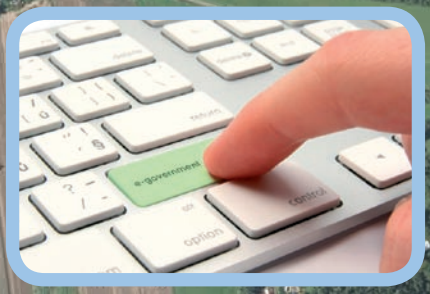
Czech Office for Surveying, Mapping and Cadastre





# *Annual Report*

# *2011*

# Content



# 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 the number of application for registration of property right and other matters of law regarding real estate the influence of the development of the real estate and mortgage market occurs. In 2011 cadastral offices have received 690 756 proposals for registration of rights representing yearly increase of 5 %. This grow was influenced by significant increase in the number of applications in the end of the year caused by some changes in legislation including the rise of administration fee since 1.1.2012, which cannot be interpreted as the recovery of the real estate market. All cadastral workplaces in the Czech Republic were carrying out the registrations of rights in the statutory time in 2011, and that are 2 weeks from the submission of the application on average. Mild prolongation of deadlines in the end of the year has been caught up on in the first two month of 2012. The number of registration based on record and notation reached nearly 1 175 thousands in 2011, which represents yearly increase of 24 %, being caused by development in the number of notations on writ of executions. The distrainors still do not follow the provision of the distrainors code according to which they should send the writ of execution to be registered in the cadastre of real estate only in the case that it is necessary for enforcing the claim. Yearly increase in the number of requests for outputs from the cadastre was solely realized by e-services of the Remote access, which satisfied even 88 % of more than 7.8 million by customers requested information from the cadastre of real estate. On the other hand the number of requests at desks in cadastral offices decreased on 11 %, so as the number of provided outputs via verifiers (CzechPoint, notaries) on 6 %. It is the result of long-term conceptual steps regarding the electronization of this administration boosting the direct access of public administration to the information from the cadastre of real estate, decreasing the time and costs of participants of proceedings with involvement of administrative bodies. Digitalization of cadastral maps went on successfully in 2011. The number of cadastral districts with digitized cadastral maps for disposal increased yearly on 1 094 cadastral districts which means 8.5 %, with the result of completed 7 941 cadastral districts which means 61 % of the total number of the cadastral districts in the Czech Republic. With regard to the economy measures it is impossible to speed up the pace of digitization, more likely the reduction in number of employees of cadastral offices results in limitation of capacities designated for the digitization. In 2012 we plan to digitize more than 8 % of the territory, but according to the planned cuts in the expenditure in 2013 and 2014 the digitization will probably be significantly reduced and

in 2014 practically stopped with all negative consequences of this step. In the frame of fulfilment of the long-term program of constructing the national geoinformation infrastructure the modernization of the Czech network of GNSS permanent stations has been realized, which enables fast and precise positioning in the whole territory of the state with cm accuracy thanks to permanent reception of signals from satellites of global navigation system. Modernization of the network enables using the signal from satellites GLONASS and after launch of Galileo satellites also from Galileo system. Map products updated in three-year cycle are provided via Geoportal of the ČÚZK in the form of web services, so that users can connect the updated data to their applications in the necessary amount - they are not forced to copy the updated data. In 2011 the second third of the project of acquisition of new terrain model of the Czech Republic with help of airborne laser scanning data of the earth surface was realized in cooperation with the Ministry of Agriculture and Ministry of Defence. The high precision terrain model with the mean error of height assignment of 30 cm will be completed in 2012 on the whole territory of the Czech Republic and resulting products will serve for many applications included f.i. the flood control.

More detailed information on results of work of land surveying and cadastral offices in 2011 brings this Annual report for the year 2011.

Karel Večeře
President of the ČÚZK

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


## > Cadastre of Real Estate

The Cadastre of Real Estates of the Czech Republic is a set of data about real estates 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 these real estates. The Cadastre of Real Estates continues to a long tradition and inventories of ownership and land registrations in the territory of the Czech Republic, with roots going back to the 14th century.

## > Land Surveying Activities

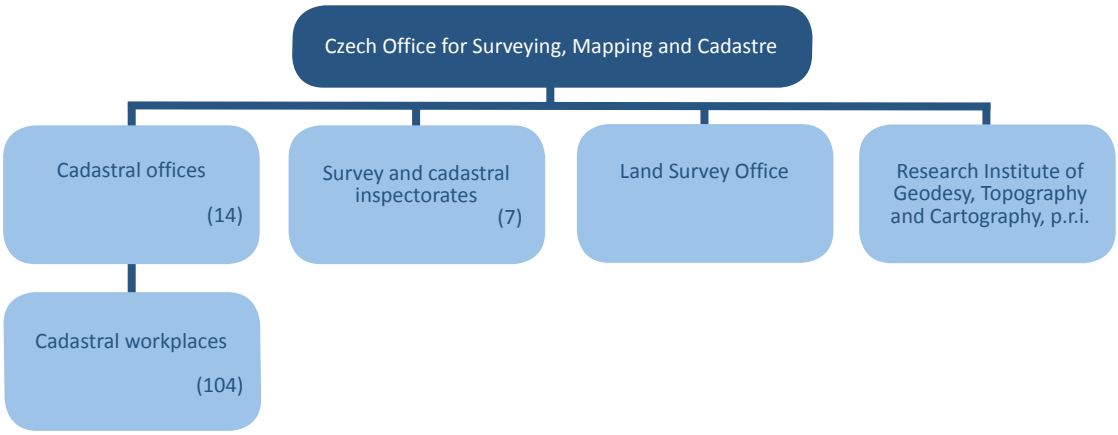
The main goal of land surveying activities in the public interest provided by the surveying, mapping and cadastre sector is to provide both professional users and wide public with requested geographical products, data and services from the geodetic control, Fundamental base of geographical data, state map series, orthophotographic representation of the Czech Republic and hypsometry and the Central Archives of Land Surveying and Cadastre.

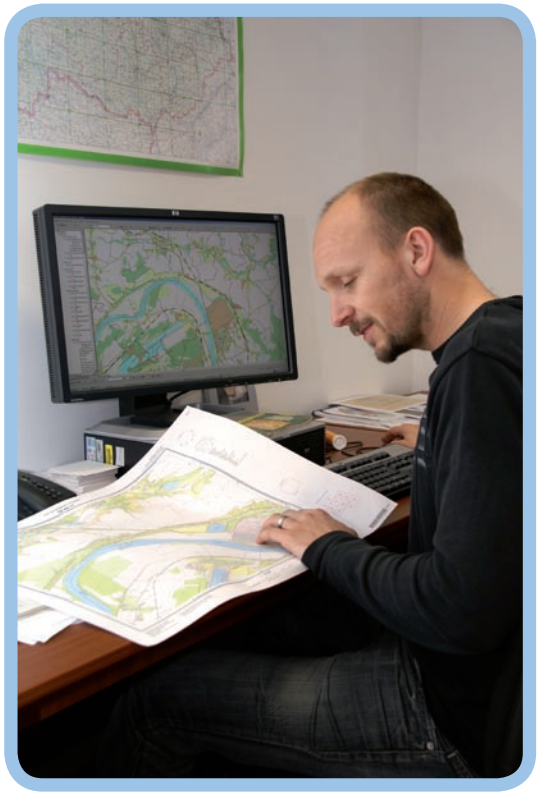
## > Organizational Structure of the Sector

ČÚZK governs 14 regional cadastral offices, which have 104 workplaces in larger towns and execute state administration of the cadastre of real estate, it further manages the 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 the Land Survey Office, 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.

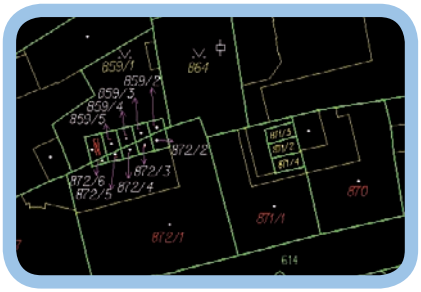
Administration authorities for the cadastre of real estate and land surveying were set up by Act No 359/1992 Coll. on land surveying and cadastral bodies, which also specifies their material and territorial competence.

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



# 2. Administration of the Cadastre of Real Estate




First records concerning the land inventory were collected for tax purposes. The effort for unified tax policy was tangible even in 1022, when the Czech prince Oldřich from the family of Přemyslovci set up the hide tax. Despite the area of the estate taking for the tax basis was not accurate, we can consider it as the first step towards to the development of the cadastre of real estate (real estate records) as a fiscal tool. The nobility started to secure private rights to property by recording in Land records at the start of the 14th century. That was the start of the recording of rights to real estate here. Later other records of real estate and cadastres were set up, serving predominantly for more effective and fair tax collection. The foundations of today's modern cadastre of real estate were laid by issuing a supreme patent of the Austrian Emperor Franz I on 23.12.1817, about land tax and land surveying. Its basis was a precise inventory and geodetic measurement of all land, a so-called Stable Cadastre. Most cadastral maps of the territory of the Czech Republic are today still derived from the survey documentation of the Stable Cadastre. Such a cadastral maps (usually at a scale of 1:2 880) are available for about 62 % of the territory of today's state.

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.

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. It was implemented in 2001. The new system increases the data quality, their accessibility and reliability and offers the option of connecting to other basic registers of state administration. Data are administered in local databases and replicated in roughly 2-hour intervals in the central database by means of the WAN department network. Thanks to this functionality it is possible to search up-to-date data of the cadastre throughout the whole Czech Republic by means of the Internet service „Remote Access to the Cadastre of Real Estate.

Since September 2001 all historical data of descriptive and spatial data were stored, so it is possible to assemble data into required outputs on historical data (time development). Since June 2006 are the electronic outputs signed by the electronic mark and have the same significance as the public documents issued by cadastral workplaces.

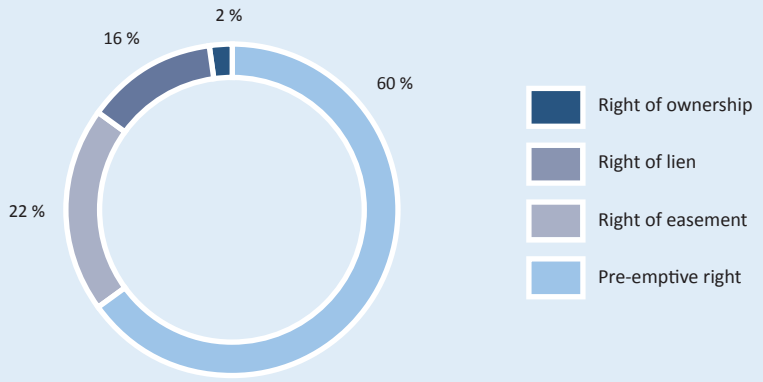
## > Main Tasks of Cadastral Offices

The 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. Contractual transactions or setting up of material rights to real estate are completed by the constitutional entry of right into the cadastre of real estate, whilst the records or deletions of material rights arising or extinct by the decision of the public authority organ, by law a. o. are performed in a simpler procedural way, by means of so called registration. Similar procedure is 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.

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

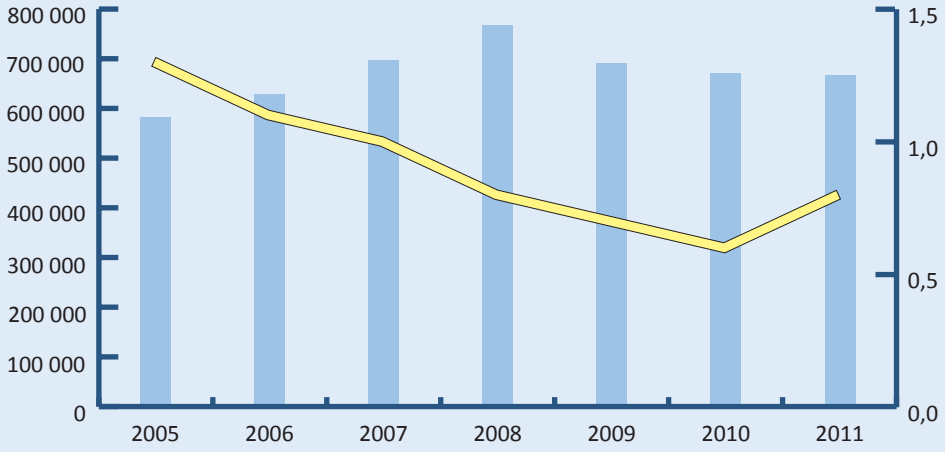
Entry in the cadastre of real estate records of property rights to real estate (right of ownership, right of lien, right of easement, pre-emptive right with material effect) and other rights stipulated by the cadastral act. In administrative proceedings the cadastral office assesses deeds and other documents, decides on permitting entry and, based on these decisions, records the rights in the cadastre of real estate. Property rights to real estate are created by registering in the cadastre of real estate with legal effect on the date of application for entry.

***Chart 1: Share of Different Types of Rights Recorded by Entry in the Cadastre of Real Estate***




In 2011 the number of accepted proposals for entries of rights by cadastral offices was 690 756 which means increase of 5 % in comparison to 2010. Yearly grow of proposals for entry of proprietary right was significantly influenced by the increased activity of applicants in the end of the year, caused mainly by the fact that from 1.1.2012 the administrative fee has increased. It led at the end of the year to mild prolongation of the total waiting time necessary for registration into the cadastre, but in the beginning of 2012 this time was reduced again to 2 weeks on average. Proposals for entry of proprietary right were represented by 60 % of the total number, rights of lien concerned 22 % of proposals, 16 % of proposals concerned easements and 2 % pre-emptive right with material effects.

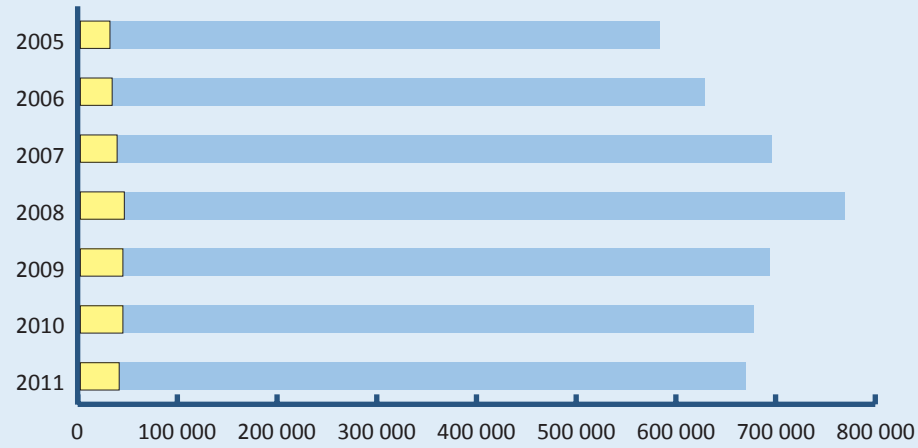
**Chart 2: Development of the Total Number of Completed Proceedings on Entry**




| YEAR | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Number of completed proceedings on entries | 581 025 | 626 948 | 695 564 | 766 305 | 689 920 | 670 048 | 665 432 |
| Average time for settlement (in months) | 1,3 | 1,1 | 1,0 | 0,8 | 0,7 | 0,6 | 0,8 |

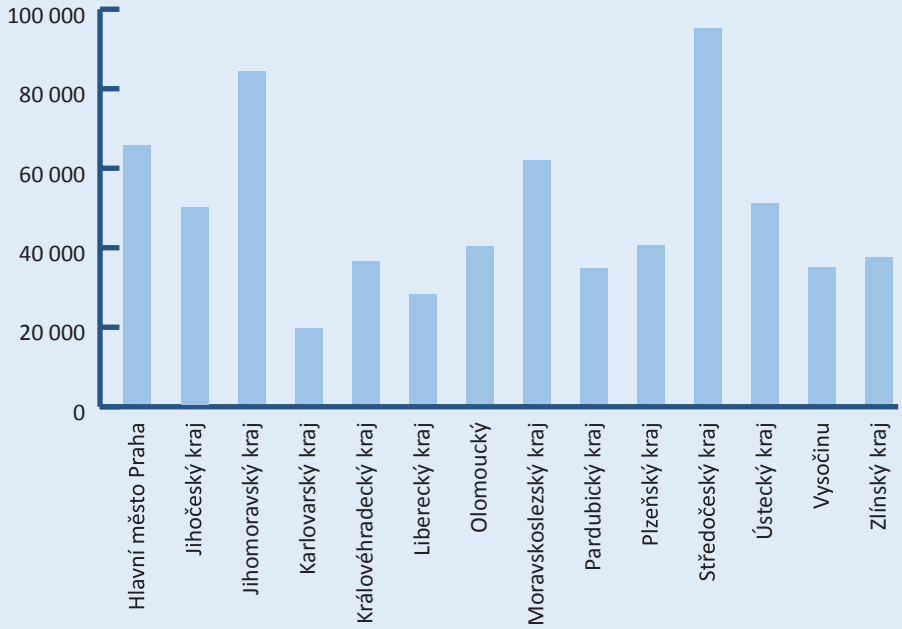
From the total number of yearly requests for entry, 94 % entries of rights are approved, the rest of administrative proceedings are refused or interrupted. In 2011 the total number of refused entries mildly decreased, as you can see in chart 3, however the percentage of incorrect requests at the total number of received requests for entries remained still high. This was boosted by the low fee for submission of the proposal for registration of right in comparison to high prices of legal services. Submitters, who are not in a hurry with the real estate transaction, prefer drawing up a deed by themselves expecting the cadastral office to indicate them possible defects during administrative proceeding. In case the defects are irremovable they take the proposal back or wait for its refusal and afterwards submit new one without marked defects. Cost of such a proceeding was only administrative fee of 500 CZK in contrast to significantly higher costs for appropriate legal services. The share of incorrect requests for entry which has to be corrected during the proceeding and which means prolongation for the proceeding is high in the long term.

## Chart 3: Development in the Number of Approved and Refused Entries




| YEAR | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Number of approved | 550 447 | 593 672 | 655 818 | 722 123 | 648 167 | 631 412 | 627 210 |
| Number of refused entries | 29 626 | 31 829 | 36 799 | 44 020 | 42 584 | 39 328 | 38 878 |

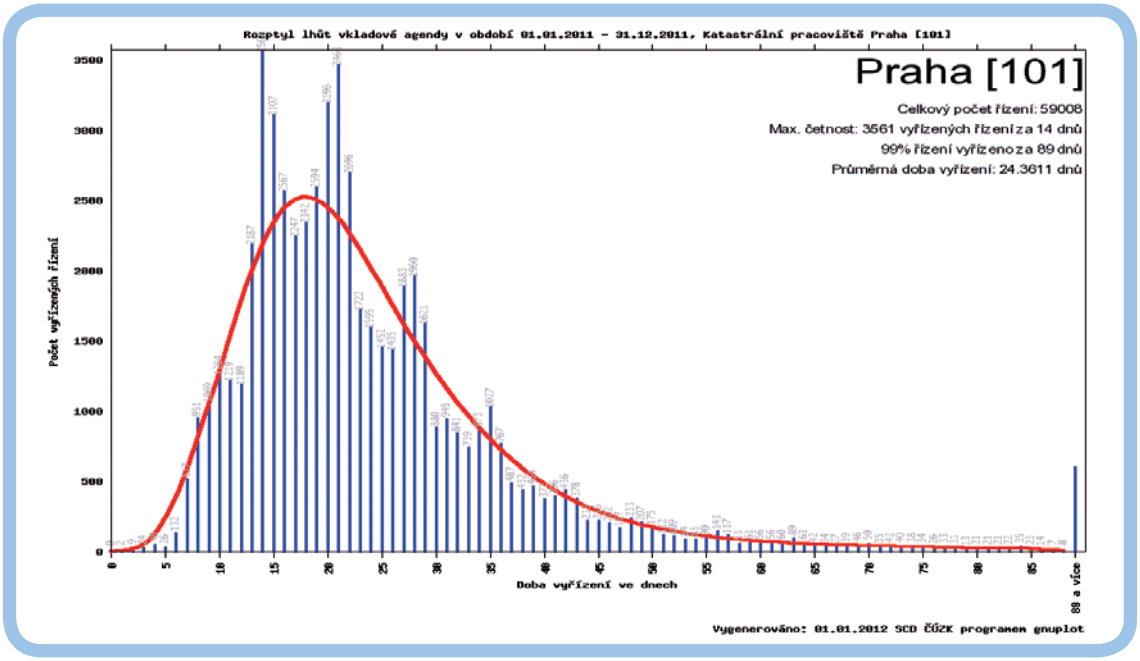
## Chart 4: Number of Entries and Suppose Duration of Proceedings in Single Regions of the Czech Republic




| Region | Hl. m. Praha | Jihočeský | Jihomoravský | Karlovarský | Královéhradecký | Liberecký | Moravskoslezský |
|---|---|---|---|---|---|---|---|
| Number of proceedings in the year | 65 401 | 48 614 | 82 248 | 18 071 | 34 696 | 26 990 | 60 822 |
| **Region** | **Olomoucký** | **Pardubický** | **Plzeňský** | **Středočeský** | **Ústecký** | **Vysočina** | **Zlínský** |
| Number of proceedings in the year | 39 073 | 33 288 | 39 232 | 97 400 | 48 477 | 34 016 | 37 104 |

Dispersion of period for entry agenda was being monitored and evaluated based on the statistical data from the information system of cadastre of real estate. Legal stated time 30 days for decision on proposal and 30 days for realization of the change into the cadastral documentation, were not exceeded by any cadastral office yet. The chart 5 shows the dispersion of period for entries delivered and completed in 2011 by the Cadastral Office for Prague-City. The highest number of applicants was satisfied within 14 days from the delivery of the proposal for entry and the submitters of error-free proposals can expect completing of their submission practically in 3 weeks, even in Prague.

***Chart 5: Dispersion of Periods for Entry Proceedings between 1.1.2011 and 31.12.2011 in the Cadastral Office Prague-City***

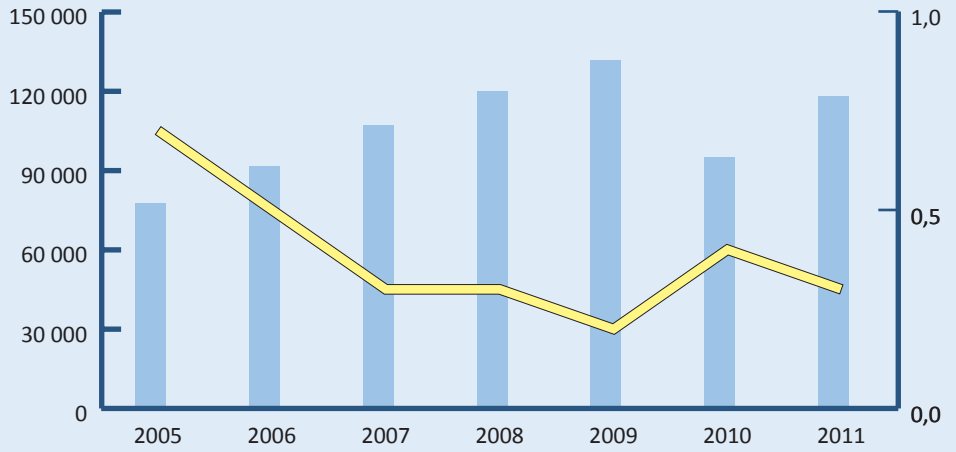



## > Registering of Rights by Record, Notation and Registering of Other Data

Cadastral offices perform also other registrations into the Cadastre of Real Estate. Registering by record means registration of the rights to real estate established by law, by decision of other organizations of state administration, by knocking down of the auctioneer in the public auction, by prescription, by acquisition and processing and of annulment of extinct rights of lien and easements. Further types of registrations are the registrations by notation. Notations serve to denotation of facts or relations relating to the real estate or a person, which are solely informative. Following data are recorded into the Cadastre of Real Estate regarding e.g. change of land type, real estate protection etc.

Whilst 943 thousand submissions for registration by record and by notation were delivered to cadastral offices in 2010 (significant decrease occurred in the number of submissions for registration by notation on the writ of executions as a consequence of the legislative change in the executor code), in 2011 the number of these submissions significantly increased again on 1 175 thousand, which represents an annual increase of more than 24 %. This increase was caused mainly by higher number of records of notations on writs of executions and annulments of the rights of lien in consequence with the refinancing of mortgage credits.

*Chart 6: Number of Completed Submissions for Registering of Rights by Record and Notations*

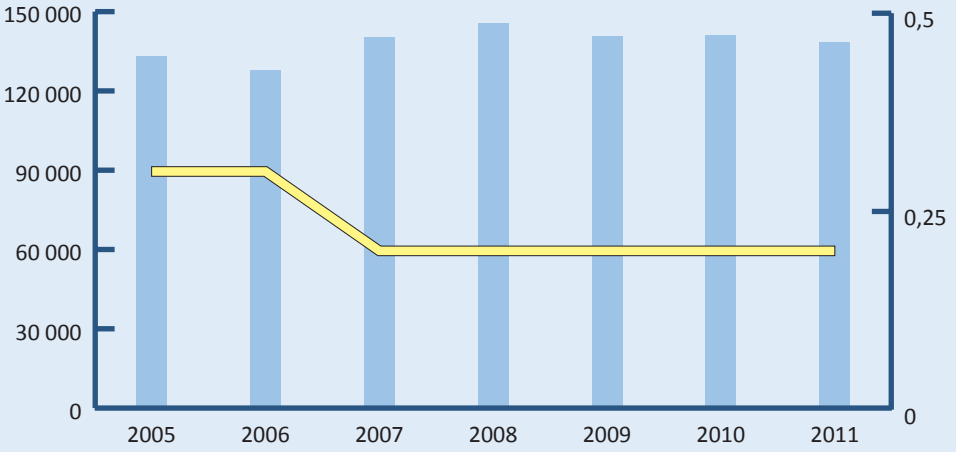



| YEAR | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Number of completed proceedings | 768 252 | 910 038 | 1 064 336 | 1 190 566 | 1 310 883 | 942 806 | 1 174 943 |
| Period for settlement in months | 0,7 | 0,5 | 0,3 | 0,3 | 0,2 | 0,4 | 0,3 |

## > 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 estates and some other changes shown in cadastral maps. They are made solely by private geodetic companies. They are important documentation for maintaining of cadastral maps, thus every survey sketch must be legalised by an authorised surveyor who is officially authorised to certify the results of surveying activities by the COSMC under Section 14 of Act No 200/1994 Coll. on surveying and mapping.

*Chart 7: Development in the Number of Requests for Certification of Survey Sketch*




| YEAR | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Number of requests for certification of survey sketch | 132 309 | 126 746 | 139 198 | 144 744 | 139 576 | 139 949 | 137 617 |
| Average period for settlement in months | 0,3 | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |

The number of surveying sketches has been very high in the Czech Republic for a long time in comparison f.i. to neighbouring Austria. It is probably influenced by completing of transformation processes, whose result or partial step is land division (agricultural restitution, registering property of municipalities, sale of state farming land etc.). Even in 2011 the number of requests for certification of survey sketches by the cadastral offices did not change rapidly in comparison to 2010. The average time for checking and certification of survey sketches by the cadastral offices reached 6 days on average.

## > 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 estates 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 available allowing outputs from the cadastre by remote access, without visit to the cadastral office. These services satisfy today most of continually growing demands for information from the cadastre of real estate.

Requests for provision of information at the counters of cadastral offices in 2011 decreased yearly on 11 %, while the total increase of satisfied requests for information from the cadastre of real estate including remote access was 26 %. Therefore in 2011 88 % of applicants for information from the cadastre of real estate were satisfied by electronic services. This progress was fundamentally influenced by the change of the Cadastral Act, based on which the remote access to the data from the cadastre of real estate is provided free of charge to the state administration bodies. It led to the growth of requests for free of charge data provision. Very similar result had the development of services on contact points of public administration (Czech POINT), which issued 415 thousand outputs from the cadastre of real estates in 2011. Further influence of significant importance is growing orientation of users towards acquiring information by means of remote access via internet services, which have started to use not only banks and real estate agencies, but also municipalities and regional authorities. Since 1.7.2006 these electronic statements from the cadastre of real estate are marked with an electronic mark and are considered as public documents. More in the chapter Electronic services of ČÚZK – Remote access.

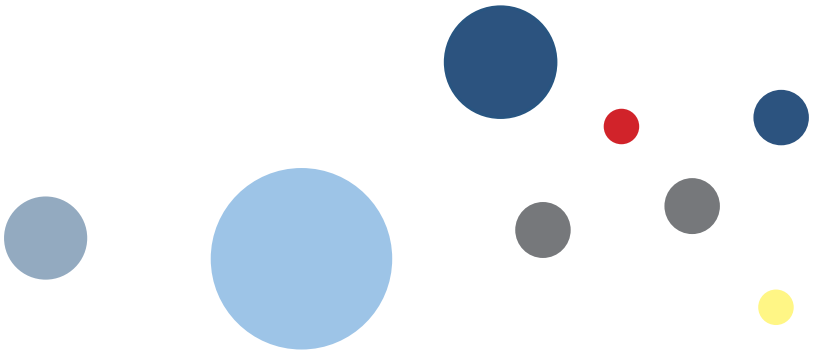
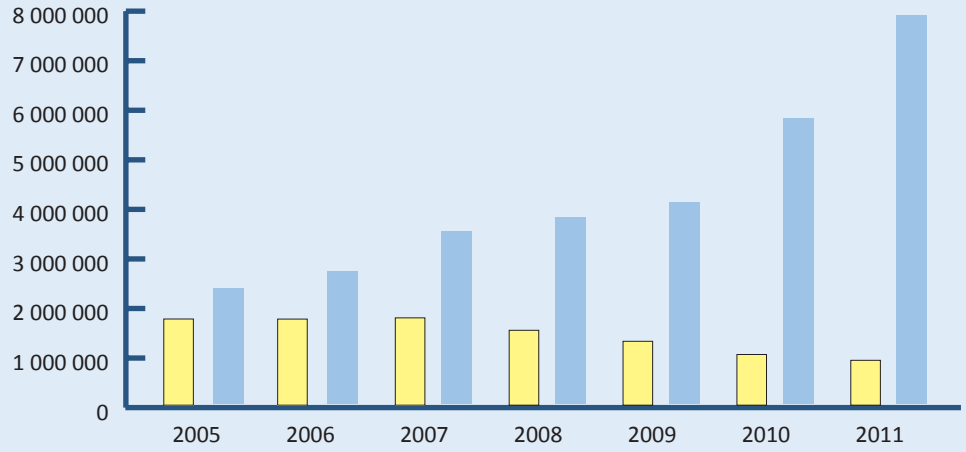
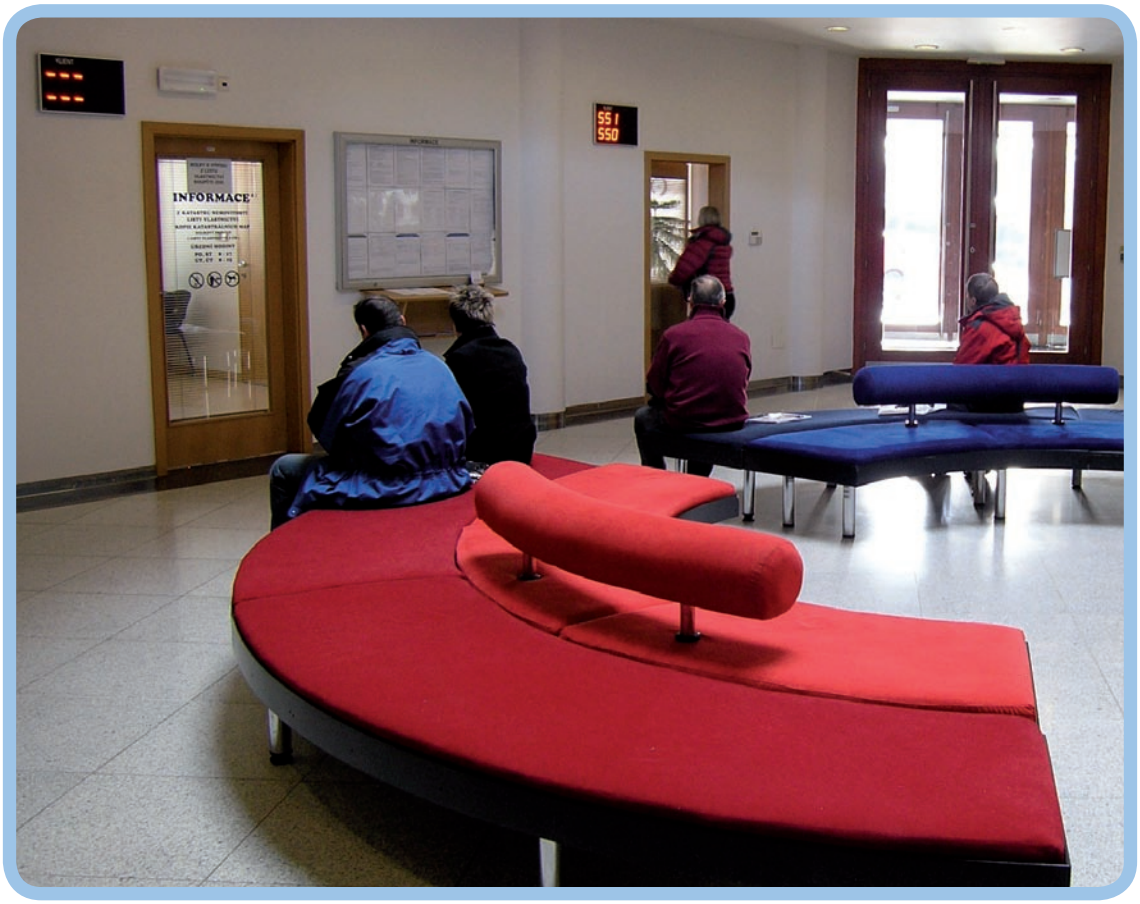


***Chart 8: Development in Number of Provided Information: Over the Counter (Number of Requests), Electronically (Number of External Outputs-reports)***




| YEAR | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Information provided in cadastral offices | 1 757 902 | 1 756 365 | 1 780 972 | 1 530 412 | 1 308 748 | 1 042 700 | 925 496 |
| Included information provided electronically | 2 328 600 | 2 669 419 | 3 486 033 | 3 760 788 | 4 055 402 | 5 761 856 | 7 832 021 |



## > Digitalization of the Cadastre of Real Estate

Digitalization 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 databases for administration and decision-making about the area. They are strategically 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, monitoring and development of technical and traffic infrastructure, environment and others.

Digitalization of the file of descriptive information of the cadastre of real estate was realized in years 1993 – 1998, in the frame of which the cadastral database was completed with missing data on land parcels consolidated into large agricultural and forest areas, information on titles, some information on owners and data on agricultural land quality. In the course of this process almost 40 million entries were added to the database and its volume thus doubled. Digitalization of the file of descriptive information of the cadastre 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.

Digitalization of cadastral maps started in connection with the completion of digitalization of descriptive information of the cadastre. The capacities that cadastral offices could give to map digitalization 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 Digitalization of the File of Geodetic Information of the Cadastre (FGI): 2002-2011***

| YEAR | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Digitalization completed | c.d. | 2 881 | 543 | 383 | 314 | 279 | 263 | 313 | 763 | 1 106 | 1 094 |
| Total in digital form | c.d. | 2 881 | 3 424 | 3 807 | 4 121 | 4 400 | 4 663 | 4 976 | 5 739 | 6 845 | 7 941 |
| Yearly growth from the total of 13 027 c.d. | | | 4,2 % | 2,9 % | 2,4 % | 2,1 % | 2,0 % | 2,4 % | 5,9 % | 8,5 % | 8,5 % |
| % From the total number | | 22,1 % | 26,3 % | 29,2 % | 31,6 % | 33,8 % | 35,8 % | 38,2 % | 44,1 % | 52,5 % | 61,0 % |

In 2009 the reversal occurred thanks to the provisions for acceleration of the digitalization, accepted by the government. The rate of digitalization reached nearly 6 % of the territory yearly. This growth in rate of digitalization went on even in 2011, when the increase of the number of cadastral districts covered by the digitized cadastral map reached 8.5 % from the total number of them. Attention was still focused on cadastral maps of cities and larger municipalities, where higher quality documentation is usually available and where more transactions on the property market and development objectives are realized.

## > Results of Digitalization in 2011

At 31.12.2011 the cadastral map was available in digital form in 7 941 cadastral districts, which represents 61 % of the total number of 13 027 cadastral districts of the Czech Republic. Revision of cadastral documentation was completed based on the results of land consolidation projects, by new mapping and by adaptation of the set of geodetic information, which means digitalization of existing cadastral maps included transformation into the S-JTSK (System of Unified Czech /Slovak Trigonometric Cadastral Net) coordinate system to DCM in another 1 094 cadastral districts.

The private sector remained active in the digitalization of cadastral maps in the form of public tenders for selected activities. Public tenders were launched as open proceeding for so called framework agreement followed by implementing agreements for single localities. To define range and contract prices the catalogue pages for four basic renewal types are used. Cadastral offices supply in this way particularly the land surveying works in the field, because the private sector is very well equipped not only with the instruments but also with the knowledge for it. In 2010 the financing of digitalization of cadastral maps was successfully provided without significant cost reduction despite the governmental economy measures included public tenders.

Significant governmental economic measures were included into the approved state budget for 2010. Under these circumstances it was impossible to devote initially planned capacity to the digitalization of cadastral maps and even the financial resources prepared for this task had to be lowered. Nevertheless it is impossible to reach further growth in the rate of digitalization to 10 % of the territory yearly. Therefore the real target was set to keep present rate of digitalization in the approximate amount of 8.5 % of the territory yearly with existing capacity and financial resources. This change will be projected into the frame schedule of the digitalization of cadastral maps so as the deadline for completion of the digitalization will be postponed by 1.5 year, thus from 2015 to the first half of 2017.

## > Plan of Digitalization of Cadastral Maps in Further Years

In 2012 the approved state budget enables carrying on the digitalization of cadastral maps in the approximate amount of 8 % cadastral district from the total number of cadastral districts in the CR. That is why the increase in the number of cadastral districts covered by cadastral map should be 1 045. The same increase of 8 % should be reached even in 2013. In further years the number of completed cadastral districts should be wound down step by step and the redundant work capacities should be used for necessary tasks connected with changes based on the new Civil Code coming into force.

***Schedule of Digitalization of FGI: 2012–2017***

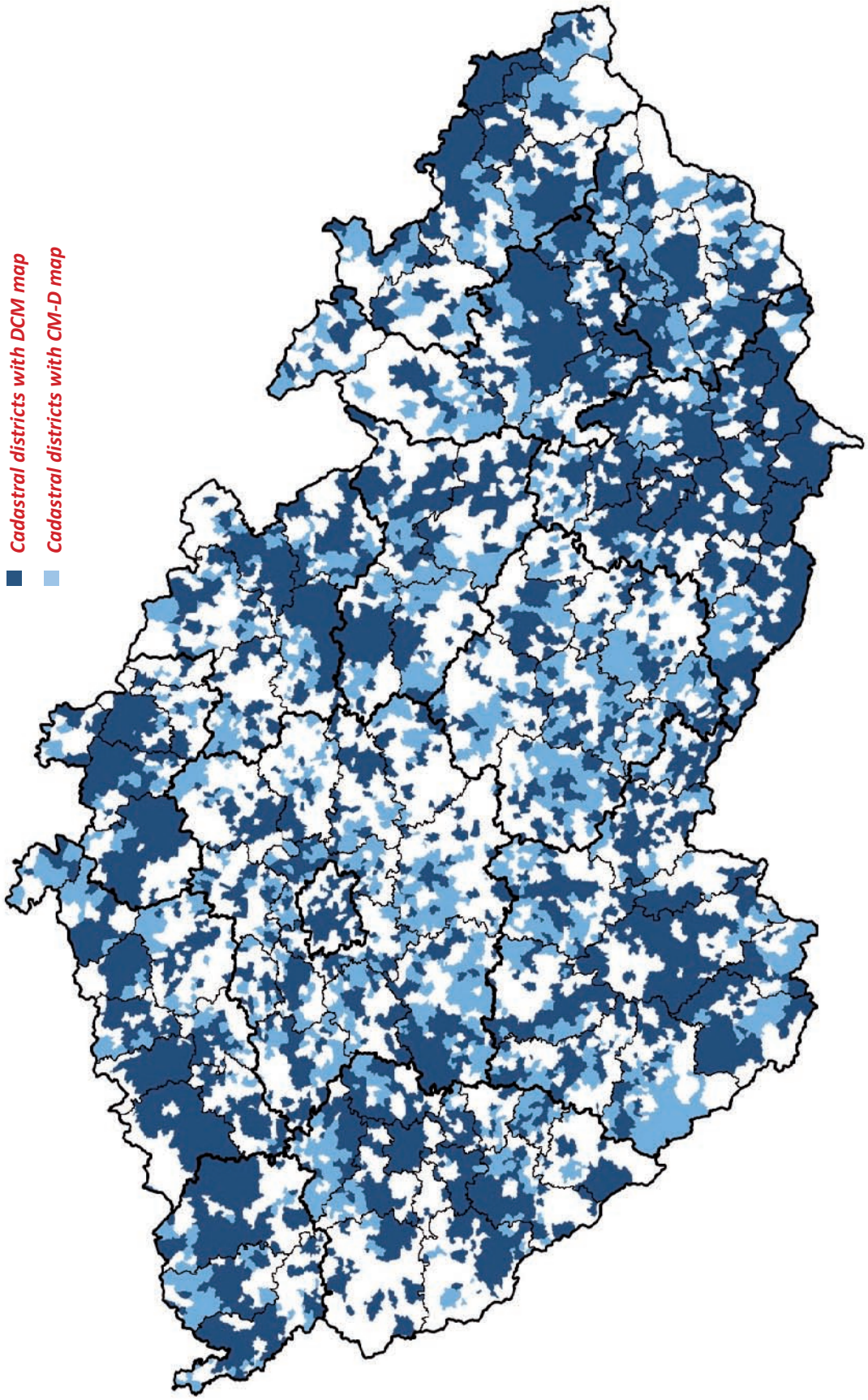
| YEAR | 1997–2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Proposal of the number of cadastral districts for map digitalization | - | 1 045 | 1 045 | 998 | 879 | 760 | 361 |
| Total number of cadastral districts with cadastral map in digital form | 7 941 | 8 935 | 9 980 | 10 978 | 11 857 | 12 617 | 13 027 |
| Yearly growth in % out of total number | - | 8,0 % | 8,0 % | 7,8 % | 6,8 % | 5,8 % | 2,6 % |
| % out of total number | 61,0 % | 69,0 % | 77,0 % | 84,8 % | 91,6 % | 97,4 % | 100 % |

The actual course of adaptation of cadastral maps into digital form is negatively affected on the one hand by the necessity of completing cadastral maps of parcels consolidated in the course of collectivisation into large land blocks, today registered in a simplified manner using the historical map fund of former registrations, and on the other hand by the very urgent need of resolving the consequences of unfinished allotment and consolidation proceedings arisen after the second world war. Whilst the removal of parcels registered in a simplified manner is a technical problem, resolution of the consequences of unfinished allotment and consolidation proceedings is a problem with serious legal aspects. Land consolidation, which is the most effective tool for the solution of relations in the area as a whole, because it provides digital cadastral map together with resolution of ownership relations i.a., proceeds, however, very slowly.

To fulfil the above stated plan it is necessary to receive reasonable financing of this task. Economic measures of the state budget could lead to significantly unwanted decrease of the rate of digitalization of cadastral maps and to postponing of the deadline for completing the digitalization at the whole state territory. At the same time it is necessary to carry on the land consolidation to clarify the reconstruction of allotments and completing of redistribution step-by-step in the cadastral districts with uncompleted allotment and redistribution proceedings.

Until the digital cadastral map is for disposal in all cadastral districts, users´ needs are covered by the raster data obtained by precise scanning of cadastral maps and maps of former land registries. Raster data of cadastral maps with current content are being collected continuously upon the stated requests. Currently these maps are for disposal on the whole territory of the Czech Republic via applications Remote access into the cadastre of real estate, Consultation of the CRE and Web map services of the CRE.

Progress of Digitalization of Cadastral Map 31. 12. 2011



# 3. Land Surveying Activities in the Public Interest

Main task of the state land surveying service is to provide basic geographic datasets and map products for the wide use not only in the public administration but also in the private sphere including the development of the geodetic control, which is necessary for land surveying activities. At present the main stress is put especially on the improvement of accuracy, details and datasets updating so as their harmonization in the frame of interdepartmental and international cooperation. Together with data quality improvement provided services are being enhanced, in particular the net services being provided by the Geoportal ČÚZK and by the Czech network of permanent GNSS stations (CZEPOS). In 2011 the attention was still paid to implementation of the Directive of the European Parliament and Council 2007/2/ES, on establishing the Infrastructure for spatial information in the European community (INSPIRE).

In the area of geodetic control the effort was focused on provision of best quality services and monitoring of CZEPOS network so as on enhancing of network compatibility with already operating satellite system GLONASS and GALILEO being under preparation. Since further development of geodetic control is impossible without connection to European terrestrial reference system ETRS89, new realization of its frame in the Czech Republic was launched on 2.1.2011. Previous geodetic control was maintained only in the necessary amount in cooperation with private companies announcing the errors detection on points during land surveying in the field.

Huge effort was given to keeping the Fundamental base of geographical data of the CR (ZABAGED®) updated. The three-year updating cycle of the whole territory of the state for many significant object types has been replaced by the updating procedure realized at least once a year in cooperation with the external administrators. Completion of integration of the database of geographical names (Geonames) and ZABAGED® lead to elimination of inconsistencies and duplications between both these datasets. The first year of operation of the new system for cartographic production led to production speedup of state map series in scales of 1:10 000 to 1:100 000. The raster form of the Base Map of the Czech Republic 1:10 000 was reworked.

The implementation phase of the inter-branch project of ČÚZK, Ministry of Agriculture and Ministry of Defence, regarding the laser scanning and processing of elevation data from the territory of the Czech Republic went successfully on resulting in some types of elevation territorial model of the Czech Republic and the model of land cover. Changeover to the digital aerial photography in 2010

rapid improvement of the quality occurred in the dataset Ortophoto of the Czech Republic. Orthophotos are provided with the resolution of 0.25 m on the whole territory of the Czech Republic.

Geoportal ČÚZK plays an irreplaceable role in data and service provision for a long time. It has also a significant role in fulfilling the obligations following from the European Directive INSPIRE. Its implementing requirements are met there in the area of metadata proceeding and publication, monitoring and reporting so as newly launched viewing and searching services. Public viewing service, which were in the past limited only on own clients of Geportal ČÚZK, could be used free of charge and without registration since the half of 2011.

## > Geodetic Control

The Land Survey Office performs administration of geodetic control of the Czech Republic and decides on the localisation, transfer or removal of survey marks of basic geodetic control. At present the importance is given to the modern part of geodetic control represented by the Czech network of permanent stations GNSS (CZEPOS) apart from classic geodetic control represented by minor control. On 2.1.2011 an important partial phase in geodetic control development by launch of new realization of European terrestrial reference frame ETRF89 on the territory of the Czech Republic and by publication of the global transformation key for the transformation between S-JTSK and ETRS89 was completed. The communication with users - mostly private surveyors - who send the reports on damages or changes on points of minor control via internet for maintenance and rectifications of defects on the points of geodetic control and geodetic data updating, has been successfully developed.

## > 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 internatio-

nal 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. New surveying of state borders and specification of positioning coordinates of all break points of the state border is just being realized only on the border with the Federal Republic of Germany.

## > Fundamental Base of Geographic Data (ZABAGED®)

ZABAGED® is a database set of selected geographic, topographic and geodetic data from the whole territory of the Czech Republic. It creates the continuous digital geographic model of the territory matched by its accuracy and detailed representation of geographic reality to the Base Map of the Czech Republic 1:10 000 (ZM10). The content of ZABAGED® represents 122 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) content in its descriptive part the identifiers (integration keys) for the connection to the databases of their administrators. The vertical component represented by spatial 3D sets of contours is administered in the separate file system. In 2011 the regular updating of ZABAGED® on the whole territory of the state went on with use of orthophotos, aerial photos and field investigation. The updating cycle of ZABAGED® is three years in this regime in last couple of years. 24 significant objects such as roads, administrative boundaries and others are being updated once a year or even more often based on changes delivered by their administrators. Since 2011 even the object category buildings is yearly updated based on the information from the cadastre of real estate. In cooperation with the Czech Statistical Office (ČSÚ) updating of roads and their names was realized together with further conditions for their use in the basic register of the territorial identification, addresses and real estate. Comparison of ZABAGED® water courses with those registered in the Central database of water courses (CEVT) under responsibility of the Ministry of Agriculture has been done resulting in unification of water courses type with the CEVT database for 96 % of them and supplementing them with the identifier. In cooperation with Saxon partners the project of ZABAGED® data harmonization together with similar German database ATKIS on the borderline was completed. Another important task of the year 2011 was the modernization of application programmes for ZABAGED® administration and updating of photogrammetric equipment.

***State Map 1:5 000 (SM 5)***

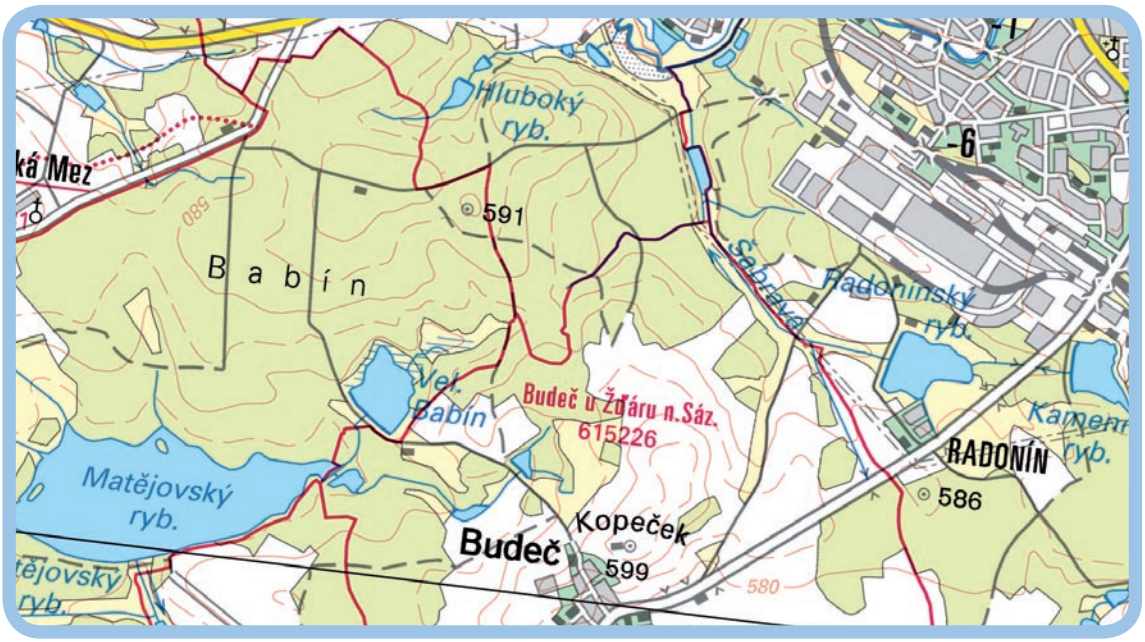
## > Altimetry

Altimetry data of the Czech Republic territory, administered and provided in the ZABAGED® frame in the form of altimetry contour line model, has been updated in the areas where the area-wide ZABAGED® updating has been realized. To facilitate the application of the altimetry model in geographical information systems this model is being alternatively transformed into the grid sized 10x10 m and as such provided to users. Based on the Agreement on cooperation on creation of CR altimetry digital databases between the Czech Office for Surveying, Mapping and Cadastre, the Ministry of Agriculture and the Ministry of Defence from 2008 the execution of the new altimetry mapping project of the territory of the Czech Republic with use of the technology of airborne laser scanning has been carried on. During 2011 the total of 22 333 sq.km of the west zone was scanned which means completing of the 2/3 of the territory of the Czech Republic (west and central zones). Maximum automated processes ensured the processing of the digital terrain model into the point grid sized 5 x 5 m (DMR 4G) for the west zone. the manual inspection as well as data classification necessary for creation of further products went on, such as digital terrain model in the irregular triangular network (DMR 5G) and digital surface model (DMP 1G). From both completed zones the DMR 4G is already provided to users whilst DMR 5G provisions has been launched only in the central zone.

## > State Map Series

Apart from cadastral maps state map series represent sets of basic and thematic map series. The basic 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 basic state map series are ZABAGED® and Geonames, in particular. Modern technology of database cartography and digital print ensures the quality of map outputs processing and gradual reduction of their updating cycle.

***Base State Map 1:50 000 Based on ZABAGED® Data***

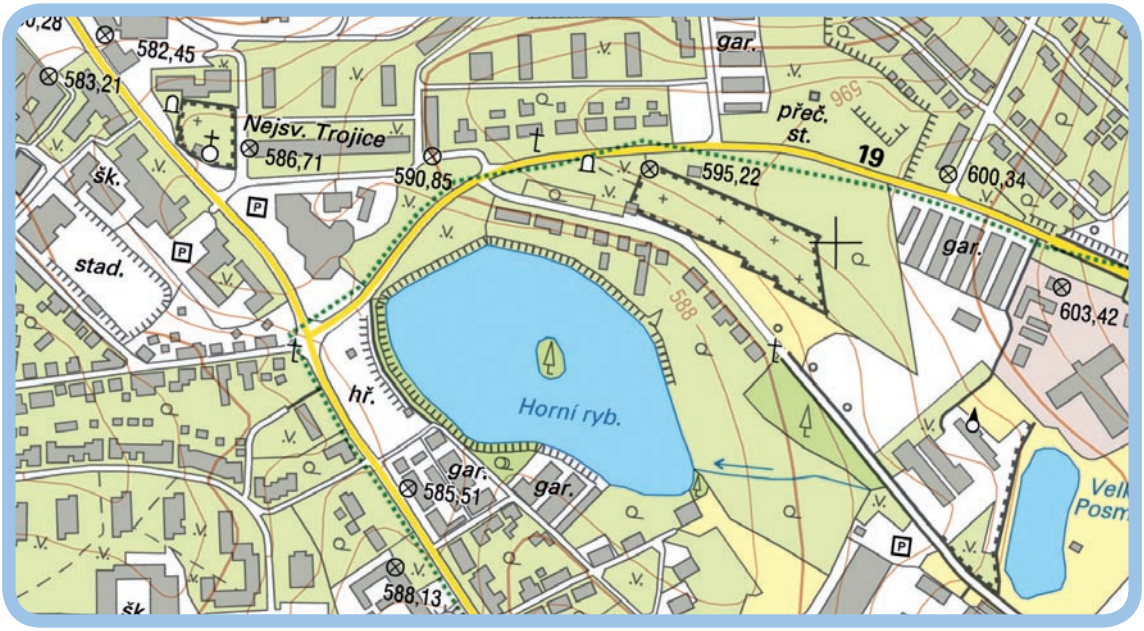


The basic state map series at a scale of 1:5 000 is provided both in digital and printed form and is available in more versions. The former state maps 1:5 000 – derived (SMO-5) are provided only in the form of copies and prints. State map 1:5 000 – raster (SM 5 R) is based on the printing materials SMO-5 and is provided both in raster and printed form. Another version is the state map 1:5 000 (SM 5) provided in digital, raster and printed form for approximately 25 % of the territory of the Czech Republic. Since 2011 the automated technology has been used to prepare data for the new edition of SM 5 on the territory where the vector cadastral map already exists. The new SM 5 is provided via web map service, as printed copies or file data. Base maps at medium scales represent the most important part of the basic state map series. Base Maps of the Czech Republic are produced in scale series of 1:10 000, 1:25 000, 1:50 000, 1:100 000 and 1:200 000. An important part of the state map series are maps of territorial units forming the Map of Districts of the Czech Republic 1:100 000, Map of Regions of the CR 1:200 000, Map of the Czech Republic 1:500 000, Czech Republic – Physical-geographical map 1:500 000 and Czech Republic 1:1 000 000. The collection of the basic state map series is still being supplemented with a group of maps of the administrative division of the Czech Republic at scales of 1:200 000, 1:500 000, 1:1 000 000 and 1:2 000 000.

The thematic state map series is a cartographic work representing certain thematic phenomena as a rule, on the basis of the basic state map series, which is published in the public interest. The collection of the thematic state map series issued by the Czech Office for Surveying, Mapping and Cadastre includes the Road Map of the Czech Republic 1:50 000, the Regional Road Map of the Czech Republic 1:200 000 and some other maps with thematic land surveying content. In 2011 creation of a new title went on – Map of municipalities with enlarged administrative competencies 1:50 000, where the administrative district of every such a municipality is depicted on one separate map sheet.

In 2009 the offer of map production was enlarged on digital geographical model of the Czech Republic territory Data200.This database was originally created for EuroRegionalMap (ERM) with accuracy and level of generalization corresponding to the scale 1:200 000 and is updated yearly.

***Base Map 1:10 000***



## > 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 on the whole territory of the Czech Republic in three-year cycles in cooperation with the Ministry of Agriculture and Ministry of Defence of the Czech Republic. Every year the updated orthophotos are for disposal from one third of the territory of the Czech Republic, which means one of three zones ("West","Central" and "East" zones).In 2009 orthophotos processing with higher accuracy given by the smaller pixel size of 0.25 m has been launched. Since 2010 the aerial photographs are being taken by the means of digital scanning, which enables simplification of data processing and improvement of their photo interpreting quality.

Orthophotos are 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 MrSID with the resolution of 0,25 m on the ground and are georeferenced in the coordinate system S-JTSK with help of the text set TFW (SDW). The data sets for coordinate system WGS 84 are also provided.

***Ortofoto – Sample***

## > Geonames Database

The Geonames database provides a complete set of information on standardized geographical names (in total 165 types of designated objects) and names of settlement units in the detail of the Base Map of the Czech Republic 1:10 000 complemented with the terminological content of chosen small scale maps. 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® data it provides users with an integrated view of the territory ofthe Czech Republic. It is a source for publishing state map series of different scales.

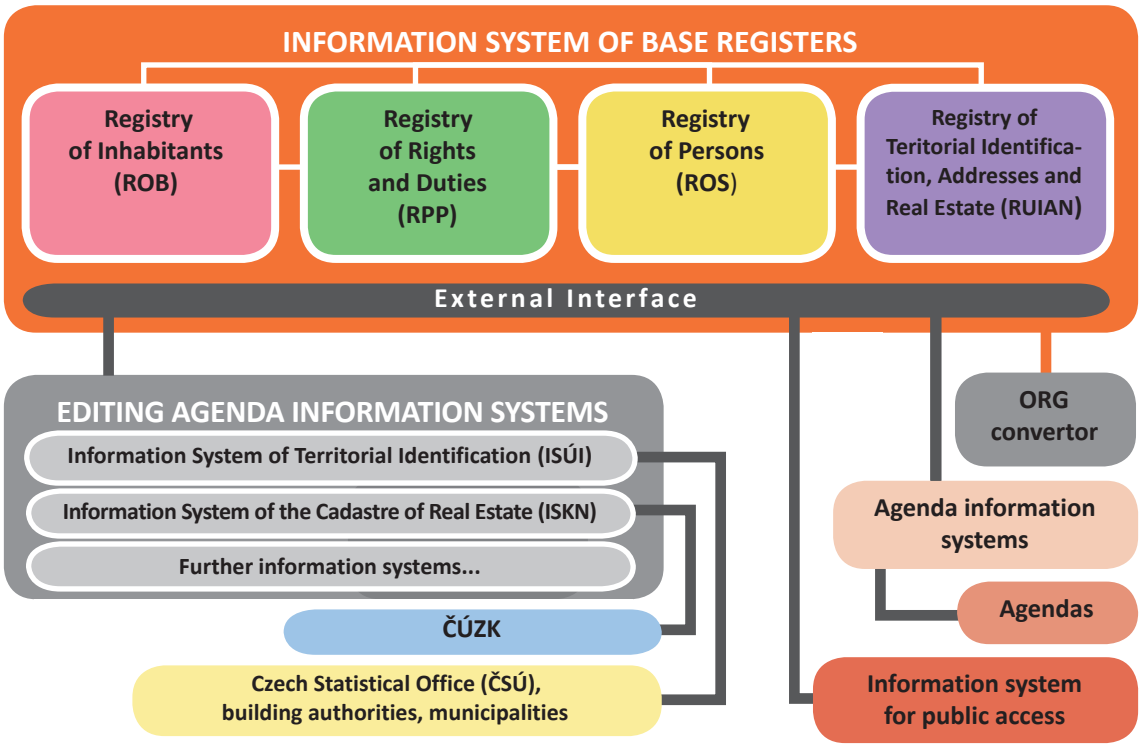
Updating of the Geonames database is going on in cooperation with municipalities harmonized with updating of ZABAGED® together with digitalization of cadastral maps. After completing of the data integration in both mentioned applications geographical names are connected direct to the objects and are set into the database only once and not in the number of their occurrence in the map.

# 4. E-Government Services

Headstones of the national e-Government conception (electronic public administration) are the basic registers. Basic registers contain data on people, companies, real estate and on rights and obligations. Four registries depicted in the following picture should create the database of electronic public administration.

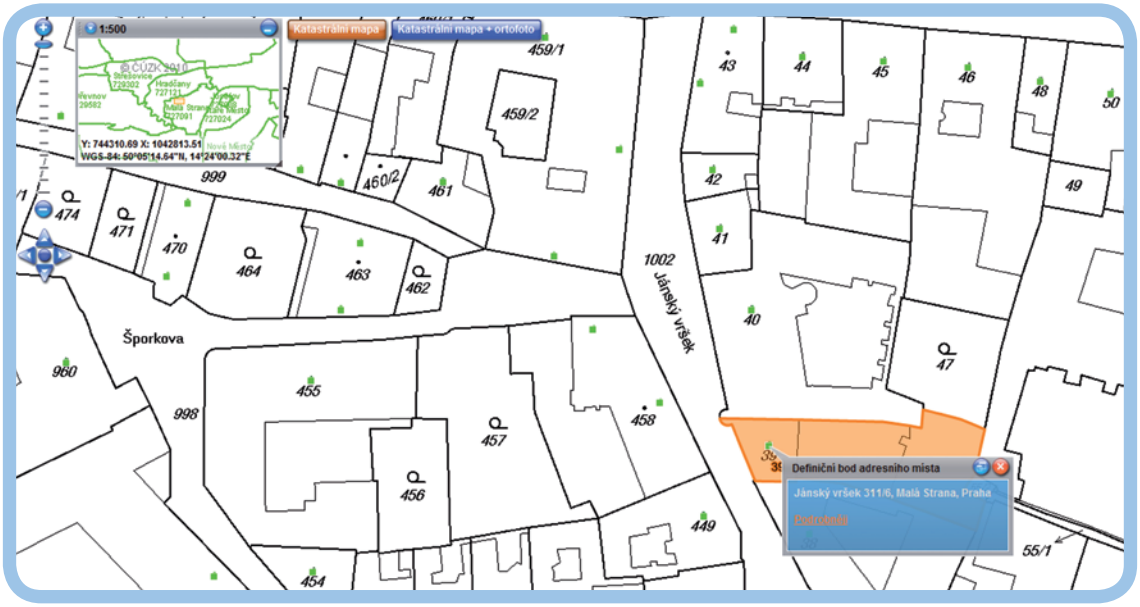
Interconnection of basic registries of public administration and their connection to other information systems should remove current problems with heterogeneous data, in particular in the area of people, companies, addresses and territorial identification. After launch of basic registries these data will be centralized in one place to save financial resources and time not only to public authorities but also to other subjects outside the public administration. These resources could be then allocated to be used for creation of other information services.

*Information System of Base Registers (ISZR)*



The branch ČÚZK is assigned the task of building the Registry of territorial identification, addresses and real estate (RÚIAN), which is an integrated part of the whole framework of base registers of public administration being just now under construction. RÚIAN is the main source of reference and localization data on territorial items and territorial registered units included parcels, buildings and addresses. Significant part of RÚIAN data will have the reference meaning. In 2011 important phases of RÚIAN project were finalized. Common central technological infrastructure for information systems of the centralized cadastre of real estate, territorial identification (ISÚI) and RÚIAN were completed. The next step was the preparation of the application programme equipment for ISÚI and RÚIAN so as creation of the fundamental database of registered data based on data from legally stated information system sources. Data verification and refining followed with the goal of step-by-step elimination of identified discrepancies. ISÚI pilot operation has been launched and municipalities together with construction offices have been obliged to update the database since August 2011. Municipalities and construction offices have taken part in data verification and elimination of discrepancies since autumn 2011. ČÚZK has been organizing more than 40 introductory seminars for the ISÚI editors in cooperation with regional offices in all regions of the Czech Republic. The following trainings were step-by-step realized by more than 30 external supervisors.

***Sample of the Depiction of the Chosen Area in the Application Public Remote Access to Rúian Data***




The progress of the project kept being influenced in a negative way because of the delay in building of further parts of the system of basic registries, especially the umbrella Information system of base registries (ISZR), in the responsibility of the Ministry of Interior. That is why the ČÚZK had to implement different alternative solutions enabling continuation of the project. The coordination with the Ministry of Interior is crucial for the realization of the whole system of base registries and in 2012 the further progress of the project is dependent on this cooperation.

Informatization of the public administration brings the need of creation of infrastructure on the national level, included the geoinformatics both on national and European levels. Introduction of e–Government encompasses several component technical problems, such as digitalization of the da-

ta series and information funds, use of protected electronic communications (ciphered, electronic signature, electronic mark), making accessible agendas and remote services (presentation of products and services on web portals, implementation of web services for remote access to data), interconnection of information systems of public administration and similar. In the area of land surveying and cadastre users have several services that can be considered applications of electronic public administration available. These services allow clients to acquire information from the cadastre, use on-line map services or determine the actual position or carry out a precise measurement using the network of GNSS permanent stations.

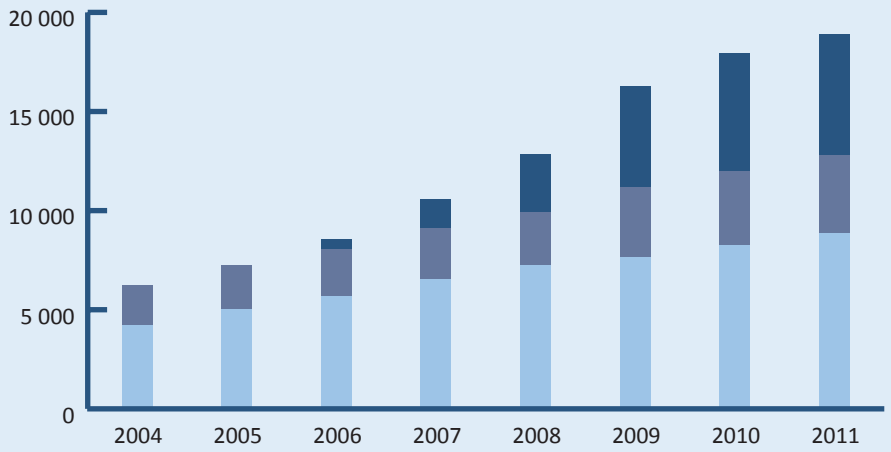
## > Remote Access to the Cadastre of Real Estate

https://katastr.cuzk.cz/

Remote access (DP) allows the provision of data from the cadastre for the whole territory of the Czech Republic via the internet. Outputs from the cadastre obtained in this way – for example, statements from the cadastre and other configurations, are formally and materially completely identical to documents issued at the same time by the cadastral office and are considered the public documents.

The application enables acquiring of the statements not only by entering of basic parameters, but supports the visual search as well, either via digital cadastral maps or raster picture of these maps in the territories without digital cadastral maps and further with help of orthophotos or topographical maps as navigation tools.

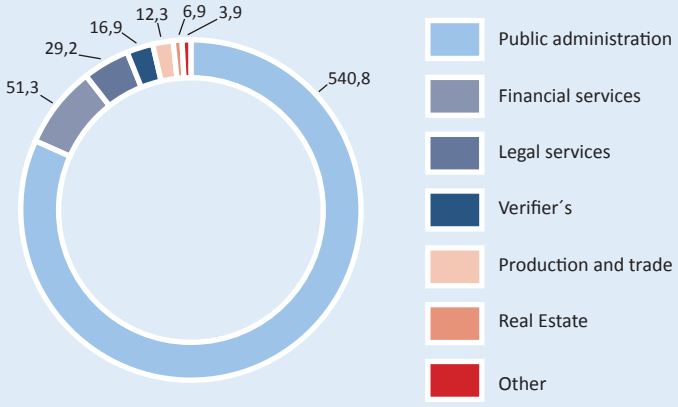
***Chart 9: Development of the Number of Users – According to the Type of Acounts***




| YEAR | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|
| Paying users | 4 169 | 4 933 | 5 572 | 6 474 | 7 132 | 7 550 | 8 191 | 8 780 |
| Free Charge users | 1 979 | 2 190 | 2 364 | 2 558 | 2 667 | 3 514 | 3 714 | 3 922 |
| Verifier´s | - | - | 614 | 1 540 | 3 051 | 5 201 | 6 043 | 6 193 |

Outputs from Remote access are paid, but substantial group of users from state administration and self-government have been provided with data from the cadastre in this manner free-of-charge. Remote access has been operated since 2001 and since its launch the number of clients actively using it has grown annually. The number of RA users increased mildly again by nearly 5 %. At 31.12.2011 the number of users´ accounts was at a total of 18 894, 3 921 of which were free accounts and 6 193 were accounts for certifiers (see later) in connection to the development of the project Czech POINT. More than three quarters of all provided outputs are those provided free of charge to governmental bodies, regions and municipalities.

***Chart 10: Depiction of the Biggest Users of Remote Access – According to the Data Value***




The number of Remote Access users has been constantly growing in 2011 so as the income for provision of data via it. The income from paid accounts overreached 120 million CZK in total. Taking into account the paid users, these services are most used by the banking sector for obtaining of the documents necessary for mortgage provisions. Remote Access is provided free of charge to municipalities and regions for performing their competency and since 2009 to the state institutions, notaries and executors, as well.

## > Issuing of Verified Outputs from the Information Systems of Public Administration

Based on the amendment of Act No 365/2000 Coll., on public administration information systems marking of outputs from the RA with an electronic mark based on a qualified system certificate started at the beginning of July 2006. That electronic mark guarantees authenticity (issued by the Czech Office for Surveying, Mapping and Cadastre) and constancy of the output. An electronically marked statement from the cadastre has all the appurtenances of a public document. The number of places where it is possible to acquire a certified statement from the Information System of the Cadastre of Real Estate has been increasing continually. The electronical statements are issued also by notaries, regional, matrimonial, municipal and city district authorities, selected representative offices and further the Czech Post s.c. and the Czech Chamber of Economy. These subjects (verifiers) then put outputs into the paper form and issued them consequently as the public output from the information system of the public administration.

In the frame of the project CzechPOINT it is possible to acquire the verified extract from the cadastre of real estate, from the trade and commercial registries and from criminal record. The verified outputs from the CRE create in the long term 25 % of all CzechPOINT´s outputs. At present the CzechPOINT enable issuing of the extract from the cadastre of real estates and the possibility of issuing copies of digital cadastral maps is under preparation.

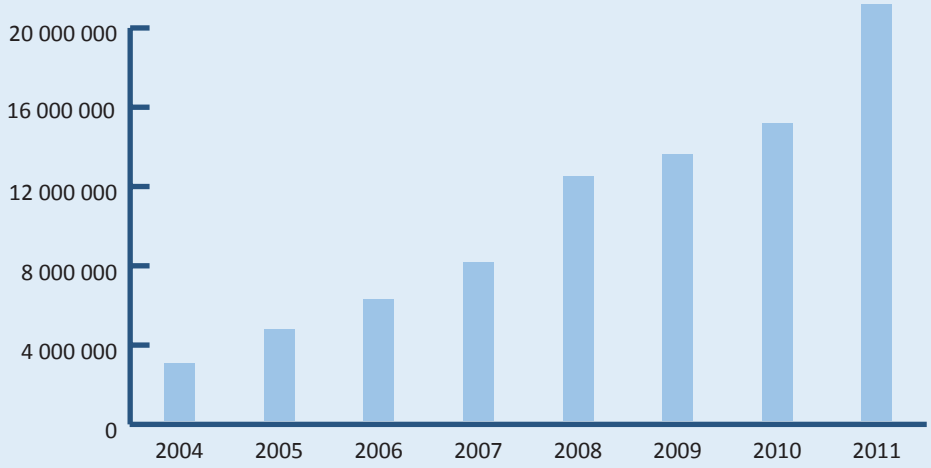
## > Consultation of the Cadastre of Real Estate

http://nahlizenidokn.cuzk.cz/

Probably the best-known e–Government service, operated in this department, is free consultation of the cadastre. This Internet service was launched on 1.1.2004 and allows provision of selected data concerning ownership of parcels, buildings and building units (flats or non-residential space). By means of consultation 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 consultation application is very intensively used by a wide range of users and has contributed in a significant way to increase the transparency of the course of individual administrative proceedings. In 2010 the modification of the application was completed being more user-friendly and enhancing the data updating.

Consultation of the cadastre is one of the most visited websites of Czech state administration. In the seven years of its existence the application has registered a constant growth in the number of users; in 2011 it had nearly 21 million visits. Yearly growth in the number of visits reached almost 40 %. The biggest growth in number of users was in 2008 and was caused by launch of the new version of application, which enabled the access to depicted cadastral maps from the whole territory of the Czech Republic. In localities not covered by the digital cadastral map, the raster pictures of cadastral maps are for disposal, which are regularly updated with depiction of changes based on survey sketches solving for better orientation. That way the users have access to currently updated complex information from the cadastre of real estate direct from their worktable.

***Chart 11: Development of the Number of Visits to Consultation of the Cadastre of Real Estates***




| YEAR | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|
| Number of accesses | 2 900 | 4 600 | 6 100 | 8 000 | 12 315 | 13 419 | 15 000 | 20 978 |

## > 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. 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 99 % and even 170 % in the number of requests.

## > Geoportal of the ČÚZK

http://geoportal.cuzk.cz/

The Geoportal of the ČÚZK enables not only finding information (metadata) on spatial data in responsibility of the branch in one place, but also their viewing or ordering in the form of datasets or services. Internet shop serves to ordering of printed maps as well. ČÚZK Geoportal homepage fulfils the role of the link to further applications and services of the branch (Consultation of the CRE, viewing of archival maps, CZEPOS, Geodetic control points etc.). The developing service of the ČÚZK Geoportal is providing the network services based on spatial data. Network services are used not only in its own applications, but also in geographic information systems, map portals and web applications of other providers. In accordance with requirements of the Implementation rules of the INSPIRE Directive the meta-information file on provided data and services are completed and regularly updated in line with the branch metadata profile. Apart from the metadata on datasets there are even more detailed data on single map sheets for instance on the state of their updating or digitalization of the cadastral maps. In 2011 the viewing and searching services were adapted according to INSPIRE implementing rules. Searching service is a public service providing metadata to the searching clients. It enables searching in metadata not only in the frame of ČÚZK Geoportal, but also in other geoportals using this service (f.i. national and European INSPIRE geoportals).

Free of charge available web service of transformation of WCTS coordinates was adapted in 2011 with use of more precise global coordinate transformation. A new client of this service has been published on the ČÚZK Geoportal website enabling the transformation of input coordinates between the two coordinate systems S-JTSK and ETRS89.

## > Datasets Provision

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® data). The client has the possibility to select required data according to the sheet line system, i.e. units for direct files providing via the internet.

The most demanded data sets remained ZABAGED®, orthophoto 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. Share of single users´ types on the total number of issued units provided in 2011 via commercial module is depicted in following figure.

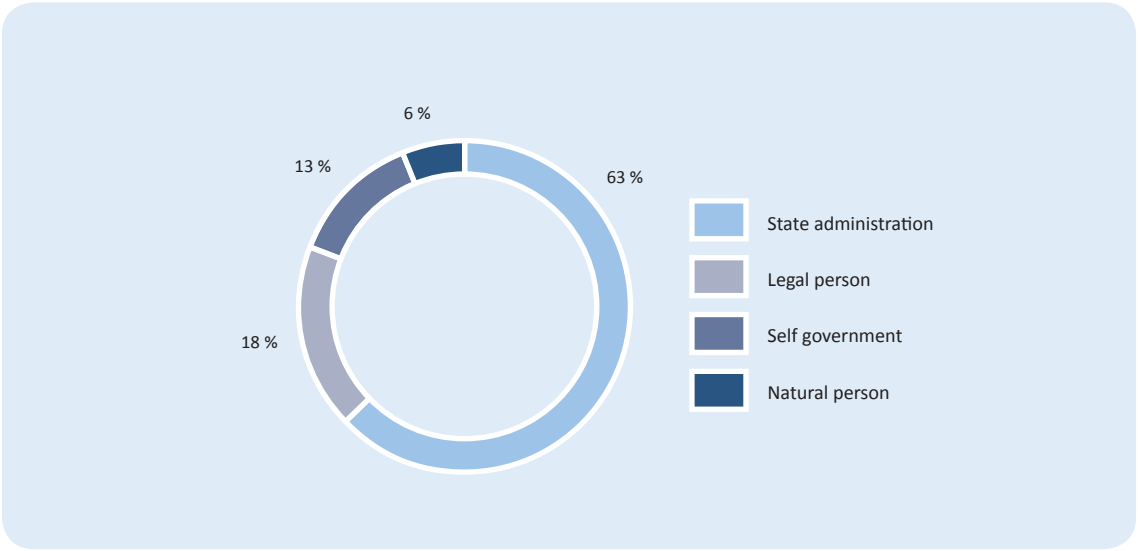



*Chart 12: Structure of Geoportal Users in 2011, Included Map Services*

Students can get the data via commercial module free of charge in the reasonable amount for the purposes of their Master or Bachelor Thesis or semestrial elaboration based on the request signed by the University.

## > Viewing Services

Viewing services of the ČÚZK Geoportal enable on-line internet access to datasets administered by the branch of land surveying and cadastre. Those users who connect their system to such a service need not administer their own database of fundamental geodata and accessible data are provided to them with the maximum possible relevance. In 2011 a significant change occurred in public viewing services provision. Viewing services of ZABAGED® data, dataset on administrative boundaries, orthophotos, raster forms of Base map 1:10 000 and 1:50 000, SM 5 raster data, geodetic control points, Geonames and Data200 are being provided completely freely without any registration to be used in viewing in all suitable clients´ applications. The conditions have been unified with previously freely provided viewing services of cadastral map and maps of the Czech Republic in scales of 1:500 000 and 1:100 000.Wide public can still use viewing map services via own ČÚZK Geoportal applications such as Map window and Geoviewer. It is possible to search in a map according to names administered in Geonames as well as according to addresses via Map window and Geoviewer. Geoviewer offers also searching of points in the database of geodetic control points included the geodetic information. Cooperation with other sectors plays important role in provision of map services. Via viewing services the geographical data from the branch ČÚZK are available f.i. in the national INSPIRE Geoportal, map portal of the Centre for regional development as well as in the application Registry of census districts and buildings in responsibility of the Czech Statistical Office. Special viewing service has been published for the Czech Statistical Office for preparation of population, houses and flats census in 2011 as well.

## > Archive Maps

http://archivnimapy.cuzk.cz

In 2006 the application Archive Maps was launched within the Geoportal of the ČÚZK. The archival documents available via this application are continuously extended. The most used archival documents are among others imperial mandatory prints of the Stable cadastre from 1824 to 1843 in scale of 1:2880, now completed with 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 16th century until 1850. Newly also so called indication sketches are available there, which are physically stored in other archives. Pilot operation of a new version of the application Archive maps has been launched. The service is provided free of charge. Via Geoportal of the ČÚZK it is possible to order copies of archival documents or digital sets in printing quality.

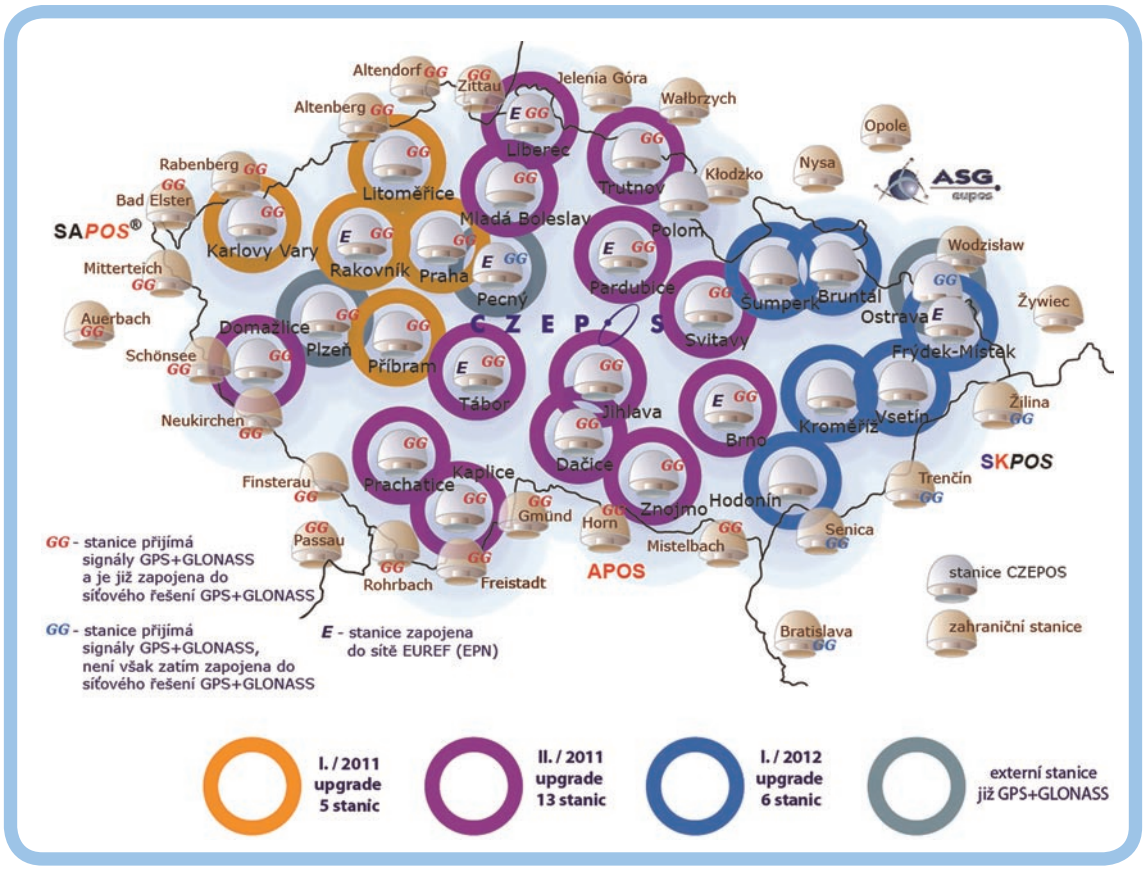
## > Czech Positioning Network GNSS - CZEPOS

http://czepos.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 territories of neighbouring countries.

In the end of 2011 the upgrade of CZEPOS stations has started in Land Survey Office with the goal of reaching compatibility of CZEPOS provided services 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.

***Overview Czepos Map Including Connected Cross-border Stations***



In the end of 2011 the upgrade of 18 stations has been realized, which newly put into operation the real time services with the corrections for both systems NAVSTAR GPS and GLONASS. Simultaneously these stations were implemented into the new network solution generating services of a virtual reference station for both mentioned satellite systems as well. CZEPOS has been extended by an external station Polom in responsibility of the Military Geographical and Hydrometeorological Office. The number of stations on the CR territory increased to 28.

By means of provided applications the users get the complementary overview on the availability and quality of the provided CZEPOS services and products and single parameters can be verified on the internet website in on-line regime. CZEPOS gains its wide ground in geodesy, navigation or in the area of intelligent control systems. At 31.12.2011 there were 1 085 registered CZEPOS network users, it means grow by 93 users in comparison to the end of 2010.

## > Database of Geodetic Control Points

http://bodovapole.cuzk.cz/

Database of geodetic control points (DGCP) serves to administration of data on geodetic control points and enables regular public access to these data free of charge. It contains geodetic data on points of fundamental horizontal, vertical and gravimetric control, data on densification and minor vertical control points. The Land Survey Office performs administration of the database; its continuous updating is shared with cadastral offices in the frame of their competency.

By the end of 2011 the database of geodetic control points included 73 348 centres of trigonometric and densification points and 34 239 associated points, further 1 313 levelling lines of the Czech state levelling network in total 25 130 km long, 119 176 levelling points (82 478 out of them are fundamental vertical control points) and 460 gravimetric points. At the end of 2011 together 1 251 cooperating users of DGCP were registered, it means users who fill in the web announcements on defects on geodetic control points. In comparison to 2010 there is increase of further 296 users in 2011.

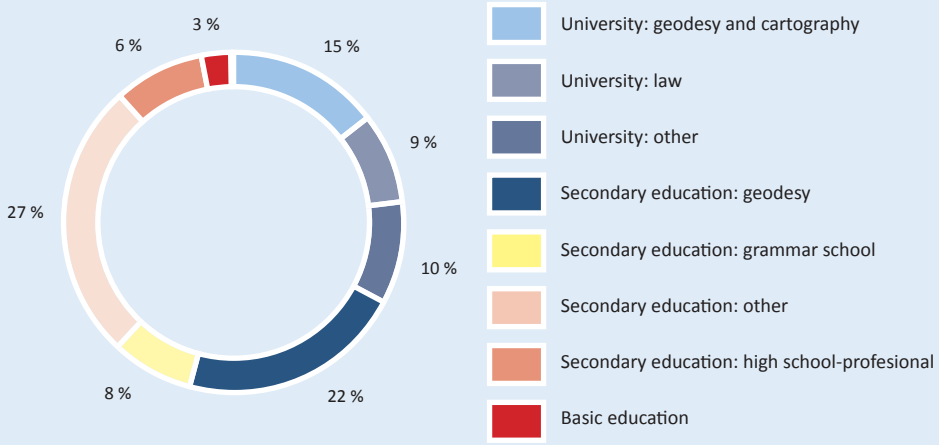
Cooperation with DBP users helps to improve efficiency in maintenance of geodetic control points, because it is possible to adjust only those points which are requested by the land surveying public.

# 5. Economics and Human Resources

## > Employees and Education

The overview of the personnel structure in 2011 according to age and education still confirms the positive trend of the last few years – a constantly increasing share of university graduates among employees (increase of 1.51 %).The share of the employees with university degree was in the end of 2011 33, 58 % of the total number of employees. The share of the secondary educated staff decreased on the other hand by 3, 16 %, but they still create 63 % of the total number of employees in the branch.

*Chart 13: Overview of the Personnel Structure According to Education Type in 2011*




Training in the ČÚZK is governed above all by the Rules for education of employees in administrative bodies in accordance with government resolution and further by internal regulations, including the training plan in the sector of the Czech Office for Surveying, Mapping and Cadastre.

The main goal in 2011 was improvement of the existing training system, which is the tool for getting, maintenance, renewal and deepening of the qualification of every particular employee in accordance with requested qualification of the employees of administrative bodies and with further demands

connected with requirements on activities performance at particular job positions, with special focus on education of employees newly engaged in the digitalization of cadastral maps.

Based on the approved plan of education in the Czech Office for Surveying, Mapping and Cadastre in 2011 a lot of educational activities were realized by the personal department for the employees of the branch and ČÚZK. These activities were mainly focused on deepening education in further areas with the goal of systematic mediation, mastering and strengthening of knowledge, skills, values and attitudes of employees.

Group, regional and special expert training was important part of the training plan in ČÚZK branch. Due to legislation changes unscheduled seminars were necessary to be realized except for scheduled ones. The seminars focused on legal, economic, personnel and cadastre of real estate subject matters.

## > Granting Official Authorization for Verification of Results of Land Surveying Activities

In the framework of granting official authorization for certification of the results of surveying activities professional competence exams for authorization were held in four terms in 2011 in accordance with section 14 of the Act No 200/1994 Coll., on surveying and mapping.

In the year 2011 the total number of completed applications was 73 (5 of them from 2010). Based on the professional competence exams new official authorization was granted to 49 applicants and 11 applicants enhanced their existing authorization. 2444 persons have been registered on the updated list of officially authorized land surveying engineers administered by the ČÚZK by the end of 2011. In 2011 no official authorizations were deleted from the registry.

## > Economics

Legally approved state budget of the Czech Republic for 2011 specified revenue of CZK 433 078 thousand and expenditure of CZK 2 962 497 thousand for the ČÚZK. The budget of revenues and expenditure did not change within 2011, there were only some money transferred between mandatory indicators based on the budget adjustments of the Ministry of Finance and further budget adjustments in the responsibility of the branch. Expenditure co-financed from the EU budget were diminished on CZK 128 thousand in the frame of the Operational project Cross-border cooperation and on 101 thousand in the frame of the Operational program Environment.

In 2011 the chapter had two specific revenue indicators "Revenue collection" and "Non-revenue collection, capital incomes and accepted transfers in total". Revenue collection, coming to the budget from the administrative fees, were prescribed in the amount of CZK 53 000 thousand, their fulfilment reached CZK 67 239 thousand, it is 127 %. Budget of non-revenue collection of CZK 380 078 thousand (CZK 180 078 thousand of the total amount from the EU budget) was filled in by the amount of CZK 372 242 thousand, it is 98 %. The reason for not reaching 100 % level of revenues are low incomes from the EU budget being in 2011 CZK of 135 802 thousand in total, part of it being from previous year 2010. Other non-revenue collection and capital incomes of the branch were filled in the amount of CZK of 236 440 thousand, it is 118 %. In comparison to 2010, when the incomes reached CZK 2010 749 thousand, the increase occurred of CZK 25 691 thousand. The reason was partly the capital incomes of subordinated bodies in the branch in the amount of CZK 9 700 thousand, particularly the sale of the real estate property.

The expenditure in 2011 were used mostly on employees´ salaries, other payments for work carried out and associated expenditure, being 69 % of the total expenditure of the branch. The average monthly income achieved in 2011 reached CZK 22 565 per employee, it means decrease on 2.2 % in comparison to 2010 and on 5.1 % in comparison to 2009.The reason for the decrease was in 2011 except for lower expenditure for salaries in 2011 and frozen sources, but also the transfer of the sources from the employees´ salaries towards the non-budgetary expenditure necessary for the compensation payments.

The second big group of expenditure were those used on financing of programs administered in the Information system of programmed financing EDS/SMVS, it means the expenditure allotted for procuring and modernisation of sector tangible and non-tangible property of the branch. It was 22 % share of the total expenditure. Significant part of the programmed expenditure was those used on realization of projects co-financed by the EU budget, in particular building of RÚIAN and modernization of the Information system of cadastre of real estate ČÚZK (CZK of 53 million). Further important item is the programme noninvestment expenditure, serving for securing the operation, maintenance and repair of state assets and for the lease of computer technology and administrative buildings. The total expenditure consisted further of other material expenditure and those used for research and innovation. Further material expenditure, being in connection with the fulfilment of the legally stated material tasks, were used in 40 % for postal services and 18 % on digitalization of cadastral maps. The remaining part of other material expenditure covered particularly the expenditure on material, travel costs, training and educational expenditure on the compensation for the loss of salary during the illness and other services included the meal allowances for the employees.

## *Summary of Obligatory Indexes of Chapter 346 of the State Budget for the Years 2005 – 2011*

Financial Indexes in CZK ´000s

| Index / Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Revenues of the chapter[1)] | 143 125 | 157 572 | 175 459 | 214 158 | 271 592 | 276 942 | 439 481 |
| Including: tax revenues | | | | | 30 016 | 62 770 | 67 239 |
| | | | | | | | |
| Total expenditure of chapter[2)] | 2 421 660 | 2 513 377 | 2 815 730 | 2 806 480 | 3 170 650 | 3 336 483 | 2 785 290 |
| Including: projects co-financed from the EU budget | | | | | 26 778 | 400 226 | 59 518 |
| | | | | | | | |
| Current expenses without non-investment | 1 830 893 | 1 956 447 | 2 109 573 | 2 197 182 | 2 460 125 | 2 351 702 | 2 145 791 |
| Including: wage resources[3)] | 1 308 839 | 1 308 839 | 1 424 864 | 1 456 806 | 1 597 945 | 1 536 985 | 1 427 387 |
| Insurance and FKSP | 452 144 | 483 848 | 527 530 | 539 126 | 575 343 | 549 632 | 498 865 |
| Other material costs | 154 686 | 163 760 | 157 179 | 201 250 | 286 837 | 252 145 | 219 539 |
| Program expenditure | 563 362 | 528 266 | 677 493 | 580 634 | 679 225 | 984 781 | 617 428 |
| Including: non-investment | 256 231 | 356 631 | 414 244 | 402 841 | 437 128 | 396 053 | 444 627 |
| Investment | 307 131 | 171 635 | 263 249 | 177 793 | 242 097 | 588 728 | 172 801 |
| Research and development expenditure | 27 405 | 28 664 | 28 664 | 28 664 | 31 300 | 22 159 | 34 391 |
| Including: operational | 26 405 | 27 664 | 28 164 | 28 664 | 31 300 | 22 159 | 34 391 |
| Investment | 1 000 | 1 000 | 500 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| Number of employees in Sector[4)] | 5 523 | 5 445 | 5 430 | 5 412 | 5 596 | 5 532 | 5 258 |
| ČÚZK | 158 | 157 | 159 | 153 | 151 | 159 | 155 |
| Cadastral offices | 4 816 | 4 755 | 4 755 | 4 738 | 4 935 | 4 864 | 4 618 |
| Land Survey Office | 455 | 443 | 430 | 427 | 417 | 416 | 394 |
| Survey and cadastral inspectorates | 94 | 90 | 91 | 94 | 93 | 93 | 91 |

1) revenues are adjusted for resources from revenue accounts of the CNB with prefi xes 4714 and 2110, used for increasing expenditure (resources of RF, FKSP, donations)
2) ) the given expenditure does not include state budget resources transferred to reserve funds, which will be used in following years
3) employee wages + other payments for work performed
4) average corrected calculation

# 6. Inspection and Supervision Activity

## > 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). SCI carried out a total of 1 485 documented inspections at cadastral offices in 2011.

Inspection activity of SCI´s in 2011 focused mainly on the inspection of the application practice of the utilization of the cadastral regulation Nr. 26/2007 Coll., on observance of technological processes during the digitalization of fathom cadastral maps as stated in the Instruction for renewal of cadastral documentation, on the application of the sounding of the provision of section 18 of the Decree Nr 31/1995 Coll., on electronic verification of results of land surveying activities submitted or documented in electronic form, on the findings in chosen cadastral districts, whether the change of original relative connections of fathom cadastral maps after their adaptation to S-JTSK are positive or negative together with detection of existing delays between retirement of the cadastral documentation after the complex land consolidation, legal power decision of the land office on the change or transfer of the ownership rights and final announcement of the validity of the renewed cadastral documentation by the cadastral office.

In the framework of supervisory activity (supervision of certification of the results of land survey activities) SCI performed a total of 422 documented supervisory actions in 2011. In 23 cases in the subsequently conducted administrative proceedings SCI decided that the verifier had committed an administrative offence of infringement of order in the sphere of surveying and imposed fines at a total of CZK 481 000.

The extent of decision-making agenda of SCI on appeals against decisions of CO decreased in 2011 on 22.8 % (614 appeals delivered in 2011 as opposed to 795 appeals delivered in 2010). The number of appeals in matters regarding correction in cadastral documentation decreased on 24.5 % in comparison to 2010 (326 appeals delivered in 2011 as opposed to 432 delivered in 2010), the number of appeals in matters regarding objections against the content of renewed cadastral documentation increased on 10.2 % (151 in 2011 as opposed to 137 in 2010) and the number of delivered appeals against procedural decisions of CO decreased by 39.3 % in 2011 in comparison to 2010 (130 in 2011 as opposed to 214 in 2010).

## SCI Decisions on Appeals against CO Decisions

| Matters | Not resolved at 1.1. | Received after 1.1. | In total | Forwarded | Appeal rejected | Decision amended | Decision repealed | Decision annulled and returned to CO | Still being resolved | Faulty proceedings |
|---|---|---|---|---|---|---|---|---|---|---|
| Correction of errors in the cadastre | 42 | 326 | 368 | 7 | 158 | 33 | 2 | 127 | 37 | 4 |
| Objections to revised cadastral documentation | 13 | 151 | 164 | 2 | 86 | 6 | - | 5 | 17 | 1 |
| Infringements of order in the sphere of the cadastre | - | - | - | - | - | - | - | - | - | - |
| Procedural | 6 | 130 | 136 | 1 | 103 | 1 | 2 | 20 | 7 | 2 |
| Changes in the boundaries of cadastral districts | - | - | - | - | - | - | - | - | - | - |
| Administrative fees | - | 4 | 4 | - | 3 | - | - | 1 | - | - |
| Rejection of applications for submission of information | - | 1 | 1 | - | - | - | 1 | - | - | - |
| Other | - | 2 | 2 | - | 1 | - | - | - | 1 | - |
| **In total** | **61** | **614** | **675** | **10** | **351** | **40** | **5** | **153** | **62** | **7** |

## Total Number of Complaints for 2011

| Inspectorates | Not resolved at 1.1. | Received after 1.1. | In total | Forwarded | Legitimate | Not legitimate | Still being resolved |
|---|---|---|---|---|---|---|---|
| in Brno | 1 | 7 | 8 | 6 | - | 2 | - |
| in Č. Budějovicíe | 1 | 3 | 4 | 2 | - | 2 | - |
| in Liberec | - | 5 | 5 | 2 | - | 3 | - |
| in Opava | 1 | 11 | 12 | 4 | 1 | 5 | 2 |
| in Pardubice | - | 2 | 2 | - | - | 2 | - |
| in Plzeň | - | 2 | 2 | 1 | - | 1 | - |
| in Praha | 3 | 27 | 30 | 19 | 4 | 6 | 1 |
| **In total** | **6** | **57** | **63** | **34** | **5** | **21** | **3** |

## > Financial Inspection

ČÚZK as administrator of budget chapter performed financial inspections according to the Act No 320/1990 Coll. on financial inspection, at its subordinated bodies in 2011.

According to the approved plan of public administration inspections for the year 2011 the inspection group of ČÚZK carried out public administration inspections together at following 12 inspected bodies:

CO for the Region Hradec Králové, CO for the Region Plzeň, CO for the Region South Bohemia, CO for the Region Liberec, Land Surveying Office 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.

Main goal of realized inspections was not only to verify the financial management of inspected persons, following the binding legislation, economic and internal rules, functioning of internal managing systems, but also the creation of 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. On the spot the ČÚZK inspection groups verified particular cases of utilization of public resources not only before, but also during and after their use. Part of the inspection was checking of the call for public tenders and their realization, the right range of administration fees, payments and prices for provision of data from the cadastre of real estate and results of land survey activities.

Among others inspections focused in 2011 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. In case the damage compensation has been set down, the control group inspected the way of damage settlement as well. Public administration inspections of some inspected persons in 2011 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 by public inspections in 2011 that would unfavourably affect the activities of inspected persons. All documents from carried out inspections were delivered to the president of the ČÚZK, who then imposed measures to elimination of existing insufficiencies. After the information on provisions accepted to elimination of existing insufficiencies all inspections were completed in due course. Summary report on results of the financial inspections for the year 2011, including beside the results of the public inspections also the results of the managerial inspections and internal audit activities, was submitted to the Ministry of Finance via information system of the financial control in the public administration.

## > Internal Audit

Internal audit is part of the system of financial inspection in the branch ČÚZK. It is carried out by special mandated employees - internal auditors. Systemized job positions are established in state administration bodies (further only SAB) in ČÚZK, LSO and in every CO. 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 SAB.

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 in conditions of particular SAB. The function of internal audit is not established in SCI and is substituted there by the regular yearly public administration inspection.

The activity of internal auditors results from the medium-term plans and on yearly plans based on them. Planning of audits is based on the risk evaluation and is focused on priority processes in conditions of particular SABs. 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 on the creation and amending of internal regulations.

Integral part of auditors´ activities is their professional development. 12 out of 15 internal auditors in the branch 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 2011 internal auditors performed together 93 internal audits. From this total number of internal audits 19 were financial ones focused on the proof of the economy of SABs, 36 were audits of systems proving the administration of public resources, 18 were audits of operation dealing with the functioning of the internal inspection system and 20 were other audits.

Performed audits were addressed in particular to prove the functionality and efficiency of the internal inspection system of particular SABs, 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. The activities of the branch were realized fluently in 2011 despite incorporating the budget cuts and the budget was balanced without bigger deviations and problems. There is permanent monitoring of public tenders processes in ČÚZK, which is electronically registered in the Softender system. There was special measures implemented enabling preservation of the property being in the economic responsibility of the ČÚZK. Performed 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, which are submitted to particular SAB heads. Most of recommendations were accepted. In 2011 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.

# 7. International Cooperation

In the year 2011 the Czech Office for Surveying, Mapping and Cadastre participated in two meetings of the Permanent Committee for Cadastre in EU (PCC), 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. The bilateral cooperation with land surveying services of neighbouring countries - Slovakia, Germany, Austria and Poland developed in 2011 in particular in the area of documentation of common state borders, establishing of networks of permanent GNSS stations and exchange of data based on existing bilateral agreements and professional experience in cadastre of real estates and land surveying. Concrete results of a couple of year developed cooperation in the area of GNSS permanent stations networking occurred. The Czech Republic is now gaining the data from 27 abroad stations located nearby the state borders and uses them for improvement of provided services.

The development of new map services and products aimed at constructing a unified infrastructure of spatial data in Europe is the remit of the international organisation EuroGeographics. ČÚZK is its active member and in 2011 participated on projects EuroRegionalMap, EuroBoundaryMap, EuroGeoNames, ESDIN, EuroSpec and others, the goal of which is to create the pan-European products with consistent parameters for all European countries and harmonization of access to realization of pan-European projects delivered by the national governments, in particular access to implementation of the INSPIRE Directive (Infrastructure of Spatial Information in Europe). Also through the ČÚZK the Czech Republic has been preparing the inclusion to the EULIS service (the European Land Information Service), which has the objective of creating a European multinational portal allowing on-line access to information on real estate in various states of the EU. Currently the service is functional for a total of 6 European states – Sweden, the Netherlands, England & Wales, Norway, Lithuania and

PCC

eurogeographics

Ireland. In 2010 the new project EULIS LINE has been launched, striving to connect the EULIS service to the project e-Justice, going on even in 2011. In following years even ČÚZK should join EULIS service by means of its service Remote access to the cadastre of real estate ČÚZK is represented in the management board 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. Main goal of WPLA is to promote the land administration ensuring material rights, develop the real estate markets in developing countries and modernize registration systems in other European countries.

Furthermore, ČÚZK actively participates in regular meetings of cadastral service providers of succession state of the former Austro-Hungarian Empire, who share with us a common cadastral tradition. In 2011 28th meeting was held in Hungarian city Pécz in attendance of participants from Croatia, the South Tyrol, Austria, Slovakia, Trentino, Hungary and the Czech Republic with the main theme for discussion being the digital document management, which is important topic even for ČÚZK.

In 2011 some professional delegations from abroad hosted in the ČÚZK, coming to establish cooperation and draw the experience of functioning and updating of the Czech cadastre of real estate. The experts coming to the ČÚZK were from Macedonia and the Republic of Cape Verde. Cape Verde colleagues spent a working week in the ČÚZK. Based on conclusions of this study visit the agreement on targeted help to the Republic of Cape Verde was agreed. In the end of 2011 a small local project of development cooperation partly financed by the Ministry of Foreign Affairs of the Czech Republic and with support of the Embassy of the Czech Republic in Lisbon has been prepared, being realized in 2012. Its goal is evaluation of the possible improvement of the cadastre of real estate and land rights registration together with help of completion of GNSS network of permanent stations on the islands of the Republic of Cape Verde.

# 8. Research and Development

Resolution of tasks of research and development in the branch is in responsibility of the Research Institute of Geodesy, Topography and Cartography (VÚGTK) in the framework of the research aim Research and development in geodesy, the cadastre and geomatics in 2005-2009, prolonged till 2011, which the ČÚZK provided with institutional support.

Tasks resolved in the scope of the research aim in 2011 were being completed in line with the agreement between the ČÚZK and VÚGTK, and among the main goals were the long-lasting projects. It refers, in particular, to proceeding with the development of software tools used by cadastral offices for renewal of the cadastral documentation. The technology and software for creation of the digital record of the detailed surveying of changes was being further developed and the technology of current measurements and surveying for renewal of the cadastral documentation with use of GNSS instruments, including electronic transmission of measured data, was prepared for practical use.

There were together 5 software products developed and handed over from the area of GIS and cadastre of real estate during 2011. Particularly the version DIKAT ZPMZ 2.1 is significant, part of which is newly the creation of no measurement sketches as a complete technological line. Further four versions of MicroGEOS were completed, the one of them MG Nautil 3.4.4 works on the Microstation J platform. Parallel with previously mentioned software development work on data quality assessment in geospatial databases and research of laser scanning data utilization went on.

In 2011 further monitoring GNSS techniques were being developed so as the use of collected data from the data centre of the geodetic observatory Pecný. Monitoring and stability testing of permanent GNSS networks CZEPOS and VESOG were in operation and the works on the building of the reference frame for the new European navigation system GALILEO went on. The observation structure installed in the geodetic observatory Pecný in Ondřejov has been further in operation, the core of which consists of the reference GNSS and gravimetric stations. Registered data were regularly provided to international data centres for GNSS data and to CZEPOS centre. Associated analytical IGS centres for GPS NAVSTAR, GLONASS and DORIS data processing provided the products in the form of precise GNSS satellite orbits, corrections of their board clock and troposphere parameters. These products are used for derivation of official IGS products regularly used by the geodetic community around the world. Research in the area of GNSS data proceeding and utilization focused primarily on the possibility of modelling of the troposphere influence on GNSS data with help of the effective mathematical model for a regional area. This should help with measuring in case of lower number of available satel-

lites complicating the solution process. Further activities in GNSS area included testing of devices on the position standard at the Skalka observatory. The software development for tensor calculation of the Earth surface deformations went on in 2011 based on the time series of GNSS permanent station coordinates included their visualization, analysis and evaluation. In-house technology for SAR photos proceeding has been developed and tested on a sample of testing data. Research activities regarding both the study of time variation of the Earth gravity field using the data from GRACE satellite mission and development of the descriptive methods and approximation of the Earth gravity field went on as well. In cooperation with other organizations research and preparation of the world vertical system continued.

VÚGTK worked on grant tasks from other Czech subjects so as from other international organizations in the frame of cooperation, mainly for EU, except for work for ČÚZK. This activity is closely connected with the main goal of the institute, which is the work for the ČÚZK, and represents 35 % of total capacities of the Institute. A number of research and development results were presented on the EGU congress in Wien and on the IUGG general assembly in Melbourne.

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