

# Czech Office for Surveying, Mapping and Cadastre

## Annual Report

**2006**

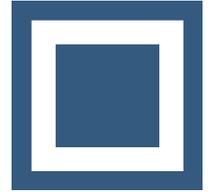






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State administrative bodies of the Cadastre of Real Estates run by the Czech Office for Surveying, Mapping and Cadastre provide state administration in the area of registration of land parcels represented by the Cadastre of Real Estates. Apart from this they ensure performance of surveying activities in the public interest including particularly administration of basic geodetic control, running the Fundamental Base of Geographic Data, publishing the set of the Basic Maps of the Czech Republic, surveying of the state border and managing of the Central Archives of Surveying, Mapping and the Cadastre.

Economic development of the Czech Republic in 2006 together with completion of some transformation processes meant a large amount of work for cadastral offices. There were significant rises in the requests for providing information from the Cadastre of Real Estates but also in the number of proposals for entry of ownership or other property rights to real estate and other proposals for registration by records or notations. In 2006 cadastral offices handled 626 948 proposals for registration of rights. Since 2001 the annual average number of records by entry has increased by more than 12 %. Completed entries by record and annotation even reached 910 038 in 2006, which represents a yearly increase of 18%. This trend, continuing now for several years as a reflection of positive economic development, has brought a range of difficulties in the provision services by cadastral offices to participants in the housing market. Cadastral offices are still managing to perform registration in the Cadastre of Real Estates in the legal time limits. In 2006 there was a considerable improvement in Prague as well, where entries are made within 2 to 3 months and this period

continues to be reduced. We have run out of resources, the influence of technological changes is not sufficient enough to provide for necessary increases in productivity. This results in reduction of some important activities which are not immediately connected with registration in the Cadastre of Real Estates, for instance digitalization of cadastral maps. However, such an approach would bring problems in future and it will thus be necessary to accept measures which would allow further reduction of the time limits for entries in the cadastre and development in the digitalization of cadastral maps.

In 2006 fulfilment of the long-term program of constructing a national geoinformation infrastructure provided by the Czech Office for Surveying, Mapping and Cadastre continued. In the whole country operation of the network of GPS permanent stations – CZEPOS was launched, which allows fast and precise positioning in the whole territory of the state with high accuracy. The Czech Republic is now one of the European countries with the most up-to-date geodetic control. The Fundamental Base of Geographic Data CR, which was completed in 2004 after 10 years hard work, has become a source of basic topographical data for geographical information systems for both the public and private spheres, and serves for deriving maps from the new collection of the state map series, which are printed by a digital printing machine, thus fast, operatively and effectively. In 2006 a new method of their updating was introduced.

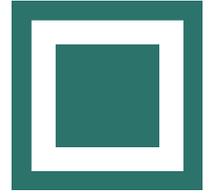
The annual report of the Czech Office for Surveying, Mapping and Cadastre provides an overview of important activities and their results, provided by the cadastral offices, Land Survey Office, land survey and cadastral inspectorates and the Czech Office for Surveying, Mapping and the Cadastre.

Karel Večeře  
President of the COSMC





# The Surveying, Mapping and Cadastre Sector in the Czech Republic



## Cadastre of Real Estates

The Cadastre of Real Estates of the Czech Republic is a set of data on real estate in the Czech Republic, including their inventory and description and their geometric specification and position. Part of it are records of property and other material rights and other legally stipulated rights to real estates. The Cadastre of Real Estates is tied 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. The current cadastre or real estates is integrated in the Information System of the Cadastre of Real Estates (ISKN) and represents one of the principle registers of state administration.

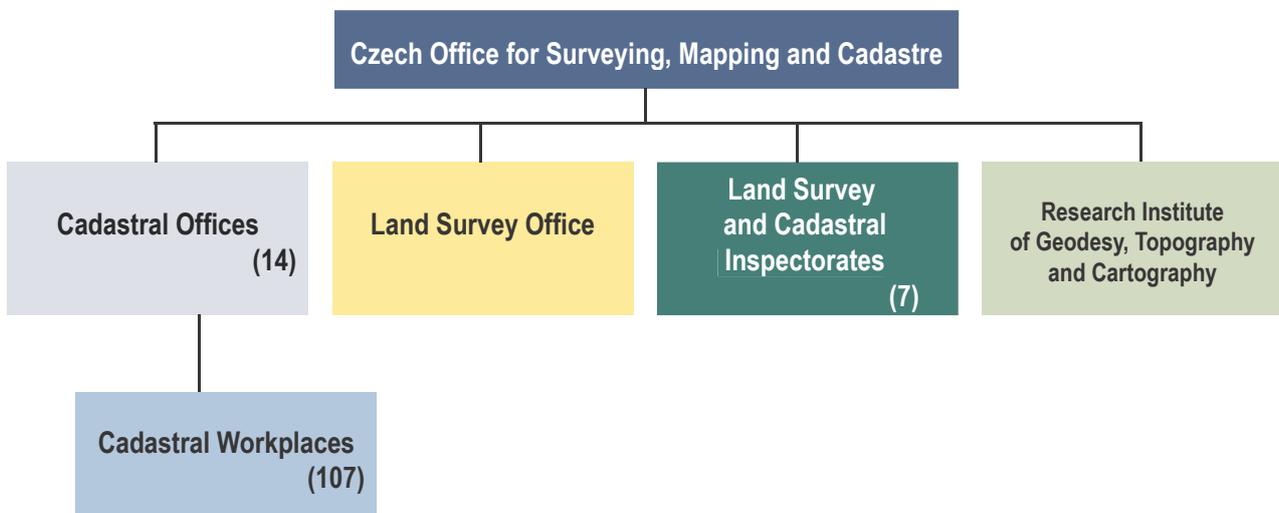
## Land Surveying Activities

Among the most important land surveying work in the public interest provided by the surveying, mapping and cadastre sector are, for example, building and maintenance of the geodetic controls of the Czech Republic, maintenance and documentation of the state borders and, equally important, issue of the state map series. These land surveying activities, as with the administration and management of the Cadastre of Real Estates, fall fully under the competence of state administration.

## Organisational Structure

The Czech Office for Surveying, Mapping and Cadastre runs 14 regional cadastral offices, which have 107 workplaces in larger towns and execute state administration of the Cadastre of Real Estates, it further manages the 7 Land Survey and Cadastral Inspectorates that control cadastral offices and supervise some commercial activities, whose results are applied to the Cadastre of Real Estates and state documentation funds, the Land Survey Office, which focuses on other land survey activities that are provided in the public interest by the surveying, mapping and cadastre section, and it is also the founder of the Research Institute of Geodesy, Topography and Cartography.

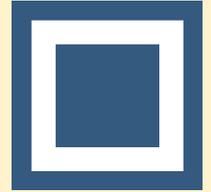
Administration authorities for the cadastre and land survey activities were set up by Act No 359/1992 Coll. on land surveying and cadastral bodies, which also specifies their material and territorial competence.



organization of the sector



# Administration of the Cadastre of Real Estates



## Origins of the Cadastral Registration in Czech Lands

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 just tax collection.

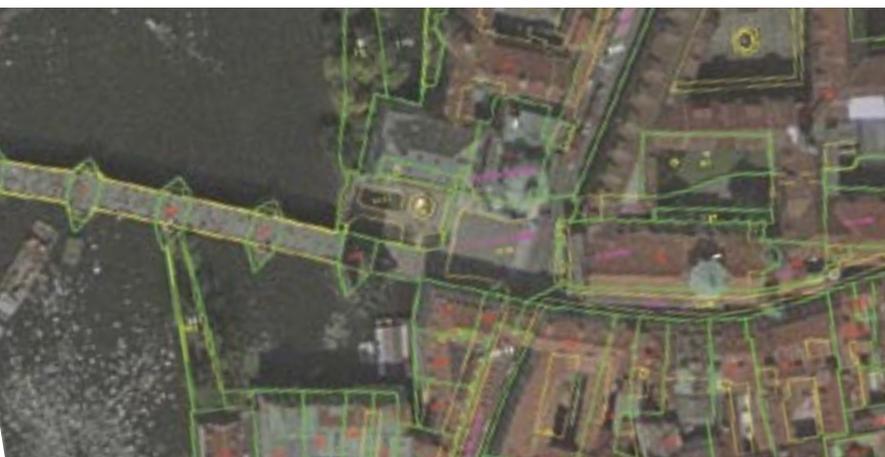
The foundations of today's modern Cadastre of Real Estates were laid by a supreme patent of the Austrian Emperor Franz I of 23.12.1817 on land tax and land surveying. Its basis was a precise inventory and geodetic measurement of all land, a so-called Stable Cadastre. Most cadastral maps of the territory of the Czech Republic are today still derived from the survey documentation of the stabile cadastre. Such cadastral maps (usually at a scale of 1:2 880) are available for about 70 % of the territory of today's state.



## The Information System of the Cadastre of Real Estates (ISKN)

Part of the Czech Cadastre of Real Estates is the ISKN. The Information System of the Cadastre of Real Estates (ISKN) is an integrated information support system for state administration of the Cadastre of Real Estates 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 by means of the internet service „Remote Access to the Cadastre of Real Estates to view up-to-date data of the cadastre throughout the whole Czech Republic.

Since 2001 all historical data of descriptive and spatial data is stored, so it is possible to assemble data into required outputs for historical data (time development).



## Digitalization of the Cadastre of Real Estates

In 1993 digitalization of the file of descriptive information of the cadastre began. The 5-year objective was completion of the cadastral database with missing data on land parcels consolidated into large agricultural and forest areas, supplementation of some data on ownership of real estate, supplementation of identifiers of 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 CIS equipped with remote access to data in the central database of the cadastre. Currently the size of the database is in total 0.58 Tb (terabytes).

Digitalization of cadastral maps started in connection with the completion of digitalization of descriptive information of the cadastre. The capacity that cadastral offices can give to map digitalization is 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 are transformed into digital form annually. Attention is focused above all on cadastral maps of cities and larger municipalities, where higher quality documentation is usually available, there are more transactions on the property market and development objectives are realized. Digitalization of cadastral maps in such localities is time consuming.

## Progress of Digitalization

At 31.12.2006 the cadastral map was available in digital form in 4 400 cadastral districts, which represents 33.8 % of the total number of 13 027 cadastral districts of the Czech Republic. Revision of cadastral documentation was completed in the form of vector digital cadastral maps (DCM) based on the results of land consolidation projects and new mapping in 167 cadastral districts (or their parts), revision of cadastral documentation by adaptation of the set of geodetic information in the S-JTSK coordinate system to DCM in 99 cadastral districts and in 89 cadastral districts transformation of the cadastral map in S-JTSK to DCM was carried out.

Until digital vectorial cadastral maps are available in other regions, users make use of raster data, obtained by precise scanning of cadastral maps and land cadastre maps. Raster data of cadastral maps with up-to-date content are procured continually, based on requests. Currently these maps are available in the whole CR by means of the application „Remote access to the Cadastre of Real Estates“ .

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 linked together 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 problem of resolving the consequences of unfinished allotment and consolidation proceedings. 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 projects eliminate this problem only very slowly.

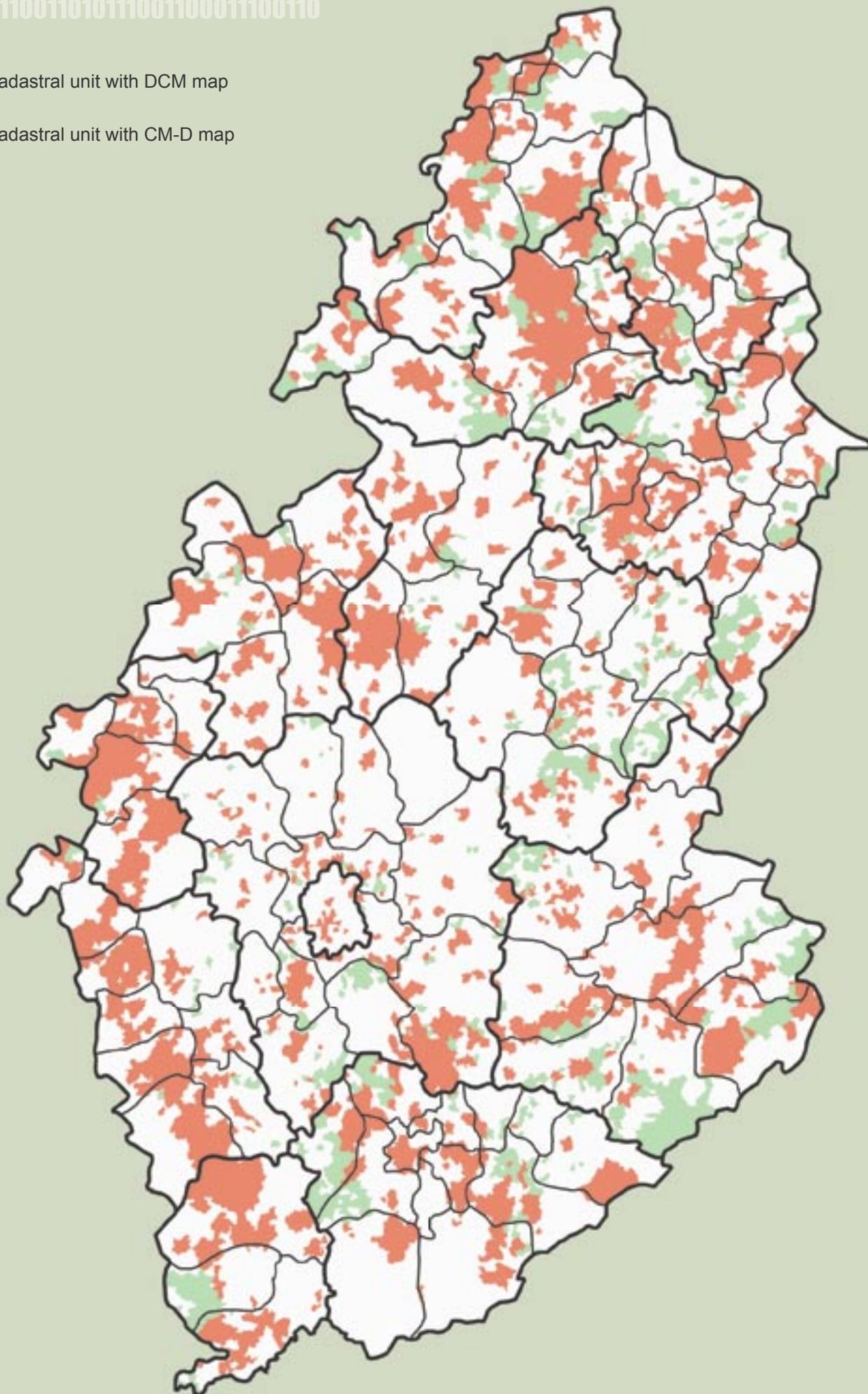
# digitalization

## Progress of digitalization of the File of Geodetic Information of the Cadastre

Year	Unit	Up to 2000	2001	2002	2003	2004	2005	2006
Digitalization of SGI – sum	C.D.	1 049	440	453	543	383	314	279
In digital form as of 31.12.	C.D.	1 988	2 428	2 881	3 424	3 807	4 121	4 400
(% of total number)	%	15,3	18,6	22,1	26,3	29,2	31,6	33,8

Progress of Digitalization of Cadastral Maps at 31.12.2006

- Cadastral unit with DCM map
- Cadastral unit with CM-D map



# entries and registrations

## Entries of Proprietary Rights Into the Cadastre of Real Estates

Entry in the Cadastre of Real Estates is recording 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 Estates. Property rights to real estates are created by registering in the Cadastre of Real Estates. From the total number of annually submitted proposals, about 95 % of entries of rights are permitted and 5 % of administrative proceedings end in rejection or discontinuance of proceedings. The proportion of proposals containing errors that must be eliminated in the course of proceedings is quite large. In recent years there has been a significant rise in the number of entries and the average yearly growth of entries of rights exceeds 12 %.

Entries of rights in the Cadastre of Real Estates is the most demanding activity of cadastral offices in terms of capacity and time. 2006 brought cadastral offices a growth in processed proposals for entries of rights of 8 % compared to 2005 – a total of 626 948. Proposals for entry of proprietary rights represented 68 % of the total number, right of lien concerned 23 % of proposals, 7 % of proposals concerned easements and 2 % re-emptive right with material effects. Between years the number of entry of lien rights has increased most, which shows the development of mortgages. The periods for processing proposals for entry of rights in 2006 were slightly less than in 2005, with a concurrent reduction in the number of employees by 2 %. The discrepancy between financial

resources providing for activities of the cadastral offices and the expansion in the volume of activities provided for also intensified significantly.

## Registering of Rights by Records and Registering of Other Data

Cadastral offices perform other registration in the Cadastre of Real Estates by records. By this method rights to real estate created by decisions of other bodies of public administration, decisions of courts or by law are registered, right of lien and easements are deleted, limitations of dispositional rights to property are registered and so on. In a similar way notations of an informative character concerning real estate, newly built or rebuilt buildings and other data, such as change in the type of land parcel, protection of real estate etc. are registered.

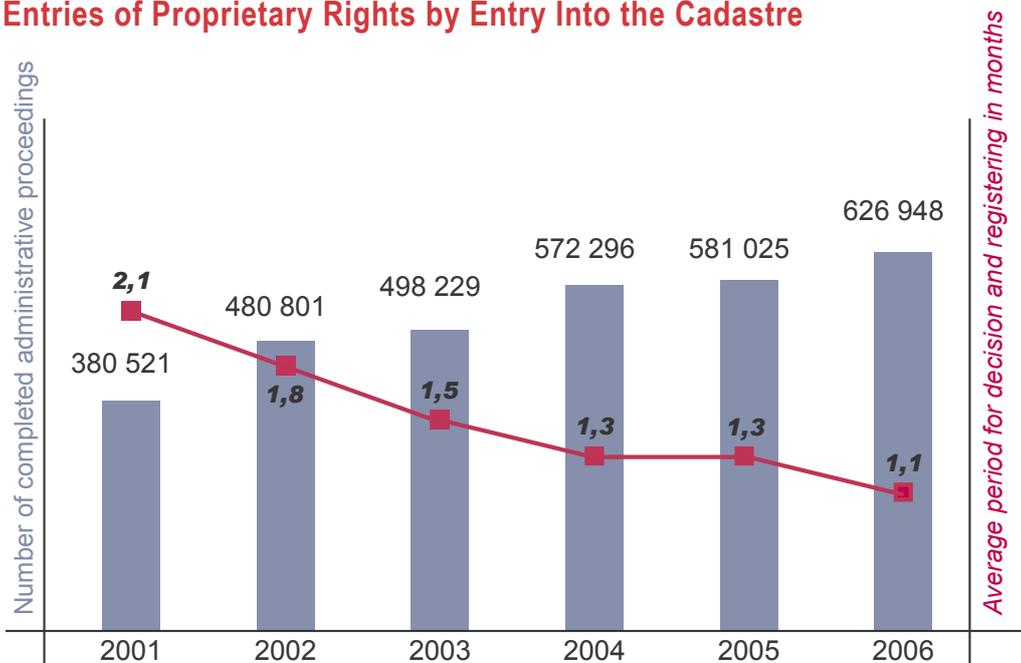
In 2006 the enormous growth in the number of submissions for recording and entry of notation went on. Whilst 708 000 submissions were delivered to cadastral offices in 2005, in 2006 the number of these submissions exceeded 856 000, which represents an annual growth of more than 20 %. The situation is complicated more, above all, by the fact that the number of requests for recording and annulment of property by seizure of assets, which the cadastral offices carry out without delay, has increased. In order not to prolong the time for other registration by records, significantly more requests had to be managed than those submitted in the particular year. In total 910 038 submissions including documents for making records were handled. Such a result can only be appreciated as very good in view of the decrease of the number of employees by 2 %.

## Survey Sketches

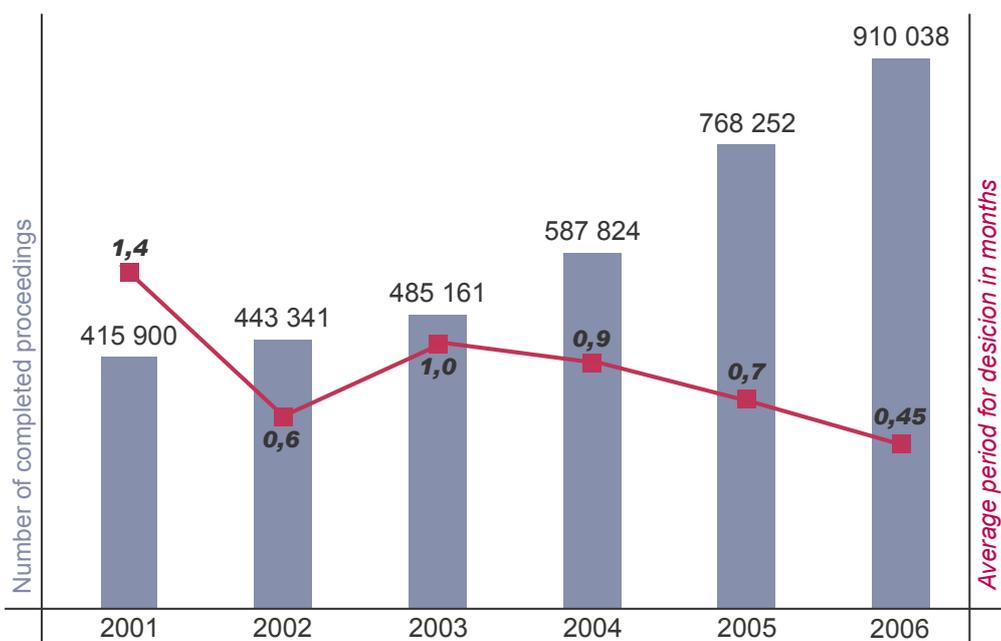
Survey sketches represent land parcel division, position of a building or change of its external outline in the cadastre and some other changes shown in cadastral maps. They are made predominantly by private geodetic firms. They are important documentation for maintaining cadastral maps, thus every survey sketch must be legalised by an authorised surveyor who is authorised to certify the results of surveying activities by the Czech Office for Surveying, Mapping and Cadastre under Section 14 of Act No 200/1994 Coll. on surveying and mapping.

The number of surveying sketches has been very high in the Czech Republic for a long time, since there are transformation processes constantly occurring, whose result or partial step is land division (agricultural restitution, registering property of municipalities, sale of state farming land etc.). Building of residential, industrial and infrastructure constructions is also developing.

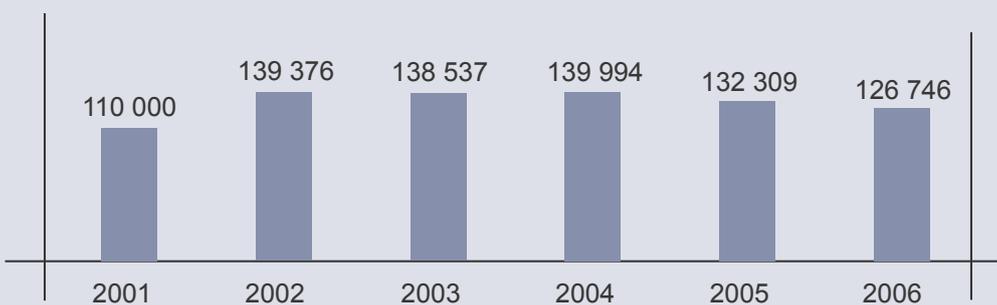
## Entries of Proprietary Rights by Entry Into the Cadastre



## Registering by Record in the Cadastre



## Number of Certified Survey Sketches



## Provision of Information From the Cadastre of Real Estates

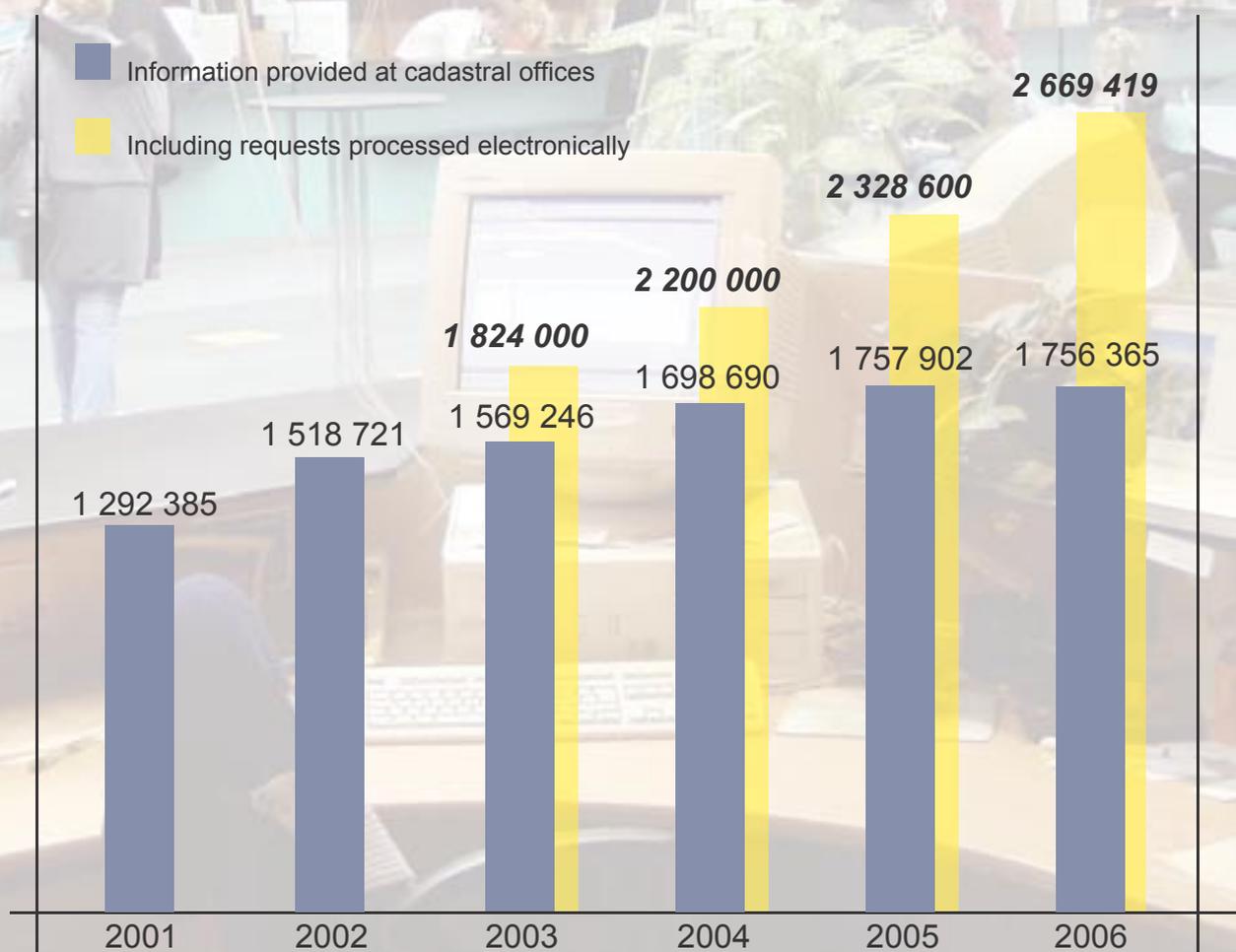
During office hours individual workplaces of cadastral offices provide clients with information from the cadastre over the counter. Outputs from the cadastre contain both technical data on real estates, but also data on legal relations. In addition, copies of cadastral maps, copies of documents stored 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 visits to the cadastral office. These services satisfy a significant part of the continually growing demand for information from the Cadastre of Real Estates.

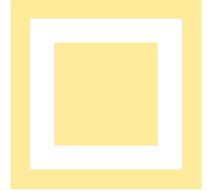
Requests for provision of information at the counters of cadastral offices in 2006 remained at the level of the previous year, while the total increase of satisfied requests for information from the cadastre including remote access was 15%. This trend shows greater orientation of users towards acquiring information by means of remote access via internet services, which not only banks and real estate agencies, but also municipalities and regional authorities have begun to use. On 1.7.2006 notation of statements from the Cadastre of Real Estates with an electronic mark began. Such statements are considered as public documents.



# provision of information

## Number of Processed Requests for Issue of Public Documents





A fundamental part of the national e-Government conception (electronic public administration) are the basic registers forming the registry system of public administration. Basic registers are national information systems containing sets of data on the basic units of society. In terms of registers these units are people, companies and real estate.

### Basic registers of the state administration in CR under construction

#### Registry of Inhabitants

#### Registry of Rights and Duties

#### Register of Persons

##### Central Registry of Entrepreneurs

##### Commercial Registry

##### Registry of Economic Subjects

#### Registry of Territorial Identification, addresses and Real Estates

##### Information System of the Cadastre of Real Estates - ISKN

##### The Information System of the Registry of Inhabitants - ISEO

##### Territorial Identification Register of Addresses - URI-ADR

##### The Registry of Census Districts - RSO

Informatisation of public administration and society creates a need to construct a geoinformation infrastructure at national level. For state supported agricultural activity in the public interest it is currently characteristic to systematically process and store the results of surveying into database systems with the aim of supporting and gradually creating the environment for the national geographical infrastructure of the Czech Republic.

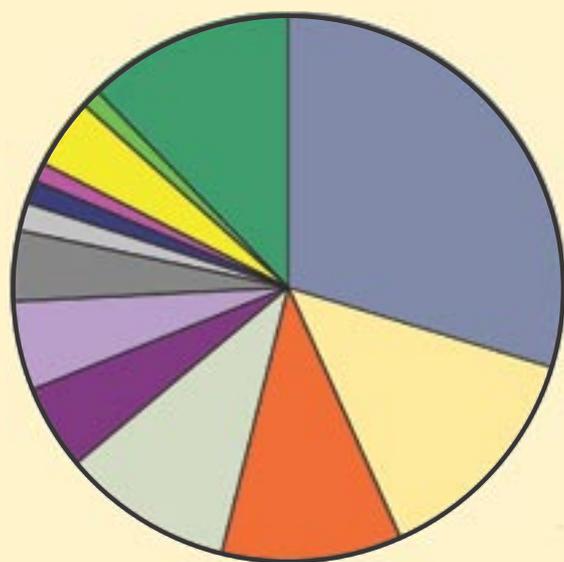
Basic elements of the national geographical infrastructure in the competence of the Czech Office for Surveying, Mapping and Cadastre are:

- basic and minor horizontal, vertical and gravity control forming a reference frame for spatial data,
- Fundamental Base of Geographic Data,
- a system of basic and thematic state map series,
- orthophotographic representation of the Czech Republic,
- database of standardized geographical names.

Introduction of e-Government encompasses several component technical problems, such as digitalization of the data series and information funds, use of protected electronic communications (ciphered communication, electronic signature, electronic mark), making accessible agendas and remote services (presentation of products and services on www 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 the cadastre users have several services that can be termed applications of electronic public administration available. These services allow clients to acquire information from the cadastre, use the on-line map services or determine the actual position or carry out a precise measurement using the network of GPS ground stations.

## Remote Access Users



## Remote Access to the Cadastre of Real Estates

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

Remote access (DP) allows the provision of data from the cadastre for the whole territory of the Czech Republic over 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. Cadastral maps in digital form are presently, however, only available in 1/3 of cadastral districts. Other regions are continually added in connection with the advance of digitalization of the cadastre.

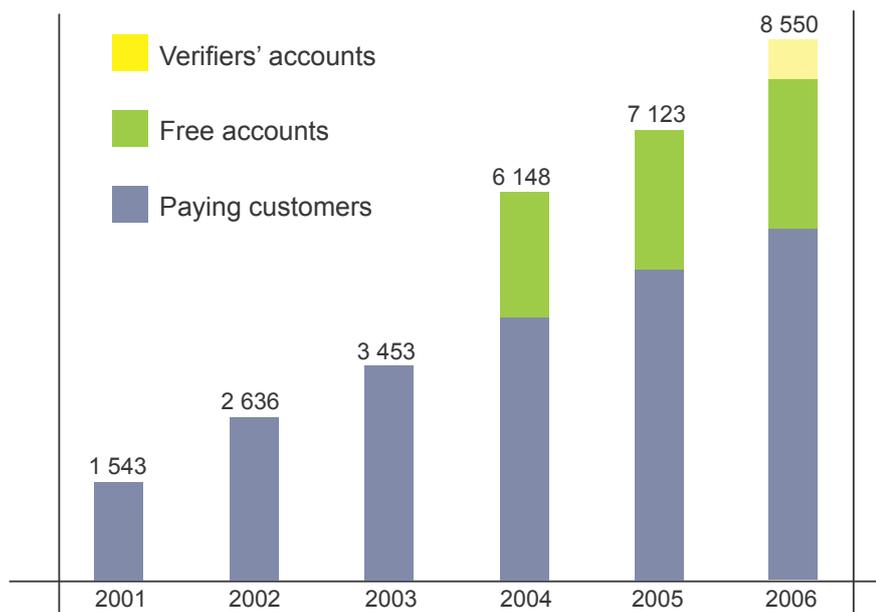
In 2006 the possibility of visual search in the application was improved. Aside from digital cadastral maps, orthophoto maps (aerial photographs) and Base Topographical Maps at a scale 1:50 000 and 1:10 000 for the whole territory of the CR were made available, as a navigation tool for orientation in space and improved searching of parcels. Since 2.1.2007 scanned raster maps of the cadastre are also available through the application Remote access to the Cadastre of Real Estates for the whole CR and those cadastral districts where digital maps are not available yet. Raster cadastral maps are part of the so-called orientation map of parcels and are updated once a year – they do not show the actual state of the cadastre (they are valid only at the moment of scanning). The second layer of the orientation map of parcels is depiction of applied geometric plans – the combination of two components thus provides information on the actual state in the depicted district.

Remote access is a fee paid service, though a substantial group of users from state administration and self-government have been provided with data from the cadastre in this manner free-of-charge since 2004. Remote access has been operated since 2001 and since its launch the number of clients actively using it has grown annually. At 31.12.2006 the number of DP users was at a total of 8 550, 2 364 of which were free accounts and 614 were for certifiers.

Based on the amendment of Act No 365/2000 Coll. on public administration information systems, marking of outputs from the DP with an electronic mark based on a qualified system certificate started at the beginning of July. 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. Furthermore, the number of places where it is possible to acquire a certified statement from the Information System of the Cadastre of Real Estates was increased. The amendment to the Act on the public administration information systems allowed issue of statements to the following subjects from 1.7.2006: municipal authorities and city district authorities, notaries, the Post Office and the Czech Chamber of Economy.



## Growth in the Number of Users of Remote Access



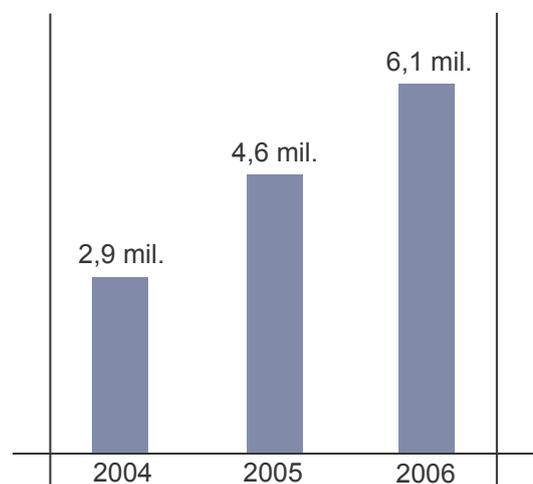
## Consultation of the Cadastre of Real Estates

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

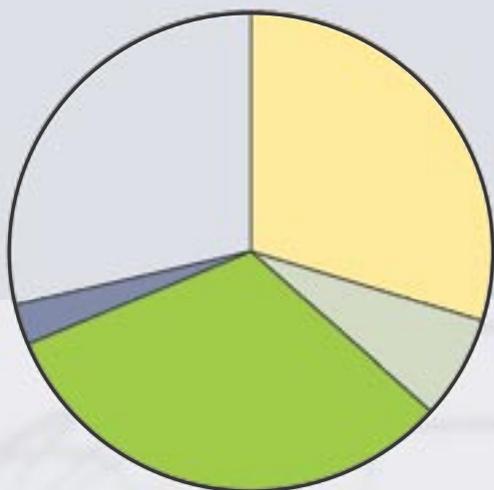
Probably the best known e-Government service, operated in this department, is free consultation of the cadastre. This internet service was launched on 1.1.2004 and allows provision of selected data concerning ownership of parcels, buildings and building units (flats or non-residential space). By means 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 application Consultation of the Cadastre won the "Czech @" for 2004 and the Prize of the Minister of Informatics. The consultation application is very intensively used by a wide circle of users and has contributed in a significant way to increasing the transparency of the course of individual administrative proceedings, whose course can be monitored by users over the internet.

Consultation of the cadastre is one of the most visited websites of Czech state administration. In the three years of its existence the application has registered a constant growth in users; in 2006 it had 6.13 million visits, thus beating, for example, the state administration portal at [www.portal.gov.cz](http://www.portal.gov.cz).

## Number of Visits to Consultation of the Cadaster of Real Estates



## Structure of Geoportal Users



- 458 Natural person
- 108 Natural person-entrepreneur
- 494 Companies, corporations
- 43 State administration
- 440 Self-government



## Geoportal of the Land Survey Office

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

This portal was launched in 2005. The Geoportal of the Land Survey Office (LO) is a comprehensive internet solution for the sale and provision of geodata of the Czech Republic, both in the form of file data and in the form of map services. The commercial module allows ordering of map services and files of digital data based on internet business. Emphasis is put on maximum usability of provided map services in public administration, particularly in GIS systems of regional offices. The Geoportal contains a set of services and client accessible data (Geoprohlížeč LO) from data storage to a wide group of users.

By means of the Commercial Module it is possible to order issue of data in separate files not only in existing vector and raster formats, but also, for example, in GML format (ZABAGED® data). The client has a significant increase in comfort when ordering data, since he is able to select required data according to the sheet line system, i.e. units for which files are available direct via the internet.

The second part, Map Services, allows on-line internet access to map data administered by the Land Survey Office. Clients who connect their system to such a service need not administer their own database of fundamental geodata and accessible map data are provided to them with the maximum available relevance.

In 2006 work was also started on a project for adapting the functions of the Geoportal to a new data model for administration of the Fundamental Base of Geographic Data (ZABAGED®) with the objective of providing the most up-to-date ZABAGED® data and map services and to ensure provision of this data set comprehensively by the department of administration and use of geoinformation. The project also includes a new tool for issue of data.

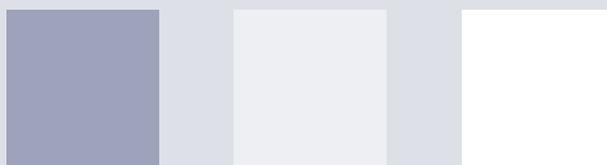
At 31.12.2003, the LO Geoportal had a total of 1 543 active users (customers with orders sent).

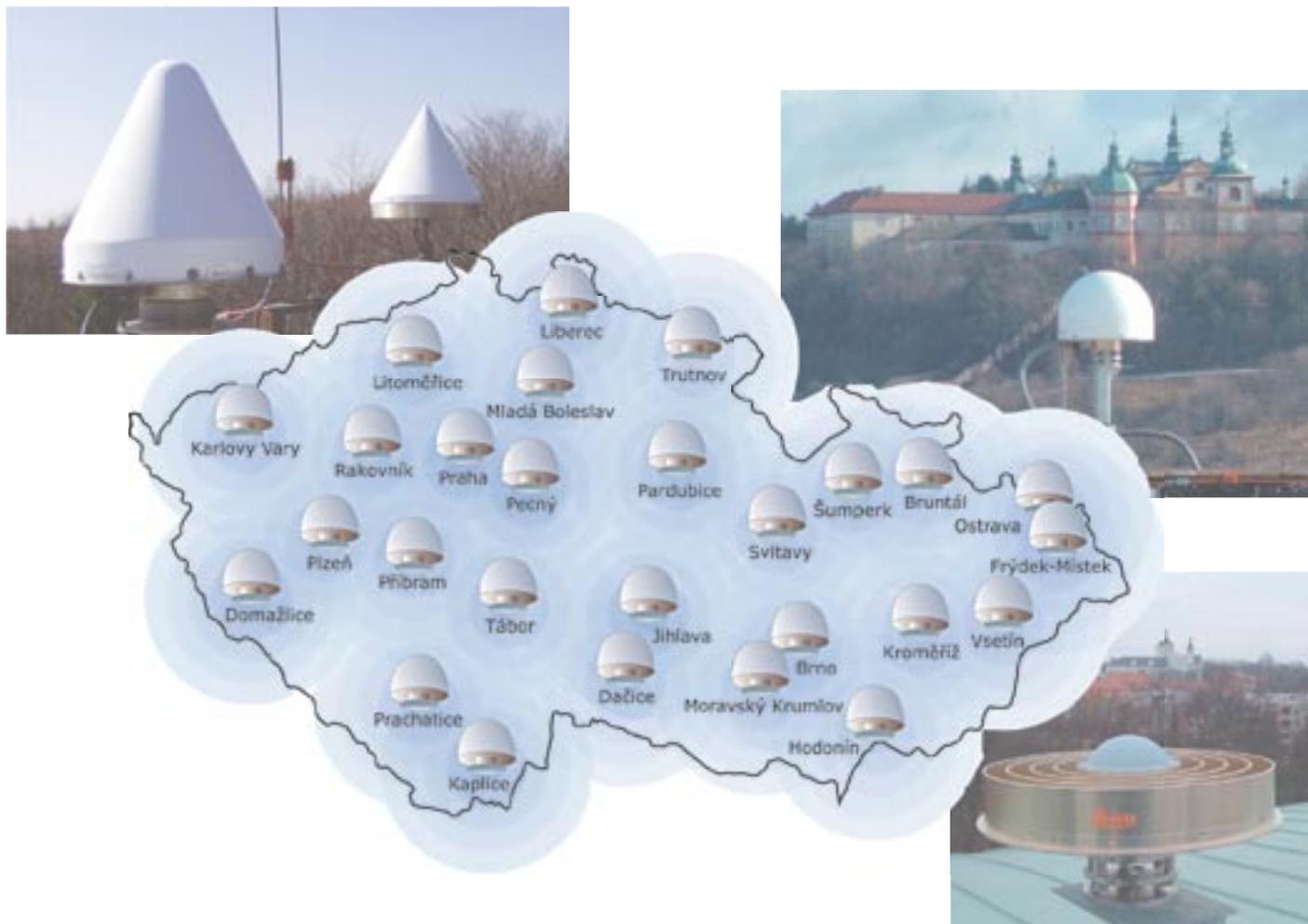
From the point of view of the value of ordered products, the most active group of users were those from state administration who ordered the data in 2006 through the Geoportal LO at a value of CZK 36.7 million and in second place of this imaginary ladder would be the group of clients from self-government who ordered data at a total value of CZK 8.4 million.

Access to online map services was provided to a total of 25 subjects, 14 of which are from the ranks of state administration and self-government.

In 2006 the application Archive Maps was launched within the Geoportal. The application is available both from the website of the Geoportal and separately at the <http://archivnimapy.cuzk.cz>. Through this service it is possible to view hand coloured maps of the imperial mandatory prints of the stabile cadastre of Bohemia from the years 1824–1843, which are part of the collection of the Central Land Survey and Cadastral Archive.

For the time being maps covering approximately 50% of the territory of Bohemia are available (ca 18 000 map sheets). By the end of 2007 the whole Bohemia should be covered and scanning of maps of Moravia and Silesia will begin. The choice of these maps on the internet is continuously widened according to the progress of scanning of individual map sheets. Access to on-line data is free. Printed copies of maps or digital files of print quality can be ordered through the Commercial Modul of the Geoportal.





## CZEPOS

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

Establishment of a network of GPS (Global Positioning System) permanent stations for positioning, which is currently a European trend, was completed by 1.1.2006. They offer wide applications in geodesy, navigation and in the domain of intelligent managing systems. For example, in neighbouring Germany the SAPOS network has been in operation for a number of years, the Slovak Republic is building its own SKPOS national network. The CZEPOS network includes 22 stations placed on cadastral office buildings, 1 station on the building of the Czech Office for Surveying, Mapping and Cadastre and 4 external stations. The stations will be uniformly located in the CR territory at a distance of cca 60 km from each other.

Data provided in the CZEPOS network allows geodetic and non-geodetic users equipped with a single GPS (Global Positioning System) apparatus with GPRS or GSM transfer to determine the position in real time with accuracy of one cm, or determine this position by post-processing after measurement to the accuracy of 1 mm. Real time data in the form of RTCM corrections will be provided in an accessible format and by means of services, i.e. differential GPS for improving navigation position, RTK (real time kinetics) in the form of FKP (area correction) and RTK in the form of VRS (virtual reference station).

Data for post-processing will be provided from individual stations in RINEX format.

In 2006 test operation of the CZEPOS network was completed and provided services became fee paid services from 1.1.2007 according to the price tariff of the Land Survey Office.

Part of test operation was testing of the precision of CZEPOS network stations. From the results of testing it is clear that when determining a position by means of the CZEPOS RTK services the medium position error of one measurement is approximately 1 cm. When processing measurement in the post-processing mode the position precision is below a centimetre and when using DGPS services (method for the data collection for the GIS application) the precision is characterised by a medium position error of one measurement of 18 cm. Under standard operation the CZEPOS network covers the whole of the Czech Republic with its services based on the network solution with the same quality. It does not depend on the position of the specified point towards the permanent stations.

At 31.12.2006 there were 337 registered CZEPOS network users.



# geodetic control

## Database of Trigonometric and Densification Points (DATAZ)

<http://dataz.cuzk.cz>

In the main, this application serves professional geodesist users. DATAZ has data on all trigonometric and densification points from the whole territory of the Czech Republic with overlap into the territories of neighbouring states. Currently DATAZ includes over 69 000 centres of trigonometric and densification points and over 35 000 associated points. DATAZ also includes destroyed points and all changes in coordinates. Administration of trigonometric points is performed by the Land Survey Office, which also provides continuous updating of DATAZ. Administration of densification points is performed by the competent cadastral offices. Selection of points DATAZ is possible through localization units (number of point and triangulation sheet, sheet of the Base Map of the Czech Republic 1:50 000 or State Map 1:5 000 – derived, cadastral district), surroundings given by coordinates and distance or localization in map sections with a sketch of trigonometric and densification points. The database is accessible free-of-charge.

In 2006 the application recorded a total of 176 000 visits.

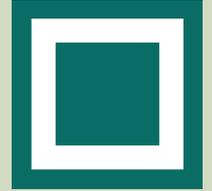
## Database of Points of the Czech State Levelling Network – ČSNS

<http://nivelace.cuzk.cz>

The Points Database of the Czech State Levelling Network includes Basic Vertical Control Points from the territory of the Czech Republic, i.e. 12 fundamental levelling points, 16,000 of the 1st order of ČSNS, 20,000 points of 2nd order ČSNS and 47,000 points of 3rd order ČSNS. Administration of the database and its continuous updating is performed by the Land Survey Office. Selection of points from the ČSNS database is possible through localisation units (cadastral district, coordinates, map sheet of the State Map 1:5 000 – derived, name of levelling line). Subsequently, an electronic form of levelling data on ČSNS points is displayed, inclusive of elevation, locality of the sketch and other data.

In 2006 77 000 visitors visited the Czech State Levelling Network website.

# Land Surveying Work in the Public Interest



## Establishing and Maintenance of Geodetic Control

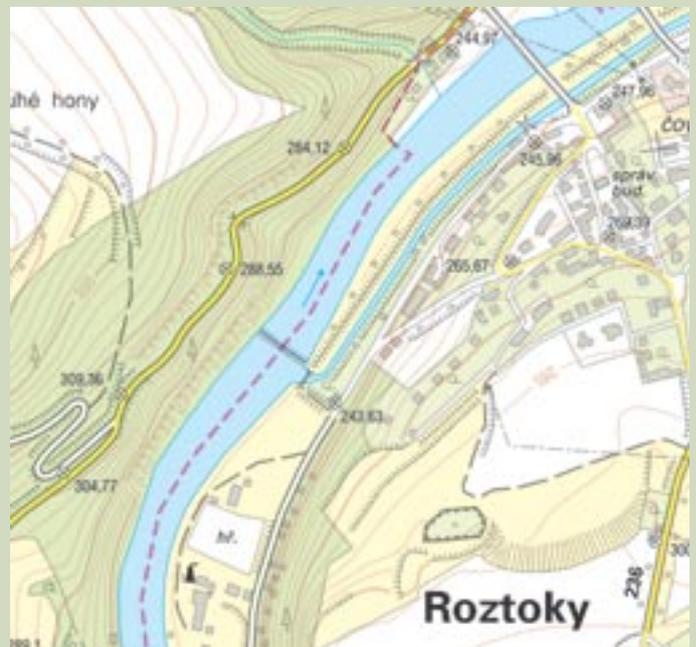
The Land Survey Office performs administration of geodetic control of the Czech Republic and decides on the localisation, transfer or removal of survey marks of basic geodetic control. The Triangulation Department sets up, maintains and renews the points of basic horizontal control and carries out maintenance of selected points of the Czech State Trigonometric Network equipped by coordinates in the European Terrestrial Reference System (ETRS). The Levelling and Gravimetry Department sets up, maintains and renews points of basic vertical and gravity control and carries out maintenance and renewal of the Czech State Levelling Network, special levelling networks and the Fundamental Geodynamic Network of the Czech Republic.

## Maintenance and Documentation of the State Border

Surveying activities for maintenance and verification of state borders is carried out by the Land Survey Office after agreement with the state border documentation administrator, which is the Ministry of Interior CR. The actual performance of surveying activities, their scope and specific material content is different for state borders with individual neighbouring states. They are completely subject to tasks arising from international agreements on state borders and their documentation, which is administered in agreement between both partners. Processing of documentation for maintenance, signalling and verifying state borders and updating border documentation is coordinated by the international border commission. From the point of view of surveying activities the current period can be described as a period of transformation and updating of state border documentation from a graphical to a digital form and specification of positioning coordinates of all break points of the state border.

## Fundamental Base of Geographic Data (ZABAGED®)

ZABAGED® is a database set of selected geographic, topographic and geodetic data from the whole territory. It creates a digital topographic model of the territory of the Czech Republic derived from the Base Map of the Czech Republic 1:10 000, which was compiled in the S-JTSK geodetic reference and Baltic vertical system after adjustment of data. ZABAGED® has the character of a geographic information system integrating a spatial component of vector graphics with topographic relations of objects and attributes containing descriptions and other information on features. The content of ZABAGED® represents 106 types of features structured in the database into 60 graphical layers of vector (DGN) files. Complementary information or identifiers of some types of features (hydrography, communications) are taken from databases of their expert administrators. The vertical component equipped with a vector file of contours allows creation of a digital terrain model. Space organizational units of ZABAGED® are map sheets of 1:10 000 in the sheet line system of the Base map of the Czech Republic at medium scales.



## State Map Series

State map series represent sets of basic and thematic map series produced by the Land Survey Office and the Czech Office for Surveying, Mapping and Cadastre. The basic state map series is a cartographic work with a basic generally usable content, coherently showing the territory according to unified principles, created and issued in the public interest. The source of topographic content of the basic state map series are cadastral maps and ZABAGED®.

The basic state map series is represented by a state map series at a scale of 1:5 000, which includes a digital and classical map at a scale of 1:5 000 based on an orthophoto, completed with contours and highlighting important elements of planimetry by vectors. For most of the state territory there exists only the former version of the state map of 1:5 000 with planimetry derived from cadastral maps with contours taken from the Base Map of the CR. Base maps at medium scales represent the most important part of the basic state map series. Base Maps of the CR are produced in a 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 CR 1:100 000, Map of Regions CR 1:200 000, Map of the Czech Republic 1:500 000, CR–Physical-geographic 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 as a rule representing certain thematic phenomena, 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 Base Hydrographic Map CR 1:50 000, Road Map of the Czech Republic 1:50 000, Regional Road Map CR 1:200 000, Map of

Fundamental Settlement Units 1:50 000 and some other maps with thematic land surveying content.

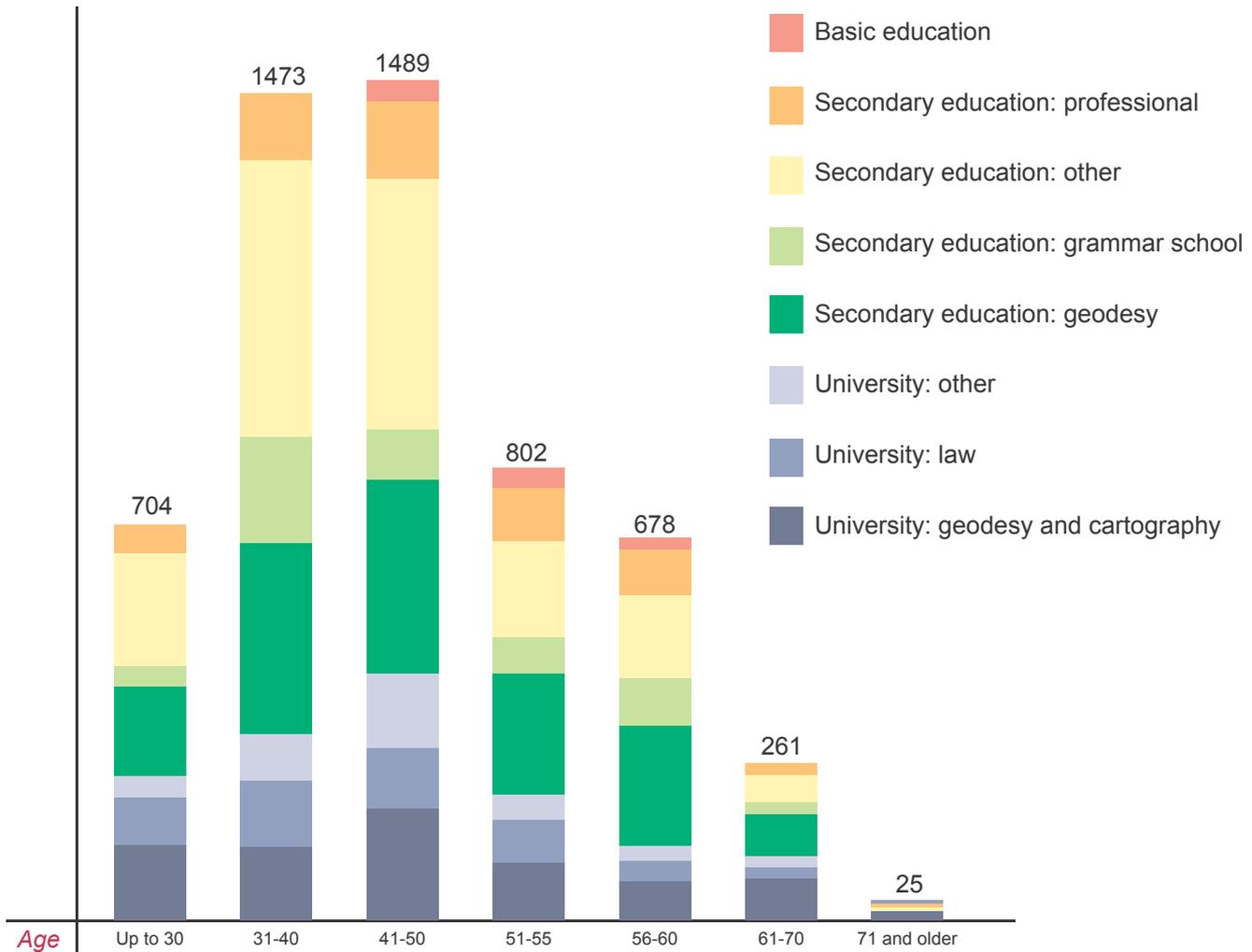
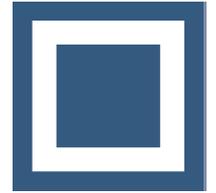
## Orthophotographic Representation of the Czech Republic

Aerial photographs with distortion caused by height differences of terrain surface removed find more and more uses in various field of activity. A grey scale orthophoto and sheet line system for the Base Map of the Czech Republic 1:10 000 (ZM 10) is available for the whole territory of the Czech Republic. The Land Survey Office distributes this product to users in map sheets of the Base Map 10 (ca 18 km<sup>2</sup>). Data is in TIF raster format with resolution of 0.5 m. A colour orthophoto in the sheet line system of the State Map 1:5 000 (SM 5 – 1 sheet of ca 5 km<sup>2</sup>) is available for two-thirds of the territory of the CR. Data are in TIF or MrSID raster format with resolution of 0.5 m.

## GEONAMES Database

The GEONAMES database provides a complete set of information on geographical names (terrain features, hydrography, land – a total 68 types of designated objects) and names of settlement units standardised on the Base Map of the Czech Republic.

GEONAMES is a spatially relational database that is replacing the existing system of registration in the Lists of Geographical Proper Names and registration maps at a scale of 1:10 000. The GEONAMES database speeds up access to these data and allows data analysis. Alongside data from the Fundamental Base of Geographic Data CR (ZABAGED®) it provides users with an integrated view of the territory of the Czech Republic. It is a source for publishing state map series of various scales.



## Personnel Structure

The table of the personnel structure according to age and education confirms the positive trend of the last few years – a constantly increasing share of university graduates among employees in the categories to 50 years of age in comparison to categories of 51 to 70 years of age. The share of employees with secondary school education with a geodetic, professional and general focus has also risen. In the youngest age categories there are no longer employees with basic education only. A reality is the constantly increasing representation of other fields than geodesy and cartography; above all these are employees with training in information technology, law and economics.



# economics

## Summary of Obligatory Indexes of Chapter 346 of the State Budget for the Years 2001 -2006

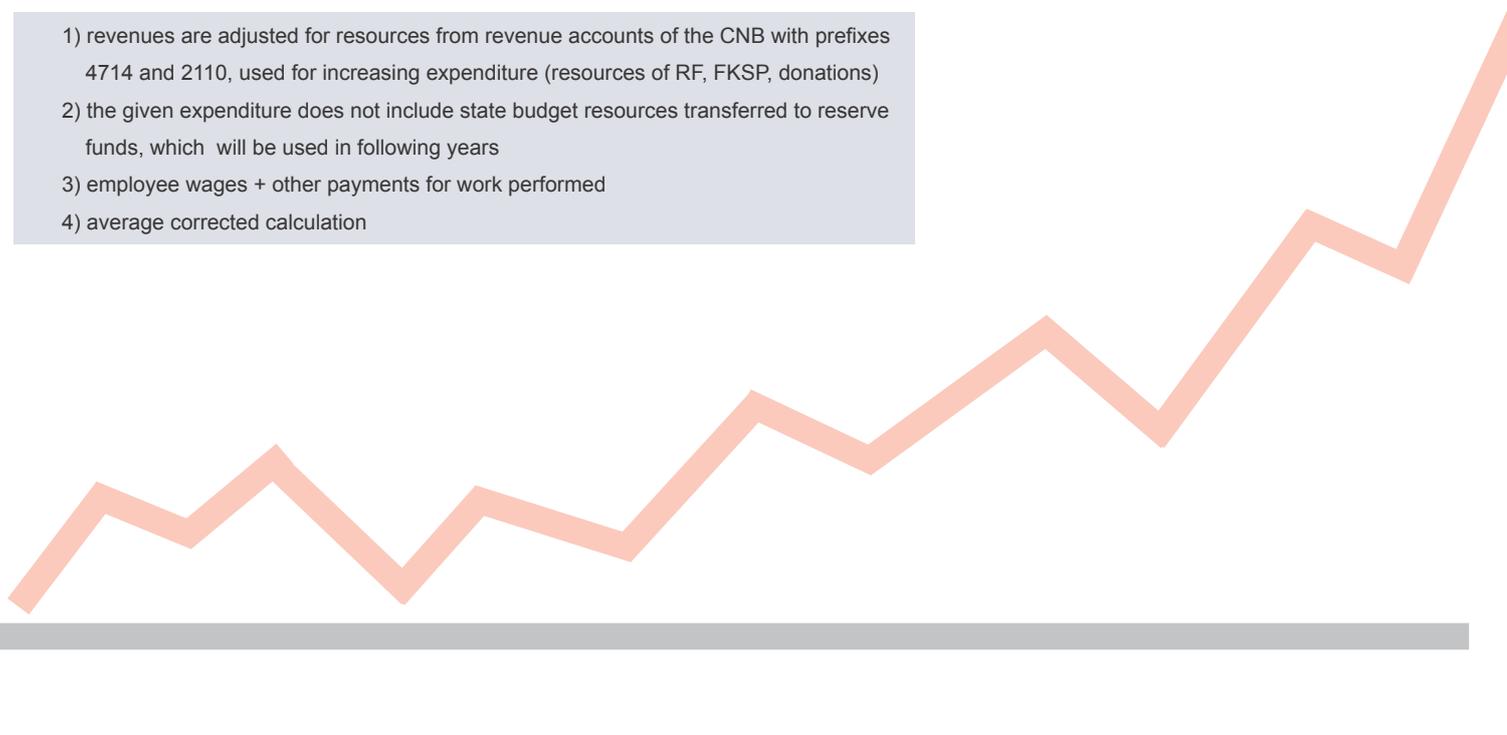
Index / Year	Financial indexes in CZK '000s					
	2001	2002	2003	2004	2005	2006
Revenues of the chapter <sup>1)</sup>	162 310	205 209	181 437	158 315	143 125	157 572
Administrative fees	323 300	456 000	466 998	486 472	544 156	549 641
Data provided free	95 000	312 000	329 461	336 544	438 426	536 376
<b>Total expenditure of chapter<sup>2)</sup></b>	<b>2 100 418</b>	<b>2 030 922</b>	<b>2 133 961</b>	<b>2 327 168</b>	<b>2 421 660</b>	<b>2 513 377</b>
Current expenses without non-investment	1 657 917	1 748 294	1 680 182	1 802 266	1 830 893	1 956 447
including: wage resources <sup>3)</sup>	992 667	1 060 661	1 148 146	1 179 756	1 224 063	1 308 839
insurance and FKSP	365 051	390 089	421 717	434 688	452 144	483 848
other material costs	300 199	297 544	110 319	187 822	154 686	163 760
Program expenditure	402 545	251 986	429 516	500 302	563 362	528 266
including: non-investment	0	16 377	218 804	247 735	256 231	356 631
investment	402 545	235 609	210 712	252 567	307 131	171 635
Research and development expenditure	39 956	30 642	24 263	24 600	27 405	28 664
including: operational	26 126	27 827	23 763	24 100	26 405	27 664
investment	13 830	2 815	500	500	1 000	1 000
<b>Number of employees in Sector<sup>4)</sup></b>	<b>5 663</b>	<b>5 676</b>	<b>5 680</b>	<b>5 616</b>	<b>5 523</b>	<b>5 445</b>
COSMC	69	70	70	158	158	157
Cadastral Offices	5 097	5 107	5 106	4 902	4 816	4 755
Land Survey Office	406	407	411	466	455	443
Survey and Cadastral Inspectorates	91	92	93	90	94	90

1) revenues are adjusted for resources from revenue accounts of the CNB with prefixes 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



## Economics

The approved state budget of the Czech Republic for 2006 specified revenue of CZK 150 000 000 and expenditure of CZK 2 464 592 000 for the Czech Office for Surveying, Mapping and Cadastre. After a request by the COSMC, the Ministry of Finance increased expenditure for employee salaries by CZK 49 991 000. The reason for the request for an increase in resources to pay employees of cadastral offices was the long-term growth in the volume of administrative proceedings in the area of the Cadastre of Real Estates and a comparison of the development of average salaries of employees of cadastral offices and average salaries of employers of other administrative bodies. The effort to secure salaries for employees of administrative bodies in the sector at a level which would correspond to the demands and responsibilities of their work continued. By means of reserve funds administrative bodies in the sector used unexpended resources from previous years for consolidation of expenditure as stipulated by the budget for 2006.

As in previous years in 2006 the greatest share of expenditure was expenditure on employee salaries, other payments for work carried out and associated expenditure, which form 70% of the total expenditure of the sector. The average monthly income achieved per 1 employee in 2006 was CZK 20 006, above all due to the use of resources of reserve funds. The second major part of

expenditure was program expenditure allotted for procuring and management of state tangible and non-tangible property. In 2006 the proportion of this expenditure was 23% of the total expenditure of the chapter. More than two thirds of program expenditure was non-investment expenditure intended for securing the operation, maintenance and repair of state assets and for the lease of computer technology and administrative buildings. Total expenditure also included other material expenditure and expenditure on research and development. Of the other material expenditure directly associated with fulfilment of legally stipulated tasks, expenditure on postal services and materials constituted two thirds. The remaining third of other material expenditure covered the main expenditure on training, travel costs and expenditure on international cooperation.

The approved budget stipulated income in 2006 was CZK 50 000 higher than in 2005. Despite the fact that the growth in operations which are provided free-of-charge continued, the stipulated income was exceeded. Traditionally the greatest share of income was income from own activities for data from the Cadastre of Real Estates, from the sale and use of the state map series and for ZABAGED® data. In comparison to preceding years there was a reduction in the income of cadastral offices for data provided in the classical way over-the-counter and vice versa income from data provided electronically via the internet increased.



# Inspection and Supervision Activity



Control of state administration of the Cadastre of Real Estates, supervision over the certification of results of land survey activities used for the Cadastre of Real Estates and state map series, and decision-making on appeals against first instance decisions of cadastral offices (CO) are delegated by law to the 7 Land Surveying and Cadastral Inspectorates (SCIs). On 1.7.2006 Addendum 4 to the SCI Procedural Code came into effect, according to which SCI started to be considered in the sense of the new administration code (Act No 500/2004 Coll.) as governing bodies of cadastral offices in accordance with the interpretation made by the Advisory Committee of the Ministry of Interior on the Administration Code. The new Administration Code also brought a new definition of the term complaint and modified the procedure for handling them. According to the new Administration Code SCI began to decide once again on applications for measures against the inaction of CO (33 decided cases). The extent of decision-making of SCI on appeals against decisions of CO remained practically unchanged in 2006 (726 appeals delivered in 2006 as opposed to 730 appeals delivered in 2005). The quality of decision-making of CO as first instance bodies has slightly worsened compared with 2005 (43.1 % of CO decisions were found to be illegal in appeal proceedings in 2006, in 2005 this figure was 41.0 %). Inspection activity of SCI in 2006 was focused above all on compliance with new procedural processes associated with the applicability of the new Administration Code. In the framework of inspections of state administration of the Cadastre of Real Estates SCI carried out a total of 1 719 documented inspections at cadastral offices. All knowledge from inspections was collected in the SCI quarterly analyses, which was passed to individual COSMC expert units for use. Dominant among the negative findings was the situation at the Prague Cadastral Office, where time limits stipulated by generally binding regulations for handling the business of entries and records were not complied with to a great extent.

In the framework of supervisory activity (supervision of certification of the results of land survey activities) in 2006 SCI performed a total of 335 documented supervisory actions. In 6 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 253 000.

## Financial Control

The COSMC, as administrator of budget chapter 346 of the state budget, performed financial checks according to the Act No 320/1990 Coll. on financial control, at the CO for Pardubice Region, CO for the Central Bohemian Region, CO for Moravian-Silesian Region, CO for Prague Capital City and all 7 SCI. Outside of the approved plan of public administration checks, a special public administration check was carried out at RIGTC. A special focus of checks carried out in 2006 was also verification of the causes of shortcomings which the National Control Authority discovered among some checked persons during its Check No 05/30 "Management of state assets and financial resources of the state budget by land survey and cadastral authorities", which took place at the break of 2005 and 2006, and measures adopted to eliminate them. Public administration checks of some checked persons in 2006 found less serious formal and objective shortcomings emerging from the inconsistent compliance with some provisions of COSMC economic rules and some partial shortcomings in records of assets. No serious shortcomings were discovered by public checks in 2006 that would unfavourably affect the activities of controlled persons or would be a reason for reduction of their financial appraisal.



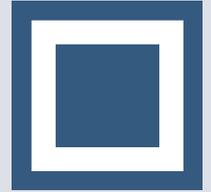
inspection

### SCI Decisions on Appeals Against CO Decisions

Matters	Not resolved at 1.1.2006		Received after 1.1.2006		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	71	500	571	6	266	63	11	142	70	13		
Objections to revised cadastral documentation	10	69	79	-	33	8	1	28	8	1		
Infringements of order in the sphere of the cadastre	-	-	-	-	-	-	-	-	-	-		
Procedural	12	144	156	3	90	4	10	34	10	5		
Changes in the boundaries of cadastral districts	-	2	2	-	2	-	-	-	-	-		
Administrative fees	1	3	4	-	2	-	1	-	1	-		
Rejection of applications for submission of information	-	4	4	-	4	-	-	-	-	-		
Other	-	4	4	1	3	-	-	-	-	-		
In total	94	726	820	10	400	75	23	204	89	19		

### Total Number of Complaints For 2006

Complaints	LO	CO	SCI	COSMC	In total
Not resolved at 1.1.2006	-	17	-	-	17
Received after 1.1.2006	-	596	53	65	714
In total	-	613	53	65	731
Forwarded	-	1	12	50	63
Legitimate	-	336	3	1	340
Not legitimate	-	268	32	14	314
Still being resolved	-	8	6	-	14



The COSMC is actively involved in many international initiatives and is represented on several international working groups.

The most involved bilateral cooperation occurs with the land surveying services of neighbouring countries – Slovakia, Germany and Austria, in particular in the area of documentation of common state borders, establishing of networks of permanent GPS stations and exchange of data and experience in cartography and cadastral legislation. Furthermore, COSMC 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.

The development of new map services and projects aimed at constructing a unified infrastructure of spatial data in Europe is the remit of the international organisation Eurogeographics, of which COSMC is a member. In the scope of Eurogeographics activities a special working group has been created for the cadastre to which COSMC has delegated a representative. Thanks to Eurogeographics department representatives have taken part in international meetings on the European Directive INSPIRE and the problems of its implementation.

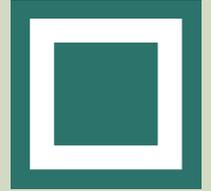
Also through the COSMC the Czech Republic has become involved in 2006 in preparations for inclusion to the EULIS service (the European Land Information Service), which has the objective of creating a European multinational portal allowing on-line access to information on real estate in various states of the EU. Currently the service is functional for a total of 5 European states. After completion of the preparatory phase in the EULIS PLUS project the Czech Office for Surveying, Mapping and Cadastre should connect up to the portal at the end of 2007 by means of its „Remote Access“ service.

## Working Party on Land Administration (WPLA)

In 2006 the Czech Office for Surveying, Mapping and Cadastre hosted one of the regular meetings of the Working group for land administration under the aegis of the United Nations, which is concerned with information on land, real estates and other associated matters. This meeting occurred in Prague in October 2006 on the theme “Land administration in the era of the e-society” with the participation of more than 100 delegates from 27 European and other countries. Delegates heard many interesting and inspiring seminars over the two days. Among other things in the program there was an excursion to the building of the land survey and cadastral offices in Prague, where workshop participants could acquaint themselves with the functioning of the cadastre of the Czech Republic and work of cadastral offices. The meeting was assessed very positively as was noticed by the COSMC representative, who has been working in the 2006–2007 period in the management committee of this organisation.



# Research and Development



Research and development in the sector of surveying, mapping and cadastre is subject to the needs of state administration with the aim of acquiring and using new knowledge usable for its improvement. It also takes account of needs in the sector for use of information and communication technologies and the needs of international cooperation in the field. Resolution of tasks of research and development is the concern of the Research Institute of Geodesy, Topography and Cartography (RIGTC) in the framework of the research aim Research and development in geodesy, the cadastre and geomatics in 2005-2009, which the Czech Office for Surveying, Mapping and Cadastre provides with institutional support.

Tasks resolved in the scope of the research aim in 2006 were completed pursuant to the stipulated technical and economic parameters in line with the agreement between the COSMC and RIGTC. Minutes from inspection days provide information on the course of individual tasks in the course of 2006.

In 2006 there occurred, among other things, preparations for the transformation of the RIGTC state contributory organisation into a public research institute. The change occurred on 1.1.2007. The Ministry of Education, Youth and Sport recorded the RIGTC in the register of public research institutes on that day.

## RIGTC



## Annual Report 2006

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