

Ten Years of Cadastral Reform in the Czech Republic: From defective cadastre to Internet access to reliable cadastral and land registry data

Ivan PESL and Dr. Vaclav SLABOCH, Czech Republic

Key words: Cadastral Reform, Land Cadastre, Land Registry, Cadastral Legislation, Legal Cadastre, Cadastral Maps, Enhanced Cadastre, Internet, Land Management System.

ABSTRACT

The paper describes restoration of the Cadastre and the Land Registry in the Czech Republic after the end of communist era and their further development in the last decade.

The result of more than forty years of communist regime was apart from other things deformed and defective cadastre which was not able to serve as efficient tool for important political, social and economic changes needed for economic restoration of the state. Urgent economic needs led to cadastral reform, which started from the beginning of the year 1993, when new cadastral legislation came into force. A Long-Term Cadastral Conception was adopted, which comprises main steps in completing cadastral data, conversion of descriptive data, digitisation of cadastral maps, linkage of local and central databases, new cadastral software and organisational, staff and financing issues. Newly built-up cadastre integrates land cadastre and land registry within only one state body and its data are accessible via Internet.

Next development comprising improved legislation, higher state guarantees, efficient linkage with other public registers and financial, organisational and personnel issues are under discussion.

CONTACT

Dipl.-Ing. Ivan Pesl
Surveying and Cadastral Inspectorate
Praskova 11
746 01 Opava
CZECH REPUBLIC
Tel. + 420 653 698 180
Fax + 420 653 621 959
E-mail: ivan.pesl@cuzk.cz
www.cuzk.cz

Dipl.-Ing. Vaclav Slaboch, Ph.D.
Research Institute for Geodesy, Topography and cartography (VUGTK)
CZ – 250 66 Zdiby 98
CZECH REPUBLIC
Tel. + 420 2 8489 0907
Fax + 420 2 8489 0056
E-mail: Vaclav.Slaboch@vugtk.cz
www.vugtk.cz

Ten Years of Cadastral Reform in the Czech Republic: From defective cadastre to Internet access to reliable cadastral and land registry data

Ivan PESL and Dr. Vaclav SLABOCH, Czech Republic

Motto:

„The remedy of former mistakes in such extensive information systems, as the cadastre is, is extremely expensive and needs long-term political and economical stability and time counted not in years, but in decades.“

1. HISTORICAL BACKGROUND

The Land Cadastre as a tax tool and the Land Registry (Grundbuch) have a very long tradition on the territory of the Czech Republic, which was a part of the Austrian-Hungarian Empire until 1918. The legal base of modern era of these institutions was created by the Civil Code from 1811, the Cadastral Law from 1819 and the Land Registration Law from 1871, which established some basic principles valid and used even today.

The post-war development in the Land Registry and the Land Cadastre was heavily influenced by the political events in the Czech Republic. Continuous development of the cadastre and the land registry was interrupted after communist take-over in 1948. The result of radical political changes was a new Civil Code of 1951, which, apart from other things, abolished obligatory registration, suppressed some individual rights and preferred new collective and state rights to use land. The Land Registry records were not regularly updated, lost their legal reliability and after some time it was even impossible to keep them at all. The only documents proving ownership and other rights in land from that period were individual deeds without any list or register enabling to get a certainty of their succession. The cadastre including maps was very simplified and the new cadastre founded in 1954 represented not rights, but physical use of land only (not even rights to use). This substantial change in registration of land was so hard, that after some time it proved to be inconvenient even for the political goals of communist state.

In 1964, when a new Civil Code came into effect, it was decided to establish State Notaries (registering not all deeds but only deeds concerning individual persons) and to modify the current cadastre by completing it with simplified records about ownership rights to support the rights of the State, of state enterprises and co-operative companies. The rights of natural persons were suppressed in this deformed rule of law. The person was generally permitted to own land but not allowed to use it in some cases. Under such conditions the cadastre was heavily deformed as well, and the parcels of persons used by the state and by co-operative companies were amalgamated into huge blocks and were not individually registered in the cadastre. This new cadastre according to the Cadastral Law from 1964 was kept on the base of deeds (some of them registered by the State Notary) but had no legal consequences. The only proof of rights in land was still the proper deed. The most precious part of this cadastre

is thus the collection of deeds, which was completed even for the period of absence of any registration (1951 - 1964) by systematic searching during years 1966 to 1988.

After the fall of the communist regime in 1989 a new governmental programme of restitution, privatisation and general economic reconstruction started. The current cadastre could not meet new demands and it was decided to come back to the time-tested principles of previous land registry and land cadastre. **The result is a "legal cadastre" integrating the land registry (legal tool) and the land cadastre (technical tool) into the only instrument administered solely by survey authorities.** This solution was accepted as the easiest in the circumstances. During years 1991 and 1992 new basic cadastral legislation was prepared and came into effect at the beginning of 1993.

Thus, January 1, 1993 is a milestone in the long history of the land cadastre in the Czech Republic and the beginning of the cadastral reform.

2. CADASTRAL REFORM (1993)

The governmental program of massive restitution and privatisation of property needed a reliable and smoothly working cadastre. The existing defective cadastre was not able to meet the demands. It was necessary first of all to strengthen the legal part of the cadastre to be able to serve as an effective tool of economy and right, and to improve substantially the performance of the cadastre.

The main requirement for the new cadastre was to give permanently and promptly the complete and legally valid information about land and rights:

- to give a certain level of guaranties to owners and creditors,
- to involve real property capital into economy,
- to facilitate land transactions,
- to define boundaries of individual plots of land,
- to serve as a tool for state taxation purposes,
- to serve as a tool for land management,
- to enable easy access of the public.

In order to ensure the continuity, it was necessary to start with the data of the existing cadastre. Due to existing defections it was necessary to introduce some temporary provisions into the new cadastre. It has been started with the existing cadastral maps, existing cadastral data and files, and with existing software, but with the new cadastral legislation. The new cadastral legislation needed a quite new approach to the cadastral data and processes. Several series of training courses at all levels were prepared and carried out beforehand. The training of employees was oriented especially at the law problems, and at new employees involved in cadastral activities.

The cadastral maps cover all the territory of the state. About 30 % of area (all towns and more active areas) was covered by modern and accurate maps at scale 1:1000 or 1:2000

(r.m.s.e. ± 14 cm or ± 26 cm respectively) with co-ordinates or possibility to calculate them from the original measured data. The rest of the area was covered by the old cadastral maps at historical scale 1: 2880 (measuring table method). All the maps had been re-drawn on plastic transparencies.

The descriptive data (about parcels, owners and their addresses) were converted into computer files except detailed data about legal information (so called „owner’s folios“, which were hand-written in standardised forms including references to the title).

The above-mentioned data were, according to the new legislation, considered as the data of the new cadastre. As some individual parcels of different owners amalgamated into huge blocks of agriculture or forest land were not represented in the current maps (and were hidden under the parcel number of the whole block), it was necessary to accept provisionally the „simplified records“ of such „missing parcels“, which were defined with the help of maps of the previous cadastre (boundaries and parcel numbers from the previous land cadastre). There were about 8 million of those parcels registered in the owner’s folios according to the previous cadastre parcel numbers.

During 1993 the government approved the **Long-Term Cadastral Conception**, which covers the most important tasks of the further improvement of the cadastre including the higher level of computerisation (digitisation of the „owner’s folios“ and cadastral maps), completing „missing parcels“ in the maps, and improving access to the cadastral data.

3. NEW CADASTRAL LEGISLATION

The purpose of land registration and cadastre itself is so tightly connected with law, that the legislation in this sphere should be considered as immensely important. Legal framework of land registry and cadastre is not only the base for all the activities in this field but it is even a part of its final result.

The new basic cadastral legislation consists of the following laws and regulations:

- Law No 264/1992 (**changes and amendments to the Civil Code** and some other laws).
- **Land Registration Act** No 265/1992 (amended in 1993, 1996, 2000, 2001).
- **Cadastral Law** No 344/1992 (amended in 1996, 2000).
- **Survey and Cadastral Administration Act** No 359/1992 (amended in 1994, 1997, 2000, 2001).
- **Cadastral Regulations** No 126/1993 (since 1996 new, No 190/1996).
- **Survey Act** No 200/1994 (amended in 2000, 2001).
- **Survey Regulations** No 31/1995 (amended in 2001).

The Civil Code was amended by provisions about acquisition and conveyance of real estate property and about the origin of other rights on the base of agreement. Such agreement does not come into effect until the entry (registration) of the agreement into the cadastre is made. Similar amendments were completed into the Commercial Code and some other special Laws

dealing with this problem in connection with privatisation and restitution process. This solution enables the cadastre to be complete and owners to be known to the public.

The Land Registration Act determines first of all what rights to real estate are registered in the Cadastre. They are: ownership rights, mortgage, rights corresponding to easement, right of first refusal having effect of right in rem, and other rights as far as they are created as rights in rem.

There are *three types of registration* in the cadastre: registration by entry, registration by record, registration by annotation. A registration can be also deleted.

The *registration by entry* into the cadastre is needed for the all rights based on agreement. These rights originate, change or extinct by entry into the cadastre. The entry into the cadastre and its deletion is possible only on the basis of positive decision made by Cadastral Office according to the Public Administration Act. The legal consequences of the entry into the cadastre start with retroactive effect from the day of delivery of the entry petition to the Cadastral Office. The Cadastral Office initiates proceedings at a petition of participant of agreement or other competent person. Deeds shall be examined and if the deed complies with the conditions the Cadastral Office will make decision permitting the entry. Otherwise the entry is refused. The negative decision shall be delivered to all participants. The parties have the right to appeal against the negative decision to Court.

The rights originated, changed or extinct not from agreement but by a Law, by a decision of a public authority, by knock down in a public auction, by obtaining on prescription, by accrual and by working out, are *registered* in the cadastre *by record* on the base of the deeds proving this facts according the law. In principle, the public deeds are needed for the records of rights into the cadastre. There is a duty for all the public authorities and the others to send such deed to the appurtenant Cadastral Office within thirty days to carry out the record. Unlike the entry, the Cadastral Office does not examine such deeds; it only finds whether there are no mistakes in writing and calculation or other evident incorrectness. If the deed is not fit for record, the Cadastral Office sends the deed back.

The *annotation* is used for registration of some important legal facts or relations concerning to the real estate or person. According to the law an announcement of execution, bankruptcy, or expropriation by Court or other public authority is registered by annotation. The annotation shall be made as well in cases when the legal relation is to be determined by Court.

The person who acts on the base of the data registered in the cadastre according to this law acts in good faith (*bona fide*) that the facts registered in the cadastre correspond to the real state of affairs. Even the records registered in the previous cadastre (until the end of 1992) prove the truth of registered facts until the contrary is proved. The cadastre is open to the public. Everyone has the right to have a look into the cadastre and make copies or extracts about legal information.

The Cadastral Law defines the Land Cadastre of the Czech Republic, its content, cadastral documentation, and administration of the cadastre.

The *objects* of the cadastre are: *Cadastral units* (usually one cadastral unit covers a territory of a small municipality), *plots of land* (sorted according to the following types: arable land, hop-fields, vine-yards, gardens, orchards, meadows and pastures, wood-lands, water areas, build-up areas, and others), *buildings* connected with the land by solid foundations (according to the Civil Code the real estates are land and such buildings), *apartments* and other rooms (only in descriptive data), *legal relations* to real estates.

The cadastre contains:

- Geometric and positional determination of real estates.
- Parcel numbers, types and areas of plots, building numbers, selected information about preservation and exploitation of real estate, tax information, and key identifiers enabling mutual data interchange with other information systems.
- Information about legal relations (registration of titles) including data about owners, co-owners and others in right and their postal addresses.
- Data about minor geodetic control.
- Place and local names.

The Law regulates in detail the administration of the cadastre, especially the proceedings of registration, the proceedings in correction of errors and omissions, and verification of copies from the collection of deeds of the current and even from the historical Land Cadastre and the land registry.

There are significant provisions here about carrying out surveys, especially about the sub-division plans. The sub-division plan is an inseparable part of deeds for registration in the cadastre. The plan shall be authorised by the Cadastral Office to correspond to the Cadastre requirements.

According to the Law the cadastral data: name and geometric determination of cadastral unit, parcel number, geometric determination of property, are strictly obligatory in the all legal acts concerning real estates. On the contrary, the parcel area is defined as a result of its boundaries and this information has no legal consequences.

All the cadastre documentation is *open to the public* and everybody has the right to have a look into them and make copies, extracts and sketches for one's personal use.

The Survey and Cadastral Administration Act institutes survey and cadastral authorities and delimitates their competencies. The supreme administration body, submitted directly to the Government, is the Czech Office for Surveying, Mapping and Cadastre. At the level of regions Survey and Cadastral Inspectorates were created. At district level Cadastral Offices

were instituted as the executive authorities. They are subordinated directly to the Czech Office for Surveying, Mapping and Cadastre.

The Cadastral Regulations amplify and specify provisions of the Land Registration Act and the Cadastral Law, set down details of content and administration of the cadastre and specify the basic technical aspects. Extensive appendices cover nearly all the technicalities of the cadastre (e.g. methods of survey and their processing, accuracy parameters, working out of sub-division plan, system of codes used, extracts from technical standards, examples and specimens of outputs, etc.).

The Survey Act determines and defines survey activities, rights and duties in carrying out the survey activities, verifying the results of survey activities, as well as geodetic datum, map projection and the state map series.

4. LONG-TERM CADASTRAÆ CONCEPTION (1993)

The difficult work on the conception of the further development of cadastre was crowned by acceptance of **The Conception of Digitisation of the Cadastre** by the government at the end of 1993. This important document represented not only the approval of priorities, but also the financing of the whole project reaching to the year 2006. The Conception sets up the main priorities as follows:

- Completing PC-LANs in all cadastral offices by 1994
- Digitisation of owner's folios (incl. completion of missing parcels) by 1998
- Completion of data about soil quality by 1998
- Completion of identifiers (personal number, company registration number) by 1998
- Densification of minor geodetic control (according to the needs of land consolidation)
- Digitisation of the newer cadastral maps (incl. completion of missing parcels) by 2000
- Digitisation of graphical maps 1:2880 (incl. completion of missing parcels) by 2006
- Gradual transition of the cadastre to the higher level of information technology.

The Conception corresponds to the main requirements of the cadastral legislation, meets the needs of state information system, creates the conditions needed for the land consolidation programme, and supports wide development of GIS. The Conception considers also the issues of personnel and their training, and the financing of the whole programme.

5. CÓMPUTERISATION OF THE CADASTRE

The computerisation of the cadastre is the main way known how to increase its efficiency. But it needs investments and time to data conversion. In conditions of massive restitution and privatisation and general pressure on cadastral data it was necessary to consider carefully the priorities of the whole computerisation process and to determine the priorities which would lead to optimum effect in time, quantity and quality.

The computerisation of the previous cadastre started in the sixties, at the beginning using punch-card computers (first numerical only, later alphanumeric) and continued on mainframes. The computers (located in several centres) were used mainly as a tool for the renewal of the descriptive data files, for geodetic calculation and drawing maps. But the cadastre itself at the cadastral offices was still also updated manually. Only wide accessibility of PC enabled the cadastral offices to start with the full use of the advantages of computerisation in everyday work. The implementation of PC LANs in cadastral offices started a new era in automation of cadastre.

In 1994 all the cadastral offices were already equipped with PC LAN and the supplies of efficient workstations for computer-graphics started. The central mainframe in the Land Survey Office was connected with PC LANs of the cadastral offices by means of telephone lines and started to serve as a central database (at the beginning as a backup database).

Beside the routine work, the program of systematic digitisation of the last hand-written documents - „owner’s folios“ - started. Simultaneously, the digitisation of cadastral maps with known or possible to calculate co-ordinates started. The data transfer standards and the data structure of the cadastre files and digital cadastral map were fixed. Because the existing software couldn’t meet the future requirements, the work on the cadastral software of new generation started.

6. PRESENT STATE OF THE CADASTRE

The Real Estate Cadastre of the Czech Republic integrates the former Land Cadastre and the Land Registry and represents a unified instrument of economy and right administered solely by survey authorities.

The supreme administration body, submitted directly to the Government, is the Czech Office for Surveying, Mapping and Cadastre. At the regional level there are 7 Survey and Cadastral Inspectorates. At the district level there are 77 Cadastral Offices as the executive authorities subordinated to the Czech Office for Surveying, Mapping and Cadastre. In addition, there are 2 special institutions: the Land Survey Office and the Research Institute of Geodesy, Topography and Cartography. The total number of employees is 5.640 (5.095 employees in Cadastral Offices) consisting of graduate technicians (18%), graduate lawyers (5%), technicians with technical college certificate (59%) and others (18%). The employees are trained in accordance with the Conception of Education and Training.

The Cadastre covers all the territory of the Czech Republic. It comprises 21,435 million parcels, and the data about 5,076 million owners on 4,161 million owner’s folios, arranged in 13.078 cadastral units.

The descriptive cadastral data are fully digitised and kept in digital form (this extremely difficult task, added to the routine work at the cadastral offices, was finished in 1998). The task included not only a simple conversion of the rest of legal data, but also completion of missing parcels, missing references to titles and missing identifiers, involving national

environment into records, and some other improvements as data restructuring, etc.

All the cadastral offices run a local database and are connected by WAN with the Central Database in the Land Survey Office, which is able to provide the cadastral data for the whole territory of the state on request.

The completion of „missing parcels“ into the current cadastral maps continues in the digitisation process, which enables to do this task more effectively and with a higher accuracy. A part of cadastral maps was converted into the form of the digital cadastral map kept now in computers. The technology of converting and updating of maps has been sufficiently tested, so that the conversion of maps can continue with sufficient speed..

In 1997 intensive work at a new all-embracing cadastral software started. The system was implemented during 2001. The new solution of the Information System of the Cadastre creates conditions for a more efficient exploitation of cadastral data, improves data security and enables remote access by Internet for competent users.

7. ENHANCED CADASTRAL SYSTEM

During 2001 the *“Enhanced Information System of the Cadastre of Real Estates”* was **implemented**. The new Enhanced Cadastral Information System (Enhanced Cadastre) means not only quite new complex cadastral software, but first of all a higher level of cooperation among parts of state administration and full use of existing communication possibilities to improve access for clients. The Enhanced Cadastre is a **key part of wider Information System of State Administration**, which is being developed.

Client/server architecture has been chosen. Local databases at cadastral offices are linked with a central database by WAN. Updating the central database is based on real-time replications from the local databases. The central database serves as the only point for access to cadastral information via Internet and the point of the data exchange with the other ministries. Written and graphical data of the Cadastre are fully integrated and stored in relational database environment. Both central and local levels use uniform application software environment, based on Oracle and Bentley. The security of system is at very high level. The Enhanced Cadastre data fully comply with the National Data Standards.

The new system was thoroughly tested during 2000 and it was implemented in 2001 according to a detailed schedule (including training of staff, software installation, migration of data, limited operation, filling up central database with data, full operation). The whole process was extremely difficult for Cadastral Offices because all mistakes or irregularities in data had to be removed.

Since the new system cooperates with the Central Register of Citizens and the Central Register of Economic Subjects (to identify owners and any change in postal addresses), government order No 111/2001 on this cooperation has come into effect.

8. REMOTE ACCESS TO CADASTRAL DATA

Remote access to cadastral data (both descriptive and graphic) was a part of the solution of the new cadastral software and was started in 2001. It enables to “competent users” right of access to Central Database, which replicates data of local databases within minutes. The security of the Central Database is ensured by a firewall. The data are provided for reading only. Clients must be registered on base of a contract with the Central Database and deposit an initial payment before using this service. Main clients are Courts, public administration offices, municipalities, banks, lawyers, surveyors, valuers, and real-estate agents. Standardised services like searching for owners or parcels and standardised extracts from the database are available. At the end of 2001 more than one thousand clients were registered.

9. WHAT NEXT?

The main document for next development of the cadastre is a *Strategic Study* for the next decade approved at the end of 2000. Questions about on encrease of guaranties to owners and creditors, more effective involvement into land and building taxation, improved land administration, and better support of land market are are the main topic. Improved legislation and higher level of management (including human resources) is needed.

In present situation when the cadastre in a certain extent has to substitute some other poorly working (or missing) information systems of public administration should be changed. The content of the cadastre should be narrowed to information where cadastre has its full competencies and is able to maintaine the data reliably (spatial data of parcels, registration of rights, taxation data). Remaining data should be handed over to ministries within their competencies.

Present states of information technologies enables to create a *Distributed DB Network of Public Administration*, where:

- Each part of state administration does its own job (within its own competencies) and keeps the information in its own DB with full responsibility.
- The databases are interconnected. United standards, formats and keys enable to exchange and complete existing data and to create new complex information according to actual need.
- The cadastre except its own data (about land and rights) provides the whole system with unified spatial data for all the databases.
- The information kept in databases is very carefully selected according to its signification, reliability, real needs, cost and benefit ratio.

Easy access to data for everybody, multiple use of data once captured, clear responsibility and legal validity of data kept, and possibility to build and extend the system step by step, may increase the efficiency, minimise the cost and create better conditions for cost recovery

(within the whole IS). The priority should be given to basic registers of the whole System such as the Register of Cadastre, Register of Citizens, Register of Economic Subjects, Register of Taxes, Register of Environment, etc.

The cadastre as a general provider of spatial data for the whole IS gains on importance. In order to profit of this opportunity it is necessary to conclude agreements with different ministries about sharing the data, standardisation and close co-operation.

The first step to reach this very ambitious goal has been made and the present cadastre co-operates with the register of citizens and the register of economic subjects. The next step prepared is to involve the register of taxes.

10. CONCLUSION

The solution of the Cadastre, integrating Land Cadastre and Land Registry into one instrument - „Legal Cadastre“ - administered by surveying authorities, has withstood the test of time. The making decision about entry into the cadastre by survey authorities according to the Public Administration Act (instead of decision of the Court) in connection with the possibility to appeal to the independent Court, is simple and proved to be much more quicker, more effective. Taking sufficient care of the rights of persons is sufficiently guaranteed. The Legal Cadaster also substantially simplifies the dealing with complicated technicalities of further development of the cadastre system.

After ten years of the cadastral reform it is possible to state:

- The new cadastre works reliably and has even withstood the severe test of massive restitution and privatisation.
- The cadastral legislation has proved to be relatively good and is gradually, improved on the base of experience and new challenges of information technology.
- The cadastral offices are equipped with local databases and are connected to the Central Database by WAN.
- The cadastral offices are equipped with qualified personnel being able to cope even with the tasks of future development. There is the conception of continuous continuing professional development and training of the personnel.
- The long-term cadastral conception approved by the Government is gradually fulfilled (both tasks and conditions needed, including financing).
- The descriptive cadastral data are fully digitised (1998).
- The digitisation of cadastral map is in progress (more than 20% completed).

- A completely new cadastral software has been tested and implemented (2001).
- Remote access to cadastral data opens new possibilities for future development (2001).
- First steps leading to establishing wider Public Administration IS (land management system) have been made.

Thanks to the international co-operation within the PHARE Program, to the Assistance of the Swiss Government and also thanks to other governmental programs and grants, it was possible to accelerate the whole project considerably. It seems that all we need now is some twenty years of political and economical stability.

REFERENCES

- CUZK**, 1994. Koncepcie digitalizace katastru nemovitostí (The Conception of Digitisation of the Cadastre). Zpravodaj CUZK, 1994(2): 2-6. *In Czech.*
- Pesl I.**, 1994. The Re-establishment of the Land Cadastre in the Czech Republic. Paper of UN-workshop: Data Processing in Cadastre, Vienna, 26-28 Sept. 1994.
- Pesl I., Rydval J.**, 1995. The Privatisation and Restitution Process in the Czech Republic. International Symposium of the FIG Commission VII, VIII and IX, Berlin, 23 - 25 May 1995, 360 p.
- Pesl I.**, 1995. The Cadastral Legislation in the Czech Republic. Paper of UN-workshop, Jürmala, 25 - 27 Sept. 1995.
- Pesl I.**, 1996. The Private Sector and Land Management - a Perspective from the Czech Republic. Proceedings of FIG seminar: Land Management in the Process of Transition, Budapest, 18 June 1996, p. 73-79.
- Pesl I.**, 1998. Five Years of the Cadastral Reform in the Czech Republic. XXI FIG International Congress, Commission 7 Cadastre and Land Management, Brighton 1998, 793 p.
- Pesl I.** 1999. Some Provisional Arrangements in the Czech Cadastre. Proceedings of International Conference on the Development and Maintenance of Property Rights, Vienna, 26 - 27 May, 1999.
- Pesl I.**, 1999. Registration of Ownership to Apartments in the Czech Republic. Proceedings of UN ECE MOLA workshop on Managing and Developing Effective Land Registration and Cadastral Services, London, September 23-24, 1999.
- Pesl I.** 2000. The Cadastral Reform in the Czech Republic. Proceedings of FIG Working Week Prague 2000.
- Slaboch, V.** 2000: Herstellung der digitalen Katasterkarten. XVII. Fachtagung der Katastralverwaltungen, Prag, 3. April 2000.

BIOGRAPHICAL NOTES

Dipl.-Ing. Ivan Pesl born in 1944. After graduating from the Technical University in Prague, Civil Engineering Faculty (surveying and mapping) in 1966 he worked on many posts in Cadastral Offices. Post-graduate studies of geodesy at the Technical University Prague during

years 1973 –1975. In 1980 he was given the authorisation in surveying for cadastre and civil engineering. His activities within the Czech Union of Surveyors and Cartographers in the field of the cadastre are documented by many papers and articles in professional journals. At the beginning of the cadastral reform in 1993 he was a head of newly established Cadastral Department of the Czech Office for Surveying, Mapping and Cadastre. In present time he is a head of the Surveying and Cadastral Inspectorate in Opava and a national delegate to the FIG Commission 7.

Dipl.-Ing. Vaclav Slaboch, Ph.D., Director of the Research Institute for Geodesy, Topography and Cartography, member of the Presidium of the Czech Union of Surveyors and Cartographers and Speaker of the Czech Committee for FIG. Studied geodetic surveying at the Czech Technical University in Prague, worked for some time with Fairey Surveys Ltd., in the U.K and later in the Research Institute for Geodesy, Topography and Cartography in Prague. In 1979 recruited as a consultant for a UNDP project in Guinea, West Africa, and recently for the Government of Malta. Chairman of FIG WG 5.1 Quality Assurance. Quality Control and Standards, member of the CERCO WG on Quality, member of the CLGE standing committee and teacher of Engineering Surveying at the Department of Special Geodesy of the Czech Technical University in Prague.