
THE SETTING UP OF THE BUILDINGS CENTRAL DATABASE

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Abstract

The main objectives and goals of the setting up of the Buildings Central Database are presented in this paper. Database contents and procedural aspects of the setting up of the Buildings Central Database are described, as well as the prototype of the intranet program solution enabling the connection of branch offices with the Main Office of the Surveying and Mapping Authority of the Republic of Slovenia.

Keywords: *buildings, central database, geodetic workshop, real estate, registers*

1 INTRODUCTION

The Surveying and Mapping Authority of the Republic of Slovenia is preparing a Bill on the Registration of Real Estate, State Boundary and Spatial Units – first discussion, materials for interagency harmonization with the ministries and other government bodies. Among other issues, the Law will also regulate real estate registration. Real estate registration includes the setting up, the managing and the updating of the Land Cadastre and the Buildings Cadastre for the entire territory of the Republic of Slovenia. It has been estimated that there are around 1 200 000 buildings (The count for the photogrammetric acquisition of buildings was performed by the Surveying and Mapping Authority of the Republic of Slovenia) and 650 000 apartments in Slovenia. However, a unified collection of data on buildings and parts of buildings forming the base for titles has not been produced yet. Title registration is the foundation for securing of real estate transactions as well as for real estate taxation. Therefore, a collection of data on buildings and parts of buildings needs to be set up.

In the recent years, many activities were performed in the field of the setting up of data on buildings and parts of buildings. In 1994, a Buildings Cadastre project was implemented – Directions for estimated operations. The project did not deal only with the contents and the procedures related to the Buildings Cadastre – as the target data collection should be named, but also with information and procedural linking with the Land Cadastre. The Buildings Cadastre was defined as a technical

and administrative register on buildings and parts of buildings. Data and procedural models were adjusted to meet this definition. In 1996 the project named Operation Design of the Prototype IT Solution for Buildings Register Management. This project defined the Buildings Register as a technical and not an administrative collection of data on buildings which should be the intermediate step on the way to the setting up of the Buildings Cadastre.

Although no legislation was not adopted, the Surveying and Mapping Authority of the Republic of Slovenia continued with the preparation of procedures for the acquisition and updating data on buildings. They also started to prepare application prototypes for supporting the operations of the Buildings Central Database because legislative provisions will have to be implemented in a relatively short period of time. In 1998 the procedures for the updating of the Buildings Register were dealt with in detail, regarding the Register as a technical data collection. It was dealt with Buildings Register updating procedures which will be implemented at branch offices of the Surveying and Mapping Authority of the Republic of Slovenia. The content of documentation and its keeping was defined. At the same time, field acquisition of data on buildings was started. The photogrammetric acquisition of building contour lines was also started. These contour lines will represent the location part of the Buildings Central Database. By the end of 1998 the Surveying and Mapping Authority of the Republic of Slovenia started the project »The Setting Up of the Buildings Central Database Prototype«, which is due to end in October, 1999. The term Buildings Register was replaced with the term Buildings Central Database (CB STAVBE – Slov. for buildings central database) when it was still defined as a technical data collection. The fundamental assumption in planning this project was that not local databases on buildings will be set up at individual branch offices of regional geodetic administrations followed by the setting up of a central database on buildings, as this was the case with the Land Cadastre, but that a central database on buildings will be set up. All organization units making part of the Surveying and Mapping Authority of the Republic of Slovenia – Main Office, Regional Geodetic Administrations and Branch Offices – will be authorized to browse and use data, as well as update them within framework of this database.

2 THE PROJECT THE SETTING UP OF THE BUILDINGS CENTRAL DATABASE PROTOTYPE

The project The Setting Up of the Buildings Central Database Prototype is implemented under the supervision of the Surveying and Mapping Authority of the Republic of Slovenia and the Government Centre of the Republic of Slovenia for Informatics. The project is managed in accordance with the standards for project management in state administration. The purpose of the project is the setting up of digital database on buildings and the production of a software package prototype meeting the needs prescribed by legislation which is under preparation: Law on Geodetic Activity, the Bill on the Registration of Real Estate, State Boundary and Spatial Units – the First Discussion, Materials for Interagency Harmonization with the Ministries and Other Government Bodies; the Law on Real Estate Tax. The legal framework for the setting up of the buildings register is also represented by the resolutions of the Government of the Republic of Slovenia on real estate registration modernization.

3 BUILDINGS CENTRAL DATABASE

The Buildings Central Database is a database of location and attribute data on buildings for the entire country. The database will be updated on a regular basis. It enables the updating of data on buildings on the basis of original data, direct access and the use of data, the linking with other related databases, the protection of data, as well as the adequate data access authorization. The Buildings Central Database includes attribute and location data. Beside valid data on buildings it also contains the history of data on buildings which enables the overview over a random time-section, data on procedures – setup, maintenance and issuing data, and data on areas of building acquisition – the graphic layer of the spatial extent of mass setup and updating procedures. The Buildings Central Database is in active and passive connection with other databases. The active connection is set with databases directly related in terms of their content to the operation of the Buildings Database (Land Cadastre data and those from the Register of Spatial Units). On the other hand, the passive connection is established with databases enabling an easier use and updating of the Buildings Central Database (digital orthophoto, basic topographic map at scale 1 : 5,000, Register of Geographic Names).

The contents of the Buildings Central Database is presented with the global entity model in Figure 1:

Basic entity model of the Buildings Central Database

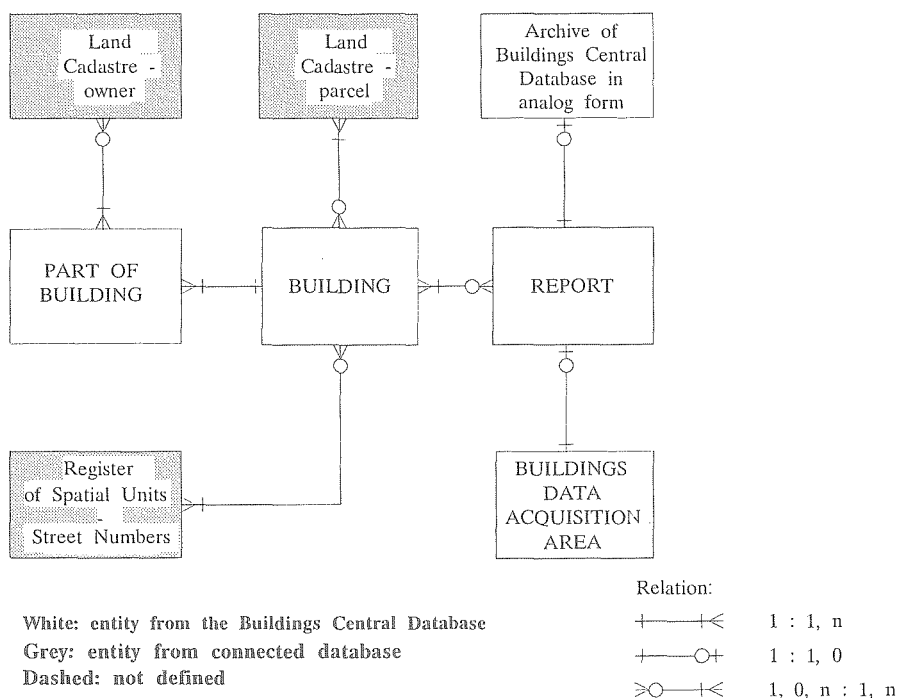


Figure 1

The Buildings Central Database includes location and attributive data and the history of data on buildings. The uniform building ID is the SID – building identifier, uniformly defined for each building in the country. Other data on buildings include: number of building – descriptive identifier, kept within the cadastral area, number of floors, ground floor area, total number of floors, eaves height, ridge height, foundations height, year of construction/restoration, centroid x, centroid y, sketch number, acquisition date and surfaces according to their use. The Buildings Central Database includes data on the set up and updating procedures as well as on the issuing of data from the base. The Application is also linked with the analog archive and the graphic layer of areas of mass building data acquisition. The model allows a possible expansion with data on parts of buildings. The expansion may also include data on the owners and the users of parts of buildings.

The Buildings Central Database is linked with the Land Cadastre through the cadastral area number and the parcel number. However, the house number identifier is used to link the Buildings Central Database with the Register of Spatial Units. The purpose of the connection of the Buildings Central Database with the Land Cadastre and the Register of Spatial Units is twofold:

- The Buildings Central Database takes over the data on the parcel (parcels) on which the building lies, and the data on house numbers on the building – the latter is the actual address of the building;
- The registers are related in terms of procedures (at first setup and updating), mainly with the purpose to ensure an optimal harmonization of data in terms of their content.

4 SETUP AND UPDATING PROCEDURES OF THE BUILDINGS CENTRAL DABASE

The updating of the Buildings Central Database will be performed at the Main Office of the Surveying and Mapping Authority of the Republic of Slovenia who are responsible for the implementation of mass acquisition of data on buildings, as well as at all branch offices of regional geodetic administrations. The latter will provide for the implementation of individual procedures on customer's or official request. Mass procedures are divided according to the method of acquisition:

- Photogrammetric acquisition (the unit of acquisition is one sheet of a basic topographic map at scale 1 : 5,00);
- Field acquisition (the unit of acquisition is a cadastral area);
- Takeover or linking with buildings data from other registers (e.g. with local topographic databases).

Photogrammetric acquisition is used for the setting up of the location part of the Buildings Central Database and at a later stage for the implementation of regular revisions. The results of the photogrammetric acquisition of data on buildings are also used in the topographic database of higher accuracy (TOPO5). The photogrammetric acquisition is supplemented with the field identification of buildings which acquires those building attributes that cannot be interpreted from aerial photographs and established with standard surveying methods without entering in the building itself. Individual procedures implemented at regional geodetic administrations and their branch offices will ensure a constant updating of the

Buildings Central Database. Basically, individual updating procedures of the Buildings Central Database can be implemented in three different way: updating of data on buildings only, updating of data on buildings as well as data in other registers – Land Cadastre or Register of Spatial Units, procedures for solving customer complaints.

The Buildings Central Database includes the report number in accordance with the classification plan of document numbering. This report number appears in the form as follows:

903KK – NNNNN/LLLL,

Individual designations carry the meaning as follows:

903 real estate register,

KK 32 – changes based on applications, 33 – complaints, objections, claims,
 34 – adopted changes, 35 – applications for issuance of data

NNNNN application serial number within the classification in the current year,

LLLL current year.

The procedures in the Buildings Central Database are defined in the procedure catalogue below:

code procedure

01 Setting up the Buildings Central Database

02 Updating the Buildings Central Database under identical conditions as the
 setting up

03 Change based upon customer's request

04 Acquisition of data on the basis of Land Cadastre data

05 Acquisition of data on the basis of the Register of Spatial Units

06 Data takeover from other registers in a mass procedure

07 Customer's complaint

08 Data issuance.

The report number (subject) is the procedure identification number and at the same time the documentation number created during the updating procedure. The documentation on the updating of buildings data are archived in a separate archive. Provided that the updating procedure is implemented simultaneously with or on the basis of a change in the Land Cadastre – i.e. an object change – a joint documentation is produced for both the Land Cadastre and the Buildings Central Database. This documentation is assigned the Land Cadastre procedure number – IDPOS and is archived in the Land Cadastre Archive. In this way a simple and economical documentation production has been ensured, for the existing documentation produced by the geodetic administration for the purposes of the Land Cadastre is supplemented with buildings data. The advantage also lies in the fact that documents in the archive need not be reduplicated despite the fact they are in relation with two different registers.

5 APPLICATION SUPPORT TO THE OPERATION OF THE BUILDINGS CENTRAL DATABASE

For the purposes of application support to the operation of the Buildings Central Database an application was produced based on the intranet technology. This application enables the setting up and the updating of the database as well as data use at the Main Office of the Surveying and Mapping Authority of the Republic of Slovenia (mass procedures) and at the 46 branch offices of regional geodetic administrations (individual procedures). The basic functions of the application are as follows:

- ❑ Reviewing, inquiring and searching in the graphic as well as attributive part of the database;
- ❑ Setting up and updating of the database – mass setup procedures, updating under identical conditions as the setting up and the takeover of data from other registers (only at the Main Office of the Surveying and Mapping Authority of the Republic of Slovenia);
- ❑ The setting up and the updating of the database – individual change procedures based on customer's request, data acquisition on the basis of Land Cadastre data, data acquisition on the basis of data from the Register of Spatial Units, customer's complaint (only at the branch offices of regional geodetic administrations);
- ❑ Issuance of data to customers and mass data issuance;
- ❑ Statistics calculation;
- ❑ System administration.

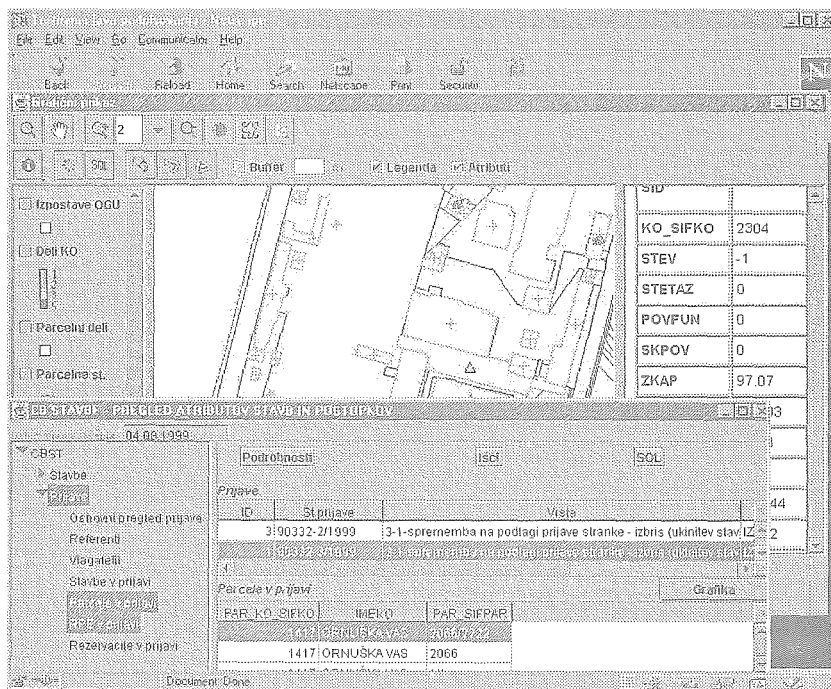


Figure 2: User-interface of the intranet application prototype

From the technological point of view, the Buildings Central Database is a three-level architecture. It consists of an intranet client accessing the application server through the national HCOM network and indirectly the database. The Buildings Central Database is located at the Main Office of the Surveying and Mapping Authority of the Republic of Slovenia. It operates in the Oracle environment and the Spatial Database Engine (SDE) used for keeping graphic data. The form of the user-interface is shown in figure 2. The user needs one of the standard Internet browsers. When the user starts work a Java program is transferred into the users browser displaying data the application server is preparing. The technological solutions for the Buildings Central Database are presented in detail in the paper titled Information Technology Support to Real Estate Central Databases (Fajfar, 1999).

6 FURTHER DEVELOPMENT OF THE BUILDINGS DATA SYSTEM

In the years to come, the development of buildings data system will be oriented towards the harmonization of the Buildings Central Database with the prescribed requirements of the new legislation. The Law on the Registration of Real Estate, State Boundary and Spatial Units will require a transition from a technical onto an administrative register (Buildings Cadastre). The Buildings Central Database will also have to be neared to similar registers in terms of content and procedures (Land Cadastre, Register of Spatial Units) with the long-term purpose to merge them in a single real estate register. The proposed intervention law prescribing the registration of strata titles into the Land Register will require the Buildings Central Database be supplemented with parts of buildings and titles related to these. Database of holders of title over parts of buildings will be made uniform in this way with the data from the parcel owners database located at the Land Cadastre. This due to the fact that all parcel owners need to be registered as co-owners of building lots. Since the prescribed procedure will not enable the registration of parts of buildings before the allotment of the building lot, for the procedures will be implemented simultaneously, the basic requirement for the harmonization of data on owners in both registers has already been set. This relation will form a pattern for a unification of real estate registers in terms of their content and procedures the long-term objective being the merging into a single real estate register.

7 CONCLUSION

The increasing need for a technical and also an administrative register of buildings has prompted the Surveying and Mapping Authority of the Republic of Slovenia to increase its engagement in the setting up of the Buildings Cadastre. The setting up of the Buildings Central Database is actually an intermediate step towards the creation of the Cadastre of Buildings. The setting up of the Buildings Central Database, which is of technical not administrative character, enabled the geodetic administration to cover the major part of its needs for a buildings data register. Beside applications within the geodetic administration, e.g. the direct use in the topographic database of higher accuracy, the buildings data register will enable local communities and other state bodies to produce and upgrade their own registers (register of building land, register of local community real estate, register of real estate belonging to individual state bodies, etc.).

The development of the buildings registration system dictate to requirements of the existing and future legislation, the needs of the users, general strategic guidelines of the Surveying and Mapping Authority of the Republic of Slovenia and the development of information technology offering a variety of possibilities. The project The Setting Up of the Buildings Central Database Prototype laid the foundations for a further development of real estate registration in Slovenia and also represents an innovation in the information sense for the latest intranet solutions have been successfully applied. We believe that through the development of real estate registration in the direction that was set, a merged real estate register will meet the exiting needs for real estate data in Slovenia.

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