A DATA BASE USED IN DIGITAL CADASTRAL MAPPING

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Zusammenfassung
An Hand eines digitalen photogrammetrischen Systems der Katasterkartenherstellung wurde eine Datenbasis, die die Speicherung, Entnahme und Erneuerung der Daten ermöglicht, aufgebaut. Die Datenbasis benützt das Socrate-System. Die Art der Beziehungen zwischen den Einheiten der Datenbasis berücksichtigend, entspricht diese den Problemen der Verwaltung der Katasterdaten-und informationen, so wie auch der künftigen Verwendung der Daten für verschiedene Verarbeitungen, wie z.B.: Flächenberechnungen, Bestimmung der optimalen Lösungen für die Grenzberichtigungen, Parzellierungen, Flurbereinigungen, Herstellung von abgeleiteten Karten. In Zukunft wird der Entwurf der Landesplanung, auf Grund der Katasterdaten-und informationen, mit Hilfe der Rechenanlage und einer automaten Kartieranlage möglich sein.

The carrying out of an operational system to process the map information required an efficient way to establish connections among them, allowing their storage and use in a simplified manner, aiming at digital cadastral mapping.
The digital photogrammetric system for cadastral mapping requires the design of a proper base special for keeping and managing digital cadastral data got in such a way.
This data base was so conceived that, besides the point coordinates and cadastral information, connections giving the graphical map aspect can be made, as well. Besides the input/output operations in/from the data base, the rediscover operations were also applied for, in order to update or retrieve data partly.
The data base for digital cadastral map (BDPCD)was developed using SOCRATE system for data base management (SGBD), in an improved version.
Requirements, which the data base has been imposed, were solved using a logical designing of connections among its entities (Figure 1).
PUNCTG entity contains the position elements as X, Y, Z coordinates of the points obtained by analytical photogrammetric plotting, SLCARTO entity keeps the code multitudes for all conventional signs necessary in a complete compilation of the required maps, and MODEL entity comprises addresses connecting the cartographic code to coordinate information, emphasizing the cartographic model. Addresses of MODEL entity gives the user the possibility to interfere all BDPCD data.
BDPCD allows the work with one or more coordinate systems (Figure 2).
Although BDPCD was developed to store the contents of the digital cadastral maps, compiled using photogrammetric methods, we can also input other data into the base.

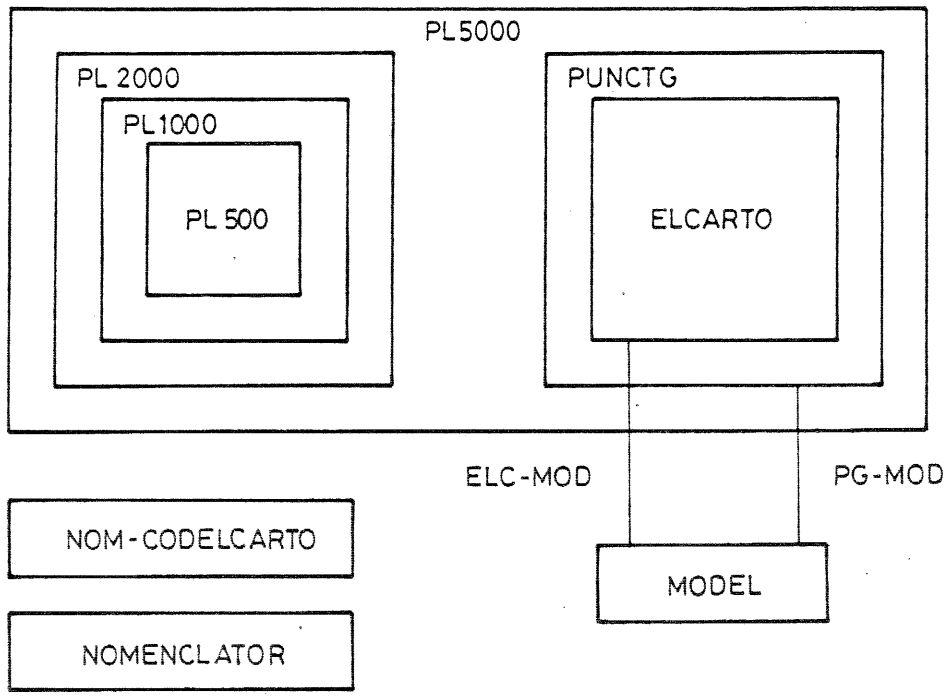


Figure 1. General diagram of BDPCD structure

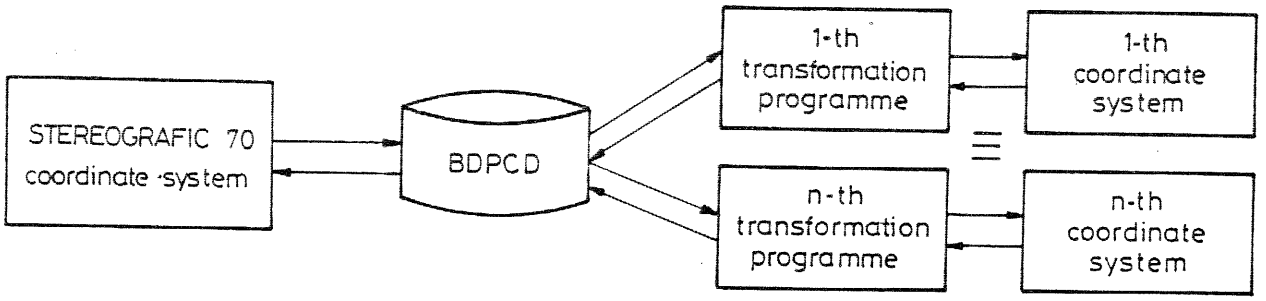


Figure 2. BDPCD general diagram with one coordinate system or more coordinate systems

Position elements showing geometric configuration of a cadastral map can be structured, according to units proper to the map sheet, at the smallest scale. The map sheet structure in BDPCD was made, employing the used nomenclature diagram (Figure 3).

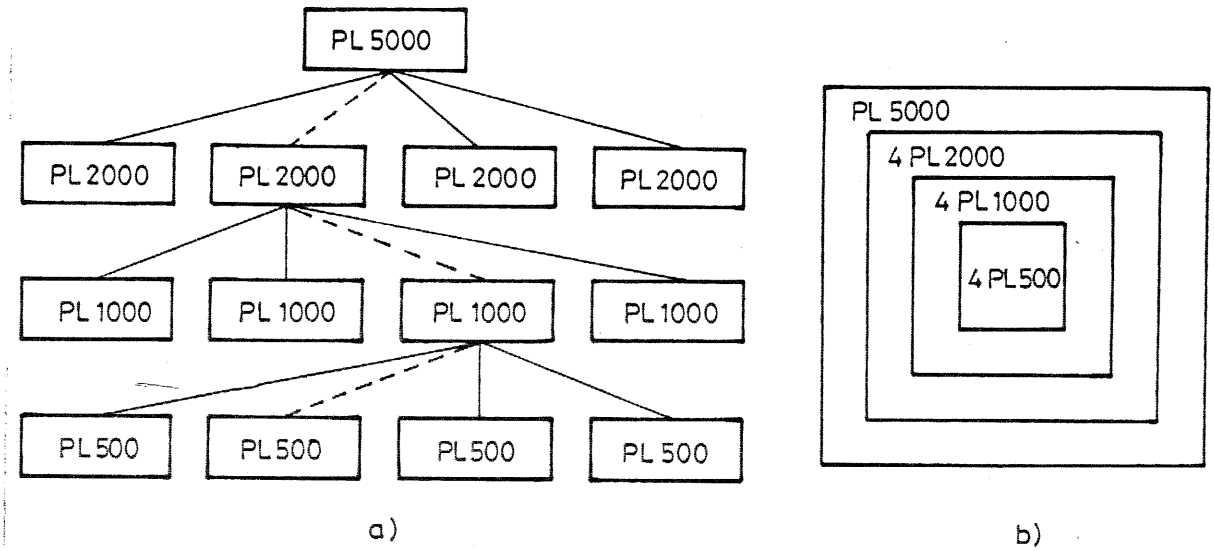


Figure 3. Various scale map structures according to Gauss division diagram on nomenclature
a) for conversational interrogative procedure
b) for batch interrogative procedure

Data load and retrieval are possible owing to their grouping into entities PL.5000, PL.2000, PL.1000, PL.500. PL.5000 basic entity subordinates the other above mentioned entities, corresponding to smaller scales. Characteristics grouped in PL.2000 - PL. 500 entities are: nomenclature, map origin, projection coordinate system, a.s.o.
As the cartographic code is the carrier of the characteristics related to the classification and graphical representation of the planimetric map content information, it gives the data base the possibility to manage by itself without any other operation.
If a planimetric information within a stored map contents is chosen in a data base according to the cartographic code meaning, its selection corresponding to a map at a certain scale should be made, using the generalization factor (Figure 4).

ZONE I	ZONE II	ZONE III	ZONE IV
Cartographic meaning C1, C2	Graphical characteristic C3, C4	Some auxiliary element retrieval C5, C6	Generalization factor C7, C8

Figure 4. Decision zones of the cartographic code

Each generalization factor specifies a conventional cartographic sign class having well - established features. Grouping the generalization factor, as against the scale criterion allows the selection of a conventional cartographic sign class arrangement, proper to the given scale.
BDPCD is so - designed that it can store a limited number of PL.5000 entities totally independent each to the other ; in this way, we can interfere into the base using the map origin as an access key.
The map origin delivery ensures the access into the interest subzone, out of which we can retrieve all or only a part of information related to the respective cadastral map contents (Figure 5).

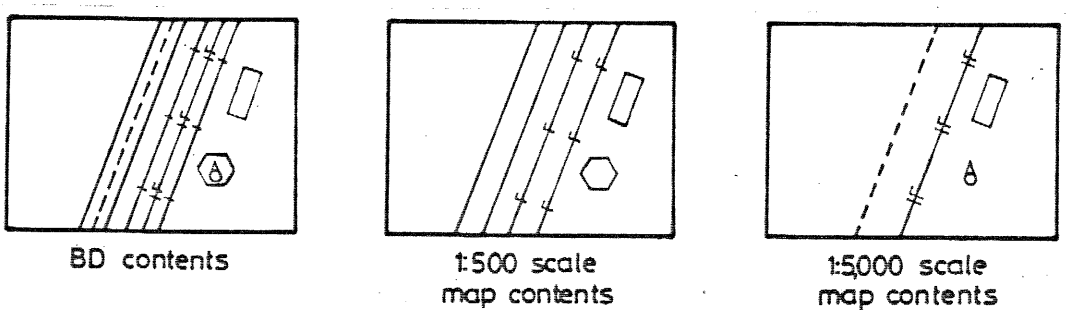
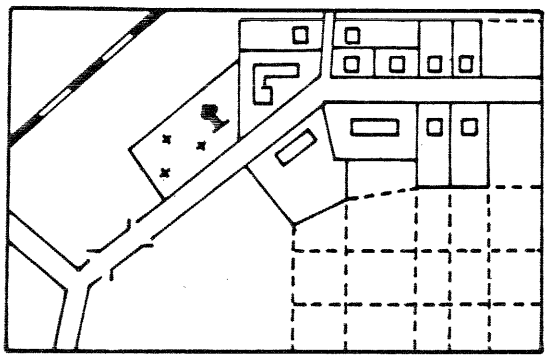
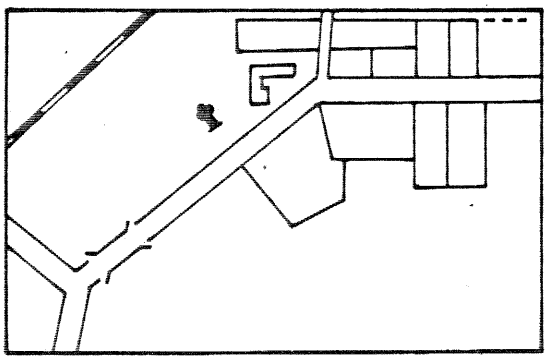


Figure 5. Some possibilities for the differential planimetric information retrieval from BD, considering generalization factor

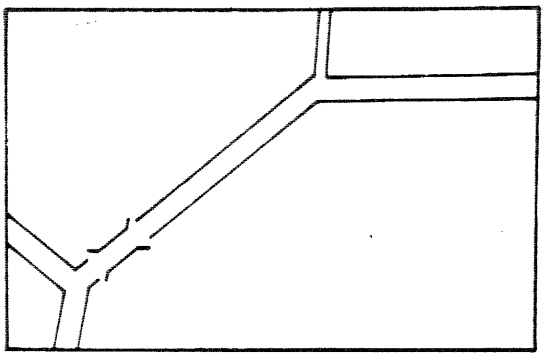
The conventional cartographic sign class identifications and their representations in the required map contents are made by giving the generalization factor, at request (Figure 6).
As BDPCD contains coordinates of points giving the geometric configuration of a cadastral map obtained during analytical plotting process, it enables to perform some special cadastral works such as: surface computations, boundary rectification , lotting and reallocation of land.
Considering the way in which connections among entities of the data base are made, we can perform data updating, that is the stored map updating, from the cartographic standpoint.
The access to information of the data base can be made either in a batch or conversational way, giving the possibility to be employed by any user, only observation of the base identifiers and the access parole should be provided.



The whole content retrieval



Retrieval of the main roads public buildings and private lot boundaries



Road retrievals

Figure 6. Possibilities for the differential planimetric information retrieval from a map contents

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