KATOZOR

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Abstract

Katozor is an application for the updating of land information and other spatial databases. All the procedures and processes for the transition from the analogous to the digital cadastral map have been incorporated in that application, as well as further updating and upgrading of spatial databases. It contains tools for raster georeferencing, data modelling, vectorization, topological and GIS processing and the system for updating of temporal data over spatial data. Katozor is an independent application which has been completely developed by using Microsoft Visual C++ developmental tool, relying upon the usage of commercial databases of Microsoft and Oracle.

The reason for its creation

In regard to the available human and material resources in the cadastre, the original desire of the author was to develop an application which would in a simple and economical way lead the Croatian cadastre into the 21st century and initiate the process of spatial data digitizing, with the following primar goals:
- fast and urgent protection of cadastral maps from further deterioration
- simplicity of the application usage, in accordance with human potentials and cadastre technical equipment
- increase in work efficiency when updating land information databases and providing services
- retargeting investment of financial means for the digitizing of spatial data rather than providing expensive commercial applications

After achieving its primar goals the further development has been continued up to the present time, and in the course of that process all incorporated modules have been improved and new possibilities have been added to the application. Thus 'Katozor' represents today a modern application which is capable of meeting all the cadastre requirements and it is being further developed in the direction of even a better application over the cadastre spatial database, as well as its application on other areas. Since some other highly developed countries have also developed or supported the development of programmes of specific designs, mostly because commercial programmes are sometimes too extensive and insufficiently specialized and too expensive, so has State Geodetic Administration supported 'Katozor' since its beginning.
**Technical data**

Development tool: Microsoft Visual C++

Supported OS: Microsoft Windows NT4/2000/XP

Supported databases: MS Access (ODBC – Open database connectivity) or Oracle 8/9 (OCI – Oracle call interface)

System requirements: CPU 1.6GHz, RAM 512MB, HDD 20GB, (minimum) 1024x768 on 17 inch display

System requirements: CPU 2.6GHz, RAM 1024MB, HDD 60GB, (recommended) 1280x1024 on 19 inch display

Input/output file formats: DXF (ver. 12 – 2004) TIFF, BMP (1 bit, 8 bit color, 8 bit grayscale) TFW, BPW (world files)

![Raster georeferencing](image)

fig. 1: raster georeferencing
Description of potentialities

Raster management:
- raster fine rotation tool
- raster georeferencing along the co-ordinate network
- raster georeferencing along the plan framework
- report generator on pre and post results of the georeferencing procedure
- tool for the removal of the surplus on margins (crop)
- multi-layered transparent raster survey
- import and export of geocoded rasters using 'world file' format

Data modelling and vectorization:
- tools for working with basic graphic elements: lines, ortho-lines, geodetic reference points, symbols, text
- tools for precise measurement of points according to the following methods:
  a. ordinate methods
  b. polar survey
  c. intersection
  d. direct co-ordinates input
• tools for working with the group of elements (block) with the possibility of scaling and rotating
• tools for working with specialized layers for cadastre parcels and addresses
• snap, autoscroll and pan options
• import and export of vector data using DXF file format
• tools for lines/straight lines section (trim and extend)

Document management and security

• systematical recording of all changes over spatial data with the possibility of temporal changes survey over cadastral parcels
• installed management with users’ rights for access and change of the land information database
• automatic locking and denial of access to data that are momentarily being changed

Fig. 3: parcel information
fig. 4: multilayer view, vectors (blue) and raster transparency (yellow)

Topological processing
- detection of double and extremely short lines
- detection of unclosed lines
- detection of line section without the breaking point
- detection of mistakes and differences between spatial and official databases
- automatic creation of cadastre parcel regions
- region analysis and the control of congruence of official and technical surfaces

GIS
- dynamic linkage of spatial databases with other databases
- creation of complex queries on data and their graphic and tabular representation
- graphic representation of data arranged in groups and classes
fig. 5: Region analysis and the control of congruence of official and tech. surfaces
Cadastre application

The land-registry office in Trogir, one of the host cities of this year’s GIS Odyssey has been the user of 'Katozor' for a number of years. As soon as it has been introduced all kinds of cadastral maps and the base state charts have been scanned and georeferenced. After that all parcel numbers were entered in the database, which enabled a fast search and positioning on the required parcel. This first phase of introduction lasted for 5-6 months and was performed exclusively by cadastral workers. The level and quality of services was increased right away, because the clients were promptly served the moment they got to the cadastre. Namely, when required by clients, the cadastre workers did the vectorization of the required cadastral parcel, as well as its surrounding parcels. With that approach, as well as by updating the land information by means of making changes, a digital cadastral plan has been gradually created. Later, in accordance with the possibilities, a systematic vectorization of the area where the greatest number of changes was made and which are of greatest importance for the local community was performed. Rasters are still used for other areas as bases for further processes of digitizing. Authorized geodetic offices and commercial companies can get the necessary data on a digital medium, and deliver the data in the same way for the purpose of the conduction of changes in the land information database.

For the whole area of the Land-registry of Trogir there are also entries in the spatial database about all the streets and house numbers of public, commercial and private objects.

Apart from Trogir land-registry office, the land information database is updated today with 'Katozor' by all the land-registry offices in Šibenik-Knin district and 15 land-registry offices in Bosnia and Hercegowina.
fig. 8: data arranged in groups and classes

**Plans for future development**

- coordination of the application with the international Open GIS standard
- creation of Internet solutions
- creation of solutions for other areas of application in the economy and state administration

**Bibliography**

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