GIS PROJECT CONSTANTA

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Abstract: *The paper presents the manner of execution and use of the program „GIS Constanta".*

Keywords: GIS, database, visualization, classifications, report, search.

1. Introduction

The execution of a Geographical Information System (GIS) implies operations of processing and conversion of data from an analog format to a digital format which allows the integration of these data in the spatial database. In this case the two components of the GIS are:

- *Spatial database* with the elements: territory borderline; incorporated area borderline; strip ground borderline; property borderline; plot borderline; roads; hydrography, toponymy.
- *Textual database* with the elements: owners, ownership documents, addreses.

A software application using the two databases assures the following functionalities: automatic localisation of land plot using the name of the owner or the number of the ownership document; insertion of elements associated to the land plot – ownership title or other scanned documents; displaying of data regarding the property unit localised: cadastrial number, plot number, category of use, land destination, measured surface, surface in documents, number and type of ownership documents, scanned image of the document, name of the owners and their addresses; the selection of a land plot on the digital map and the display of the information above; issue and printing of the property unit record and its sketch; printing of the development site plan of the land plot; update of the textual database.

2. Description of the application

2.1 Main menu

When the program is opened, in the menu bar one can find the following options:
- File
- PDF for compulsory purchase documents
- Classifications
- Reports
- Counselling
- Information

If the user is the administrator, then the menu has the option:

- Administration

2.1.1. File

In order to be able to work with GIS Project Constanta, the user needs *authentication*. The user name and the password must be typed in the dialogue case opened at the command: *File - open*. The press the button: "*Authentication*".

When selecting the option "*Exit*" in the submenu of the *File* option, a dialogue window appears with the option to exit the program.

2.1.2. PDF for compulsory purchase documents

The menu "***PDF for compulsory purchase documents***" was created for the user to visualize the scanned compulsory purchase documents in pdf format.

In the submenu of the button "*PDF for compulsory purchase documents*" there is the option*: PDF accessing for compulsory purchase document.*

When selecting the button one sees a dialogue window, and if a compulsory purchase decree is selected from the list and the button *PDF Display* is pressed, the printable document is displayed.

If the scanned PDF for the respective document does not exist, a warning message is displayed:

"*The file associated to Decree x does not exist*"

The OK button is selected and using the button on the left of the window is searched *Location PDF File* selecting the corresponding PDF, after which is pressed the button *Modify.*

2.1.3. Classifications

When selecting the button *"Classifications"* there are two options for displaying the existing classifications:

> **Classifications for artery types:**

Selecting the option *"Artery types"* the user may verify the abbreviations for the artery types, afterwards modifying where necessary or adding types of arteries with the corresponding abbreviations.

> **Classifications for types of compulsory purchase documents**:

When selecting the option *"Types of compulsory purchase documents"* in the submenu *"Classifications"* one can modify information regarding the *type of the selected compulsory purchase documents.*

2.1.4. Reports

When performing this selection, the existing reports regarding the following will be presented:

- Names of arteries presented in the compulsory purchase decrees that are not localised graphically;
- Properties compulsorily purchased by compulsory purchase decrees that are not localised graphically.

Thus, for accessing the ***Report for properties compulsorily purchased by compulsory purchase decrees that are not localised graphically:***

- choose from the submenu of button *"Reports"* – Report of compulsorily purchased land by unidentified decrees; command "*Start*"will be given;
- after selecting the button "*Start"*, the user must wait for the verification to be completed.

In this report a series of information will be received regarding the properties compulsorily purchased that cannot be found on the map: the name of the owners, Decree to which they belong, street, number, compulsory purchase number.
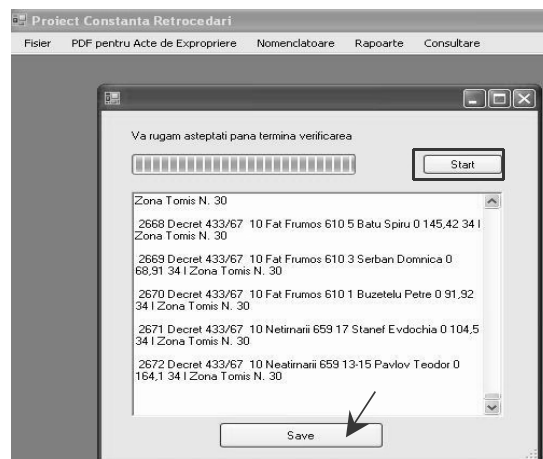
The same steps must be taken in the case of creating a ***Report for the unidentified streets.***

These reports can be saved in **.rtf** format (rich text format) by pressing the command *"Save".* The 2 files are saved in D:\SIG Retrocession Assistant.

2.1.5. Accessing

When selecting the button *"Accessing"* the following submenu will be displayed:
Arteries; Land Sketch; Compulsory purchase decrees; Property register; Maps; Nationalization decrees.

Irrespective of the criteria for accessing, the user can see all the information in the map provided that the zoom button is pressed until it appears; the mininum display scale for all information is 1:2000.

The information available is:

➢ Current arteries.
➢ Railway.
➢ Current Estates.
➢ Current Buildings.
➢ Current Post Numbers.
➢ Compulsorily Purchased Estates.
➢ Compulsorily Purchased Buildings.
➢ Post numbers of compulsorily purchased properties.
➢ Compulsorily Purchased Areas.
➢ State property estates.
➢ State property buildings.
➢ State property areas.
➢ Land Sketches.
➢ Classification of Maps from 1936 at scales: 1:500, 1:1000, 1:2000, 1:5000.
➢ Classification of Maps from 1997 at scales: 1:500, 1:2000.
➢ Classification of Maps from 1936 at scales: 1:500, 1:1000, 1:2000, 1:5000.
➢ Classification of Maps from 1997 at scales: 1:500, 1:2000.
➢ Administrative borderlines.

This information may appear/disappear as the user wishes by marking/unmarking the respective layer.

Also, on the map the current estates, constructions and post numbers are black. The compulsorily purchased estates and buildings with their post numbers (in the plans attached to the compulsory purchase decrees) are red. The estates and buildings in the property of the state with their post numbers (in the plans attached to the compulsory purchase decrees) are brown.

Information regarding the previous and current arteries, compulsorily purchased properties, land sketches corresponding to decrees, property registers and nationalization decrees can be searched.

2.1.5.1. Artery Accessing

In order to access information regarding current and previous arteries, the button *"Edit"* in the main menu of the section *Arteries* must be selected.

After this selection a dialogue window will appear with the options: ***Artery Search*** and ***Correspondence between the current arteries and the previous arteries***.

When selecting the button: *"Artery Search"* in the main menu of the dialogue window one can find the names of the arteries with their geographical location.

➢ When selecting the button "*Current name*" in the text window is inserted the current name of the artery in question. The porgram displays all arteries containing the characters typed in the window. The type of artery desired is selected (Bld., Alley, Street) with the correct denomination, and then it is localised graphically. The previous name of the artery above is also displayed.

➢ When selecting the button *"Previous name"*, in the text window is typed the previous name of the artery in question. The program will display the arteries containing the characters displayed in the window. This way, the user also receives the name of the artery corresponding to the one in question, in this case the previous artery with its current counterpart. (opposite of *"Current name"*)

Correspondence previous arteries - current arteries is executed when the previous artery *does not* have a current counterpart, thus this artery can be given a name.

This fact is known when the user receives a warning message regarding the status of the artery searched, eventually being asked if he desires to give a current name to the respective artery.

If the user wishes to give a name to the artery searched as a consequence of the message received, select the button "*Yes*" which will automatically open the window for Artery Accessing (previous arteries – current arteries).
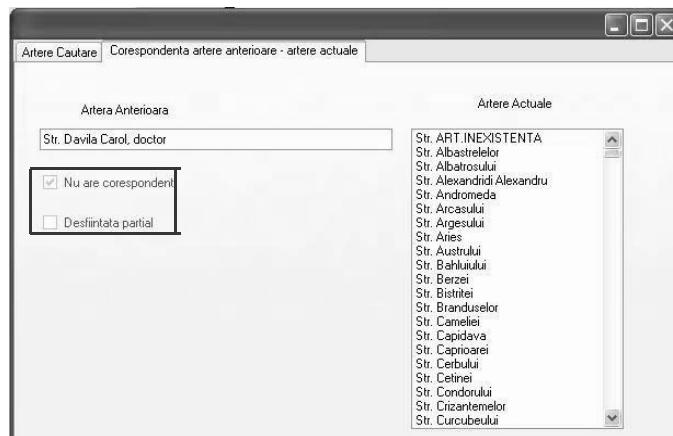
In this dialogue window, it is specified if: the previous artery *does not have a counterpart* or is *partially cancelled*.

In order to execute the correspondence of a previous artery with a current one, from the *Current arteries* chart will be selected the street that is to be counterpart for the previous artery.

Nevertheless, information regarding the arteries in Constanta can be found by direct inquiry on the map (the button *"Arteries"* is selected from the submenu of the button *"Accessing"* – main page of the program; the *"Select"* button in the chart on the top right will be selected with the mouse, this button facilitating the inquiry of the arteries directly on the map; "*double click*" on any artery and the user will receive information regarding the current and previous name of this artery in a chart situated at the bottom of the dialogue window).

2.1.5.2. Land Sketch Accessing

When selecting the button "*Land Sketches*" can be vizualised the 1936 Books of Land Sketches.

Thus every point recorded on the map represents the land sketch including the cadastrial plan. These plans are also found in Decree Accessing.

In order to open a land sketch:
➢ *Double click* on a point on the map;

➢ Or follow the command: ***Edit – Land Sketches – Search***. This command sends the user directly to the land sketch he is looking for. Here are searched the Land Sketches according to the Area and Quarters they belong to.

Choose the Area to which the Book with Land Sketches belongs and the corresponding Quarters. After the selection of the Quarters, the Land Sketch will be automatically displayed, without another subsequent command.
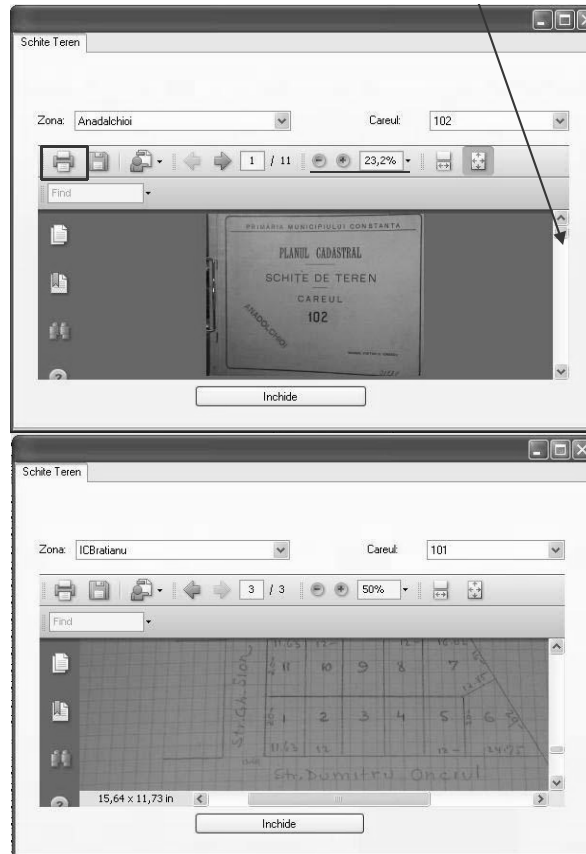
The Land sketches can be **printed** directly from this window. For an accurate vizualisation, there is the option *zoom* by "+" and "-" or selecting the desired zoom percent.

2.1.5.3. Accessing Property Decrees

The accessing of the Compulsory purchase decrees allows the user to visualize graphically the estates purchased compulsorily by Compulsory purchase decrees. This visualization is executed according to:

➢ The name of the owner of respective estate;
➢ Address compulsorily purchased estate;
➢ Decree and compulsory purchase number.

The program allows overlapping the layers of compulsorily purchased estate with the current situation of estates by marking or unmarking the layers in the chart on the right side of the dialogue window.

When opening the window for Decree Accessing, there is a chart with ***rolling bar*** for the display of the layer on the map. These layers can be opened or closed by ticking the *corresponding box* for each of them.

For accessing the Decrees, in order to find out information regarding the owners of land claimed, as well as information regarding land, access the button **Edit - Decrees – Search** in the menu **Decree Accessing.**

For facilitating the operations the following buttons can be found on the interactive map: *"Zoom in, Zoom out, Complete vizualisation, Move, Center selection"*. These commands help the user of the program interact with the map.

In order to find information related to a certain land plot claimed, regarding owners, the compulsorily purchased land plot post number and number of compulsory purchase, "Double Click" on the respective land plot.

In the previous image, a certain compulsorily purchased land plot was selected using the button "*Selection*".

At the bottom of the window was displayed information regarding owners at the address of the land compulsorily purchased and the surface of the purchased land in square meters.

If the following information is available:
➢ The name of owners;
➢ Complete address of the owners;
➢ Decree and compulsory purchase number of the land plots claimed, the program enables information search after *Owner name, Address, Decree and compulsory purchase number.*

2.1.5.4. Accessing Property Register

The Property Register enables search after: *Owner name, Quarter number and Address*.
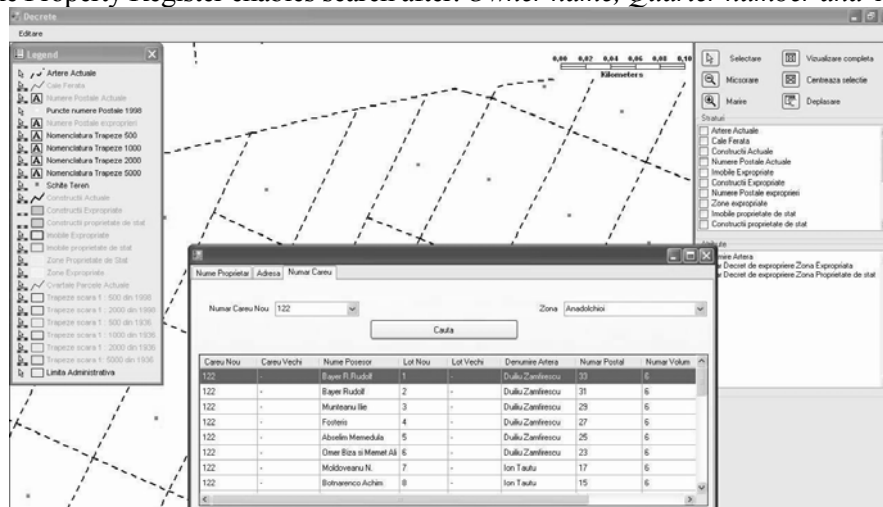
1. Accessing after the ***Name of the Owner***, according to the name searched, the application finds all owners with the same name (only one name – surname or forename, not entire name).

After typing the name in the text box "*Names of Owners*" press the button "*Search*". The application will display, following this search, all owners with the same name, the quarter where the land sketch is found, the street, post number etc.

Also, the .pdf image can be displayed.
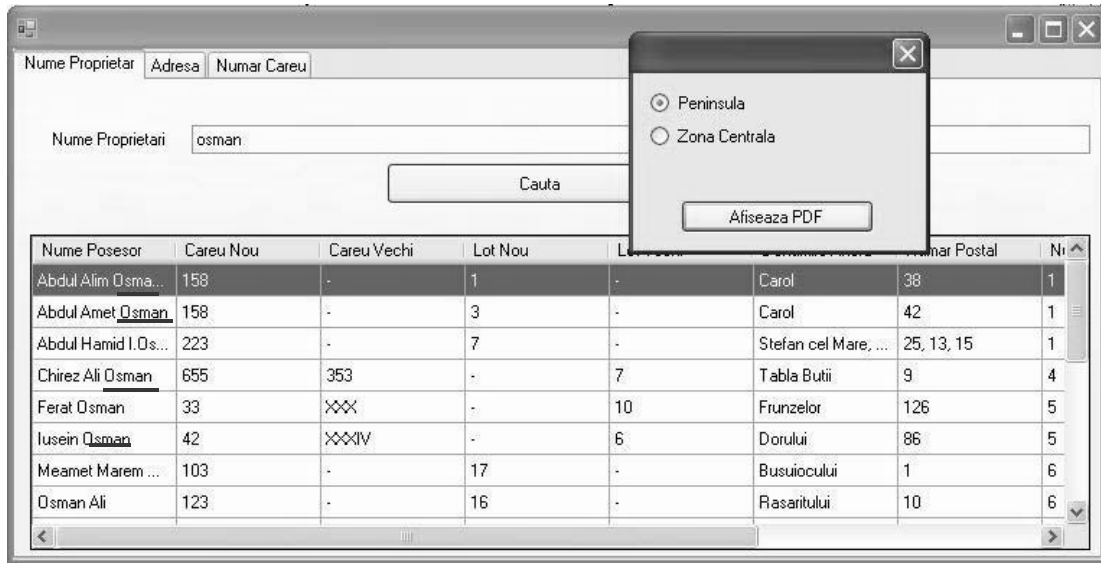
In the Property Register, *The Central Area and the Peninsula* are included as part of the Town.

In order to display the book with land sketches, the user must select one of the two areas.

The same for the areas *Unincorporated area Parcelarea Mavrodin*, *Unincorporated area Campul*, *Unincorporated area Parcelarea Barbulescu*, which, in the Property Register, are included in the *Unincorporated area.* In order to display The Book of Land Sketches, the user must select one of the 3 areas.

2. Accessing after ***Owner's Address***: the program will search after the address typed by the user.

The name of the street will be typed in the text box "*Name of address*" and the post number in the text box "*Post no.*", afterwards press the button "*Search*".

In this window will be displayed the owner resident at the respective address, post number, quarter where the land sketch is located.
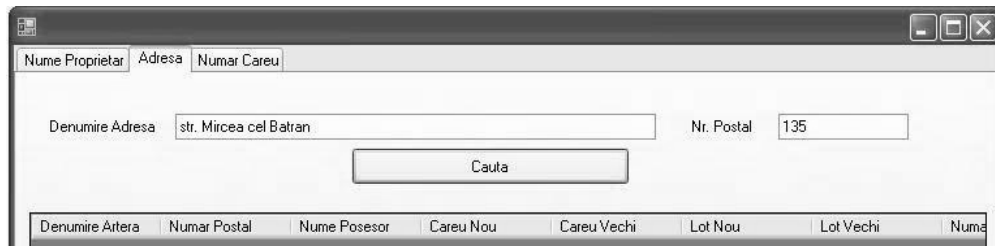
3. Accessing after **Quarter Number**: helped by a rolling bar, the user will choose the quarter and area to be searched. The program will display all owners of compulsorily purchased land located in the quarter and respective area.
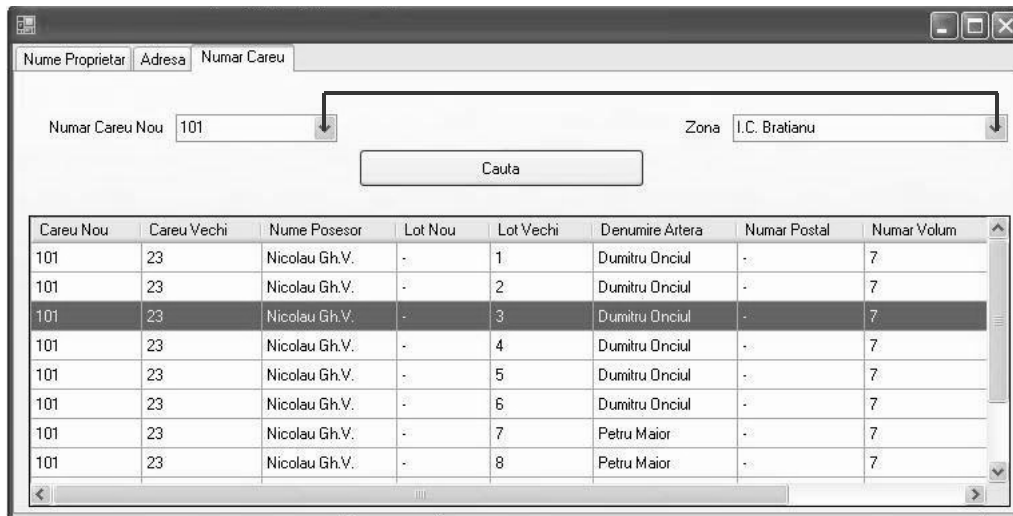
2.1.6. Accessing the Maps

This option allows the user to vizualise the trapezes with maps at different scales, from 1936 and 1997.

To have Maps displayed press the button: Edit – Maps.

Display maps from 1936

After this command appears the dialogue window presenting the types of maps, from 1936 or from 1997, at different scales. According to the desired scale, for viewing the Map press the button *Zoom* to display the classifications of the desired maps.

- **For 1936 Maps**, the following scales are available: 1:500, 1:1000, 1:2000 şi 1:5000. In order to view a map: tick the box for *1936 Map*, then choose the scale. Ticking the box for a certain scale, the existing maps will be displayed for the respective scale. Select the map the user is interested in viewing and press the button "*Display*".

- **For 1997 Maps**, the following scales are available: 1:500 şi 1:2000. In order to view a map tick the box for *1997 Map*, and the rest follows according to the above.
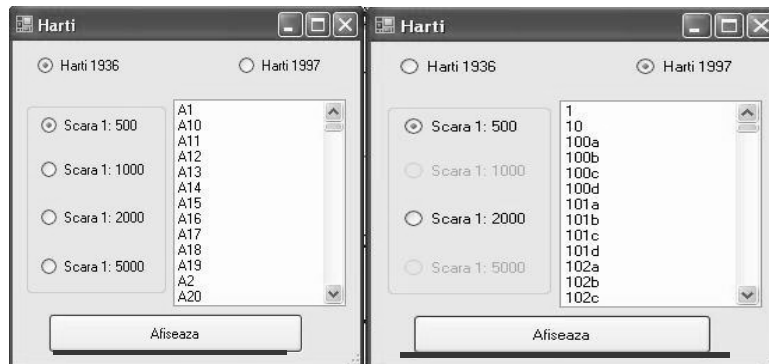
After pressing the button "*Display*", **the program will display the trapeze with the selected map in the foreground.**

If a new map is searched, the map previously displayed will automatically be deleted from the screen.
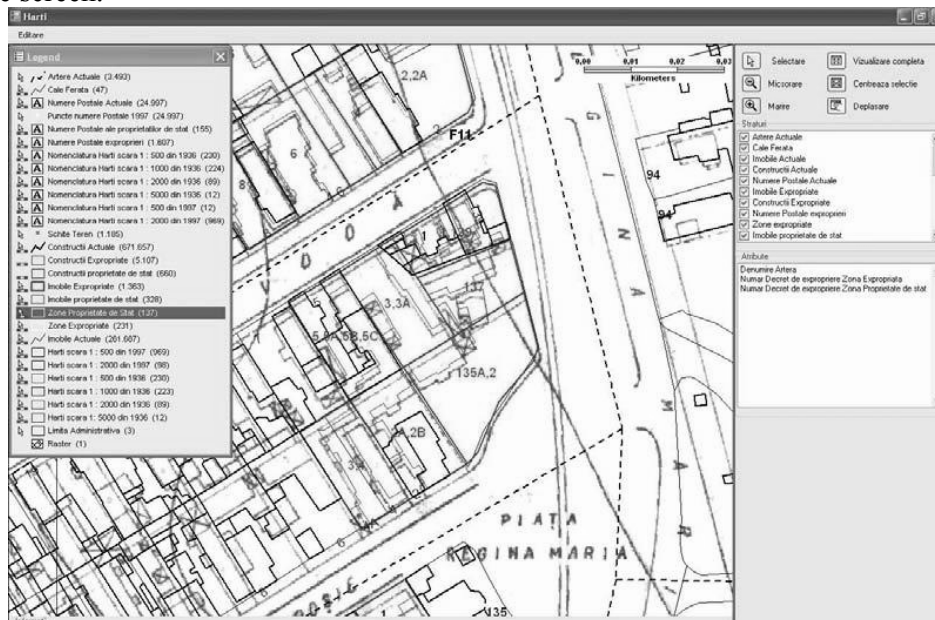
2.1.7. Accessing Nationalization Decrees

For accessing the Nationalization decrees, in the *Accessing* menu tick the submenu *Nationalization Decrees*.

The information in the *Nationalization decrees* can be visualized with two options:
➢ Search after address;
➢ Search after name.

3. Conclusions

The implementation of a GIS project for the management of property has the following major advantages:
- The storage of information in digital format allows the uniformization of the representation scale, integration of data of vectorial type with associate descriptive data and offers a complete image of the reference units (the property body and its land plots)
- The layering of the information in digital plans offers multiple vizualisation possibilities by overlapping the elements from various sources;
- The referencing of the information in teh same reference system and simultaneous vizualisation increases the effectiveness of decisions.

The „GIS Constanta" application offers assistance in the procedure of land retrocession, executed in Constanta Municipality.

4. Bibliography

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