

3D VISUALIZATION FOR A RESIDENTIAL AREA IN CLUJ-NAPOCA CITY

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Abstract. *In this study a 3 Dimension modeling of a city area has been done using GIS technologies and starting with a topographic base drawing. This kind of modeling is very popular among urban planners and helps them correlate spatial processes with the localization of the place affected by a certain process. Also simulations can be made when having a city's 3D layer in front of you and you start analyzing factors that influence everyday life, not only natural but also human ones.*

Keywords: 3D modeling, spatial image, layers, GIS.

INTRODUCTION

This project aimed to create the virtual side of an area from Cluj-Napoca city, situated in Transylvania Plain, a residential area with houses and streams and agricultural areas. In this way a attribute data set of the territory has been set, so in the future localizing certain factors or objectives will be faster and easier. The management of this data helps analyzing the territory geographically, statistically and also the society in every aspects.

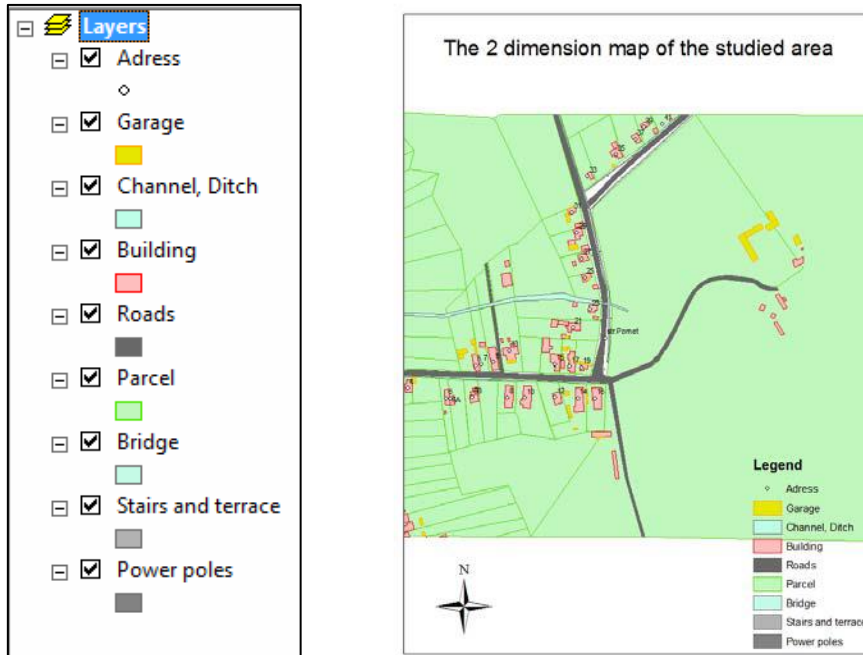


Fig. 1. Spatial image of the studied area

MATERIAL AND METHOD

The project was based on cartographic plan at 1:5000 for the city Cluj-Napoca, which was scanned, put in the coordinate system Stereo 1970, datum S42 Romania and imported in the program. Digitizing the main elements is the process that takes the most part of the time, because for each type of element from the map a separate layer was made (roads, houses etc).





The attribute table was completed with address, heights, position of x, y, perimeter and enclosed area. We used polygon as type for the vectors and points for addresses.

After completing the draw of every element and written or calculated the attributes each layer received a color to symbolize it on the map.

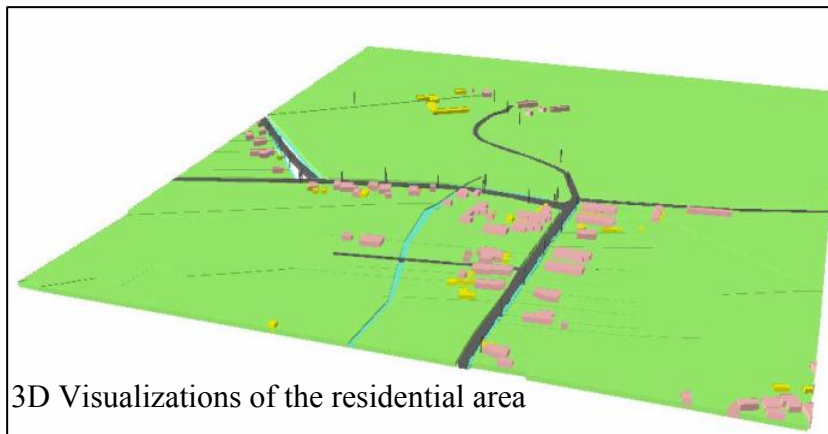
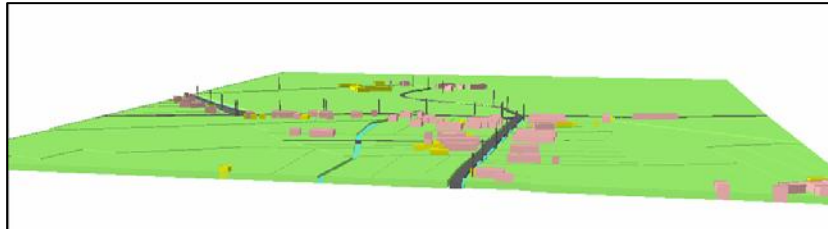
FID	Shape	LAYER	ELEVATION	PERIMETER	ENCLOSED_A
15	Polygon	CLADRI	3,6	85.292 m	187.12 sq m
16	Polygon	CLADRI	3,8	64.453 m	187.78 sq m
17	Polygon	CLADRI	3	33.367 m	40.688 sq m
18	Polygon	CLADRI	4	26.397 m	43.058 sq m
19	Polygon	CLADRI	4	26.449 m	32.457 sq m
20	Polygon	CLADRI	4	22.502 m	17.572 sq m
21	Polygon	CLADRI	4	6.787 m	2.745 sq m
22	Polygon	CLADRI	4	45.676 m	92.318 sq m
23	Polygon	CLADRI	4	18.004 m	19.759 sq m
24	Polygon	CLADRI	4	16.785 m	16.383 sq m
25	Polygon	CLADRI	4	16.652 m	17.023 sq m
26	Polygon	CLADRI	4	33.257 m	58.232 sq m
27	Polygon	CLADRI	4	14.356 m	12.706 sq m
28	Polygon	CLADRI	4	35.412 m	69.984 sq m
29	Polygon	CLADRI	4	44.496 m	120.3 sq m
30	Polygon	CLADRI	4	20.414 m	25.235 sq m
31	Polygon	CLADRI	4	26.343 m	43.472 sq m
32	Polygon	CLADRI	4	37.073 m	31.759 sq m
33	Polygon	CLADRI	,388.756	22.809 m	0.0000153 sq m

Importing the 2 dimension map we obtained in these steps in ArcScene application, or any other that has 3D visualization, we give the comand extrude for the area to raise in 3D.

RESULTS AND DISCUSSION

The model we obtained can be ofcourse completed with putting a spatial image on the background, or other layers needed for certain projects an themes.

Realizing this model and the spatial database for this area will help analysts to locate possible areas on thematic maps for building shops or develop the infrastructure and also to simulate the consequences of these developments.



3D Visualizations of the residential area

CONCLUSIONS

With this project we tried to highlight the necessity to create spatial database for all regions and cities in Romania, these can be used not only by geographers but also by urban planners, surveyors, in local administration or in emergency cases when for example an ambulance will have to find the shortest way to get to an address but also to prevent the effects of a natural calamity or simulate it. In this way information is easy to use, visualize and work with at all scales of needs

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