

Karadeniz Technical University
Department of Geodesy and Photogrammetry Eng. GISLab

An e-enrollment Model for Public Schools in Developing Countries Using GIS





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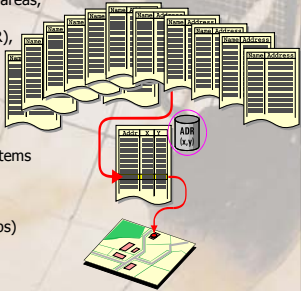
1- INTRODUCTION

In Education Systems of Developing Countries;

- ✓ determination of school catchments areas,
- ✓ the routes for school service buses,
- ✓ Automatic Student Registration (ASR).

School Site Management

Address Data – Address Information Systems
Demographic Data
Census Data
Digital Infrastructure (Digital Base Maps)
Information Technologies
Geographic/Spatial Coverages



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2- METHODOLOGY

Building up the digital coverages of the city;

- ✓ Base maps (Road, Buildings..)
- ✓ Zoning plans
- ✓ Topography


Forming attributes of the coverages;

- ✓ Road Information
- ✓ Building Information

Determination of school catchment areas

Building up ASR by GIS techniques;

Optimization the routes of school buses based on residences of the students



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2- IN TURKEY

School catchments areas are not determined accurately because of lack of base maps, up-to-date information and GIS.

Also, walking distances from student houses to schools are not calculated appropriately.

So, students are faced with walking to further schools or taking school buses.

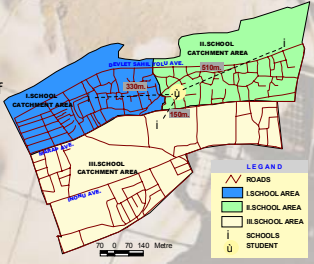


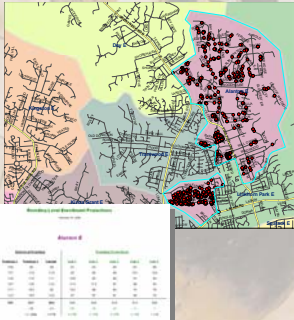
Figure-Distance issues for allocation to school according to existing

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3- IN THE WORLD (a)

With the help of either census or county road information, each student in the school district can be accurately mapped with GIS. A current student database is taken from the district's student information system, and students are mapped in GIS by a process called geo-coding.

The address of each individual student is matched with addresses in the county or census road file. This results in a point on the map for each student. Once students are in GIS format, they can be analyzed and displayed in several ways.



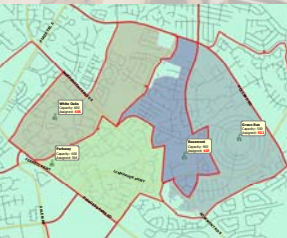
Address A		Address B	
Count	Percentage	Count	Percentage
100	10.0%	100	10.0%
200	20.0%	200	20.0%
300	30.0%	300	30.0%
400	40.0%	400	40.0%
500	50.0%	500	50.0%
600	60.0%	600	60.0%
700	70.0%	700	70.0%
800	80.0%	800	80.0%
900	90.0%	900	90.0%
1000	100.0%	1000	100.0%

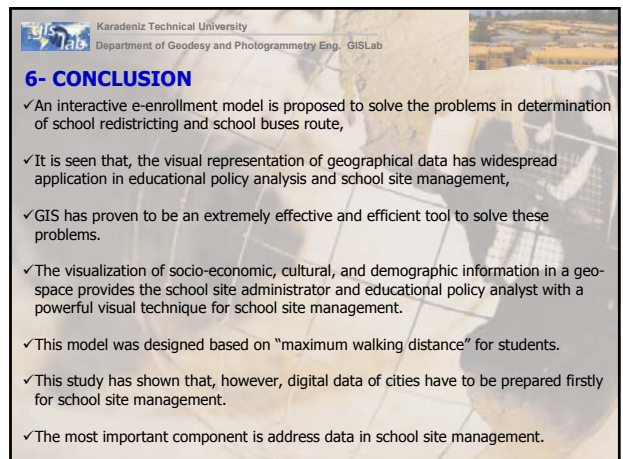
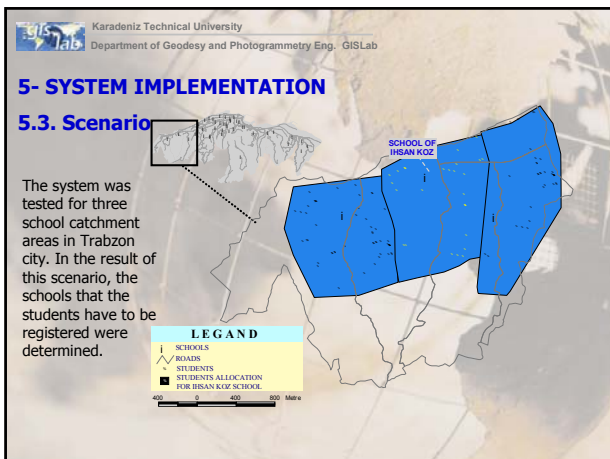
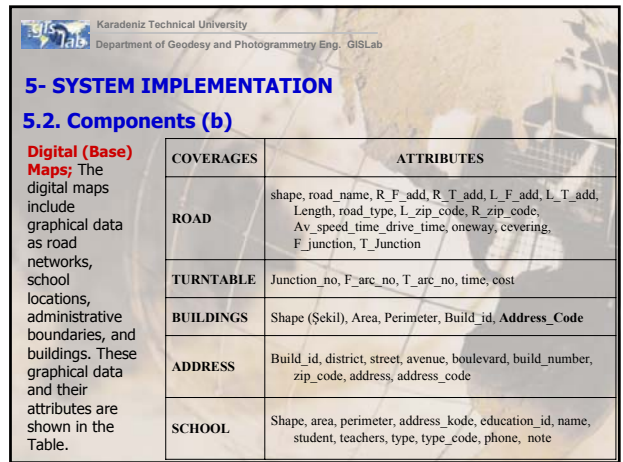
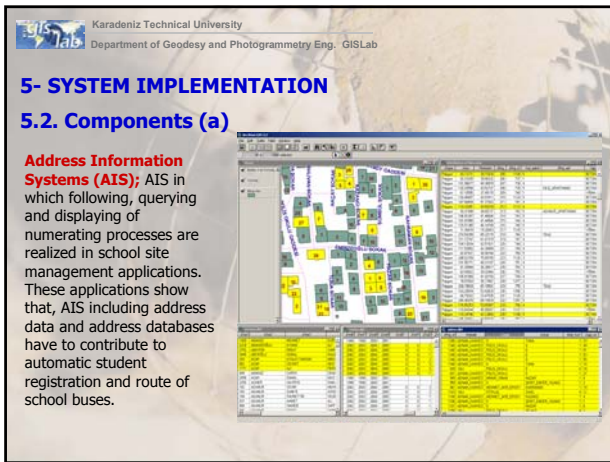
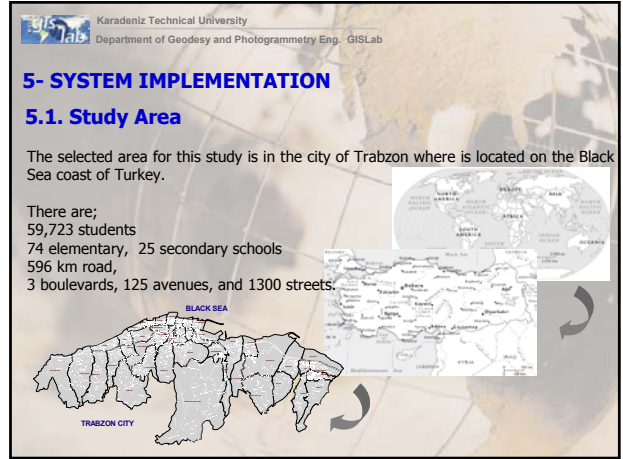
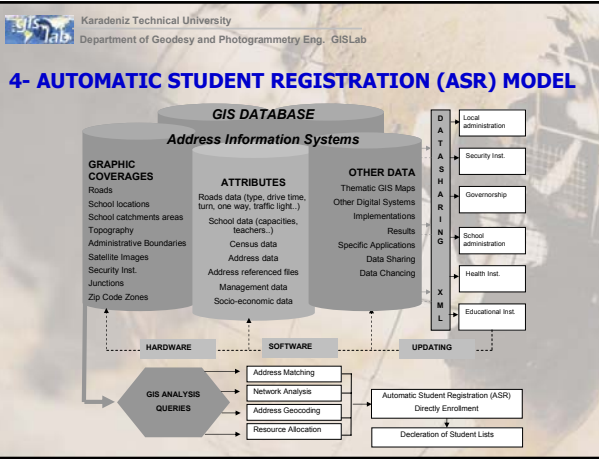
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3- IN THE WORLD (b)

To resolve school redistricting problem a lot of solutions have been proposed and many mathematic models have been designed by researches.

Various analyses are performed with attendance boundaries, such as the number of students who live in the attendance boundary, students who attend the home school, as well as the number of students who live outside the attendance boundary and attend within it.







THANKS...

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