



Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

## Property & Garbage Tax Collection via Address Information Systems: A City Case Study Trabzon, Turkey

FIG Working Week 2005 and GSDI - 8  
Semiramis Intercontinental  
Cairo, Egypt  
April 16-21, 2005

Volkan YILDIRIM & Recep NISANCI

Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

### 1- INTRODUCTION

Local taxes play a major role for financing services and reducing disparities across geographic regions and between different kinds of municipalities and social groups.

Property taxes and garbage taxes are the most yielding tax between these. So, collecting these taxes exactly is crucial for local governments.

Principle cause of this lost is unavailability of any contact with those people who do not declare their property or do not pay for these taxes.

In pilot region studies, it is also seen that, address based Geographical Information Systems (GIS) applications are used for eliminating this lost.

Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab


### 2- CURRENT SITUATION IN TURKEY

Property tax and garbage tax two-thirds of the municipality tax income.

Property taxes are the most important source of income and play important revenue role in municipalities' services in Turkey

In Turkey, owners are legally responsible for payment of property taxes, and occupiers of residential property are responsible for payment of garbage taxes.

In the researches, it is appearing that, 17% of properties are not pay property taxes, 23% of properties are not pay garbage taxes. The lost caused by these figures is equal to 32% of annually collected taxes.



Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

### 3- ADDRESS INFORMATION SYSTEMS

Information systems are used respect to necessities in different areas. One of these areas is Address Information System (AIS) in which following, querying and displaying of numerating processes are realized in urban information system applications.

```

    e - GOVERNMENT
      |
    e - MUNICIPALITY
      |
    URBAN INFORMATION SYSTEM
      |
    ADDRESS INFORMATION SYSTEM
      |
    ADDRESS
      |
    NUMERATING SYSTEM
  
```

Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

### ADDRESS

Most of the things that human society cares about happen at addresses. Where people live, work and play. Where most economic activity takes place. Where crime happens. Where fires occur. Where people are injured. Where goods are bought and sold. Where products are delivered. Where services are rendered. The address allows us to describe these locations in a way that other people can understand.

### ADDRESS COMPONENTS

data composed of multiple qualifiers. These qualifiers are arisen by different operation steps.



Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

### ADDRESS STANDARD

Components	1. (%) Comp.	2. (%) Comp.	3. (%) Comp.	4. (%) Comp.	5. (%) Comp.	6. (%) Comp.	7. (%) Comp.	Yok (%)	Total (%)
Society, Organization, Company Name	91	-	3	-	-	3	3	-	100
Building Numbers and Name	2	52	36	5	5	-	-	-	100
Street Name	-	36	52	5	5	2	-	-	100
Zip Code	-	7	5	61	10	17	-	-	100
District Name	-	-	5	22	51	5	-	17	100
City Name	-	-	-	-	17	27	-	56	100
Country Name	6	-	-	-	-	42	52	-	100

1. Society, Organization, Company Name → Mr. J. Public → Sn. Mehmet Çete

2. Bina Numarası → 123 Church Street → 10 Gül Sokak

3. Street Name → 61857 Colloyn → 61250 Yomra

4. Posta Kodu → PRETORIA → TRABZON

5. District Name → SOUTH AFRICA → TURKEY

6. City Name

7. Country Name

Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

## 4- TRABZON CITY CASE STUDY

### CURRENT SITUATION

There are approximately 22.332 buildings and 75.604 departments in Trabzon City. Trabzon Municipality planned for property taxes approximately 5.500.000 USD and for garbage taxes approximately 750.000 USD in 2003. But in this year, Trabzon Municipality collected 4.000.000 USD property taxes and 500.000 USD garbage taxes. That is to say, the municipality's annual taxes loss is approximately 1.750.000 USD.

Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

## COMPONENTS OF SYSTEM

- ✓ Road Coverage
- ✓ Building Coverage
- ✓ Computing of Property and Garbage Taxes
- ✓ Automatic Declaration

Block	Area	Perimetre	Volume	Floor	Garbage
TRABZONKENT1	14.000	14.000	14.000	14.000	14.000
TRABZONSU1	14.000	14.000	14.000	14.000	14.000
TRABZONSU2	14.000	14.000	14.000	14.000	14.000
TRABZONSU3	14.000	14.000	14.000	14.000	14.000

Karadeniz Technical University  
Department of Geodesy and Photogrammetry Eng. GISLab

## 5- CONCLUSION

The development of information systems and the accompanying extensive databases, many of them utilizing desktop computers, has created a technological revolution extending directly into property and garbage taxes problem solving. These taxes problems are often characterized as uncertain, complex and dynamic. Solving them, if solutions are possible, is a multiuse process with a strong emphasis on deductive reasoning and decision making, both emphases adopted from the finance and economic disciplines. This article develops a model in order to assess how Address Information Systems may affect collected of property and garbage taxes problem solving. Using the address data and address databases, it was shown that address based information systems have to contribute to property and garbage taxes problem solving.

Karadeniz Technical University  
Department of Geodesy and Photogrammetry

# THANKS...

**Volkan YILDIRIM**  
Karadeniz Technical University  
Department of Geodesy and Photogrammetry  
Trabzon / Turkey  
Tel: +90 462 3772794  
Fax +90 462 3280918  
e-mail: yvolkan@ktu.edu.tr