Cadastral Data Management System in Turkey

Dr. Emin Bank
ebank@islem.com.tr

Who we are?

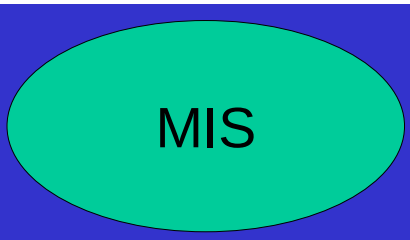
MIS ?

GIS ?

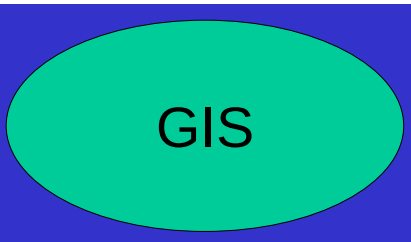
Or

IT ?

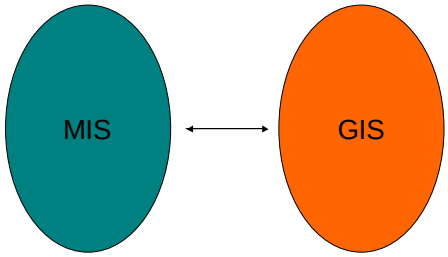
View from MIS



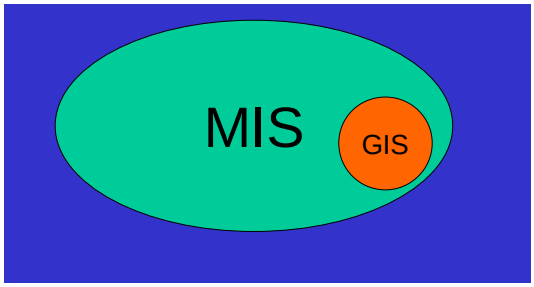
View from GIS



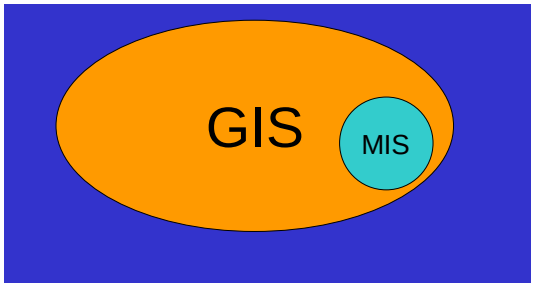
Nowadays MIS and GIS are getting closer fastly



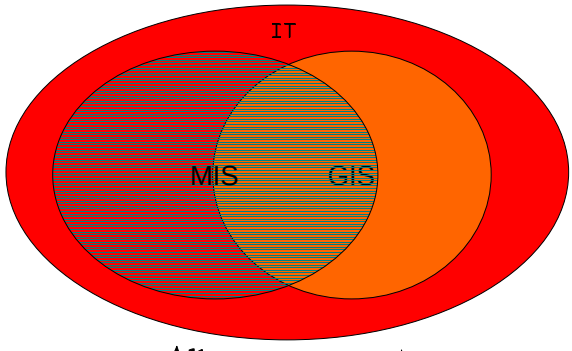
Viewing from MIS is changing



Viewing from GIS is changing

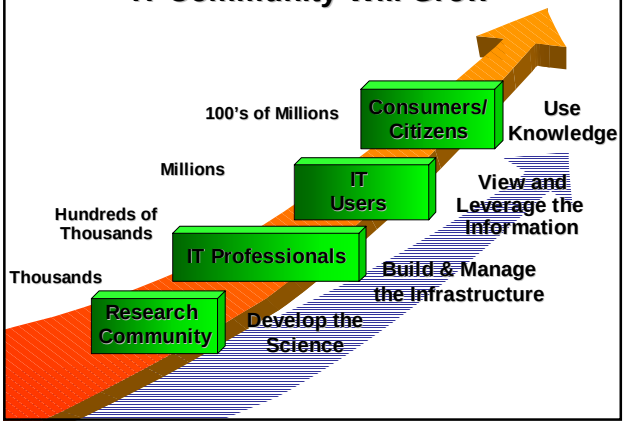


Neither MIS Nor GIS

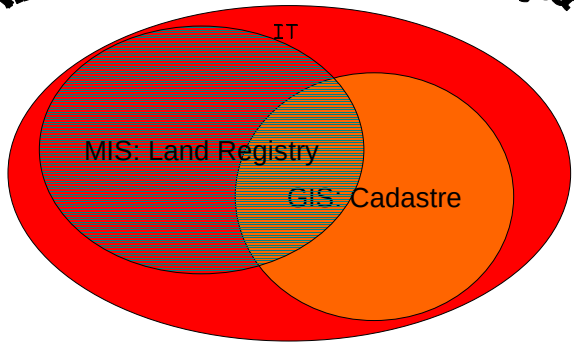


All we are IT users

IT Community Will Grow



Land Registre&Cadastre Information System is an IT Project



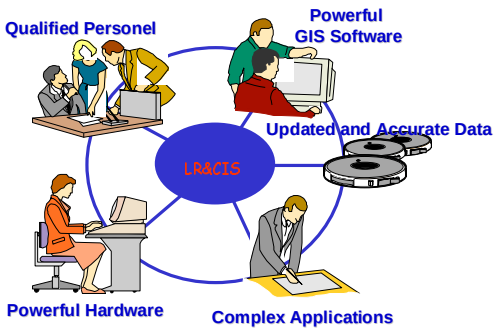
TURKISH LAND REGISTRY AND CADASTRE SYSTEM (LR&CIS)

- The studies has began in early 2001.
- 3 months for analysis studies,
- 3 months for design studies,
- 16 months for software development studies
- it has been implementing for 14 months on actual distrubuted sites
  - General Directorate,
  - one Regional Directorate,
  - 6 land registery and 2 cadastre offices

MAIN CHARACTERISTICS OF PROJECT

- It is integrated with Land Registry system
- It is a parcel-based system
- It contains geometric cadastral information and proprietary information with respect to ownership.
- It covers all Land Registery and Cadastre activities carried out in Regional Directorates (25), in Land Registery (1003) and Cadastral (325) Offices.

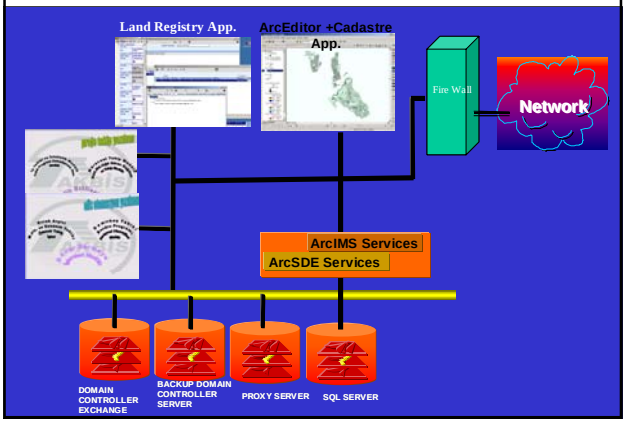
COMPONENTS OF LR&CIS..



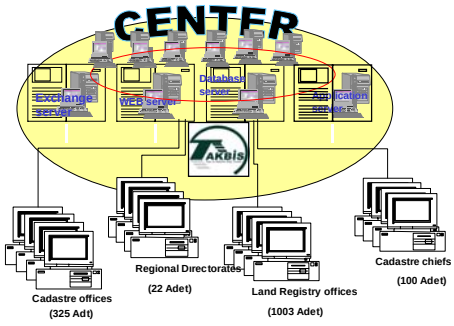
STAFF OF LR&CIS..

- **PROJECT MANAGER (1)**
- **LAND REGISTER / CADASTRE SYSTEM MANAGER (2)**
- **SYSTEM ANALYST (24)**
- **DATABASE EXPERT (4)**
- **PROGRAM DEVELOPPER (24)**
- **DATA ENTRY OPERATOR (40)**
- **HARDWARE/NETWORK EXPERT (6)**
- **LAND REGISTRY/CADASTRE EXPERT (4)**

SOFTWARE ARCHITECTURE



SYSTEM ARCHITECTURE



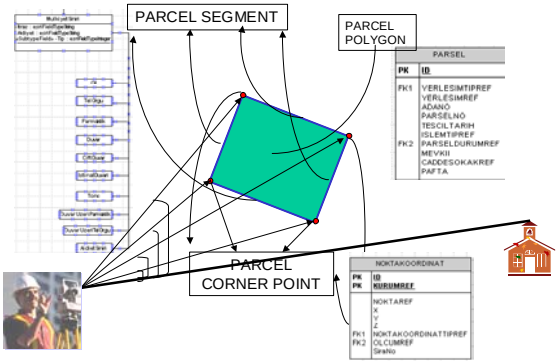
CADASTRAL DATA MANAGEMENT

CADASTRAL DATA CONTENT AND DEFINATIONS

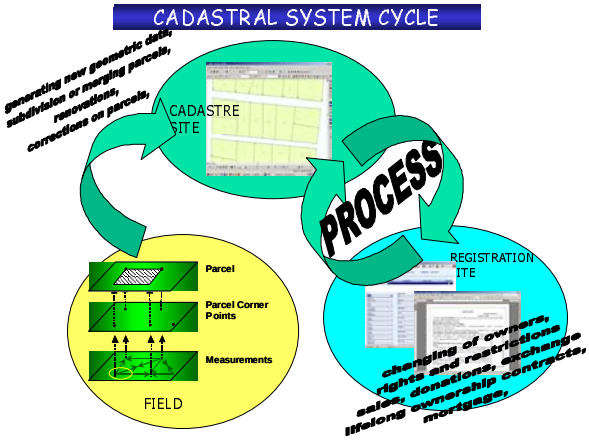
-**Geometric data** : composed of quarter or village boundaries,blocks, parcels, parcel segments, parcel corner points, ground control points, and buildings

-**Attribute data** : owners, rights, mortgages, annotations should be defined and registered with geometric data at the same time.

PARCEL GENERATION



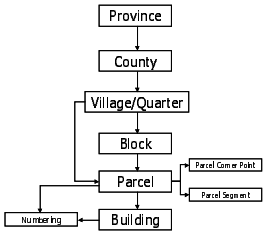
CADASTRAL SYSTEM CYCLE



Data Sets	Feature Classes	Geometry
Administrative Boundary	Province	Polygon
	County	Polygon
Property	Village/Quarter boundary	Polygon
	Block	Polygon
	Parcel	Polygon
	Parcel Corner Point	Point
	Parcel Segment	Line
	Servitude	Polygon
	Ground Corner Points	Point
Project Area	Working Area	Polygon
Construction	Building	Polygon
	Numbering	Point

Rules and Relationships

- A parcel must be in a block or Village/quarter,
- A block must be in a Village/Quarter,
- A Village/Quarter must be in a County and a County must be in a Province



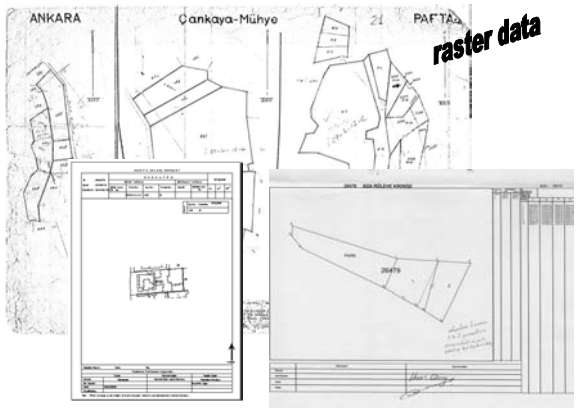
In Geodatabase		In Registration	Domain list
Boundary of provincies, county, quarter	Name		
	Reference Code		
	Shape Area		
Block	Number		
	Shape Area		
Parcel Polygon	Block Number		
	Parcel Number/Name		
	Shape Area		
	Sheet Name		
		Owner	
		Share	
		Rights	
		Mortgage	
		Decleration	
		Parcel Type	X
		Registred Area	
Parcel Segment	Graphical lenght		
	Measurment lenght		
	Segment line type		X
Parcel Corner Point	Number		
	Production method		X
	Product by Organization		X
	Product date		
Building	Building Type		X
Ground Control Point	Number		
	Measurment type		X
	Coordinate X Value		
	Coordinate Y Value		
	Coordinate Z Value		

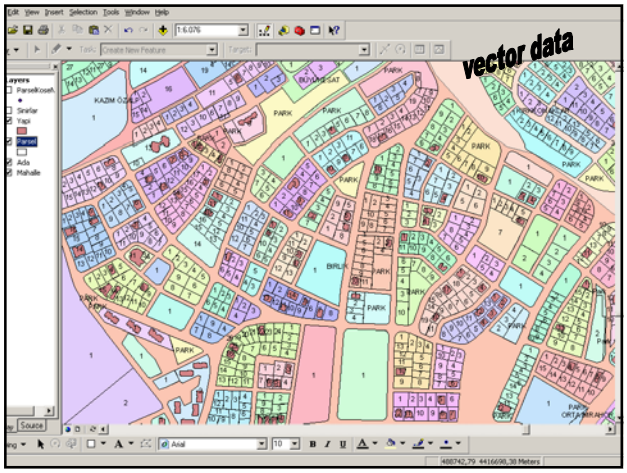
STATISTICS OF TURKEY AREA

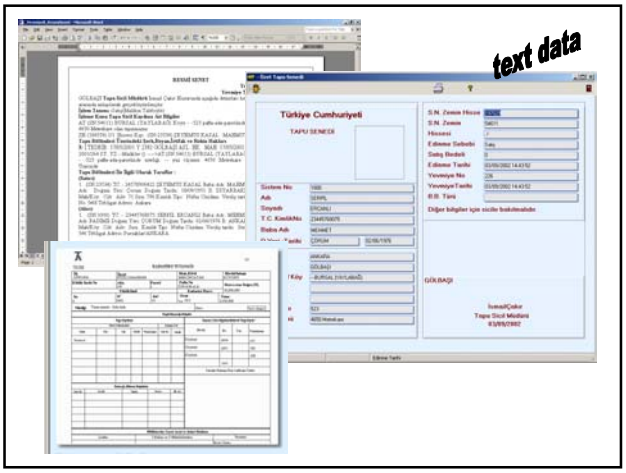
TYPE OF AREA	km²	%
Forest	202,280.00	26.0
Pasture	96,000.00	12.3
Cadastral Arae (Rural)	440,000.00	56.6
Cadastral Area (Residential)	40,000.00	5.1
TOTAL	778,000.00	100.0

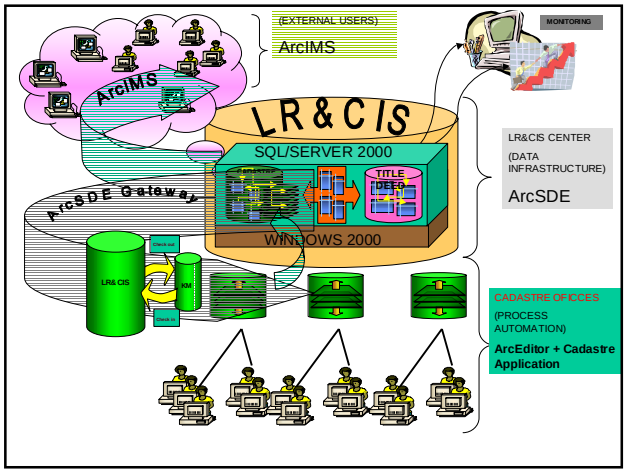
STATISTICS OF TURKEY AREA

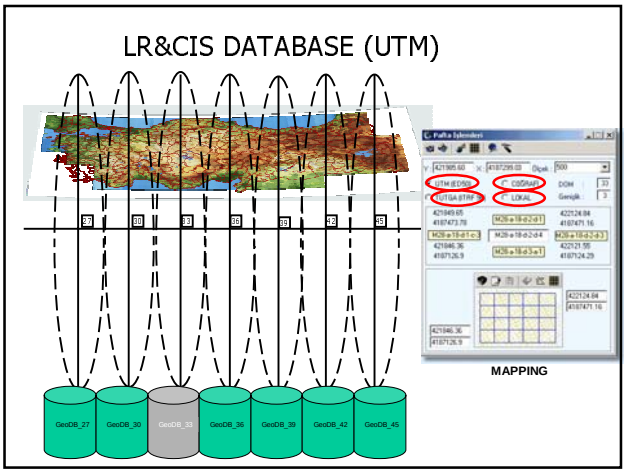
RESIDENTIAL AREA				RURAL AREA			
TOTAL	COMPLETED	NUMBER OF PARCEL	PRODUCED AREA (KM2)	TOTAL	COMPLETED	NUMBER OF PARCEL	PRODUCED AREA (KM2)
8,636	8,277	5,879,813	39,214,480	37,223	25,838	28,459,864	332,787,793

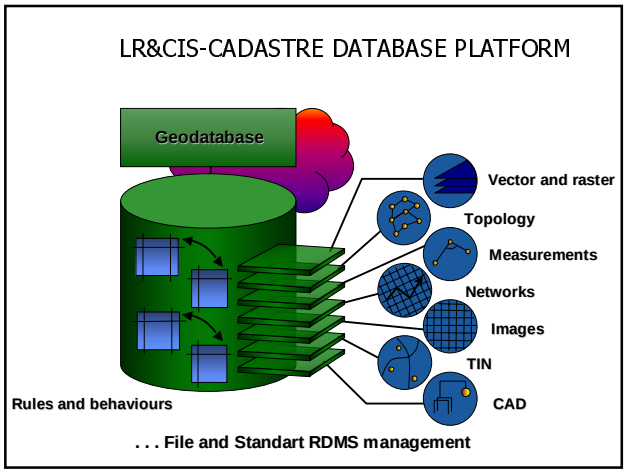


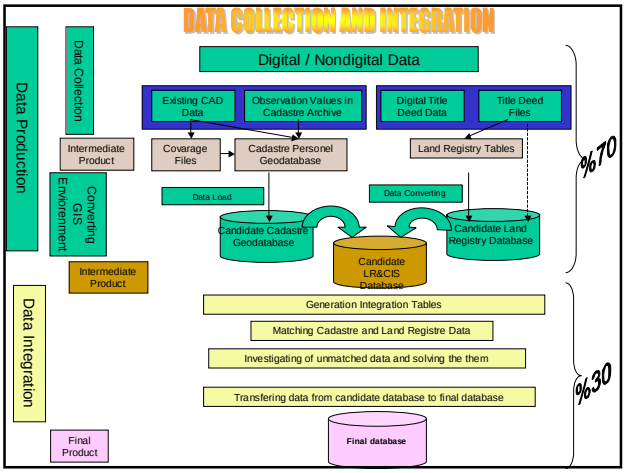



text data
Türkiye Cumhuriyeti
TAPU SENEDİ


(EXTERNAL USERS)
ArcIMS
MONITORING
ArcIMS
LR&CIS
SQL/SERVER 2000
TITLE DEED
ArcSDE Gateway
WINDOWS 2000
LR&CIS
LR&CIS CENTER
(DATA INFRASTRUCTURE)
ArcSDE
CADASTRE OFFICES
(PROCESS AUTOMATION)
ArcEditor + Cadastre Application


LR&CIS DATABASE (UTM)
MAPPING
GeoDB_27
GeoDB_30
GeoDB_33
GeoDB_36
GeoDB_39
GeoDB_42
GeoDB_45

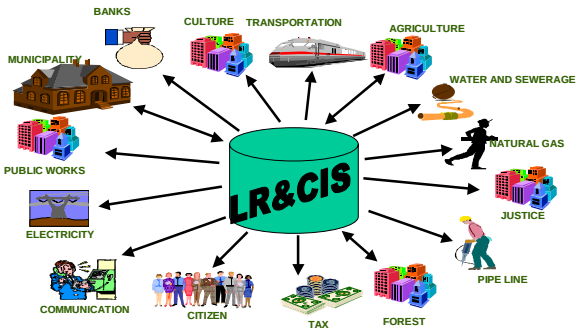

LR&CIS-CADASTRE DATABASE PLATFORM
Geodatabase
Vector and raster
Topology
Measurements
Networks
Images
TIN
CAD
Rules and behaviours
. . . File and Standart RDMS management

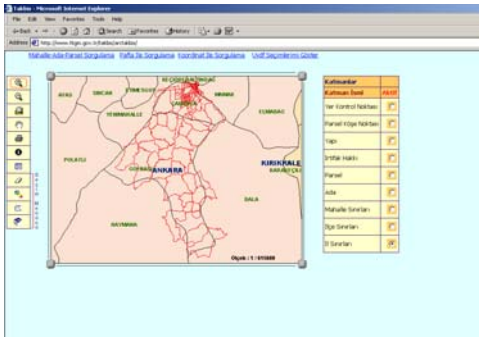

DATA COLLECTION AND INTEGRATION
Data Production
Data Collection
Digital / Nondigital Data
Existing CAD Data
Observation Values in Cadastre Archive
Digital Title Deed Data
Title Deed Files
Intermediate Product
Covarage Files
Cadastre Personel Geodatabase
Land Registry Tables
Converting GIS Environment
Data Load
Data Converting
Candidate Cadastre Geodatabase
Candidate Land Registry Database
Candidate LR&CIS Database
Intermediate Product
%70
Data Integration
Generation Integration Tables
Matching Cadastre and Land Registre Data
Investigating of unmatched data and solving the them
Transfering data from candidate database to final database
Final Product
Final database
%30

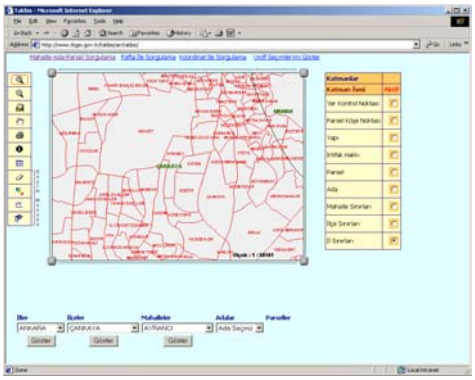
TAKING REQUEST
ASSIGNING PROCESS
DETERMINATION PROCESS
CHECK OUT DATA
DOING APPLICATION
LR&CIS
CHECKING STEPS
GENERATING REPORT OF
DATA EDITTING FOR SECURITY
REGISTRATION PROCESS

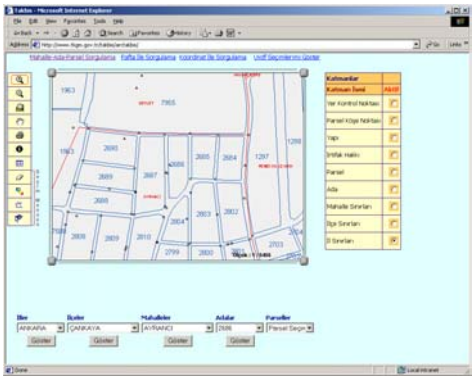
DATA SHARING VIA INTERNET

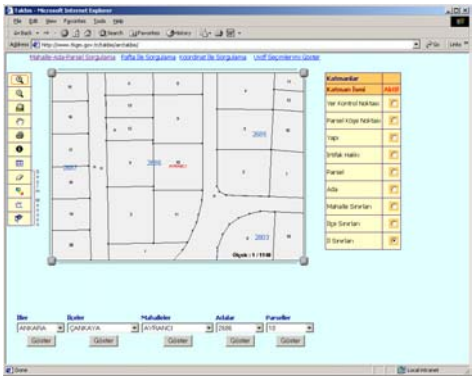
EXTERNAL USERS OF LR&CIS...

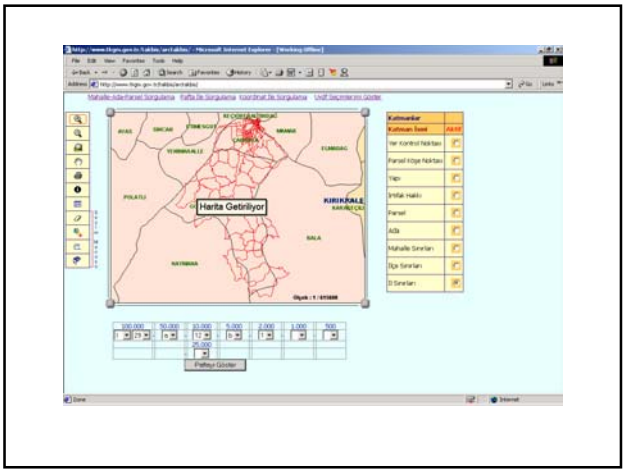


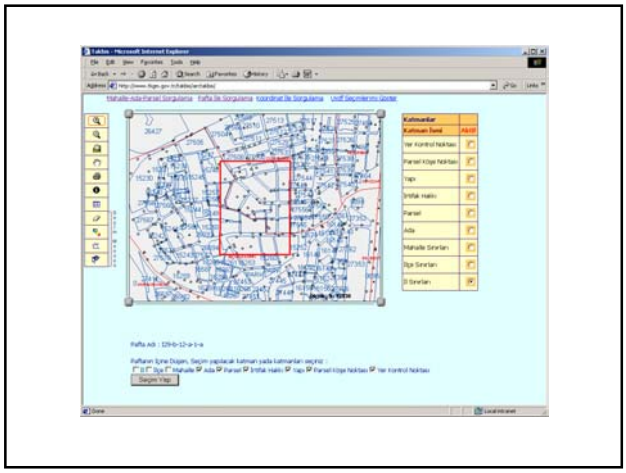


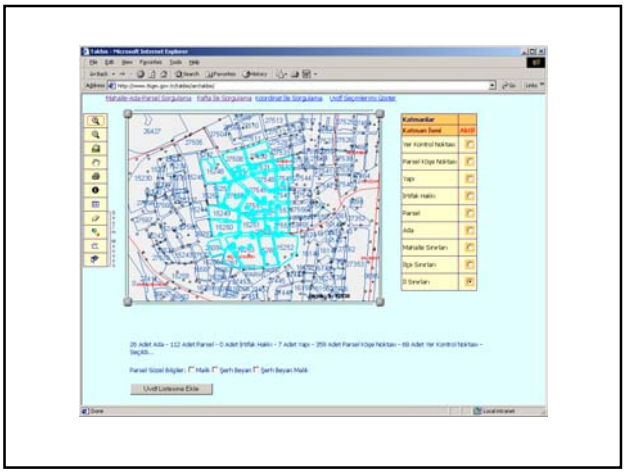


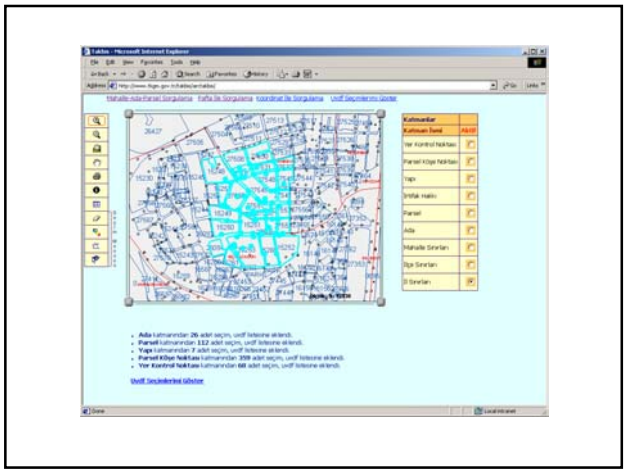


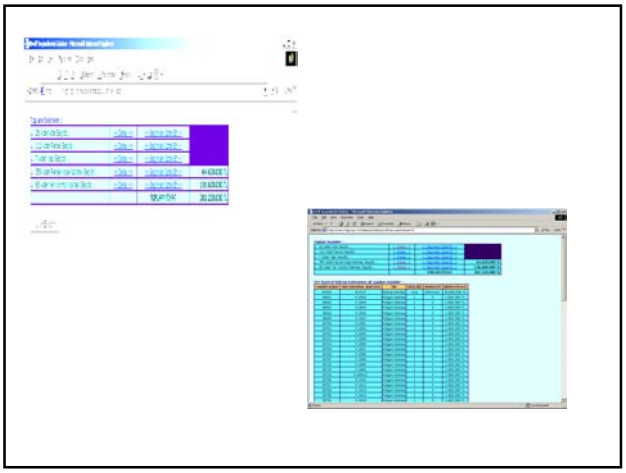


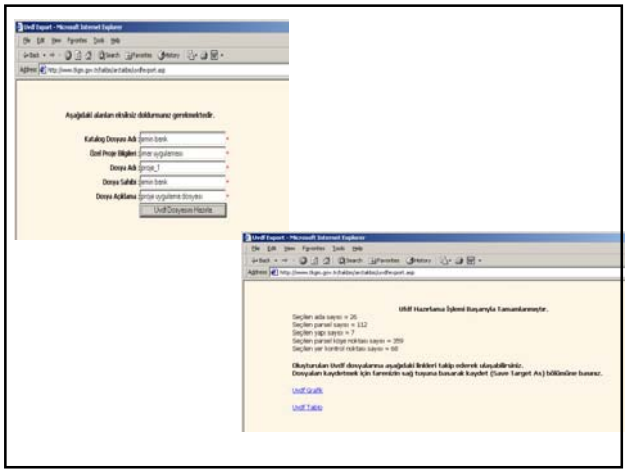

Harita Getiriliyor

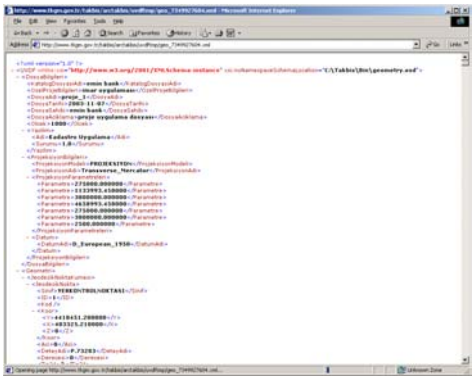


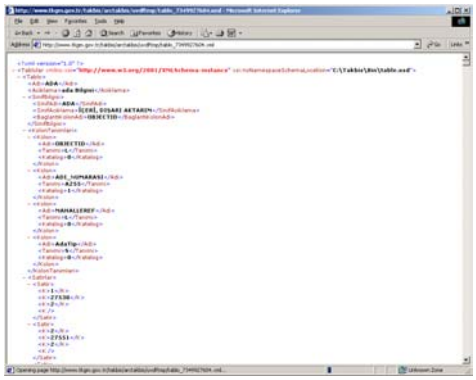










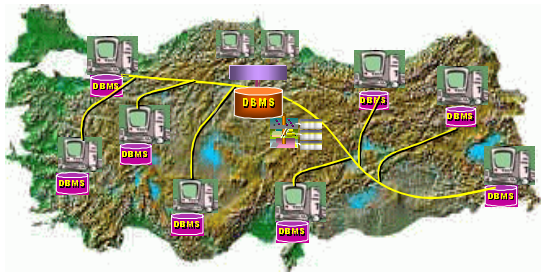


Conclusion

- At this moment cadastral data is living with it's weakless of accuracy, currency and quality.
- In the future, data improvement proccess shoul be taken as a big project, planned, and solved in a specific time by the Cadastre Organization.
- Data quality should be classified and shoul be proccessed with in accordince it's quality
- Data shoul be riched with other data like worth of parcel, tax value and land use in order to establish a multi purpose of cadastral system.
- Cadastre organization should be reorganize in accordace with this system.
- Personnel qualification should be increase with training.
- The body of current laws and regulations should be improve accordance with technologic developments. ,

FUTURE OF PROJECT..

AT THE END OF PROJECT...



ALL UNITS OF GDLRC WILL BE CONNECTED EACH OTHER

ALL PROSEDURES SHALL BE MONITORED DYNAMICLY

IT SHALL BE POSSIBLE TO ACCESS UPDATED DATA DYNAMICLY