State-of-Play towards Building Turkey GDI

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XXIV FIG INTERNATIONAL CONFERENCE
Facing the Challenges-Building the Capacity
11-16 April 2010 Sydney / AUSTRALIA

Overview

- Introduction with GIS Background of Turkey
- "National GIS" actions in e-transformation Turkey project
- Information Infrastructure Approach for SDI Evaluation
  - National GIS Activities of Turkey
  - Examining Provincial GDI Development of Turkey
- Discussion / Conclusion

Introduction

- Public institutions increased ICT investment in 1990s.
- Digital Maps started to be produced in Turkey after 1990s.
- The importance of GIS after these years…
- Many GIS and successful e-government projects…
- After 2002, into an information society with e- Transformation Turkey Project.

TAKBİS– Land Information System transfers land register records and cadastral maps to a digital environment

CORS-TR establishing reference GPS stations in each province, 24/7

HBB– Map Information Bank a metadata portal for large scaled maps

Introduction *National GIS actions*

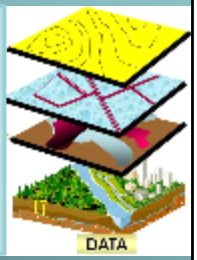
- "Building Turkey National GIS" actions, similar to SDI vision.
- Action-47 in 2004, current situation to build SDI was examined.
- Action-36 in 2005, Turkey National SDI strategy as policy encouragement was determined.

TAPU VE KADASTRO GENEL MÜDÜRLÜĞÜ

under responsibility of LRCD

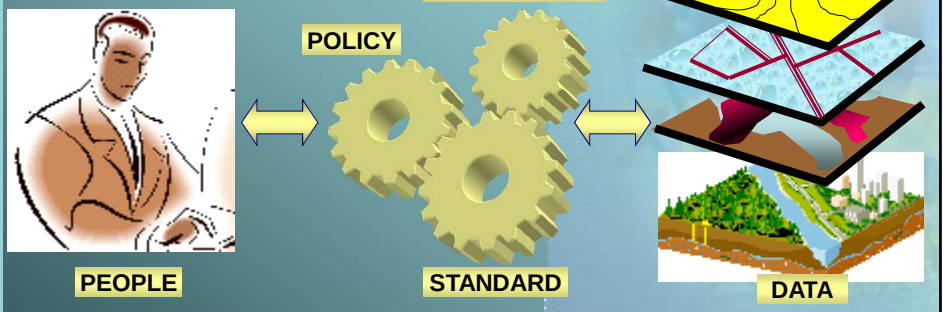
- KYM-75 in 2007 aims to build a geo-portal where public institutions can present their geo-information. …

? Policy
? Data standard
? Technical requirements



Introduction *GDI Concept*

Adapted from Rajabifard and Williamson (2003)



- Besides techno-centric perspective, socio-technical thinking around GIS/GDI is discernible in developing concept.

- Information Infrastructure approach can provide interesting and useful insights to understand and explain technical and institutional complexities within GDI.

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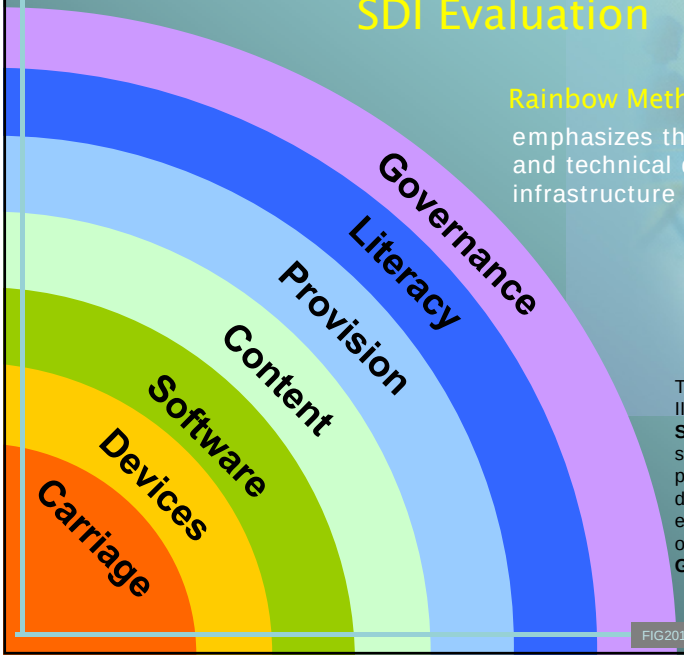
Information Infrastructure Approach for SDI Evaluation

Rainbow Methaphor

emphasizes the interplay of social and technical dimensions in infrastructure development.



The rainbow metaphor for access II was proposed by **Clement and Shade (1998)** with the intention to strengthen public policy perspectives in the Canadian II debate. Also, this metaphor was examined to analyze the dynamics of the Indian National SDI by **Georgiadau etal. (2005).**

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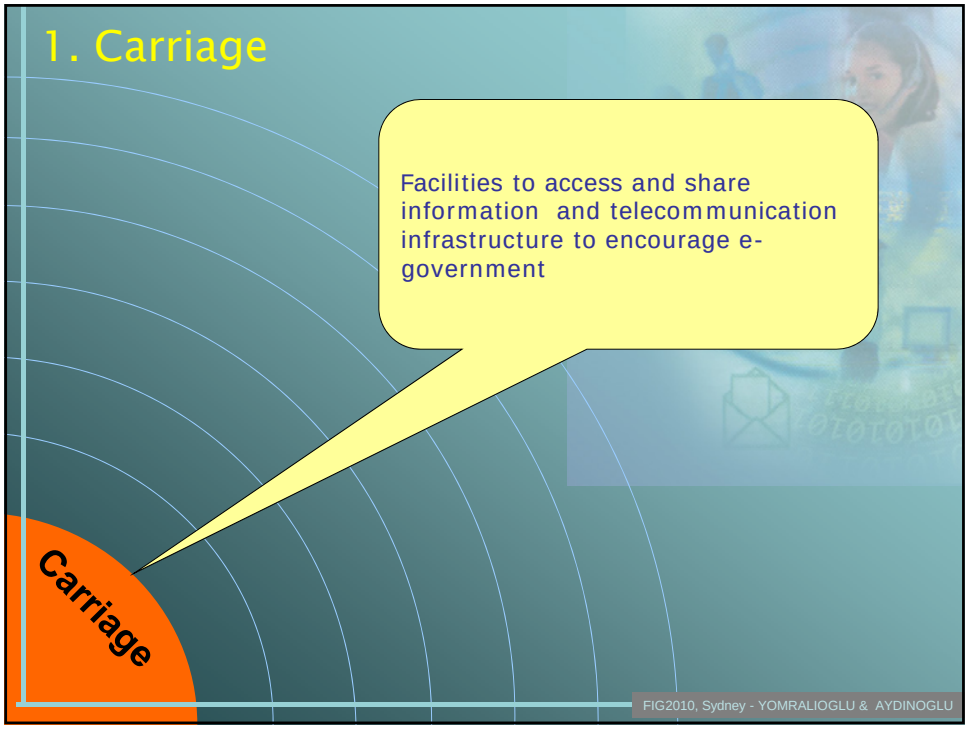

National GIS Activities Of Turkey

Carriage

- Telecommunication Law has been recognized to renovate old laws.
- Electronic Signature Law certified by Telecommunication Authority legalizes electronic signatures.
- Other laws; personal data, consumer, security law, and like this are in progress.
- ADSL users started to increase enormously but not at expected level. 3G technology was embarked in 2009.
- Intranet and internet access is at very well to use and share geo-data in intra-public institutions.

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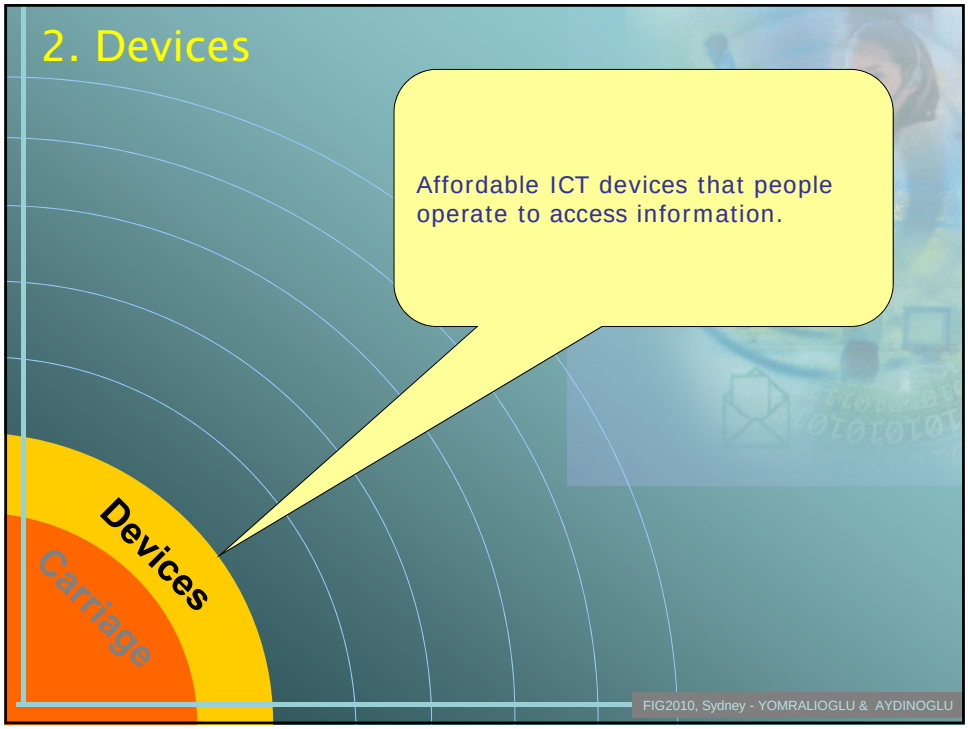

National GIS Activities Of Turkey

Devices	• All public institutions have hardware capacity to use and analyze geo-data • Almost all public institutions have Windows based platform. • Almost all institutions published their web page on web servers situated in General Directorates or any service provider. • Data Servers enable to manage the data in especially General Directorates of these institutions. • Especially Metropolitan Municipalities have possibilities to manage and share geo-data on Web /Data Servers.

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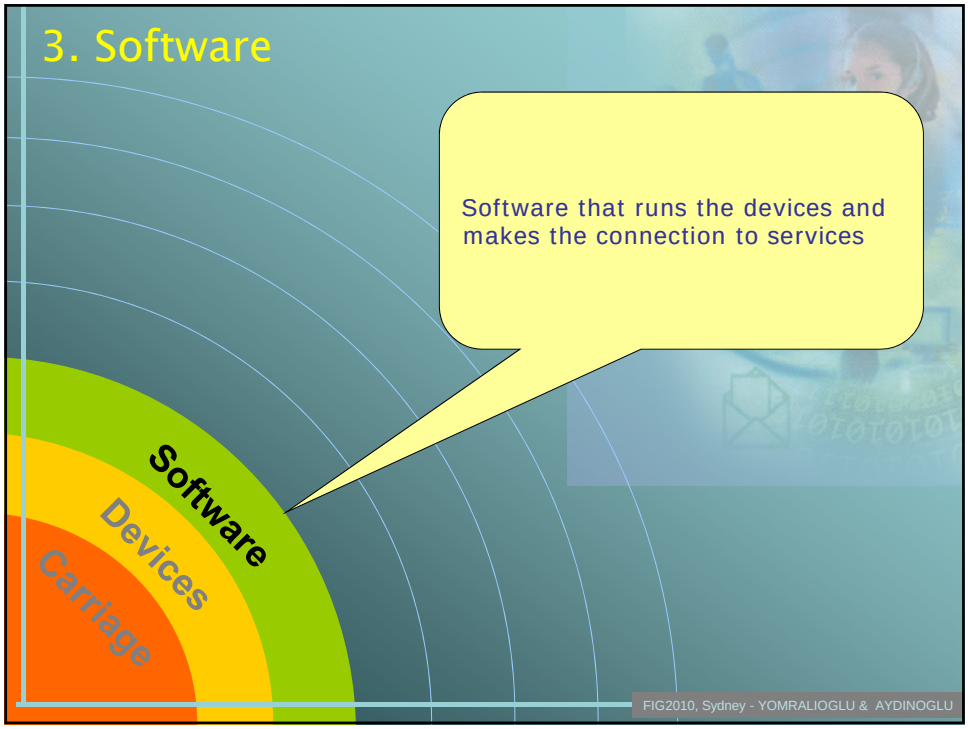
3. Software
Software that runs the devices and makes the connection to services
Software
Devices
Carriage
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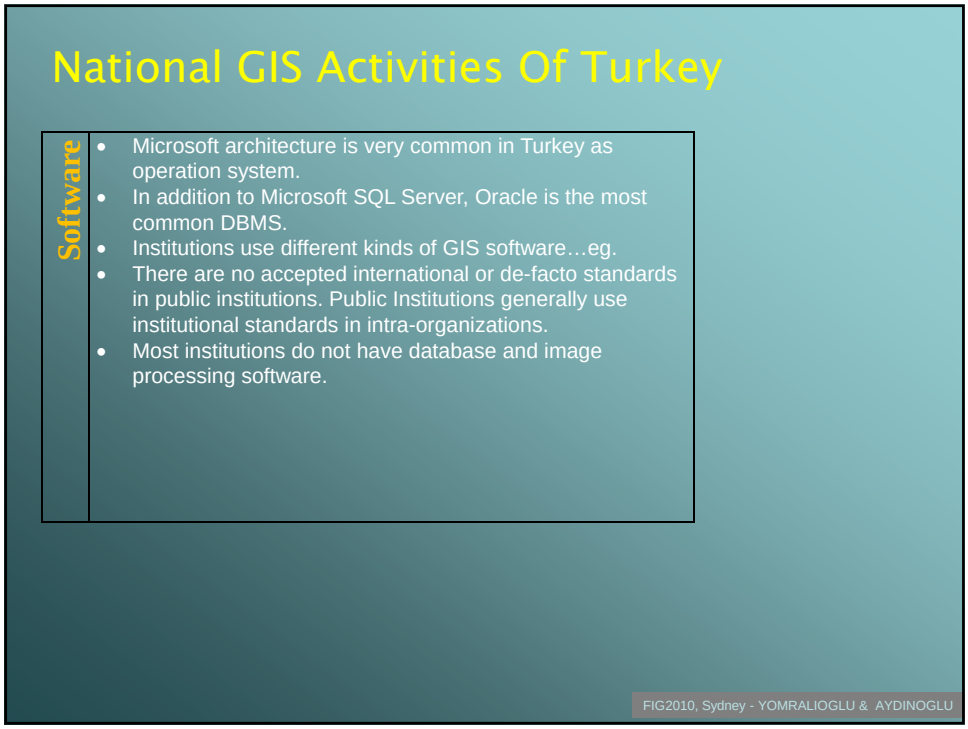
National GIS Activities Of Turkey
Software
Microsoft architecture is very common in Turkey as operation system.
In addition to Microsoft SQL Server, Oracle is the most common DBMS.
Institutions use different kinds of GIS software…eg.
There are no accepted international or de-facto standards in public institutions. Public Institutions generally use institutional standards in intra-organizations.
Most institutions do not have database and image processing software.
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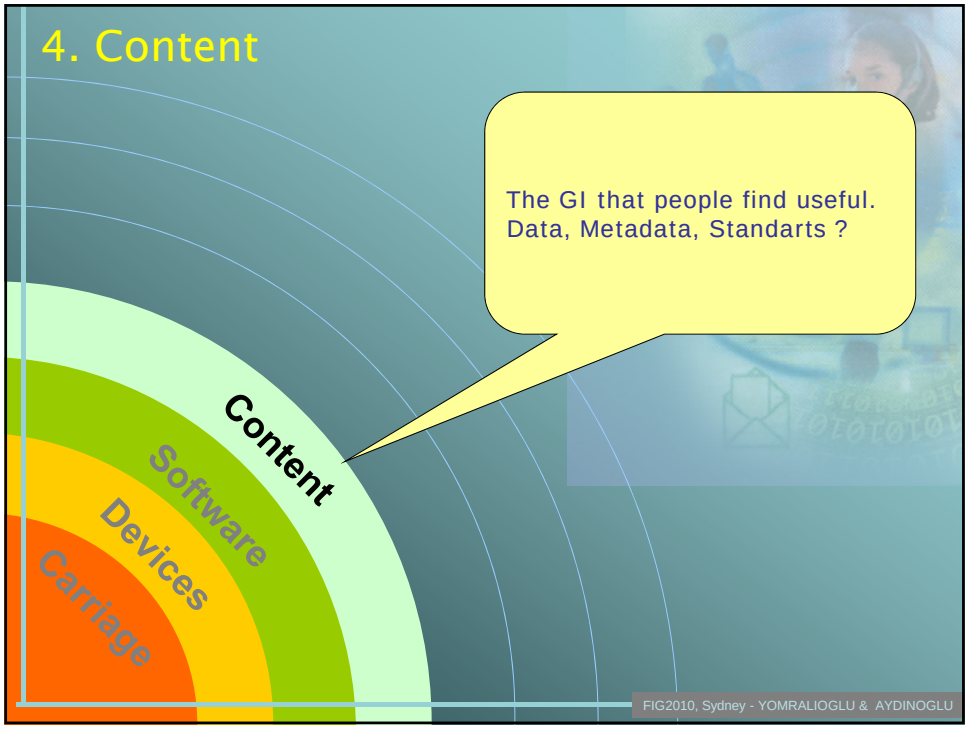

National GIS Activities Of Turkey

Content

- The geodetic reference system and projection systems are standardized with TUTGA (Turkey National Base GPS Network) based on ITRF-96 (International Terrestrial Reference System) and GRS-80 (Geodetic Reference System-1980).
- UVDF-National Data Ex-Change Format determines data types and data flows, based on XML format. But, it was discussed that UVDF should be updated for national GIS development and compliant with GML 3.X.
- Geo-Data Standards have not been determined yet…
- There is no metadata standard among public institutions. HGK has only their metadata standard.
- Public institutions produce spatial data, depending on their needs.
- Institutional responsibilities have not been determined and geo-data was produced repeatedly.
- Besides national data catalog of STMs produced by HGK, large scaled maps are produced, depending on Large Scaled Map Production Regulation (BÖHHBU). BÖHHBU was revised and enclosed with feature / attribute catalog in 2006. But, this catalog was not designed to solve application-driven geo-information user needs.
- GIS applications of local governments were developed, depending on GIS software and related companies. Therefore, geo-data is not interoperable.
- Lately, Interior Ministry is in process to combine the databases of National Address Database (UAVT) and National Citizenship System (MERNIS). Local Governments can combine these data on their own Urban GIS app.

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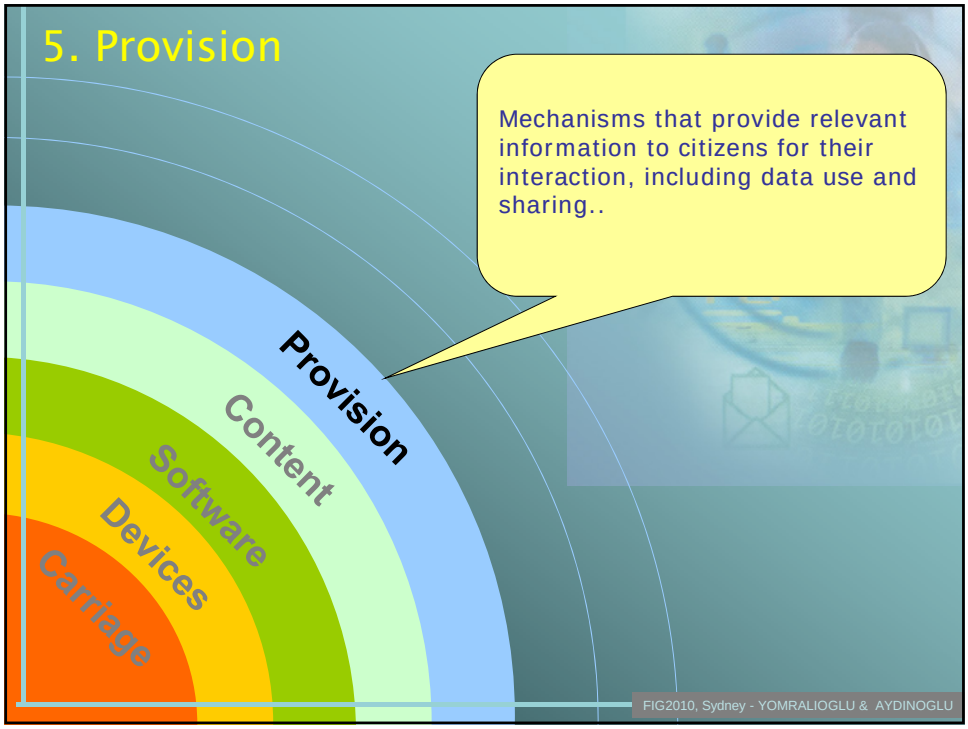

National GIS Activities Of Turkey

Service/Access

- Data are provided either on CD or paper. In Intra-Institutions, local network provides an effective method to exchange spatial data.
- There are not any on-line services to download core geo-datasets that contribute the national SDI initiative.
- There are web mapping services available for geo-data including;

- Geographic Names Database by GCM
- Digital Turkey Databases by GCM
- Soil and National Agriculture Information System by Ministry of Agriculture
- TAKBIS- Land Registry and Cadastre Information System by TKGM
- CORINE Land Cover/ Forest/ Environment/ Water Information System by COM, and
- Especially metropolitan municipalities have web based mapping applications.

- GCM website provides description about their maps and digital products, but online dissemination is not possible.
- Some e-government and internet GIS services for citizens were produced for agriculture, transportation, and other thematic sectors to present the maps.
- Almost all provinces and municipalities browsed the information on internet. Some web services were browsed, such as Web Urban Atlas, Zoning Plan, etc.
- Most municipalities in especially big provinces are trying to build Urban GIS applications. According to a survey executed to 3066 out of 3228 municipalities of Turkey (TUIK, 2005), 18 % (543) of the municipalities have numbering unit and 4 % (126) of which work on Urban GIS.

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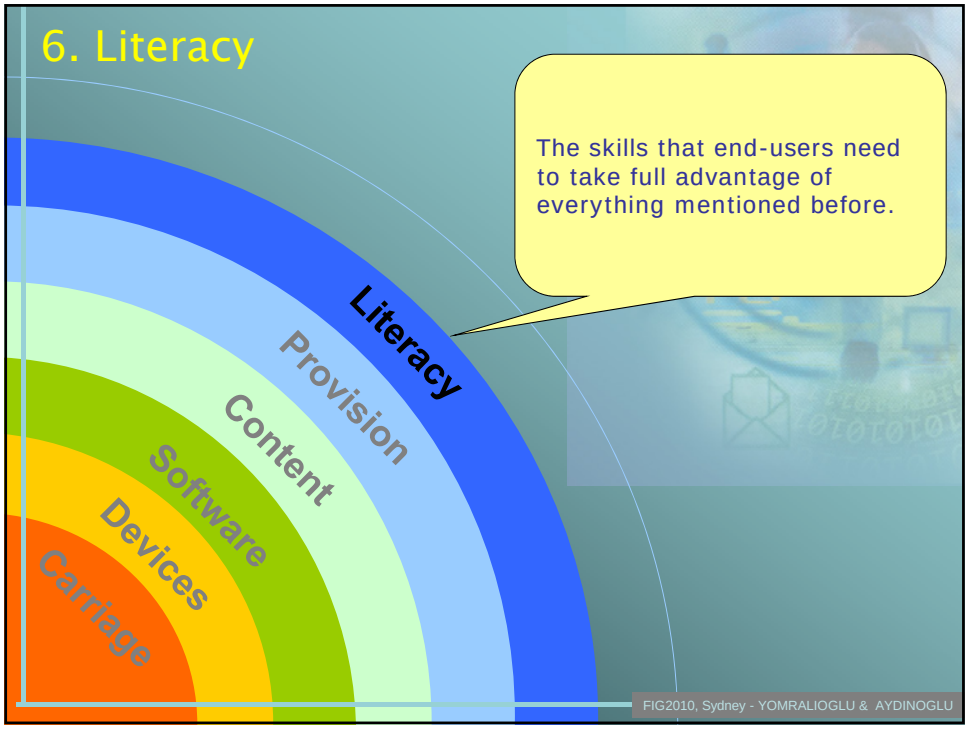
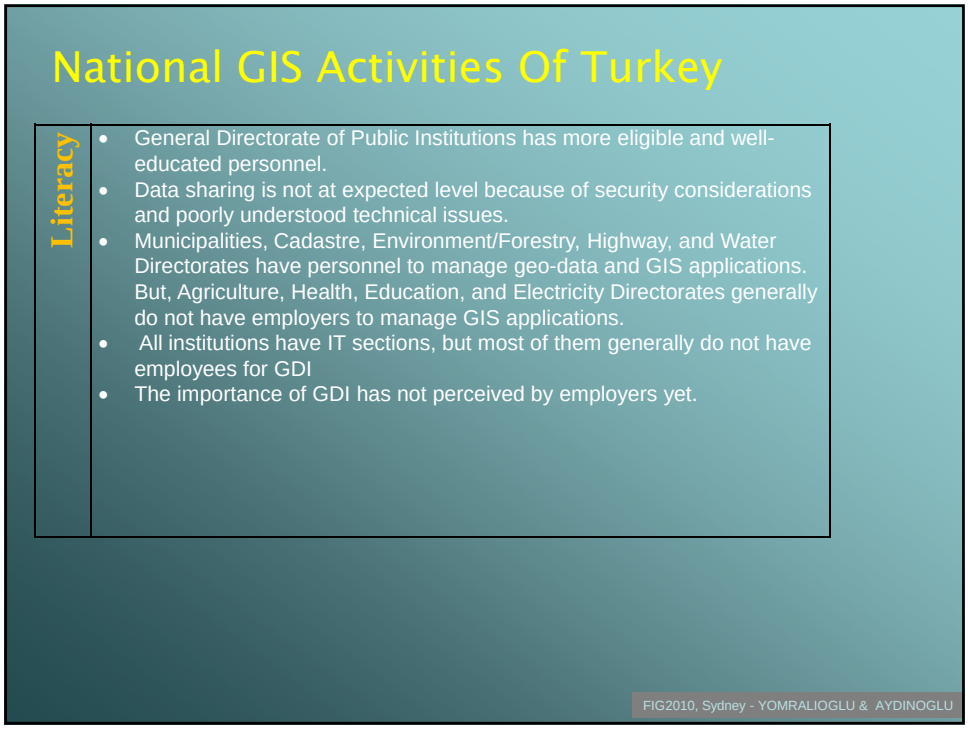

6. Literacy
The skills that end-users need to take full advantage of everything mentioned before.
Literacy
Provision
Content
Software
Devices
Carriage
FIG2010, Sydney - YOMRALIOGLU & AYDINOGLU


National GIS Activities Of Turkey
Literacy
General Directorate of Public Institutions has more eligible and well-educated personnel.
Data sharing is not at expected level because of security considerations and poorly understood technical issues.
Municipalities, Cadastre, Environment/Forestry, Highway, and Water Directorates have personnel to manage geo-data and GIS applications. But, Agriculture, Health, Education, and Electricity Directorates generally do not have employers to manage GIS applications.
All institutions have IT sections, but most of them generally do not have employees for GDI
The importance of GDI has not perceived by employers yet.
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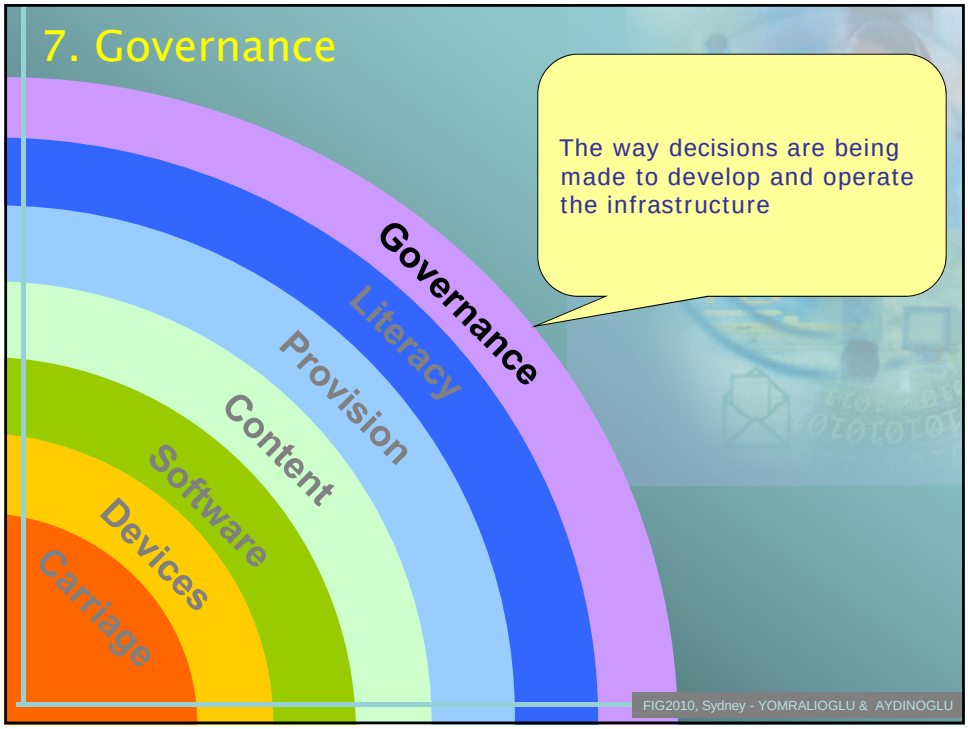

National GIS Activities Of Turkey

Governance

- TKGM as a major producer of geo-information manages National GIS actions.
- With Action-36, Turkey National GIS concept and implementation models were determined in 2005. But, a legal framework has not been initiated for GDI development yet
- KYM-75 action aims to build Geo-Portal after determining geo-data standards.
- There is no centrally management authority or coordination body among institutions as a mediator to built GDI in Turkey. Inter-ministerial Committee (abbreviated as BHIKPK in Turkish) is responsible for map related production processes in all country.
- Regulations for distributing, distributing, pricing, and managing geo-data have not been determined and put into practice yet.
- According to Zoning Law revised in 2009, The Ministry of Public Works and Settlement has tasks for building, developing, and processing GIS in Turkey
- According to 5216 numbered Municipality Law and 5272 numbered Metropolitan Municipality Law, municipalities are compulsory to build GIS and Urban GIS.
- Access to Public Sector Information accepted in 2003, Public Institutions are responsible for presenting all kinds of information and documents.
- Interoperability Circular published by prime ministry of Turkey constitutes standards to build information systems in all central and local public institutions for e-goverment project.

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Examining Provincial GDI Development of Turkey

#	Public Institutions	Level	A1	A2	B1	B2	C	D	E
1	GOVERNORSHIP	3							
2	PROVINCIAL PUBLIC MANAGEMENT	3							
3	MUNICIPALITY	3/4							
4	Provincial Dir. Of Agriculture	3							
5	Provincial Dir. Of National Education	3							
6	TEDAS-Provincial Dir.of Electricity Distr.	3							
7	TEIAS-Turkey Electricity Transmission Corp.	2							
8	DSI-Regional Dir. of State Hydraulic Works	2							
9	Regional Dir. Of Transportation	2							
10	TCDD-Turkey Regional Head Dir.of Railways	2							
11	DLH-Regional Dir. of State Ports&Airports	2							
12	BOTAS-Pipelines&Petroleum Transp.Corp.								
13	PTT-Provincial Dir. Of Post	3							
14	Provincial Dir. of Telecom	3							
15	Provincial Dir. of Public Works & Settlement	3							
16	Regional Dir. of Highways	2							
17	Province.Dir. of Land Registry and Cadastre	2							
18	Dir. of Land Registry	4							
19	Dir. of Cadastre	3/4							
20	Regional Dir. of Provincial Bank	2							
21	Provincial Dir. of Health	3							
22	Regional Dir. of Turkey Statistics Institute	2							
23	Regional Dir. of Forestry	2							
24	Dir. Of Forestry Management	3							
25	Province.Dir. of Environment and Forestry	3							
26	Regional Dir. of Meteorology	2							
27	Council for Culture and Natural Ent.Preservation	2							
28	Provincial Dir. of Culture and Tourism	3							
29	MTA-Reg.Dir.of Mineral Res.&Exploration	2							
30	Provincial Dir. of Industry and Trade	3							
31	Provincial Dir. of Security	3							
32	Province Gendarme Command	3							
33	Group Command of Coast Security	2							
34	Provincial Dir. Of Youth and Sport	3							
35	Provincial Mufti. of Religion	3							
36	Directorate of Navigation and Hydrography	1							
37	Undersecretariat of Mining	1							

A1: Geo-data Provider
A2: Data Provider
B1: Direct User
B2: User
C : Developer
D : Legal

E : Decision Maker

Field Work was applied to data providers (A1 and A2) in Trabzon Province

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Examining Provincial GDI Development of Turkey

S W O T

	Governance	Literacy	Service/Access	Data/Content	Software	Device
S STRENGHT	* Municipalities and Cadastre Directorates have payment policy for "Data Recovery". Protocols were signed for data exchange between public institutions. * TUIK defined policy and payment procedure for exchange of statistical data.	*Municipality, Cadastre, Environment and Forestry, Highways, Hydraulic Works, and etc have sufficient personnel to manage GIS projects.	*Most public institutions built their web sites. * Especially, municipalities browsed urban atlas, numbering, and similar applications with web mapping technology. * A lot of institutions generally share geo-data on paper maps. * Electricity, Agriculture, Health, Education, and etc have centralized data management system.	* Municipalities, zoning plan services, Cadastre, etc use intra-institutional standards according to law and manage geo-data digitally. * A lot of public institutions have data exchange problem both intra-institutions and between public institutions.	* NetCAD as a national software are used on most of public institutions, but these programs are not at expected level for GIS functionalities. * Data including statistics, electricity, etc are managed on centralized data servers.	*Almost all public institutions have computer capacity to process geo-data. * Planning and investment should be done to build data server on public institutions of COM.
W WEAKNESS	* Data exchange is possible inside public institutions. But, policy for data exchange and pricing is unclear between public institutions.	* Institutions has ICT departments, but do not have potential for configuring GDI servers and networks. * Agriculture, Health, Education, Electricity, and etc do not have sufficient personnel. *Although Provincial Public Administration has a variety of tasks relating to geo-data, they do not have sufficient GIS * Personnel in almost all public institutions have not perceived the requirement of GD	* Bureaucracy and legal procedure effect geo-data management negatively.	* Most institutions archive geo-data on analog format. * Most institutions do not have geo-data and metadata standards. * It is generally difficult to manage geo-data digitally in public institutions.	* Public institutions generally do not have database software. * Public institutions generally do not have image processing software.	*Most of institutions do not have data/ internet severs to process geo-data.

Examining Provincial GDI Development of Turkey

BOSTON

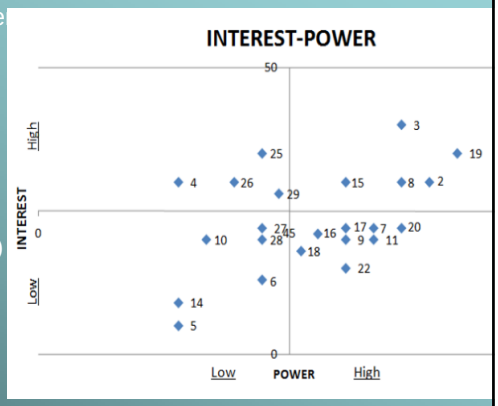
12 of public institutions have High Powe
9 out of 23 public institutions have High Interest.

High Interest-High Power:
-Provincial Public Administration (2),
-Municipalities (3),
-Reg.Dir. of State Hydraulic Works (8),
-Prov. Dir.of Public Works and Settl.(15)
-Directorates of Cadastre (19).

High Interest- Low Power:
4 of public institutions

Low Interest- High Power:
8 of public institutions

Low Interest- Low Power:
6 of public institutions



Examining Provincial GDI Development of Turkey

BOSTON

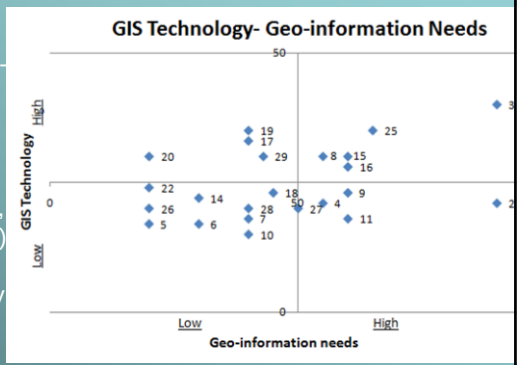
9 of public institutions have High GIS Technology
9 of public institutions have High Geo-information needs.

High GIS Technology/ High Geo-information needs
-Municipalities (3),
-Reg.Dir.of State Hydraulic Works (8),
-Prov.Dir.of Public Works and Set (15)
-Reg. Dir. of Highways (16),
-Prov.Dir.of Environment and Forestry

Low GIS Technology/ High Geo-information needs
4 of public institutions

High GIS Technology/ Low Geo-information needs: 4 of public institutions

Low GIS Technology/ Low Geo-information needs: 9 of public institutions



CONCLUSIONS

- The potential of public institutions that work with geo-data was examined in order to build a GDI in Turkey.
- Municipalities, cadastral based administrative units, and environmental related project have been significantly involved in GIS projects in Turkey.
- GIS technology is also highly available. But still there is a great lack of an umbrella institution that can be responsible to coordinate the national spatial data infrastructure procedures.
- The geo-data using policy is missing. Therefore data exchanging between public units is an issue while it is possible inside the institutions.