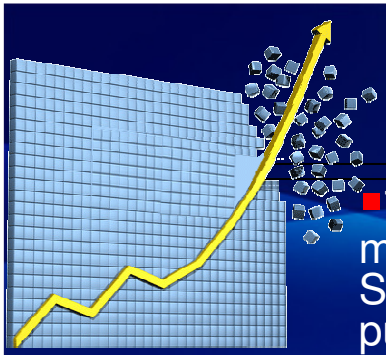
TURKISH NATIONAL SPATIAL DATA INFRASTRUCTURE PROJECT & RELATED PROJECTS

United Nations/Azerbaijan/United States of America/European Space Agency Workshop on the Applications of Global Navigation Satellite Systems, May 11- 15 , 2009, Baku, Azerbaijan

Bayındırlık ve İskan Bakanlığı Teknik Araştırma ve Uygulama Genel Müdürlüğü



REPUBLIC OF TURKEY
MINISTRY OF PUBLIC WORKS AND SETTLEMENT **MINISTRY**

- The Ministry of Public Works and Settlement was formed in 1983 with the merging of the Ministry of Public Works and the Ministry of Reconstruction and Settlement, which had been established in 1920 an 1958 respectively, for the purposes of carrying out civil works and major repairs concerning public buildings, and highways as well as providing services related to physical planning, land development and housing for low income families as well as extending disaster relief.

- Our Mission is for the purpose of achieving the vision of the ministry, preparing every type of legislation, technical document and standarts within the architecture, engineering and contracting services by using every type of plan, map, study and Project Works as well as using the technology on construction and construction materials production and providing everytype of coordination, education and control services, approval to obtain the synergy for the nationwide implementation

INTRODUCTION

- Consistent means to share geographic data among all users could produce significant savings for data collection and use and enhance decision making.

- National Spatial Data Infrastructure defined as the technologies, policies, and people necessary to promote sharing of geospatial data throughout all levels of government, the private and non-profit sectors, and the academic community.
- This project is investigating tools and *methodologies* for an implementation of **Space Information Technologies** and for the specifically required **Standardization of mapping ,planning and monitoring** activities in Turkey.

- The nature of this project which incorporates latest technologies, covers highly innovative aspects for resource planning, land use decisions, coastal zone management, environmental protection, population dynamics and security studies.

BACKGROUND AND JUSTIFICATION

Turkish-NSDI
(Development Process of NSDI)

- Turkey has taken the important steps in Pre-Accession Term to European Union (EU) although it is not a member state.
- General Directorate of Land Registry and Cadastre and General Directorate of Technical Research and Implemantation related to Ministry of Public Works and Settlement, has executed spatial_based projects on the way Accession to EU.
- Project for National Geographic Information System Infrastructure (NGISI) is one of the main projects and INSPIRE Directive has been taken as fundamental tool. Many inter_organizations (institutions) meetings had been realized in 2008 as initial studies for NGISI. After counseling adjudication in January 2009 technical studies will start for National Spatial Data Infrastructure (NSDI).
- The act for National Spatial Data Infrastructure (NSDI) is designed in Act Plans for 2006-2010 which is attached to Strategy for National Information Society. NSDI in Turkey is named as “Act 75” under “Modernization in Public Administration”. In this concept two big sub_projects had been executed.

BACKGROUND AND JUSTIFICATION

- Geographical Information Systems based on Remote Sensing contribute to planning activities, where environmental information are required namely for: coastal zone management, land use planning, hydrology as well as ecological aspects of the urbanisation. Of major concern for Turkey are the ***expanding urbanisation***, ***disaster management***, ***the water management planning***, ***pollution control***, and ***the reduction of negative impacts of the industrialization*** on the environment. All need to be supported by information based on remotely sensed data.

RATIONALE

- The sustainable development and protection of the environment are major issues in policies, and are included in many directives of the **European Union**. The need for a community strategy on an integrated planning and management of urban areas has been identified as a priority issue by several communications of the Commission. Thus, the provision of reliable and comparable data sets, statistics and indicators, and their subsequent integration into sound scientific information at various geographic scales, is of prime importance for decision making. **Geo-spatial information** is a key input for monitoring the effects related to the implementation of policies and in the provision of data relevant to international agreements.

What Kind of Spatial Data ?

- Whose ? - Spatial data held by or on behalf of a public authority operating down to the lowest level of government when laws or regulations require their collection or dissemination

- Which data ? - INSPIRE covers 34 Spatial Data Themes laid down in 3 Annexes – (*required to successfully build environmental information systems*)

Bringing data and services together through a Spatial Data Infrastructure

Like a road infrastructure makes it possible to connect different places, a spatial data infrastructure makes it possible to connect data and services located at different sources

Data and services easily discoverable and accessible to users

Easier development of new applications and services

Components

Institutional framework	Technical standards
Fundamental Geo-data sets	Web-Services (WMS-WFS-WCS)

What are the problems?
Different quality and different types of attribute information

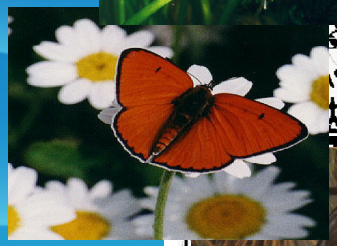
- Data compiled by Member States:
  - Paper map / site
  - Descriptive database
  - Digital Spatial data
- Data are validated and integrated by DG ENV
- Data sources:
  - In general 1/100.000, on topographic maps
  - Exceptionally 1/250.000 (very large sites)
  - Often 1/25.000 –1/1.500 (cadastre)

Species

- Falco Subbuteo
- Rhinolophus Hipposideros
- Lycaena Dispar
- Bombina Variegata

Activities

- Agricultural structures
- Landfill, land reclamation and drying out
- Professional fishing
- Modification of cultivation practices
- Continuous urbanisation



Area = 67 ha

INSPIRE Spatial Data Scope

Annex I

1. **Coordinate reference systems**
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. **Cadastral parcels**
7. Transport networks
8. Hydrography
9. Protected sites

Annex II

1. **Elevation**
2. Land cover
3. **Ortho-imagery**
4. Geology

Harmonised spatial data specifications more stringent for Annex I and II than for Annex III

INSPIRE Thematic Scope

Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and governmental services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
10. Population distribution – demography
11. Area management/restriction /regulation zones & reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy Resources
21. Mineral resources

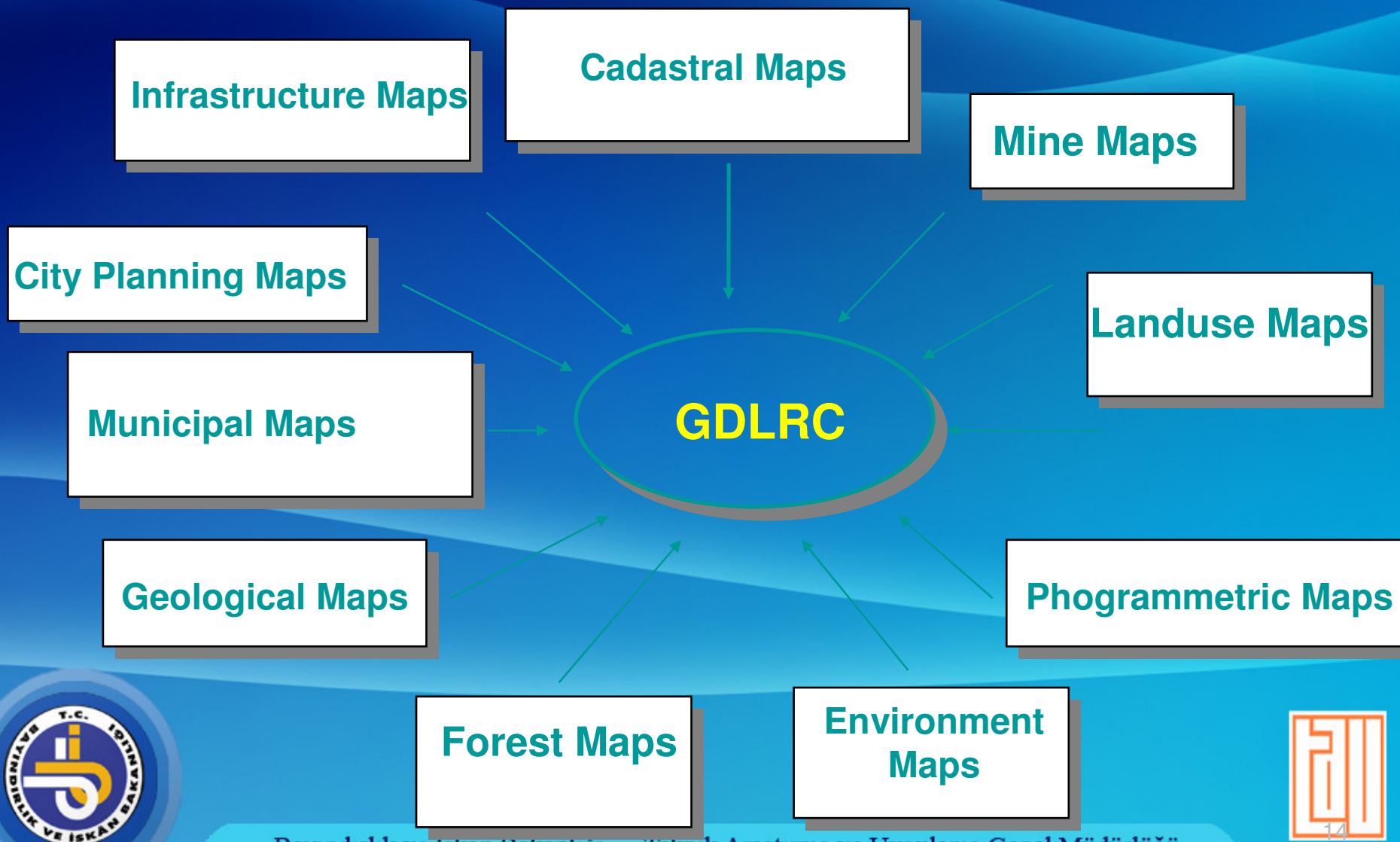
TURKISH NATIONAL SPATIAL DATA INFRASTRUCTURE PROJECT & RELATED PROJECTS

- The act for National Spatial Data Infrastructure (NSDI) is designed in Act Plans for 2006-2010 which is attached to Strategy for National Information Society. NSDI in Turkey is named as “Act 75” under “Modernization in Public Administration”. In this concept two big sub_projects had been executed.
- One of them is Metadata Portal Project. The system design and software studies were completed. It is ready to register their metadata to all map_related institutions and organizations using ISO 19115 standards and to search to all people on http://hbb.tkgm.gov.tr/metadata/

Geo-Meta Data Portal

- First application in Turkey.
- It is in coordination of GDLRC.

AIM : to store all map_related metadata from different organizations in one database.



AIM 2: To prevent the duplicate map production.

AIM 3: To constitute a substructure for e_government.

AIM 4: Standardization for geo- metadata using ISO 19115.

AIM 5: To get true and reliable metadata in time and fast.

AIM 6: To follow the map production in one center.

AIM 7: To avoid waste of time to search any data in huge amount of metadata

AIM 8: To provide needed data to the Services of Decision Making Systems fast and effective.

REGISTRATION METADATA

Administration of Institutions' Information

Administration of Users' Information

SEARCHING METADATA

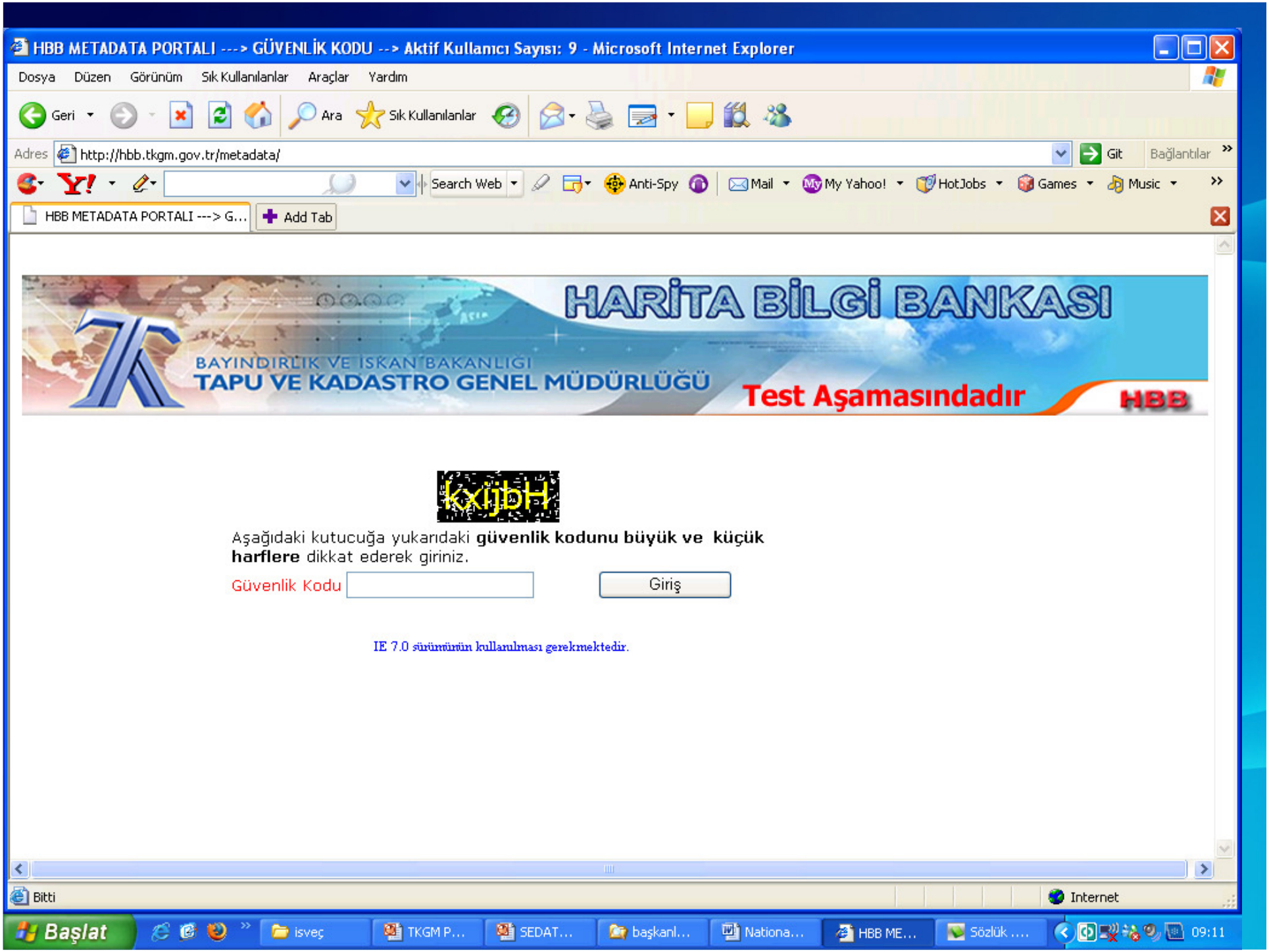
Simple Search

Detailed Search

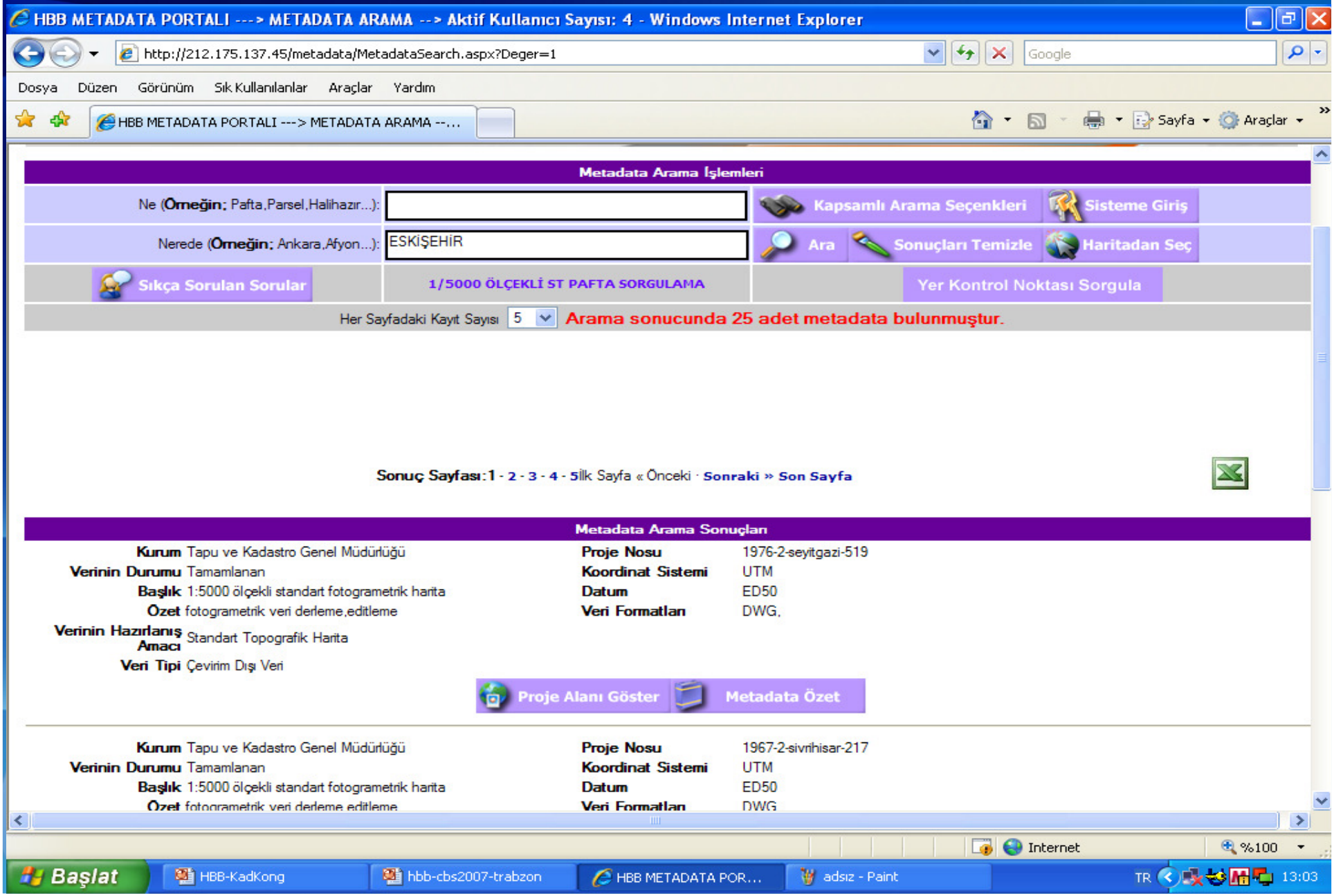
Search by Selecting on Map

Search Ground Control Points

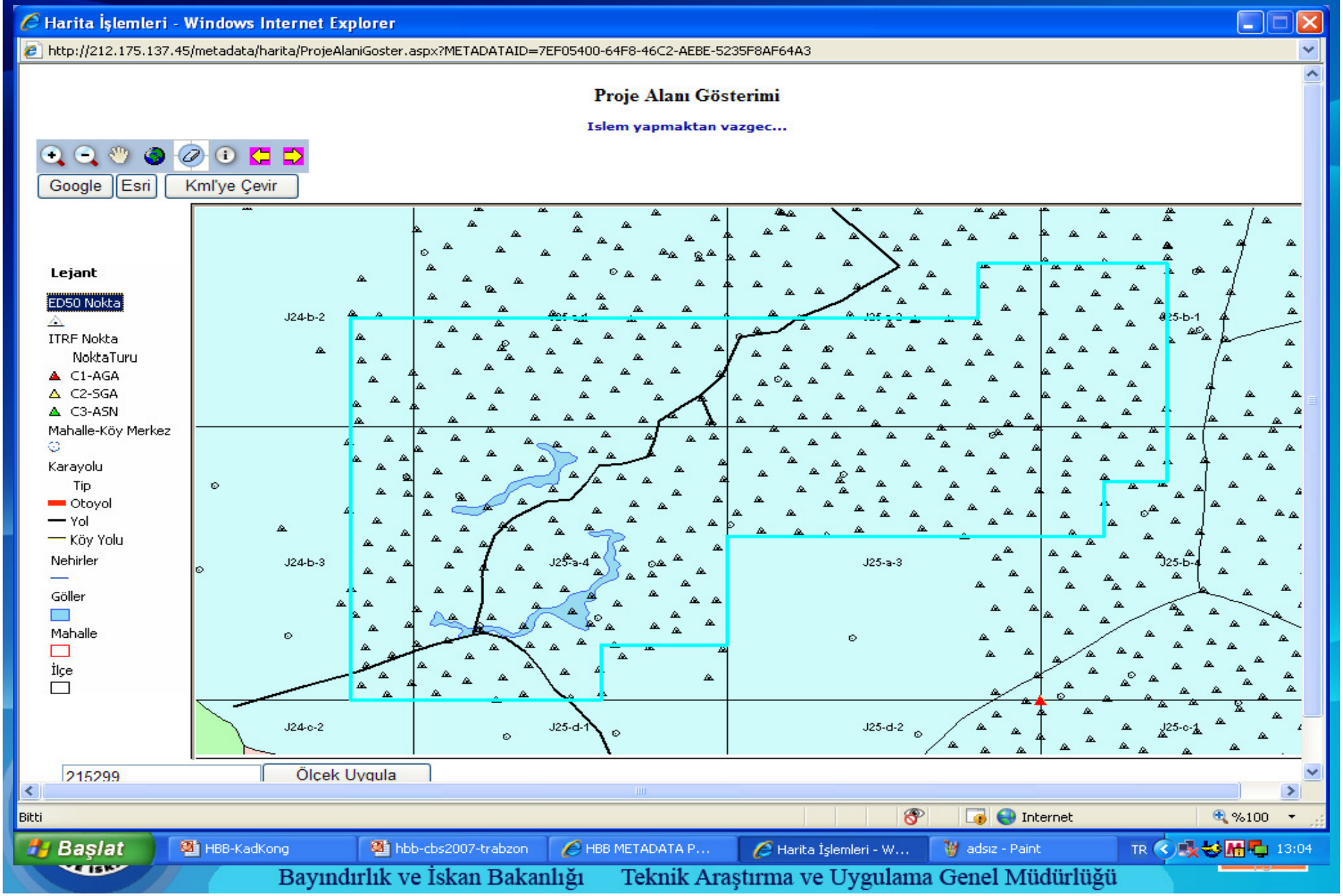
Search Standard Topograhic Maps in 1/5000 Scale.


HBB METADATA PORTALI ---> GÜVENLİK KODU --> Aktif Kullanıcı Sayısı: 9 - Microsoft Internet Explorer
Dosya Düzen Görünüm Sık Kullanılanlar Araçlar Yardım
Geri Ara Sık Kullanılanlar
Adres http://hbb.tkgm.gov.tr/metadata/
Git Bağlantılar
Search Web Anti-Spy Mail My Yahoo! HotJobs Games Music
HBB METADATA PORTALI ---> G...
Add Tab
HARİTA BİLGİ BANKASI
BAYINDIRLIK VE İSKAN BAKANLIĞI
TAPU VE KADASTRO GENEL MÜDÜRLÜĞÜ
Test Aşamasındadır
HBB
kxijbH
Aşağıdaki kutucuğa yukarıdaki güvenlik kodunu büyük ve küçük harflere dikkat ederek giriniz.
Güvenlik Kodu
Giriş
IE 7.0 sürümünün kullanılması gerekmektedir.
Bitti
Internet
Başlat
isveç
TKGM P...
SEDAT...
başkanl...
Nationa...
HBB ME...
Sözlük ....
09:11

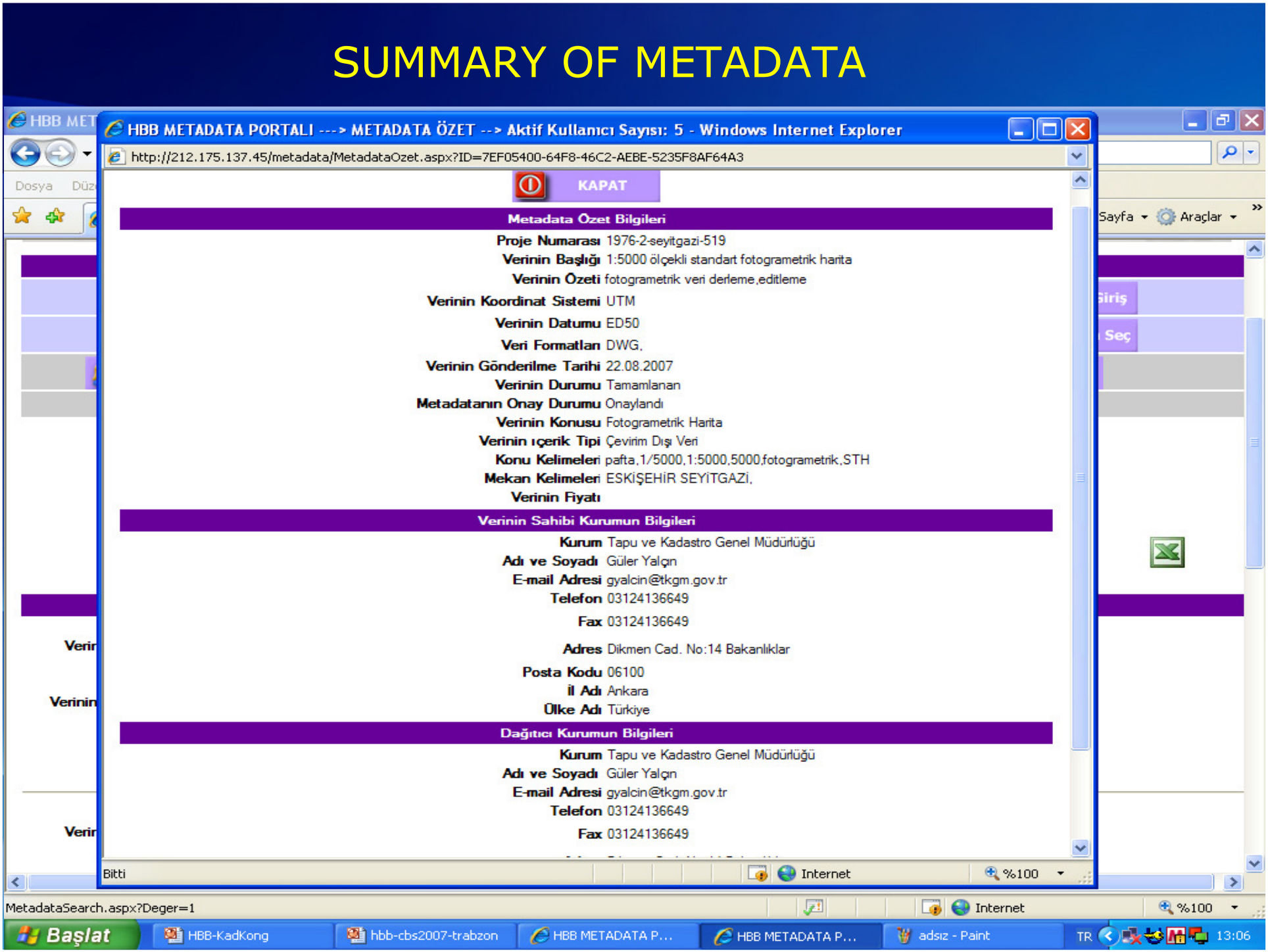
SIMPLE SEARCH



SHOW PROJECT AREA



SUMMARY OF METADATA



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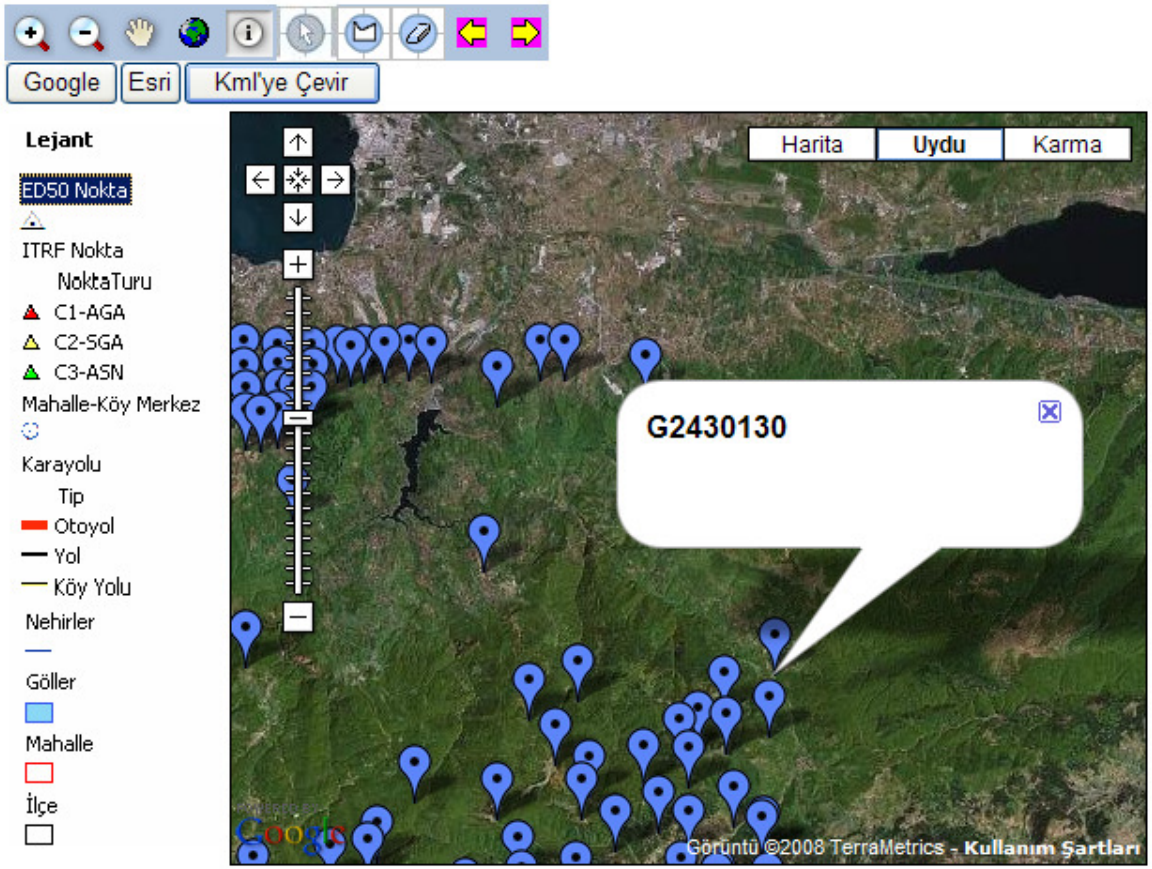
http://212.175.137.45/metadata/Harita/HaritaSecim.aspx

HARİTA ÜZERİNDEN NOKTA ANALİZİ



Tür Seçiniz ITRF ED50

Sorgula

Sonuçları Aktar

Lütfen arama yapmak istediğiniz noktayı ekrandaki  butonuna bastıktan sonra harita üzerine tıklayarak belirleyiniz.Belirlenen nokta etrafında arama yapılmak istenen tampon bölge uzaklığını ekrandaki kontrol aralığı bölümündeki listeden seçiniz.Daha sonra Sorgula düğmesine basarak yer kontrol noktası sorgulama işlemini tamamlayınız.Yapılan sorgunun sonucunda bulunan nokta sayısı Sorgula butonu üzerinde görüntülenecektir.Sonuçları görüntülemek için Sonuçları Aktar butonunu kullanınız.Sonuçlar Yer Kontrol Noktası Sorgulama ekranında görüntülenecektir.

Internet %100

Başlat | HBB-KadKong | hbb-cbs2007-trabzon | adsız - Paint | HBB METADATA P... | Untitled Page - Win... | TR 13:27

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http://212.175.137.45/metadata/Harita/HaritaSecim.aspx

HARİTA ÜZERİNDEN NOKTA ANALİZİ

Google | Esri | Kml'ye Çevir

Lejant

ED50 Nokta

ITRF Nokta

NoktaTuru

C1-AGA

C2-SGA

C3-ASN

Mahalle-Köy Merkez

Karayolu

Tip

Otoyol

Yol

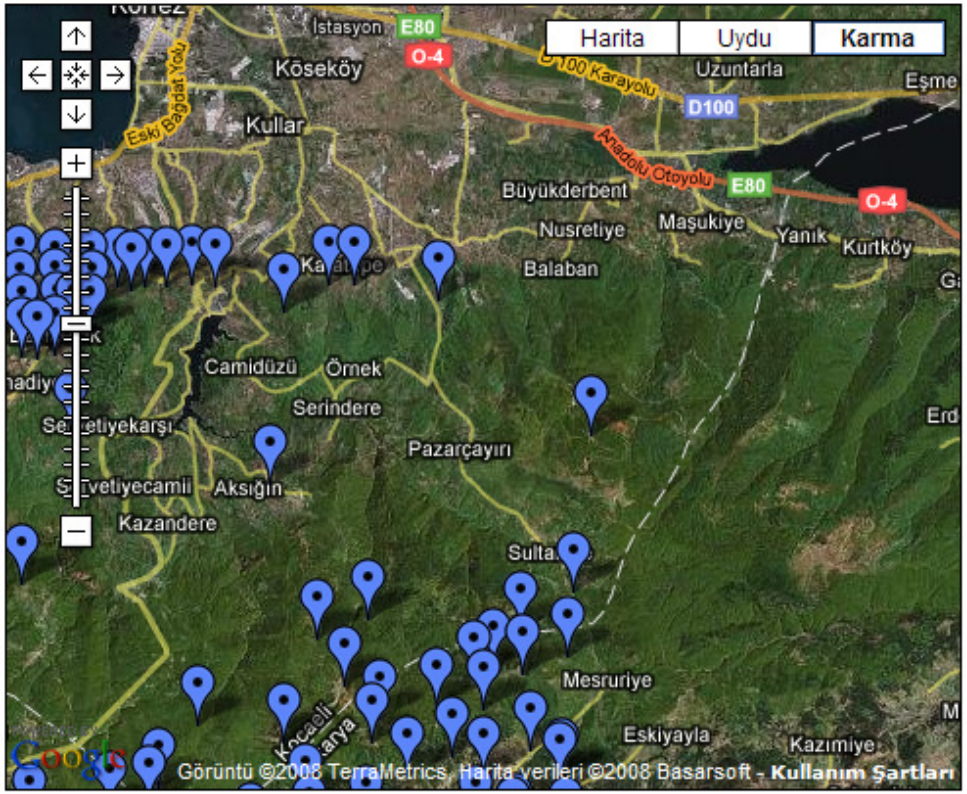
Köy Yolu

Nehirler

Göller

Mahalle

İlçe



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Bitti | Internet | %100

Current Situation In Project

- Web based software is completed
- It is possible to register metadata online
- Numbers and approximayetly coordinate values of Ground Control Points are searched. Analysis of the Points can be done.
- Other Instututions are registring their metada
- ISO 19115 Standarts

www.tkgm.gov.tr

http://hbb.tkgm.gov.tr/metadata

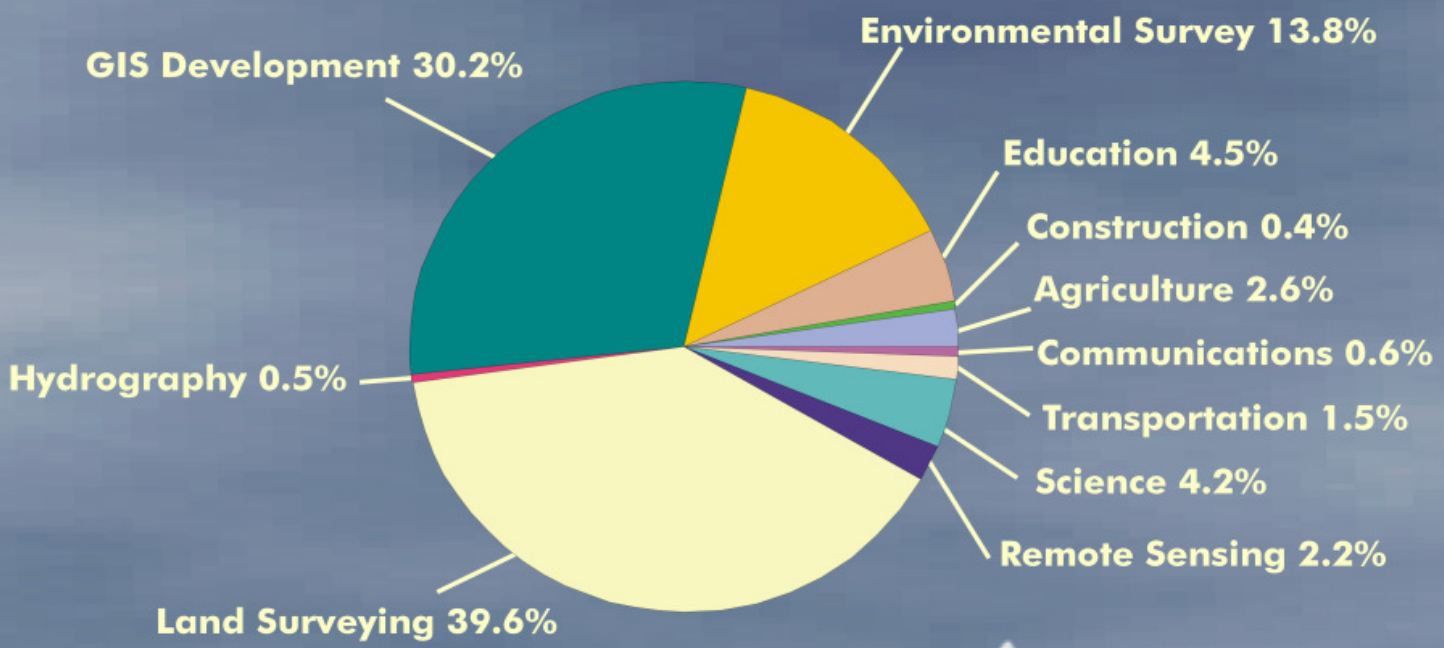
Turkish National Permanent RTK-GPS Network and Datum Transformation Project

TUSAGA-Aktif (CORS-TR)

CORS-TR

- The other project is CORS-TR (Continuously Operating Reference Stations) Project. Within the scope of this project, Istanbul Culture University (ICU), jointly with the General Command of Mapping (GCM) and the General Directorate of Land Registry and Cadastre (GDLRC), has proposed an extremely crucial project for Turkey to TÜBITAK (The Scientific and Technological Research Council of Turkey).
- TUBITAK, and upon scientific assessment, has decided to support this nation-wide “Project of Research and Implementation Related to the Establishment of Networkbased Stationary Real-Time Kinematic (RTK) GPS Terminals and Determination of Cellular Transformation Parameters”.
- The aim is to establish one station in each province, in order to provide a system that will cover the whole country, functioning 24 hours/day, and able to provide the capability of accurate position determination.

CORS Applications



5,646
Survey responses
Fall 1999

Turkish National Permanent RTK-GPS Network (CORS_TR)

STARTS: MAY 2006
END : MAY 2009
COST : 5 M. USD

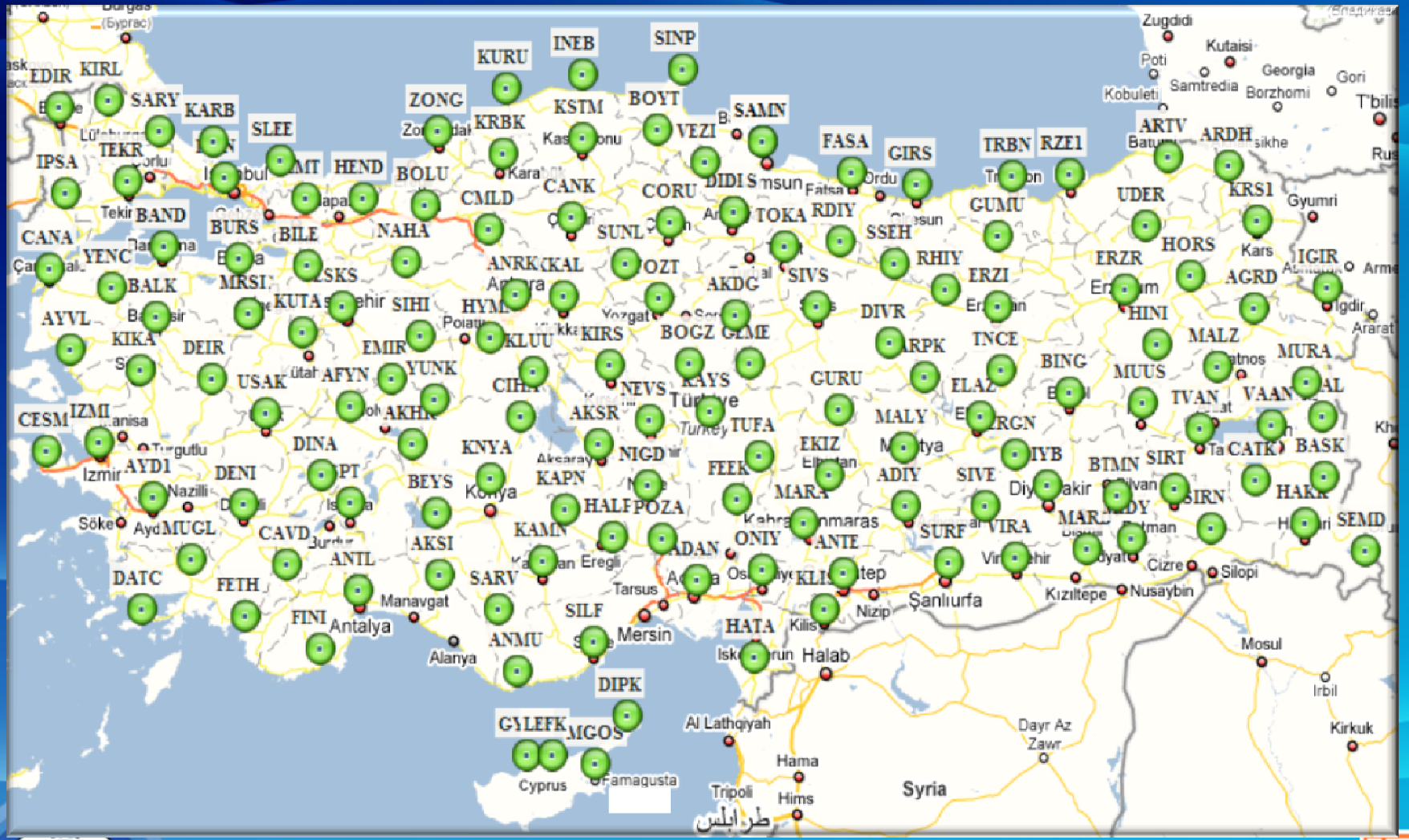
Turkish National Permanent RTK-GPS Network (CORS_TR)

Aim;

- To collect cm-level accuracy in real-time, for precision position information in all Turkey and K.K.T.C. with RTK GPS network.

- Datum transformation between ED50-ITRF

CORS_TR Stations -147



CORS_TR Monumentations


Erzurum-Meteoroloji

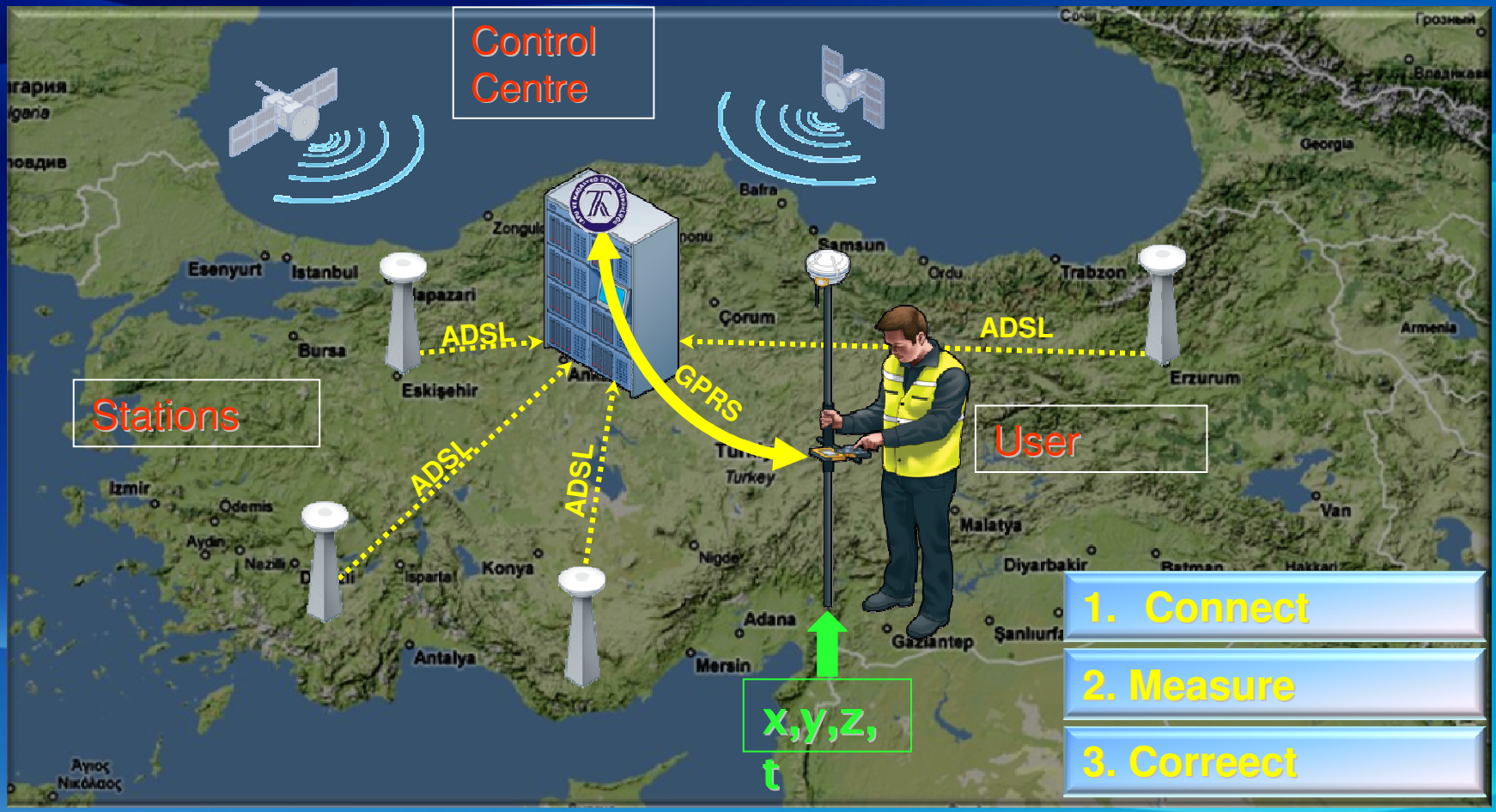

Diyarbakır-DSI


Iğdır-TKGM


Kabinet


Viranşehir-Meteor.

How it is working …



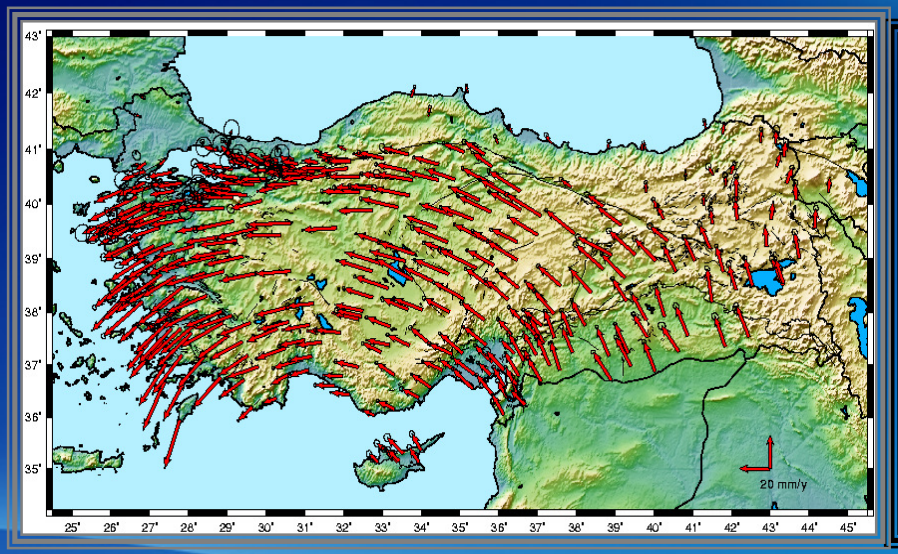
Cm-level coordinates in a few seconds ..

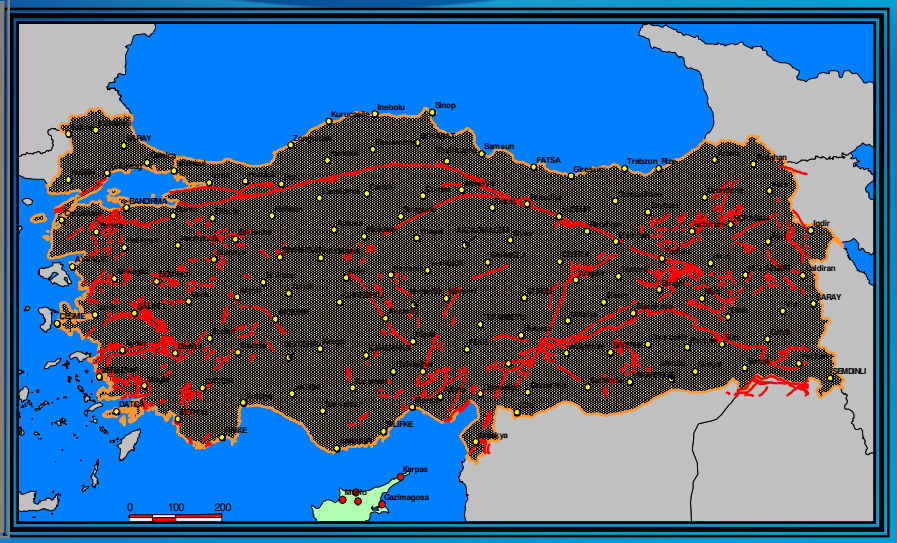
Project Outputs -1

- No GCP (triangulation or traverse points) for pricise mapping and GIS (geo related e-state) data collection projects.
- Saves more than 50 million USD every year (reduces 30% in all mapping projects)

Project Outputs -2

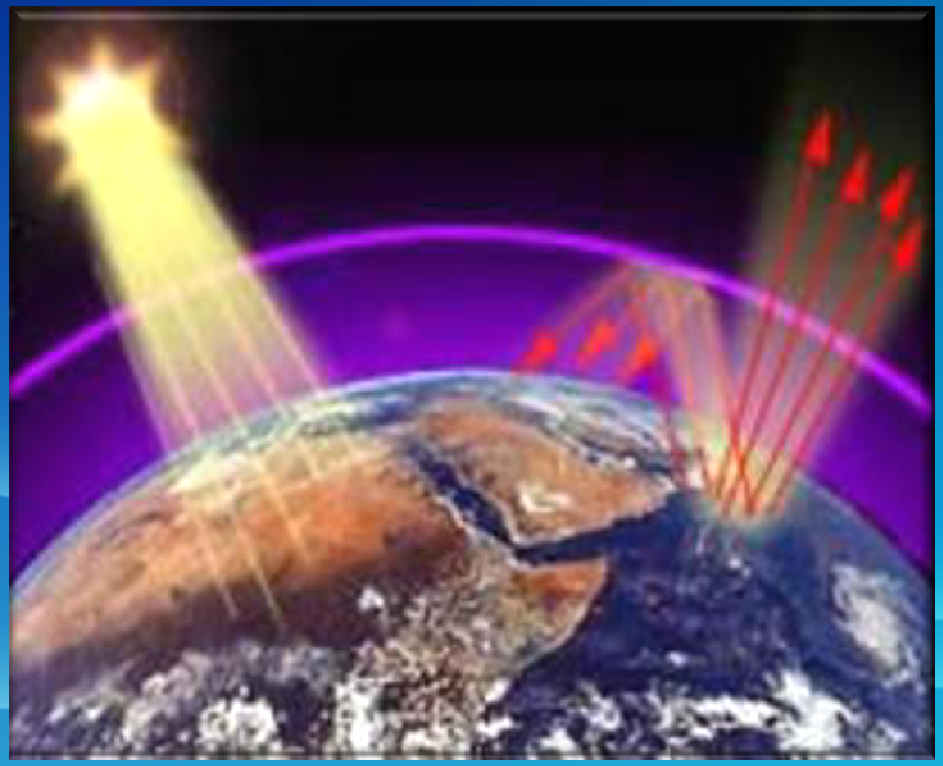
To monitor techtonic movements on-line





Project Outputs -3

To model atmosphere (ionosphare&trophospare)



PROJECT PURPOSE

- The project aims to build the physical infrastructure which is essential particularly for Planning and Monitoring activities in Turkey and to implement Space Information Technologies to practices of governmental bodies successfully. This will provide the enhancement of institutional capacity in parallel with the development of essential means for planning and monitoring activities in Turkey.
- The project comprises the latest subjects of resource planning and contemporary technologies for the studies of decision making for land use, management of coastal region, environmental protection and community dynamics and security.
- Another aim of the project is to update the level of technology utilized in governmental bodies in our country. This will be applicable to scientific and academic institutions as well. At this point, the improvement of scientific researches as well as the support of governmental services would be the expected outcomes.

THANK YOU for your attention

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