

*Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland*



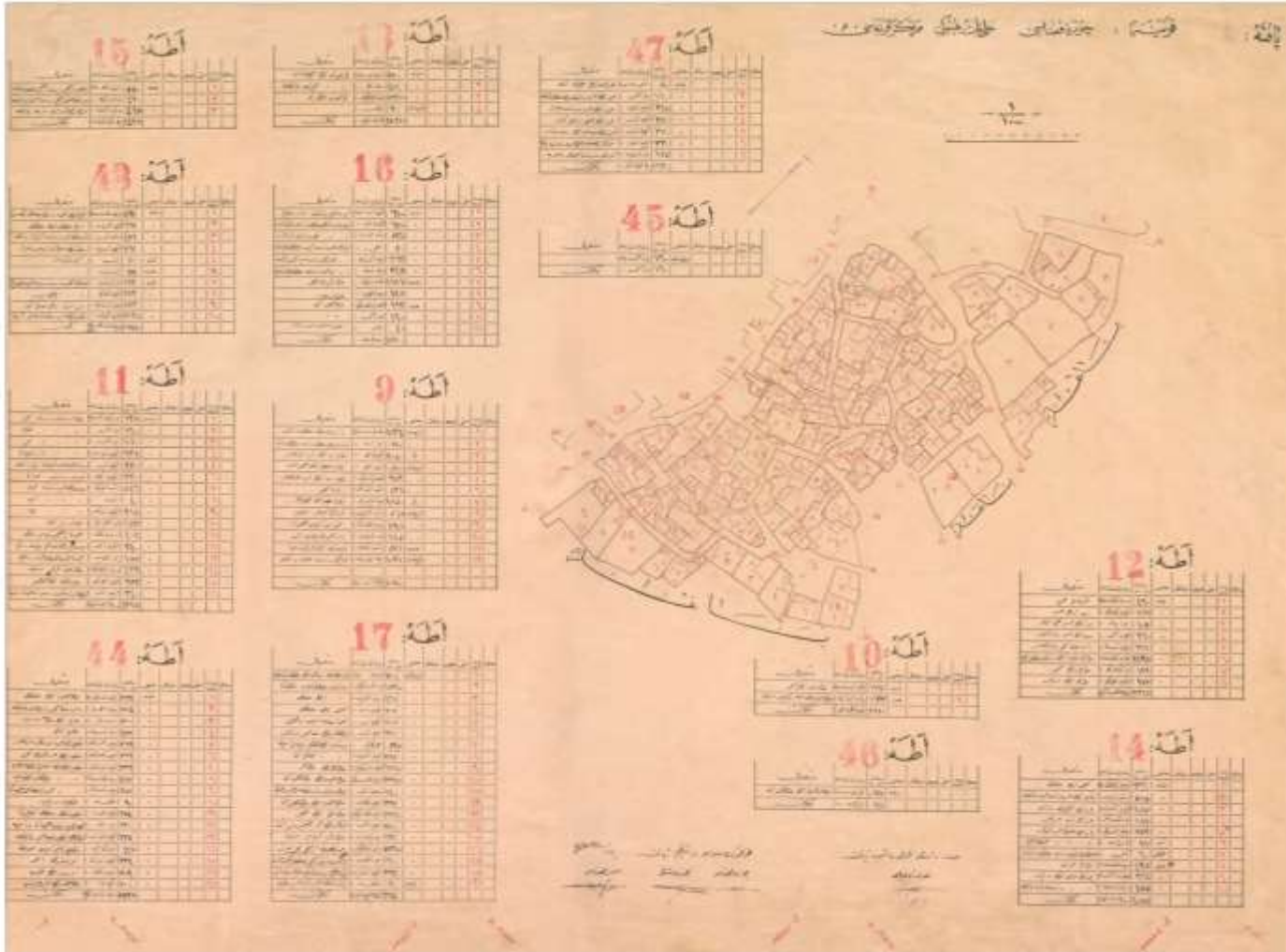
SEAMLESS DIGITAL CADASTRAL MAP AND GEODETIC INFRASTRUCTURE IN TURKIYE

Sedat BAKICI
Head of Geoinformatics Department

SHORT HISTORY of GDLRC



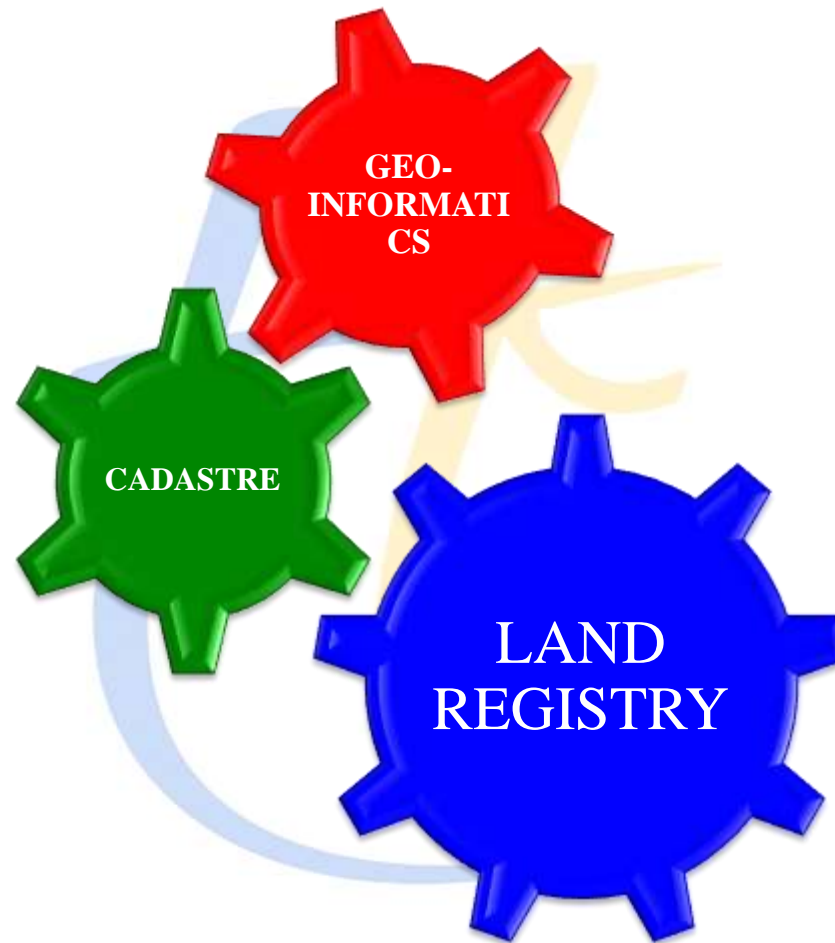
FIRST CADASTRAL MAP IN TURKIYE-1913



DUTIES & AUTHORIZATION

- Register, update and service of land registry
- Cadastre of homeland
- Photogrammetric map production and geodetic activities
- Land information system
- Cooperation with international organisations on related areas
- Licenced Survey and Cadastral Engineering Offices
- Real estate brokerage activities
- Coordination with other public institutions and organizations

MAIN AREAS OF ACTIVITY of GDLRC



GEOINFORMATICS SERVICES

- GNSS RTK Network (TUSAGA-Aktif / CORS-Tr)
- Photogrammetric mapping & Orthophoto production.



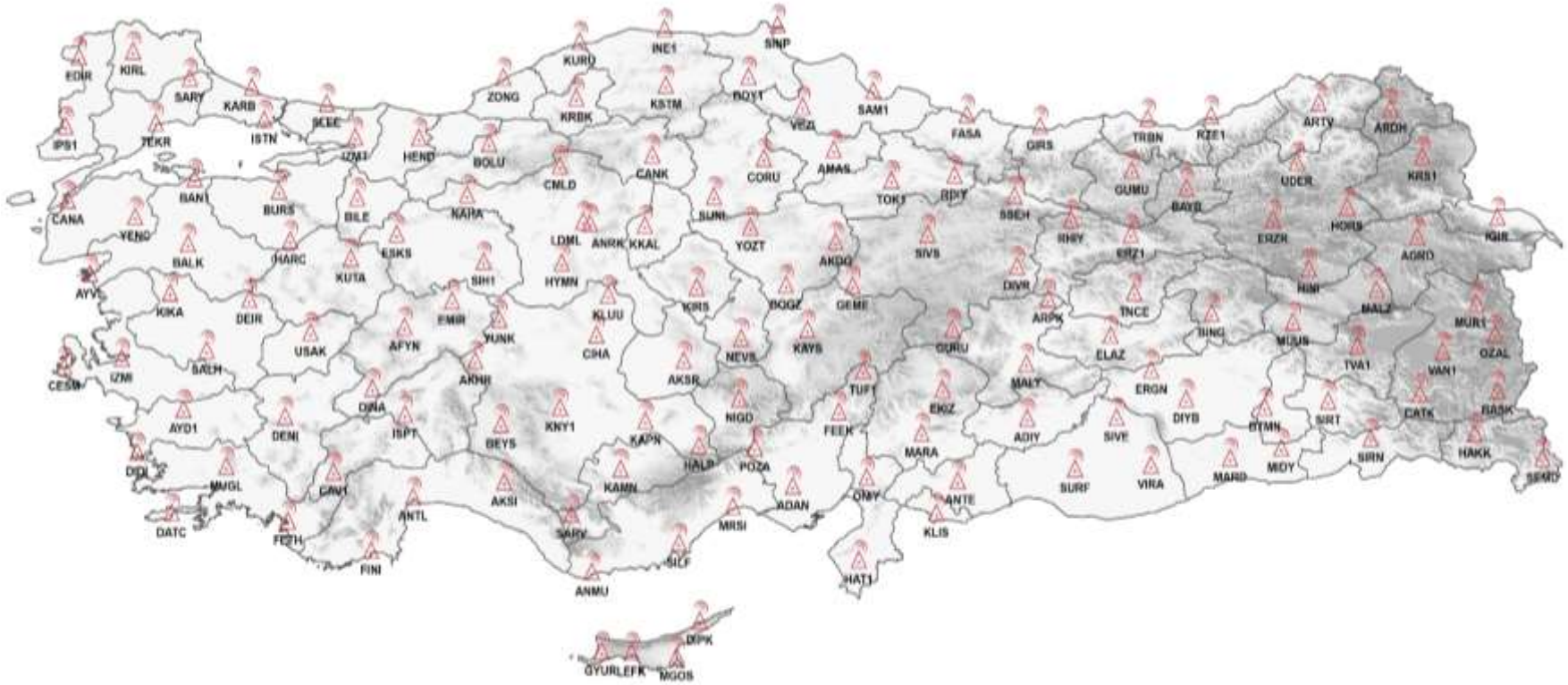


TUSAGAKTİF

TÜRKİYE ULUSAL SABİT GNSS AĞI AKTİF



CORS-Tr Stations-146



Distance between stations 80-100 Km.'s

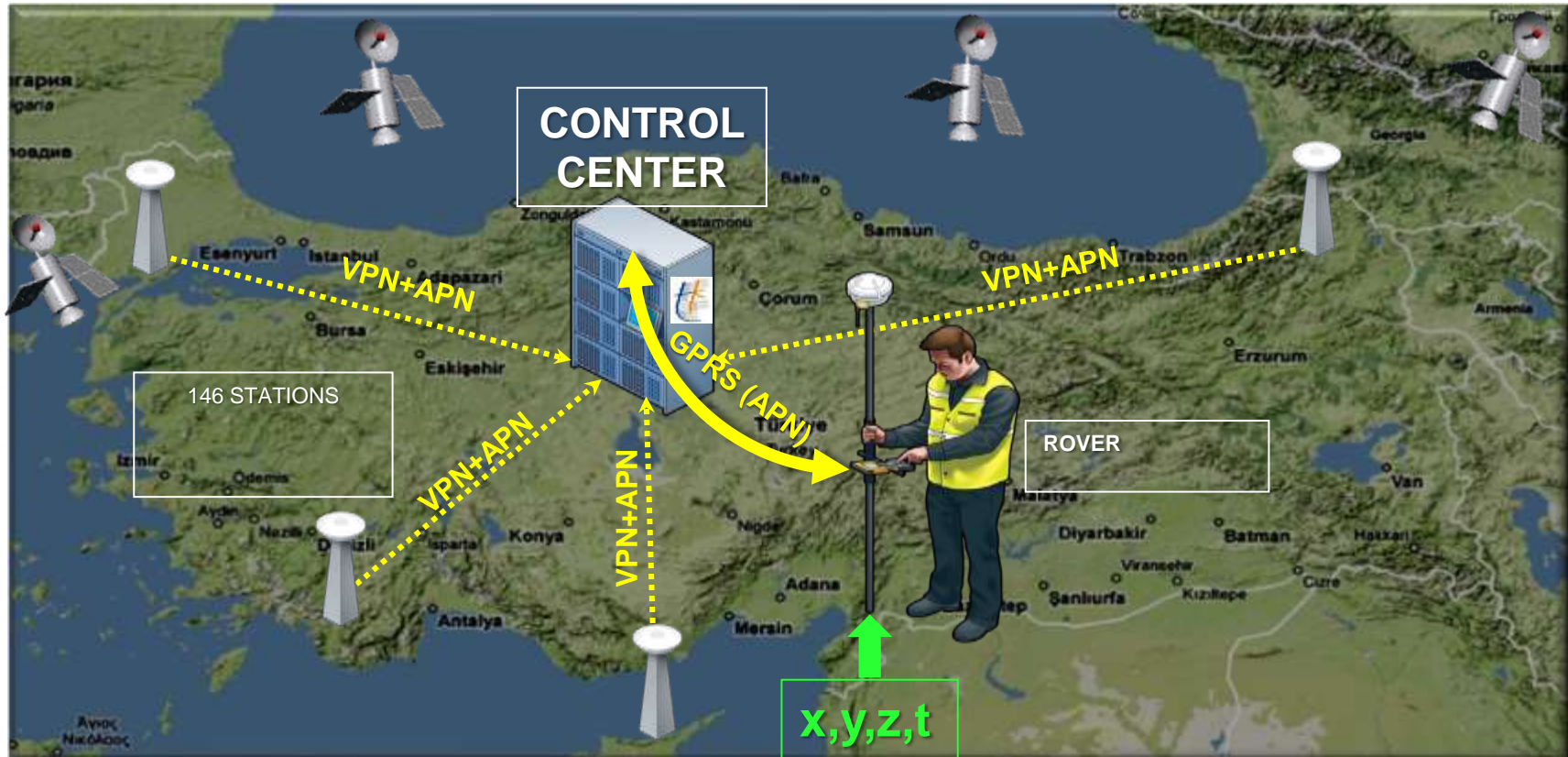
CORS-Tr Stations



CORS-Tr Control Center Ankara – GDLRC



Network RTK Working Principle



2005.0 Epok

User Web Service

<http://www.tusaga-aktif.gov.tr>

The screenshot displays the TUSAGAKTIF website interface. At the top, the URL 'tusaga-aktif.gov.tr' is visible in the browser's address bar. The main header features the TUSAGAKTIF logo, the text 'TÜRKİYE ULUSAL SABİT GNSS AĞI AKTİF', and the coat of arms of the Republic of Turkey. Below the header, there are two main navigation menus. The left menu, titled 'ABONELİK İŞLEMLERİ' (Subscription Operations), includes: Giriş (Login), Abonelik Rehberi (Subscription Guide), Ücretler (Fees), Sıkça Sorulan Sorular (Frequently Asked Questions), and İletişim 444 46 77 (Contact). The right menu, titled 'TEKNİK İŞLEMLER' (Technical Operations), includes: Giriş (Login), İstasyon Haritası (Station Map), Nokta Konumları (Point Locations), 30 Saniye RINEX (30 Second RINEX), and AĞ-RTK Çalışma Prensipleri (Network-RTK Working Principles). At the bottom of the page, there are social media icons for Facebook, Twitter, and YouTube. A central illustration shows a person using a surveying instrument.

User Web Service

<http://www.tusaga-aktif.gov.tr>

TUSAGAKTIF
TÜRKİYE ULUSAL SAĞIT İMGE ALIYICI

Trimble® Pivot Web

• Ana Sayfa • VRS iScope Live!

- Ara Sayfa
- İstasyon Haritası
- Ağ Bilgisi
- 195 İstasyonlar
- İRM/ORM
- Referans Vektör Dökümü
- Hesabım
- Kırsal Bilgi
- Şifre Değiştir
- Gönder
- Özellikler
- VRS iScope
- VRS iScope Live!
- Aktif Üyelikler
- Yönetim
- Bölge
- Bölge Ekle
- Bölgeyi Düzenle
- Firmalar/Kurumlar
- Firma/Kurumlar
- Yeni Firma/Kurum
- Onay Bekleyen Firmalar/Kurumlar
- E-posta adresini kaydet
- Firma/Kurum Detayları
- Detaylı Firma/Kurum Bilgisi
- Ekl Bilgi Alanları
- Yeni Alan Ekle
- Kullanıcı Bilgisi Detayları
- Ekl Bilgi Alanları
- Yeni Alan Ekle
- Organizasyon Yönetimi
- Organizasyonlar
- Yeni Organizasyon
- Yetki Yönetimi
- Yetki Genel
- Yeni Yetki
- Üyelik Yönetimi

VRS iScope™ Live!

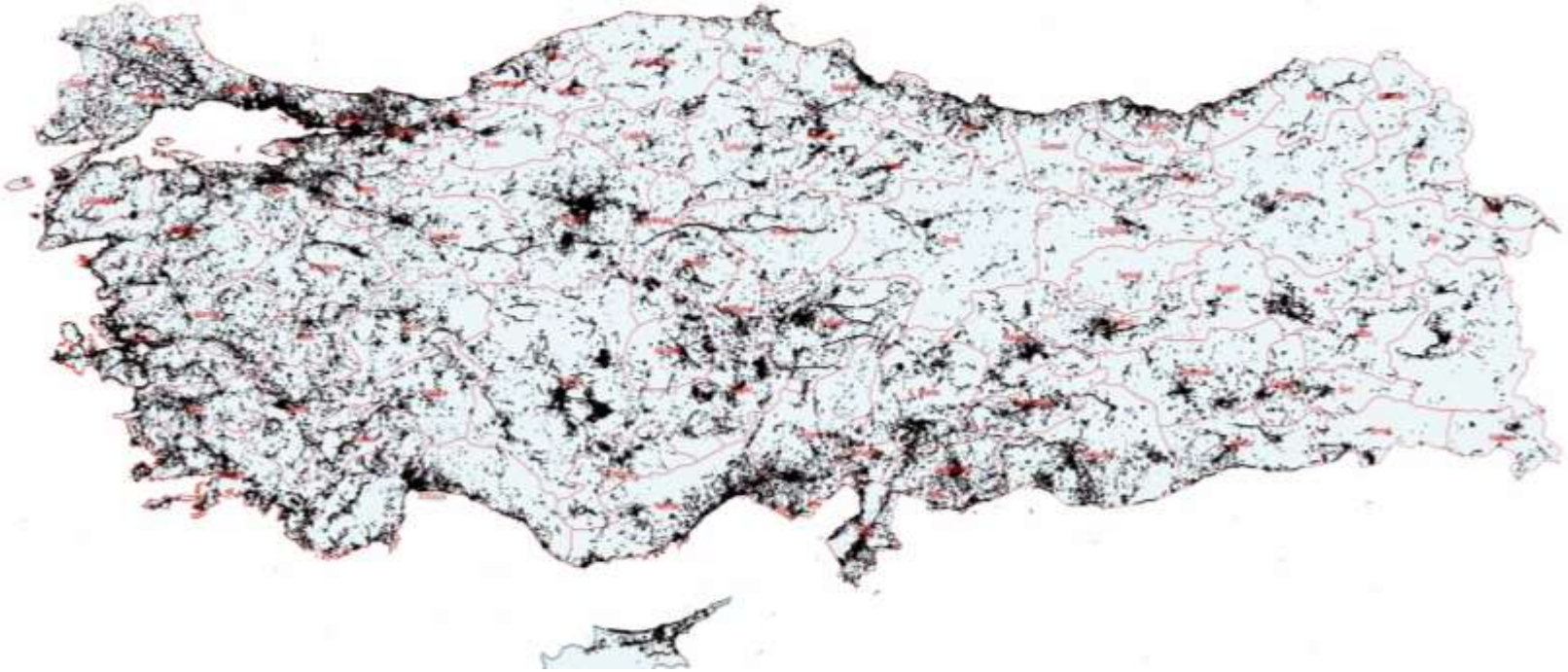


- 335 aktif kullanıcılar:
- K05344801 (RTK Fikis)
 - K01456501 (RTK Fikis)
 - K0210501 (RTK Fikis)
 - K072601802 (RTK Fikis)
 - K05554301 (RTK Fikis)
 - K070608302 (RTK Fikis)
 - K074204201 (RTK Fikis)
 - K070710501 (RTK Fikis)
 - K071000501 (RTK Fikis)
 - K01450004 (RTK Fikis)
 - K08470101 (RTK Fikis)
 - K073200801 (RTK Fikis)
 - K09381801 (RTK Fikis)
 - K0336030201 (RTK Fikis)
 - K073427001 (RTK Fikis)
 - K08425302 (RTK Fikis)
 - K073419701 (RTK Fikis)



Kullanıcı: K01296851
Organizasyon: PALLI Kod 854
Zemin: 19 23 57 087 3
En: K 38° 44' 14.08234"
Boy: D 28° 54' 56.10054"
Yükseklik: 943.648
Uydu: 13
PDOP: 1.32
Kanal: RTK Fikis

CORS-Tr Usage Map – 2016

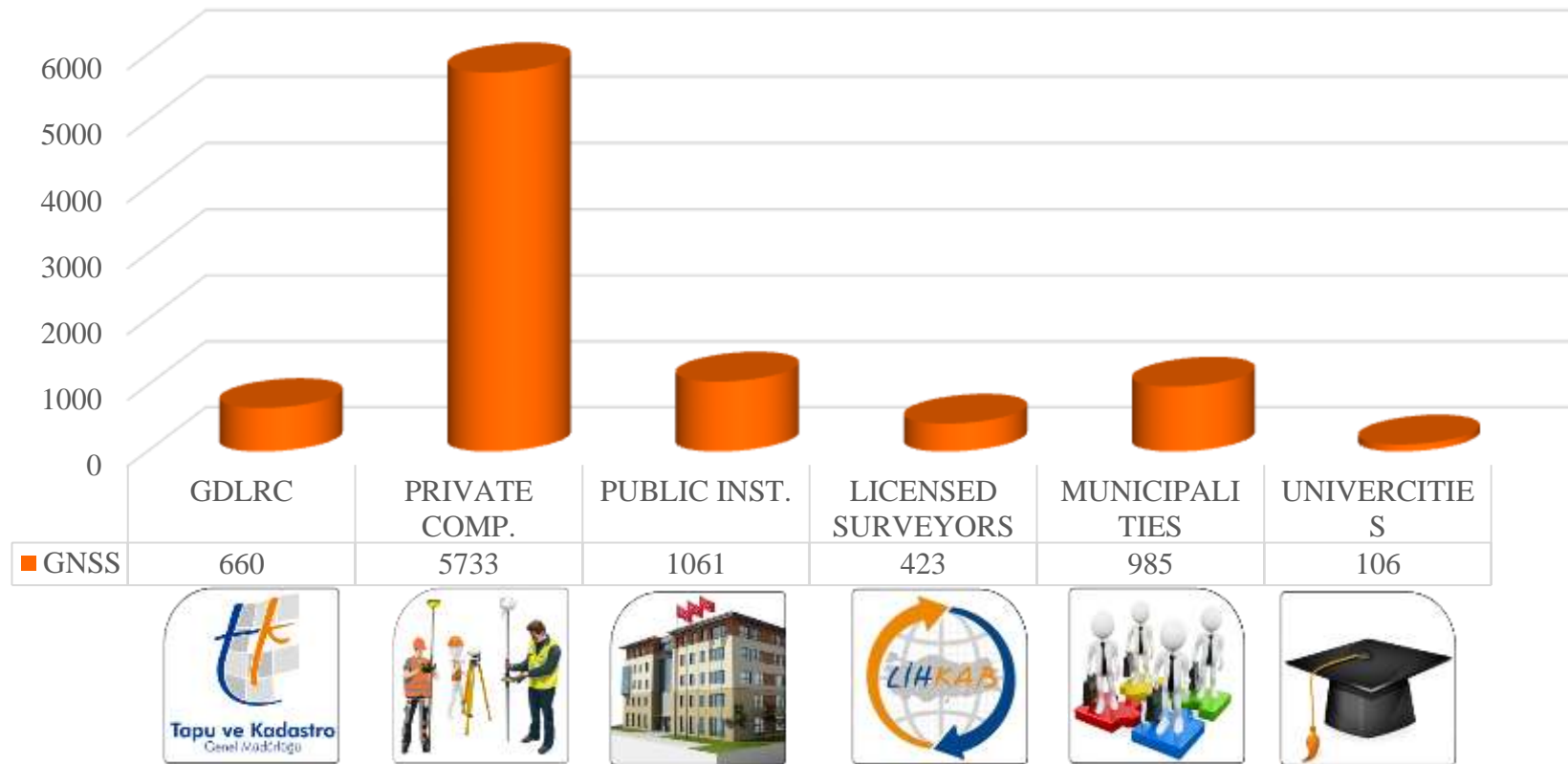


13.412.424 points ...

CORS-Tr Operating/Users

Total # Users: 8.968

09.05.2017



Daily total number of users (mean) :2400
Simultaneous maximum number of users:840

CORS-Tr Accuracy Checks

PERIOD	Nr of POINTS	RMS (m.)		
		EAST	NORTH	HEIGHT
2009	808	0,039	0,042	0,090
2014-1	723	0,045	0,039	0,078
2015-1	743	0,033	0,035	0,047
2015-2	701	0,029	0,027	0,058
2016-1	725	0,032	0,031	0,051
2016-2	697	0,029	0,028	0,046

2 times QC Checks every year ...

CORS-Tr Operating / Prices

SERVICE TYPE	DATA TYPE	Price (VAT INC.)	EXPLANATION
FIRST SUBSCRIPTION	-	50 USD	Once
RTK Services	Network-RTK	35 USD	Monthly
		250 USD	Annual
	Network-DGPS	17 USD	Monthly
RINEX Data	RINEX 1 s	0.17 USD	Station/Hour
	RINEX 30 s	FREE	Station/Day

CORS-Tr Operating/User support



444 GNSS
444 4677

2016
14.919 CALLS



On-line Orthometric Height Value



PHOTOGRAMMETRIC MAP&ORTHOPHOTO PRODUCTION

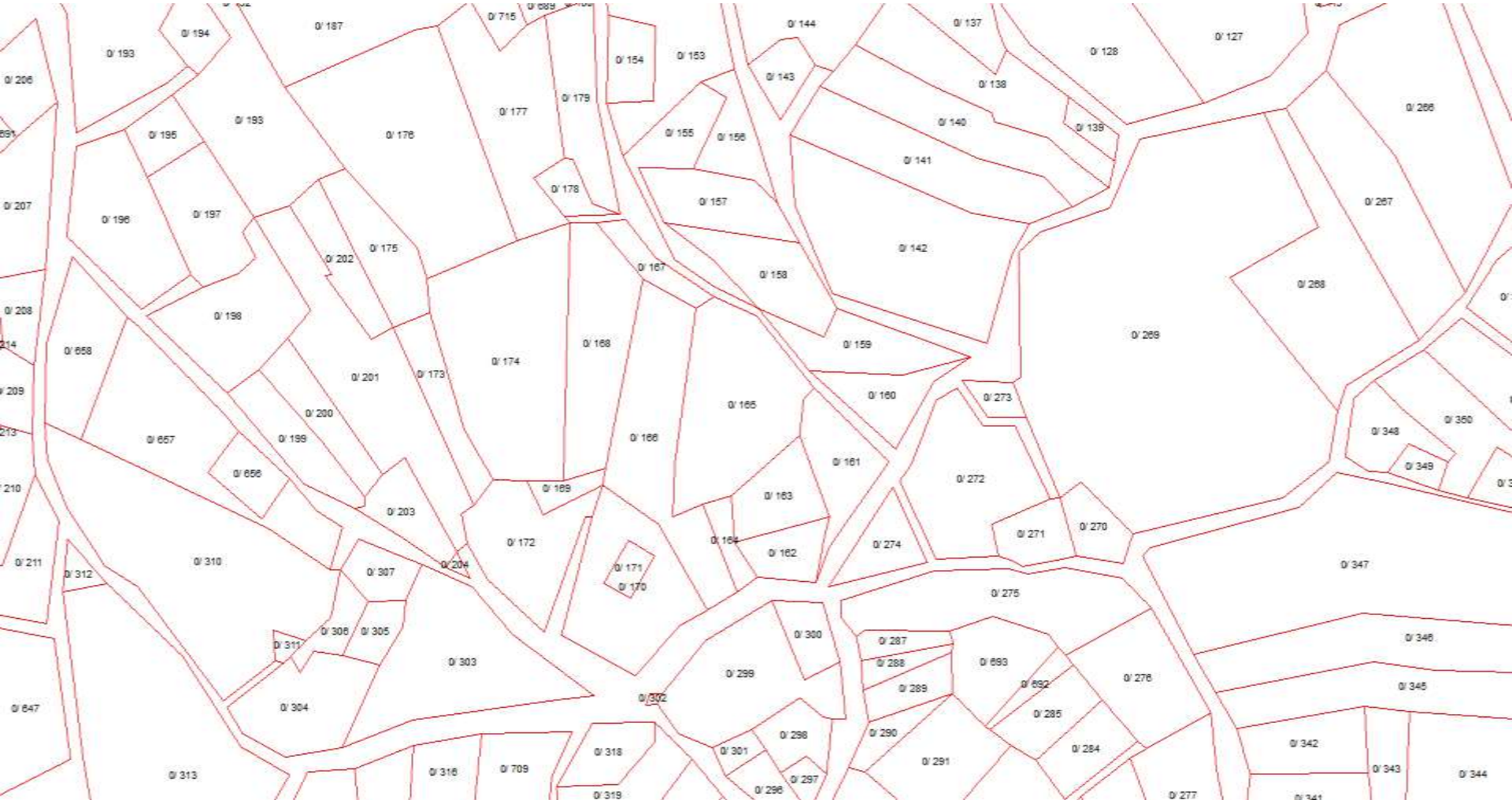
In order to complete first cadastre, 1/5000 scaled base map production has been carried out at 480.000 Km² area after 1955 by photogrammetric method

...

Digital Orthophoto production has been started after 2007 for cadastral renovation and update works for the purposes of **decision-support, quality control and establishing legal basis** ..



Orthophoto Map – Usage at Cadastre



Orthophoto Map – Usage at Cadastre



Orthophoto Map – Usage at Cadastre



Orthophoto Map Production Process



ORTO FOTÖ
BİLGİ SİSTEMİ

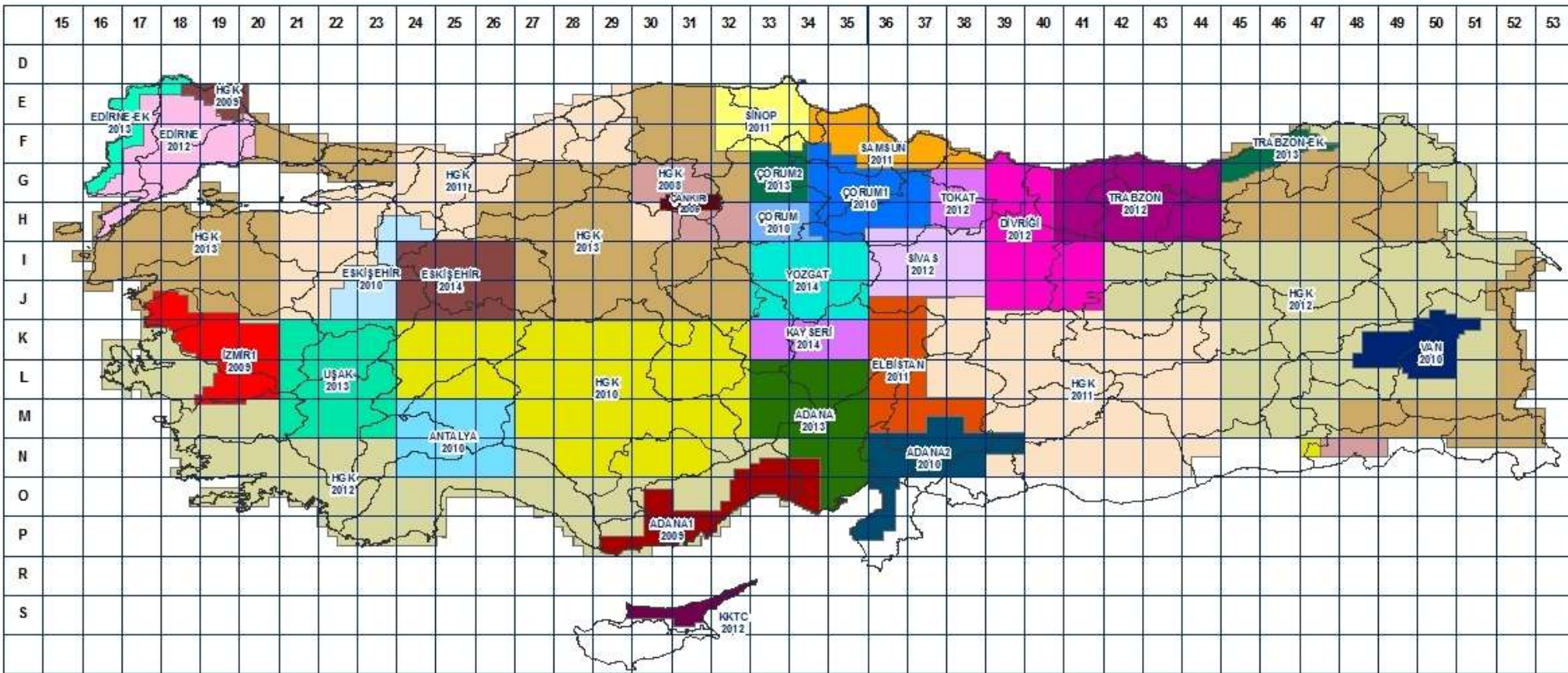


Aerial Image Acquisition

Aerial photography services for aerial image acquisition are provided by 2 aircrafts equipt with digital aerial camera in GDLRC



Orthophoto Map Production Situation 15-30-50 cm GSD



Orthophoto Maps - Web Services (WMS)

<http://harita.tkgm.gov.tr>



Ortho image– Delivery



1.75 USD / Km²

ORTHOPHOTO PRODUCTION FROM B/W AERIAL ARCHIVE PHOTOGRAPHS

Scanning of aerial photographs taken for the production of 1/5.000 scale ST maps in the 480,000 Km² area available in the GDLRC archive and the production of B/W Orthophoto using the obtained digital images. It was completed in 2015.



KAYSERİ 2002



KAYSERİ 2010



KAYSERİ 2011



KAYSERİ 2014

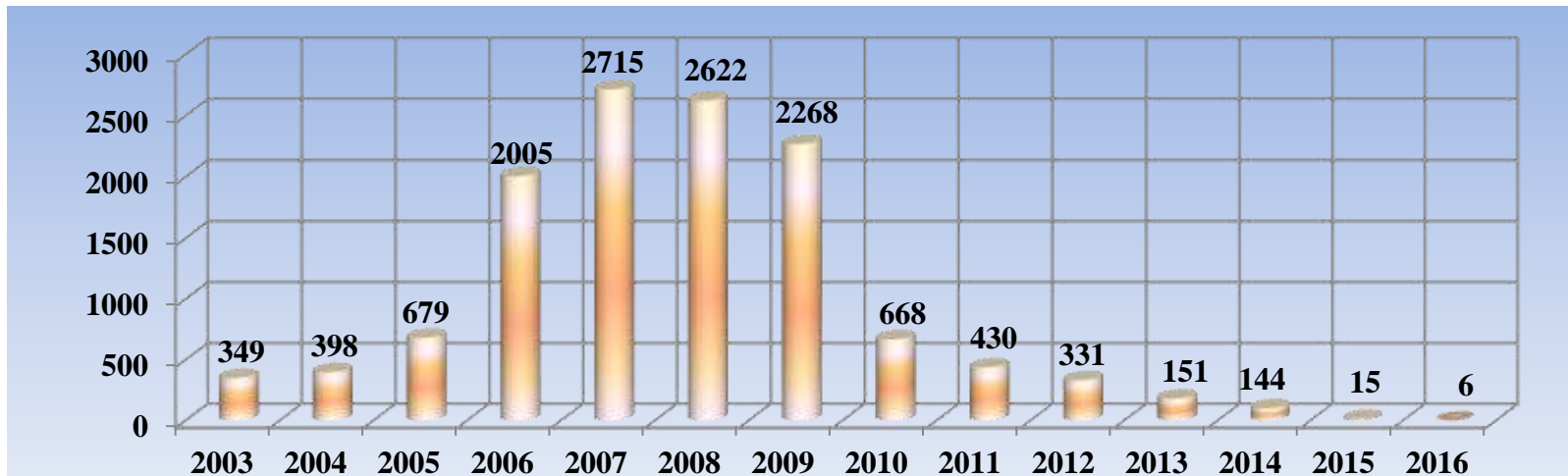
CADASTRE SERVICES

- First Cadastre is completed
- Cadastre Renovation works in progress
- Forest Cadastre in progress
- Military security zones are measured
- Licenced Cadastre Offices (195)



INITIAL CADASTRE

INITIAL CADASTRE OF TURKEY (CURRENT)				
TOTAL UNITS	COMPLETED BEFORE 2003	2003-2015	IN PROGRESS	PROBLEMATIC
52.049	38.796	12.781	107	365



- ARIP PROJECT

CADASTRAL RENOVATION



TKMP PROJECT

In 4671 units, 4.808.032 parcels



REVOLVING FUND RESORCES

In 1190 units 1.229.543 parcels

TOTAL

In 5861 units 6.037.575 parcels



AF PROJECT

4.6 Millions parcels

Land Registry and Cadastre Information System-TAKBİS

TAKBİS IS ONE OF THE BASIC E-GOVERNMENT PROJECT AIMING TO TRANSFORM SERVICES OF GDLRC IN TO A UNIQUE DATABASE



TAKBİS (Land Registry and Cadastre Information System)

Browser: cbs.tkgm.gov.tr/silverlight/anasayfa.aspx — Mekânsal Gayrimenkul Sistemi

Mekânsal Gayrimenkul Sistemi | Apple Türkiye Fan Sitesi | TRT Haber – Türkiye'nin Haber Kaynağı

Bilgi Teknolojileri Dairesi Başkanlığı | kullanıcı : sbakici

Katma Kişi Sorgulama

Gerçek Kişi | Tüzel Kişi

Ad: [] Soyad: [] Baba Adı: []

T.C. Kimlik No: 37756344638 | Sorgula

Kimlik No	Adı	Soyadı	Baba Adı	Ana Adı	Doğum Yeri	Doğum Tarihi
3344638	SEDAT	BAKICI	LÜTFİ			
3344638	SEDAT	BAKICI	LÜTFİ	FADİME	ESKİŞEHİR	02/11/1967

İlçe	Mahalle	Ada	Parsel	Alan	Cins
ESKİŞEHİR	TEPEBAŞI	ZİNCİRLİKUYU	0	4818	124,00 TARLA

Detay Ad: [] Detay Adet: []

Malikler: 3

Malik Tip	Malik Açıklama	Hisse	Edinme Sebep	Edinme Tarihi
GerçekKişi	SEDAT BAKICI : LÜTFİ Oğlu3/8 (İştirak No: 0)		İfraz İşlemi (TSM)	18/1
GerçekKişi	FADİME BAKICI : HALİL İBRAHİM Kızı2/8 (İştirak No: 0)		İfraz İşlemi (TSM)	
GerçekKişi	HÜLYA KELLEÇİ : LÜTFİ Kızı3/8 (İştirak No: 0)		İfraz İşlemi (TSM)	18/1

Görüntüleniyor... | 25 | 1

Belirli... | Pafta İndeksleri | Tematik Haritalar | Ortofoto Haritaları | TKGM:Ortofoto | Google Maps

TKGM:Ortofoto | Saydamlık: % 75 | 2 adet katman seçildi.

Kişi Sorgulama Yüklendi

Coğrafi Bilgi Sistemleri Şube Müdürlüğü | TKGM © 2013 | Enlem : 39,7843 | Boylam : 30,4664 19,00

E-Gov Applications

Since 06 October 2010, e-Government application of GDLRC has been published and TAKBİS data has been served to citizens via e-Government gateway.

www.turkiye.gov.tr

www.turkiye.gov.tr

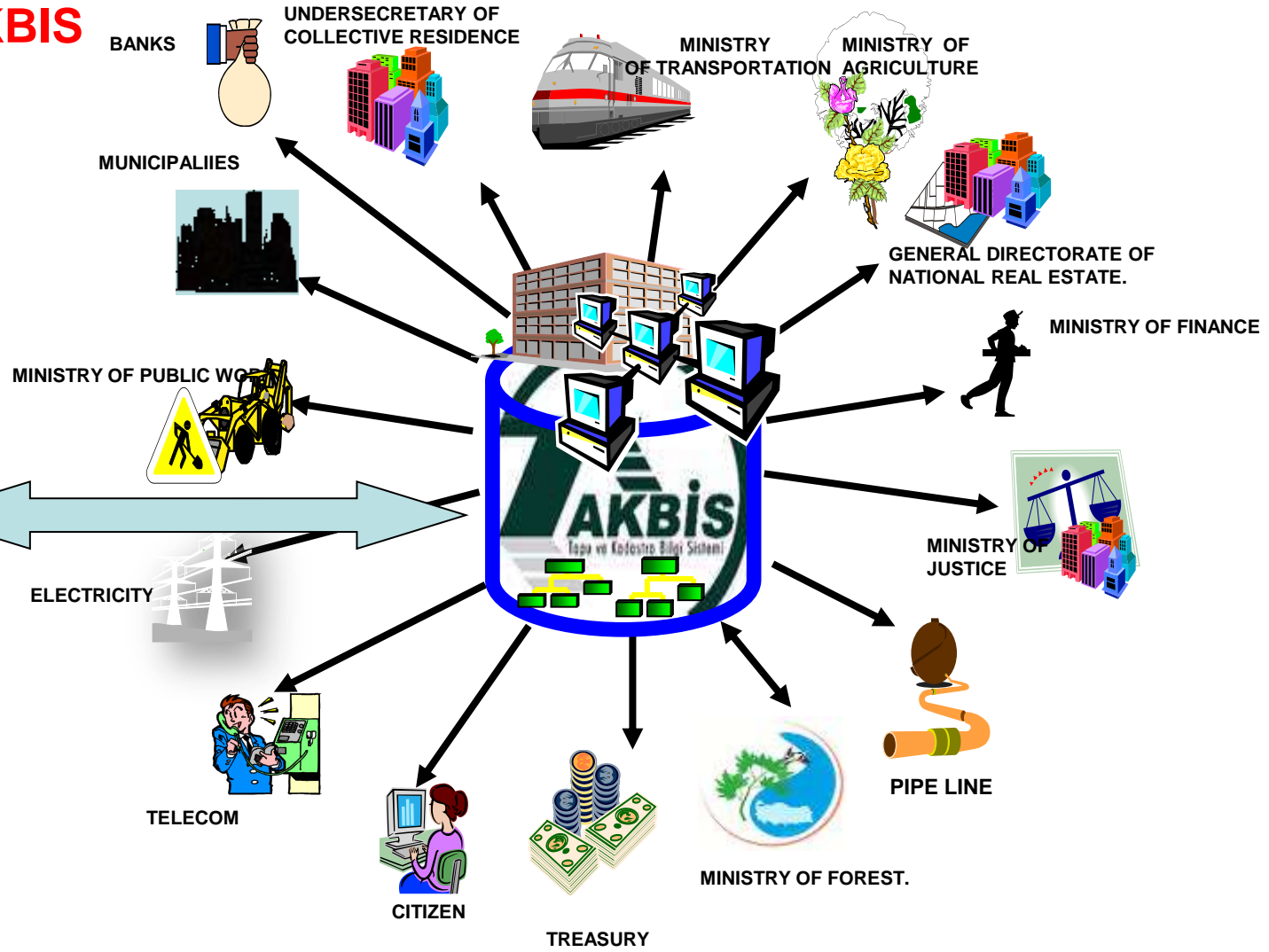
Tapu Bilgileri Sorgulama

İl	ANKARA	Yüzölçümü (m ²)	124
İlçe	ÇANKAYA	Blok No	TAHA
Hisseli/Koy	ZİNCİRLÜYÜ	Blok No	
Ada	8	Kat	
Parsel	408	Kat	
Çift No	53	Sahipler Bölgesi No	
Sayfa No	6307	Arazi Payı/Payda	/

Tezminat üzerinde bulunan (gizli) buralarda bulunabilir. | Bilgi: Detaylı bilgi için tıklayın.

Users Of TAKBIS

MERNİS
Central demographic
information system



E-parcel Inquiry

Tapu ve Kadastro Genel Müdürlüğü
Parsel Sorgulama Uygulaması

İdari Coğrafi Adres Katman

Ankara

Çankaya

Öveçler

7527

17

Sorgula

47.457808 : 0

Parsel Bilgileri

Taşınmaz Kimlik No	226836
İl	Ankara
İlçe	Çankaya
Mahalle/Köy	Öveçler
Ada	7527
Parsel	17
Tapu Alanı	1.315.00 m2
Nitelik	5 katlı apartman beton
Mevki	-
Pofta	-

cbs.tkgm.gov.tr

LAND REGISTRY SERVICES

- Legal bases from [Turkish Constitution](#) and [Civil Code](#)
- Land Registry is under [state guaranty](#) without any excuse
- [8.3 Millions](#) transactions at [2106](#)

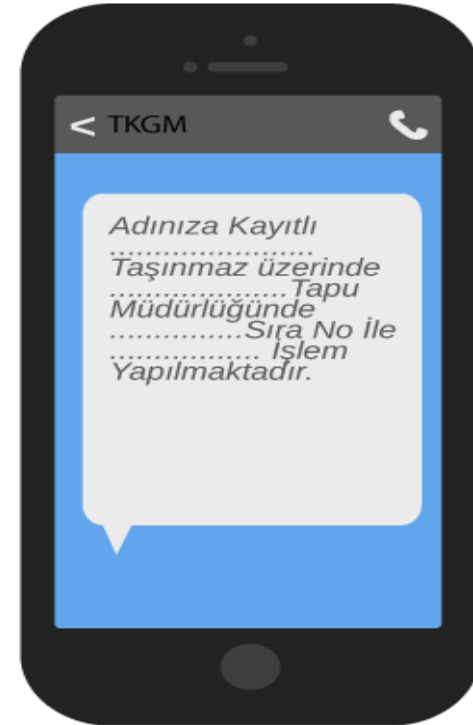


E-Appointment and KIOSKS

<https://randevu.tkgm.gov.tr>



Notice With SMS

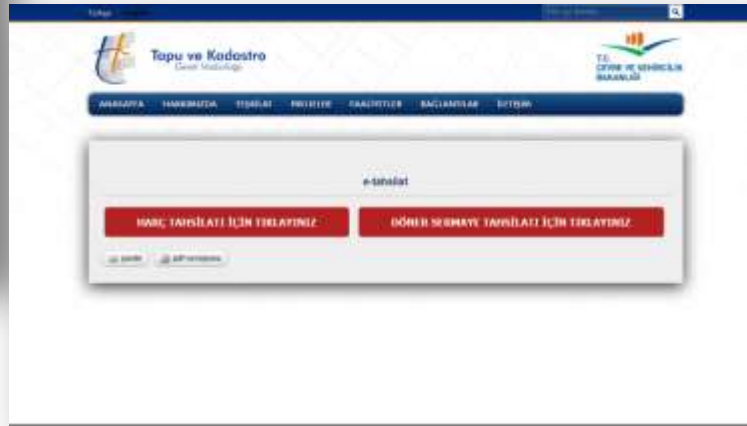


E-removal of Mortgage

Ziraat Bankası, İş Bankası , Akbank



E-Payment of Fees



Exchange Bank Applicaton



Tapu ve Kadastro Genel Müdürlüğü

Takasbank

Gayrimenkul Alışverişleriniz Artık Güvende



Gayrimenkul alışverişinde yaşanan güven problemi, sahte para, hırsızlık ve dolandırıcılık riskleri artık tarihe karışıyor.

TapuTakas uygulaması sayesinde, alıcılar ve satıcılar güvenli bir ortamda alım satım bedeli ödeme işlemlerini gerçekleştirebilecekler.

- İşlemlere dair anlık SMS bildirimleri
- Parada sahteciliğe karşı koruma
- Risksiz ve güvenli ortamda ödeme
- Öüvenli ödeme altyapısı

Detaylı bilgi ve işlemler için
www.taputakas.com.tr



Land Registry Transactions Outside the Jurisdiction Area and Abroad

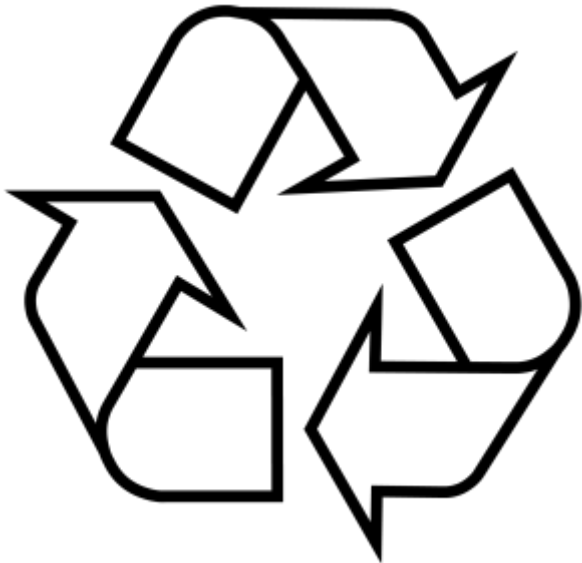
- Doing Land Registry Transaction from **every LR office**
- Doing Land Registry Transaction in Turkish Embassy in **Berlin-Germany**
- ...



REVOLVING FUND

- Active since 1992
- Cost recovery ...
- Main purpose is;

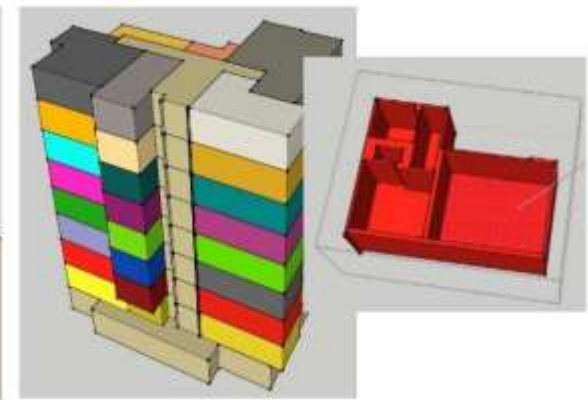
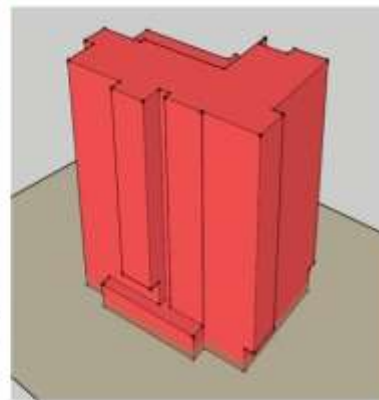
To collect fee from the land registry and cadastre services, to make expenditures for the services in line with the annual demands and needs of the Institution.



NEAR FUTURE PLANS



- 3D City Models
- 3D Cadastre
- Improve TAKBIS





Let's meet in Istanbul

6-11 May 2018, Istanbul, Turkiye

www.fig.net/fig2018

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 : 39°.8562, 32°.8465

THANK YOU ...