



**UNGEONOW 2024**  
首届联合国地信周



# **THE CURRENT STATUS AND NEEDS OF URBAN GEOSPATIAL INFORMATION DEVELOPMENT IN BELT AND ROAD COUNTRIES: A CASE STUDY OF MONGOLIA**

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DEQING, CHINA  
21-24 OCTOBER 2024



General Authority for Land Administration and Management, Geodesy and  
Cartography.

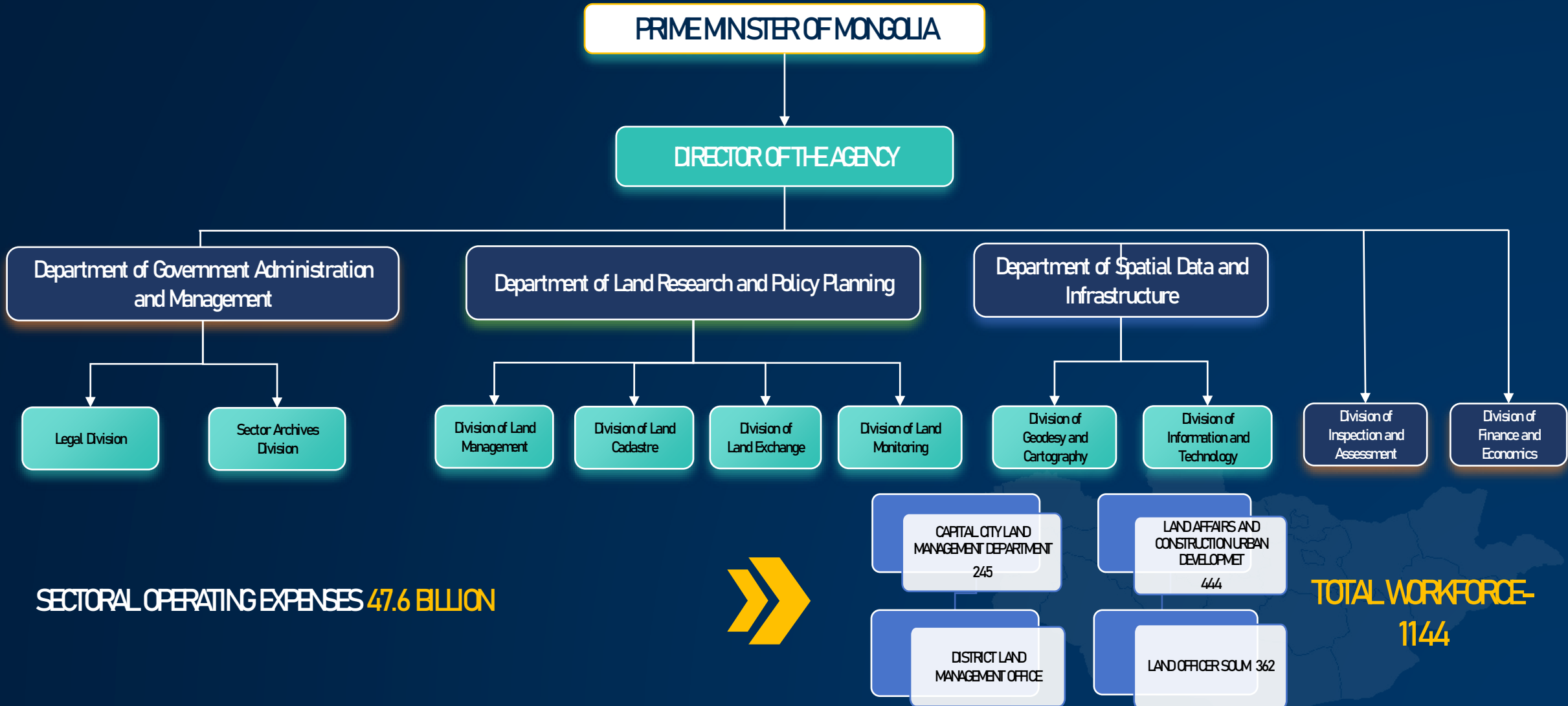
Mongolian Association of Geodesy, Photogrammetry and Cartography





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 ГАЗАР ЗОХИОН БАЙГУУЛАЛТ,  
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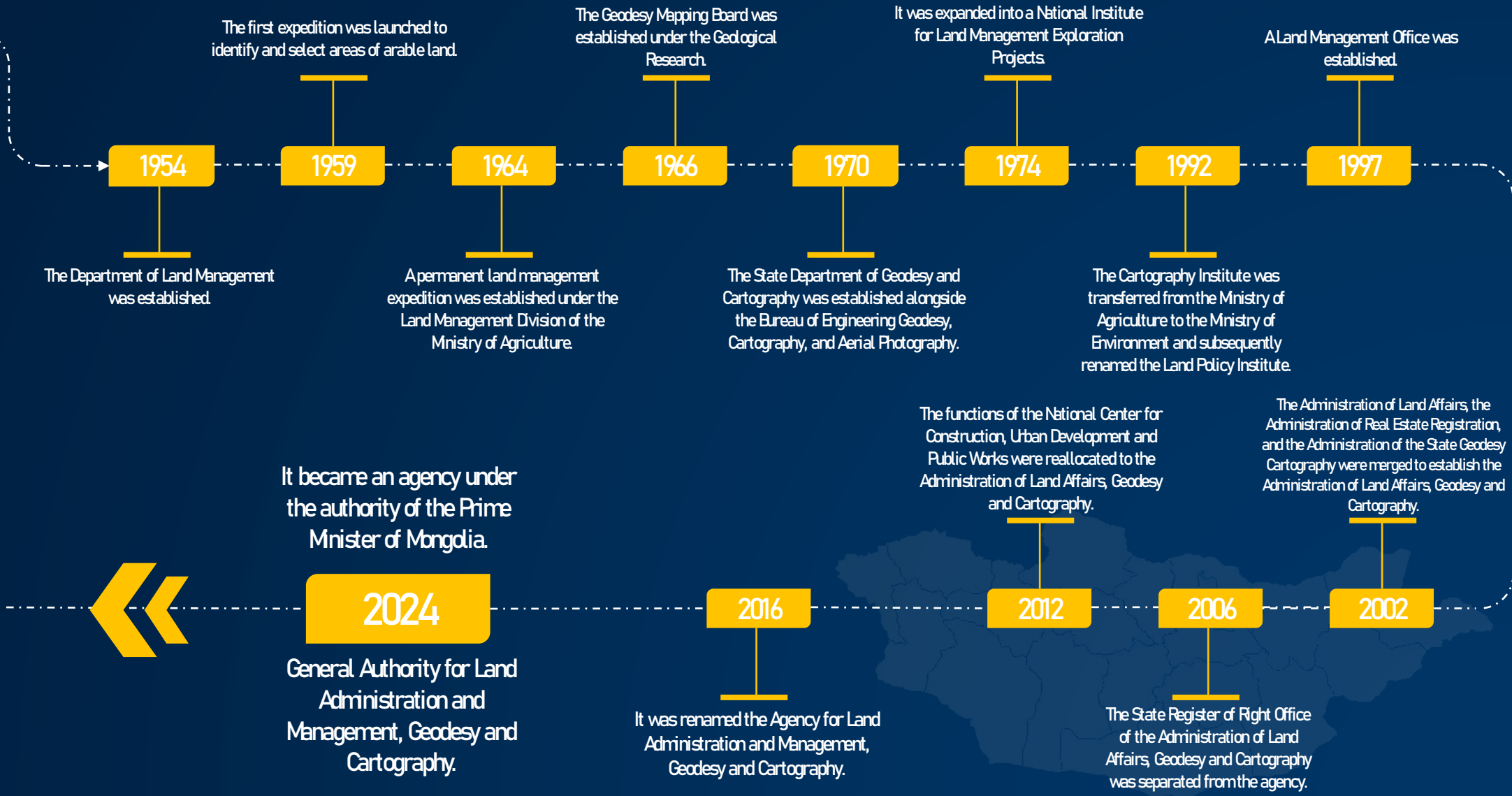
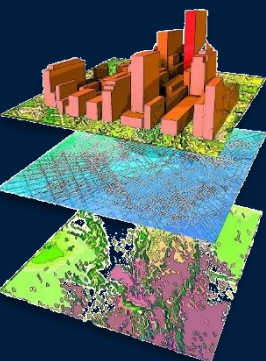
# STRUCTURAL ORGANIZATION OF THE SECTOR





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# A HISTORICAL OVERVIEW





## KEY DIRECTIONS OF ACTIVITIES



### MEASURES INCLUDED IN THE DEVELOPMENT POLICY DOCUMENT OF MONGOLIA

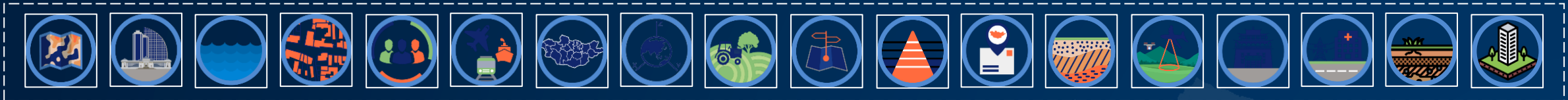
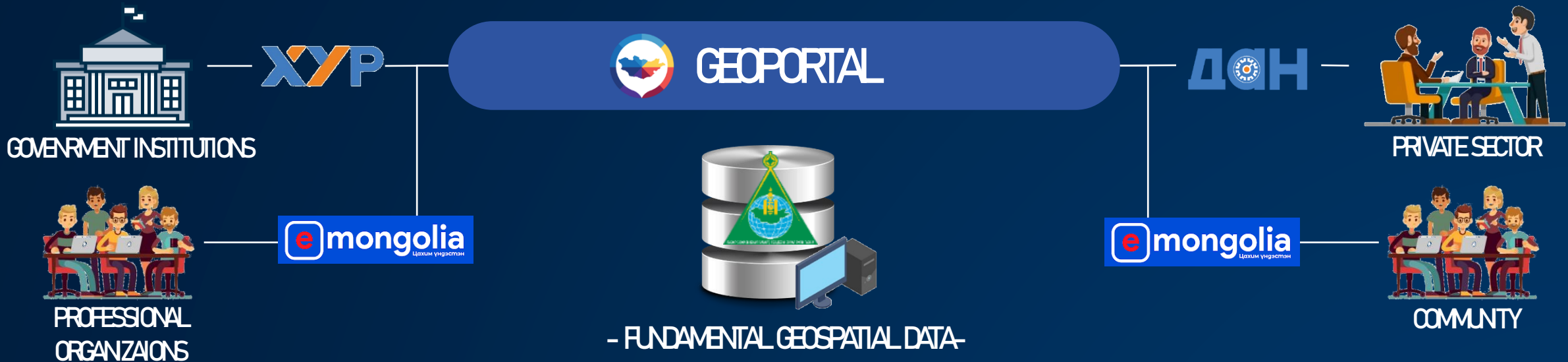
IN LINE WITH THE OBJECTIVES OF DIGITALIZING GOVERNMENT SERVICES AND REDUCING STATE BUREAUCRACY, AS SPECIFIED IN MONGOLIA'S "VISION-2050" LONG-TERM DEVELOPMENT POLICY AND THE "NEW REFORM POLICY".





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# DIGITAL SPATIAL DATA SYSTEMS



## INTEGRATED DIGITAL SYSTEM OF MANAGEMENT OF LAND COMMON FUND







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# DIGITAL SYSTEM FOR LAND MANAGEMENT AND URBAN DEVELOPMENT



Developing a plan



Harmonization of planning information



Plan monitoring



Gathering public feedback and providing information on the plan



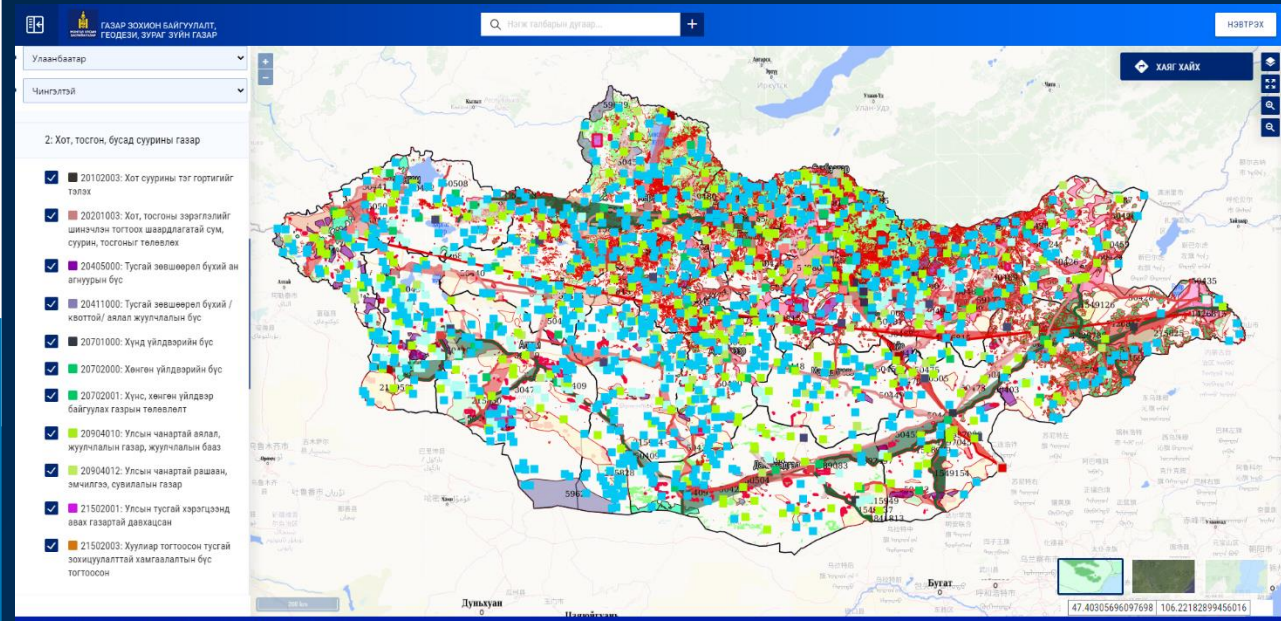
WEB SERVER



www.egazar.gov.mn

Conducting an overlap analysis and establishing planning zones

1. National general land management plan
2. General land management plan of Capital city and province
3. Development plan for the central soums of the province
4. Urban development general plan of capital city and city
5. General plan of general construction
6. Territorial development plan
7. Annual land management plan of capital city, soum and district
8. State-level buffer zones

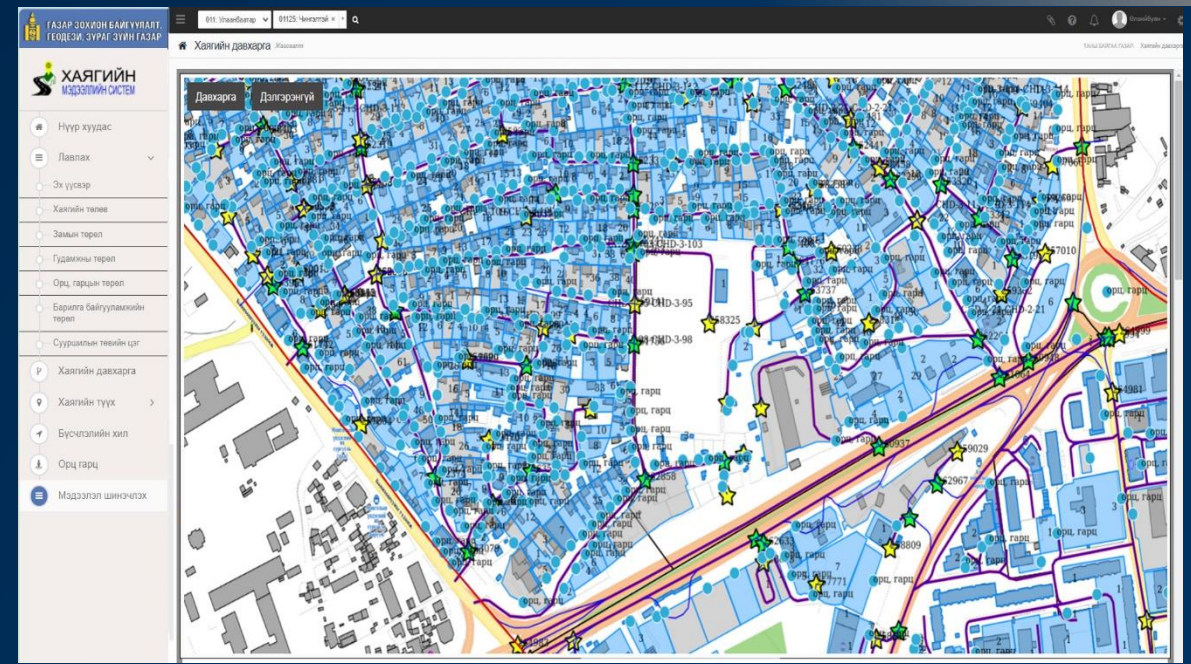
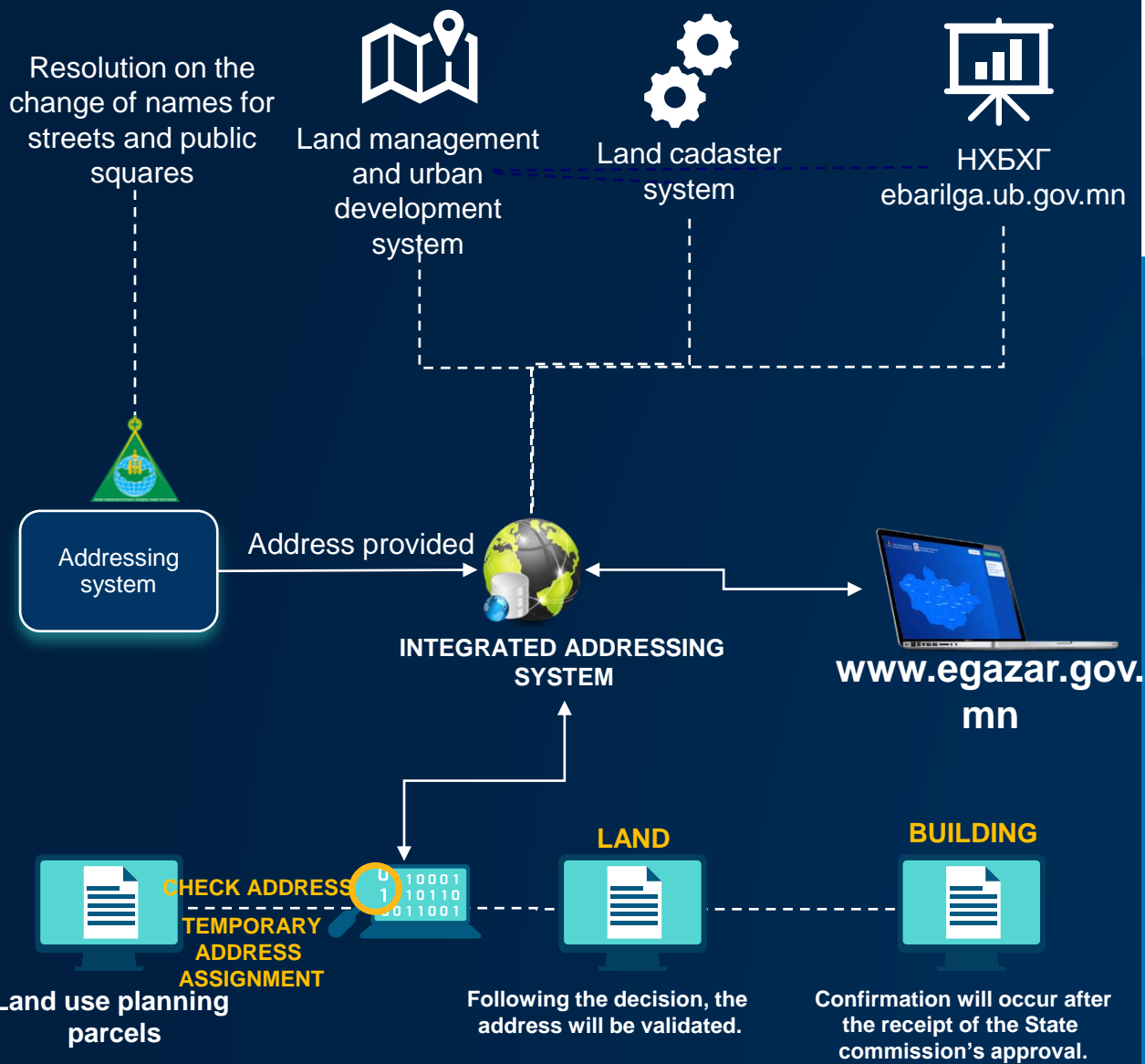


Land management plan	Development plan for the soums territory	Urban development general plan
11,994	135	122
Land for Special state needs	Protective zone and land use layer	Land planning for citizen ownership
187	141,391	22



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# INTEGRATED DIGITAL ADDRESSING SYSTEM



<b>Total land parcels</b>	<b>Road mapping data</b>	<b>Street view</b>
<b>1,139,127</b>	<b>222,195</b>	<b>57,401</b>
<b>Entrance and exit mapping data</b>	<b>Building and structure mapping data</b>	<b>Mapping data of the start and end point of street</b>
<b>928,436</b>	<b>522,159</b>	<b>85,661</b>





Auction



Project selection  
 process

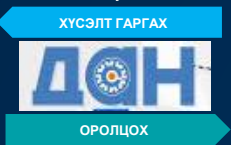
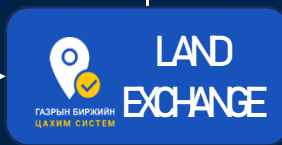


Market price  
 information

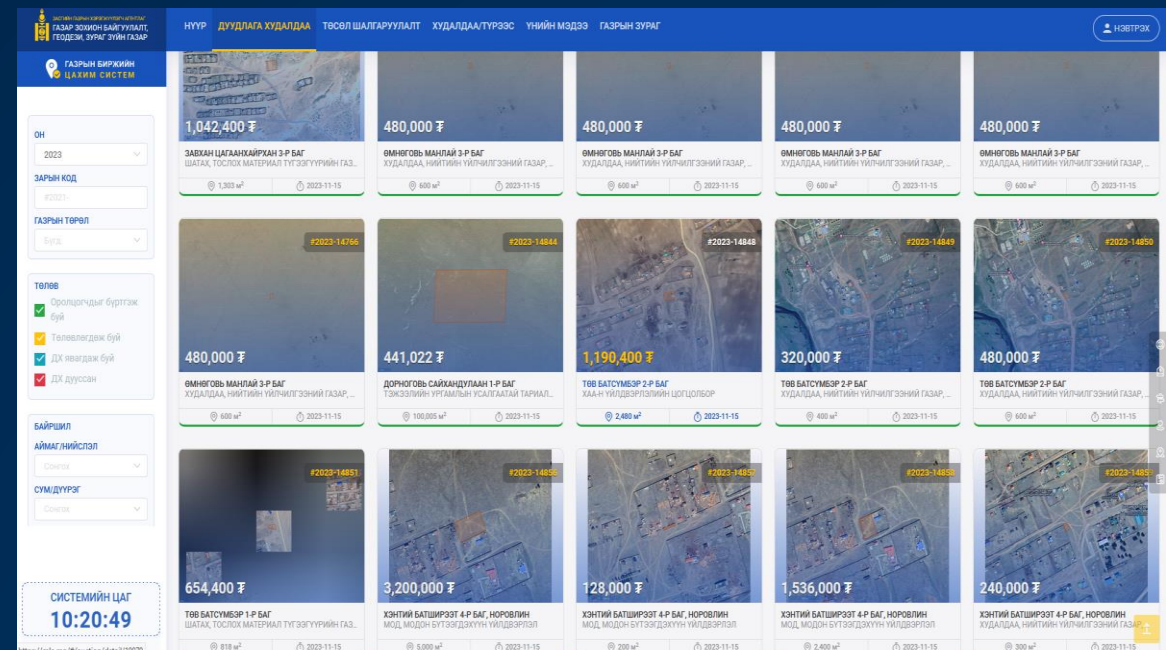


Citizens can engage in  
 auctions and project  
 selection, as well as  
 access updates on  
 land market prices

Organize and  
 monitor activities  
 in accordance  
 with the annual  
 plan



1. Auction for land ownership, possession, and utilization;
2. Project selection and evaluation for land possession and utilization;
3. Transactions related to the transfer of land ownership and possession rights to others;
4. Transactions related to the leasing of land ownership and possession rights to others;
5. Information on land sales, rental listings, and brokerage activities;
6. Managing and disseminating a database of market price information for land and real estate property to the public;

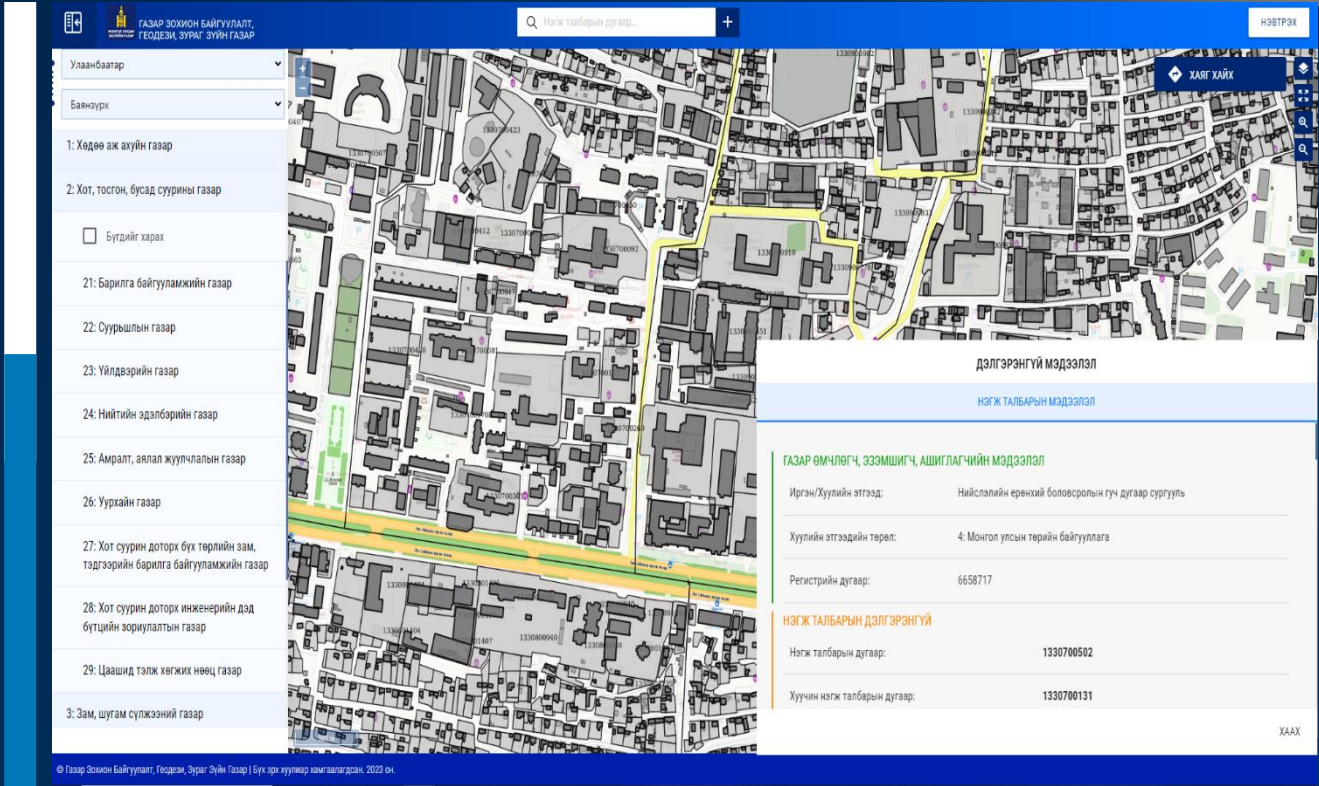
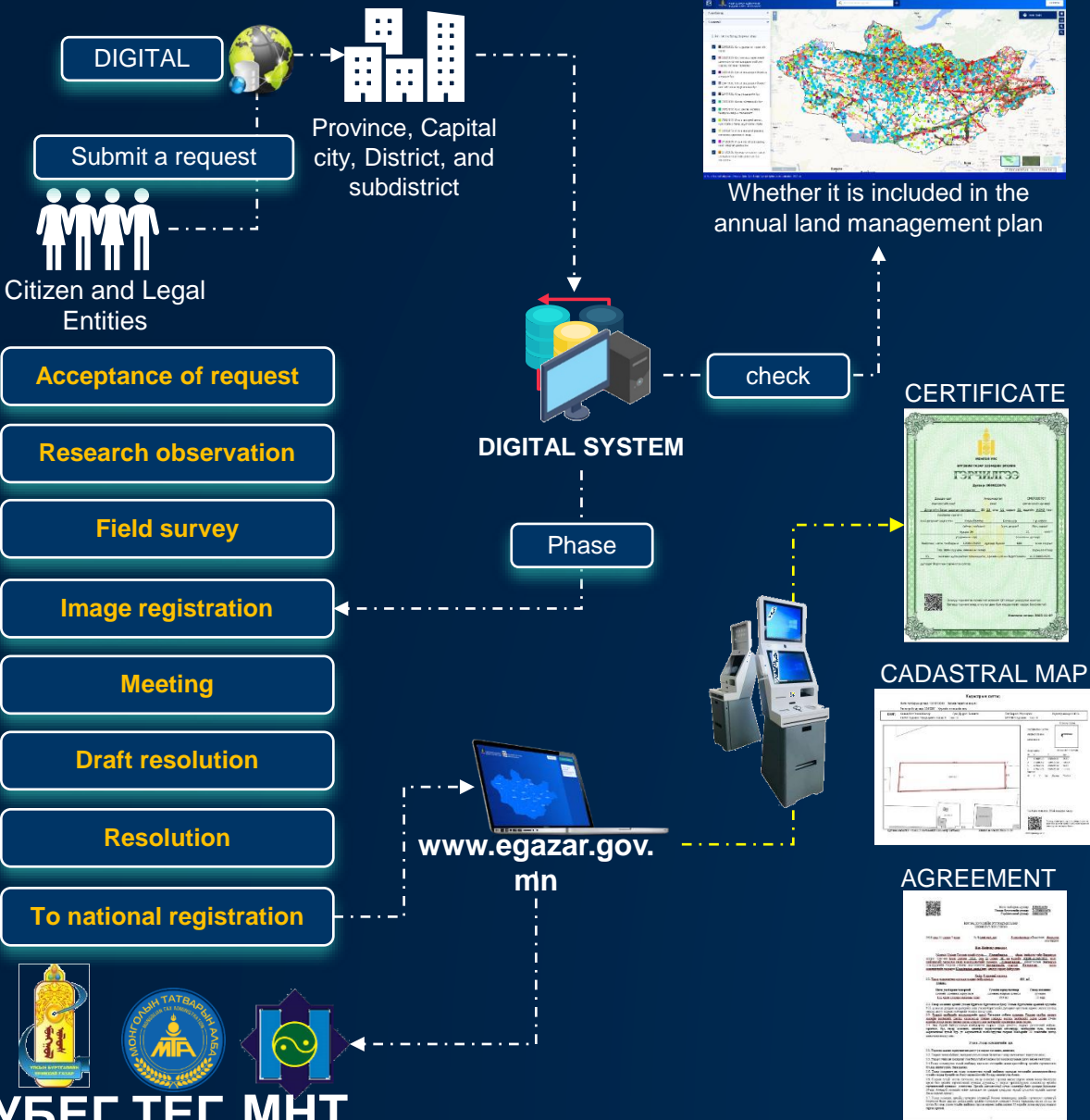


<b>Auction for the ownership, possession, and utilization of land</b>	<b>Project selection and bidding for land use and management</b>	<b>Market price information for land and real estate property</b>	
<b>14,493</b>	<b>659</b>	<b>85,063</b>	
<b>Sold land</b>	<b>Total area (ha)</b>	<b>Average annual income (billion)</b>	<b>Total income, billion (2018-2023)</b>
<b>5,319</b>	<b>22,489</b>	<b>18.2</b>	<b>91.5</b>

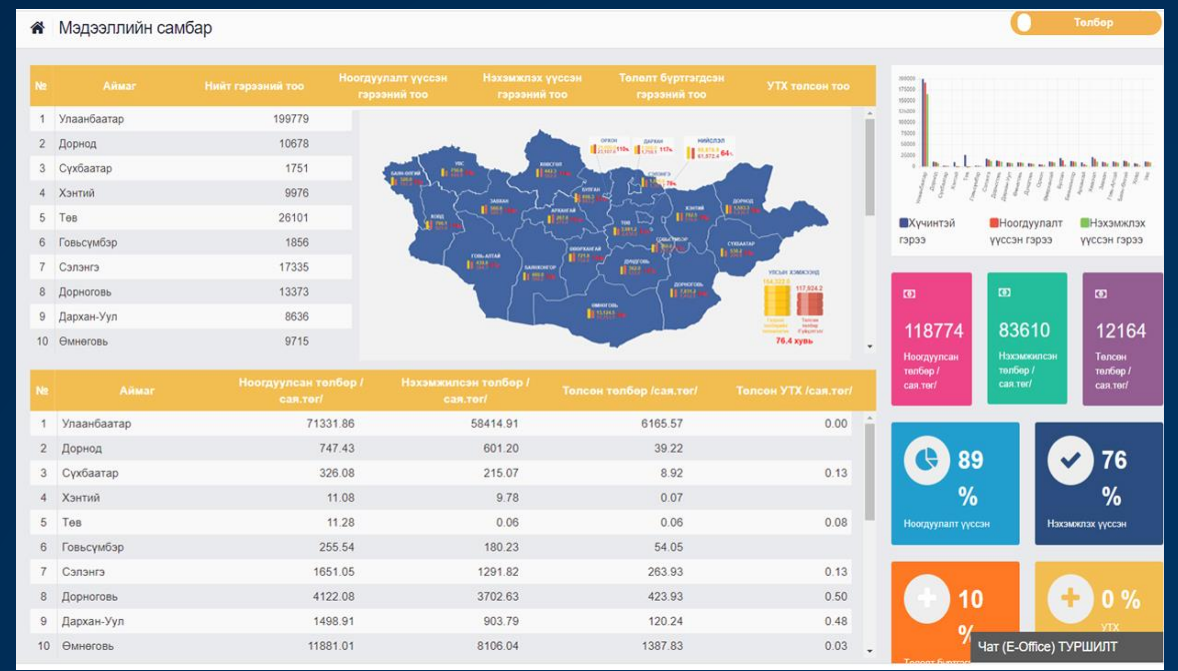
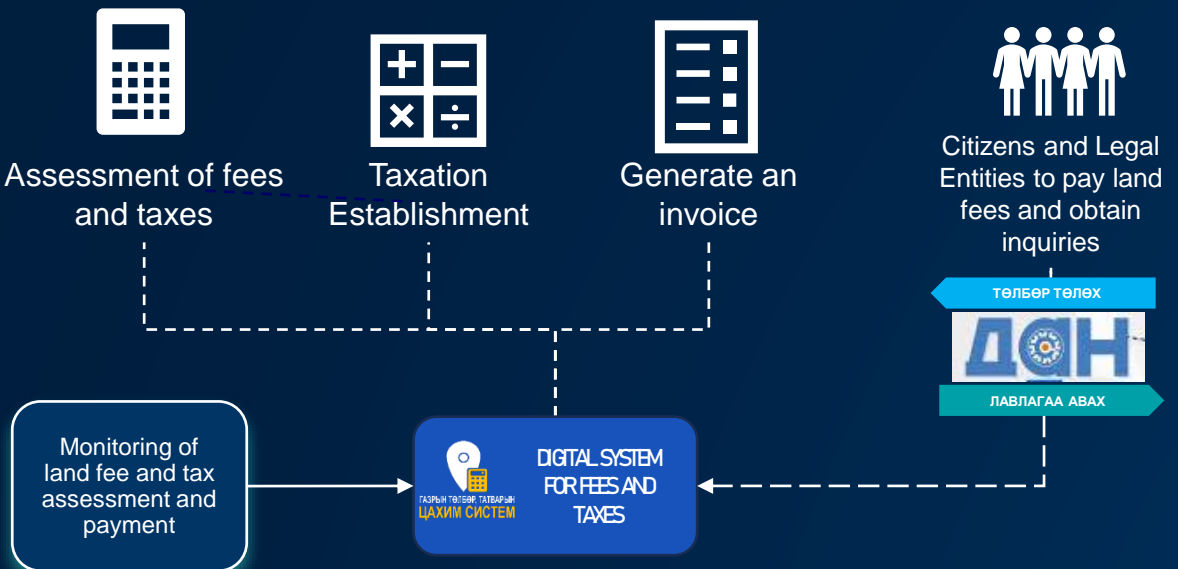


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# INTEGRATED DIGITAL SYSTEM OF LAND CADASTRE







- 1 Registration and Validation of Land valuation circles, classification (zones), and base prices for each Aimag, Capital city, Sourns and Districts
- 2 Register and input borders and boundaries approved by the Citizens Representative Assembly into the system for payment calculation
- 3 Generate the land payment assessment for each parcel of land subject to payment for the relevant year
- 4 Generate an invoice for each parcel of land assessment created and submit it to the integrated tax management system
- 5 Generate reports on Land payment assessments and payments, and disseminate them to the public.

<b>Land payment</b>	<b>Land tax</b>
<b>500,364 parcel</b>	<b>287,990 parcel</b>
<b>Taxation 167,5 billion</b>	<b>Taxation 553,9 million</b>
<b>Payment 91 billion</b>	<b>Payment 20 million</b>

# URBAN DEVELOPMENT CADASTRE SYSTEM



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Иргэн, хуулийн  
 этгээд

Request



Accepting request

21 аймгийн  
 ГХБХБГ



Architectural planning  
 assignment



Issuance of permission to  
 start or continue  
 construction work



State commission's final  
 conclusion issued



URBAN.GOV.MN

Building and Structure

General planning

Engineering infrastructure

Protection and Restriction zone

Other spatial services



Road and Transport

Social infrastructure

Landscaping and Green  
 Infrastructure

Topographic map



Building permit  
 application

**10,210**

Registered building  
 and Structures

**21,274**

Mapping information of  
 the Network

**34,356**

Mapping information of  
 landscaping and green  
 infrastructure

**11,320**

Mapping information of  
 Social infrastructure

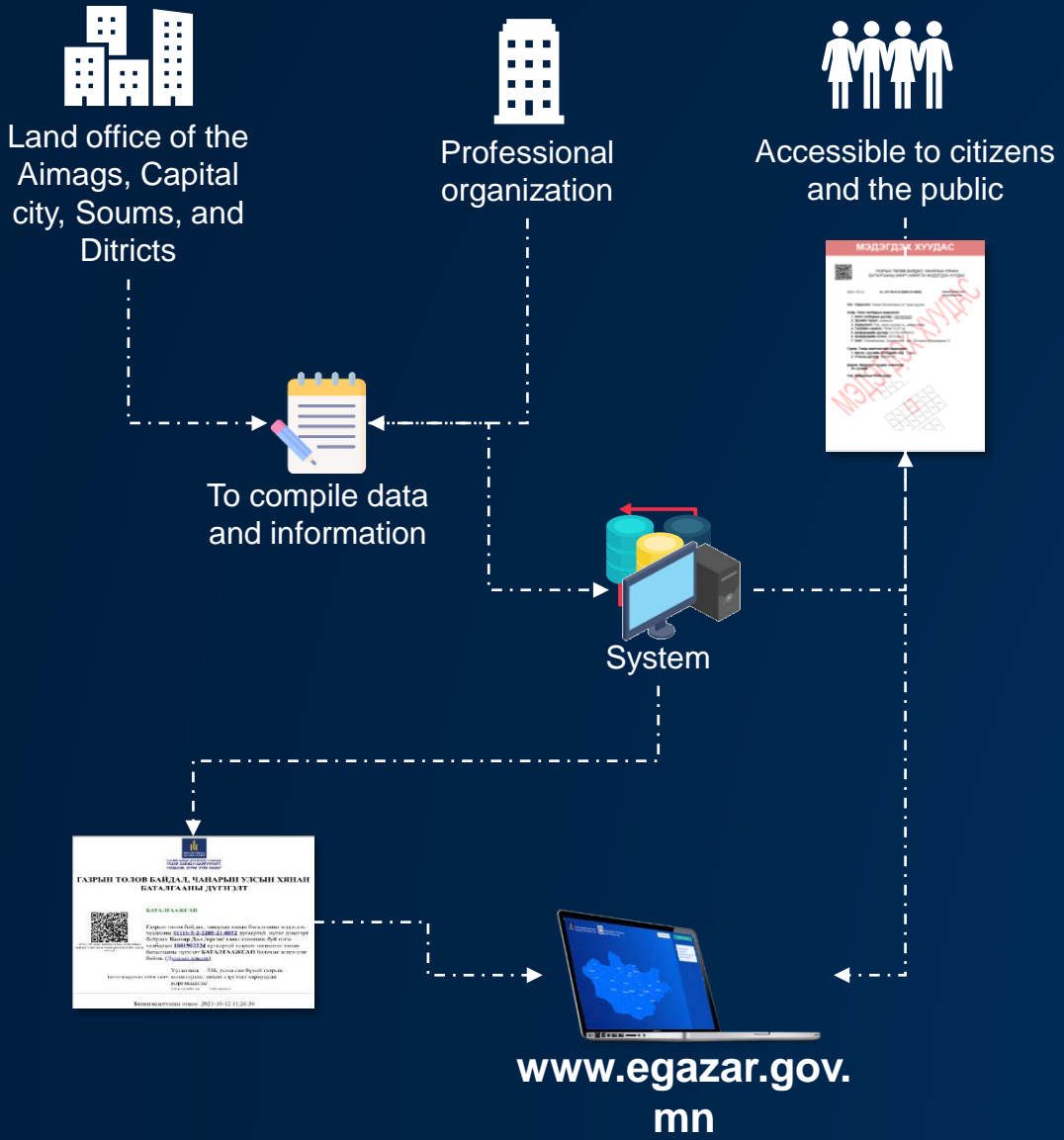
**1,906**





**ЗАСГИЙН ГАЗРЫН ХЭРЭГЖҮҮЛЭГЧ АГЕНТЛАГ**  
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**ГАЗАР**

# LAND MONITORING INFORMATION SYSTEM



The screenshot shows the web interface of the Land Monitoring Information System. It features a map of Mongolia with numerous colored dots representing monitoring points. On the left, there are filters for location (Улаанбаатар, Багануур) and a list of monitoring categories with checkboxes:
 

- ✓ Болчээрийн газар
- ✓ Зам, шугам сүлжээтэй давхцсан
- ✓ Ойн сэнхтэй давхцсан
- ✓ Усны сэнхтэй давхцсан
- ✓ Тусгай хэрэгцээний газартай давхцсан

 A circular gauge shows the total number of monitoring points: **Цэвэр бэлчээр 12.12**. The interface also includes a search bar, a zoom control, and a "ХАЯГ ХАЙХ" (Close Map) button.

**Хөдөө аж ахуйн газар**

137429 талбар | 28760 цэг

Захиалгат хянан баталгаа	5067
Төлөвлөгөөт хянан баталгаа	13262
Мониторинг	10431

**Хот, тосгон, бусад суурины газар**

83094 талбар | 67427 цэг

Захиалгат хянан баталгаа	61662
Төлөвлөгөөт хянан баталгаа	4590
Мониторинг	1175

**Зам, шугам сүлжээний газар**

276 талбар | 673 цэг

Захиалгат хянан баталгаа	673
Төлөвлөгөөт хянан баталгаа	0
Мониторинг	0

**Ойн сан бүхий газар**

198 талбар | 431 цэг

Захиалгат хянан баталгаа	301
Төлөвлөгөөт хянан баталгаа	0
Мониторинг	130

**Усны сан бүхий газар**

37 талбар | 82 цэг

Захиалгат хянан баталгаа	0
Төлөвлөгөөт хянан баталгаа	0
Мониторинг	82

**Тусгай хэрэгцээний газар**

109 талбар | 298 цэг

Захиалгат хянан баталгаа	178
Төлөвлөгөөт хянан баталгаа	0
Мониторинг	120

[www.egazar.gov.mn](http://www.egazar.gov.mn)

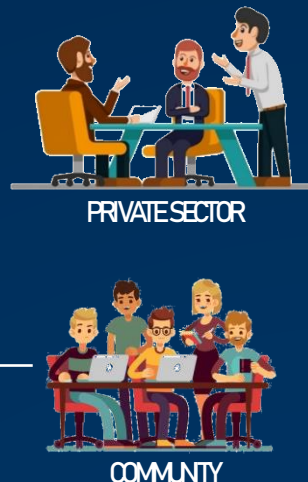


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# GEODESY AND CARTOGRAPHY INFORMATION SYSTEM



## GEOPORTAL



## GEODESY AND CARTOGRAPHY



### Geodetic Control Network Points

- Байрлалын сүлжээ
- GNSS-ийн байнгын ажиллагаатай станц
- Өндрийн сүлжээ
- Гравиметрийн сүлжээ
- Солбицол хооронд хөрвүүлэлт
- GNSS-ийн онлайн боловсруулалт

### Topographic map

- Том масштабын байр зүйн зураг
- Дунд масштабын байр зүйн зураг
- Жижиг масштабын байр зүйн зураг
- Тусгай болон нийтийн хэрэгцээний сэдэвчилсэн зураг

### Engineering Geodesy

- Инженерийн дэд бүтцийн хэмжилт, зураглал
- Барилгын хяналт, гүйцэтгэл
- Геологи, геофизик, уул уурхайн геодезийн хэмжилт

### Geographical names

- Газар зүйн нэрийн толь
- Газар зүйн нэрийн зураг
- Газар зүйн хуучин нэрийг тодотгох
- Уламжлалт нэрийг сэргээх
- Газар зүйн нэрийн зөвлөл

### Cartographic

- Газрын зураг, зураг
- Сэдэвчилсэн газрын зураг
- Нэг маягийн суурь
- Хэвлэмэл бүтээгдэхүүн, үйлчилгээ

### National border

- Монгол Улс, ОХУ-ын хил шалгалт, зураглал
- Монгол Улс, БНХАУ-ын хил шалгалт, зураглал

### Validation of Geodetic Measuring Instruments

- Багаж баталгаажуулах
- Багаж бүртгүүлэх
- Багаж шилжүүлэх
- Хэмжилтийн полтгон



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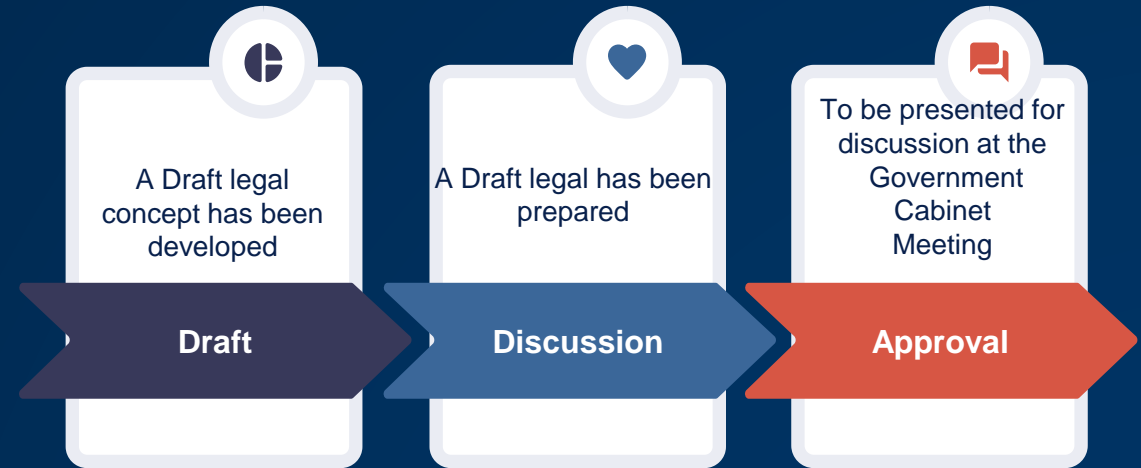
# UPGRADING THE LEGAL AND LEGAL ENVIRONMENT FOR THE SPATIAL DATA INFRASTRUCTURE SECTOR

LAW TO BE REVISED AND APPROVED:

General Land Law	Cadastre Law
Addressing Law	Geodesy and Cartography Law

PRIMARY LAW TO BE REVISED AND APPROVED:

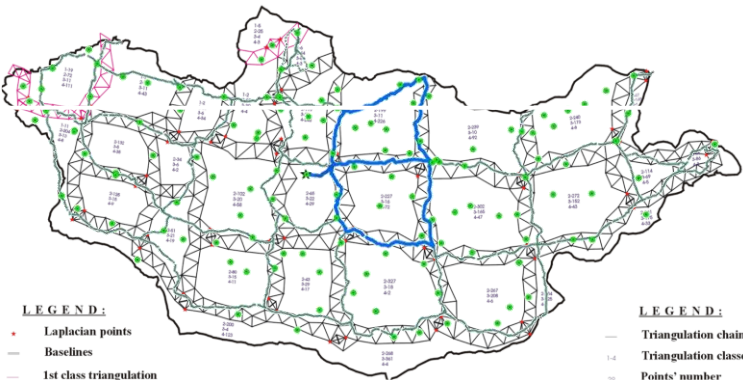
Spatial Data Infrastructure Law
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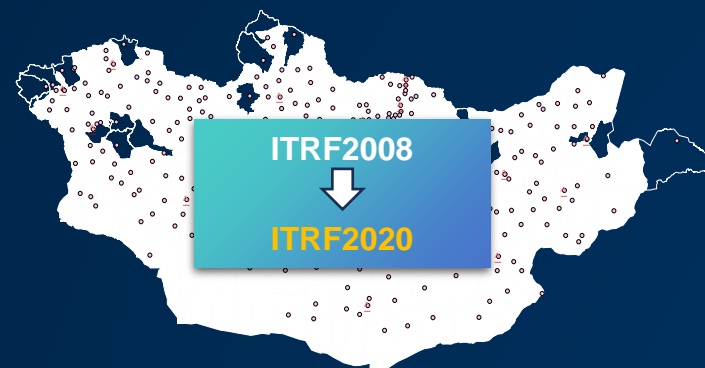


- **TRIANGULATION NETWORK OF MONGOLIA (1936-1965):** Approximately **15000** points and markers established.
- **ELEVATION NETWORK OF MONGOLIA:**  
**Second Class Network (1936-1954):** 2500 points, 14 polygons, 31 lines spanning a total of 9302 km.  
**First Class Network (2014-2023)** 550 points, 2 polygons, 8 lines covering a distance of 4300 km.
- **GRAVIMETER NETWORK OF MONGOLIA:**  
**Grade 1 Grid (1983-1985)** comprising **31** points.  
**Grade 2 network (1985-1989)** established with **103**



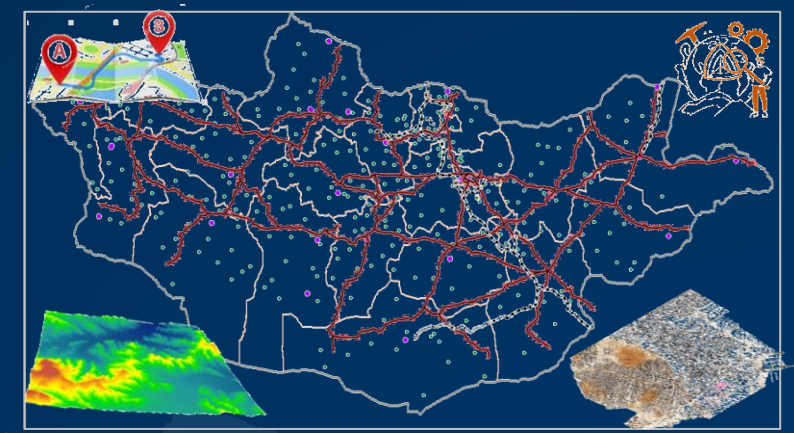
- **MONGOLIA'S GNSS PRIMARY NETWORK:**  
**From 1997 to 2014,** comprised of **3500** points and markers
  - Primary stations
  - Secondary stations
  - Mapping stations
- **PERMANENT GNSS STATIONS IN MONGOLIA:**  
 A total of 43 stations
  - **Ulaanbaatar** – 6
  - Provincial centers – 21
  - Soums, settlements – 16<https://monpos.gazar.gov.mn>
- **GEODETIC PERMANENT POINTS IN MONGOLIA:**  
 22977 points, markers. <https://nsdi.gov.mn/>

APPROVAL OF THE INTEGRATED  
 GEODETIC TRANSFORMATION,  
 ELEVATION, AND REFERENCE SYSTEM



- Government Resolution No.267 of 2022:
- ✓ Implementation of the ITRF2020 International geodetic transformation system
  - ✓ Adoption of the Altitude system based on the Baltic sea
  - ✓ Utilization of the UTM reference

CONVERT THE SPATIAL MAPS OF CITIES, TOWNS, AND OTHER SETTLEMENT AREAS AT A SCALE 1:1000, ALONG WITH THE ENGINEERING NETWORK DIAGRAM, TO THE INTERNATIONAL GEODETIC REFERENCE SYSTEM ITRF2020.



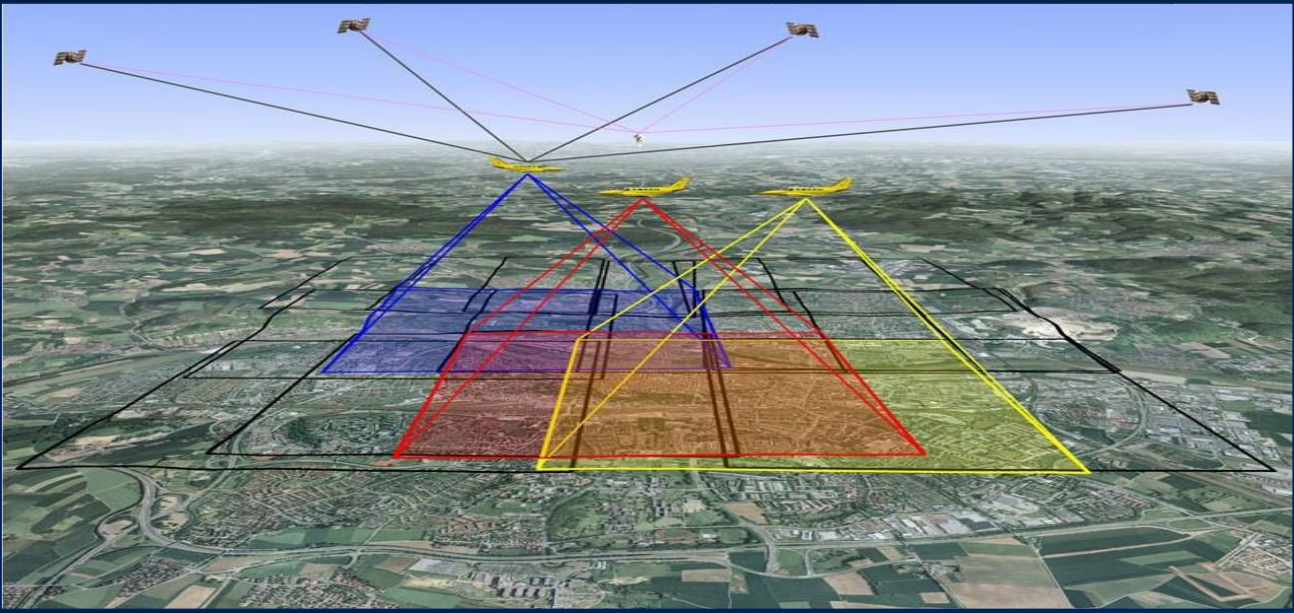
21 PROVINCES, 330 SOUMS, 45 SETTLEMENTS OF MONGOLIA



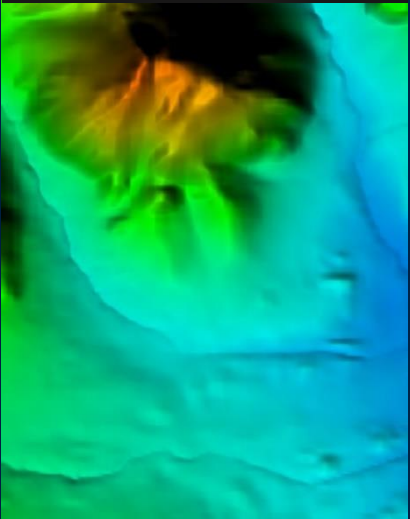


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# 1:25 000 SCALE TOPOGRAPHIC MAPPING AND PERMANENT GNSS OPERATING STATION NETWORK



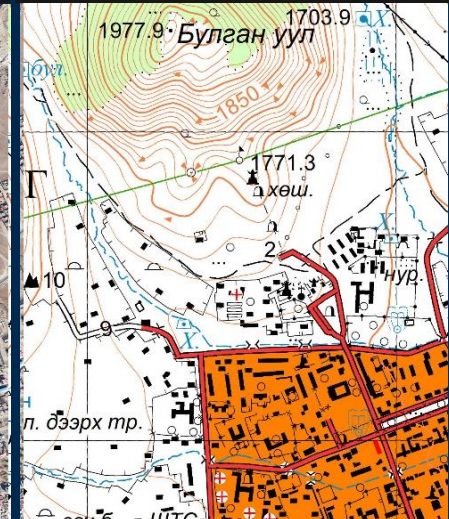
**1. Digital Elevation Model**



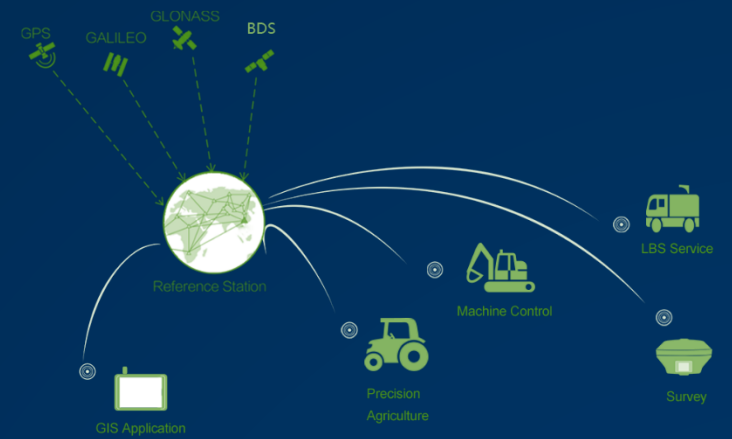
**2. Aerial orthophoto imagery**



**3. Digital Topographic Map**



**ESTABLISHED: 65 stations**



Establish **15** new stations to enhance the network of permanent GNSS stations in Mongolia

By coarsening the grid to **65** for a GNSS base station, the positional accuracy of the grid can be improved to **2cm**.





Mongolian Association of Geodesy, Photogrammetry and Cartography



# ABOUT THE GEODESY, PHOTOGRAMMETRY, CARTOGRAPHY SECTOR

- Up to 1500 engineers and technicians
- Licensed engineer 200+
- Consultant engineer 50+
- Company in field 250+





# Mongolian Association of Geodesy, Photogrammetry and Cartography

- Established in 2004
- International Federation of Surveyors (FIG) members since 2005
- 60+ companies registered in association
- 400+ surveyors registered
- 6 Elections
- 5 presidents
- Professional and Consultant engineers training and register





# Activities

- Participated in the drafting of the revision of the Law on Geodesy and Cartography, improvement of the legal framework of the sector
- To update industry norms, rules and standards, and submit suggestions to the process of developing new ones
- We are committed to the qualification and retraining of industry experts, the localization of the development of foreign countries with high development in the industry, the constant provision of new information, and the recognition of our activities.



# Activities

- Collaboration works with government
- Collaboration with Universities
- 20 years experience
- Geodesy journals every year
- Academic conference every year
- Olympiad for students every year
- Olympiad for engineers
- Sports competitions every year





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**THANK YOU**