

SMART DATA LLC

COMPANY PROFILE



2025

Developed by
Smart DATA
SMART SOLUTIONS.
DELIVERED

BRIEF INTRODUCTION

Smart Data LLC was founded in 2014 and has since implemented IT solutions for business and government organizations, tailored to meet customer needs. Our company is working in the following main areas. These include:

- Software Development
- IT Consulting
- Infrastructure
- Data Warehouse, BI

BRIEF INTRODUCTION

In order to implement intelligent IT solutions in line with user needs and successfully introduce them, we are working on the following basic principles. These include:

- Supporting internal operations of the organization
- Reducing repetitive operations and reducing costs
- Ensuring data accuracy
- Using multi-level confidentiality and security capabilities
- Establishing an infrastructure to ensure the reliability of system operations
- Analyzing various data of the organization's operations and providing decision-making level information to management quickly
- Increasing competitiveness based on the latest trends in IT

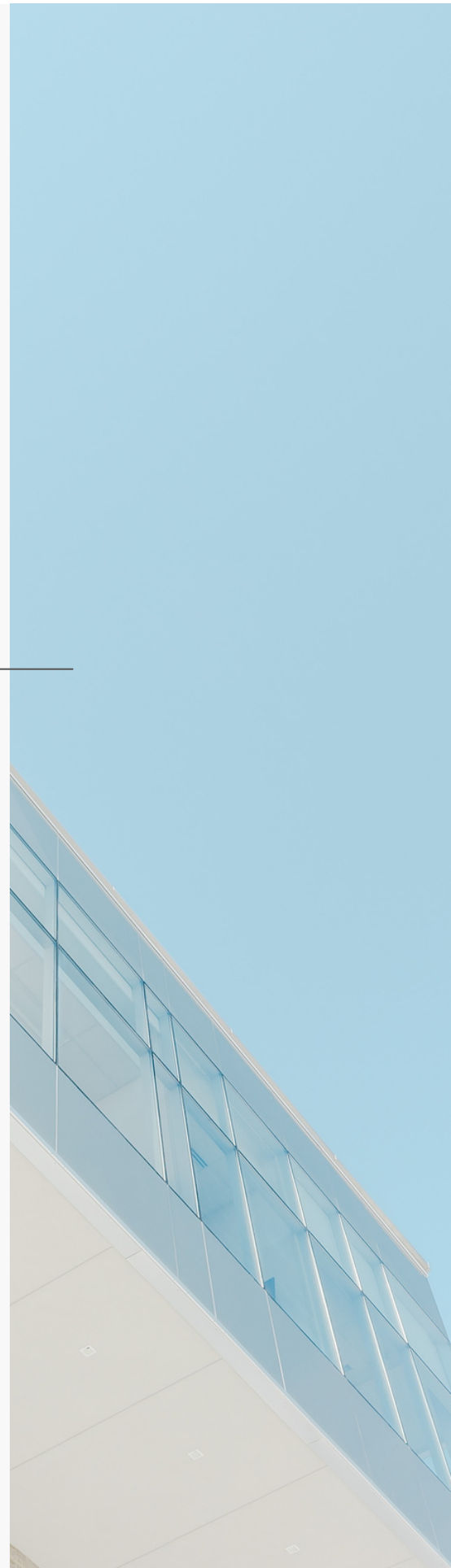
Within the framework of these principles and objectives, we have been developing the products we are developing and the projects we are participating in on time and at a high quality level, and have been developing and introducing innovations on our initiative.

Vision

Everyone working in our company will be satisfied, united under one goal, developing solutions that incorporate their knowledge, skills, and intelligence, and creating a globally competitive company that will make its contribution to the society and economy of Mongolia.

Mission

We are committed to making information technology solutions accessible to everyone through our PRODUCTS and SERVICES, and to bringing value and joy to your life.



Why choose us?

We are providing quality IT solutions to our client organizations, developing and implementing our expertise in each system we implement.

- We will study your organization's operations in detail and focus on further improving them with IT solutions.
- We are working to introduce process solutions to the organization rather than just technology solutions.

**Years of
experience**

Skilled Team

**Smart
Solutions**

**A fast problem
solver**

SOFTWARE DEVELOPMENT



How we work?



Requirement & Research

We define customer requirements in detail and conduct a study of the current situation.



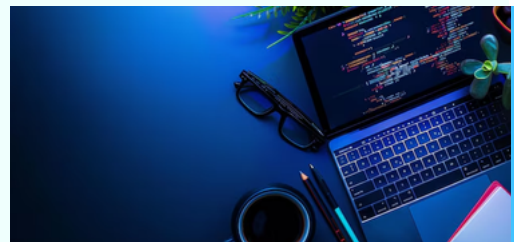
Design & Architecture

Based on the requirements, we will develop a design based on technological and business processes.



Development & Test

Create software coding and infrastructure based on requirements, design, and prototypes.



Deployment & Support

After a successful launch, continuous improvements and support services are provided.

Timeline

2014

ESTABLISHED

2015

ONLINE TRADING
PLATFORM (E-COMMERCE)

www.megashop.mn

2015

E-OFFICE

Delivered and
implemented at Skytel
LLC

2018

LAND MANAGEMENT SYSTEM

By the order of the Agency of Land Management, a Land Management System consisting of the following subsystems was launched: Cadastre, Land Planning, Monitoring, Tax Payment, Evaluation, and Public portal

2017

PASTURE MANAGEMENT SYSTEM

Implemented a pasture management project for the inter-provincial pasture use administration

2019

TRAINING FOR LAND STAFF

The electronic land management system was successfully implemented and regional training was successfully organized in 21 aimags and capital city districts.

2020

LAND PUBLIC PORTAL
(EGAZAR.GOV.MN) AND
MOBILE APP ([EGAZAR APP](#))

2022

URBAN PLANNING PORTAL
(EBARILGA.UB.GOV.MN)

2024

ROAD AND ROAD STRUCTURE
MANAGEMENT INFORMATION
SYSTEM (UBROAD.MN)

2024

LAND EXCHANGE
ELECTRONIC SYSTEM
(MLE.MN)

2023

URBAN DEVELOPMENT
CADASTRE ELECTRONIC
SYSTEM (URBAN.GOV.MN)

Our Services

Software development

- We study and understand the needs of our client organizations, analyze them, and develop the architectural design.
- According to our design and solution, we develop and implement smart software with the possibility of future development, using the latest techniques and technologies.

Information technology consulting service

- When an organization needs a solution on how to implement information technology advances in its operations.
- When it is necessary to analyze and improve existing information technology solutions and infrastructure

Infrastructure setup and configuration

- Connecting and configuring servers, equipment, and their interconnections in the most suitable way in connection with the implementation of information technology solutions.
- Coordinating all types of data and information in the organization.

Data warehouse, BI

- Creates opportunities to centralize, organize, and analyze data from various sources (Database, Excel, File) collected by the organization into a single database.
- Monitoring daily information from anywhere, at any time is the most important indicator today.

SOFTWARE DEVELOPMENT

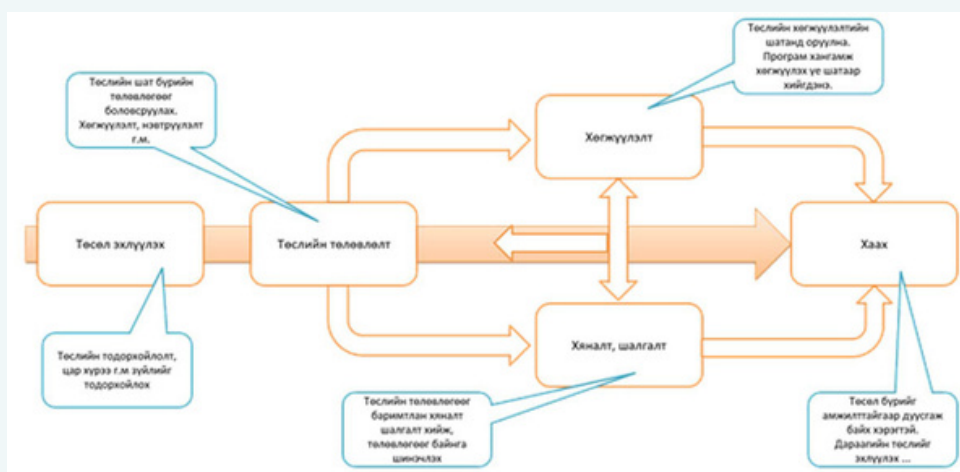
Software Development Development and Coding

- We are developing systems with smart solutions based on the latest technologies.
- When developing software, we follow project development methodologies and software development steps and deliver them.

When developing a project, we are implementing it in stages such as starting the project, planning the project, developing the project, controlling and checking, implementing and closing.

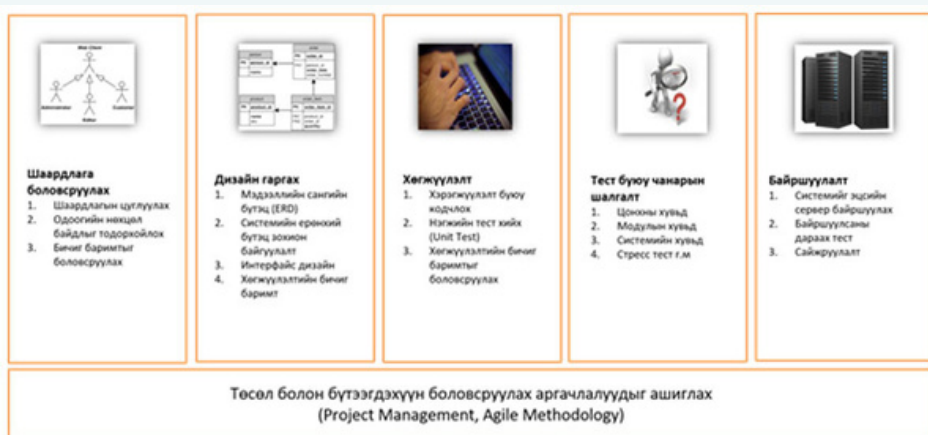
Project Implementation Process

- Geographical Information System
- Web System
- Desktop System



Software development stages

- When a project enters the development stage, the software is implemented in stages, as shown in the picture below.
- This is the basis for a systematic, error-free, and successful development.



- Laravel Framework
- React JS / React Native
- HTML / CSS / Javascript
- .NET Framework / C#
- PostgreSQL / PostGIS
- GeoServer
- Ubuntu OS
- Socket

Information technology consulting service

Consulting and implementation

We provide technical and technological advice on how to connect the internal and external operations of business and government organizations with information technology solutions, in line with the goals and directions of the organization, improve employee coordination, and save time and budget

Consulting services



- **Software:** What kind of software to use, and how to improve the one currently in use.
- **Database:** How to manage different types of information systematically, how to adjust load and speed.
- **Business process:** How to align the internal business process with technology.
- **System connections:** When it is necessary to connect different systems and exchange information.
- **Security and protection:** How to ensure information security.
- **Server:** When to properly manage and organize equipment and servers.
- **Network:** When to configure the organization's internal and external networks.
- **Host:** Organizing the host for your needs.

Infrastructure setup and configuration service

Configuration and control

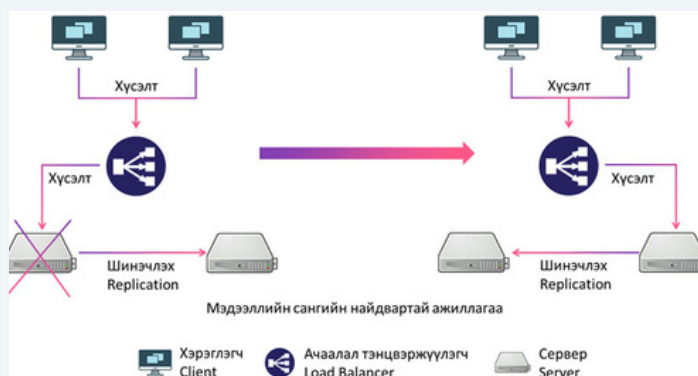
- In the past, for most of the projects we have implemented, we configured and connected the infrastructure and equipment ourselves.
- Therefore, building and configuring a technology infrastructure has become one of our main areas.
- It is a critical task to build an infrastructure, install and run the software developed on it, handle multiple users accessing it at the same time, and ensure data security.

Web load balancing

- When multiple users need to access simultaneously, we implement a load balancing method to balance the load of the servers.
- We use technologies such as Apache and HAProxy for servers and load balancers. It is also possible to configure using physical load balancing devices



Ensuring database reliability



For a database, which is the lifeblood of any information system, the accuracy of the data it contains and the reliability of the servers are of utmost importance.

To meet these requirements, a continuous infrastructure is created as follows. It also offers solutions such as configuring backup servers. By configuring database servers to be read-only and write-only, the load on the server is significantly reduced, allowing the software to function normally.

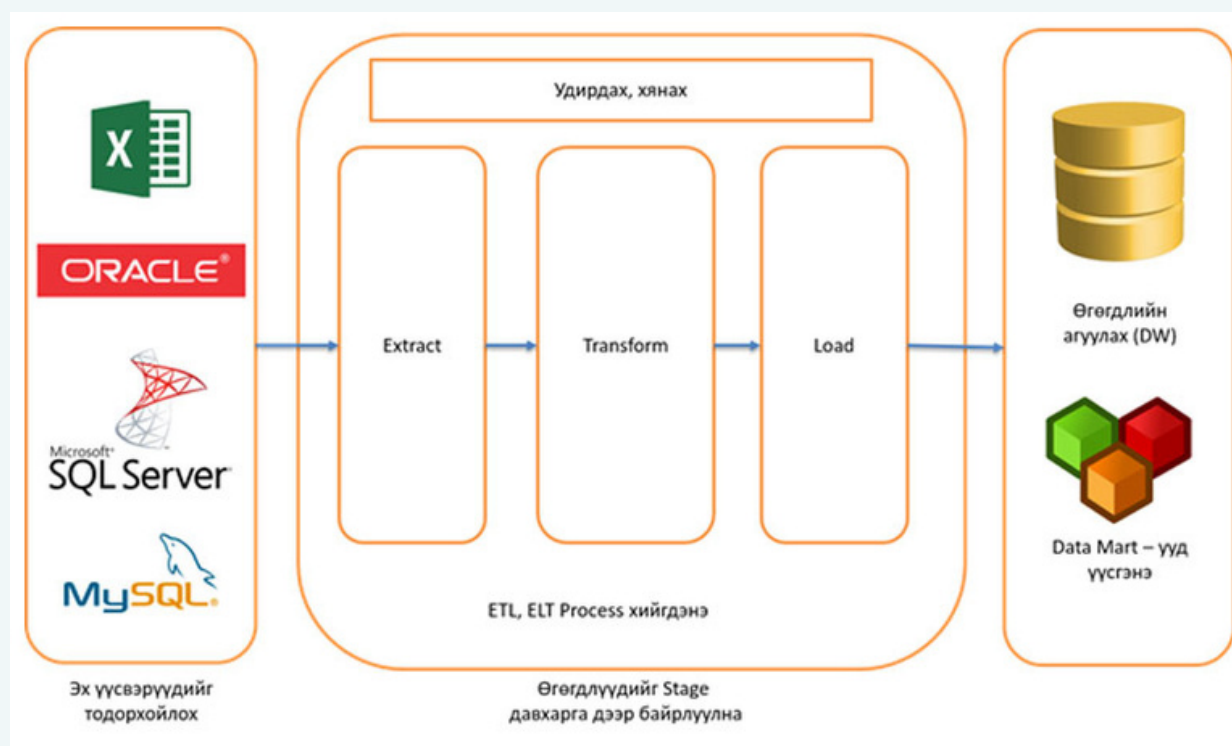
Data warehouse, BI

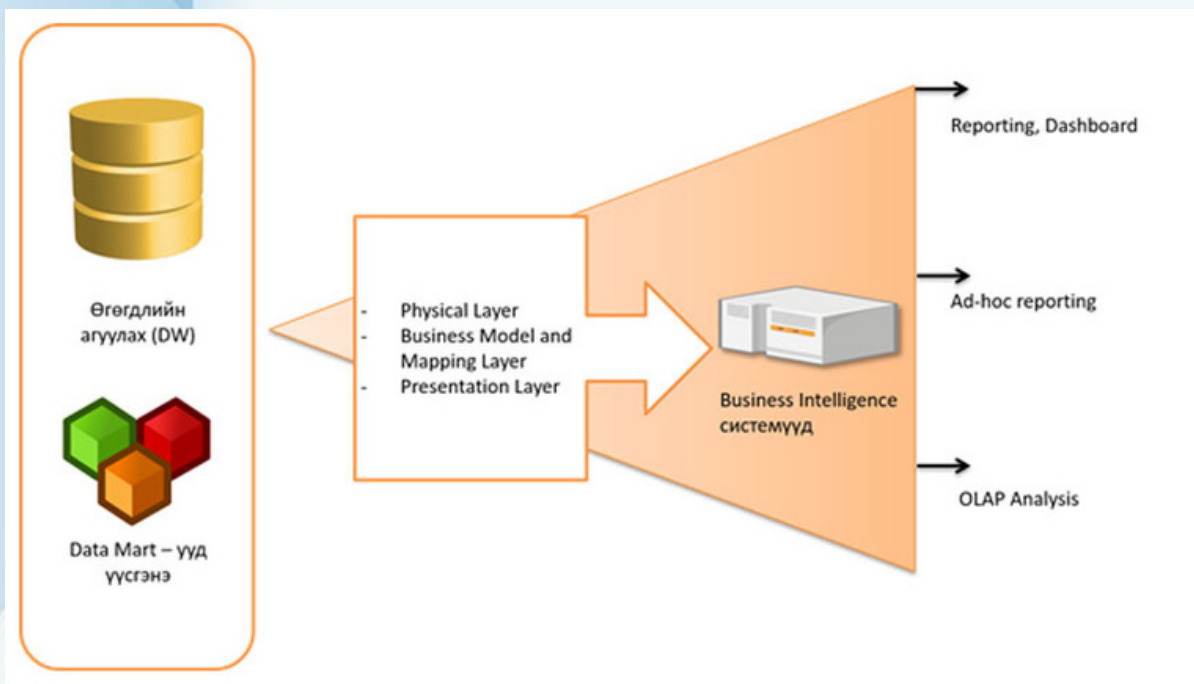
Classification and calculation

- It has become a necessity for organizations to create reports and analyze their valuable data.
- We provide the opportunity to properly store and protect data, implement and install technological solutions, and generate reports, analyses, and research from it.

Creating a data warehouse

- The diagram below shows how to place paper and electronic information located at your organization into a data warehouse.
- By converting data into an electronic form and storing it in a single standard format, it becomes very easy to generate reports and research.
- Also, we use specific methodologies and systems to place data in the data warehouse.





Report analysis

- Once the organization's data is placed in the data warehouse according to a standard model, it is necessary to connect reporting and analysis systems.
- We train managers to work on this system and create reports.



Case Studies

1

Integrated Land Management System (Land ERP)

About

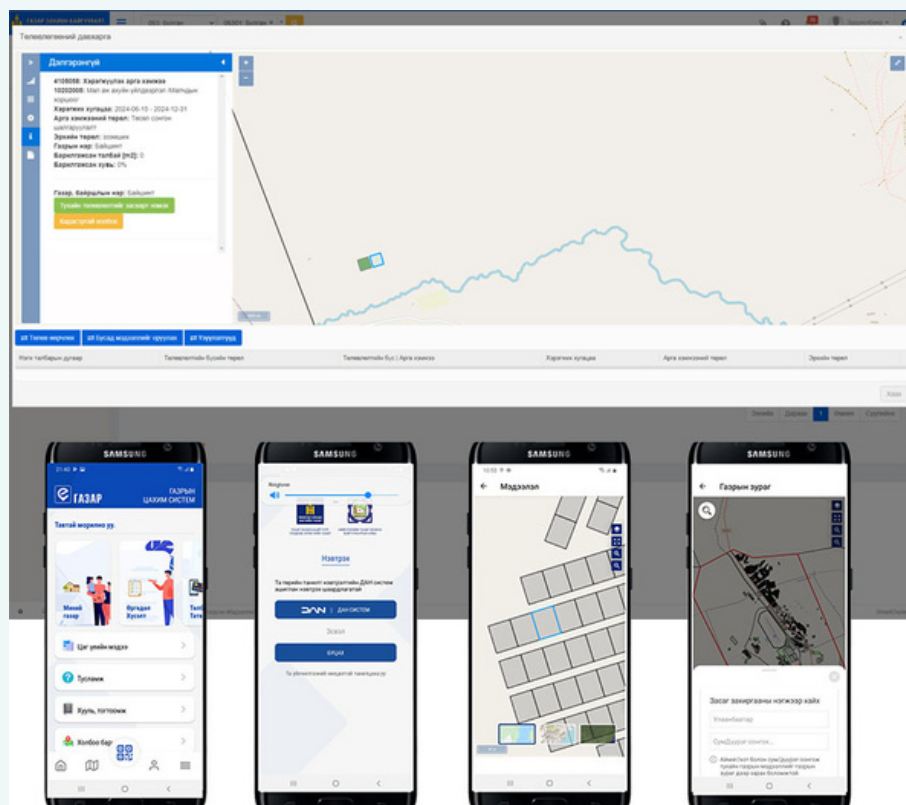
Land allocation, planning, payment, taxation, and land control and monitoring systems in Mongolia were implemented using updated technology between 2018 and 2022. The systems we personally implemented included the Land Organization System, Land Cadastre System, Land Payment and Tax System, Land Monitoring System, and the open web portal and mobile application egazar.

Problem to be solved

- The land cadastre system in Mongolia was working independently in 21 provinces and 330 soums, and on each officer's computer.
- The land use planning, payment, and tax systems, and the land monitoring system did not exist.
- It was not possible to exchange information with other organizations.
- It was not possible to publicly display land information.
- It was not possible to receive applications and requests from citizens online.

Implemented solution

- The architecture of the Land ERP system was developed by creating requirements and design according to the software development steps.
- Development was done using open-source technologies according to the client's requirements and our solution.
- A map server (Geoserver) was configured to display spatial information internally and to the public.
- An open web portal and a mobile application were needed to provide land information and receive requests from the public.
- A solution was implemented for a unified internal management system that officials throughout the country could access.



Project information

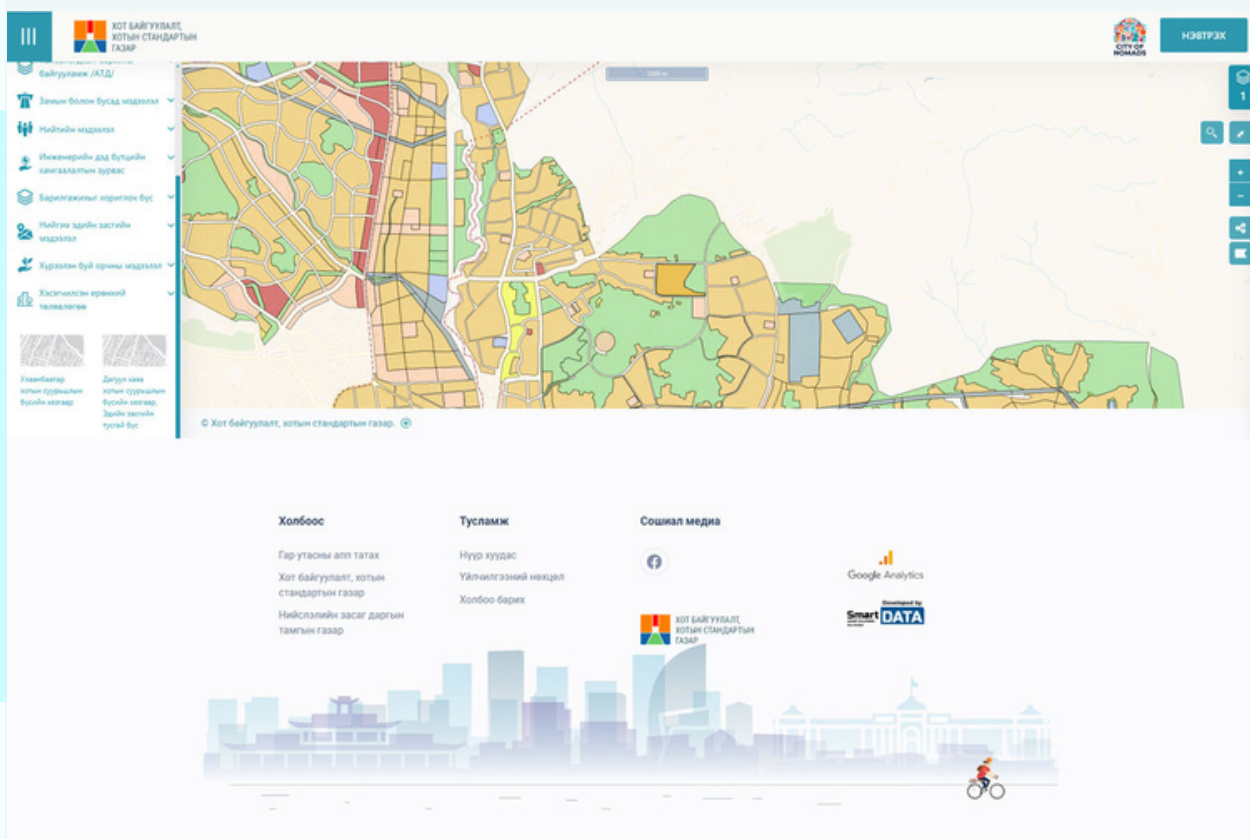
- **Client:** General Authority for Land Administration, Geodesy and Cartography
- **Implementation date:** 2018 - 2022
- **Open portal:** www.egazar.gov.mn
- **Mobile app:** egazar

2

Urban Development System for Capital City (Urban City ERP)

About

- The Urban Planning and City Standards Agency organizes and approves development work in line with the long-term, medium-term, and short-term development policies of Mongolia, and plans with the participation of citizens based on the economic and social resources of Ulaanbaatar. It is a subordinate organization of the Ulaanbaatar city government that organizes and supervises urban development activities in a fast, efficient, and accessible way for citizens and legal entities using modern advanced technology.
- Previously, this organization used desktop software to manage the urban development database, and after receiving and resolving requests from citizens on paper, it registered the spatial information in the database



Problem to be solved

Problems and difficulties faced by citizens and businesses

- It is difficult to view information about buildings with and without permits.
- It is not possible to report violations related to illegally constructed buildings and urban development with location and documented photos.
- It takes a lot of time to submit requests for construction and other services, and requests are submitted on paper.
- It is not possible to view development and detailed master plans and other public layers of information at any time.

Problems and difficulties faced by urban development experts

- Since information already stored in the system is not automatically retrieved, re-entering it manually can cause data discrepancies and waste time.
- Citizens who have entered public requests through other systems can log in to each specific system and work on multiple sources, which can lead to problems such as some requests taking a long time to be resolved and wasting time.
- Documents printed from the system are not generated according to the currently used format, so there is a risk of manual re-editing and typing errors.
- Re-entering information in different software programs can cause data to be stored differently, cause typing errors, and waste time.

Project results

- A unified Urban ERP was created, which allows citizens and businesses to submit and resolve all types of requests electronically.
- This saves time, and citizens and businesses can send and track their requests online.
- Citizens and businesses can log in with their DAN ID (National Authentication System) at ebarilga.ub.gov.mn to check what size of building they can build on their unit plot.
- A unified database of applicants (citizens, businesses, and entities involved in construction) was created, so there is no need to register participants' information again and again.
- Citizens and businesses can view open spatial layers online.
- To avoid conflicts of interest for officials, requests related to construction are allocated by district and other methods.
- A criterion for checking the accuracy and completeness of information has been created.
- For each type of request, a workflow or business process can be created and configured according to the organization's internal operations

Project information

Client: Urban Development Agency of Capital City

Implementation date: 2021

Open portal: www.ebarilga.ub.gov.mn

Mobile app: EBarilga

3

National urban development cadastre system (**Urban State ERP**)

About

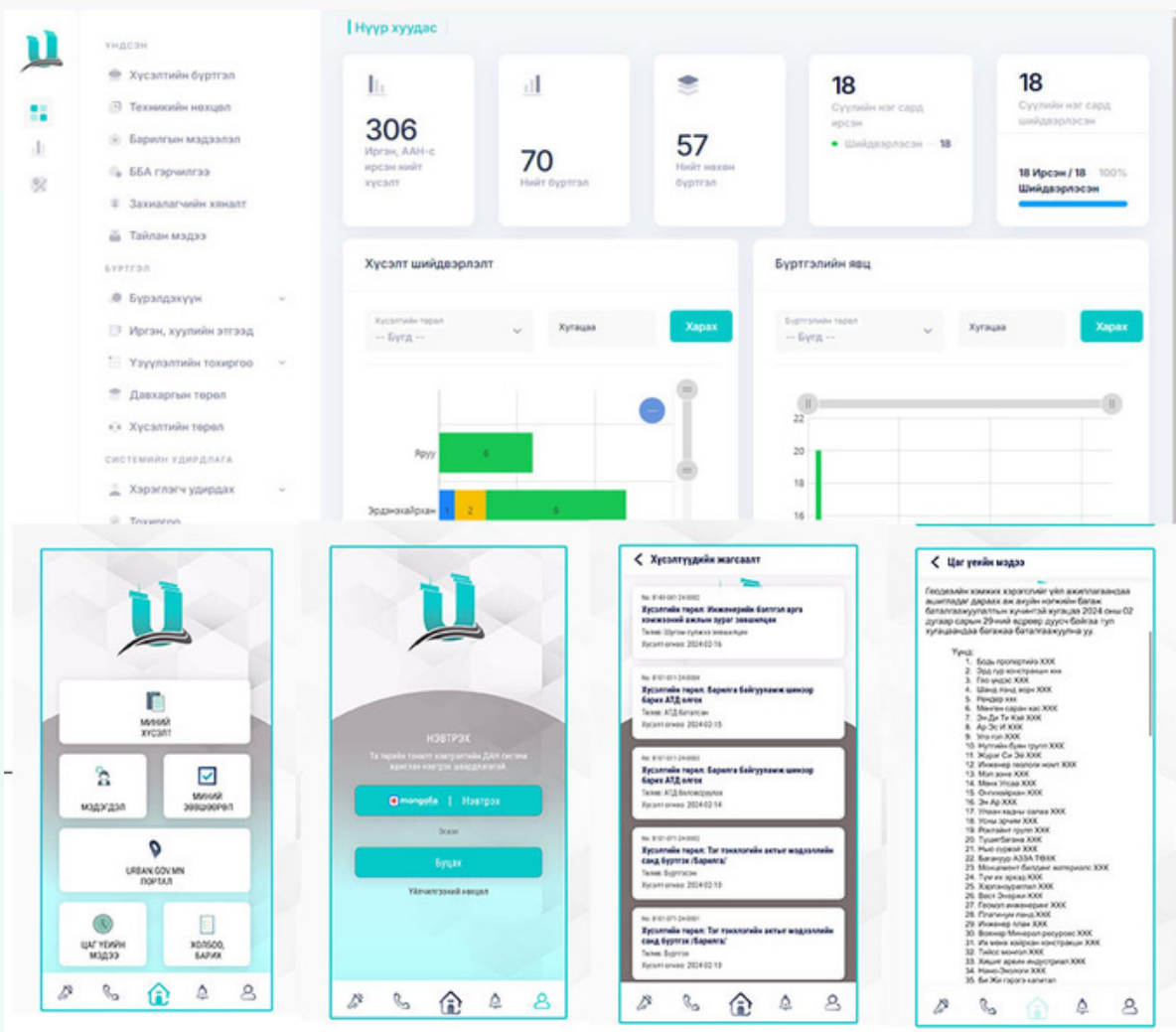
- The national urban development cadastre is a document for urban development planning and construction in the country, and the urban development cadastre includes information about geodesy, topography, cartography, hydrogeology, urban development, land, and construction information, as well as information about engineering, transport, social infrastructure, and land improvement.
- The information is compiled by the provincial land relations, construction, and urban development agencies, and they grant permits to start or continue construction work, expansion, and renovation in the area, register other information during the construction, and after the construction is completed, they accept the as-built drawing and issue the BOC conclusion, and provide detailed information about other infrastructures and objects in the area.

Problems to be solved

- In the old system, each time a new spatial or non-spatial data type or layer was added, additional development was carried out, and it depended on the developer company.
- As a result, the structure of the main part of the database was not flexible or dynamic.
- Citizens from the public only sent their initial requests for building permits or architectural planning assignments, and other processes were requested in paper form. It was necessary to create the opportunity to send all requests related to the construction of buildings and structures online.
- It was not possible to exchange information with the necessary relevant authorities.

Implement solutions

- The underlying structure of the information database was changed, and the old data was converted and entered into the new structure.
- The newly organized database structure was designed to allow the client to manage and organize the details to be registered within the framework of any new registration, request type, or spatial data type, without additional development.
- When implementing a project, we study the user's needs, the current situation, and perform a detailed mapping of the current and future processes.
- Developing software based on system analysis reduces the risk of omitting any criteria or steps from user requirements and business operations, and positively influences the successful implementation of the project.
- The Urban City ERP system, which was implemented in Ulaanbaatar, was modified, and the Urban State ERP was created



Project results

- It is now possible to receive, resolve, and enter spatial information for all types of requests from citizens and businesses.
- It is possible to create any number of layers in the database and dynamically configure the attributes to be registered on those layers for each type of request.
- The administrator can change the color and style of the spatial layers according to the standard.
- It is possible to register the organizational structure and configure user rights.
- A criterion for checking the accuracy and completeness of information has been created.
- The system was designed to allow a workflow to be created and configured according to the internal operations of the organization for each type of request, which reduces future software development costs.
- Attached files and approved files related to requests and registrations are now stored in a unified electronic archive.

Project information

Client: General Authority for Land Administration, Geodesy and Cartography

Funding: Ministry of Urban Development, Construction, Housing

Implemented date: 2023

Open portal: www.urban.gov.mn

Mobile app: Urban: Cadastral System

4

National Land Exchange System (Land Auction System)

About

- The implementation of the land exchange system was started with funding from the Ulaanbaatar Land Management Agency to improve its technology and internal operations.
- As part of this, we re-designed and developed works such as land auctions, project selections, collecting land market price information, and entering land reserve fund and trade/lease information

Problem to be solved

In terms of technology:

- To expand and improve the existing technical infrastructure and redesign it.
- To create a possibility to conduct the auction without interruption.
- To update the versions of the frameworks and servers currently in use to the latest version.
- To create a unified time control on the user side.

In terms of operations:

- Develop a portal site and internal management system with a modern design
- Recall and connect detailed information about the land participating in auctions and project selection from the integrated land system
- Create the ability to enter the land cadastre, land organization, and self-drawing (Shapefile) when creating a land reserve
- Create the ability to automatically create contracts and land applications with citizens and enterprises selected in auctions and project selection
- It is necessary to solve problems such as automatically creating auction notes from the system.

Implemented solution

In terms of technology:

- The main platform of the land exchange system was developed on the Laravel framework, the public portal was developed using the React JS framework, and the database system was based on PostgreSQL / PostGIS.
- During the auction, it became possible to bid by transmitting information between the portal and the main platform via Socket.
- The internal management system, open portal, and database systems were developed to be configurable on different servers

In terms of operations:

- The open portal was developed with a new design and look.
- The DAN (National Authentication System) system for citizen and business identification was connected.
- Auctions and project selections were connected to the integrated land management system.
- The database was organized to provide price information and other reports quickly.

The screenshot displays the user interface of the land exchange system. On the left is a vertical sidebar menu with icons and text for navigation, including sections like 'Нүүр хуудас' (Home), 'Дуудлага худалдаа' (Auction/Trade), 'Төсөл шалгаруулалт' (Project Selection), 'Зох зээлийн үнийн мэдээлэл' (Price Information), 'Нөөц сан' (Reserve Fund), 'Хар жагсаалт' (List), 'Худалдаа, түрээсийн зар' (Trade, Rental Fee), 'Санал' (Offer), 'Бүртгэл' (Registration), 'Бүртгэлүүн' (Registration List), 'Иргэн, хуулийн этгээд' (Citizen, Legal Entity), 'Ажлын хэсэг' (Working Group), 'Системийн удирдлага' (System Management), 'Хэрэглэгч удирдах' (Manage Users), 'Тохиргоо' (Settings), 'Лавлах' (Update), 'Иргэн хуулийн этгээдийн төрөл' (Type of Citizen/Legal Entity), 'Дуудлага худалдааны лавлах' (Update Auction/Trade), 'Төслийн лавлах' (Update Project), and 'Зох зээлийн үнийн' (Price Information).

The main content area is titled 'Дуудлага худалдаа' (Auction/Trade) and features a progress bar with six steps: 1. Бүртгэл (Registration), 2. Газрын мэдээлэл (Land Information), 3. Дуудлага худалдааны мэдээлэл (Auction/Trade Information), 4. Нэмэлт мэдээлэл (Additional Information), 5. Хавсралт материалууд (Attachments), and 6. 360° зураг (360° Photo). Step 3 is currently active.

Below the progress bar, there is a form for land registration. It includes a dropdown for 'Тухайн сонгосон Сүм/Дүүргийн кадастраас хайх?' (Search from the cadastre of the selected Sum/District?) and a 'Хайх' (Search) button. A text input field contains the value '8516000621', with a 'Хайх' (Search) button next to it.

The form also contains several input fields and checkboxes: 'Нэгж тооцоон дотроо' (Within the unit calculation) with value '8516000621', 'Газрын / Санх' (Land / Finance) with value 'Худалдааны', 'Газрын хэмжээ (м²)' (Land area (m²)) with value '5400', 'Халтга / Тогт' (Lease / Fixed) with value 'Халтга / Тогт', 'Газрын хөрөнгийн' (Land resource) with value '2111: Худалдаа, нийтийн ү...', 'Халтгайн дэлгэрэнгүй' (Lease details), 'Эрхийн төрөл' (Type of right) with value 'Эзэмшигч', 'Зарчваралын огноо' (Deadline) with value '2014-06-06', and a checked checkbox for 'Газрын дэлгэрэнгүй бүртгэл' (Lease registration).

There are also checkboxes for 'Хэвд тал хашаа болох' (Can be a plot/enclosure), 'Исжүүлэх байдал' (Status) with a dropdown set to 'Сонгох...', 'Исжүүлэх технологийн үнэ' (Technology value), 'Исжүүлэх хангамжийн байгууллага' (Infrastructure organization), 'Нэмэлт мэдээлэл' (Additional information), and a checked checkbox for 'Цахилгаантай эсэх' (Whether electricity). There are also checkboxes for 'Телефон утасны шугамд холбогдсон эсэх' (Whether connected to telephone line), 'Өөрийн эх үүсвэрийн шугамд холбогдсон эсэх' (Whether connected to own line), and 'Үерийн далайд ойр эсэх' (Whether near sea).

On the right side of the form, there is a map showing a street grid with a blue rectangle highlighting a specific plot of land.

Project results

- Land auctions and project selections contribute a certain amount to the state budget, so their operations and reliability must be constantly maintained.
- It was developed to meet the requirements of continuous improvement, using the latest technologies, and connecting with other systems to provide detailed information to the public.
- Currently, it is connected to the land management system and the national urban development system, and displays the necessary information to the public.

The image displays six screenshots of a web portal for land auctions. Each screenshot shows a table of auction results with the following columns: 'Харгалыгч' (Bidder), 'Огноо' (Time), and 'Үнэ' (Price). The auctions are for various land parcels in Ulaanbaatar, including areas like Завхан, Түдэвтэй, 3-р баг, Цорго, and Дундговь, Эрдэнэдалай, 7-р баг, 1.

Харгалыгч	Огноо	Үнэ
#14940	15:09:02.399	1,699,200₮
#14952	15:08:57.299	1,649,200₮
#14940	15:08:11.298	1,599,200₮
#14952	15:08:06.209	1,549,200₮
#14940	15:07:14.258	1,499,200₮

Харгалыгч	Огноо	Үнэ
#14987	15:09:02.910	150,238,400₮
#14940	15:08:55.233	145,238,400₮
#14987	15:08:47.782	144,238,400₮
#14940	15:08:34.764	139,238,400₮
#14987	15:08:29.572	138,238,400₮

Харгалыгч	Огноо	Үнэ
#14958	15:09:06.704	1,568,800₮
#14940	15:09:04.322	1,518,400₮
#14958	15:08:48.192	1,468,400₮
#14958	15:08:48.192	1,468,400₮
#14940	15:08:24.327	1,418,400₮

Харгалыгч	Огноо	Үнэ
#11688	15:09:09.983	11,436,960₮
#14940	15:09:08.305	11,336,960₮
#11688	15:09:01.377	11,236,960₮
#11688	15:09:01.377	11,236,960₮

Харгалыгч	Огноо	Үнэ
#14940	15:07:54.304	1,216,800₮
#14989	15:07:47.867	1,166,800₮
#14940	15:06:49.587	1,116,800₮
#14989	15:06:32.213	1,066,800₮

Харгалыгч	Огноо	Үнэ
#14940	14:58:43.411	255,200₮
#14953	14:41:47.138	205,200₮
#14940	12:50:53.397	155,200₮
#14953	10:32:25.663	105,200₮

Project information

- **Client:** General Authority for Land Administration, Geodesy and Cartography
- **Funding:** Ulaanbaatar Land Management Agency
- **Implementation date:** 2024
- **Open portal:** www.mle.mn

5

Land service kiosk machine (Land Kiosk)

About

- Services provided to the public by the General Authority for Land Administration, Geodesy and Cartography were organized to be fast and accessible through kiosk machines and placed in rural areas and districts.
- The Land Relations Service Kiosk machine can provide about 70 types of services related to land relations to citizens, businesses, and organizations, and it is possible to submit and resolve 52 types of applications and requests online, print 12 types of information, references, and certificates for free, and also resolve electronic requests and applications.

Problems to be solved

Land services are being provided through kiosks for the first time, and there are issues to be resolved, starting with identifying citizens by their mobile phone numbers and ID cards registered in the land system. There is also a need to implement solutions such as sending messages to all mobile numbers and redrawing cadastral maps every time.



Implemented solutions

In terms of technology:

- It is now possible to obtain land services from anywhere in Mongolia through a kiosk machine.
- The land service kiosk machine now allows sending messages to the registered phone numbers of citizens and enterprises.
- It now allows reading the ID card and recognizing it by the civil registration number.
- It now allows downloading and printing all types of electronic files related to land located at the land office.

In terms of functionality:

- Citizens and enterprises can now create and print the latest land cadastral map.
- It is now possible to vote on land management plans.
- You can now send requests related to your land.
- Some paid services can now be paid using QPay.



Project results

The implementation of land service kiosks across the country has enabled citizens and businesses to quickly access services at any kiosk, rather than having to go to a land office to receive services. The most widely used services are land cadastral maps, certificates, and contracts. Also, by making this service a paid service, the running costs associated with operating kiosks are covered.

Previously, citizens used to sign 6-10 signatures to obtain government services such as land ownership, possession, and use rights contracts, certificates, cadastral maps, land condition quality inspection and assurance reports, land mortgages, and payment information, but with the introduction of electronic machines, citizens and legal entities have been able to receive a total of 18 types of services in one place within 1 minute.

Project information

Client: General Authority for Land Administration, Geodesy and Cartography

Implementation date: 2023 - 2025

6

Capital Road and Road Facility Registration System (Road ERP)

About

The goal is to introduce an integrated spatial information-based management system that provides information on the capital's roads and road facilities by user requirements, enriches the integrated database by enriching the basic data of the database, and improves the quality and accuracy of the information.

Problems to be solved

In terms of technology and techniques:

- Requirements for creating a unified management system based on web technology
- Requirements for the creation of public portal sites and mobile applications
- The need to purchase new servers and equipment, and to run systems on them accordingly
- Requirement to import data from the existing ArcGIS system

In terms of operations:

- Develop a portal site and internal management system with a modern design
- Create a business process model of all operations, such as orders, contracts, permits, etc., carried out at the Road Development Department
- Make the process of resolving requests and complaints related to the Road Development Department from citizens and business units electronic
- Connect the integrated road management system with the integrated land management system
- Connect the integrated road management system with the Urban Development and Urban Standards Department's Urban Development systems
- Conduct training and an introduction for general employees and specialists, etc.

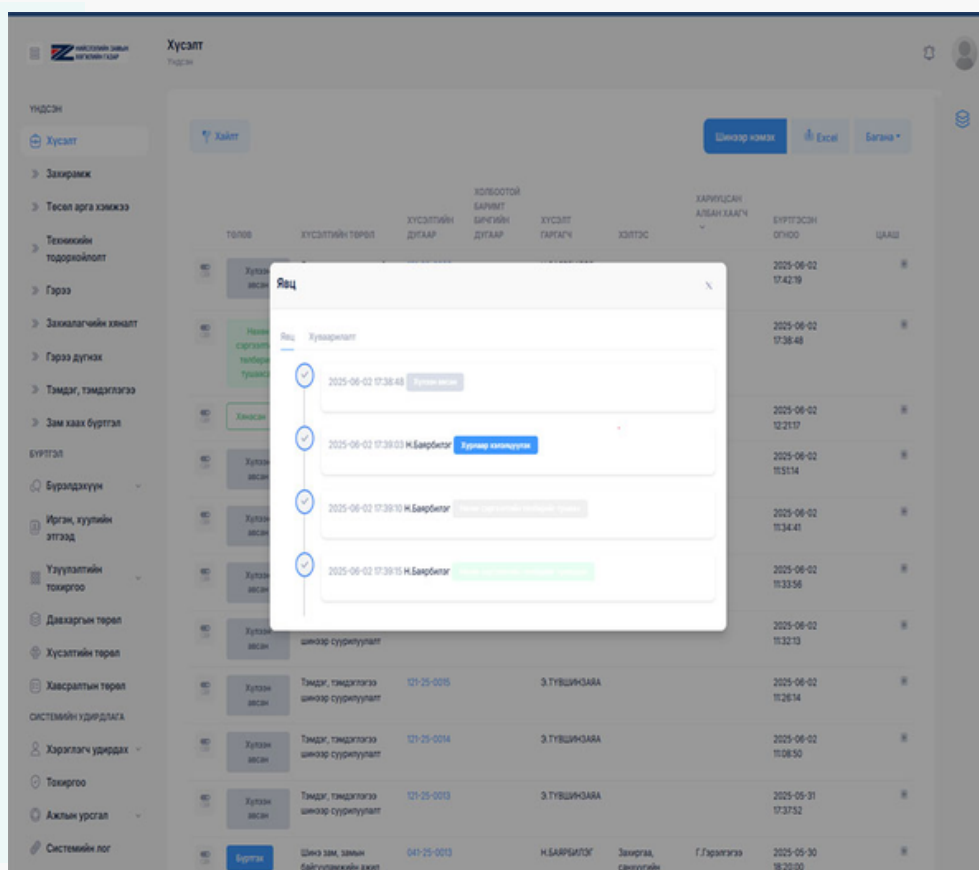
Implemented solutions

In terms of technology:

- Like previous systems, our own integrated spatial management platform has been customized
- Mobile apps (React Native) and web systems (Laravel Framework) have been developed
- A map system has been developed based on (Geo Server)

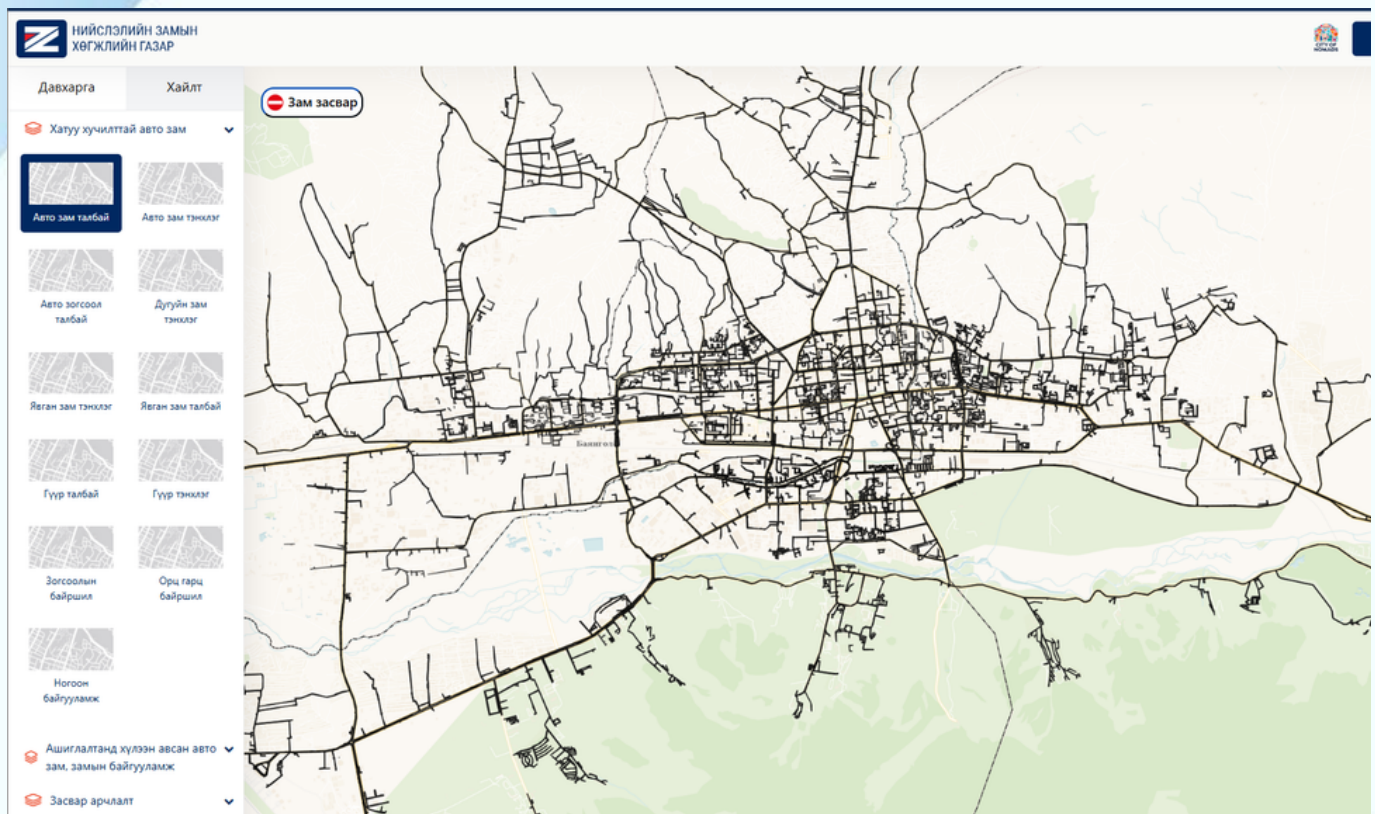
In terms of operations:

- The open portal has been developed with a new design and appearance.
- The state identification and login DAN system for citizens and business entities has been connected.
- It is now possible to receive and resolve all types of requests. (More than 40 requests, such as marking, site analysis, permits, etc., are now resolved.)
- It is now possible to make various types of registrations. (Orders, contracts, project events, customer control, etc., are now added.)
- It is now possible to register all types of spatial layers.



Project results

A unified database of all roads and road facilities in the capital has been created. Internal business processes have also been mapped and necessary activities have been programmed. Various requests from citizens and enterprises have been received and resolved through an open portal.



Project information

Client: Capital City Road Development Department

Implemented date: 2024 - 2025

Open portal: www.ubroad.mn

Mobile app: ubroad.mn

Contact us

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