REPUBLIC OF KAZAKHSTAN

AI & DIGITAL MINISTRY

nitec

joint-stock company

National Information Technologies

Kazakhstan's e-Government and national AI platform operator

10 **UN Online Services Index**
#1 among CIS countries

24 **UN e-Government Development Index**
among 193 countries

A Group **World Bank GovTech Maturity Index**
GTMI - 0.817

1 **GovTech Prize**
Inclusive Digital Transformation category
WORLD GOVERNMENT SUMMIT

3 TOP **Future of Government Awards 2023**
Open Source Adaptation category

1 **Smart Data Ukimet** - Best Analytics & Big Data Project of 2024
Global CIO PROJECT of the YEAR

nitec.kz

OUR GOVTECH SOLUTIONS:

AI & DIGITAL MINISTRY

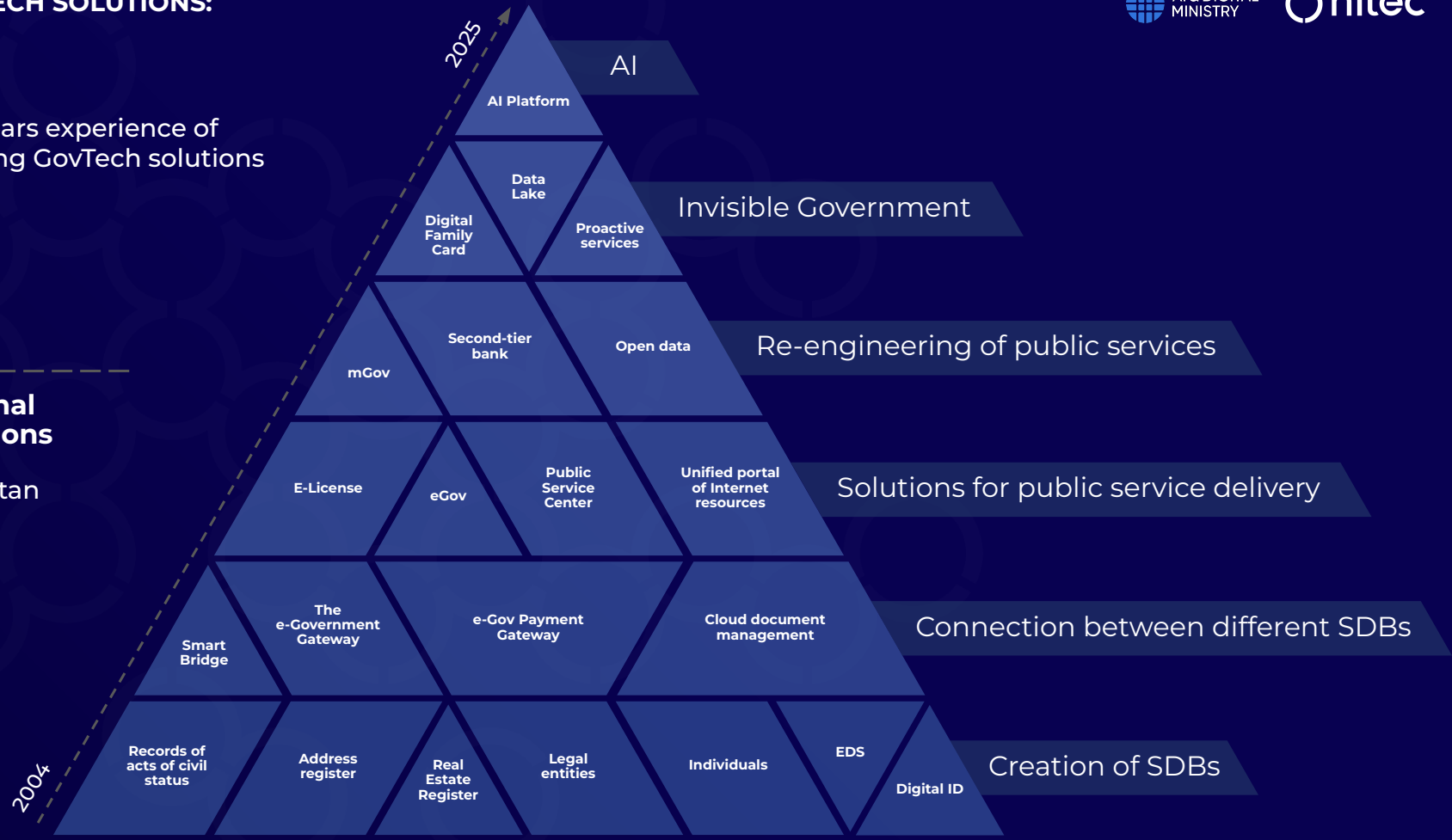
nitec

>20 years experience of building GovTech solutions

International collaborations

Tajikistan

Togo



smart bridge

A platform designed to simplify the process of integration between the information systems of public authorities (PAs) and the private sector

nitec

Gov. agency —data exchange— Gov. agency —service provision— BUSINESS

Smart Bridge provides API access to government services by leveraging ***the e-Government Gateway*** *for data exchange between Gov. agencies*

published		finalized		
2.9k services		**6.5k** integrations		
2.1k state	**0.8k** non state.	**2.2k** G2G	**3.7k** G2B	**0.6k** B2B

Economic impact

Easy and fast integration process and reduction of paperwork:

3 months	**1** month
8 approvals	**1** approvals
8 letters	**0** emails
4 technical documents	**1** online form

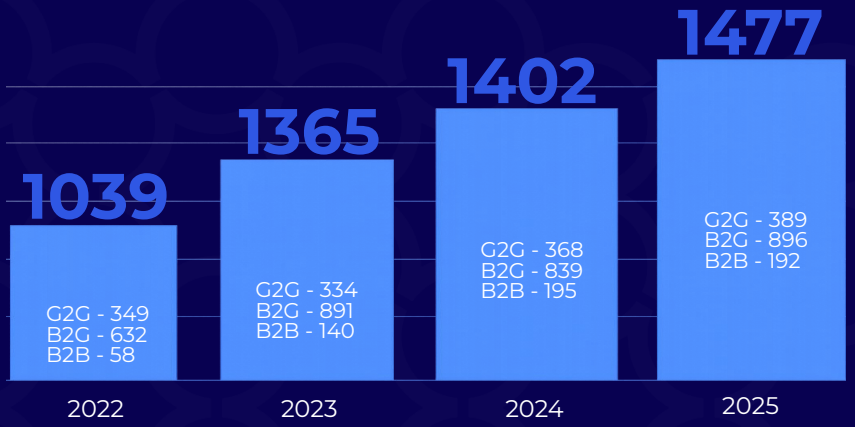
number of requests	organizations and IPs
17B in 2024	**11k** organizations
	4.5k systems

1 **application**
fill out the online application form; to connect or publish a service

2 **harmonization**
track the status of your application in your personal cabinet

3 **access**
get access and get started to work with the service

Dynamics of realized integrations



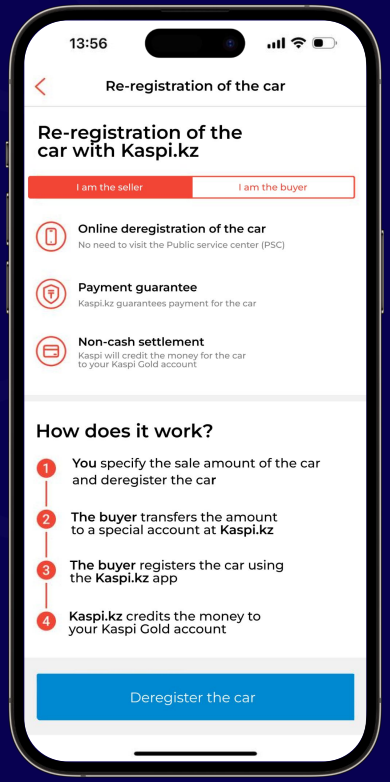
2-3 hours
re-registration process earlier

5-10 minutes
re-registration process now

more than 65% of transactions are made using kaspi.kz super-application

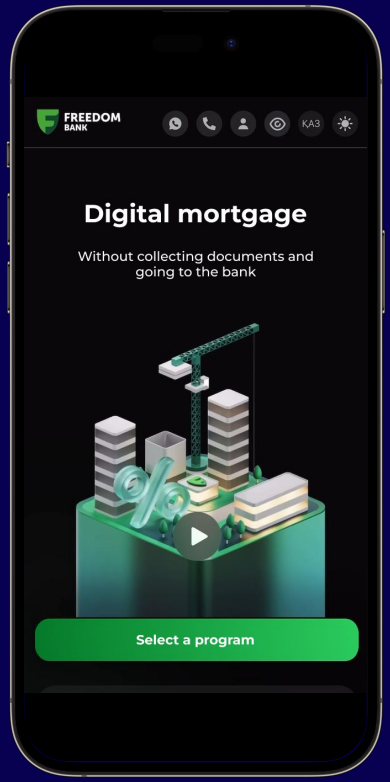
$1.8 billion transferred through cashless transactions

Example, vehicle registration
in a couple of clicks



kaspi bank app

Digital Mortgage
No paperwork
and a trip to the bank.



freedom bank app

DATA-DRIVEN GOVERNMENT

Creation of **DATA LAKE**

machine learning

analytics

01001 01000110000

010100 10 10001 0001

010010010 0010 1001010100

local data movement

real-time data movement

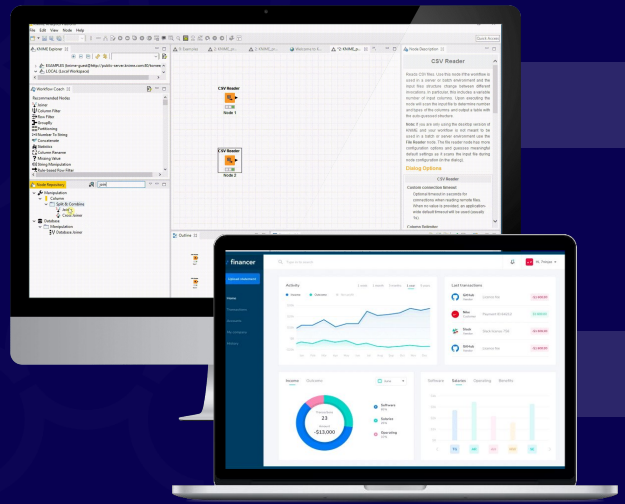
1) Collecting, supplementing and updating data from **>120** state databases
2) **Depersonalization of** personal data
3) **>30 cases** for data-driven decision making

3 TOP

Future of Government Awards 2023
Open Source Adaptation category

aws

UNDP



Designer data analysis

Data visualization builder

Amundsen

Open for Innovation KNIME

pentaho

Apache Superset

These services are provided free of charge to all government agencies

The problem of the lack of centralized analysis

Ministry of Agriculture



Register of agricultural producers

No information on who is officially registered and has the right to export.

Ministry of Finance



Taxpayer Register

No information about who is engaged in business but does not pay taxes.

Ministry of Trade



Register of exporters and export volumes

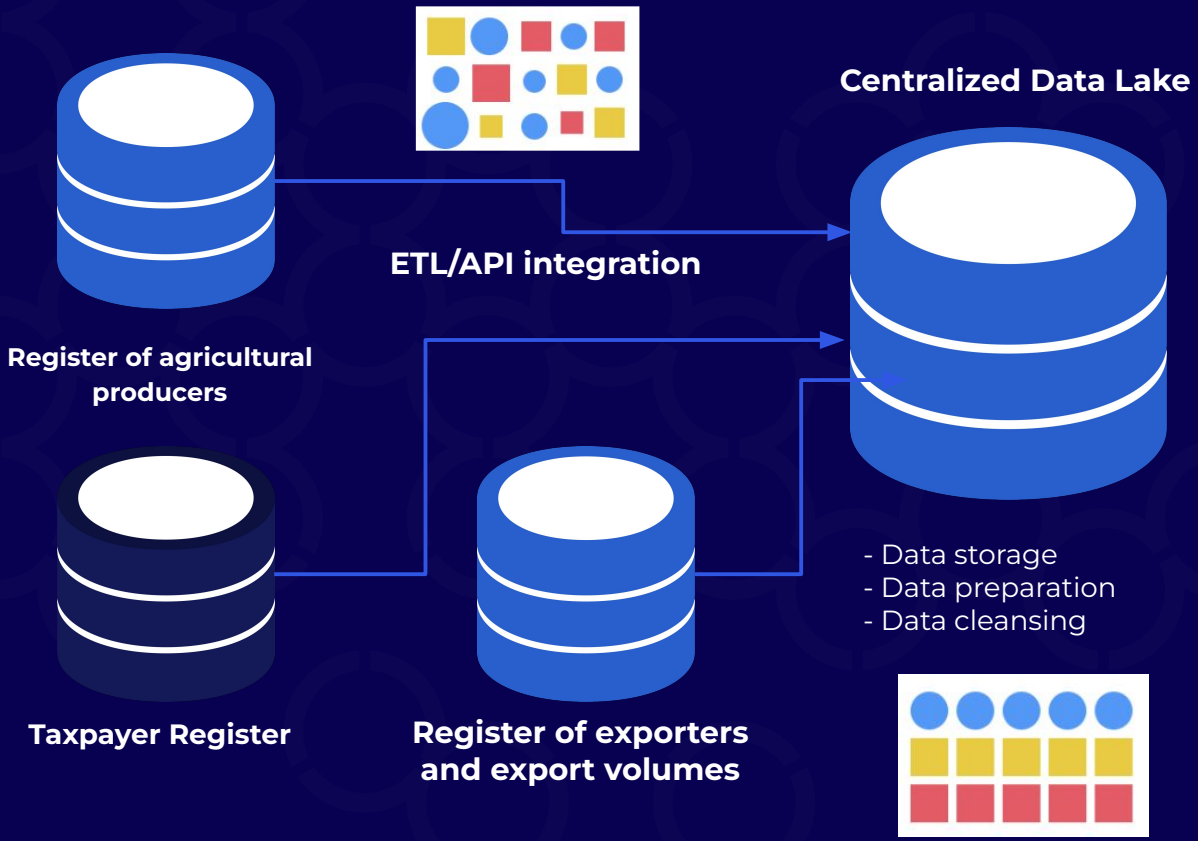
No information on how much goods can be exported and how much must be retained for domestic consumption.

Common problems:

- **Fragmented planning. Cross-sector dependencies cannot be seen, incorrect prioritization of programs.**
- **There is no single “source of truth.” Different versions of the same indicators in different departments → conflicting decisions.**
- **Lack of a centralized approach to data management and data quality**

Use their data to perform internal processes, no overall picture

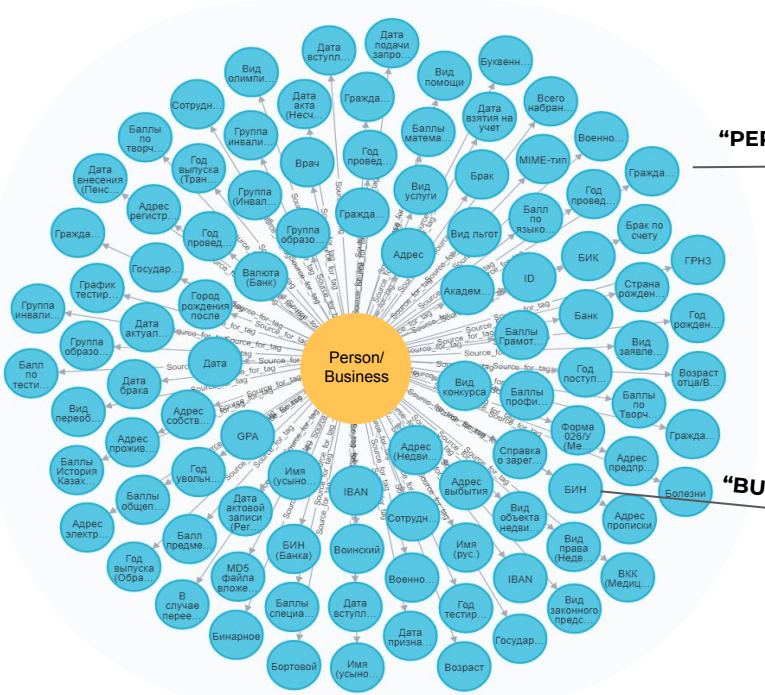
Creation of centralized Data Lake



Opportunities:

- The big picture, effective strategic planning, identifying those responsible for poor data quality
- Rapid digitization of data collection, understanding non-digitized areas, creating KPIs for digital officers
- The emergence of a foundation for AI development, widespread implementation of AI assistants for civil servants, increased transparency and efficiency of government work

Data Layer + MDM (using the examples of entities "Person" and "Business")



“PERSON”

Historical context of person’s citizenship

id	citizenship_id	citizenship_name	created_date	modified_date
hash_id	1	KAZAKHSTAN	01.01.2000	
hash_id	2	RUSSIAN		05.05.2013
hash_id	10	GERMANY	2021	

“BUSINESS”

Historical context of business details

id	business_type	name_ru	start_date	end_date	hash_iin_ruk
bin_id	1	name_1	01.07.2015	01.01.2019	hash_iin
bin_id	2	name_2	01.01.2020	05.05.2022	hash_iin
bin_id	5	name_3	07.09.2023		hash_iin

Data Layer — A digital layer for storing data about entities with a chronology of changes and historical context.

Master Data Management (MDM) — The process of managing reference data, with the Data Layer serving as its foundation.

The Data Layer with **MDM** ensures the quality, reliability, and transparency of data for QazTech products.

DATA-DRIVEN CASE

DIGITAL FAMILY CARD

welfare analysis
(Alkire-Foster multidimensional poverty measure)

1 GovTech Prize

GovTech Prize
Inclusive Digital Transformation category

القمة العالمية للحكومات WORLD GOVERNMENTS SUMMIT

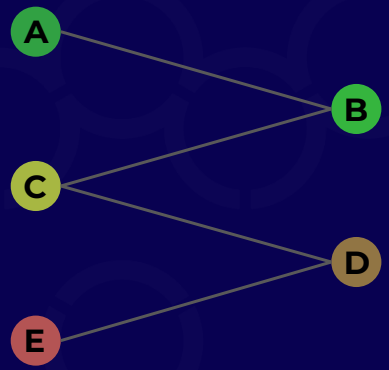
- **Family at the data level** (20 state DBs)
  Possibility of cross-filtering | Family income
- **100 indicators** (30 statuses)
  Transparency and identification of those in need of social support

6M+
digitized families

family assessment criteria

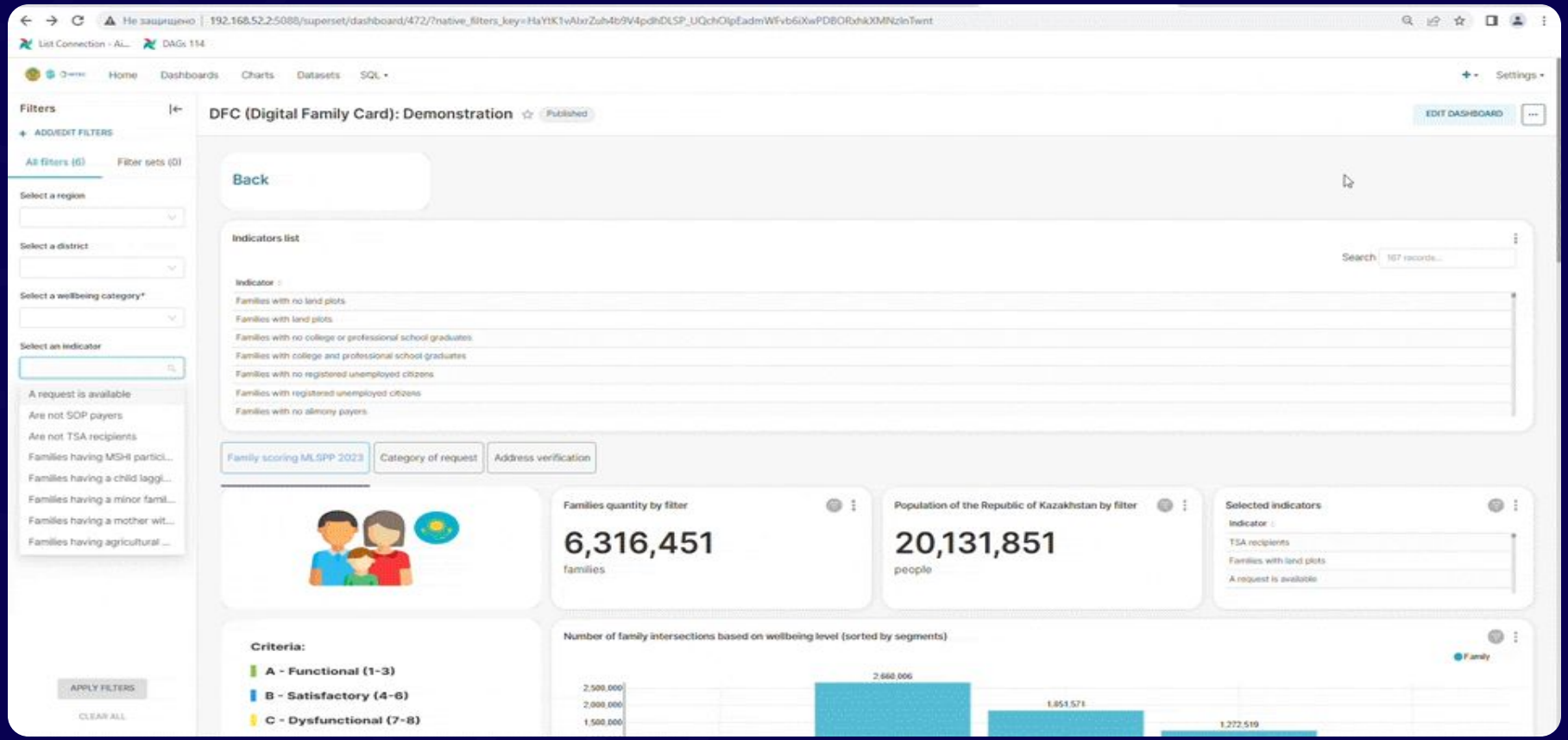
- Material situation
- Housing conditions
- Health
- Social status
- Education

algorithm for classifying families



Identification of problems to be solved

- Living below the poverty line
- No job or little income
- Lack of housing
- Lack of education and skills
- Lack of health insurance
- Health problems
- Children do not attend kindergarten or school
- Children are without parental supervision
- There are problems with the law
- Need legal assistance


Home
Dashboards
Charts
Datasets
SQL
Settings
Filters
ADD/EDIT FILTERS
All filters (6)
Filter sets (0)
Select a region
Select a district
Select a wellbeing category*
Select an indicator
A request is available
Are not SOP payers
Are not TSA recipients
Families having MSHI partici...
Families having a child laggi...
Families having a minor famil...
Families having a mother wit...
Families having agricultural ...
APPLY FILTERS
CLEAR ALL
DFC (Digital Family Card): Demonstration
Published
EDIT DASHBOARD
Back
Indicators list
Search
Indicator
Families with no land plots
Families with land plots
Families with no college or professional school graduates
Families with college and professional school graduates
Families with no registered unemployed citizens
Families with registered unemployed citizens
Families with no alimony payers
Family scoring MLSPP 2023
Category of request
Address verification
Families quantity by filter
6,316,451
families
Population of the Republic of Kazakhstan by filter
20,131,851
people
Selected indicators
Indicator
TSA recipients
Families with land plots
A request is available
Criteria:
A - Functional (1-3)
B - Satisfactory (4-6)
C - Dysfunctional (7-8)
Number of family intersections based on wellbeing level (sorted by segments)
Family
2,660,006
1,851,571
1,272,519
2,500,000
2,000,000
1,500,000

DATA-DRIVEN CASE

DIGITAL FAMILY CARD

5M+
public services provided in a proactive format

45
number of proactive services launched

1.9 M+
Notification services provided

26k+
vouchers created for vulnerable families to receive discounts on commercial gas

1,5 M+
hot lunches provided to school children

800k+
students exempted from military service

Public services	Formed lists by SDU
1. Disability allowance	**290 634**
2. Allowance for raising a child with a disability	**114 504**
3. Social payment in case of job loss	**81 423**
4. Social payment for disability	**7 307**
5. Social payments in case of loss of breadwinner	**2 411**

Proactive Government Services

Example

Applicant



Pregnant woman

85%

of expectant mothers no longer need to visit SB offices

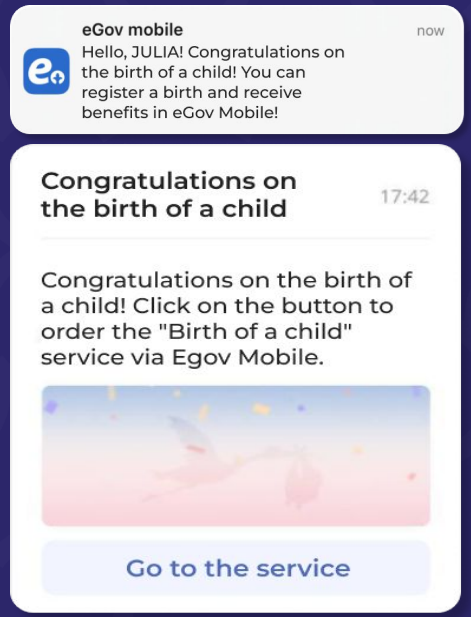
within

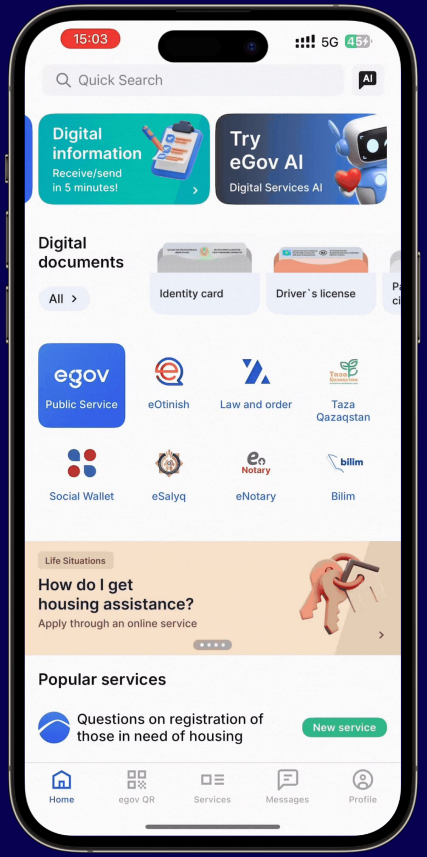
3 days

after entering the child's birth record in the SDB, they can give the child a name and an account number to receive financial aid from the state through the app.

Notifications

- ✔ Proactive Services
- ✔ Pop-up tips
- ✔ Congratulations on a joyous occasion





Proactive service: Hot meals (AS IS)

AS IS

https://egov.kz/cms/ru/services/secondary_school/mon-197-205

Выбирает тип заявления

Указывает контактный телефон и дополнительный номер телефона

Указывает e-mail

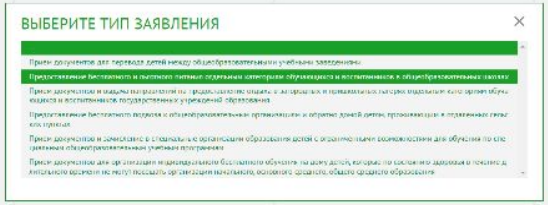
Выбирает от кого подается заявление: родитель, законный представитель и поступающий/учащийся

При подачи заявки родителем, выбирает ребенка из списка или вводит ИИН

При подачи заявки законным представителем, вводит ИИН ребенка

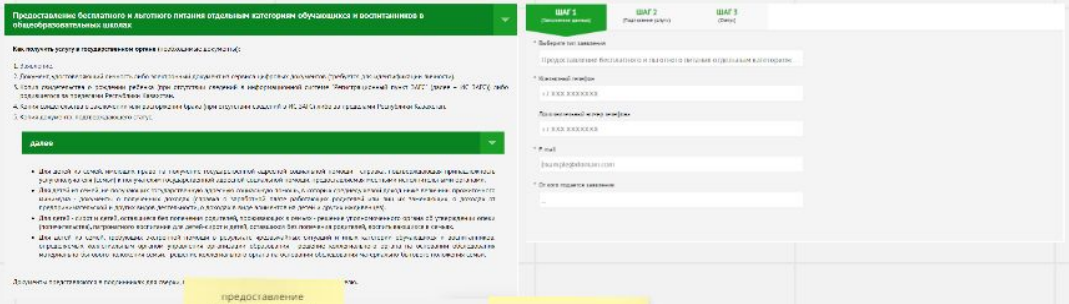
При подачи заявки поступающим/учащимся

Подписывает услугу ЭЦП



Вводит текущие сведения об образовании ребенка

Подтверждает фактический адрес проживания с пропиской



Если фактический адрес не совпадает с пропиской, указывает учебный год, фактический адрес проживания, регион, вид льготы

Загружает копию свидетельства о заключении/ расторжении брака

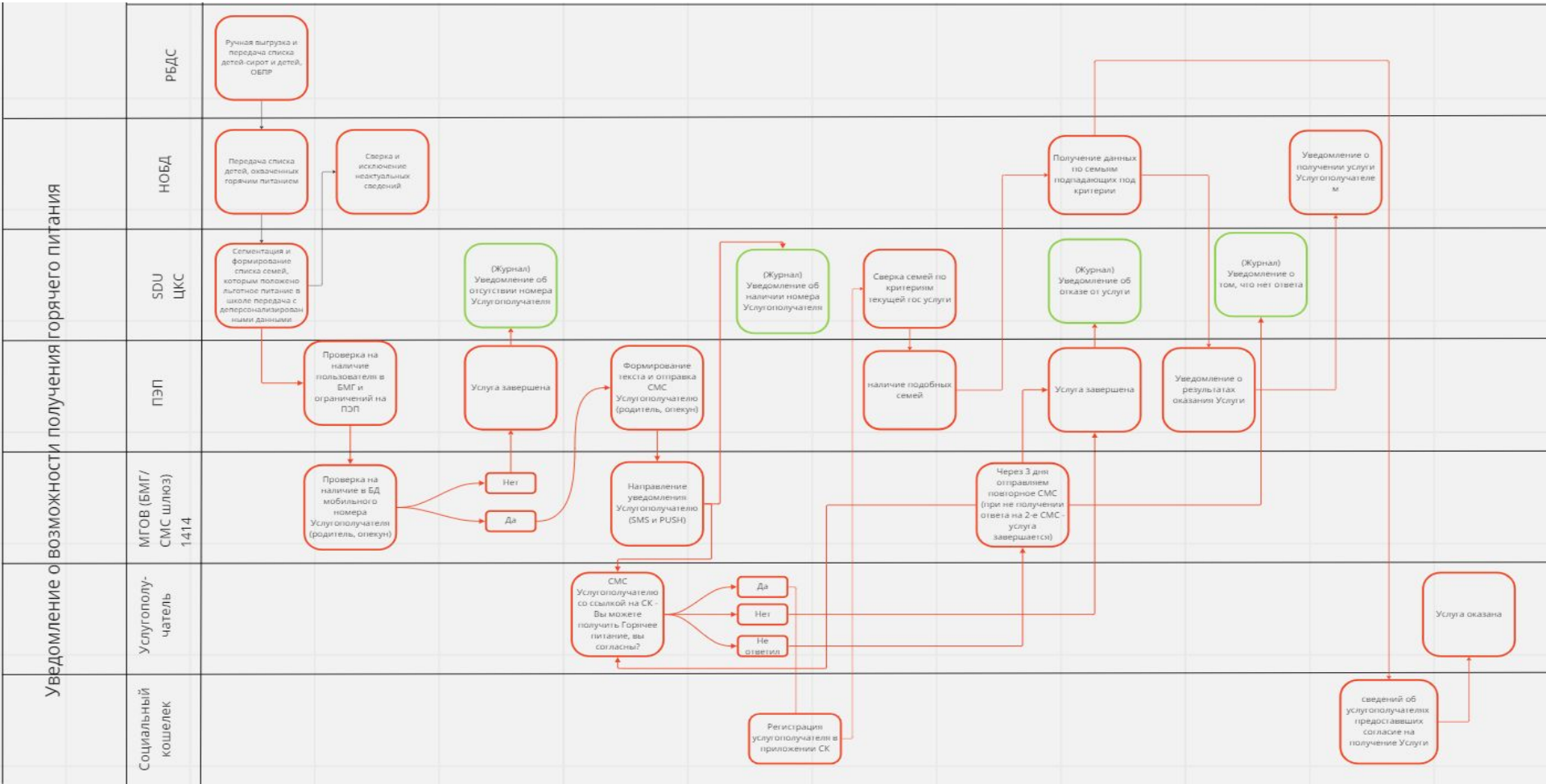
предоставление бесплатного подвоза, предоставление бесплатного и льготного питания, прием документов и выдача направлений на предоставление отдыха – 5 рабочих дней.

Системный анализ

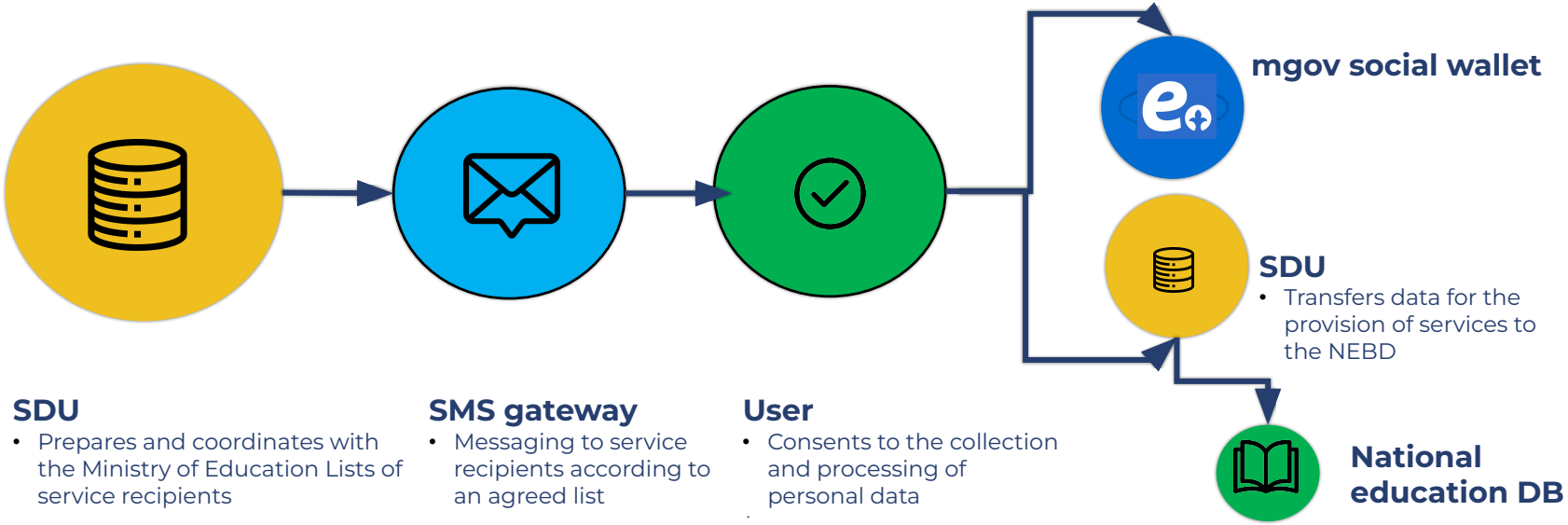
https://miro.com/app/board/uXjVPOphMLo=/

Подписывает правовую ответственность за достоверность данных и соглашается на использование персональных данных из внешних ИС

Proactive service: Hot meals (BPM)



Proactive service: Hot meals (TO BE)



SDU
- Prepares and coordinates with the Ministry of Education Lists of service recipients

SMS gateway
- Messaging to service recipients according to an agreed list

User
- Consents to the collection and processing of personal data

Data Quality analysis on hot meals for school children

Schools from the regions compiled lists for hot meals, and the ME submitted these lists to the SDU for verification.

Results:

233K
Number of persons without “student” status (not affiliated with schools)

1799
Number of persons over 18 years of age affiliated with secondary education institutions

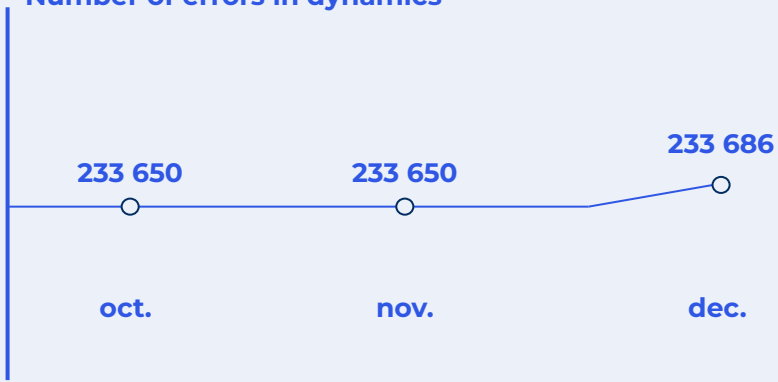
1018
number of persons held in places of deprivation of liberty according to IRDB data

221
Number of persons receiving free municipal meals who have left for permanent residence abroad

139
Number of persons affiliated with schools but studying at technical colleges and universities according to NEBD data

96
total number of deaths according to data from the Civil Registry Office, the Register of attached population, and the Federal Database of Legal Entities attached to the Federal Tax Service

Number of errors in dynamics



Economic impact

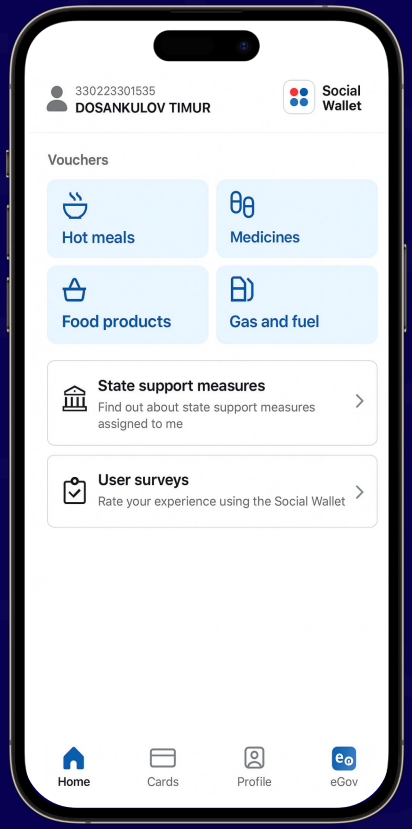
2$
per student

410 k. $
saved per 1 day

72 M. $
per 1 study year

Checks are subject to daily monitoring.

Proactive targeted non-monetary state support for citizens



5000+
Schools

800+
Pharmacies

3M+
Meals

5M+
Prescriptions

Biometrics prevents misuse; vouchers are received only by those who really need them.

At pharmacies, patients present a QR code.
Paper prescriptions remain available for those who do not use the app.

DATA-DRIVEN CASES BASED ON
DIGITAL FAMILY CARD



Optimization of the queue for subsidized housing

The SDU system found that 510,678 individuals meet at least one criterion for being on the waiting list for subsidized housing. Thus, 15,642 individuals are registered as deceased, 553 individuals are not listed in the State Register of Individuals, and 3,300 individuals do not have an individual identification number (IIN).

Automated selection of jurors



Previously, it took an average of 60 days to form a jury list, and an average of 45 cases were considered per year. After automation, approximately 280 cases are considered per year.

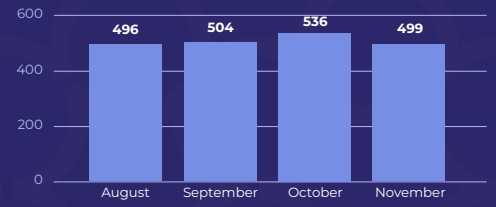
*Under the Law of the Republic of Kazakhstan “On Jurors,” starting July 1, 2023, the process of forming a list of candidates for jurors will be conducted using the Smart Data Ukimet information and analytical system.

DATA-DRIVEN CASE
DIGITAL FAMILY CARD

14.9% share of socially vulnerable families in the district

Irgiz district
Aktobe region

Number of socially vulnerable families for 4 months



Significant drivers of improved wellbeing

Income >70% of CoL **6,48%**	4+ CoL
Land for residential housing **6,40%**	**5,90%**

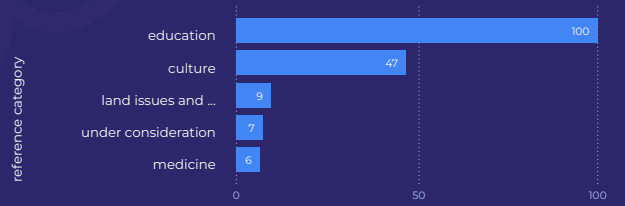
Significant risk zone factors

3 to 4 PM **9%**	Income up to 70% of CoL **8%**
	Employed without work **7%**

Artificial intelligence recommends

Recommendation:
To improve living conditions in Irgiz district it is necessary to strengthen support for economic activity, for example, through job creation and stimulation of small business development. Introduction of educational and training programs will help to improve the skills of the population and improve their chances for employment. It is also necessary to pay attention to the improvement of infrastructure, to establish efficient electricity supply, street lighting and garbage processing systems.

Top topics of appeals of vulnerable families



CASE

E-APPEALS

sdu smart data ukimet

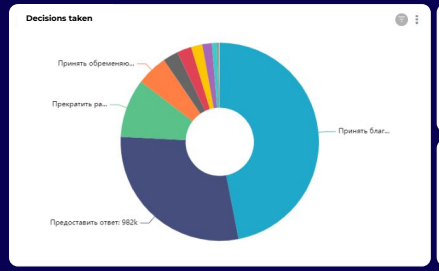
DATA DRIVEN DECISION CASE

E-APPLICATIONS

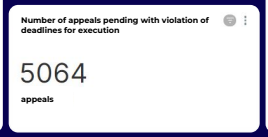
Gov Tech

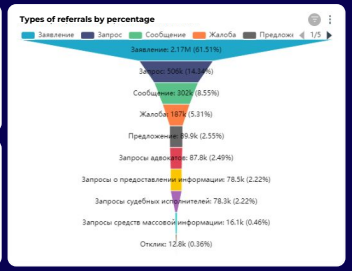
A TOOL FOR MONITORING AND ANALYZING CITIZENS' APPEALS TO GOVERNMENT AGENCIES

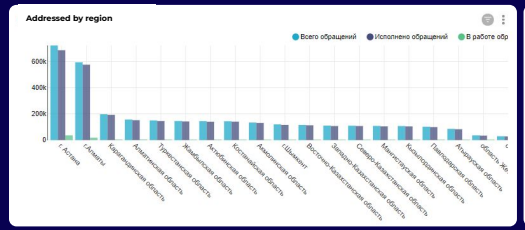
- Monitor the number of applications
- Monitor the number of overdue and in-process appeals

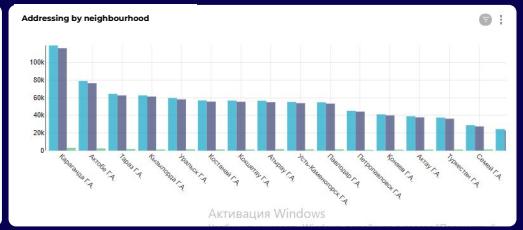












Portrait of a Author 360

IIN: ############ Sex

Age Nationality



82 government databases

daily, monthly update

Bureau of National Statistics	Data from the Committee on Statistics
Health Ministry	Data on public health and drug supply
Ministry of Finance	Data on government procurements and property, financial and budget reporting, customs declaration
Ministry of Education	Data on kindergartens, schools, Universities
Ministry of Labor	Wages, pension contributions, foreign workers, able-bodied population
Ministry of justice	Data on Individuals, Entities and Property

Social status, labor activity

Ability to work
Place of work
Continuous work experience
Movable/immovable property
Pledged property
Applying to Employment Authorities

Health

Hospital adherence
Morbidity
Free drug coverage
Test results

Education

Higher education
Date of admission/graduation
Specialty by education
Number of points on the state test
Academic achievement

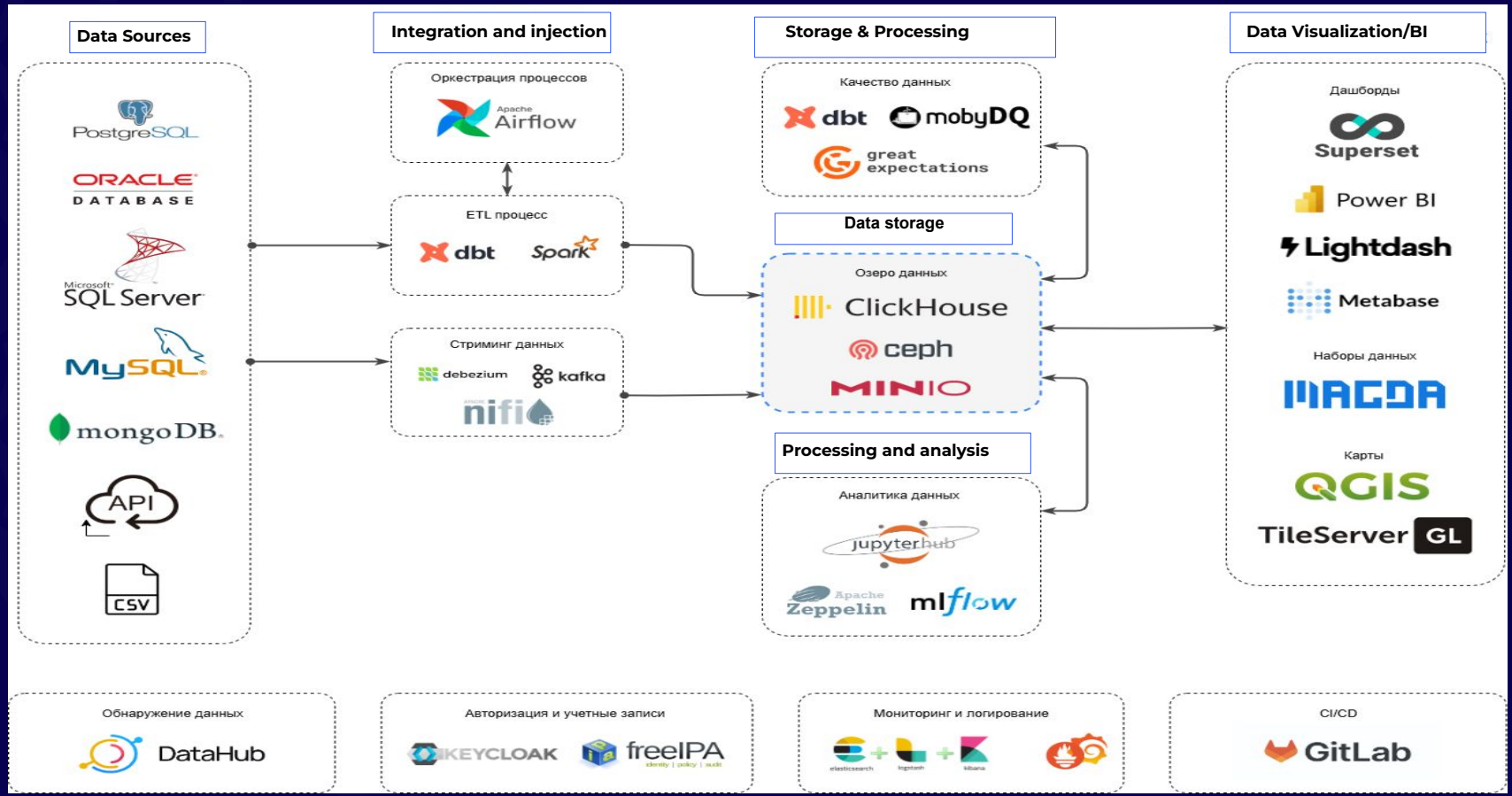
Finance

Wages and salaries
Pension payments
Social payments

Family

Married / not married
Full / Incomplete family
Age of marriage
Number of children
The average income per person in the family

All data on the slides - showing certain moment snapshot, actual numbers may vary


Data Sources
PostgreSQL
ORACLE DATABASE
Microsoft SQL Server
MySQL
mongoDB.
API
CSV
Integration and injection
Оркестрация процессов
Apache Airflow
ETL процесс
dbt
Spark
Стриминг данных
debezium
kafka
nifi
Storage & Processing
Качество данных
dbt
mobyDQ
great expectations
Data storage
Озеро данных
ClickHouse
ceph
MINIO
Processing and analysis
Аналитика данных
jupyterhub
Apache Zeppelin
mlflow
Data Visualization/BI
Дашборды
Superset
Power BI
Lightdash
Metabase
Наборы данных
MAGDA
Карты
QGIS
TileServer GL
Обнаружение данных
DataHub
Авторизация и учетные записи
KEYCLOAK
freeIPA
Мониторинг и логирование
elasticsearch
logstash
kibana
CI/CD
GitLab

Alem Cloud (Gov) Supercomputer

2 ExaFlops (FP8)

the Alem Cloud (Gov) supercomputer serves as the technical backbone for scalable orchestration of AI models, support of high-load services, and the development of specialized solutions tailored to government needs.

64 HGX servers

512 NVIDIA H200 GPUs

Launched on July 9

Supercomputing Cluster in the USA

Alem.ai Cluster	NU Cluster	Freedom Cluster
4× H100 GPUs	8× H100 GPUs	8× H200 GPUs
4× H200 GPUs		currently being launched

Supercomputer for National Companies

1600 PFlops (FP8)

50 HGX servers

400 NVIDIA H200 GPUs



Supercomputer at Data Center 200, AI ZONE

76 L40S

optimized for inference and real-time workloads



Factory for Creating AI Agents

Open Source and Independence
Open-source solutions are used to ensure digital sovereignty and independence from external platforms.

100 AI agents by the end of the year in the most complex government processes

Real Implementation Cases:

EgovAI

Assists citizens in obtaining services

1,5K
Daily Active Users

eOtinish

Prepares preliminary responses and analyzes citizens' inquiries

50K
inquiries processed

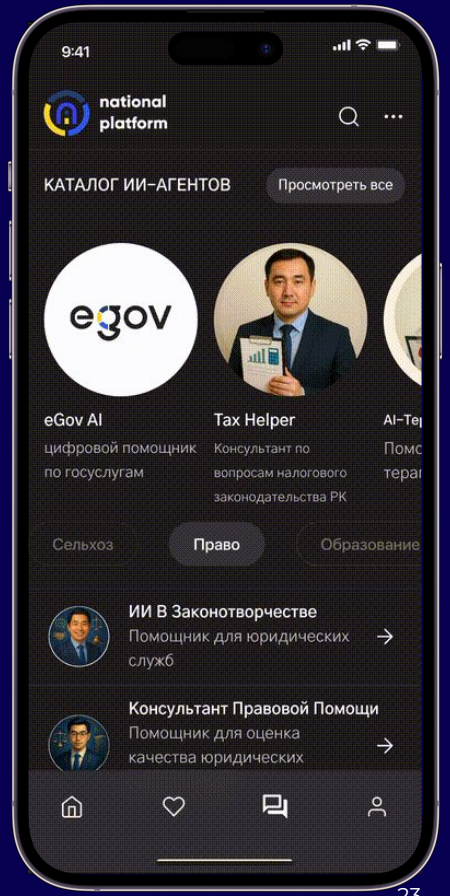
1,3K
inquiries per day

AI Productivity Stack

Automation of daily office tasks (translations, letters, etc.)

up to 85%
process acceleration

20
government agencies have access within a closed network



INTERNATIONAL CENTER FOR AI

Mission: Driving AI transformation in the Republic of Kazakhstan, the CIS, and Central Asia

alem.ai

- **10** research projects
- **100** startups
- **1 000** specialists
- **10 000** talents
- **AI** community

AI Government
Implemetation, Sit. center, AI-Driven Government

R&D Center
Global expertise, Laboratories, Corporations

Acceleration
Business programs, Investments, Industrial projects

P2P Academy
Lectures, Grants, Accommodation, Stipends, Open University, Career development trajectory

Projects with school and university students
Talent acquisition, Hackathons, Summer programs, Grants, Accommodation, Stipends, P2P-learning

AI Popularization
Media, Social media, Public space, Events, Exhibitions



Sustainable Development Goals

SUPPORTED BY BIG DATA ANALYSIS



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NIMBLE INNOVATION	INTENTION	TEAMWORK	EFFICIENCY	CUSTOMER-FOCUSED DEVELOPMENT



For more information you can contact us

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