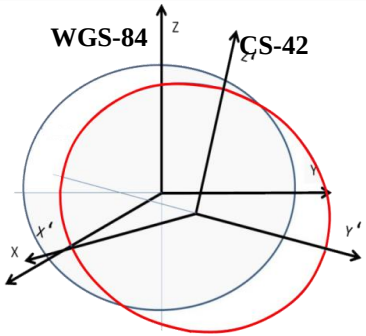
Ministry of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan

Committee of Geodesy and Cartography

project «National Spatial Data Infrastructure (NSDI) of the Republic of Kazakhstan»

Current situation in the Republic of Kazakhstan



COORDINATE BASE

In Kazakhstan no satellite geodetic network and a modern coordinate system.
The coordinate base of the Republic of Kazakhstan is represented by the coordinate system of 1942 (CS-42) with state geodetic networks. CS-42 has no connection with international positioning systems, in which modern geodetic instruments work.

Also are used the following coordinate systems: Local coordinate systems (for each locality), WGS-84 (not established on the territory of Kazakhstan) and another.

Outdated geo-base - a constraint in the digitalization of cadastres

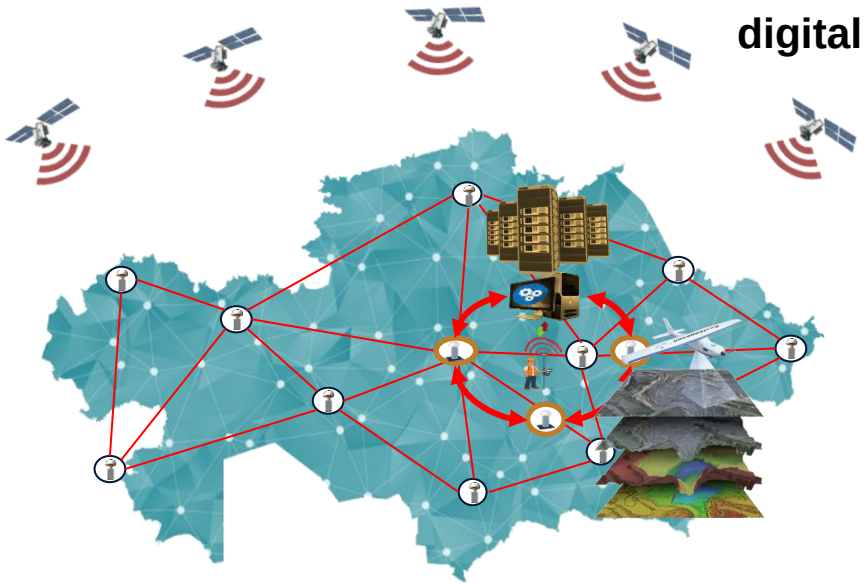
Different coordinate systems

Land border overlays

Accumulation of spatial data of different formats

Differences in standards and low levels of accuracy

Solution: National Spatial Data Infrastructure (NSDI)



Paragraph 56 of Plan of action of
State Program "Digital Kazakhstan" for 2018-2022

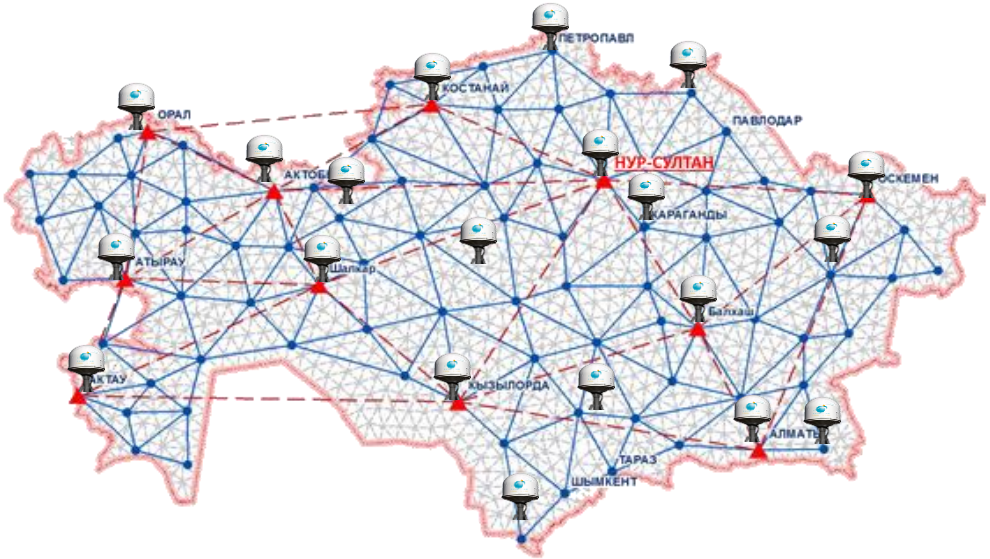
Paragraph 123 of Plan of action of
National project "Technological breakthrough through digitalization, science and innovation" for 2022-2025

The project «NSDI» consists of 2 components:
I. Establishment of a modern state coordinate system

II. Providing the territory of the country, including cities and district centers with open maps

Project implementation period: 2021-2024.

I. Establishment of a modern state coordinate system

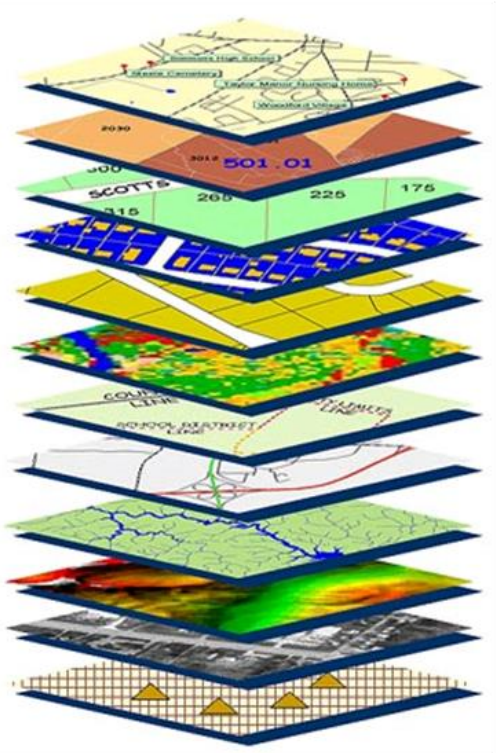


86 reference stations

modernization of:
- ***state geodetic networks***
- ***leveling networks***
- ***gravimetric networks***

QTRS
(Qazaqstan Terrestrial Reference System, state coordinate system of Kazakhstan)

II. Providing the territory of the country with open maps



-*Land cadastre*
- *Urban cadastre*
- *Forest inventory*
- *Mineral resources*

thematic spatial data

-*locality*
- *vegetation and soil*
- *borders*
-*road network*
-*hydrography*
-*relief*
-*aero and space photography*
-*coordinate base*

basic spatial data

information systems integration

unified digital cartographic basis

Geoportal NSDI

NSDI Information System

NSDI IS

OPEN API

- WMS
- WFS
- WMTS
- WFS-T
- WCS
- another

Interaction with specific Information Systems

of land relations, real estate, architecture and urban planning, forestry, subsoil use, agriculture, wildlife, ecology, nature management, etc.

The main functions of the Information System NSDI:

- **Creation, editing and viewing of cartographic data, metadata**
- **Finding spatial data**
- **Connection of external services (city, land cadastres, etc.)**
- **Map bank**

Thank you for your attention!

Solution: National infrastructure of spatial data (NISD)

Отрасль	Повышение качества	Новые проекты
Земельные отношения	Точное определение границ и отсутствие споров	Реинжиниринг земельных госуслуг ЕГКН
Архитектура и градостроительство	Сокращение нарушений градостроительных регламентов	Внедрение 3D-технологий, VR и AR - технологий
Проектирование и строительство	Сокращение проектных и строительных ошибок	Внедрение CAD и BIM-технологий
Природопользование, геолеогия и недропользование	Точная обработка рудных тел Повышение открытости и транспарентности данных	Экологический мониторинг и прогнозирование, Умные рудники
Жилищно-коммунальное хозяйство	Точное геопозиционирование сетей, достоверность и современность сведений	Smart-city Умные датчики
Транспорт и логистика	Повышение точности навигации	Навигация беспилотного транспорта Smart-логистика
Сельское хозяйство	Повышение производительности сельского хозяйства	Точное земледелие