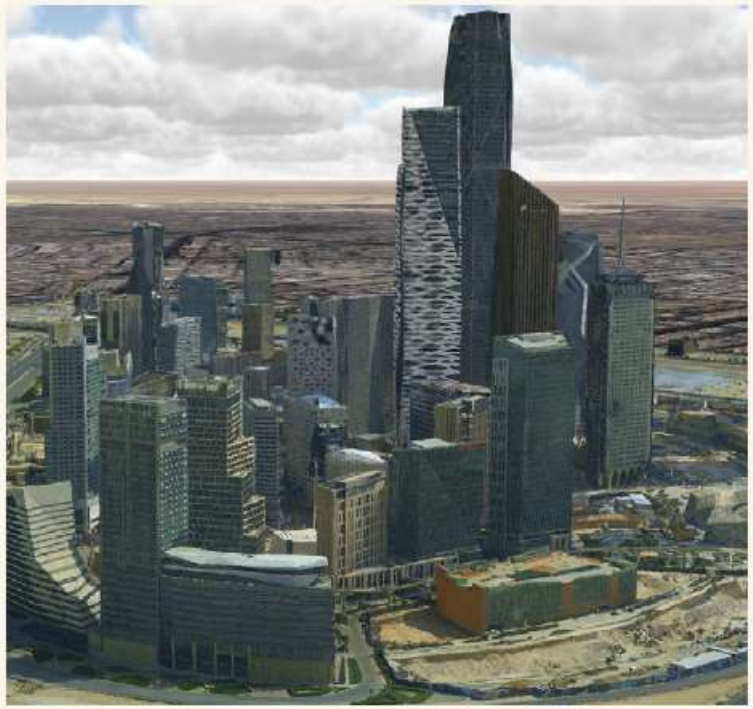

GWF
GEOSPATIAL WORLD FORUM
CLICK TO KNOW MORE



EVOLVING NATIONAL GEOSPATIAL KNOWLEDGE ECOSYSTEM WITHIN THE KINGDOM OF SAUDI ARABIA

GEOSA

GWF
GEOSPATIAL WORLD FORUM

SAUDI ARABIA's VISION 2030: SHAPING MODERN ECONOMY THROUGH DIGITAL TRANSFORMATION

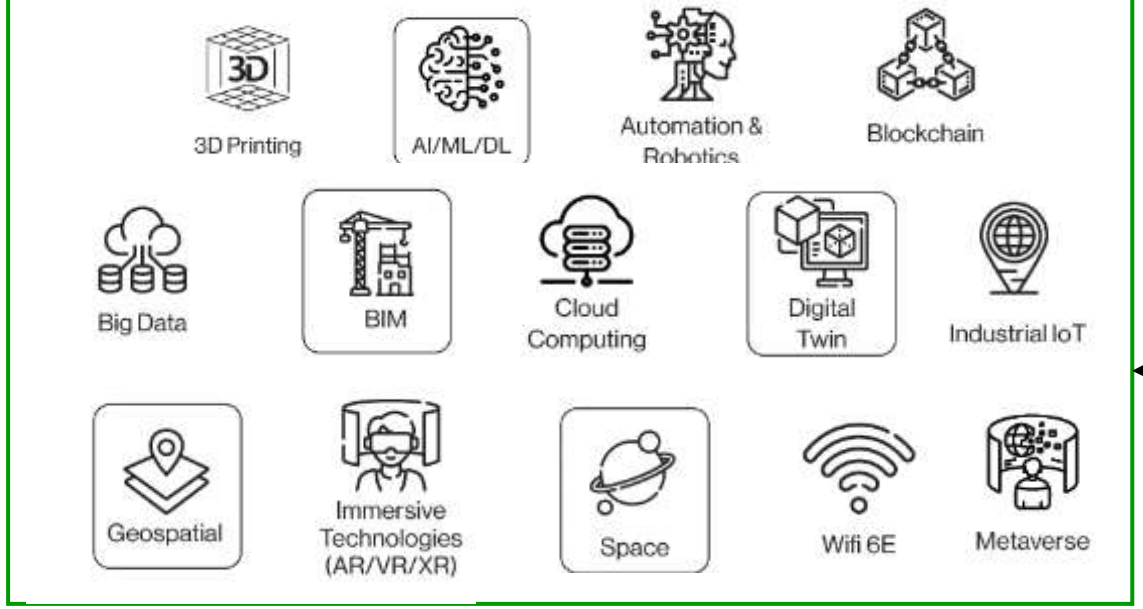
The Kingdom of Saudi Arabia's vision 2030 will be the point of reference for our future decisions, so that all future projects are aligned to its content…

Sustainable success can only be achieved when built upon solid foundations. Our vision, grounded in our country's strengths, will deliver this stability and create a brighter future for our country and our people.

KSA Vision 2030 Priorities

- **Vibrant Society**
- **Thriving Economy**
- **Ambitious Nation**

Technology Drivers



GEOSA's Vision & Mission

Vision

To lead the Kingdom of Saudi Arabia in providing spatial intelligence, innovation, and security, driving sustainable development and national prosperity through robust geospatial infrastructure and expertise.

Mission

- To **elevate Saudi Arabia as a leader in spatial intelligence, innovation, and security**.
- To regulate and advance the geospatial sector with precision and efficiency, focusing on building and maintaining a national geospatial infrastructure, encouraging collaboration for its effective use, and enhancing national skills through training and partnerships.
- To engage internationally and contribute to geospatial science advancements and ensure responsible data use.

Role of GEOSA in Advancing Infrastructure Development in KSA

- **Geospatial Data Management**: By maintaining comprehensive and accurate geospatial datasets, GEOSA provides essential information for infrastructure planning, design, and implementation.
- **Infrastructure Planning and Design**: GEOSA supports infrastructure development by providing geospatial information and analysis tools for planning and designing various projects, including roads, utilities, buildings, and transportation networks.
- **Land Use Management:** GEOSA contributes to effective land use management by providing geospatial data on land ownership, boundaries, and zoning regulations.
- **Urban Development Support**: GEOSA assists in urban development initiatives by providing geospatial data and analysis for city planning, expansion, and revitalization projects.
- **Infrastructure Monitoring and Maintenance**: GEOSA facilitates infrastructure monitoring and maintenance activities through geospatial tools and technologies.
- **Policy Development and Regulation:** By establishing standards, guidelines, and regulatory frameworks, GEOSA ensures the quality, interoperability, and accessibility of geospatial data, promoting consistency and coordination across government agencies and stakeholders.

Vision 2023 KSA's Infrastructure and GEOSA Contribution

Vision 2030	Role of Geospatial Information	Use of GEOSA's Products and Services to meet Vision 2030 Goals
Promoting the quality of services provided in Saudi cities	Planning tools that integrate and visualize accurate 3D geospatial data with other data, including live sensors	Digital Elevations Layer, Aerial Photographs, Surveying Data
Improving the urban landscape in Saudi cities	Geospatial data contribute to identifying the distribution of landscapes and locating the best sites for various applications	Base Map, Land Cover and Land Uses, Surveying Data
Creation of special zones and rehabilitation the economic cities	The creation of special zones in exceptional locations depends mainly on geospatial data like images and digital elevation model (DEM)	Digital Elevations Layer, Aerial Photographs, Surveying Data, Valley Network, Road Network, Buildings Layer, Shaded Relief Models

Source: https://www.geosa.gov.sa/En/About/Pages/geospatialinformationvision2030.aspx

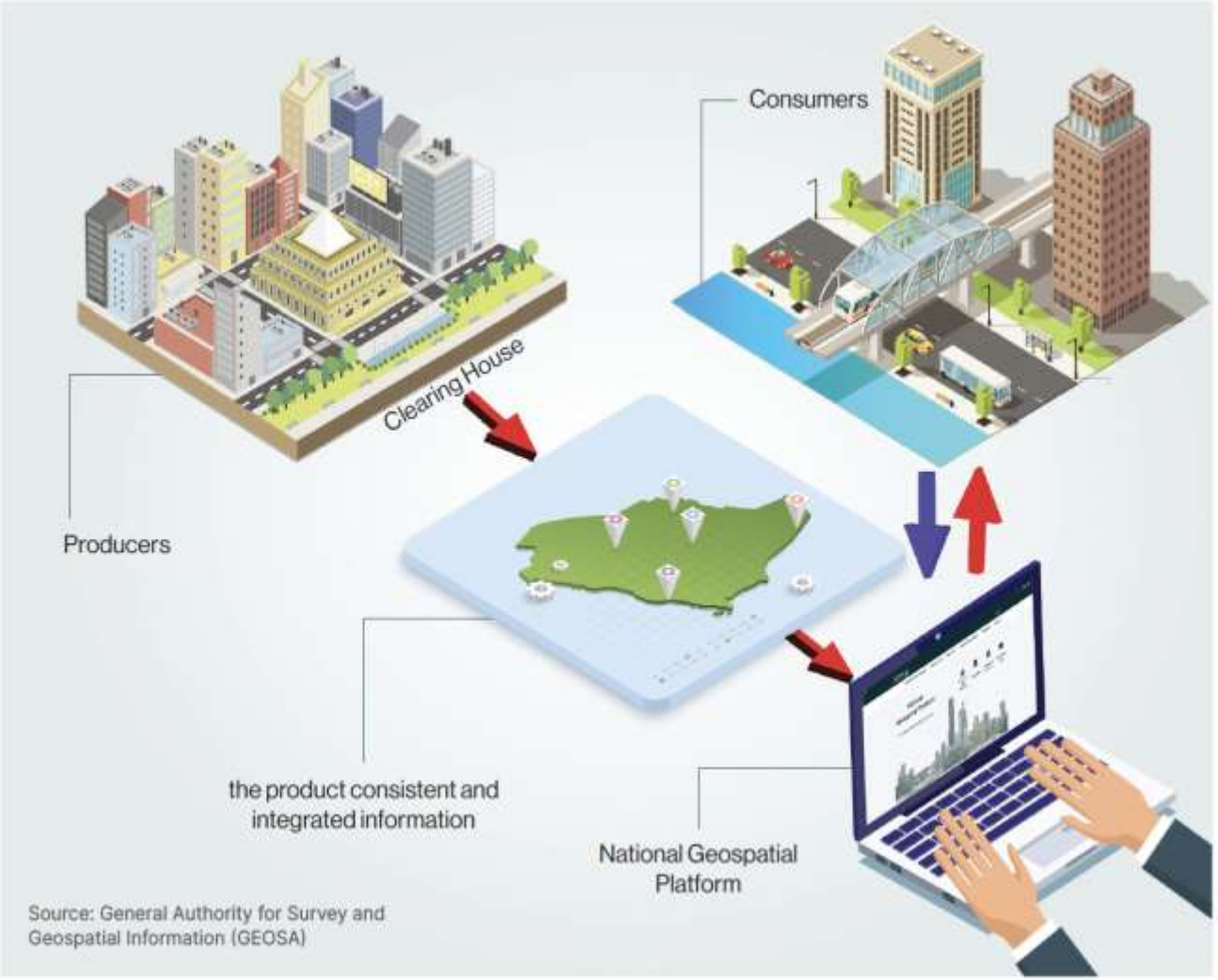
GEOSA GWF GEOSPATIAL WORLD FORUM

GEOSA's STRATEGIC PARTNERS

GEOSA

GWF
GEOSPATIAL WORLD FORUM

NATIONAL GEOSPATIAL CENTRE



VISION

- To establish itself as the national reference for geospatial information governance in the Kingdom, ensuring that national geospatial data is findable, accessible, interoperable, and reusable (FAIR principles).
- To create a secure, robust, and efficient platform for geospatial data dissemination, aimed at enhancing government spending efficiency and fostering the integrated use of geospatial information systems across various sectors.

MISSION

- To advance geospatial standards, policies, and platforms, ensuring the effective management and use of national geospatial data.
- To maintain the national geospatial database and the National Geospatial Platform to support government, businesses, and citizens.
- To foster digital and geospatial technologies, spatial analysis, and specialized training, our aim is to enhance efficiency, service quality, and informed, location-based decision-making, in alignment with international best practices and collaborative expertise.

GEOSA GWF GEOSPATIAL WORLD FORUM

NATIONAL GEOSPATIAL PLATFORM

The National Geospatial Platform is a **unified geospatial information platform** supporting good governance sustainable development, citizen empowerment, and democratization of geospatial data for commercial application. Services include:

- A comprehensive electronic atlas of the Kingdom.
- An open data portal for Sustainable Development Goals (SDGs).
- Digital twin services for Riyadh to aid in urban planning.
- Advanced mobility, navigation, and road data services to improve transportation.
- Detailed 3D building models and points of interest data for enriched spatial analysis.
- Real-time road information and a national network of continuous monitoring stations for improved travel and infrastructure management.
- Tools for geodetic reference conversion to ensure data accuracy.

Trustworthy and authoritative geospatial content

Style geographic data

Intelligent and interactive web services

Collaborative user interface

Search and access user-ready content

GEOSA

GWF
GEOSPATIAL WORLD FORUM

NATIONAL GEOSPATIAL PLATFORM- ARCHITECTURE

General Authority for Survey and Geospatial Information

National Geospatial Platform

Unified Geospatial Data Platform for Publishing and Data Sharing

Spatial Data

Non-Spatial Data
[Census Data
Demographic Data
Economic Data]

Data Partnerships

Governments that produce and share data

Service-Oriented Architecture

Web Services Like WMS/WFS

Web-based GIS Application

Beneficiaries

- Government Bodies
- Commercial Sector
- Academia and Research Organizations
- Citizens

Government

Commercial

Geo-Applications

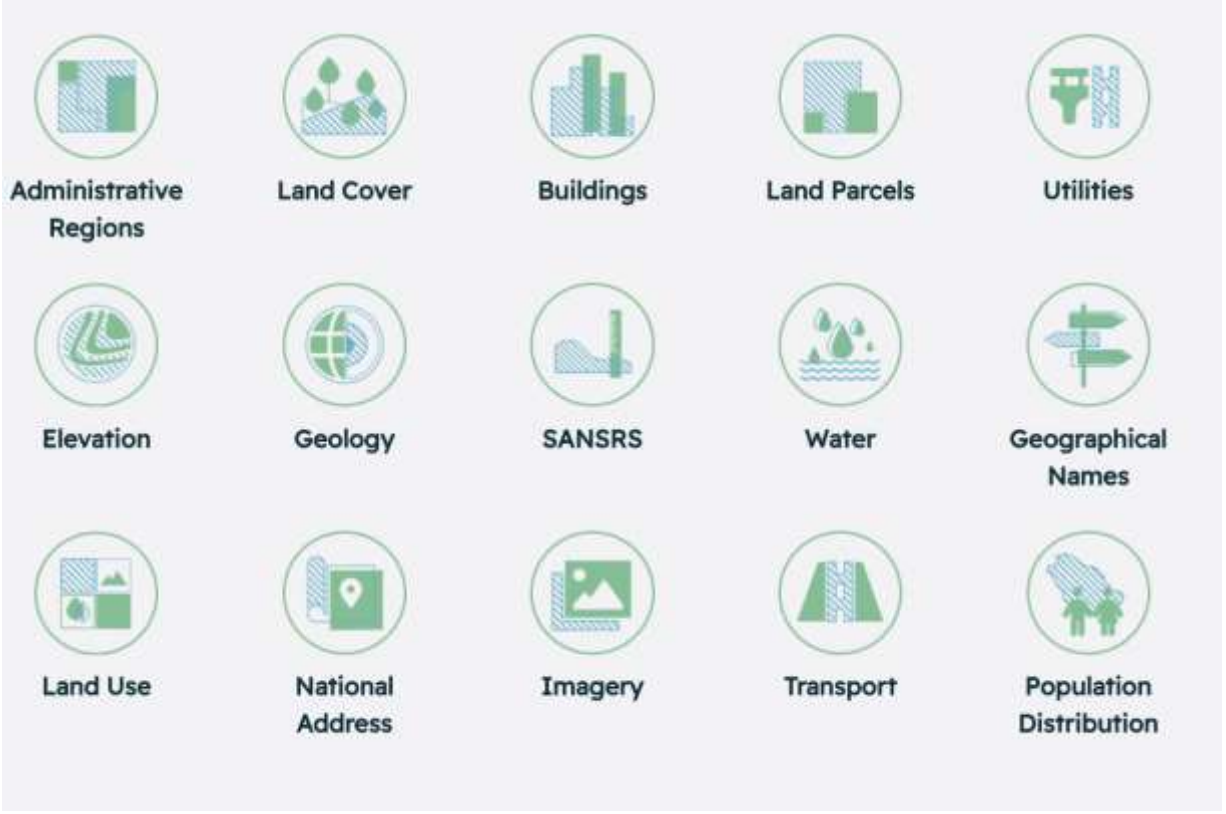
SOCIO-ECONOMIC BENEFITS FOR

Sustainable Development Goals (SDGs), Sustainable Economic Growth, Green Growth, Enable Modern Innovation, and Creative and Economic Society

NATIONAL GEOSPATIAL DATABASE

Official Map of the Kingdom of Saudi Arabia

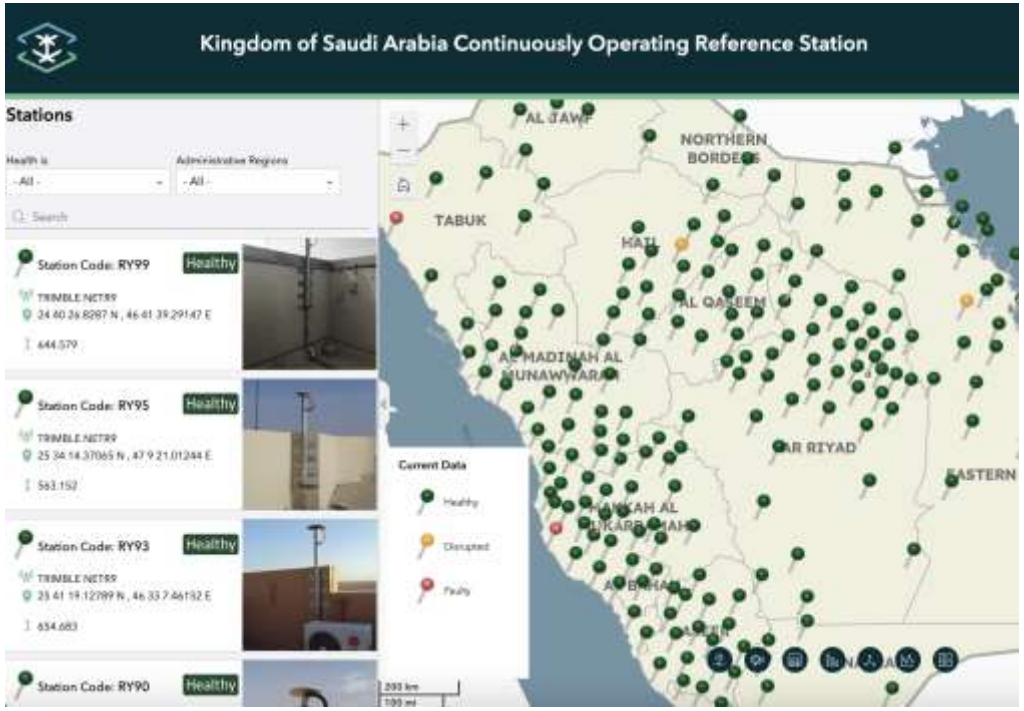
Foundational Geospatial Data Themes



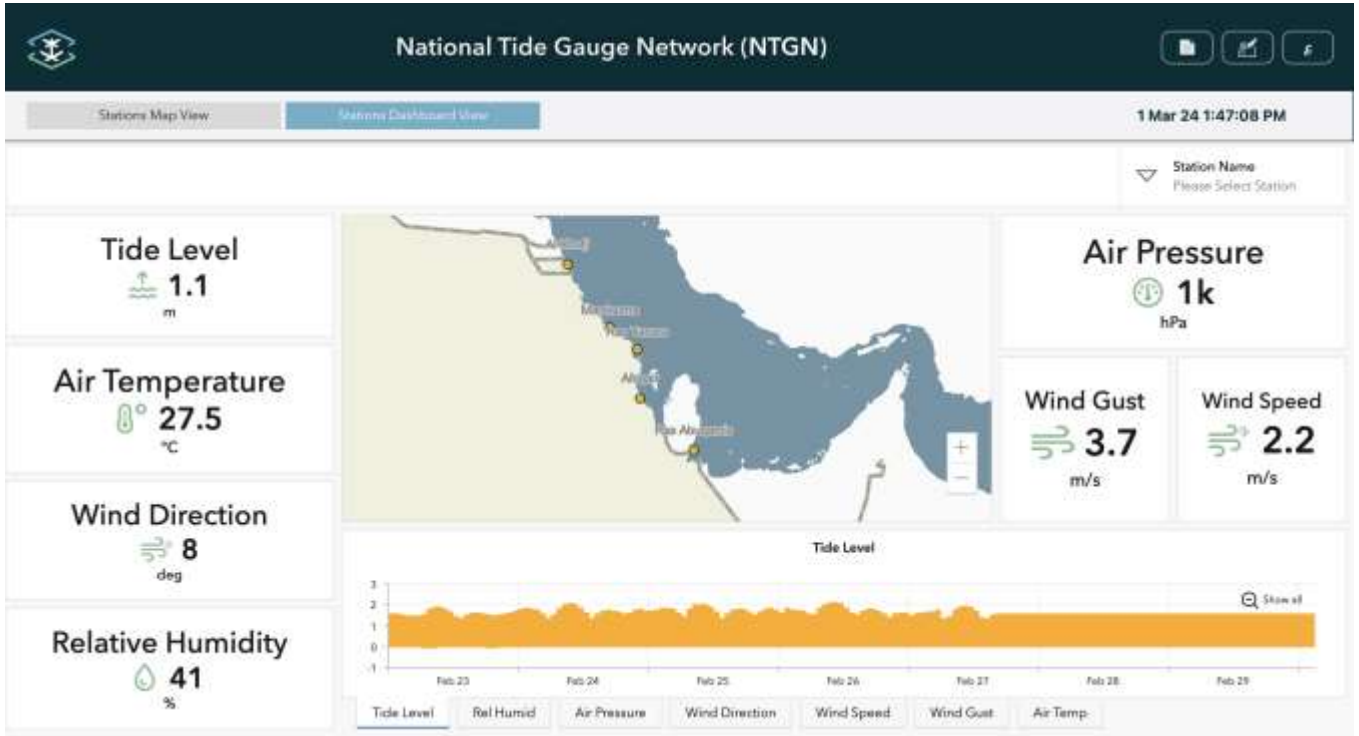
GEOSA GWF GEOSPATIAL WORLD FORUM

NATIONAL GEOSPATIAL DATABASE

Kingdom of Saudi Arabia's Continuously Operating Reference Station (KSA-CORS)



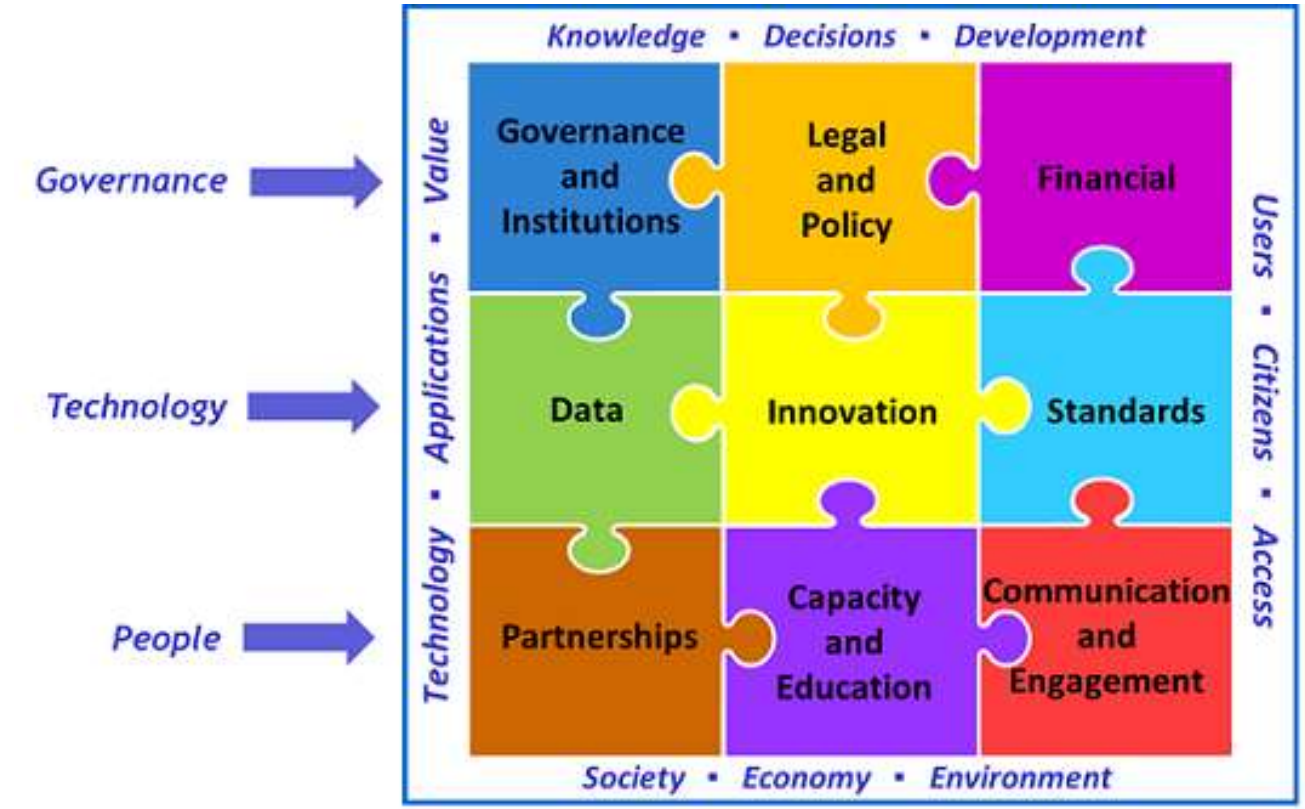
National Tide Gauge Network (NTGN)



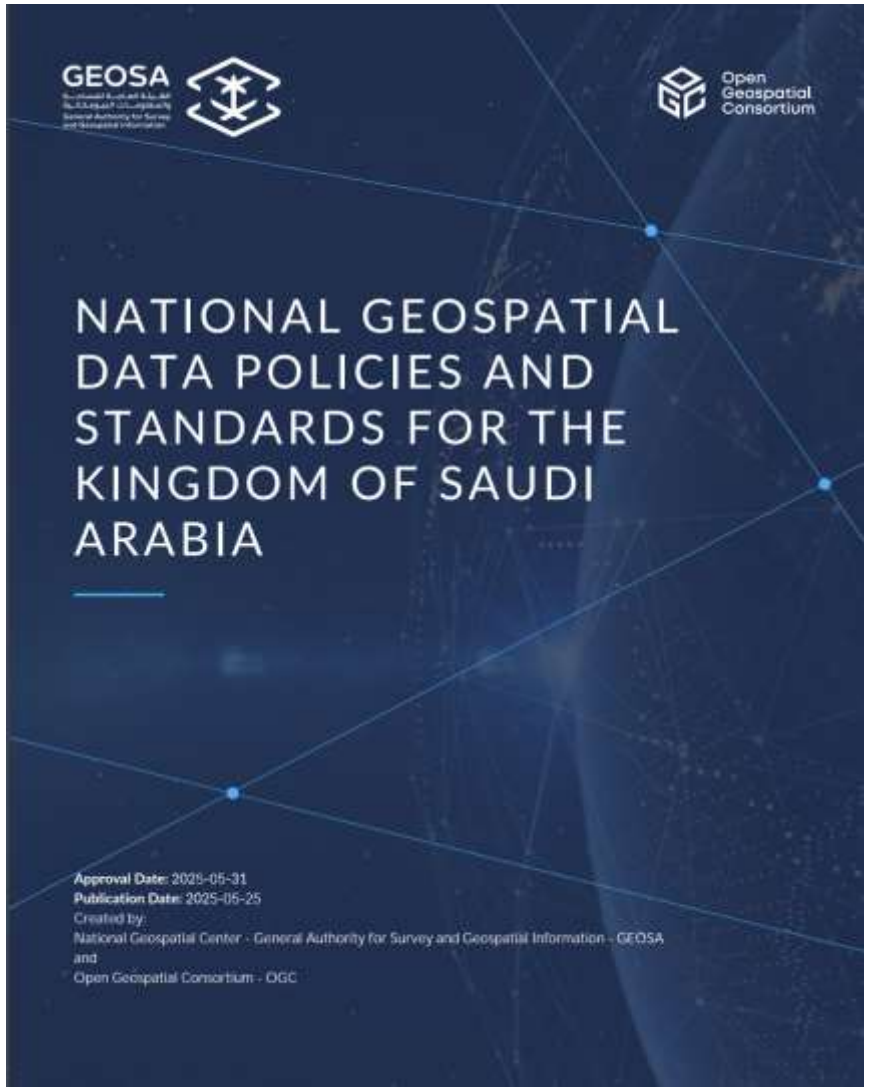
GEOSA GWF GEOSPATIAL WORLD FORUM

NATIONAL GEOSPATIAL STRATEGY: DRAWING INSPIRATION FROM IGIF

- Support and enable the Kingdom's Vision 2030 goals and other national strategies
- Enhanced engagement for utilization of integrated geospatial information
- Support the transformation and the national digital economy
- Utilization from the best applicable global practices in the field of geospatial information
- Accelerating economic growth, improving productivity and technological advancement in all sectors
- Encouraging and supporting innovation and creativity in the geospatial information sector
- National capacities building and skills and increasing employment opportunities in the sector
- Protecting the kingdom's resources and environment
- Support the national sustainable development initiatives
- strengthening and enrichment the national geospatial platform to be the national source for the information
- Using Key Performance Indicators (KPIs) and Critical Success Factors (CSFs) for the Geospatial Roadmap



NATIONAL GEOSPATIAL DATA POLICIES AND STANDARDS

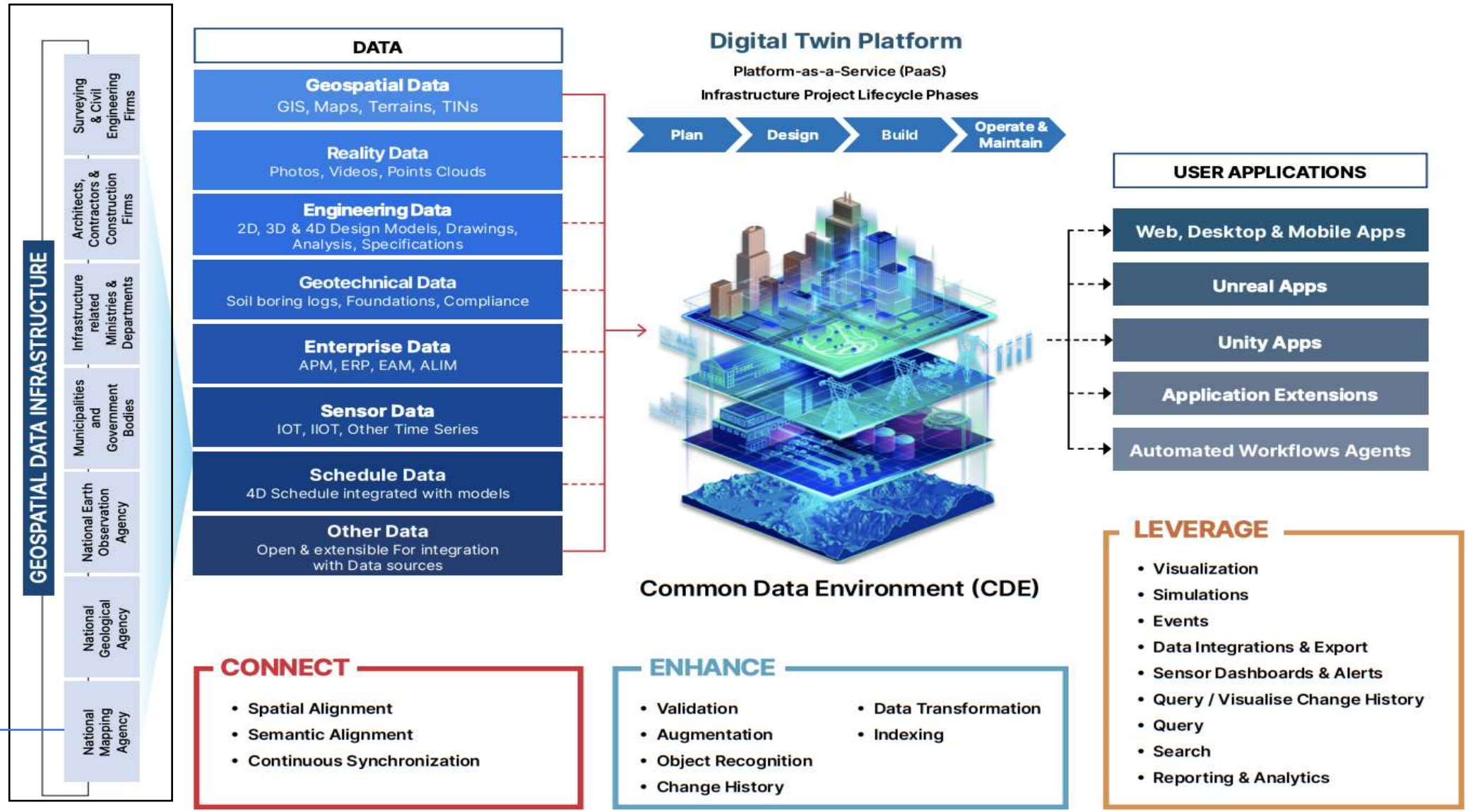


The National Geospatial Center (NGC) in collaboration with the Open Geospatial Consortium (OGC), has spearheaded the development of comprehensive national geospatial policies and standards for the Kingdom. These initiatives are designed to standardize and enhance the management, utilization, and security of geospatial data across various sectors.

- **National Geospatial Data Policies**, encompassing classification, licensing, pricing, sharing, and protection of geospatial data. These policies aim to streamline the use and distribution of geospatial information, ensuring accessibility and security.
- **Geospatial Data Standards**, addressing data quality, collection, maintenance, and the establishment of a standards registry. These standards are pivotal in maintaining data integrity and facilitating efficient geospatial practices.

GEOSA GWF GEOSPATIAL WORLD FORUM

ROLE OF GEOSPATIAL DATA AND INFRASTRUCTURE IN DIGITAL TWIN



Role of National Geospatial Agencies

DIGITAL TWIN

The General Authority for Survey and Geospatial Information (GEOSA) of Saudi Arabia, through its National Geospatial Centre, has developed a Digital Twin of Riyadh as part of its National Geospatial Platform initiative to enhance geospatial capabilities. Showcased during the 2023 LEAP event, this digital twin is a sophisticated virtual model that integrates and visualizes comprehensive geospatial data. The role of GEOSA in creating a Digital Twin includes -

- **Conception, Development, and Deployment**: The Centre is instrumental in all stages of digital twin implementation, from conceptualization to execution, ensuring alignment with national geospatial objectives.
- **Facilitating Data Integration:** By harmonizing data from diverse sources, the Centre ensures the creation of comprehensive and accurate digital representations, essential for robust decision-making processes.
- **Driving Innovation and Standardization:** Through strategic partnerships and collaborative efforts, the Centre promotes innovation and sets standards for digital twin implementation, fostering interoperability and efficiency across sectors.

GEOSA, the General Authority for Survey and Geospatial Information, is spearheading a transformative initiative within Saudi Arabia's geospatial sector by implementing digital twins. This innovative approach marks a significant advancement in the integration of cutting-edge technologies with traditional geospatial methodologies.

Impact and Future Directions:

- **Transformative Impact on Infrastructure Projects**: Digital twins revolutionize the way stakeholders conceptualize, plan, and execute infrastructure projects, leading to improved efficiency, cost-effectiveness, and sustainability.
- **Empowering Stakeholders with Insights**: By providing stakeholders with real-time data and simulation capabilities, digital twins empower informed decision-making, enabling proactive management of resources and risks.
- **Envisioned Advancements in Geospatial Technologies**: GEOSA anticipates continuous advancements in geospatial technologies, with digital twins playing a pivotal role as catalysts for innovation, sustainability, and resilience against emerging challenges.

DIGITAL TWIN INITIATIVES IN THE KINGDOM OF SAUDI ARABIA

Saudi Arabia's **Ministry of Municipal, Rural Affairs and Housing (MOMRAH), signed a deal with South Korea's Naver to develop a digital twin platform for five major cities including Riyadh, Medina, Jeddah, Dammam, and Mecca** to facilitate real-time decision-making and manages public digital services over the forthcoming five years. By integrating cutting-edge technologies like artificial intelligence (AI), robotics, and cloud solutions, this initiative holds significance in advancing smart city infrastructure within Saudi Arabia. The project is worth USD 100 million.

Saudi Arabia's**, NEOM's ground-breaking plan includes a digital twin in the "metaverse."** This innovation allows people to experience NEOM's future cityscape before physical construction begins. Using virtual reality and augmented reality, the NEOM metaverse intends to offer a lifelike portrayal of daily life in the planned city, transcending physical boundaries and fostering anticipation and investment interest.

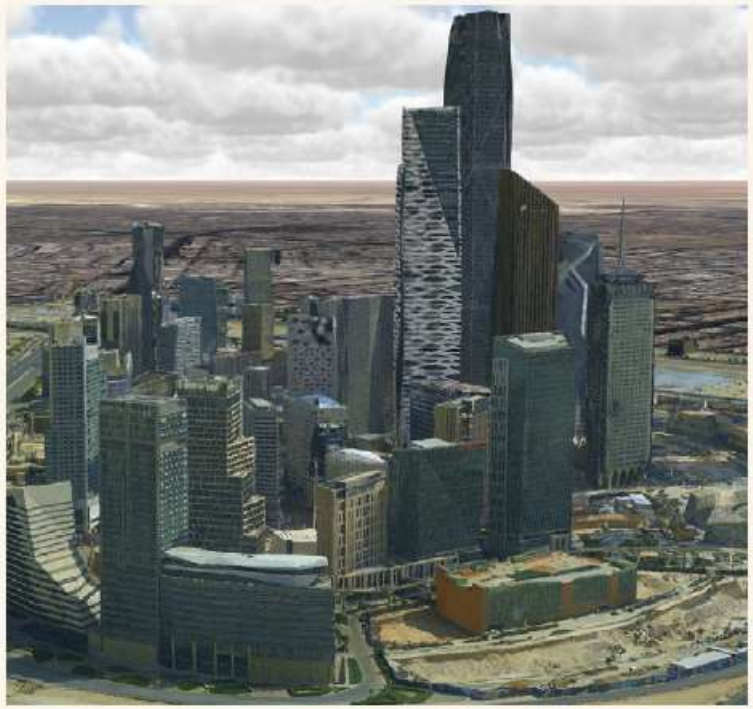
NEOM

The **Raseel Platform, built on the open source FIWARE platform, is a Digital Twin- Smart City Platform, the intellectual property of the Madinah Smart City Program** for developing and executing a comprehensive smart city plan for Al Madinah City, to improve its services and infrastructure. It enables businesses and government agencies to collect, analyse, and act upon data for better decision-making and service delivery.

GEOSA GWF GEOSPATIAL WORLD FORUM

WAY FORWARD

Strengthen Geospatial Infrastructure	Policy and Standards Ecosystem Development	Institutional Capacity Building	Industry Development and Innovation
Centralized Data Management: Improve the availability, accessibility, and quality of geospatial data through a centrally controlled, integrated approach by the National Geospatial Centre, reducing duplication and fragmentation. **Public Sector Data Integration**: Prioritize the integration of public sector data to enhance citizen-centric services, ensuring the preservation and security of geospatial information.	**National Geospatial Policy Development**: Establish a comprehensive geospatial data policy that aligns with emerging technologies, focusing on the development of a robust standards framework for data interoperability and reusability. **Geospatial Knowledge Infrastructure:** The policy should also cover critical aspects of geospatial knowledge infrastructure development for empowering the world economy and society through geospatial information and technology use/and implementation.	**Education and Workforce Development** Promote geography and geospatial technology education from early stages and support interdisciplinary programs and research in geospatial sciences to cultivate a skilled workforce ready for future challenges.	**Domestic Industry Support** Encourage domestic geospatial companies to innovate and climb the value chain, focusing on reducing dependency on imports by fostering product development and R&D within the Kingdom.



THANK YOU

GEOSA

GWF
GEOSPATIAL WORLD FORUM