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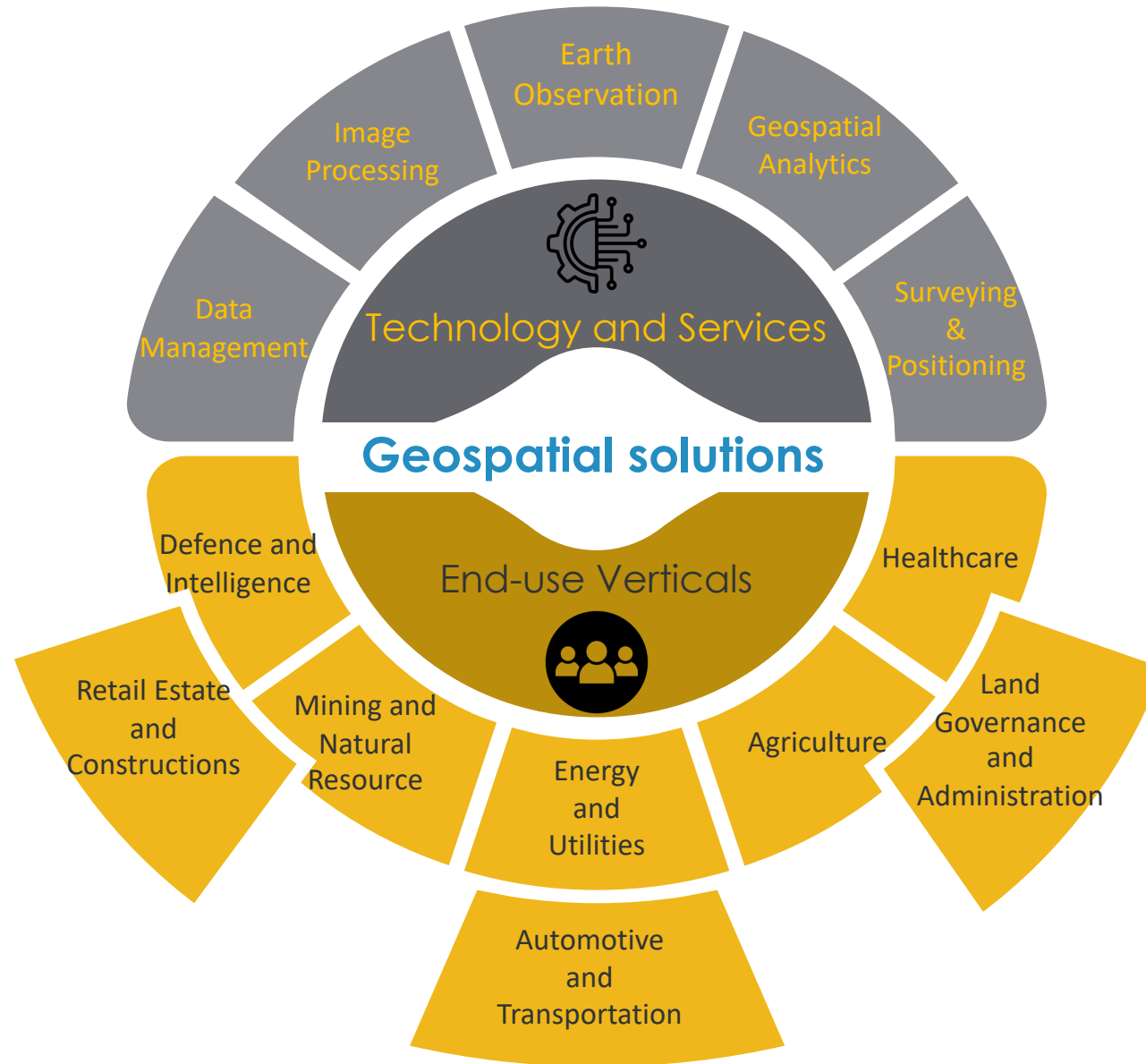
Role and Relevance of Geospatial Knowledge Infrastructure (GKI) in National Development

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Geospatial Solutions Market



General Drivers to the Geospatial Solutions Market



Upcoming technologies like 3D, Augmented Reality (AR), and Virtual Reality (VR). Artificial Intelligence, Automation, the Cloud, the Internet of Things, and the Miniaturization of sensors



Location in decision-making becoming commonplace



Emergence of new geospatial data sources and services



Technological advancements



More automation analytics and intelligence



Changing user expectations



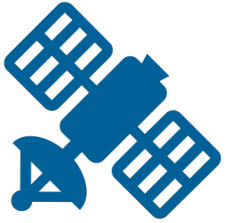
Changing organizational structures

Barriers to Market Growth

- Software development gap
- Lack of standardization
- High cost of LiDAR
- High cost of GIS software
- Lack of integration with other technologies
- Long-term data continuity



Drivers for Earth Observation



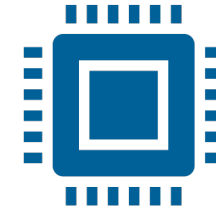
Surge in Demand for Big EO Data

Advancements in Big Data Analytics have enabled the generation of high-value insights from EO satellites



Advancement in Satellite Technologies

- The development of smaller satellites with lighter payloads
- Advancements in payload specifications (hyperspectral and multispectral)
- Entry of private-players and commercialization of the space segment



High Demand for high-resolution imaging services

Satellites provide high-resolution imagery for monitoring and verifying applications in various sectors, including civil engineering & construction, government, defence and intelligence, agriculture & forestry, transportation, real estate, and others.

Drivers for Surveying and Positioning

DRIVERS

Land Survey Equipment

- Urbanization and Industrialization in developing countries.
- Smart City Planning and Development.

UAV Survey

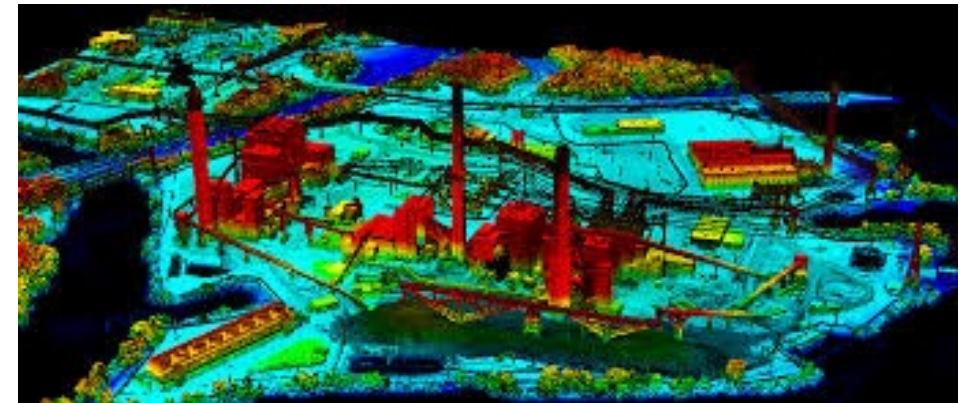
- Automation in Surveying and Mapping; Time-effective; Economical; High-resolution Data Capture

LiDAR Survey

- 4D LiDAR for autonomous vehicles, machine vision and factory automation.
- Technological shifts in the manufacturing of LiDARs have lowered the cost of equipment and operation, further driving adoption and use.

Global Positioning

- Navigation, or navigation-driven applications, on all platforms such as mobile phones, computers, and IoT.
 - Location-based services
-



Drivers for Geospatial Analytics



Increased Demand

There has been a marked increase in the adoption of Geospatial Analytics by enterprises to gain strategic and competitive advantage over their competitors



Understanding Business Needs

Geospatial Analytics enables large-scale industry verticals to gain quick & easy insights of customer requirements based on geo-location. Enables them to generate insights on large scale diverse data, including historical and recent data



Capacity Uplift driven by Technological Developments

Computing technologies such as Big Data Analytics, Cloud Computing, Artificial Intelligence and Machine Learning, have made Geospatial Analytics feasible at an enterprise level, and its benefits tangible, by enabling the on-premise deployment of analytics and its pre-requisites.

Emerging Use Cases Across Verticals

Mining

Using machine control for drilling, piling and dynamic compaction frees-up resources by automating labour-intensive tasks.

Transportation

Visualise live construction information in 2D, 3D, and 4D to track and optimise project performance.

Agriculture

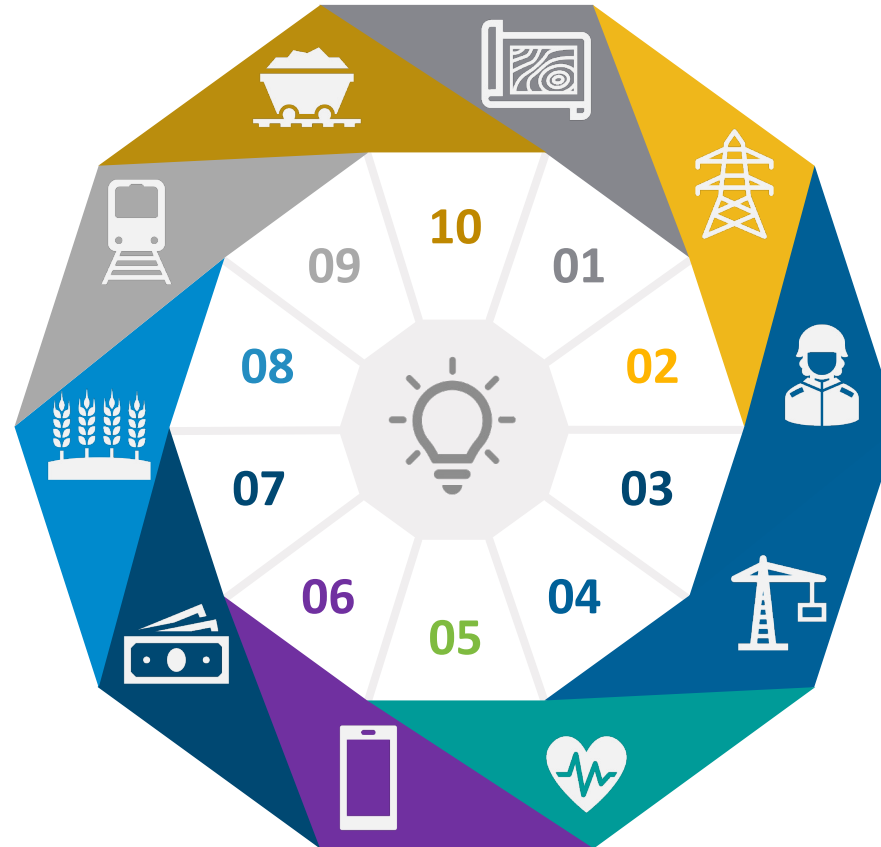
Determine accurate production and acreage estimates for farmland.

Banking, financial services and insurance (BFSI)

Cost-effective credit assessments for farmers using satellite imagery.

LBS

Marketing products and services through personalised ad promotions based on location.



Land Administration

Using drones and AI for data capture and processing to generate accurate cadastral maps with reduced cost and time.

Energy and Utilities

Leveraging predictive analytics to determine when to increase production for events such as severe weather.

Defence and Security

Using location awareness to provide better information to safely deploy emergency personnel and equipment.

AEC

Monitoring facilities using Digital Twins to understand discrepancies in operations and predict failures.

Healthcare

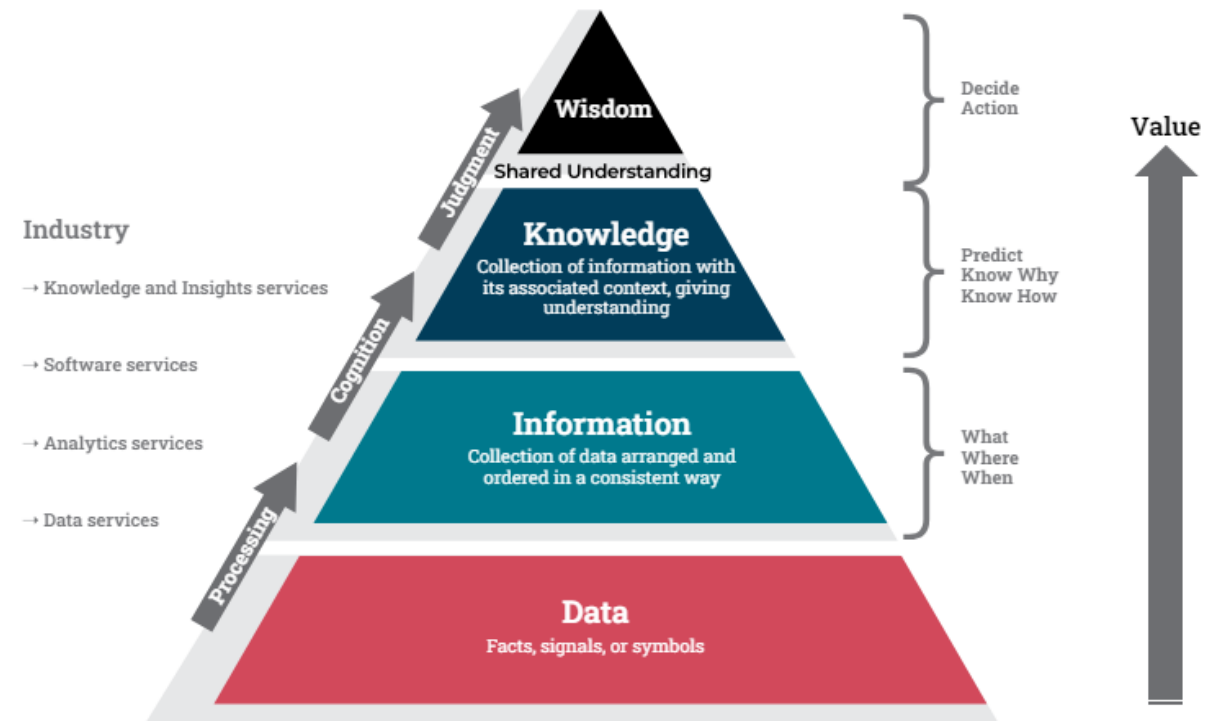
Using location information from mobile devices to notify individuals who are near others who are infected.



Geospatial Knowledge Infrastructure - Conceptual

“The GKI concept provides a blueprint to integrate digital economies, societies and citizens with geospatial approaches, data and technologies and, in so doing, deliver the location-based knowledge, services and automation expected in this 4IR (5IR) digital age.”

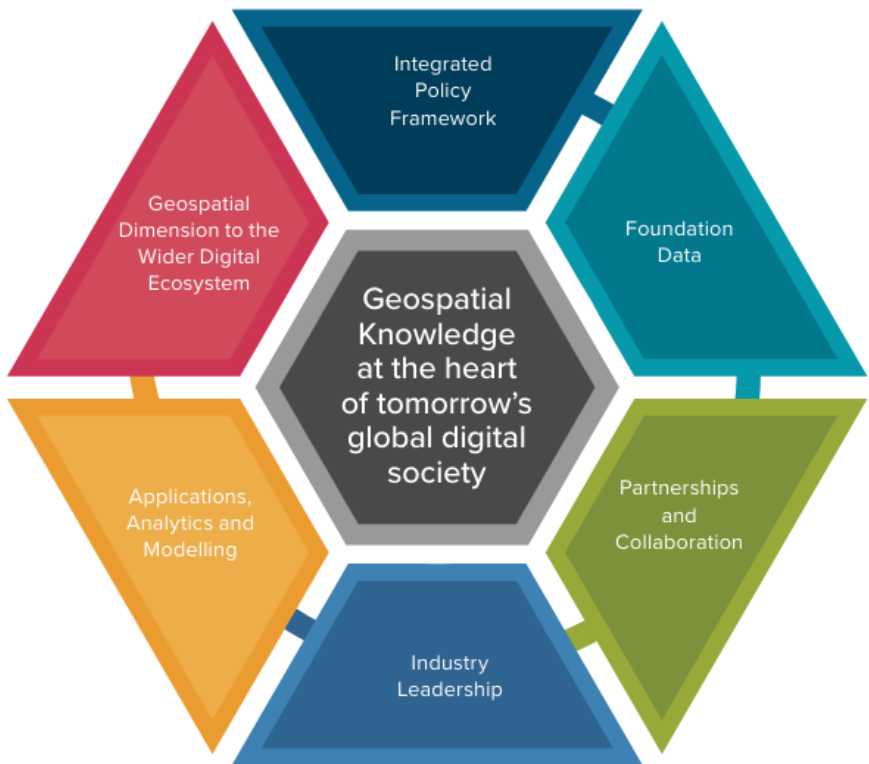
Figure 10: Knowledge Management Cognitive Pyramid



Source: Geospatial World Analysis

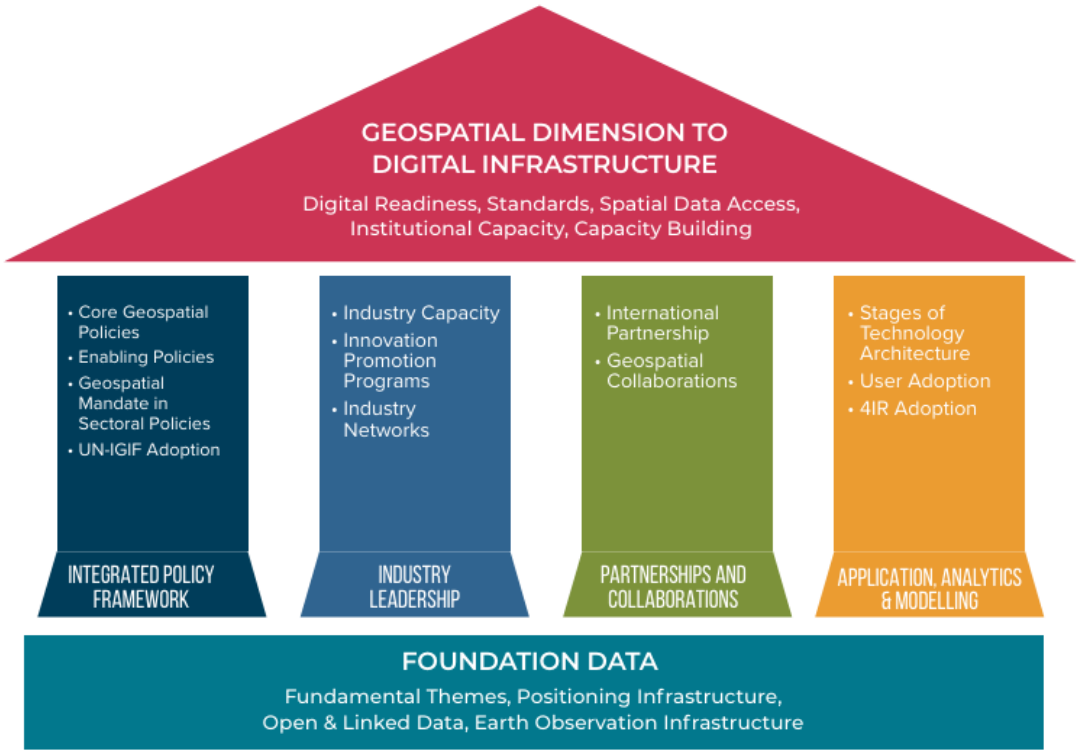
Geospatial Knowledge Infrastructure

Figure 11: The Six Elements of a Geospatial Knowledge Infrastructure (All elements contribute to improved national outcomes, both individual and collaborative)



Source: GKI White Paper

Figure 13: GKI Readiness Index Pillars

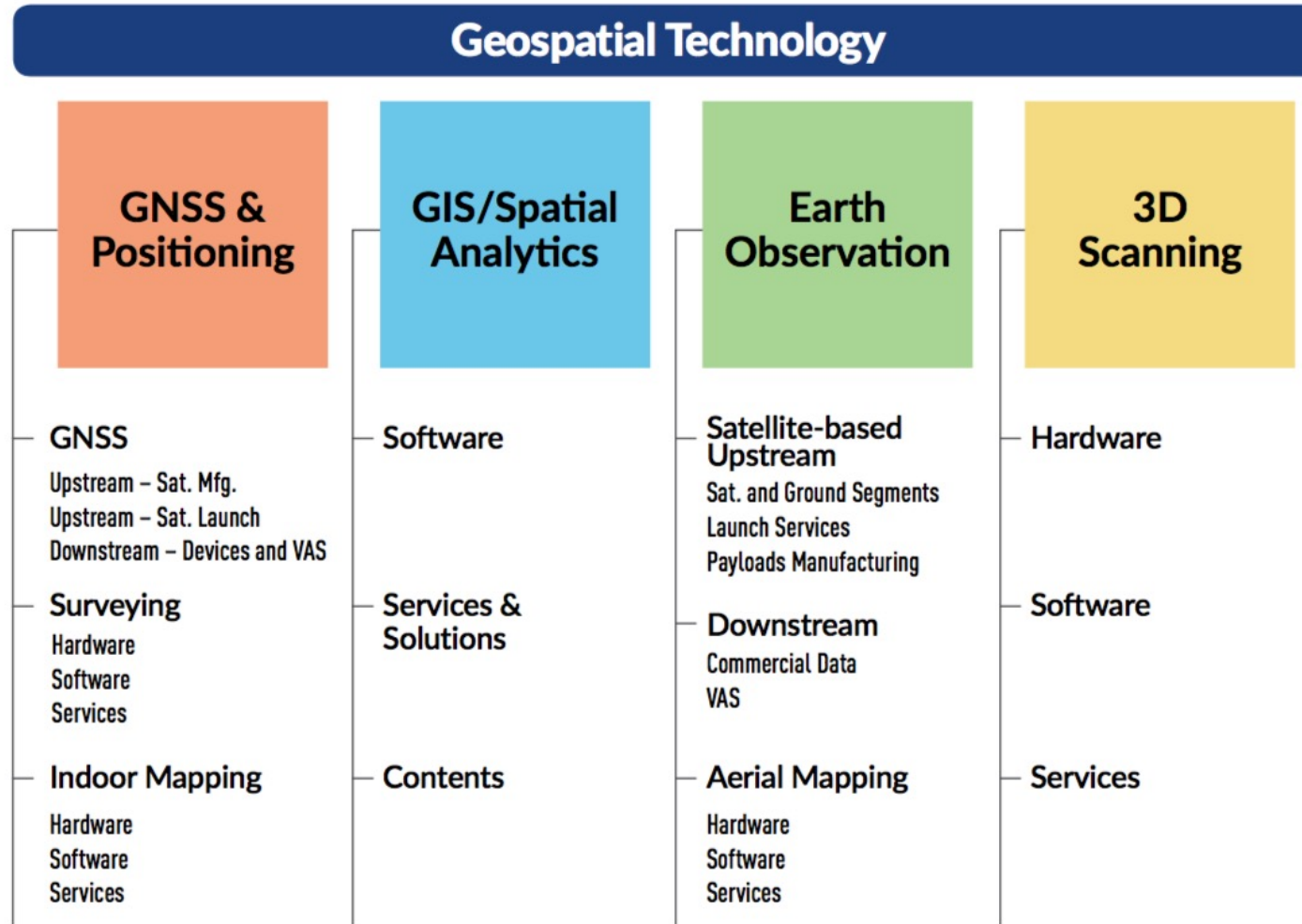


Source: Geospatial World Analysis

GKI complements UN-IGIF framework strengthening wider Digital Ecosystems



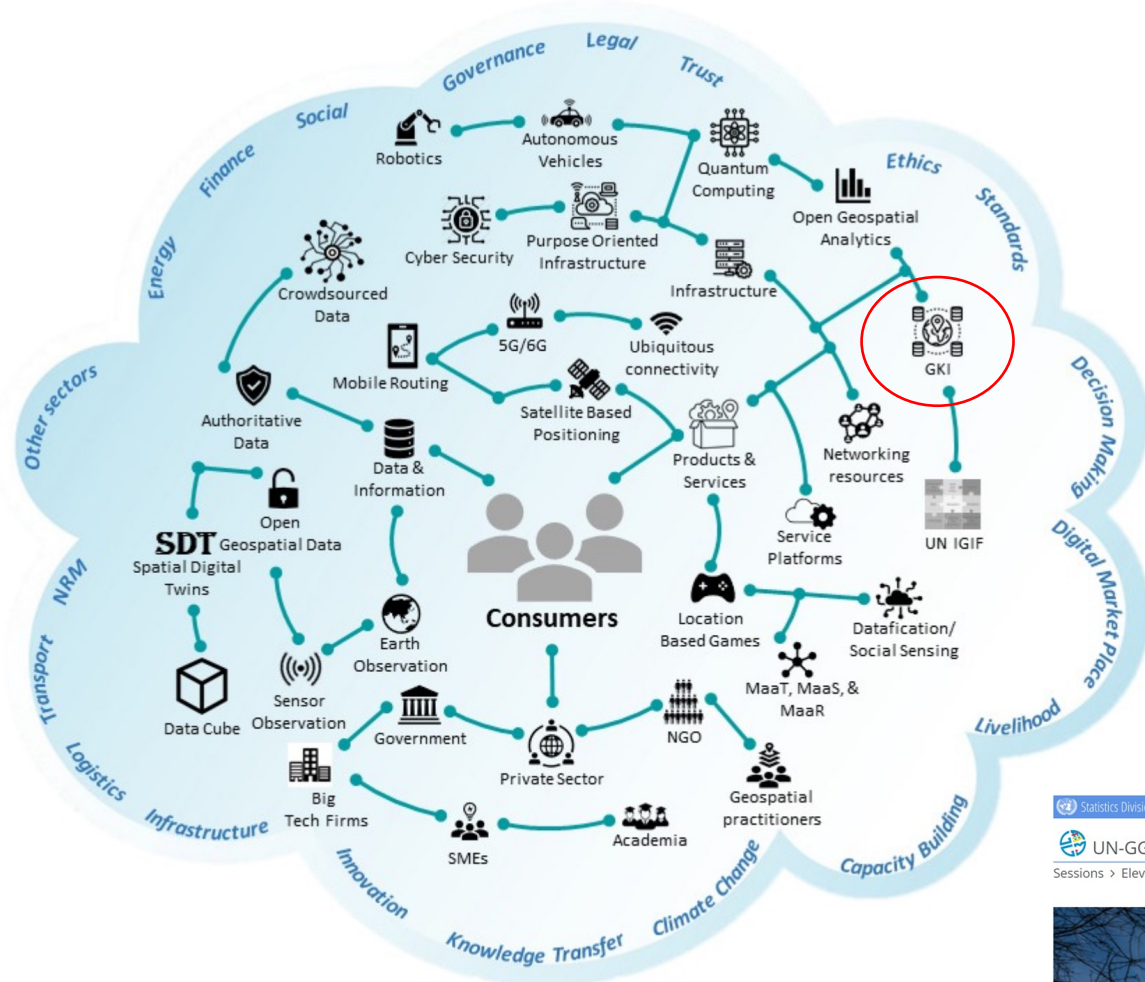
Geospatial Technology Ecosystem



Source: Geospatial Media Analysis



The Geospatial Ecosystem



The geospatial ecosystem is coordinated and shaped by a **multitude of stakeholders** and self-organizes through both **competition and collaboration**.

The geospatial ecosystem is logically a **subset of the wider digital information ecosystem**, and comprises a multitude of stakeholders, not only government data providers and expert users as we typically have in an SDI, but a much wider range of organizations, individuals, and machines.

Towards a sustainable geospatial ecosystem beyond SDIs¹

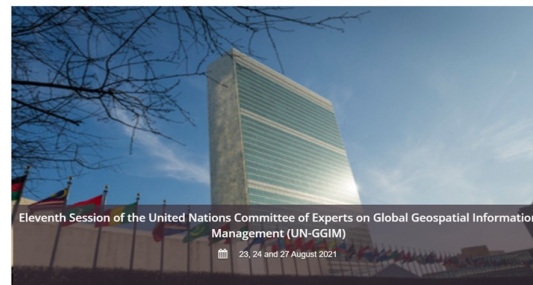
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- Eleventh session
- Tenth session
- Ninth session
- Past sessions

Overview

- Mandates
- Aims and Objectives
- Bureau
- Regional Committees
- Functional Groups
- Thematic Networks

Quick links

- UN-GGIM Events
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Summary

- Governments require support and collaboration from Private Sector to develop a sustainable Geospatial Sector – GKI provides the opportunity to collaborate
- Government utilizes GKI to create a competitive environment for the private sector to invest and sustain
- Governments to nurture Small to Medium Size companies and start-ups that are essential parts of the Geospatial Knowledge Infrastructure
- GKI embedded in the wider Geospatial Ecosystem in future will present a thriving Spatial Marketplace for Geospatial Transaction between Government – Private Sector – Academia
- Need to invest in Human Capital to deliver a successful GKI

Thank You

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