

GEOSA

الهيئة العامة للمساحة
والمعلومات الجيومكانية
General Authority for Survey
and Geospatial Information



Geospatial Knowledge & Innovation Strategie

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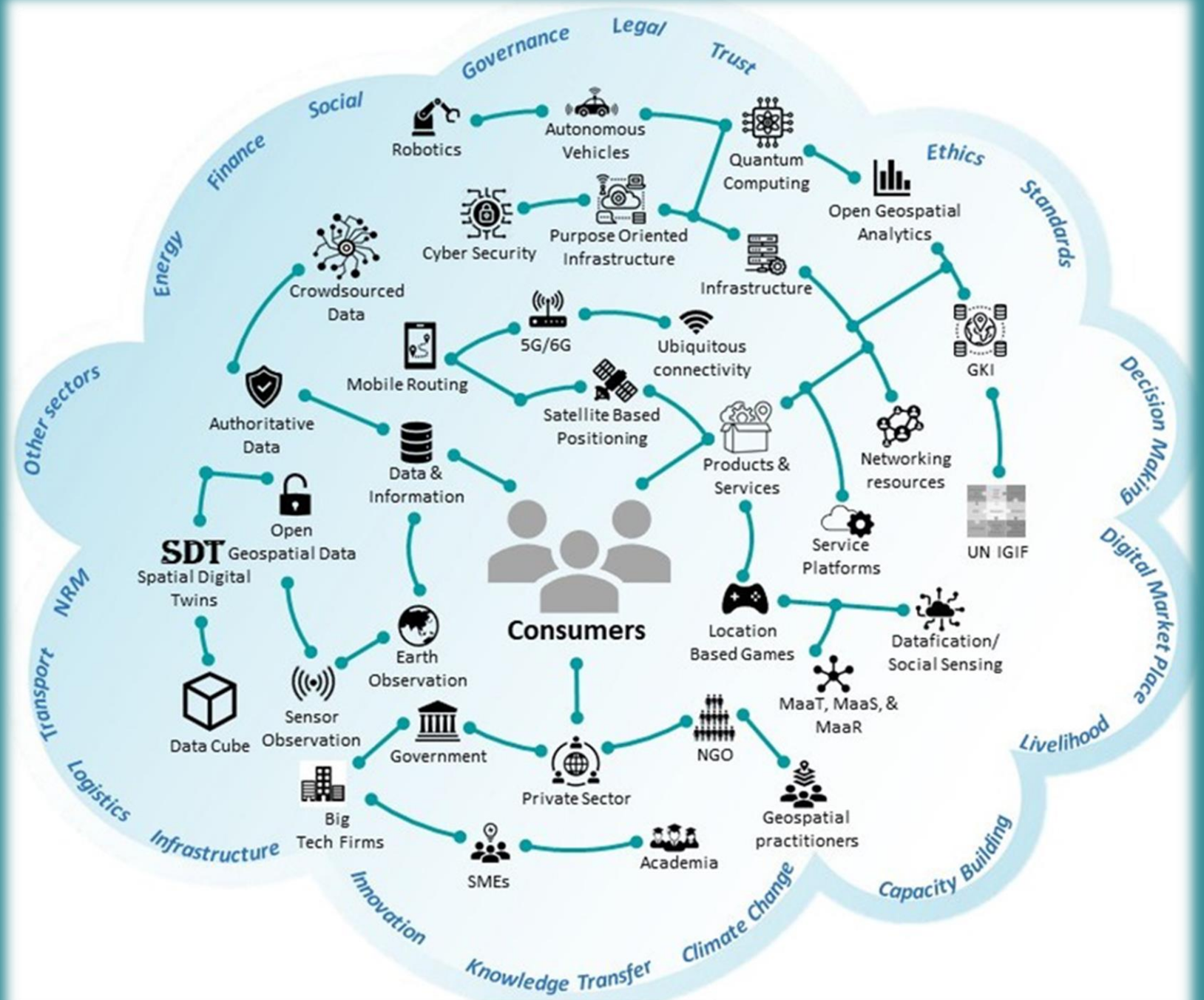
President's Senior Advisor

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Geospatial Ecosystem



GEOSA has developed 3 strategic roadmaps to activate geospatial knowledge and innovation sector that catalyzes national ecosystem towards transformation & integration of “power of where” for national & global aspirations.



The National Geospatial Strategy: The Strategy House

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Vision:

A geospatial, bio-based, and sustainable sector that achieves the efficiency of geospatial infrastructure and contributes to the Kingdom's economic, social, and environmental leadership

Mission:

Providing a structured and efficient national geospatial data infrastructure supported by an innovative and investment-friendly environment, empowered by qualified human capabilities, fostering the engagement of stakeholders and strategic partners, and supporting in decision-making.

Pillar

1

Regulation and supervision and monitoring of the sector

P1SO1

Geospatial sector governance, regulations and strategies development, and enforcement

P1SO2

Enhancing geospatial awareness and establishing regional and global leadership

Pillar

2

Geospatial infrastructure

P2SO1

Building national capacity and knowledge in geospatial sector

P2SO2

Developing the geospatial foundation themes data of the sector

Pillar

3

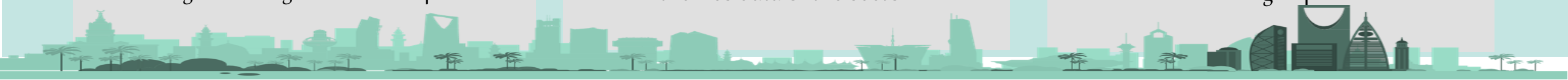
National capacity and enabling geospatial investment and innovation

P3SO1

Develop and Secure the information Infrastructure of geospatial sector

P3SO2

Attracting investments and enhancing innovation culture of in the geospatial sector



1

Strategy Roadmap for Geospatial Knowledge and Innovation Sector in KSA

2

Strategy Roadmap for Center of Innovation

3

Strategy Roadmap for Geospatial Knowledge and Innovation in GEOSA

Strategic Objectives



01 Strategy Roadmap for Geospatial Knowledge and Innovation Sector in KSA

Strategic Objectives

1

Establish a **network of custodians** for anchoring generation, preservation and dissemination of **Geospatial Knowledge, Research, and Innovation Assets**

2

Develop **buoyant geospatial markets** to position KSA as a **global hub** of Geospatial Knowledge, Research, and Innovation assets & attract investments

3

Vibrant Geospatial Knowledge, Innovation, and Research culture in entire ecosystem to **boost scientific research** and entrepreneurial output

4

Best in class geospatial workforce with knowledge research and innovation focus to create global eminence for KSA's **expertise and leadership**

5

Embed **geospatial knowledge, research, and innovation** across **priority economic sectors** of KSA

6

Increase **awareness, accessibility and discoverability** of geospatial knowledge, research, and innovation



1 Strategy Roadmap for Geospatial Knowledge and Innovation Sector in KSA

2 Strategy Roadmap for Center of Innovation

3 Strategy Roadmap for Geospatial Knowledge and Innovation in GEOSA



Programs



1 Strategy Roadmap for Geospatial Knowledge and Innovation Sector in KSA

2 Strategy Roadmap for Center of Innovation

3 Strategy Roadmap for Geospatial Knowledge and Innovation in GEOSA

Strategic Objectives



02 Strategy Roadmap for Center of Innovation

Strategic Objectives

1 State-of-the-art research & ideation support for delivering excellence in scientific and **applied research**

2 Delivering world-class geospatial services by **engaging with partners** in strategic collaborations

3 Enablement of **sharing global expertise & knowledge** with KSA's workforce and nurture a future ready workforce

4 Awareness amongst **stakeholders** about geospatial technologies & their potential advantages

5 Geospatial **integration across key sectors** to improve socio-environmental outcomes for all

6 Vibrant ecosystem for **venture building &** geospatial entrepreneurship in KSA

7 **Leader in global geospatial** discourse and development of innovative geospatial solutions

8 Ensure operational & **financial sustainability** to establish Col as a brand for geospatial innovation excellence



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Col Flagship Programs



GeoHorizon Fund

A fund of funds to finance geospatial innovation through investments, R&D, and infrastructure development

GeoLeap Accelerator

A program designed to help matured geospatial startups and companies in scaling their operations & accelerate growth



Geo-Nudge Program

A multi-sectoral thinktank program to facilitate geospatial integration across sectors through strategic planning



Internal Dev Program

A comprehensive initiative designed to propel the GEOSA's Col to new heights



Geolgnite Incubator

A program designed to support select early-stage startups and entrepreneurs in the geospatial sector



GeoFrontier Lab

A state-of-the-art geospatial research and innovation lab for cutting-edge research & innovation



SynerGeo

A program to foster geospatial partnerships for key stakeholders as well as for Col to deliver its services

Collaborative Programs



Geospatial Stack

*With National
GeoExchange Platform*

A virtual platform offering a suite of advanced geospatial innovation services (DT creation, virtual prototyping, simulation, idea validation, and co-R&D) in the metaverse



GeoPulse Platform

*With National
Geo4All Platform*

A gateway for geospatial information aggregation and dissemination



GeoTrail Platform

*With National
Geo4All Platform*

A digital repository of geospatial knowledge, case studies, geospatial business and technical publications



GeoScience

*With dedicated geospatial
scientific research institution*

A comprehensive program focused on carrying out geospatial scientific research, especially focused on geodesy, earth sciences and geo-referencing systems



GeoInnovate

*With National
GeoPathways Platform*

A digital gateway to connect GS learners with certification, internship and research fellowship opportunities



GeoSpeak Platform

*With National
GeoExchange Platform*

An open-source platform for geospatial discussions & exchange for people

1

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Strategy Roadmap for Geospatial Knowledge and Innovation in GEOSA

Strategic

Objectives



03 Strategy Roadmap for Geospatial Knowledge and Innovation in GEOSA

Strategic Objectives

1 GEOSA workforce to have **competency** around basic, advanced, and innovative geospatial knowledge, research & innovation

2 Robust Internal systems and processes for generating, preserving, and aggregating knowledge, **research and innovation assets** in GEOSA

3 Geospatial knowledge, research and **innovation assets and services** to act as a **source of financial return**

4 **Widespread community awareness** of geospatial knowledge, research and innovation in KSA

5 GEOSA as **a leader for geospatial knowledge**, research, and innovation at regional and global level

6 **Digital Public Infrastructure** to support storage, dissemination & access of geospatial knowledge, research & innovation assets

7 **Nationwide collaboration** between various agencies to deliver goals and aspirations as per national priorities



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Strategy Roadmap for Geospatial Knowledge and Innovation in GEOSA

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Geospatial Scientific & Applied Research Program

Facilitate cross-sector geospatial research to develop diverse applications, support technology transfer and geospatial projects



Geospatial Citizen Awareness Program

Launch broadcasting services for improving Geospatial awareness amongst citizen groups



Professional Training Program

Provide professional training for GEOSA staff



Geospatial Knowledge & Innovation Monetization Program

Use geospatial services & assets for financial gains



Licensing, Accreditation, & Certification Program

Act as an accreditation agency for organizations providing professional certification for geospatial related competencies



Geospatial Knowledge & Innovation Platform Development Program

Facilitate partnerships for hosting, maintaining, and running key platforms



Geospatial Ecosystem Development Program

- *Developing Geospatial knowledge & innovation maturity assessment index*
- *Facilitate mentorship and guidance to SMEs, startups, industries, government, and academia*



Geospatial Knowledge & Innovation Policy Framework Program

Define and continuously strengthen policy framework for Geospatial knowledge and innovation services



National Geospatial Competency Assessment Program

Annual survey of Geospatial institutions to map competency levels and gap in key geospatial skillsets and qualifications



School Education Support Program

Provide early education resources for school students for developing spatial thinking and improving awareness of spatial technologies and application



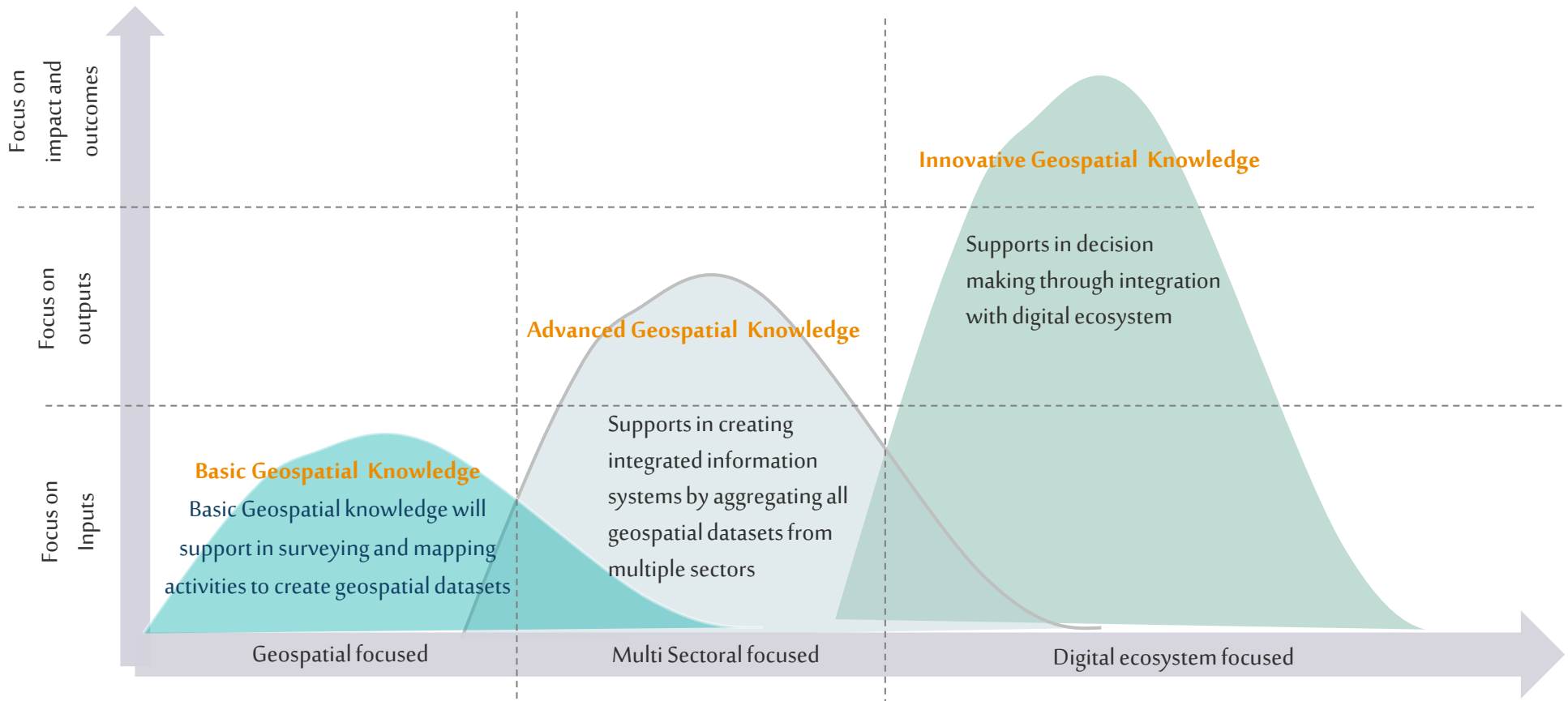
The three categories of knowledge represent differences in focus areas and functional aspects. Whereas basic knowledge is focused on inputs and geospatial datasets, innovative knowledge is focused on impacts, outcomes and decision making.



Knowledge and innovation prioritizes decision making and application by integrating geospatial information with digital tech

Knowledge and innovation prioritizes geospatial **information management** by integrating **multiple** layers of geospatial data across various **foundation and other themes**

Knowledge and innovation prioritizes geospatial data generation and storage



Supports Geospatial workforce in areas of surveying, processing, and analytics

Supports Geospatial workforce with domain specific understanding in areas of surveying, processing, and analytics

Supports workforce across the digital ecosystem in leveraging Geospatial Knowledge and Innovation

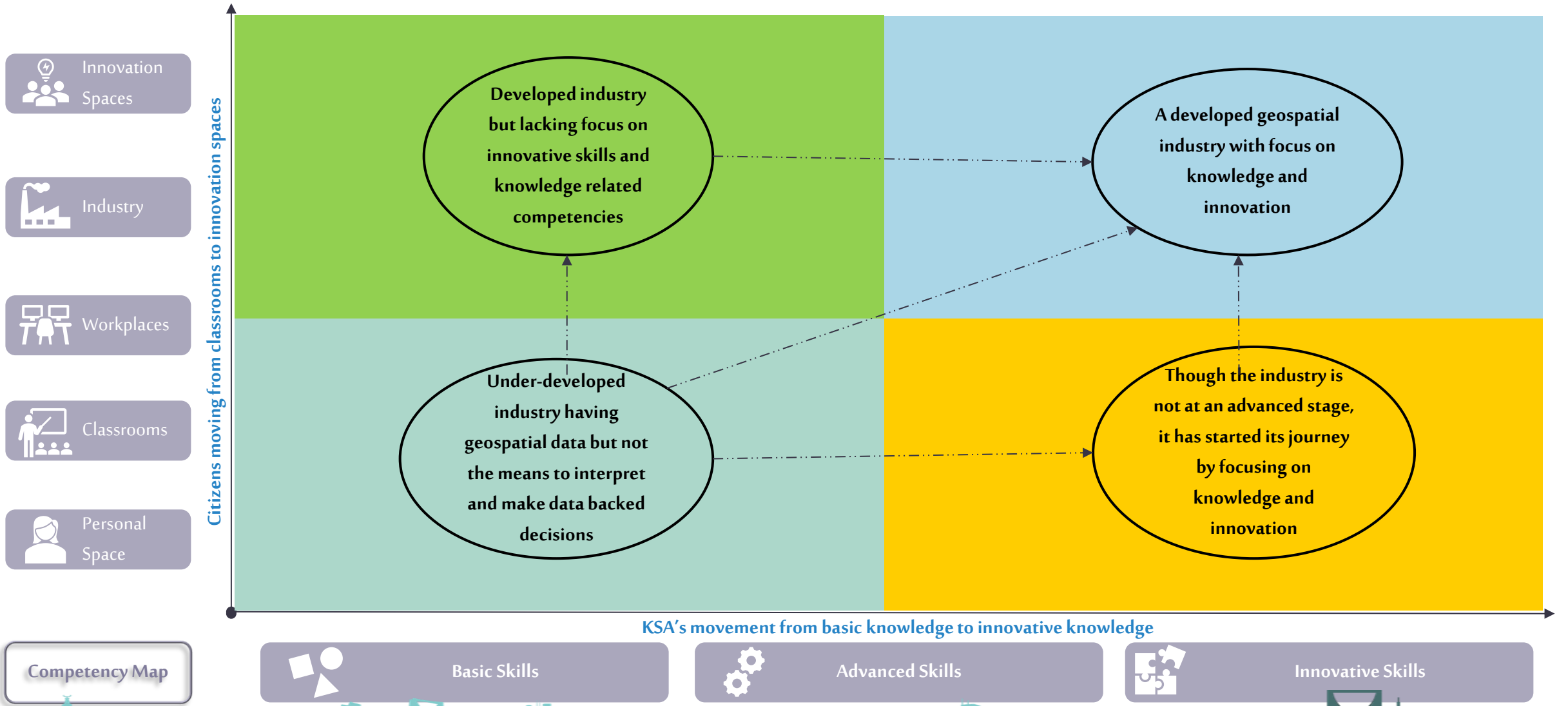


The Geospatial Competencies Universe comprises of the exhaustive set of technical competencies that are required to fully realize the benefits of the geospatial human capital

	Basic- The foundational skills that are pre-requisites for geospatial learning	Advanced-Encourage System Level Thought and engagement with spatial data infrastructures	Innovative- Finding new ways of knowledge creation and dissemination with decision making focus
Tier 5: Industry Sector Technical Competencies	<ul style="list-style-type: none"> Primary Research Skills Recognizing Sensitivity and Significance of Data Geomatics Advanced Geospatial Statistics Spatial Economics 	<ul style="list-style-type: none"> Requirement Analysis Ortho Imagery Selecting Systems Cubesats Determining Spatial Data Accuracy Meta Data Creation Modifiable Areal Unit Problem (MAUP) Datacubes Parcel Digitization FME Capabilities Geo Computation Drones/UAVs 	<ul style="list-style-type: none"> Discerning Knowledge of Thematic Datasets Intersectional Knowledge across sectors and job functions Theme Specific SQL Using Open-Source APIs to create custom tools for thematic sectors Theme Specific Analytical and Modelling Skills Geocoding SaaS Expertise in thematic areas OGC and other standards compliance skills for each theme Predictive Modelling Quantum and Edge Computing BIM/Digital Twins Geo-INT
Tier 4: industry wide technical competencies	<ul style="list-style-type: none"> Cybersecurity and Data Management Awareness 5G Digital Divide and Ethics Awareness 	<ul style="list-style-type: none"> Using Coordinate Systems Advanced Cartography and GIS Tools Metadata and Interoperability Knowledge Geospatial Linguistics and semantics Positioning Systems GNSS/GPS Application Development and Programming Spatial Querying Geotagging Best Practices & Standards Awareness Remote Sensing and Photogrammetry Geospatial Governance Advanced Use of DBMS Multispectral and Hyperspectral Imaging 	<ul style="list-style-type: none"> Programming and Automation of Geospatial Processes AR/VR AI/ML/Deep Learning Object/Sensor Based Data Production IoT and digital sensors Blockchain LiDar Automation and Robotics
Tier 3: Workplace Competencies	<ul style="list-style-type: none"> Apprenticeship Making Business Cases Legal awareness and privacy concerns 	<ul style="list-style-type: none"> Geodesy & Modelling Skills Spatial Data Stewardship Learning Management Systems Spatial Information Processing Market Trends Identification in Geospatial 	<ul style="list-style-type: none"> Political Geography Open Sourcing Intelligence
Tier 2: Academic Competencies	<ul style="list-style-type: none"> Basic Cartography Topology Spatial Thinking Physical Geography Ground Survey Techniques Geodetic Survey and Earth Science PISA Skills 	<ul style="list-style-type: none"> Orbit Sciences Oceanography Meteorology Hydrography Bathymetry Forestry Astrometry 	<ul style="list-style-type: none"> Interdisciplinary Perspective Demography and Statistics Regional Geography Outcome and Need Assessment
Tier 1: Personal Effectiveness Competencies	<ul style="list-style-type: none"> Conflict Management Job Shadowing 	<ul style="list-style-type: none"> Systems Thinking Change Management 	<ul style="list-style-type: none"> Problem Solving Skills Critical Thought on Global Issues



The Geospatial Competencies Universe comprises of the exhaustive set of technical competencies that are required to fully realize the benefits of the geospatial human capital.



Innovation Spaces

Industry

Workplaces

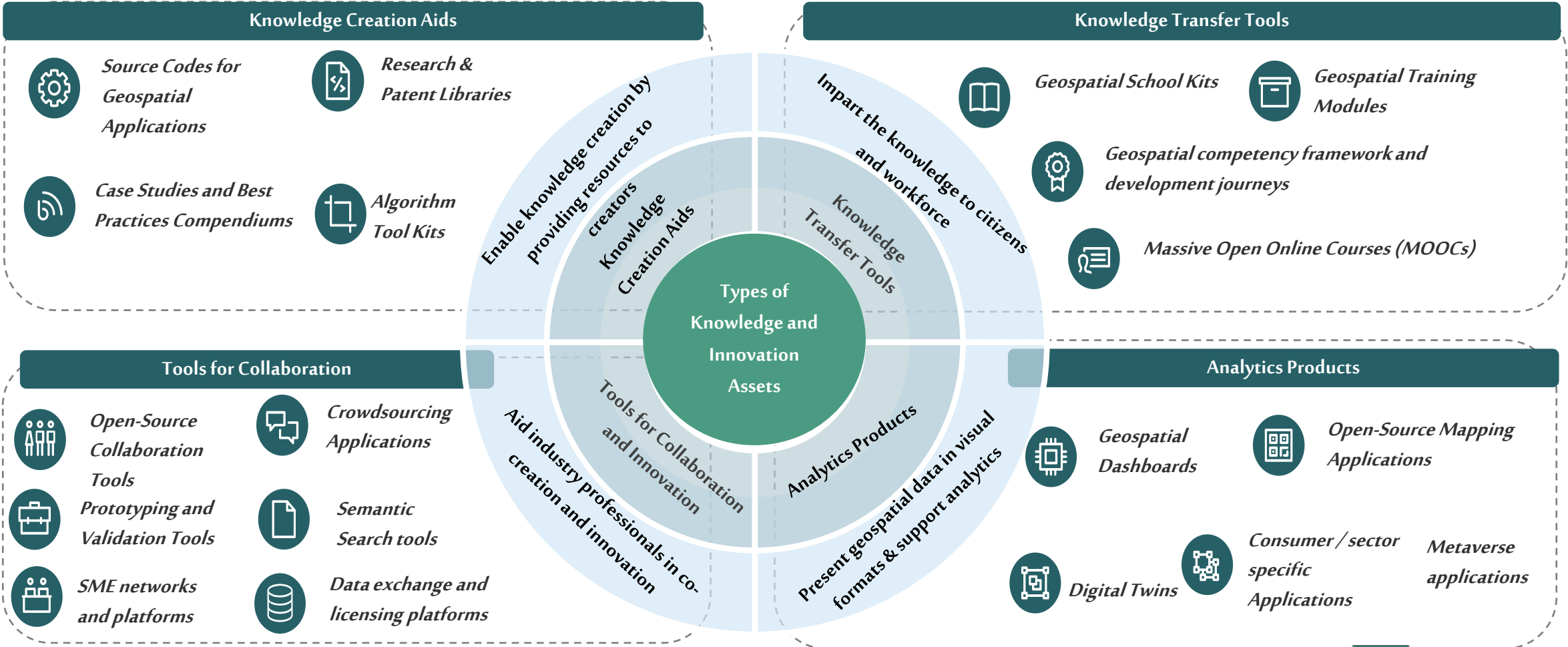
Classrooms

Personal Space

Competency Map

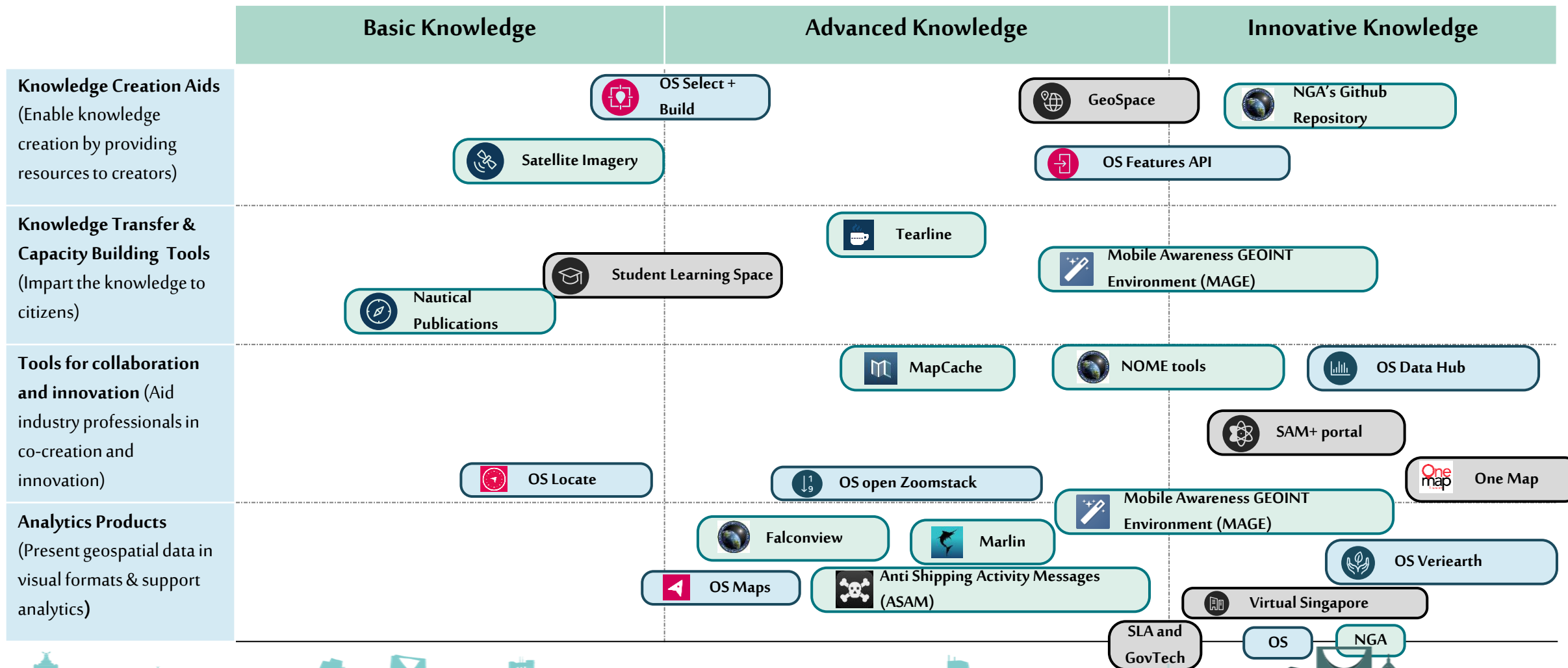


Geospatial Knowledge and Innovation Assets are established to (a) catalyze decision making and governance across multiple sectors, (b) replicate best practices / success stories, and (c) enable and enhance participation collaboration



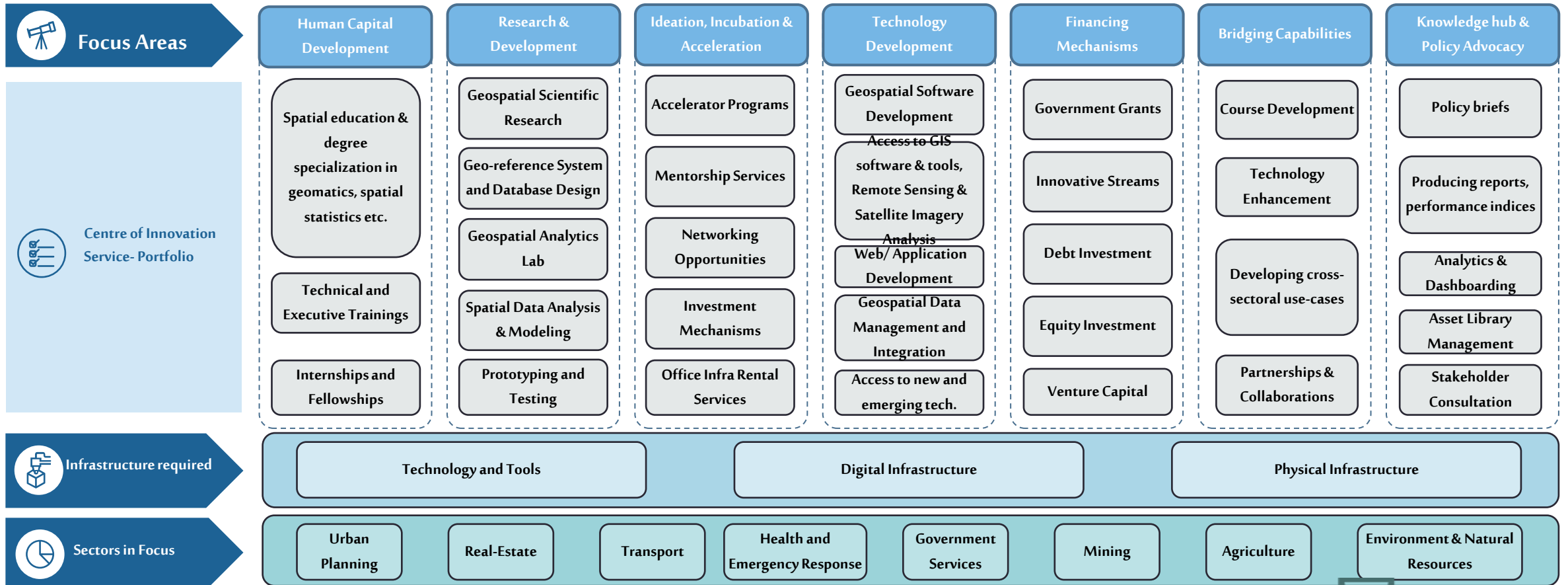


Knowledge Assets developed by NGA, OS, SLA and GovTech primarily focus on analytics product like visualization and dashboards. All these agencies have tools for collaboration and innovation which highlights the maturity of geospatial ecosystem.



To promote geospatial research and innovation, a Centre of Innovation shall define its areas of focus in terms of stages of innovation funnel, sectors, services, focus areas and stakeholders.

Each stage of geospatial innovation funnel maps across various focus areas, infrastructure requirements, sectoral applications and stakeholders engaged.



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Thank You

