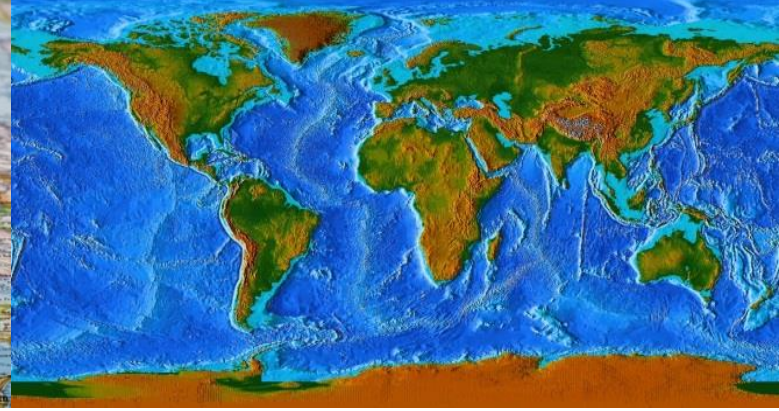



Strengthening National Geospatial Information Management, Systems and Infrastructure

The Integrated Geospatial Information Framework An Overview

Greg Scott, UN-GGIM Secretariat
Environmental Statistics and Geospatial Information Branch
United Nations Statistics Division
Department of Economic and Social Affairs
United Nations, New York

“Everything happens somewhere…”

Nancy Tosta, June 2001

Everything that happens…happens somewhere.

We can locate, view, relate, record, collect, measure, analyze, model and monitor what happens where, when, why, and how.

We can do this more today than ever before….which is far less than what we will do tomorrow.

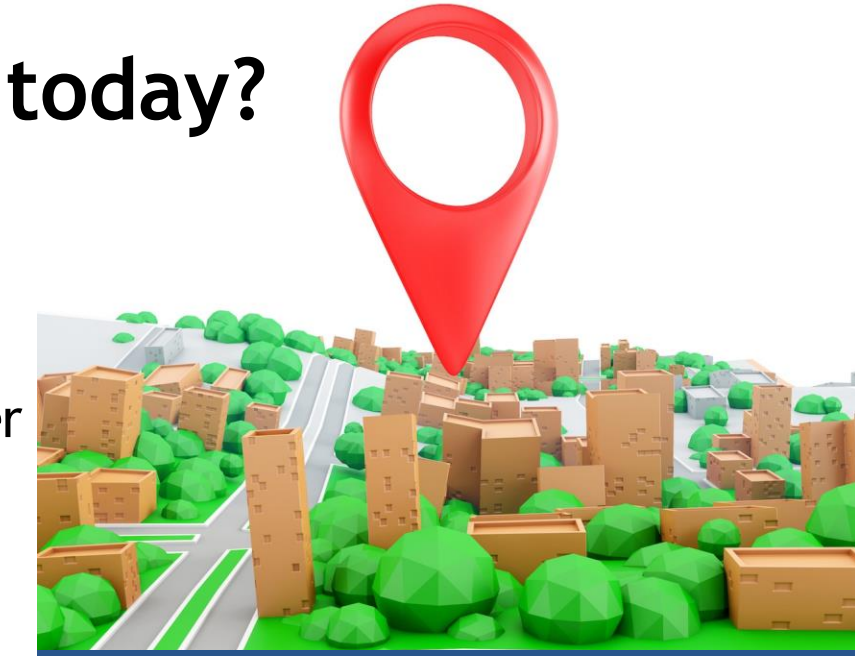
“What IS ‘geospatial information’ today?

What is geospatial information? Geography? How mainstream is it?
How do we use it, best leverage it, communicate it?
What does it mean? What is its identity? What is next?
Is it an industry in its own right? Or is it a data and technology enabler for many, or all, industries?

Geospatial information is not just data, software, hardware, applications, solutions…it is the instrument of geography; the ‘geography’ of data, software, applications, solutions…

Geospatial information is the integrative glue for everything else. Without it other things are often meaningless and/or without context.

The role of geospatial information is changing and evolving rapidly…



Geospatial information represents much more than the ‘digital map’ of a nation; it is the ‘digital currency’ for evidence-based decision-making. Geospatial information is a critical component of the national infrastructure; both a blueprint of what happens where, and the means to integrate a wide variety of data across multiple sectors.

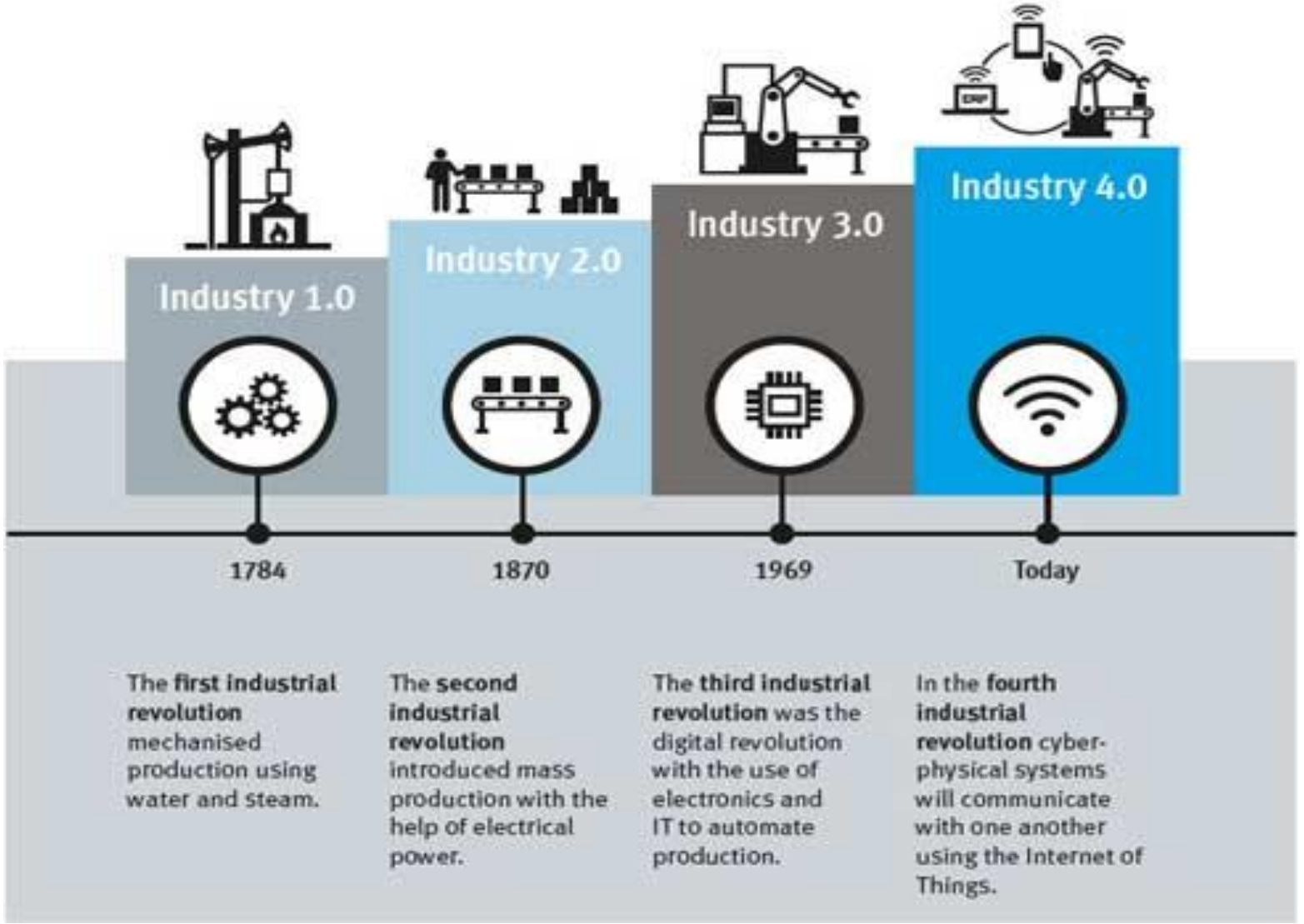
“What IS ‘geospatial information’ today?

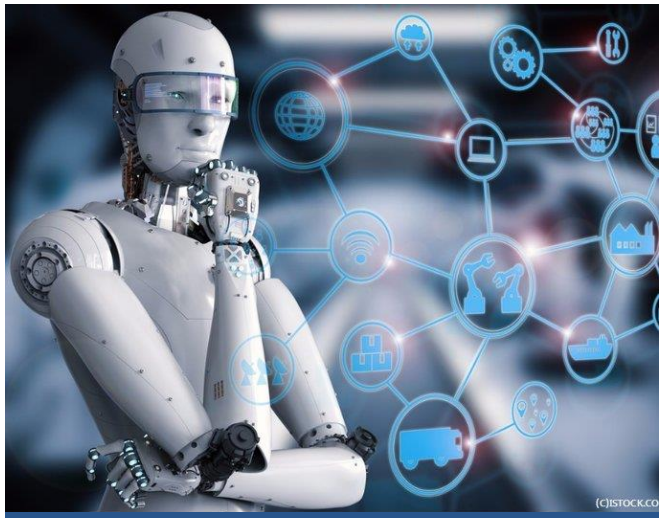
What is changing rapidly is the pace at which high fidelity data is being made available… combined with enabling technologies and sophisticated analytics… that are able to collect and manipulate the data. How do we keep up?

Change itself is not the problem…that is inevitable progress.
It is the pace of change that is so challenging for us. How are we responding to this pace… and the many multidimensional aspects?

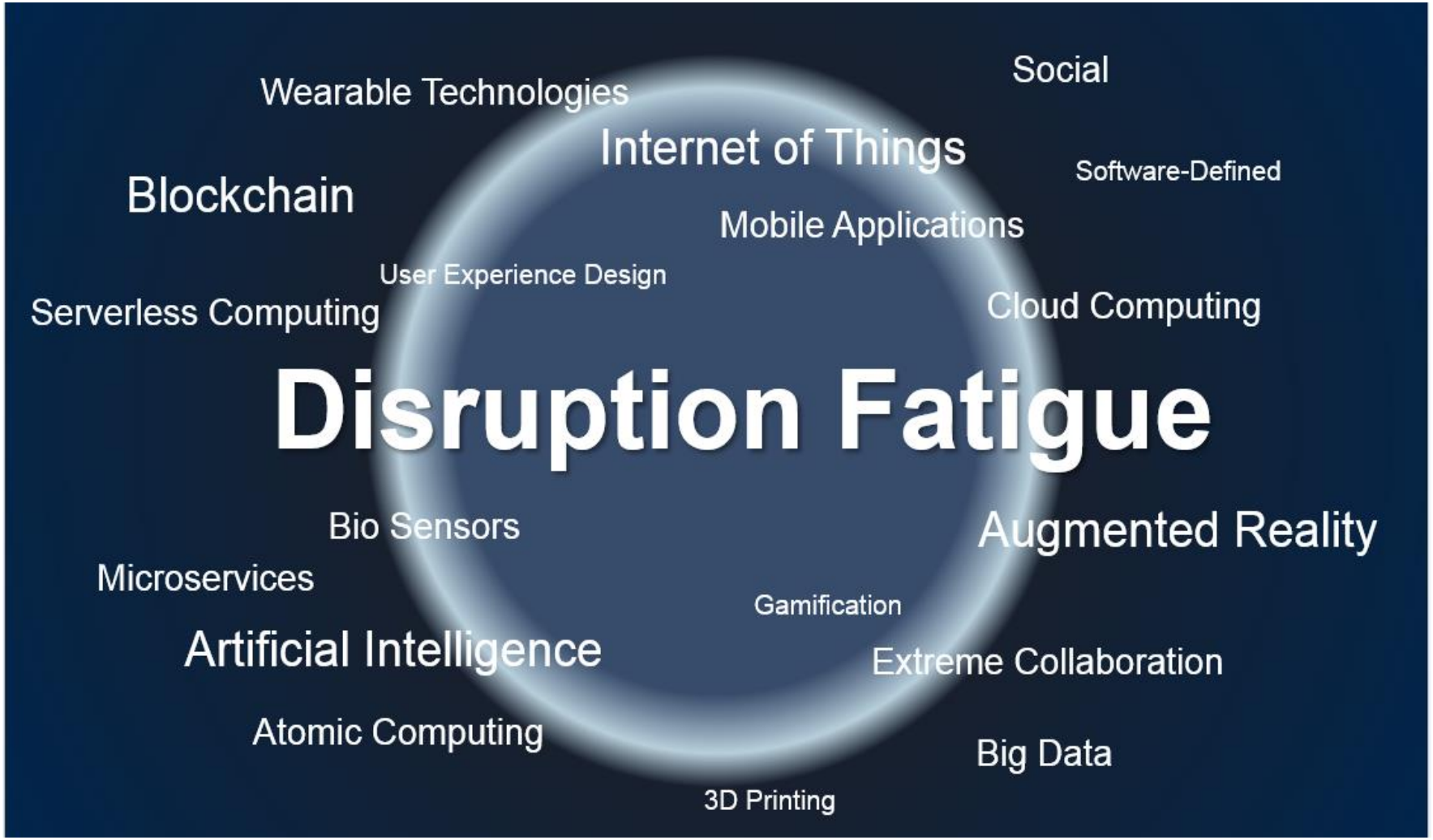
“Increases in the amount and variability of data, combined with massive advances in communications and digital technology, digital transformation, have seen the emergence of geospatial information as a major contributor to economic transformation in many countries, including e-government, e-service and e-commerce.”

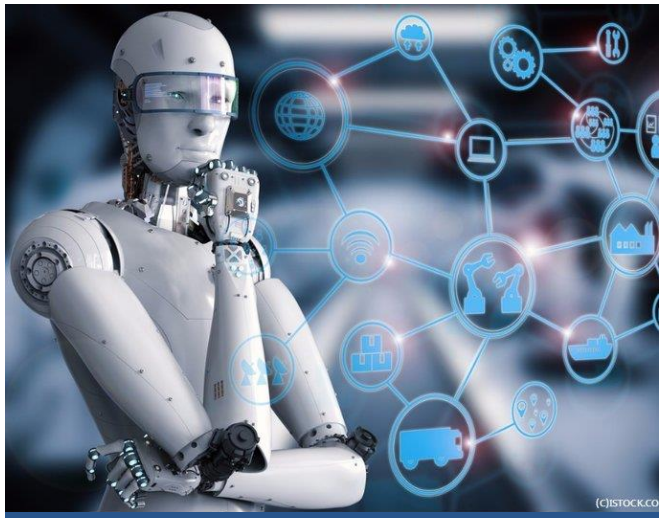
Geospatial information represents much more than the ‘digital map’ of a nation; it is the ‘digital currency’ for evidence-based decision-making. Geospatial information is a critical component of the national infrastructure; both a blueprint of what happens where, and the means to integrate a wide variety of data across multiple sectors.





The disruptive nature of digital transformation, technology, innovation, and their exponential impacts, means that society's expectations on how, and at what level of detail, we record what is happening where and when are changing at a rapid pace.



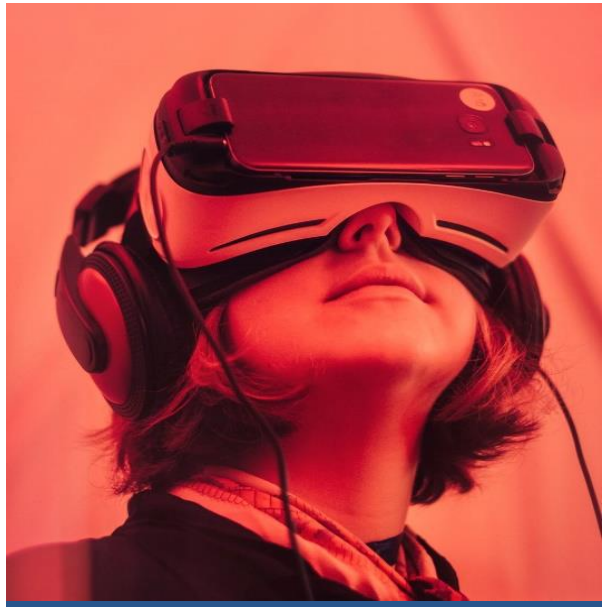


The disruptive nature of digital transformation, technology, innovation, and their exponential impacts, means that society's expectations on how, and at what level of detail, we record what is happening where and when are changing at a rapid pace.

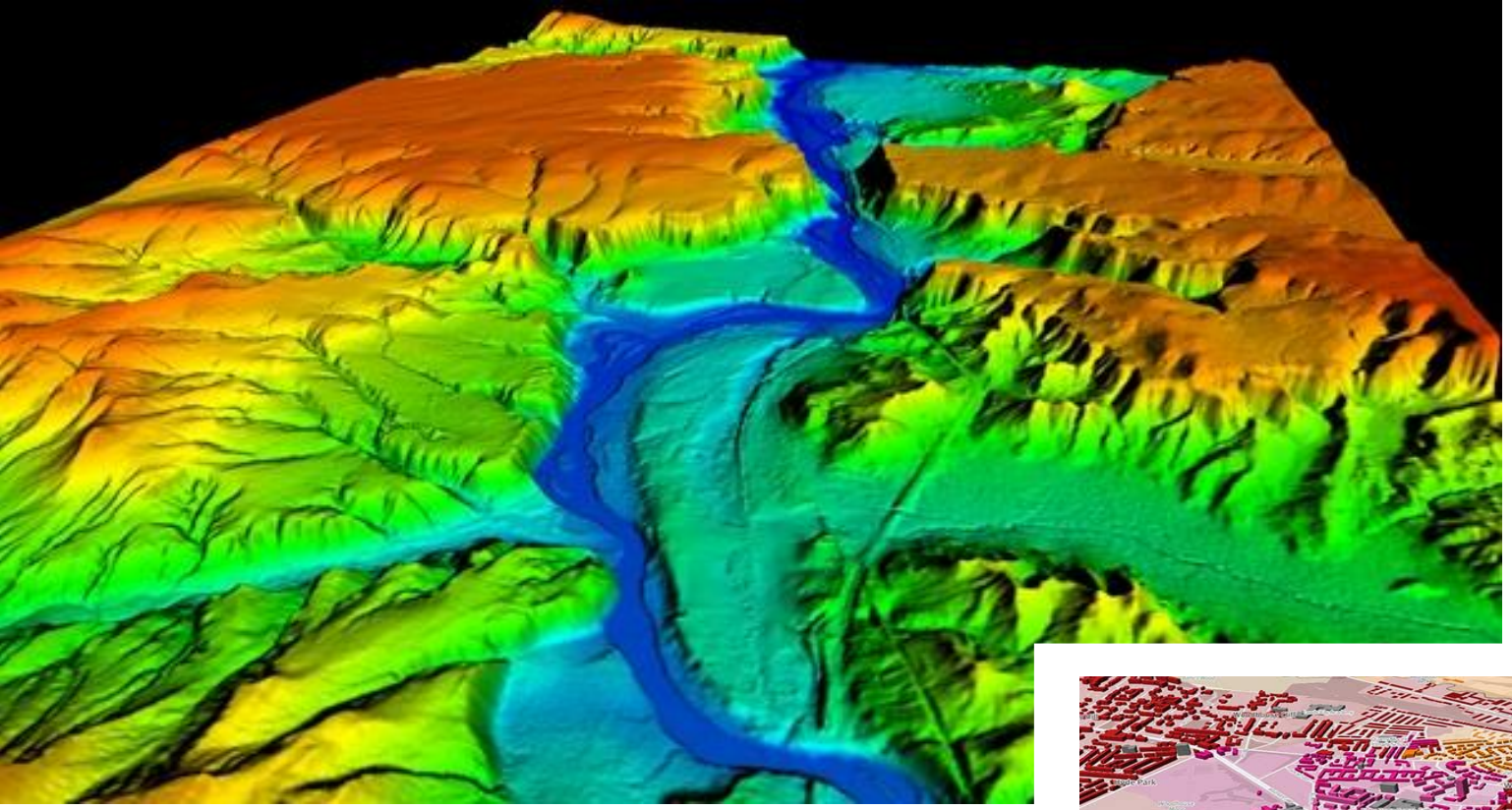
Mission of geospatial information authorities

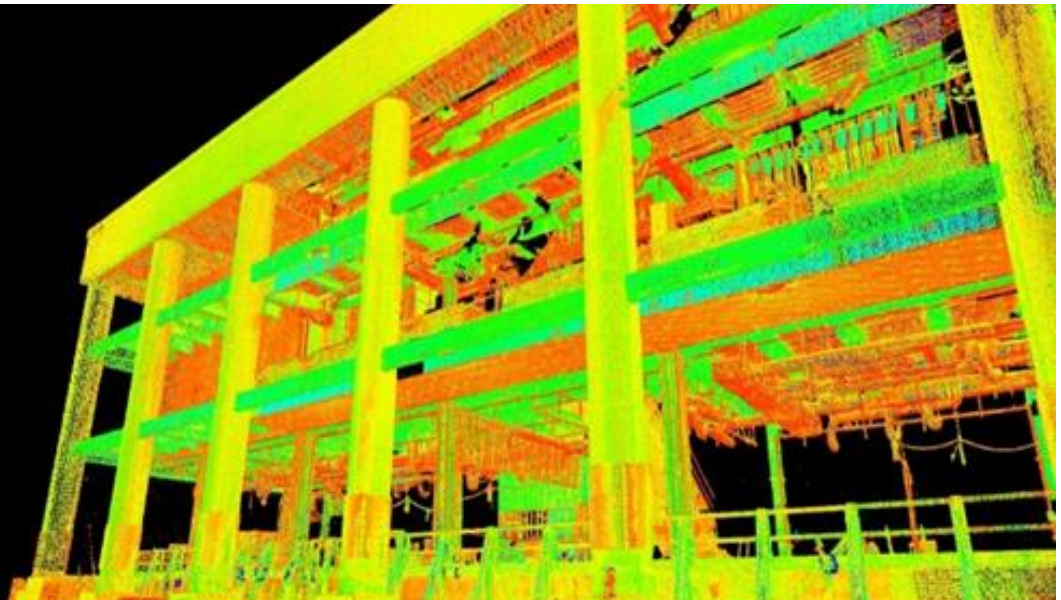
What does the future look like? What is our mission? How do we keep pace with change, while still shaping our future? How are we going to be anchored in the chaos of the information environment?

- We function in times of disruption: rapidly increasing amounts of data, enabling technologies and associated analytics. New roles are emerging.
- Opportunity to apply these to the benefit of national priorities and economic development more holistically.
- This means moving up the value chain. No longer data collectors, but data connectors and integrators. The information is the currency for policy.
- Data realignment: Outcomes that are more definitive, diversified, integrated, accessible and dynamic.
- Data aggregation and disaggregation: National – local – national.
- Communicate: Link up with other government agencies. They need you!!
- Proposition: Modern, agile, policy-oriented, collaborative, integrated national information systems.



While 'data' is still the primary information currency, the many disruptive technology enablers and applications are challenging the norm for the mission of national geospatial information authorities.

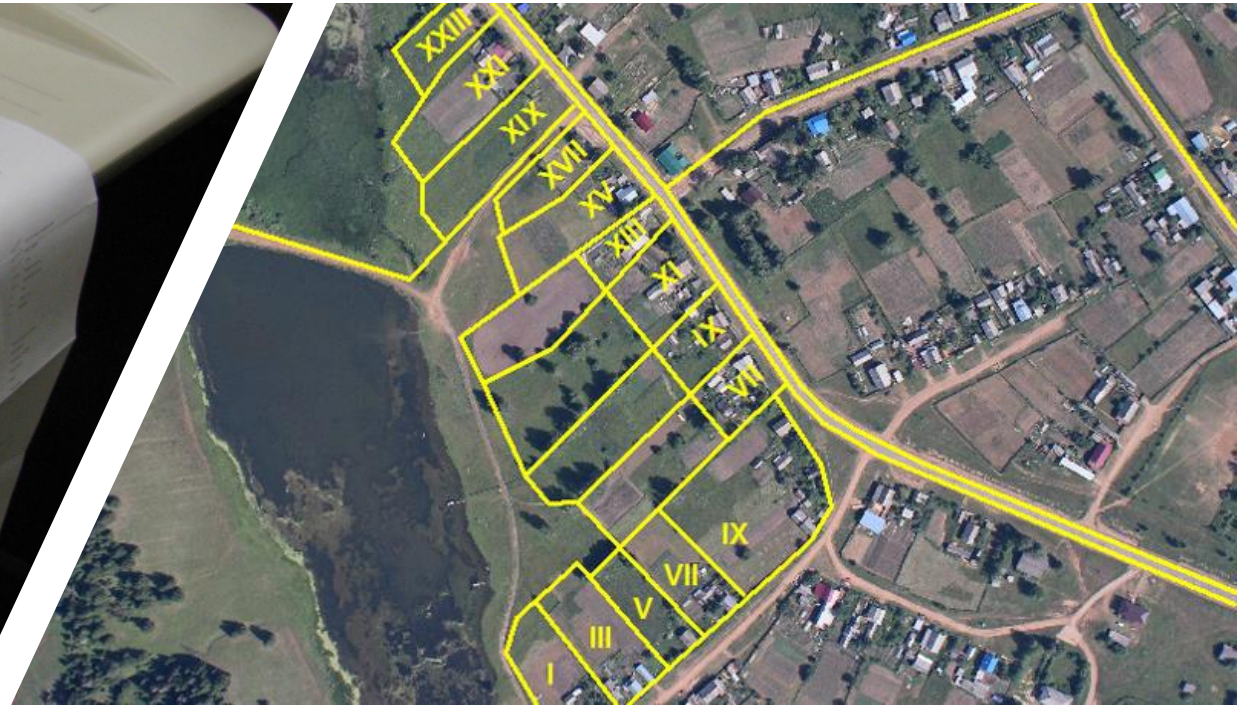





LEEDS
Sheepscar
Little London
Burmantofts
New Town
The Leylands
Mabgate
Quarry Hill
Bank
Steander
Camp Field
Cavalier Hill
Fearn's Island
GREAT WILSON STREET


MALAWI LAND COVER 2010

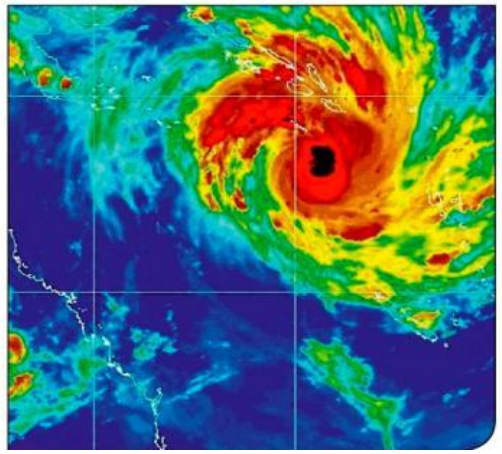

HAWK-EYE Cx 36
contex


XXIII
XXI
XIX
XVII
XV
XIII
XI
IX
VII
IX
VII
V
III
I

How can you measure and monitor sustainable development…





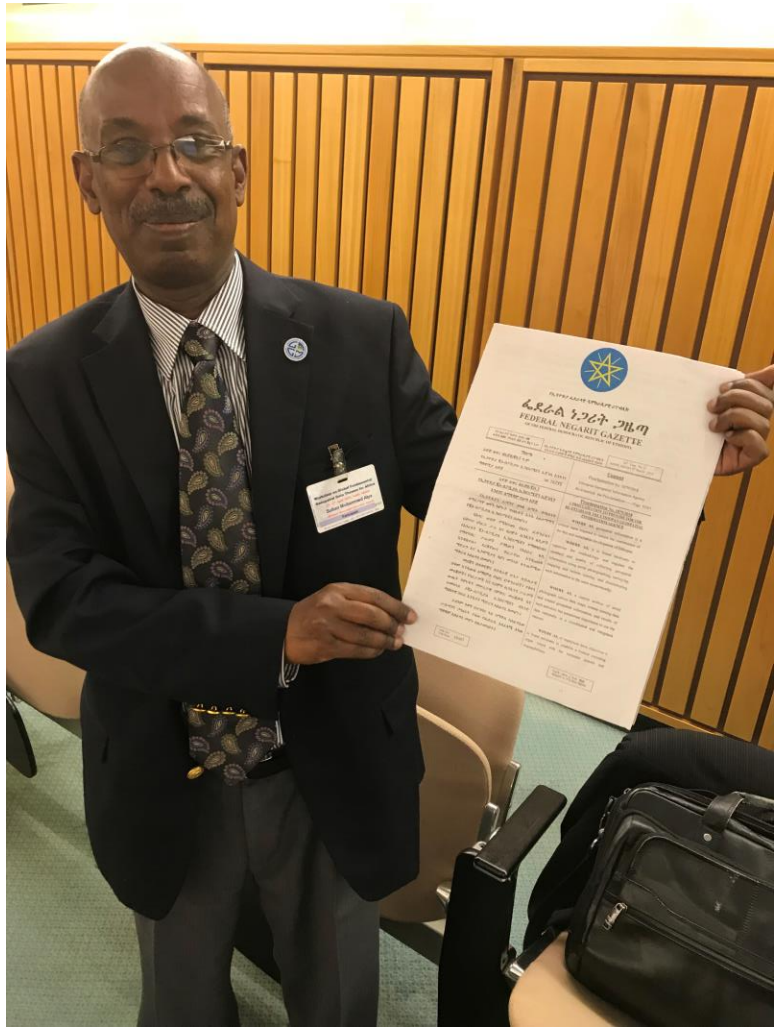



…without geography, place, and location

2030 Agenda: Goals, targets, indicators, measuring…

Do we have the data for development??

Can we make it ‘production ready’ information for all?



WHERE AS geospatial information is a critical input required to ensure the continuance of fast and sustainable development of Ethiopia

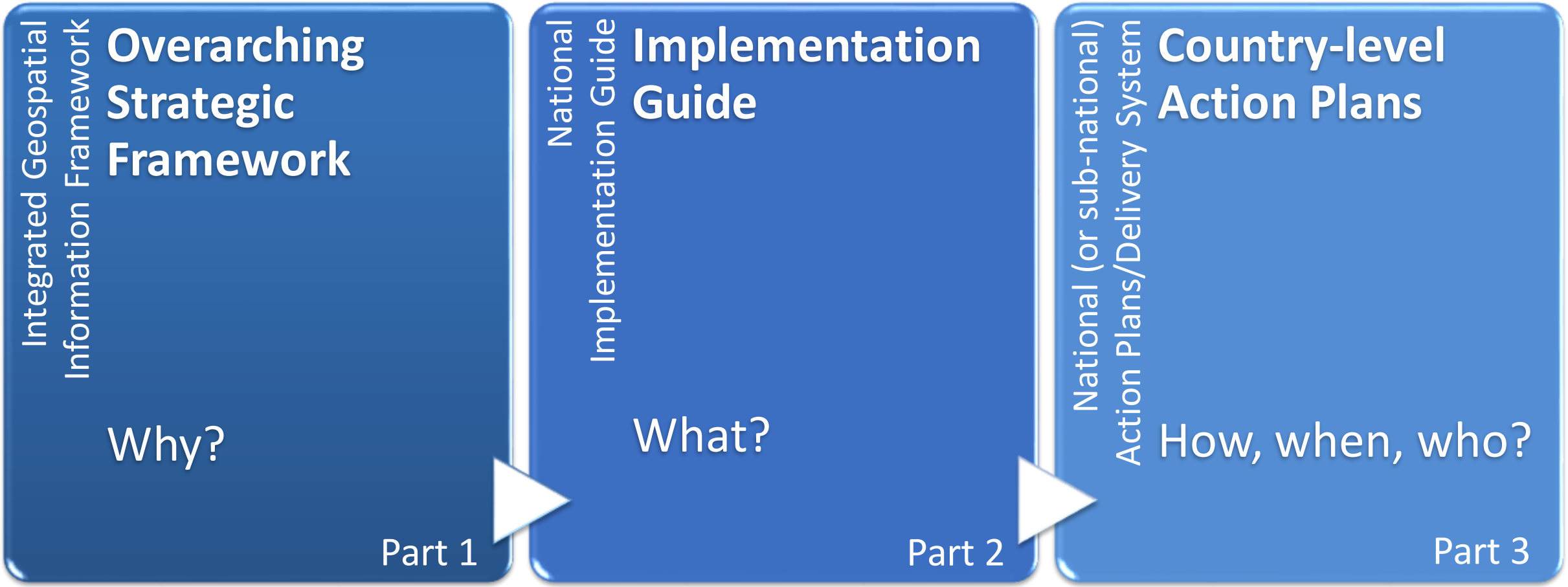
Strengthening the future mission of national geospatial information authorities will assist nations in achieving sustainable development, bridging the geospatial digital divide, secure socio-economic prosperity, and leave no one behind.

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN NATIONAL GEOSPATIAL INFORMATION MANAGEMENT

Background

- In August 2017, UN-GGIM welcomed a new Collaborative Agreement between UNSD and the World Bank.
- The basis of the collaboration was a recognition of the growing need to explore and develop mechanisms for **geospatial data, infrastructure and policies** to be embedded more holistically within concessional financing, technical assistance and knowledge sharing services; and implementation in developing countries.
- A key deliverable of the collaboration is an overarching **geospatial information management framework** that Member States can reference when implementing integrated evidence-based decision-making solutions, and that maximizes and leverages national systems tailored to their own situations.
- The result is an **Integrated Geospatial Information Framework.** Part 1: **Overarching Strategic Framework**, is to be adopted by UN-GGIM at this session.



The **Integrated Geospatial Information Framework** comprises a 3-part document set as separate, but connected, documents. The **Overarching Strategic Framework** is fully developed following a global consultation. The structure and main elements of the **Implementation Guide** are developed for in-principle approval. The **Country-level Action Plans** are work in progress.

Overarching Strategic Framework

- A forward-looking Framework built on national needs and circumstances.
- Provides the overarching strategic messages and more expansive and integrated national framework, particularly focusing on policy perspectives and elements of geospatial information.
- Sets the context of 'why' geospatial information management is a critical element of national social and economic development.
- **Vision** and **Mission** statements communicate the overarching aim of the Integrated Geospatial Information Framework.
- It does this via **7 Underpinning Principles**, **8 Goals and 9 Strategic Pathways** that lead to a national approach that takes account of national circumstances, priorities and perspectives.
- The Overarching Strategic Framework is intended for a wide range of stakeholders – these primarily being high-level policy and decision makers, institutions and organizations within and across government.

The Framework is a mechanism for articulating and demonstrating national leadership, cultivating champions, and developing the capacity to take positive steps.

Overarching Strategic Framework: Vision and Mission

The **Vision** recognizes the responsibility for countries to plan for and provide better outcomes for future generations, and our collective aspiration to leave no one behind

The **Mission** is designed to stimulate action towards bridging the geospatial digital divide; to find sustainable solutions for social, economic and environmental development; and to influence inclusive and transformative societal change for all citizens according to national priorities and circumstances.

Vision

The efficient use of geospatial information by all countries to effectively measure, monitor and achieve sustainable social, economic and environmental development - leaving no one behind.

Mission

To promote and support innovation and provide the leadership, coordination and standards necessary to deliver integrated geospatial information that can be leveraged to find sustainable solutions for social economic and environmental development.

Overarching Strategic Framework: Principles

Underpinning Principles:

PRINCIPLE 1: Strategic Enablement

PRINCIPLE 2: Transparent and Accountable

PRINCIPLE 3: Reliable, Accessible and Easily Used

PRINCIPLE 4: Collaboration and Cooperation

PRINCIPLE 5: Integrative Solution

PRINCIPLE 6: Sustainable and Valued

PRINCIPLE 7: Leadership and Commitment

The 7 Principles are the key characteristics and values that provide the compass for implementing the Framework, and allow for methods to be tailored to individual country needs and circumstances.

Overarching Strategic Framework: Goals

GOAL 1: Effective Geospatial Information Management

GOAL 2: Increased Capacity, Capability, and Knowledge Transfer

GOAL 3: Integrated Geospatial Information Systems and Services

GOAL 4: Economic Return on Investment

GOAL 5: Sustainable Education and Training Programs

GOAL 6: International Cooperation and Partnerships Leveraged

GOAL 7: Enhanced National Engagement and Communication

GOAL 8: Enriched Societal Value and Benefits

The 8 Goals reflect a future state where countries have the capacity and skills to organize, manage, curate and leverage geospatial information to advance government policy and decision-making capabilities.

Overarching Strategic Framework: Strategic Pathways

- The Framework is anchored by 9 Strategic Pathways in 3 main areas of influence: Governance; Technology; and People.
- The objective of the Strategic Pathways is to guide governments towards implementing integrated geospatial information systems in a way that will deliver a vision for sustainable social, economic and environmental development.
- Each Strategic Pathway is augmented by specific objectives to assist countries in achieving the required results.
- The Strategic Pathways are presented as separate pieces of a jigsaw puzzle in recognition that there are many aspects and dimensions to each individual pathway, and that when joined together, the Framework is connected, integrated and implemented.
- Each of the 9 Strategic Pathways are explained in more detail, along with specific actions, in Part 2: Implementation Guide.

9 Strategic Pathways

Governance

Technology

People

Knowledge ▪ Decisions ▪ Development

Technology ▪ Applications ▪ Value

Users ▪ Citizens ▪ Access

Society ▪ Economy ▪ Environment

Governance and Institutions	Legal and Policy	Financial
Data	Innovation	Standards
Partnerships	Capacity and Education	Communication and Engagement

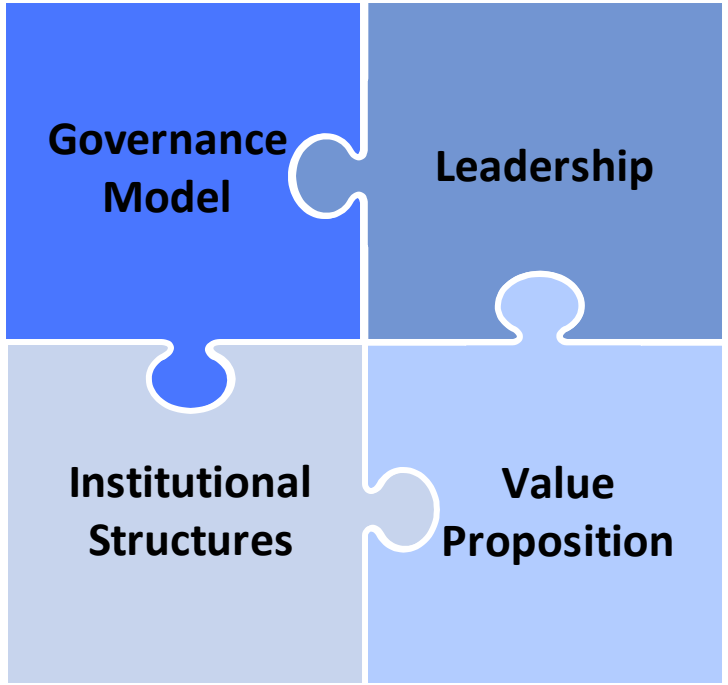
Anchored by 9 Strategic Pathways, the Framework is a mechanism for articulating and demonstrating national leadership in geospatial information, and the capacity to take positive steps.

Strategic Pathway 1

Governance and Institutions

Establishes the leadership, governance model, institutional arrangements and a clear value proposition as a means to strengthen multi-disciplinary and multi-sectoral participation and a commitment to achieving an Integrated Geospatial Information Framework.

Objective is to attain political endorsement, strengthen institutional mandates and build a cooperative data sharing environment through a shared understanding of the value of an Integrated Geospatial Information Framework, and the roles and responsibilities to achieve the vision.



Strategic Pathway 2

Legal and Policy

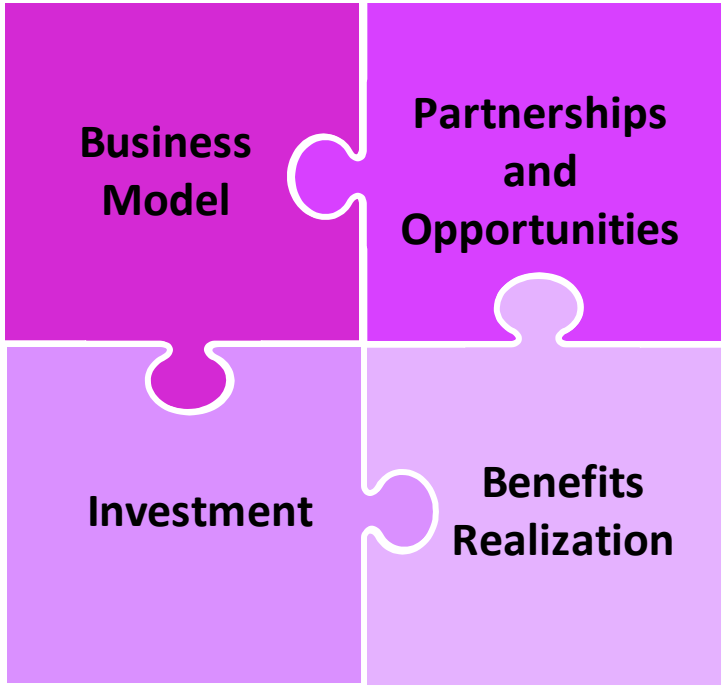
Establishes a robust legal and policy framework that is essential to institute appropriate national geospatial information legislation and policy that enables the availability, accessibility, exchange, application and management of geospatial information.

Objective is to address current legal and policy issues by improving the laws and policies associated with, and impact on, geospatial information management; proactively monitoring the legal and policy environment, particularly with regard to designating official responsibility for the production of data, and with respect to issues raised by emerging technologies and innovative and creative use of geospatial information.

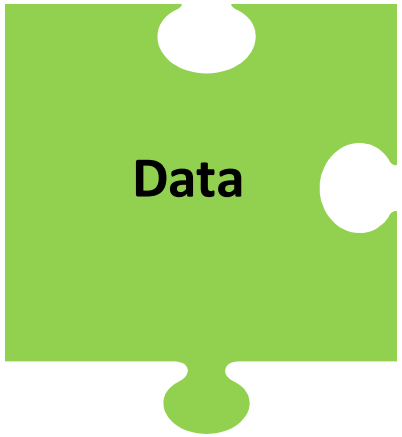
Strategic Pathway 3

Establishes the business model, develops financial partnerships, and identifies the investment needs and funding sources for delivering integrated geospatial information management, as well as recognizing the benefits realization milestones that will achieve and maintain momentum.

Objective is to achieve an understanding of the implementation costs and ongoing financial commitment necessary to deliver integrated geospatial information management that can be sustained and maintained in the longer term.

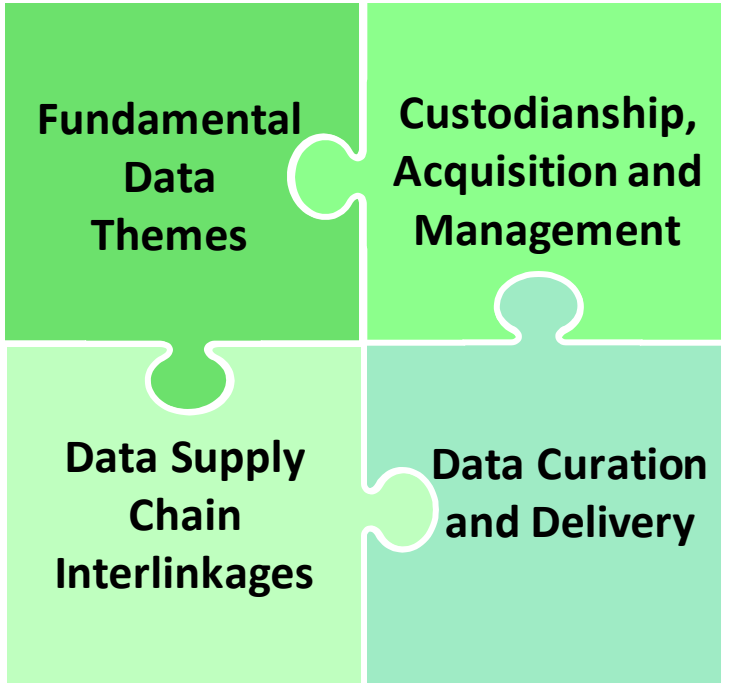


Strategic Pathway 4



Establishes a geospatial data framework and custodianship guidelines for best practice collection and management of integrated geospatial information that is appropriate to cross sector and multidisciplinary collaboration.

Objective is to enable data custodians to meet their data management, sharing and reuse obligations to government and the user community through the execution of well-defined data supply chains for organizing, planning, acquiring, integrating, managing, maintaining, curating, publishing and archiving geospatial information.

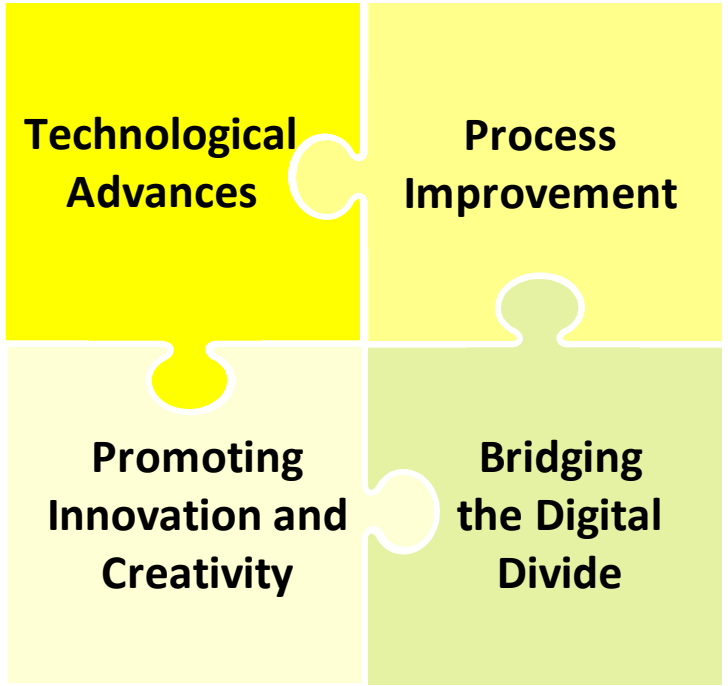


Strategic Pathway 5

Innovation

Recognizes that technology and processes are continuously evolving; creating enhanced opportunities for innovation and creativity that enable governments to quickly bridge the digital divide.

Objective is to stimulate the use of the latest cost-effective technologies, process improvements and innovations so that governments, no matter what their current situation is, may leapfrog to state-of-the-art geospatial information management systems and practices.

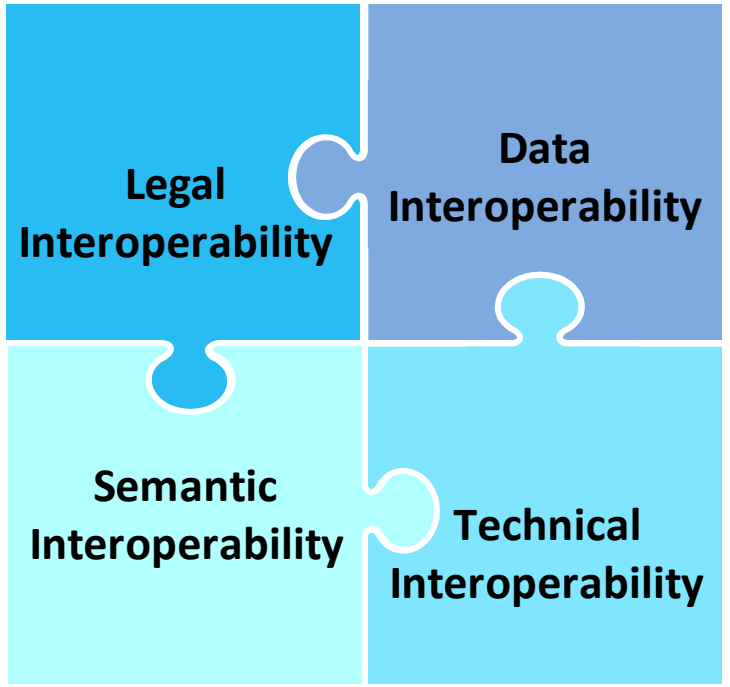


Strategic Pathway 6

Standards

Establishes, and ensures the adoption of, best practice standards and compliance mechanisms that enable legal, data, semantic and technical interoperability, which are fundamental to delivering integrated geospatial information and knowledge creation.

Objective is to enable different information systems to communicate and exchange data, enable knowledge discovery and inferencing between systems using unambiguous meaning, and provide users with lawful access to and reuse of geospatial information.



Strategic Pathway 7

Partnerships

Establishes effective cross-sector and interdisciplinary cooperation, industry and private sector partnerships, and international cooperation as an important premise to developing a sustainable Integrated Geospatial Information Framework.

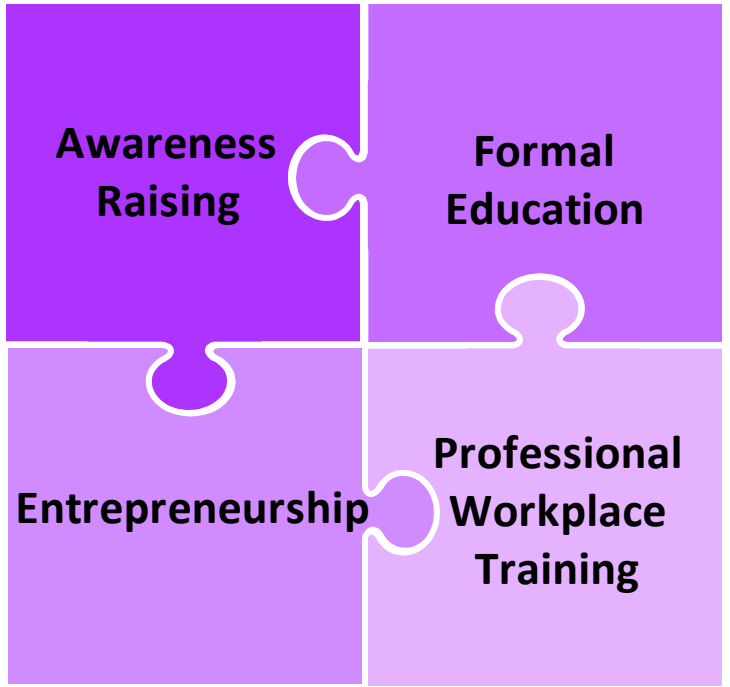
Objective is to create and sustain the value of geospatial information through a culture based on trusted partnerships and strategic alliances that recognize common needs and aspirations, and national priorities.

Strategic Pathway 8

Capacity and Education

Establishes enduring capacity building programs and education systems so that geospatial information management and entrepreneurship can be sustained in the longer term.

Objective is to increase the awareness and level of understanding of geospatial information science. This includes developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities require to utilize geospatial information for decision-making.



Strategic Pathway 9

Communication and Engagement

Recognizes that stakeholders (including the general community) are integral to the implementation of integrated geospatial information management systems and that their buy-in and commitment is critical to success.

Objective is to deliver effective and efficient communication and engagement processes to encourage greater input from stakeholders to achieve transparent decision-making processes when implementing the Geospatial Information Management Framework.

9 Strategic Pathways

Governance

Technology

People

Knowledge ▪ Decisions ▪ Development

Technology ▪ Applications ▪ Value

Users ▪ Citizens ▪ Access

Society ▪ Economy ▪ Environment

Governance and Institutions	Legal and Policy	Financial
Data	Innovation	Standards
Partnerships	Capacity and Education	Communication and Engagement

Anchored by 9 Strategic Pathways, the Framework is a mechanism for articulating and demonstrating national leadership in geospatial information, and the capacity to take positive steps.

Summary

Strengthening geospatial information management will assist countries in bridging the geospatial digital divide, secure socio-economic prosperity, and leave no one behind.

The **Integrated Geospatial Information Framework** is being developed as a reference guide for developing and strengthening arrangements in national geospatial information management. It has been designed specifically for low to middle income countries and small island developing States.