AfricaGIS 2019

Innovations in **Geospatial Technologies** for **Achieving Sustainable Development Goals** in **Africa**

Kigali Conference and Exhibition Village, Rwanda
18 – 22 November 2019

Smart Spatial Strategy Solutions for Sustainable Development

The IGIF: Strengthening Geospatial Information Arrangements for Africa

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…”

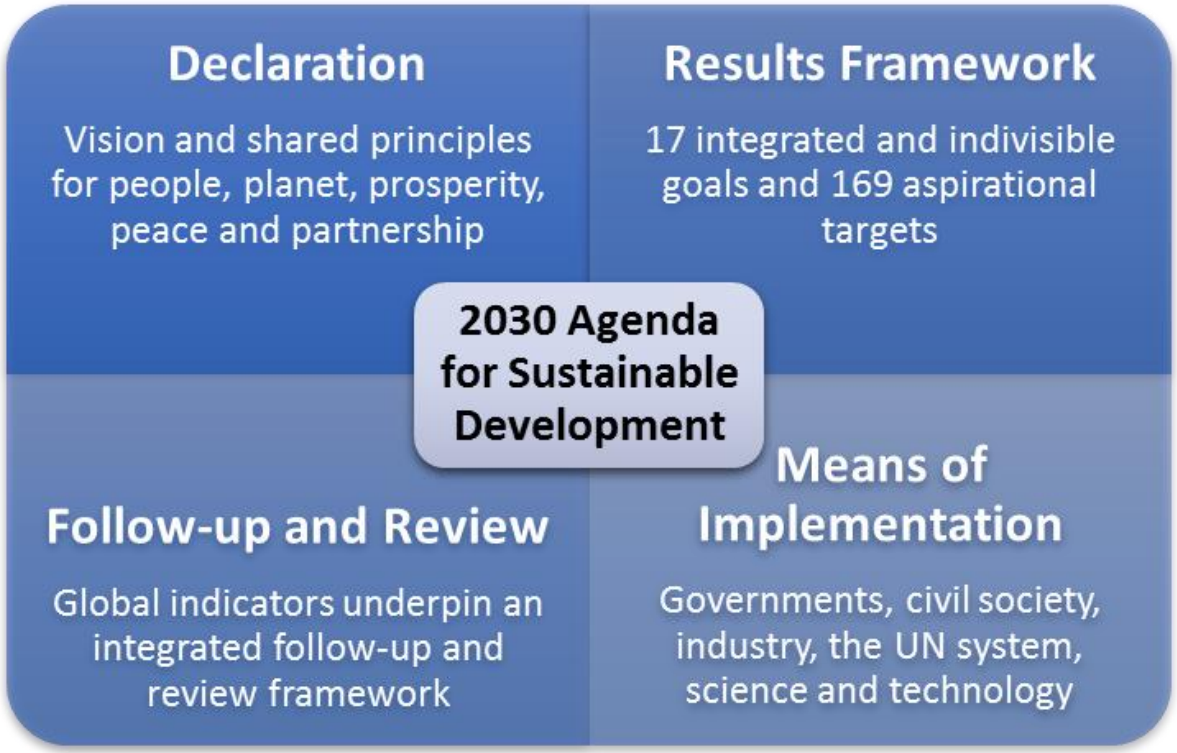
Nancy Tosta, June 2001

Everything that happens…happens somewhere.

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

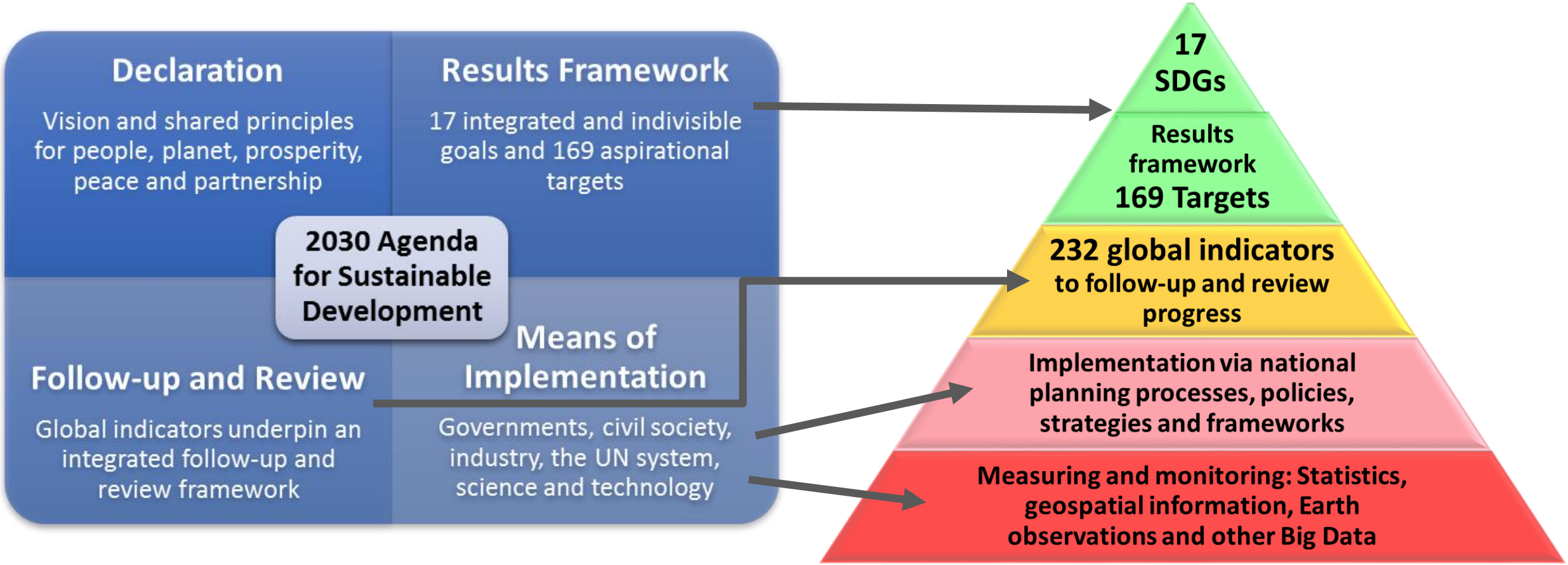
We can do this more today than ever before….which is far less than what we will do tomorrow.

2030 Agenda: Goals, targets, indicators, implementation



The 2030 Agenda is an Integrated Plan of Action structured in four main parts: (i) Vision and principles for transforming our world as set out in the Declaration; (ii) Results framework of 17 SDGs and 169 targets; (iii) Means of implementation through governments, society and global partnership; and (iv) Follow-up and review framework of global indicators.

2030 Agenda: Goals, targets, indicators… and data!!



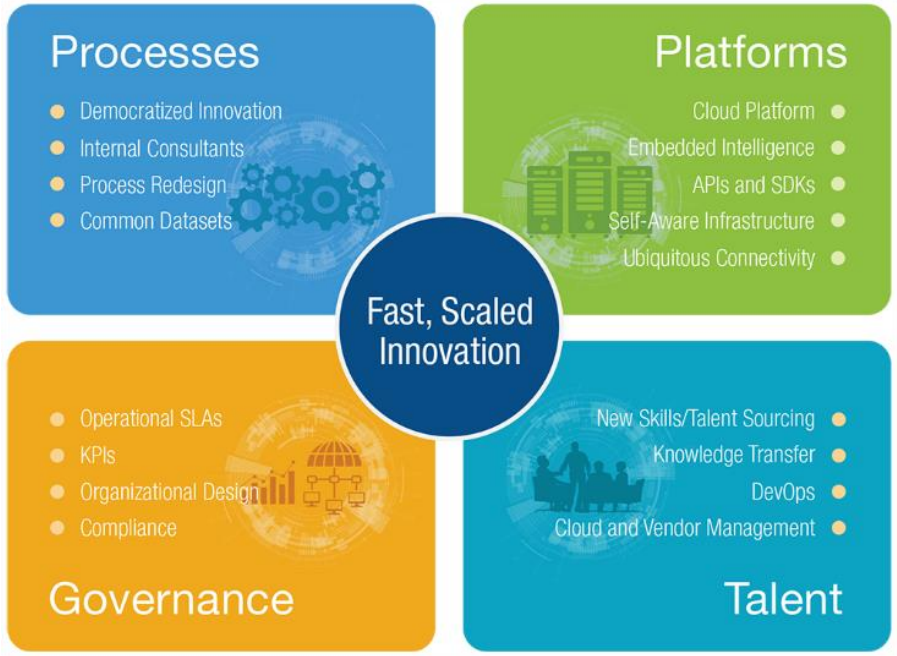
Any national SDG implementations will be sub-optimal without strategies and frameworks to integrate statistics, geospatial information, Earth observations, and other new data into the measuring, monitoring and reporting processes.

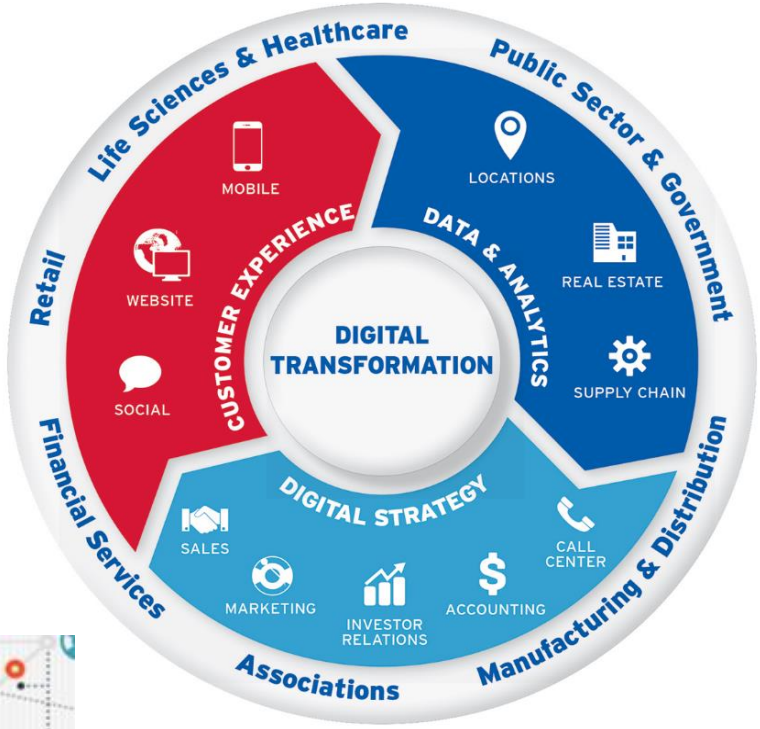
The Sustainable Development Goals Report 2019

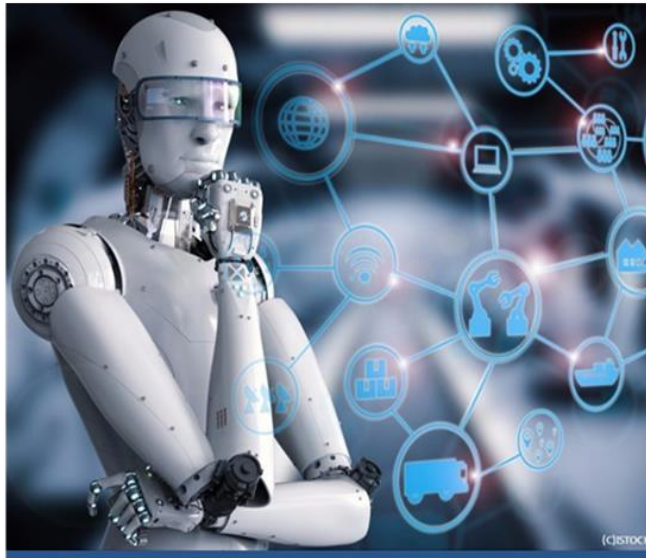
"It is abundantly clear that a much deeper, faster and more ambitious response is needed to unleash the social and economic transformation needed to achieve our 2030 goals. From our advances, we know what works. This report therefore highlights areas that can drive progress across all 17 SDGs: financing; resilience; sustainable and inclusive economies; more effective institutions; local action; better use of data; and harnessing science, technology and innovation with a greater focus on digital transformation. In everything we do, we must diligently ensure that policy choices leave no one behind, and that national efforts are supported by effective international cooperation, grounded in a commitment to diplomacy and crisis prevention"

António Guterres
Secretary-General, United Nations

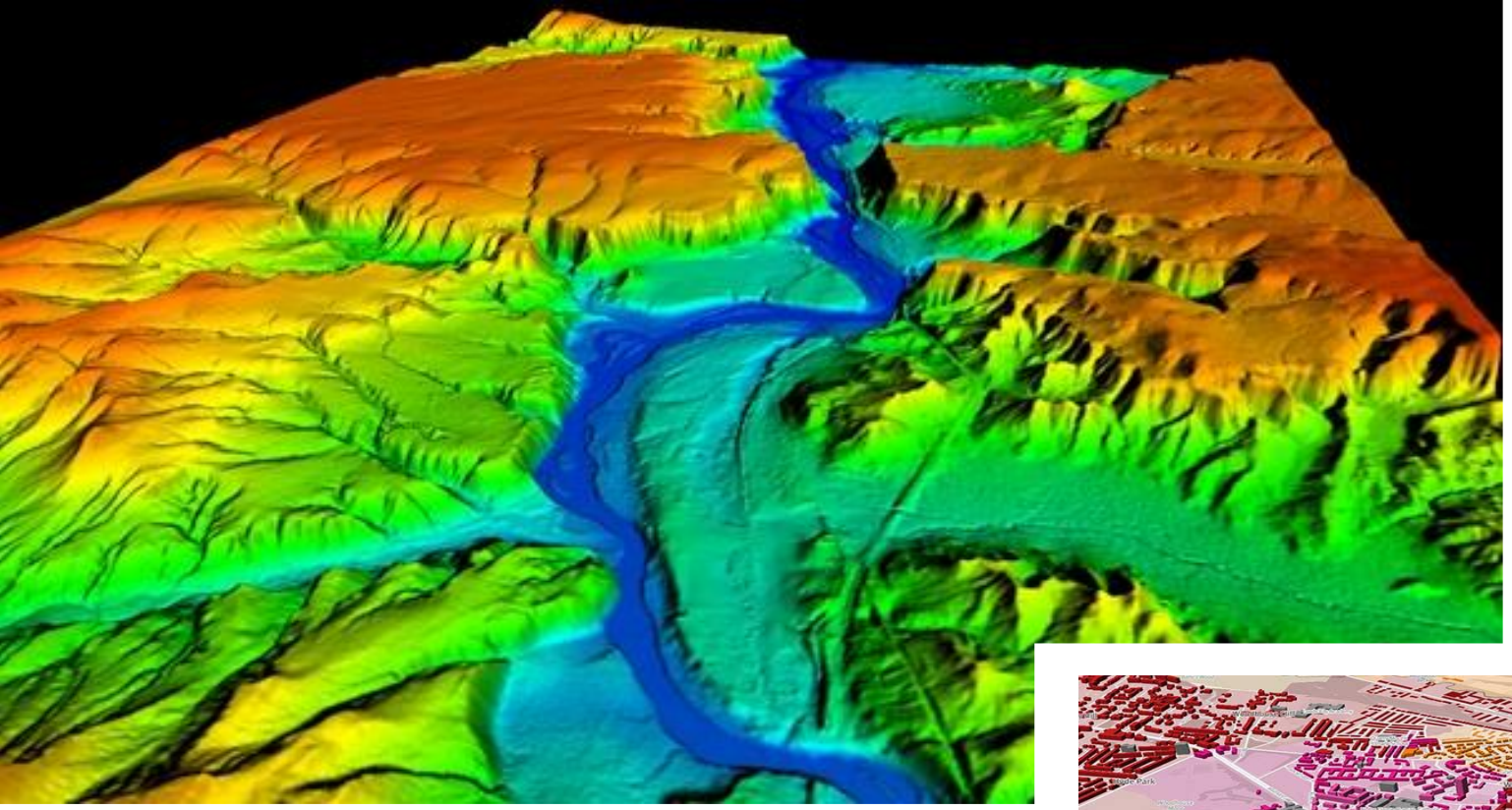
The disruptive nature of digital transformation

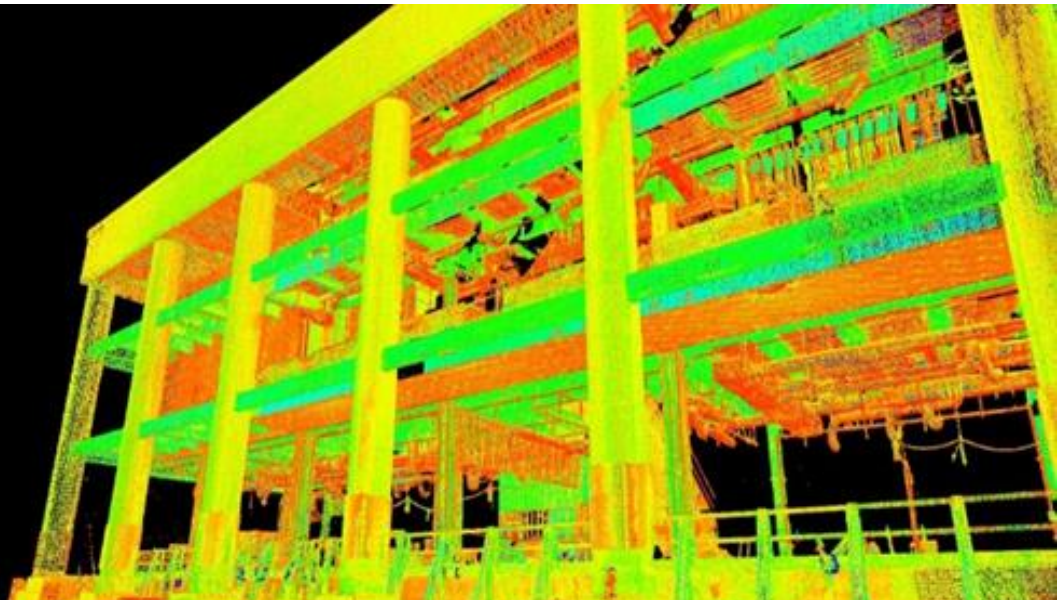






The disruptive nature of digital transformation, technology, innovation, and their exponential impacts, means that society's expectations on how, and at what level of detail, we record what is happening where and when are changing at a rapid pace.

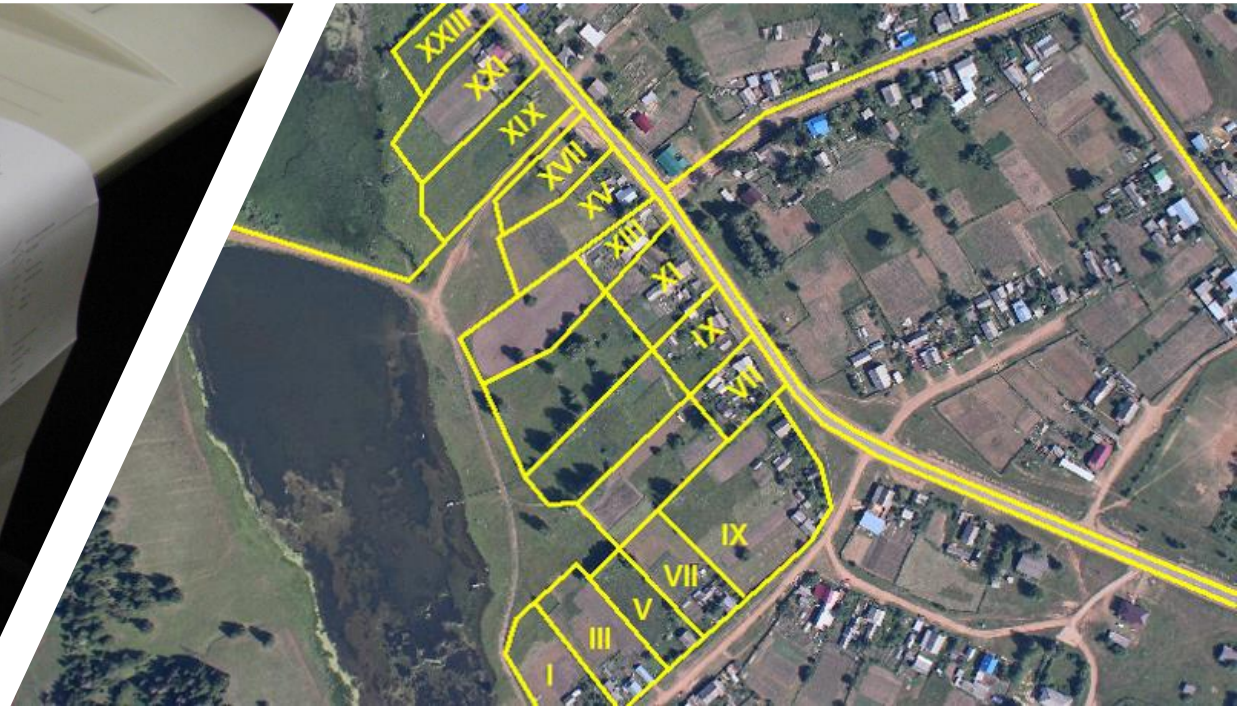




LEEDS
The Leylands
Mabgate
New Town
Quarry Hill
Bank
Steander
Camp Field
Cavalier Hill
Fearn's Island
Sheepscar
Little London
Woodhouse
Woodhouse Carr
Bagby Fields
Burmantofts
Leeds City Bus Station
Leeds College of Building
The Ruth Gorse Academy
Mount St Mary's Roman Catholic High School
GREAT WILSON STREET
A64(M)
A58(M)

MALAWI LAND COVER 2010

HAWK-EYE Cx 36
contex


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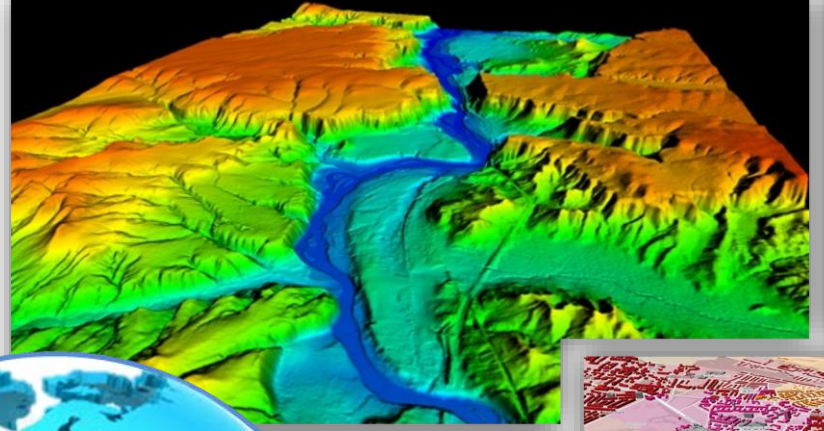
VII
IX
VII
V
III
I

“Within the past generation, hundreds of millions of people have emerged from extreme poverty, and access to education has greatly increased for both boys and girls. Further, the spread of information and communications technology and global inter-connectedness has great potential to accelerate human progress, to bridge the digital divide, to develop knowledge societies, and scientific and technological innovation”

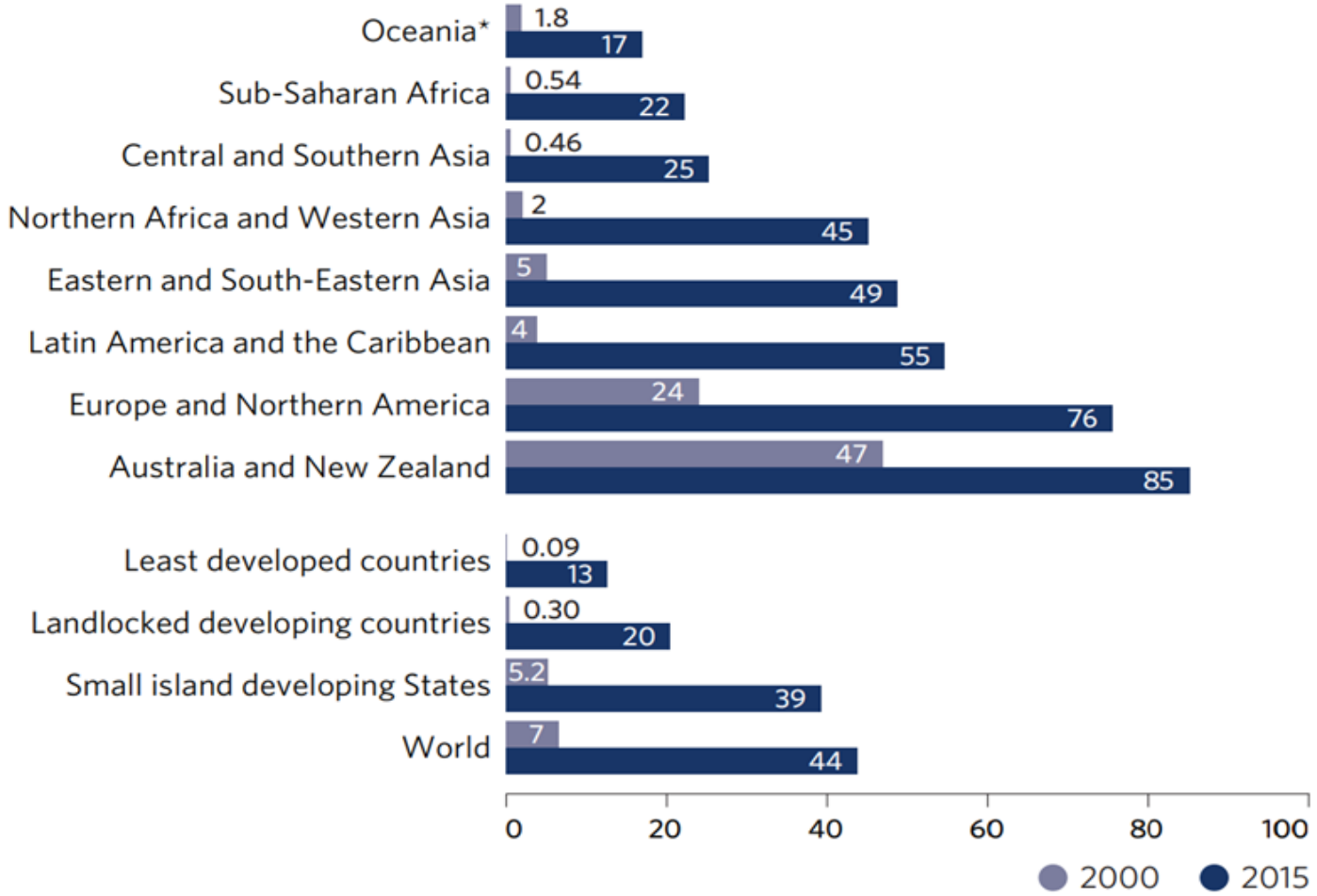
2030 Agenda for Sustainable Development

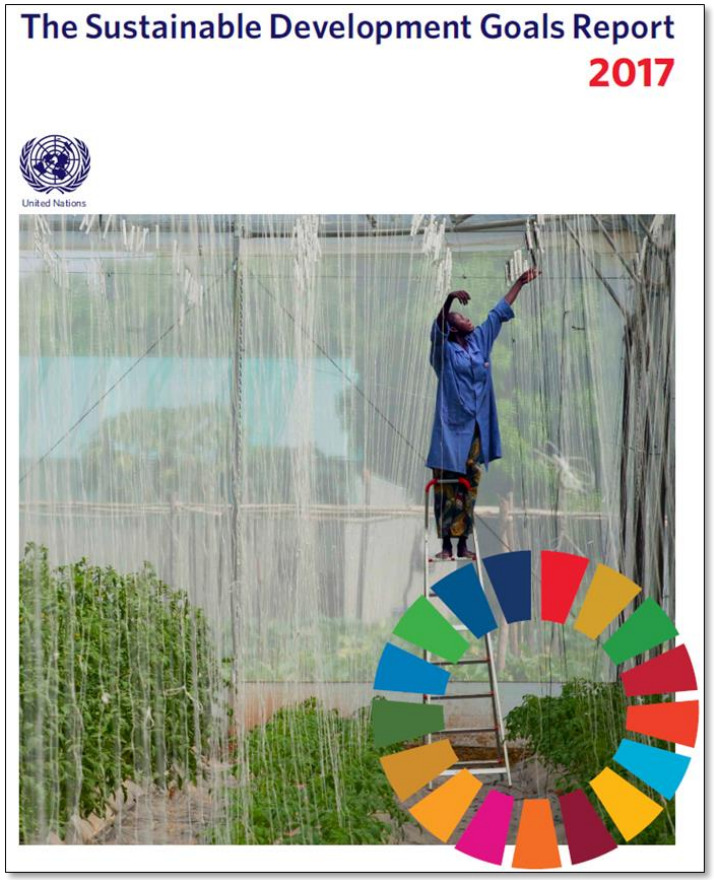


Bridging the Geospatial Digital Divide

ng and exploiting the new data needs, nation systems, analytics and associated nabling technologies and tools to support the implementation of the SDGs is going to take strategic policy leadership and transformational change - a digital transformation that is able to bridge the ‘geospatial digital divide’ which continues to inhibit development progress for developing countries.

Greg Scott, November 2016





In 2016 fixed-broadband penetration reached 30% in developed countries, but only 8.2% and 0.8% in developing regions and least developed countries (LDCs). In the developed regions, about 80% of the population are online, compared to 40% in developing regions and 15% in LDCs. **Although Internet use in LDCs has tripled over the last 5 years, the percentage of users today only reaches the level enjoyed by developed countries in 1998.**

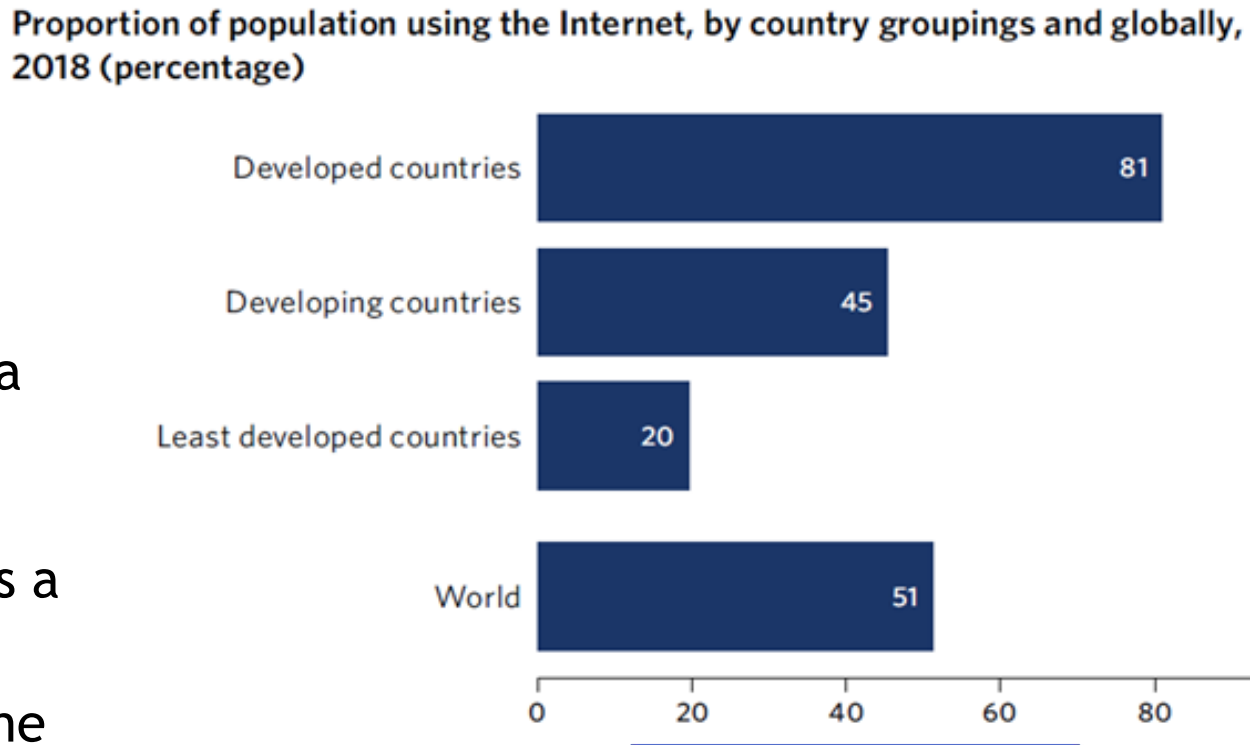
Support for implementing the SDGs is gaining momentum, but major challenges remain. A growing share of the global population has access to the Internet, yet the digital divide persists.

The Internet can be a gateway to development, and a means of implementation for many of the SDGs.

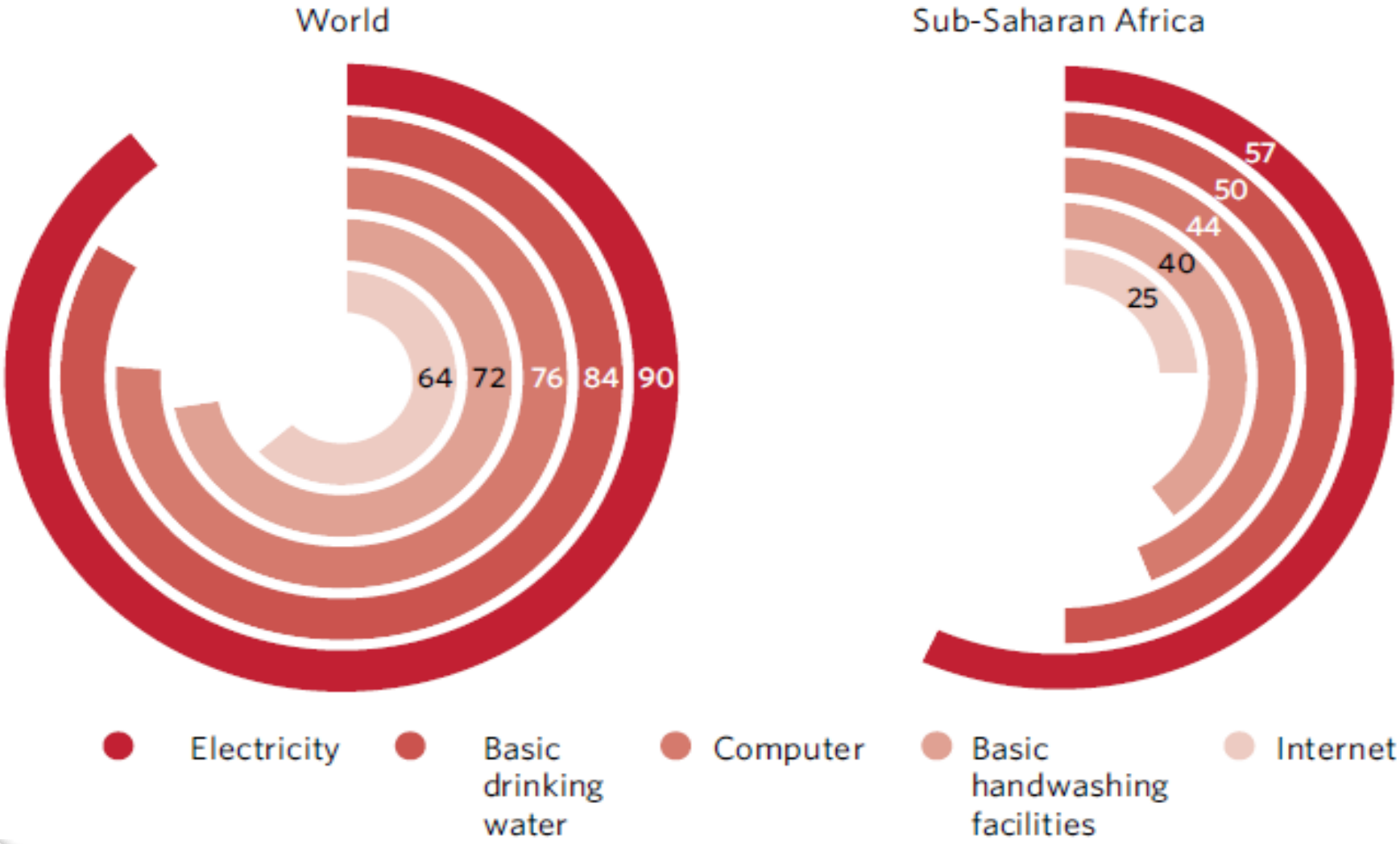
In 2018, more than half the world's population (3.9 billion) used the Internet – an important step towards a more inclusive global information society.

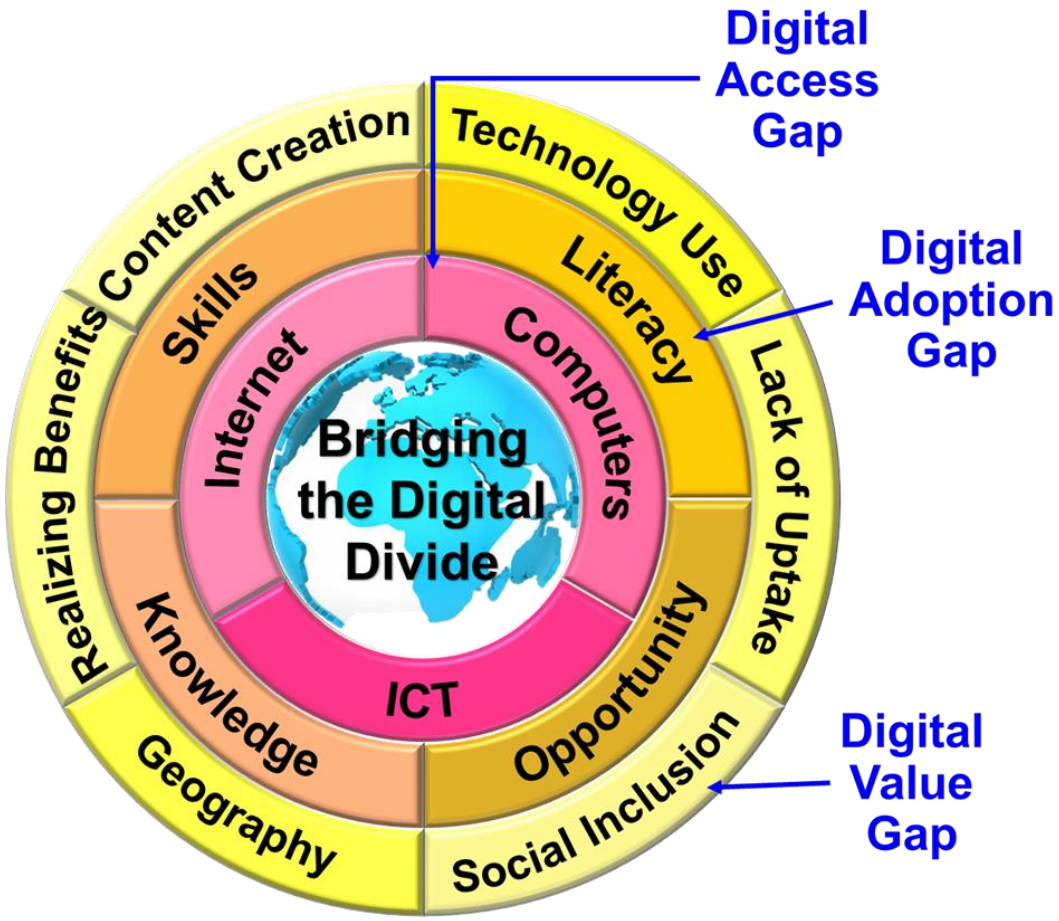
Over 80% of people in developed countries were online in 2018 compared to 45% in developing countries, and only 20% in the LDCs.

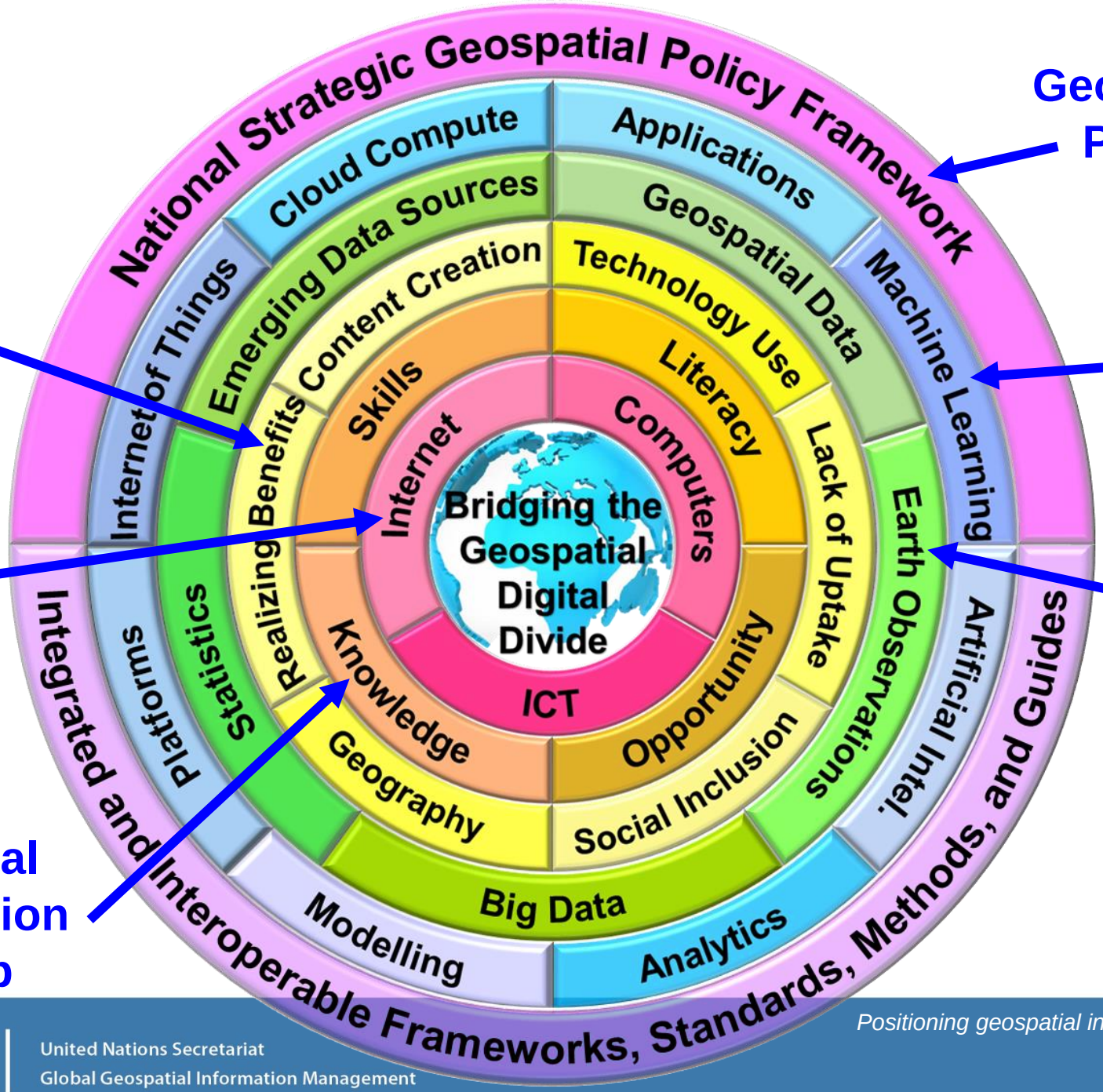
Access to broadband networks is believed to have a significant impact on global economic output. An increase of 1% in fixed broadband penetration equates with an average rise of 0.08% in global GDP. The impact is higher in developed countries than in developing countries.



Proportion of schools with access to basic school resources globally and in sub-Saharan Africa, upper secondary, 2017 (percentage)




Digital Access Gap
Digital Adoption Gap
Digital Value Gap
Content Creation
Technology Use
Literacy
Skills
Internet
Computers
Realizing Benefits
Lack of Uptake
Bridging the Digital Divide
Knowledge
ICT
Opportunity
Geography
Social Inclusion


National Strategic Geospatial Policy Framework
Integrated and Interoperable Frameworks, Standards, Methods, and Guides
Cloud Compute
Applications
Emerging Data Sources
Geospatial Data
Internet of Things
Machine Learning
Content Creation
Technology Use
Benefits
Literacy
Skills
Lack of Uptake
Internet
Computers
Bridging the Geospatial Digital Divide
Realizing
Earth Observations
Statistics
Artificial Intel.
Platforms
Knowledge
Opportunity
ICT
Geography
Social Inclusion
Big Data
Modelling
Analytics
Geospatial Policy Gap
Geospatial Technology Gap
Data Ecosystem Gap
Digital Value Gap
Digital Access Gap
Digital Adoption Gap

“develop an overarching Geospatial Framework……”

“prepare and implement country level Action Plans…..”

ROADMAP FOR COLLABORATION

BETWEEN

WORLD BANK’S GLOBAL PRACTICE ON SOCIAL, URBAN AND RURAL DEVELOPMENT, AND RESILIENCE

AND

UNITED NATIONS STATISTICS DIVISION

TO ASSIST COUNTRIES TO BRIDGE GEOSPATIAL DIGITAL DIVIDE

The Integrated Geospatial Information Framework provides a basis and guide for developing, integrating and strengthening geospatial information management.

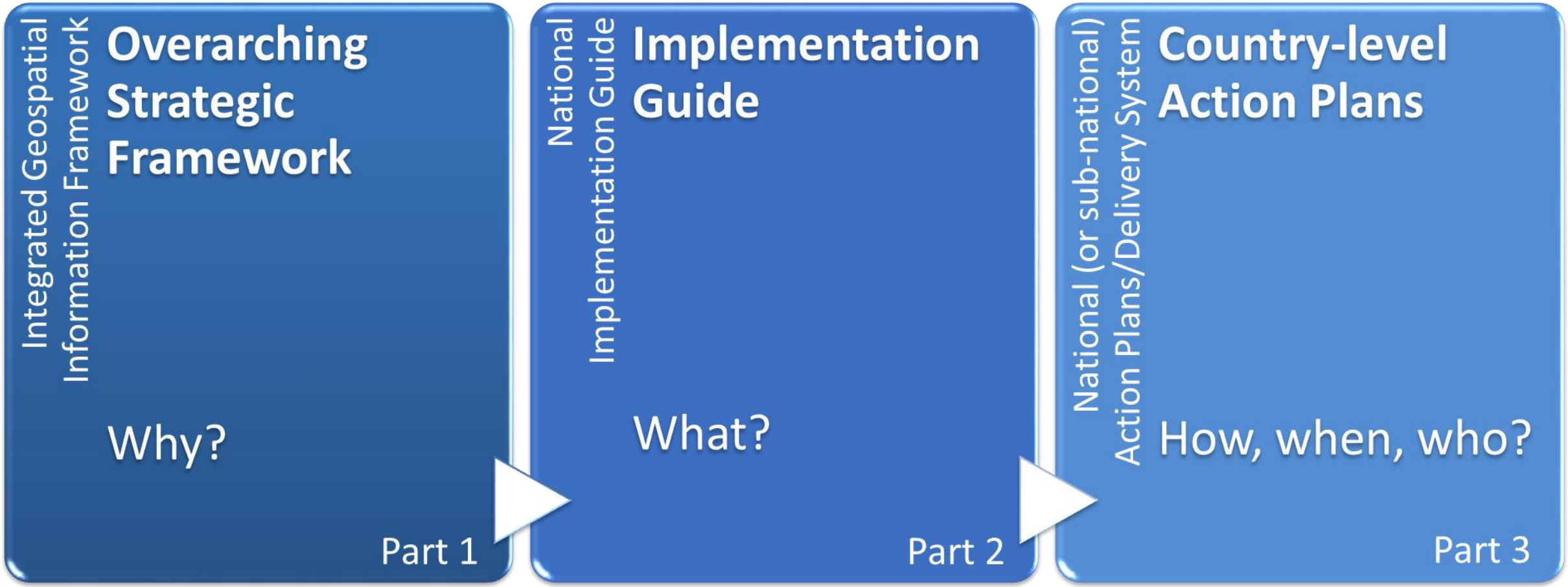
INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN NATIONAL GEOSPATIAL INFORMATION MANAGEMENT

PART 1: OVERARCHING STRATEGIC FRAMEWORK

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

http://ggim.un.org/UN-GGIM-Intergrated-geospatial-information-framework/



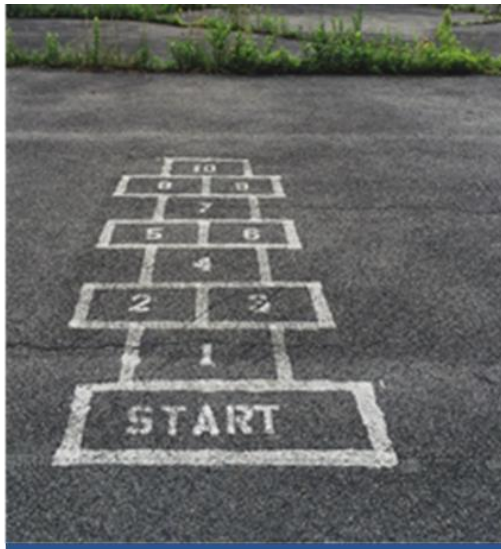
Part 1: Overarching Strategic Framework – **WHY** geospatial information management needs to be strengthened.

Part 2: Implementation Guide – **WHAT** actions can be taken to strengthen geospatial information management.

Part 3: Country-level Action Plans – **HOW** the actions will be carried out, **WHEN** and by **WHOM**.

IGIF: Overarching Strategic Framework

- A forward-looking Framework built on national needs and circumstances.
- Provides the overarching strategic messages and integrated national framework, 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.
- The Framework achieves 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 Overarching Strategic 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.

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.

STRATEGIC DRIVERS

National Development Agenda ● National Strategic Priorities ● National Transformation Programme ● Community Expectations ● Multilateral trade agreements ● Transforming our World: 2030 Agenda for Sustainable Development ● New Urban Agenda ● Sendai Framework for Disaster Risk Reduction 2015–2030 ● Addis Ababa Action Agenda ● Small Island Developing States Accelerated Modalities of Action (SAMOA Pathway) ● United Nations Framework Convention on Climate Change (Paris Agreement) ● United Nations Ocean Conference: Call for Action

UNDERPINNING PRINCIPLES

Strategic Enablement	Transparent and Accountable	Reliable, Accessible and Easily Used	Collaboration and Cooperation	Integrative Solution	Sustainable and Valued	Leadership and Commitment

GOALS

Effective Geospatial Information Management	Increased Capacity, Capability and Knowledge Transfer	Integrated Geospatial Information Systems and Services	Economic Return on Investment
Sustainable Education and Training Programs	International Cooperation and Partnerships Leveraged	Enhanced National Engagement and Communication	Enriched Societal Value and Benefits

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.

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.

9 Strategic Pathways

Governance →

Technology →

People →

Knowledge ▪ *Decisions* ▪ *Development*

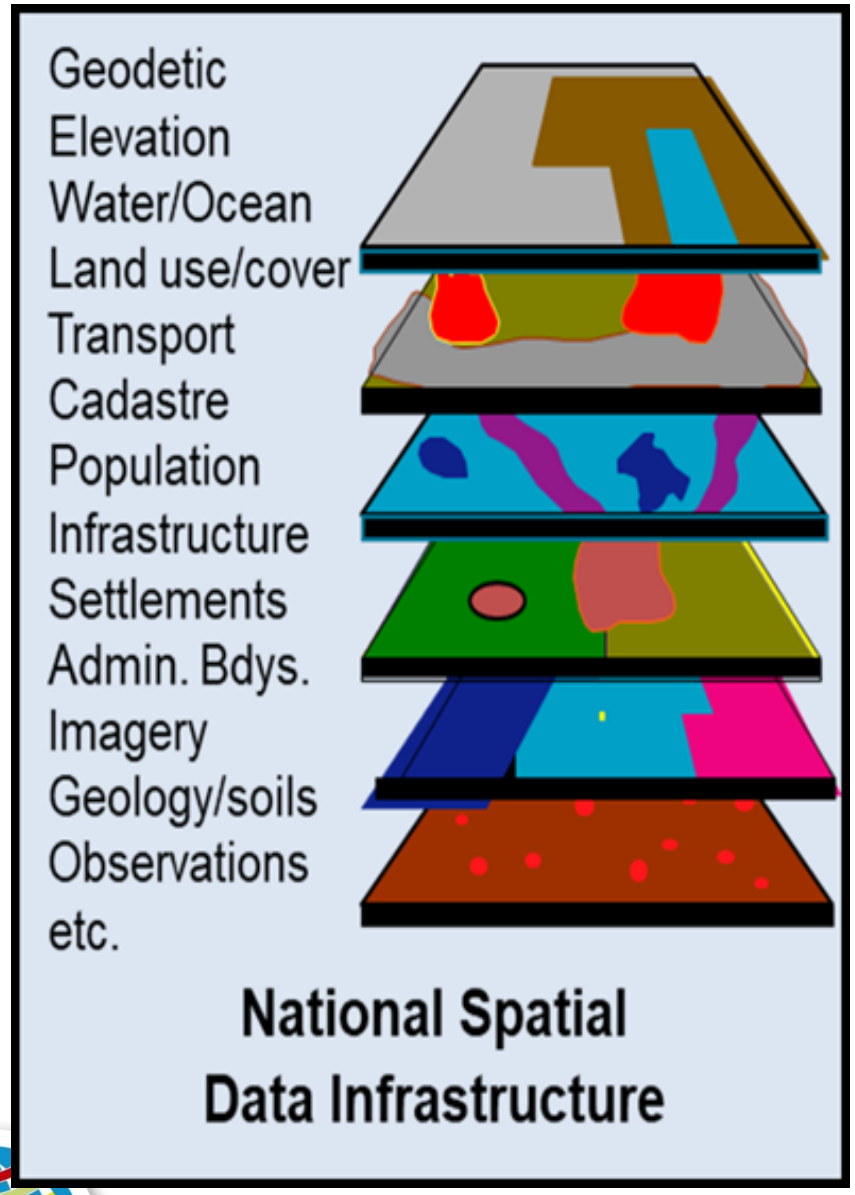
Value ▪ *Applications* ▪ *Technology*

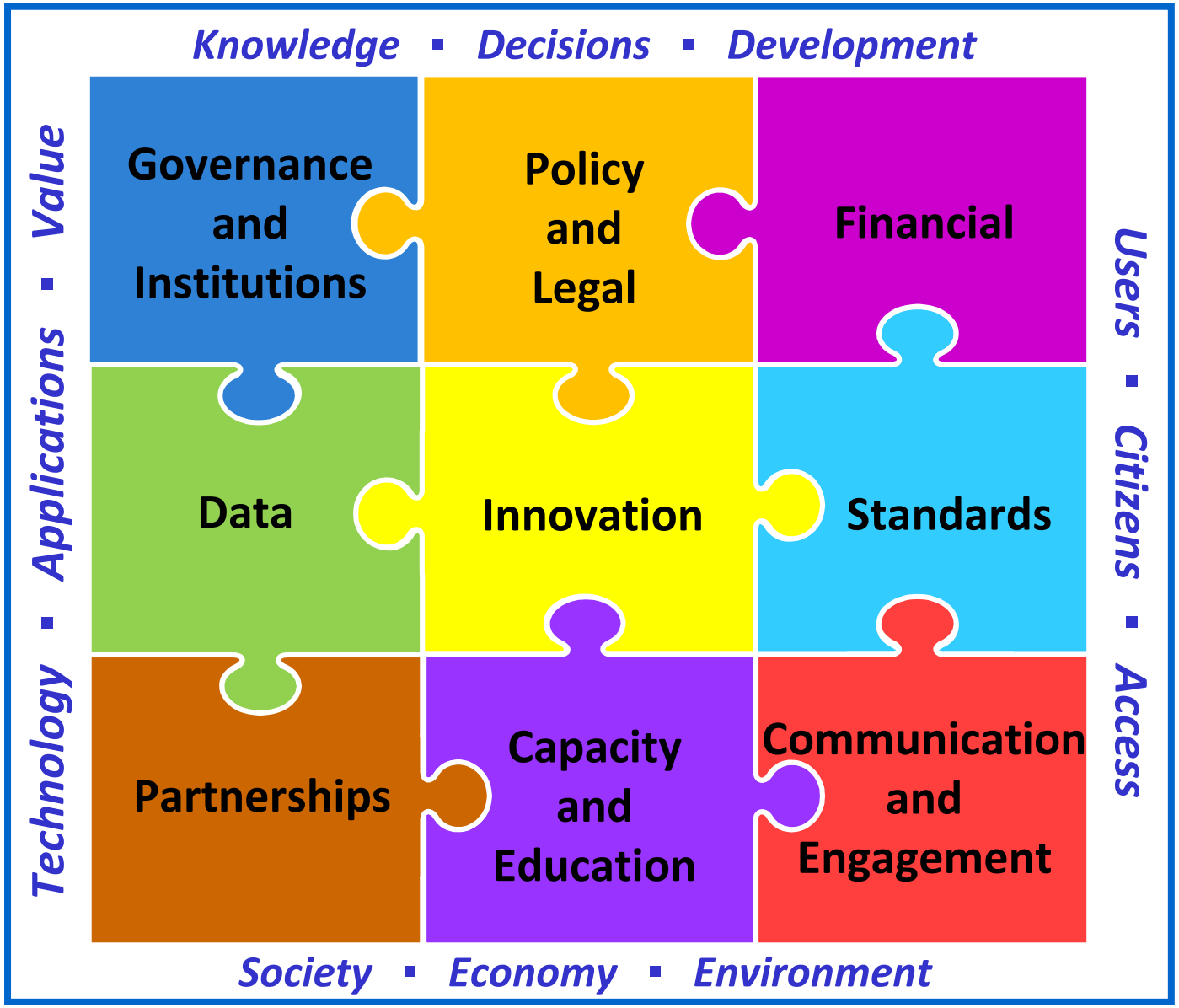
Users ▪ *Citizens* ▪ *Access*

Society ▪ *Economy* ▪ *Environment*

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

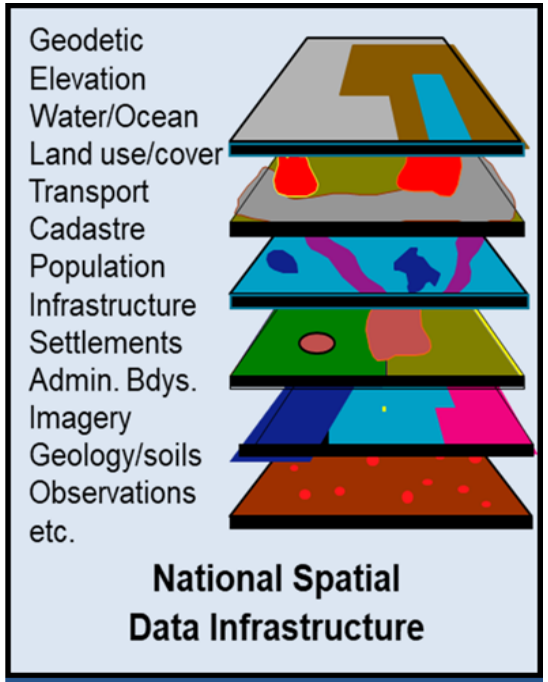
Anchored by 9 Strategic Pathways, the Framework is a mechanism for articulating and demonstrating national leadership in geospatial information, and the capacity to take positive steps.


Geodetic
Elevation
Water/Ocean
Land use/cover
Transport
Cadastre
Population
Infrastructure
Settlements
Admin. Bdys.
Imagery
Geology/soils
Observations
etc.
National Spatial
Data Infrastructure


Knowledge ▪ Decisions ▪ Development
Governance and Institutions
Policy and Legal
Financial
Data
Innovation
Standards
Partnerships
Capacity and Education
Communication and Engagement
Technology ▪ Applications ▪ Value
Users ▪ Citizens ▪ Access
Society ▪ Economy ▪ Environment

IGIF: Linkages to the NSDI

- The principal focus of NSDIs is geospatial data. What is needed to establish or maintain an integrated national geospatial program is not sufficiently addressed by the NSDI.
- While an NSDI is a core and valuable component, a national geospatial program is much more than the data. The IGIF defines each of the interconnected 9 Strategic Pathways required for an integrated national geospatial program.
- Building on the existing benefits and practices of NSDIs, the IGIF is more comprehensive than the traditional efforts of NSDIs.
- What is the driver for why we have the IGIF rather than the NSDI? More diverse data types and needs that are now more relevant and dependent on geospatial data than were originally considered. This is a reflection of both technology evolution and the new and emerging data ecosystem that is more dependent on a systems approach to 'location' and 'integration'.



The Framework will augment and build upon existing NSDI arrangements, providing a holistic, integrated national information system-of-systems approach to the data life cycle

9 Strategic Pathways

Governance

Technology

People

Knowledge ▪ Decisions ▪ Development

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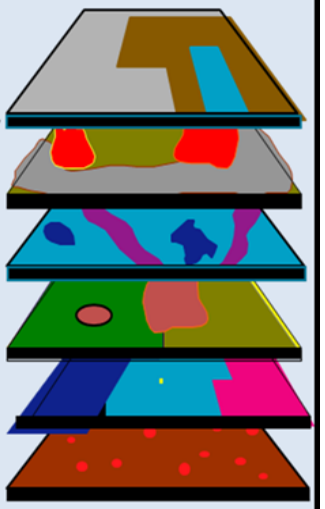
Governance and Institutions	Policy and Legal	Financial
Data	Innovation	Standards
Partnerships	Capacity and Education	Communication and Engagement



National Spatial Data Infrastructure

The Framework will augment and build upon existing NSDI arrangements, providing a holistic, integrated national information system-of-systems approach to the data life cycle

9 Strategic Pathways

Governance

Technology

People

Knowledge ▪ Decisions ▪ Development

Value ▪ Applications ▪ Technology

Users ▪ Citizens ▪ Access

Society ▪ Economy ▪ Environment

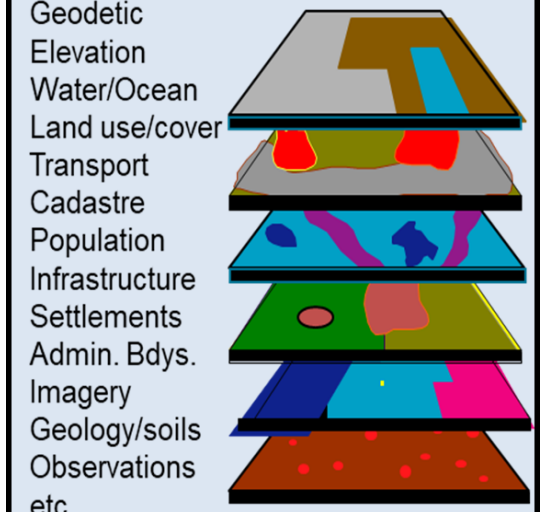
Institutions

Policy

Data

Standards

Partnerships

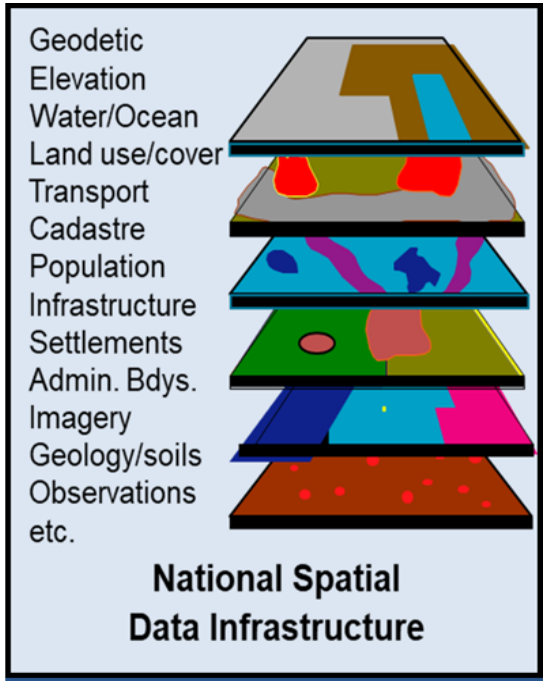


National Spatial Data Infrastructure

"The technology, policies, standards, human resources and related activities to acquire, process, distribute, use, maintain and preserve spatial data" (OMB 2002).

IGIF: Linkages to National Priorities

- Typically, efforts at achieving an NSDI have focused on **creating an NSDI rather than developing national geospatial capacity** to address priority societal, economic and environmental decisions. Efforts have not been integrated into the broader requirements and mandates of government.
- The IGIF, as an integrated framework, allows those countries that have already implemented NSDI capabilities to build upon this existing progress and investment.
- More importantly, the IGIF offers a new paradigm and mechanism to further strengthen nationally integrated geospatial information management and the desired transformational change that is required.
- The approach, and comprehensive guidance for countries, recognizes the importance of capacity and capability development from the outset, beginning with the process to develop and prepare a Country-level Action Plan, a process that is participatory and inclusive for whole-of-government.



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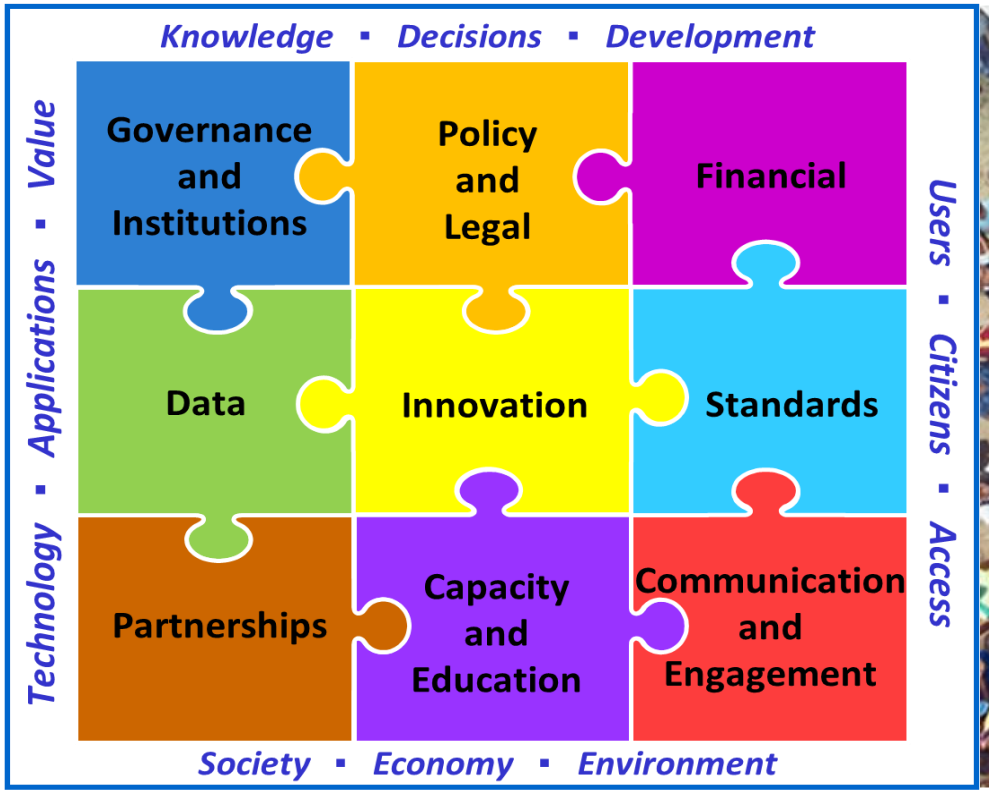
Summary



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 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. But, it is also being used to improve and coordinate activities to achieve alignment between and across existing national agency capabilities and NSDIs in developed countries.