**International Workshop and Seminar on United Nations Global Geospatial Information Management**
**17-22 October 2019, Deqing, Zhejiang Province, China**

# The Data Ecosystem for Sustainable Development

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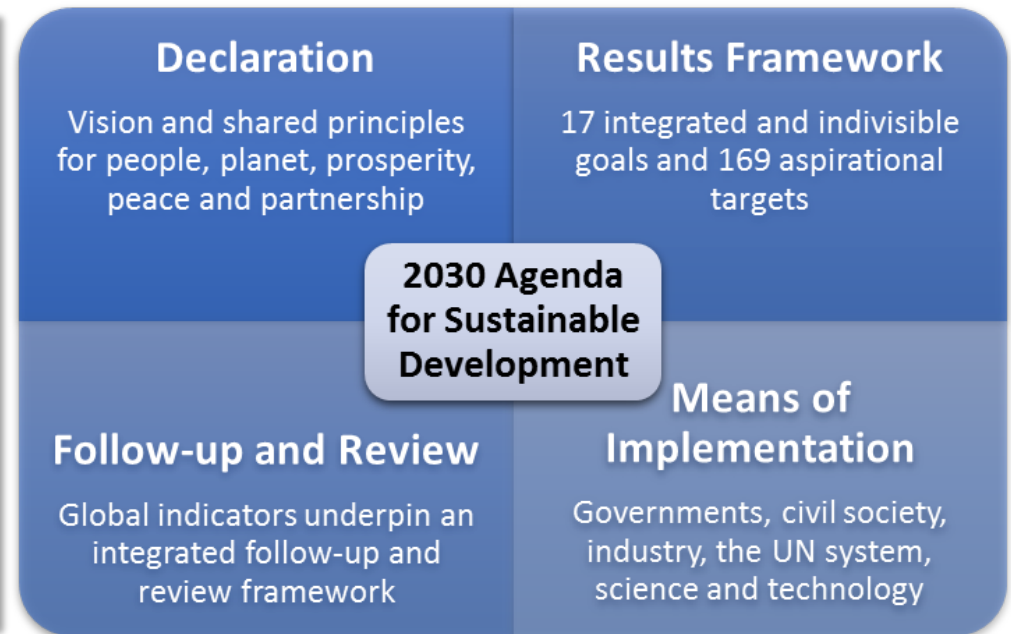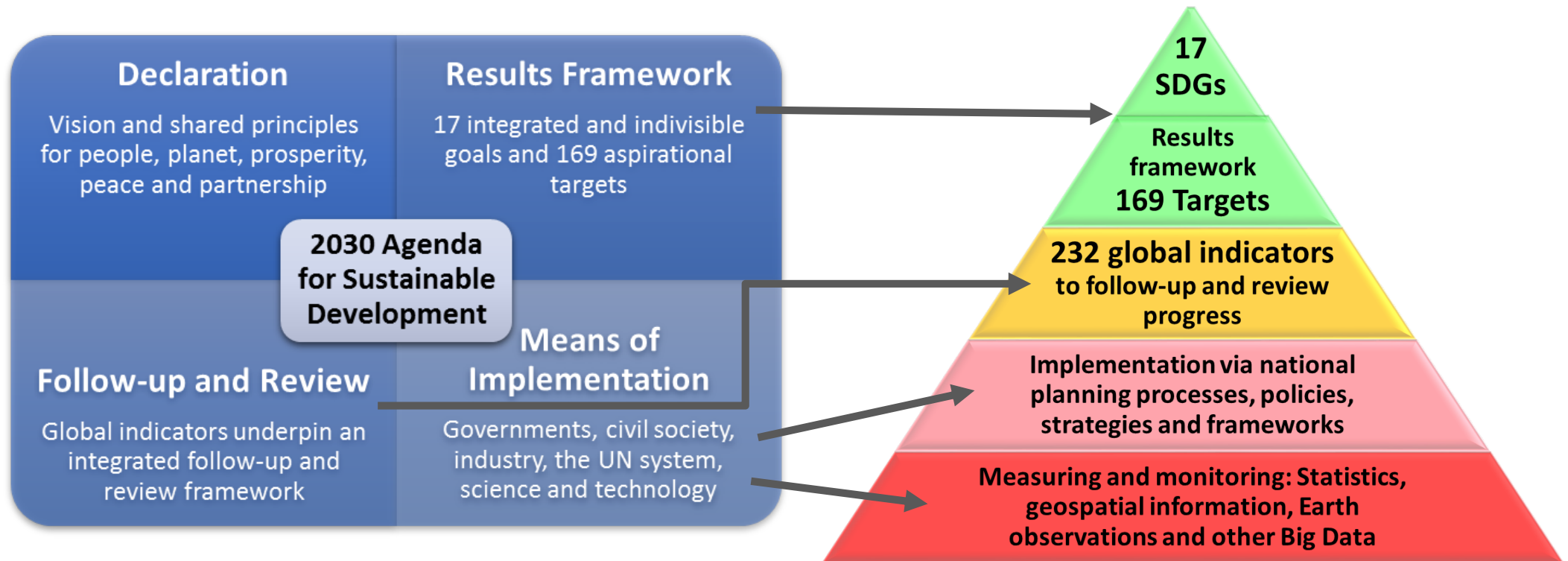Department of Economic and Social Affairs
United Nations, New York

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# 2030 Agenda: Goals, targets, indicators, implementation



**Declaration**
Vision and shared principles for people, planet, prosperity, peace and partnership

**Results Framework**
17 integrated and indivisible goals and 169 aspirational targets

**2030 Agenda for Sustainable Development**

**Follow-up and Review**
Global indicators underpin an integrated follow-up and review framework

**Means of Implementation**
Governments, civil society, industry, the UN system, science and technology

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!!

**Declaration**
Vision and shared principles for people, planet, prosperity, peace and partnership

**Results Framework**
17 integrated and indivisible goals and 169 aspirational targets

**2030 Agenda for Sustainable Development**

**Follow-up and Review**
Global indicators underpin an integrated follow-up and review framework

**Means of Implementation**
Governments, civil society, industry, the UN system, science and technology

**17 SDGs**

**Results framework 169 Targets**

**232 global indicators** to follow-up and review progress

**Implementation via national planning processes, policies, strategies and frameworks**

**Measuring and monitoring: Statistics, geospatial information, Earth observations and other Big 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. <u>An integrated data ecosystem is needed</u>.
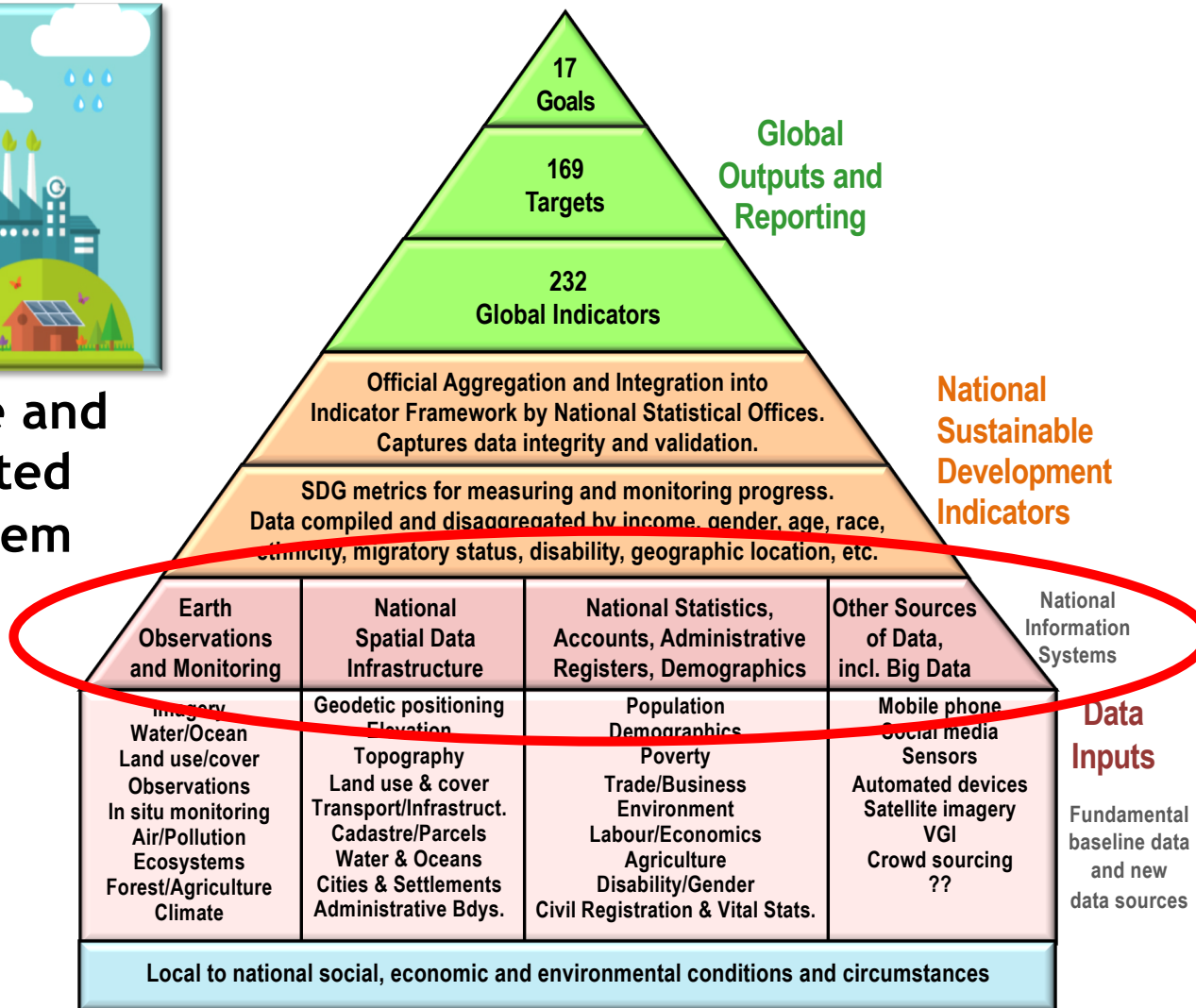
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An integrative and interconnected data ecosystem

| 17 Goals | | | Global Outputs and Reporting |
| 169 Targets | | | |
| 232 Global Indicators | | | |
| Official Aggregation and Integration into Indicator Framework by National Statistical Offices. Captures data integrity and validation. | | | National Sustainable Development Indicators |
| SDG metrics for measuring and monitoring progress. Data compiled and disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location, etc. | | | |
| Earth Observations and Monitoring | National Spatial Data Infrastructure | National Statistics, Accounts, Administrative Registers, Demographics | Other Sources of Data, incl. Big Data | National Information Systems |
| Imagery Water/Ocean Land use/cover Observations In situ monitoring Air/Pollution Ecosystems Forest/Agriculture Climate | Geodetic positioning Elevation Topography Land use & cover Transport/Infrastruct. Cadastre/Parcels Water & Oceans Cities & Settlements Administrative Bdys. | Population Demographics Poverty Trade/Business Environment Labour/Economics Agriculture Disability/Gender Civil Registration & Vital Stats. | Mobile phone Social media Sensors Automated devices Satellite imagery VGI Crowd sourcing ?? | Data Inputs

Fundamental baseline data and new data sources |
| Local to national social, economic and environmental conditions and circumstances | | | | |

There needs to be more institutional collaboration, coordination and integration across the various national data frameworks, information systems and platforms.

# The Sustainable Development Goals Report 2019

_"It is abundantly clear that <u>a much deeper, faster and more ambitious response is needed</u> 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; <u>better use of data</u>; and <u>harnessing science, technology and innovation</u> with a greater focus on <u>digital transformation</u>. 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


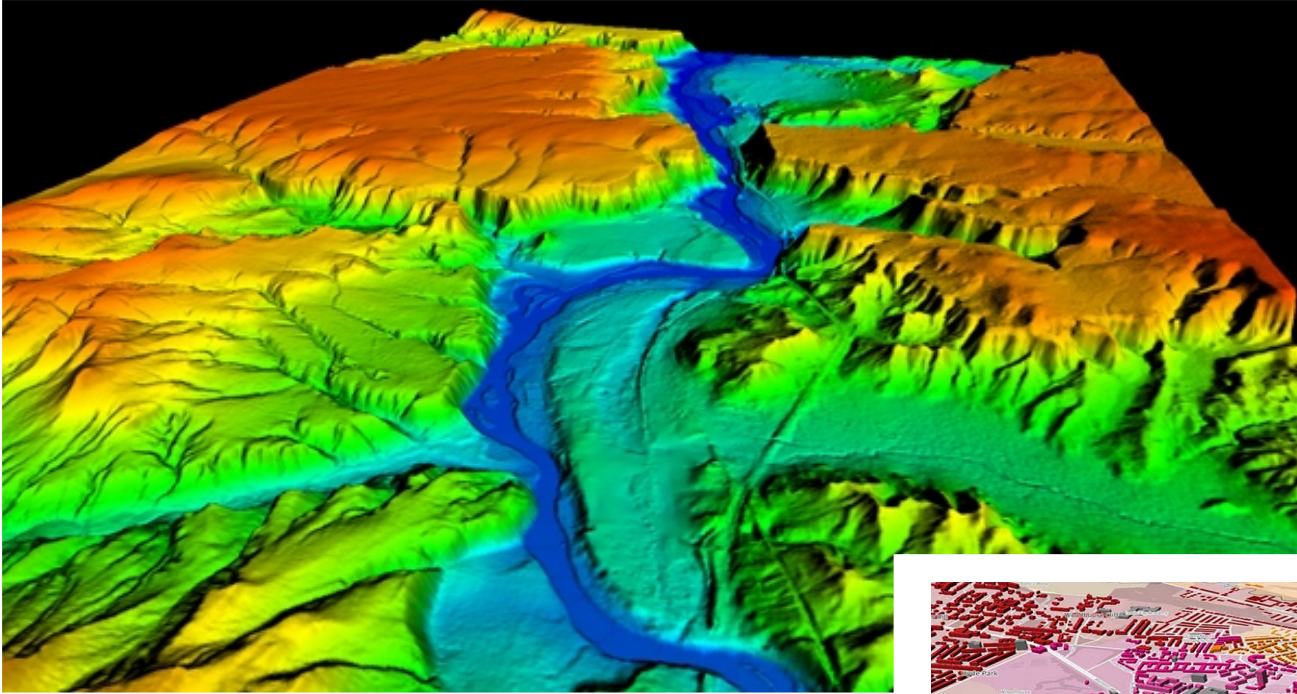The Sustainable Development Goals Report 2019 — United Nations

# The disruptive nature of digital transformation
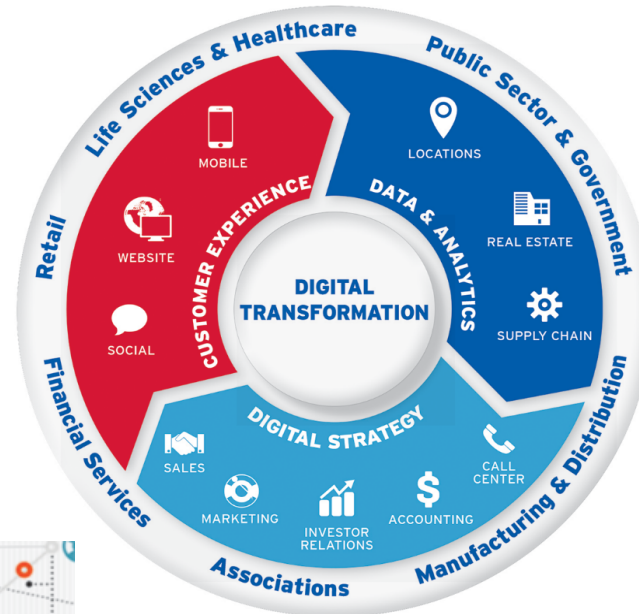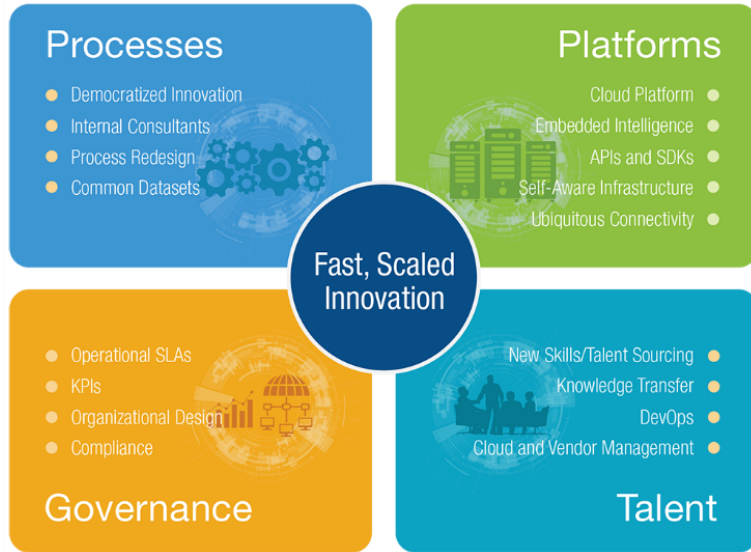


The disruptive nature of digital transformation, technology, innovation, and their exponential impacts, means that society's expectations on how, and at what level of detail, we record what is happening where and when are changing at a rapid pace.
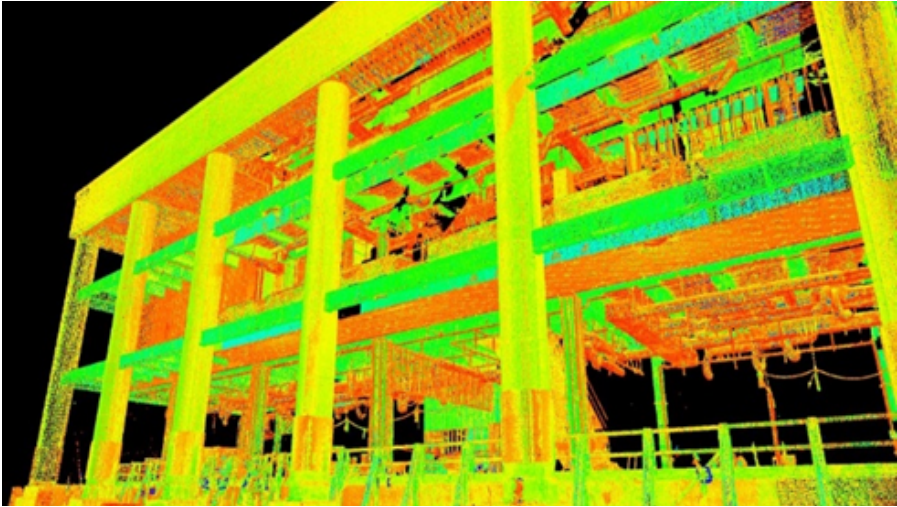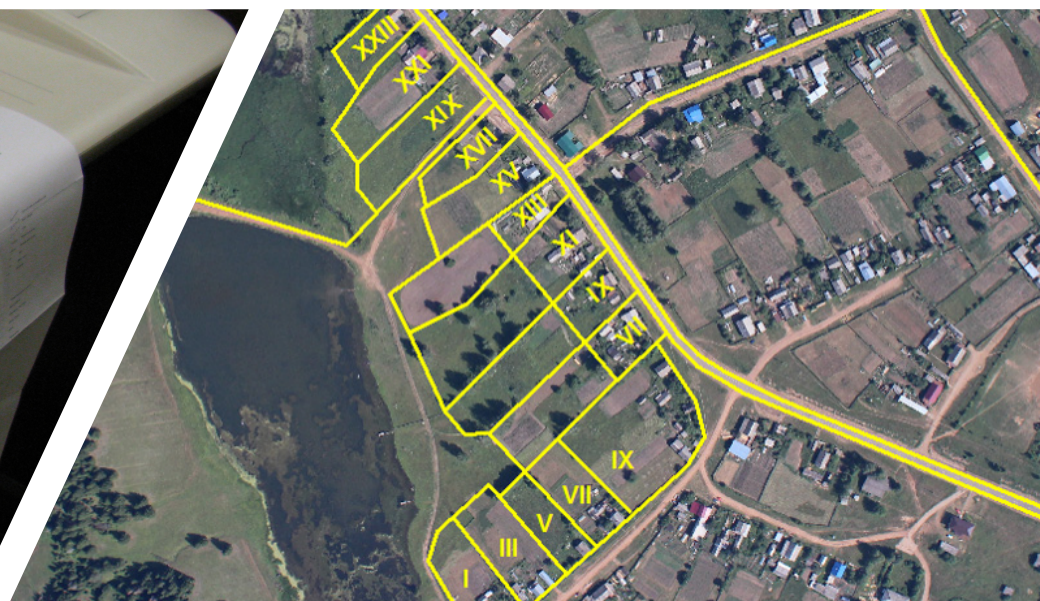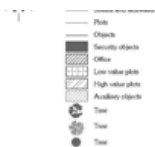
# The disruptive nature of digital transformation

"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 a 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 all developing countries.

Greg Scott, November 2016
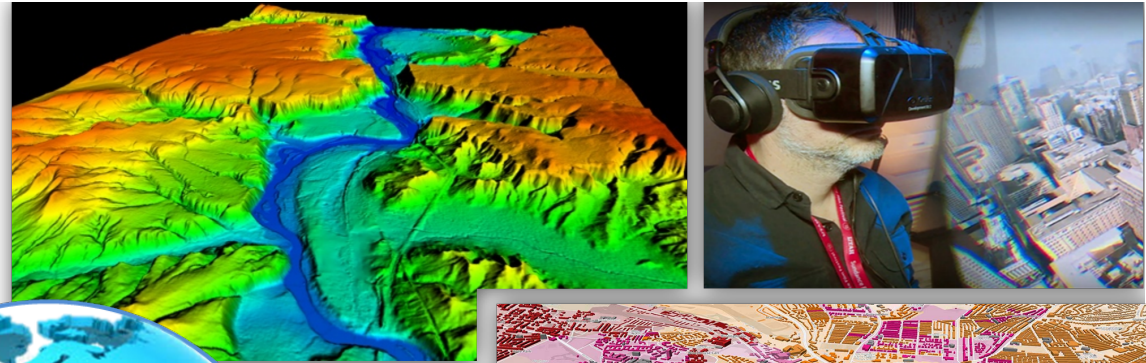
"develop an overarching Geospatial Framework……"

"prepare and implement country level Action Plans….."

ANNE WELLENSTEIN

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

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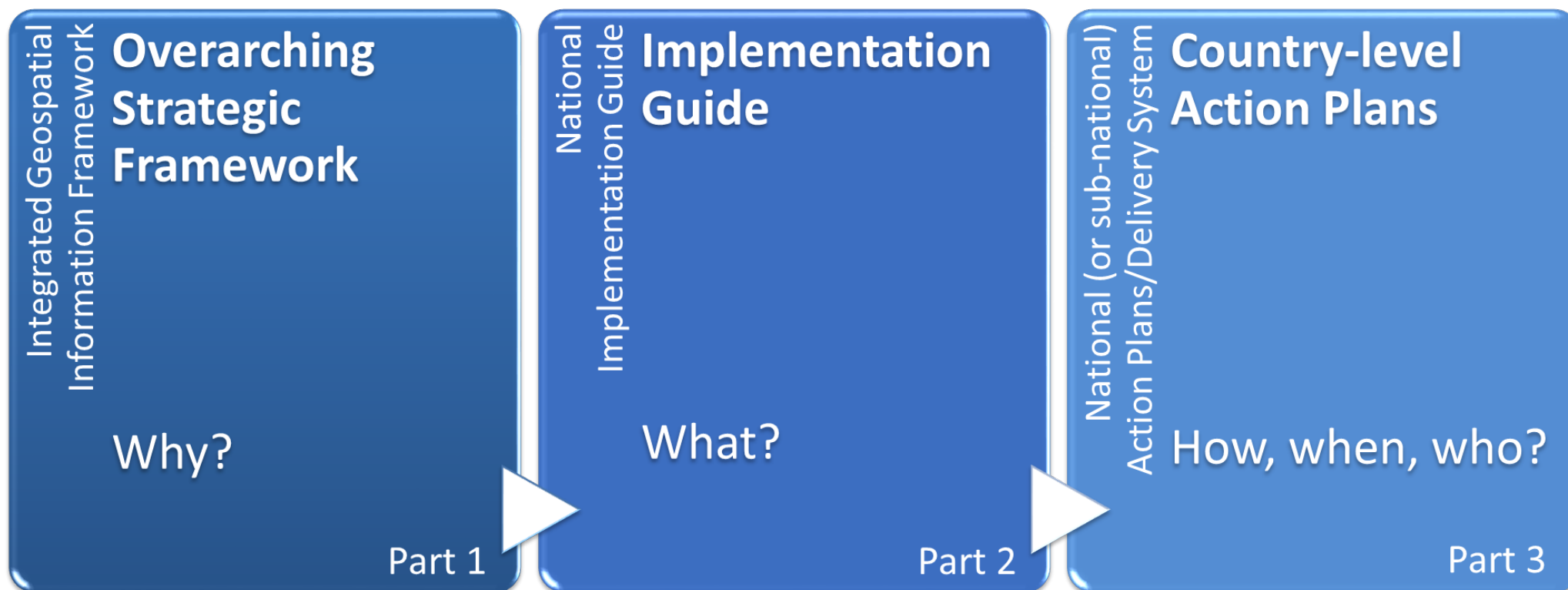
http://ggim.un.org/UN-GGIM-Intergrated-geospatial-information-framework/

| Integrated Geospatial Information Framework | National Implementation Guide | National (or sub-national) Action Plans/Delivery System |
|---|---|---|
| **Overarching Strategic Framework**<br><br>Why?<br><br>Part 1 | **Implementation Guide**<br><br>What?<br><br>Part 2 | **Country-level Action Plans**<br><br>How, when, who?<br><br>Part 3 |

The **Integrated Geospatial Information Framework (IGIF)** comprises 3 separate, but connected, documents. The **Overarching Strategic Framework** was completed and adopted by UN-GGIM in August 2018. The structure and main elements of the **Implementation Guide** were provided for discussion, and had 'in-principle' approval by UN-GGIM. The **Country-level Action Plans** were acknowledged as 'work in progress' and to be developed through case studies.

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# 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.

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## VISION

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## MISSION

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## 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.

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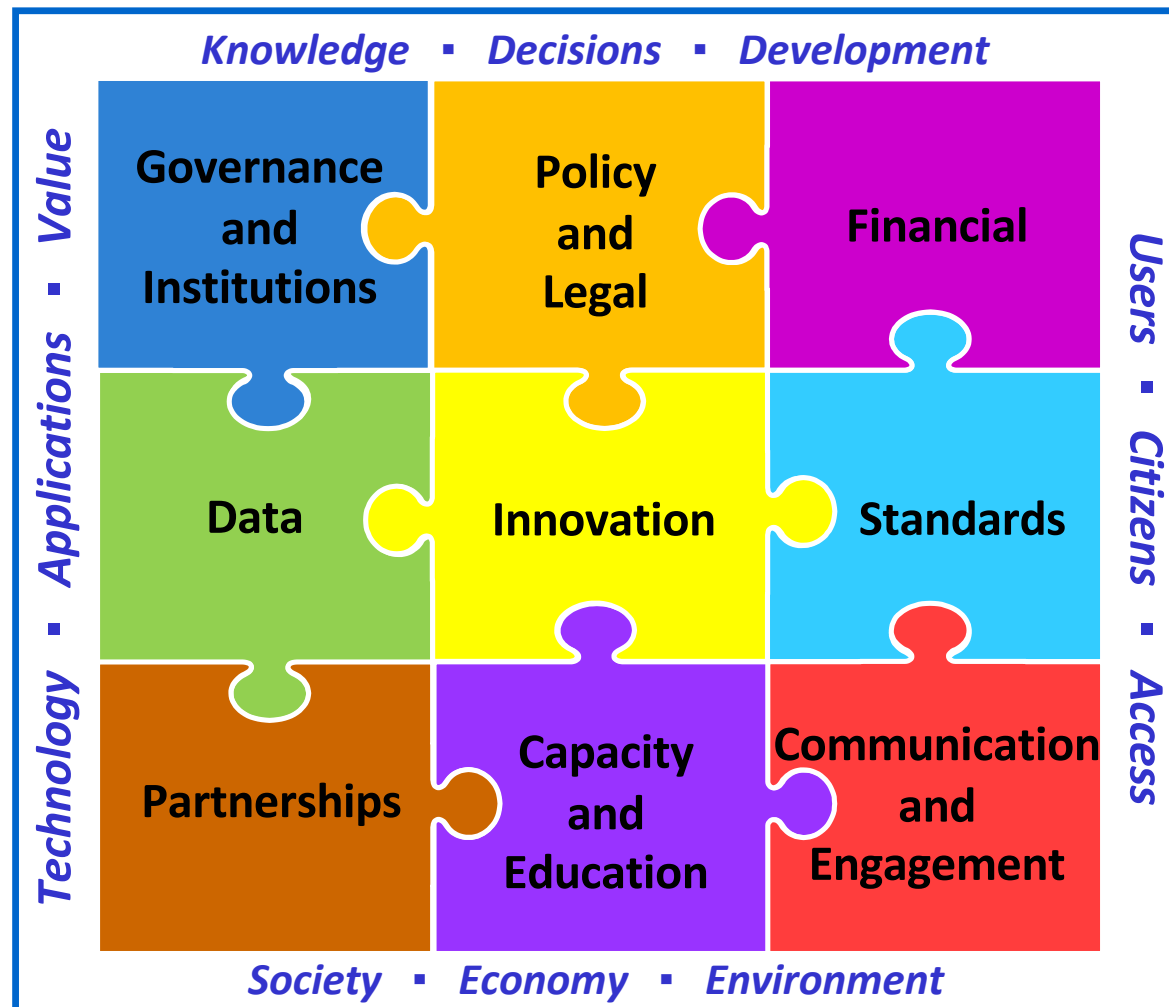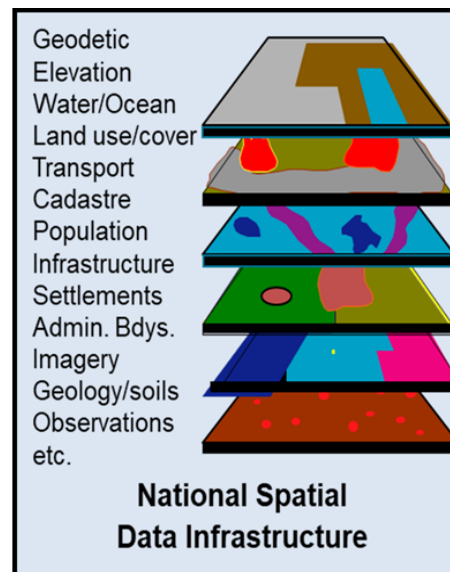*Positioning geospatial information to address global challenges*

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# 9 Strategic Pathways

Governance →

Technology →

People →

**Knowledge ▪ Decisions ▪ Development**

Value ▪ Applications ▪ Technology

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

Users ▪ Citizens ▪ Access

**Society ▪ Economy ▪ Environment**

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.

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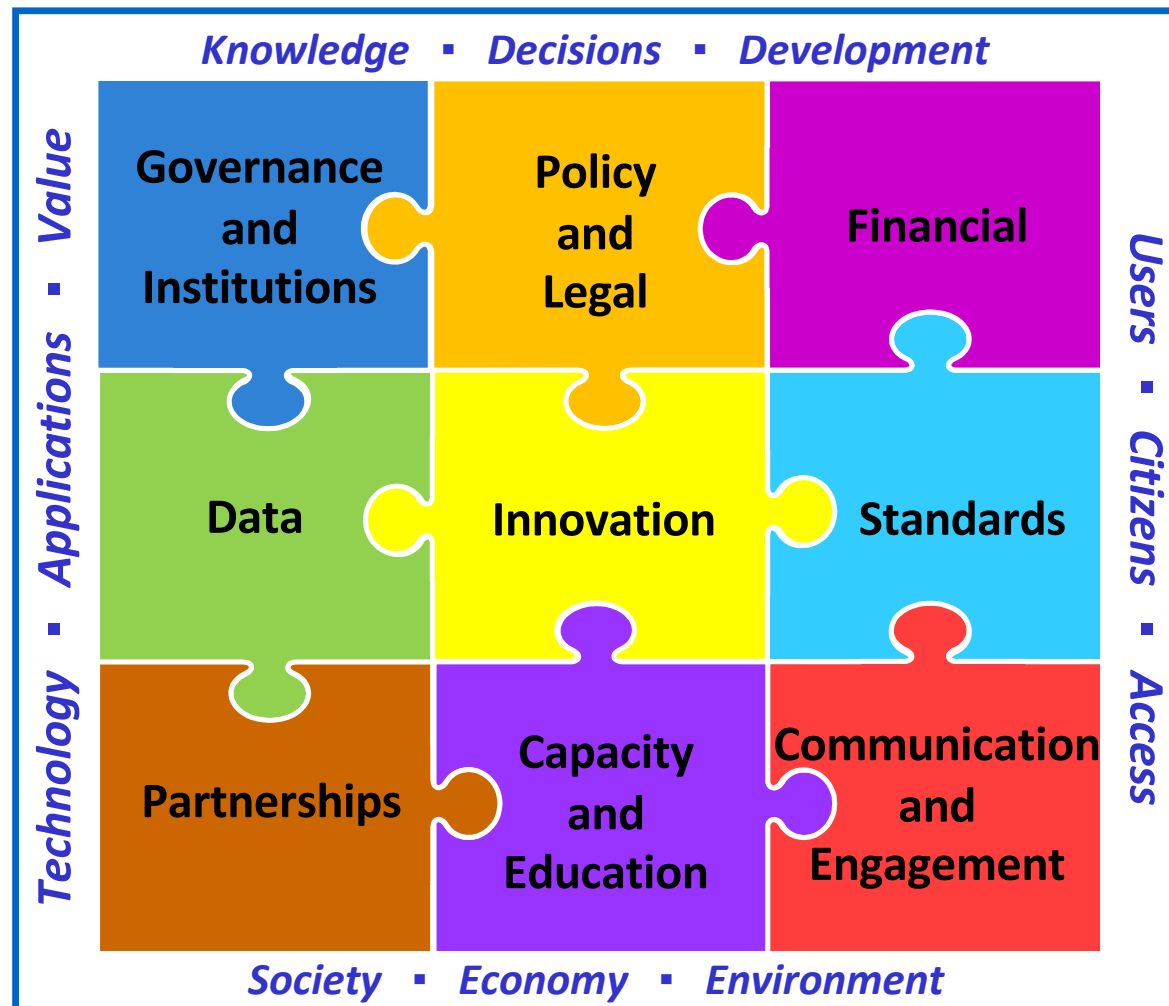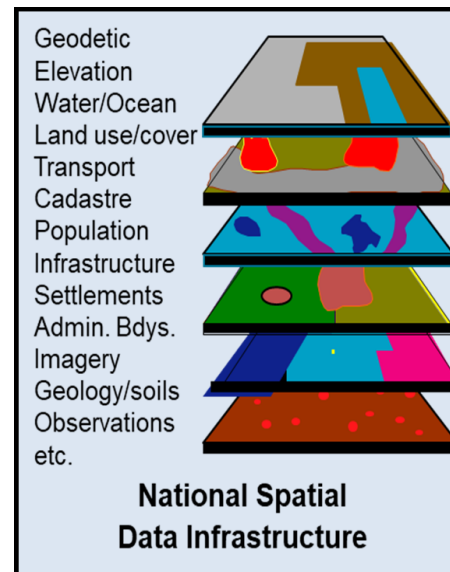*Positioning geospatial information to address global challenges*
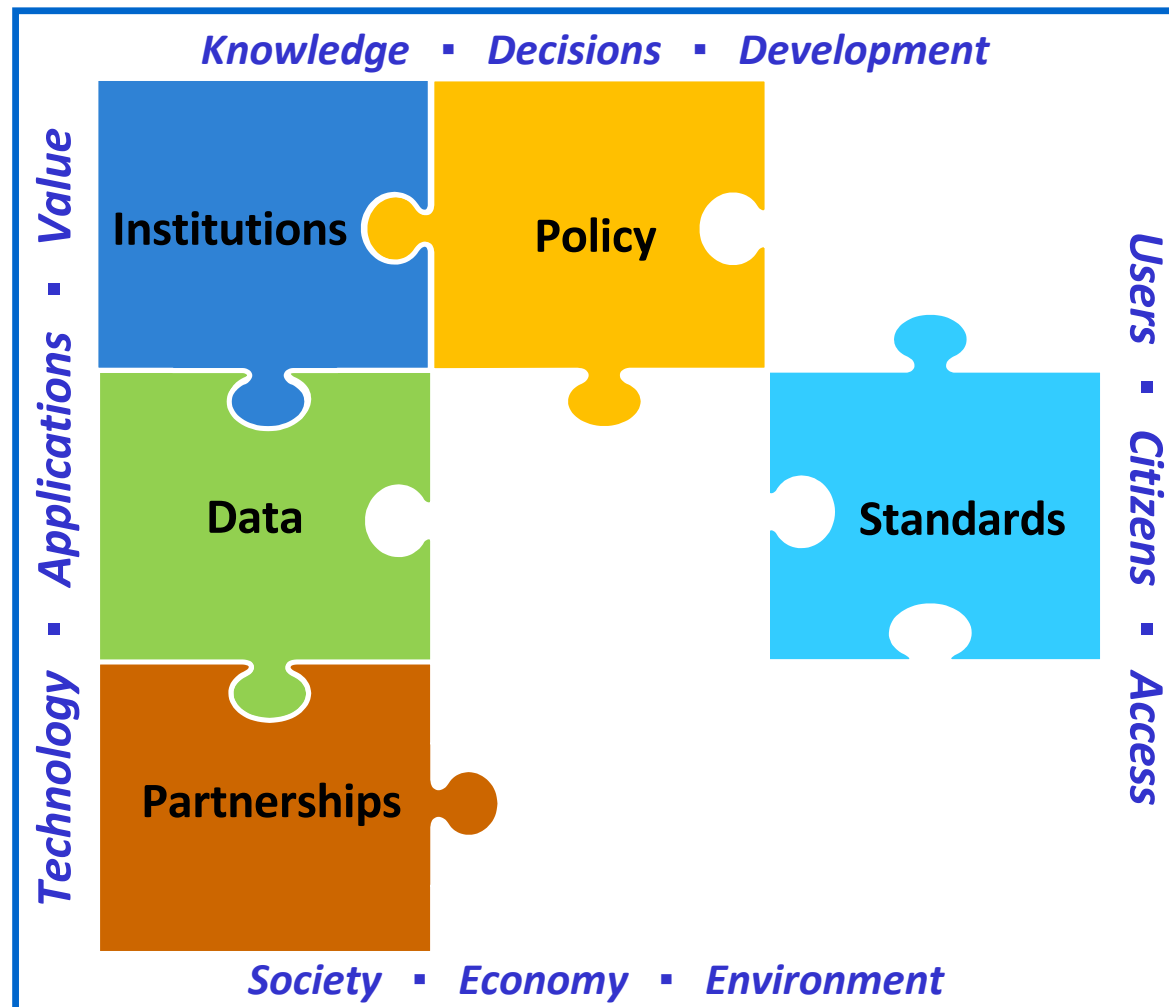ggim.un.org

9 Strategic Pathways

Governance →

Technology →

People →

Knowledge · Decisions · Development

| Value | Governance and Institutions | Policy and Legal | Financial |
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Users · Citizens · Access

Society · Economy · Environment

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

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
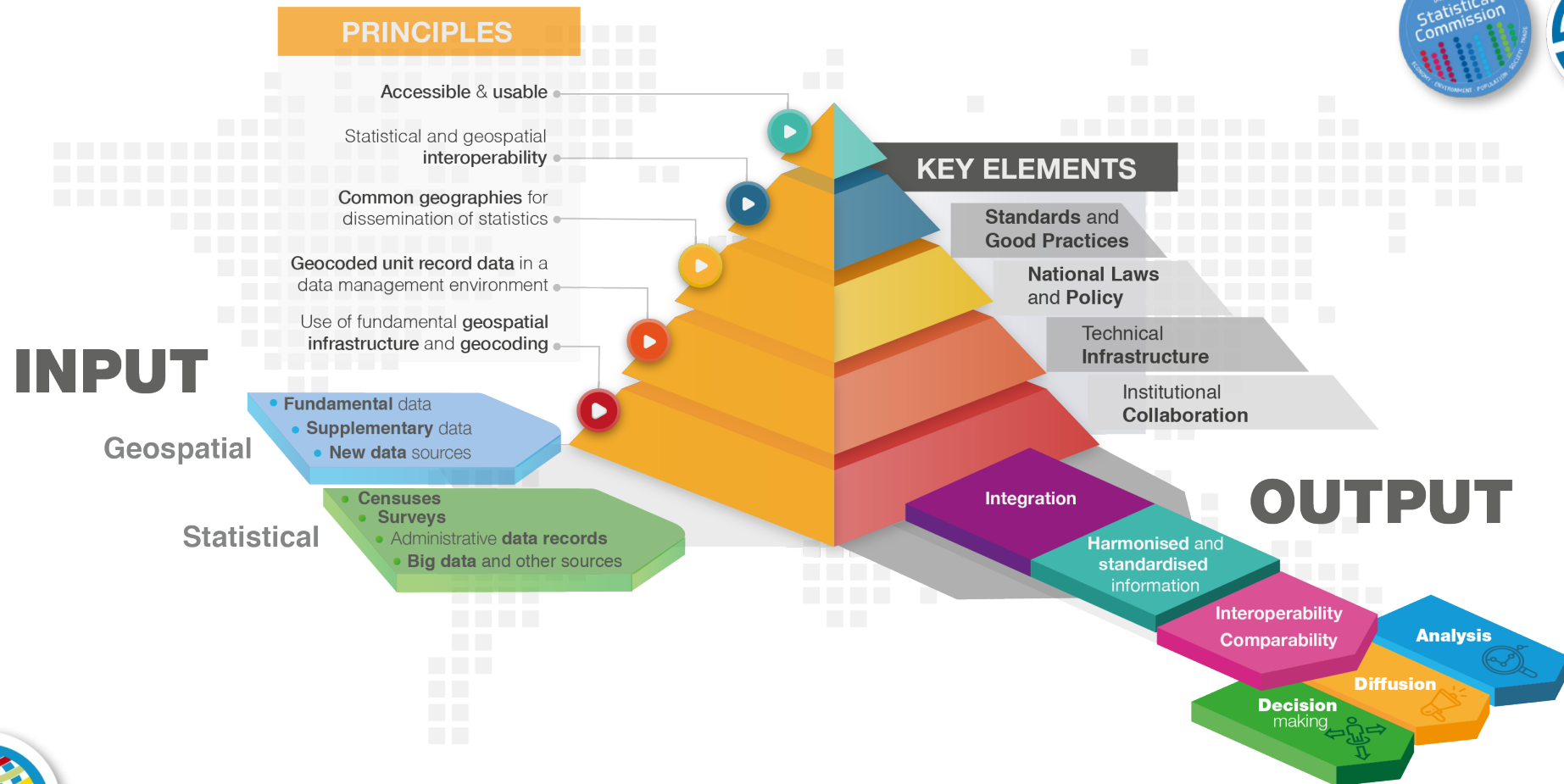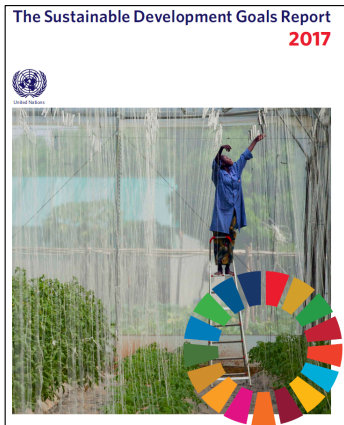
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9 Strategic Pathways

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etc.

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).

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# IGIF: Linkages to the GSGF

# Harnessing the power of data for sustainable development

The Sustainable Development Goals Report 2017



To fully implement and monitor progress on the SDGs, decision makers need data and statistics that are accurate, timely, sufficiently disaggregated, relevant, accessible and easy to use. Data availability and quality have steadily improved over the years. However, statistical capacity still needs strengthening and data literacy must be enhanced at all levels of decision-making. This will require coordinated efforts on the part of data producers and users from multiple data systems. It will also demand innovative ways to produce and apply data and statistics in addressing the multifaceted challenges of sustainable development.

## Leave no one behind

National averages, even city averages, often mask wide disparities among population groups. The identification of people suffering from deprivation therefore requires sufficiently detailed data across multiple dimensions, including age, sex, geography and disability status, among others. Any global or national statistical system must ensure that the coverage and level of data disaggregation for the follow-up and review of the 2030 Agenda leaves no one behind.

Towards this end, national statistical systems need to invest in the technology and skills necessary to collect and integrate data from multiple sources, including integration of geospatial information with statistics and other data. This means making better use of traditional statistical surveys, censuses and administrative records. It also means harnessing the power of technology to leverage new sources of data, such as from cell phone records, Earth observations, other sensors and social media. More citizen-generated data are also being used to monitor the needs and progress of vulnerable groups. However, new methodologies need to be developed to ensure the quality and reliability of such data.

# The Changing Patterns of Unemployment and Poverty in Ireland, 2011-

## A focus on cities

The map displays unemployment rate and total unemployed population from the Census 2016 at ED level. A closer look at Dublin illustrates varying unemployment rates within the area.

Data at this level provide a detailed representation of unemployment trends. This visualisation highlights the divide (North East, South West divide) in high and low levels of unemployment.
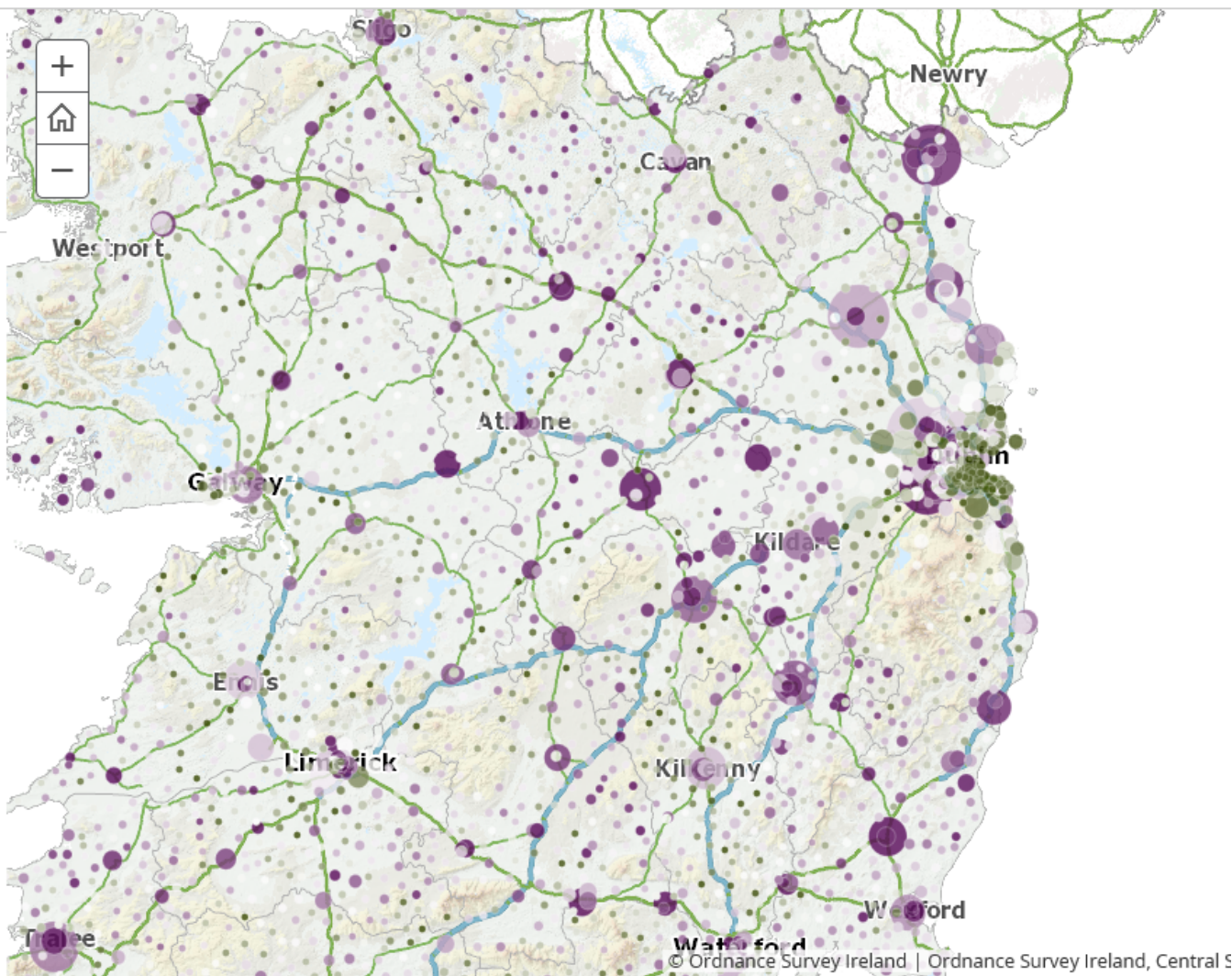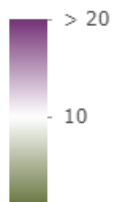
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Strengthening geospatial information management will assist countries in bridging the geospatial digital divide, secure socio-economic prosperity, and leave no one behind.

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