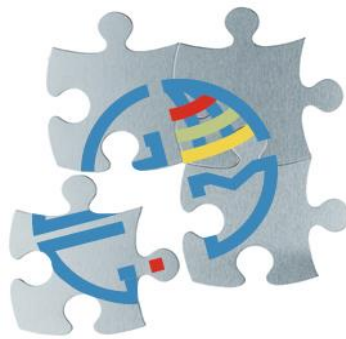


Geospatial Data for Good....Supporting National Ownership
12 May 2022, Geneva, Switzerland

Global Geospatial Frameworks

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



Setting the global scene

We fell victim to “the tyranny of the urgent,” the problem that occurs when the “urgent” replaces the “important.”

We will do good for the Earth by doing well in our businesses.

Today, there’s nothing more important than sustainability.

Ola Rollen, President and CEO of Hexagon, 20 April 2021



- Expanding urbanisation, concerns about food production, climate change, the need for sustainable land management and development, and growing inequality are putting our global ‘resilience’ under stress.
- The way in which our society is organised amplifies the structural threats that climate change and the emergence of new infectious diseases have upon the world.
- Many global development challenges, particularly pertaining to socio-economic development and equity, are intrinsically tied to what happens where at the local level - cities, communities, citizens.
- Governments, institutions and industry can make the necessary investments in the many components of preparedness and resilience - of which geospatial information is key.

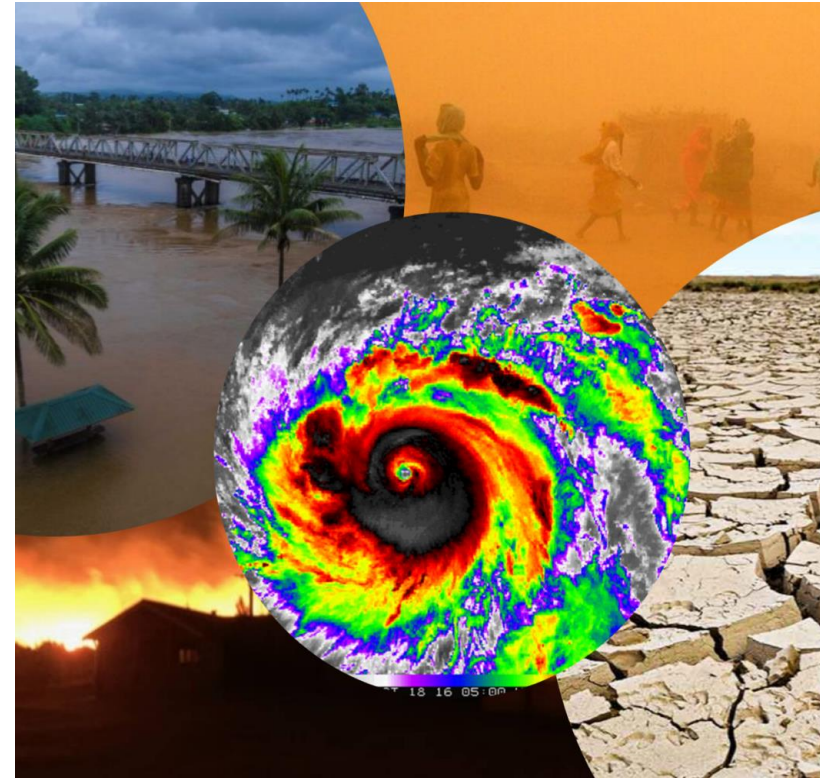


Defining Geospatial Information

Everything happens somewhere. Geospatial information reflects the physical world in which all human, economic and environmental activity takes place, and provides the digital version of our world.

It is an essential national information resource, critical component of the national infrastructure and knowledge economy; a blueprint of what happens where, and the means to integrate a wide variety of government services.

Geospatial information provides the evidence for sustainable development, to measure, monitor and report on progress... with geography and location... relating people, activities and events to a place... informing policy- and decision-making, and determining actionable outcomes... so that no one is left behind.



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Global Development Frameworks

2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

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UN-GGIM Global Geospatial Frameworks

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK (IGIF)

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Future Trends in Geospatial Information Management

The Future Trends Report provides expert opinion on the mid to long term-developments in geospatial information.

It is a strategic insight document for all countries and the global geospatial information community.

It is broad in nature, looking at emerging trends in technology, legal and policy, skills and training, the private and non-governmental sectors, and in the role of government.

Recognizing that disruption and change in the geospatial community are likely to occur as a result of the linking of multiple trends, the Report explores a diverse set of emerging and developing trends.



The full [Future Trends Report](#) can be accessed here.



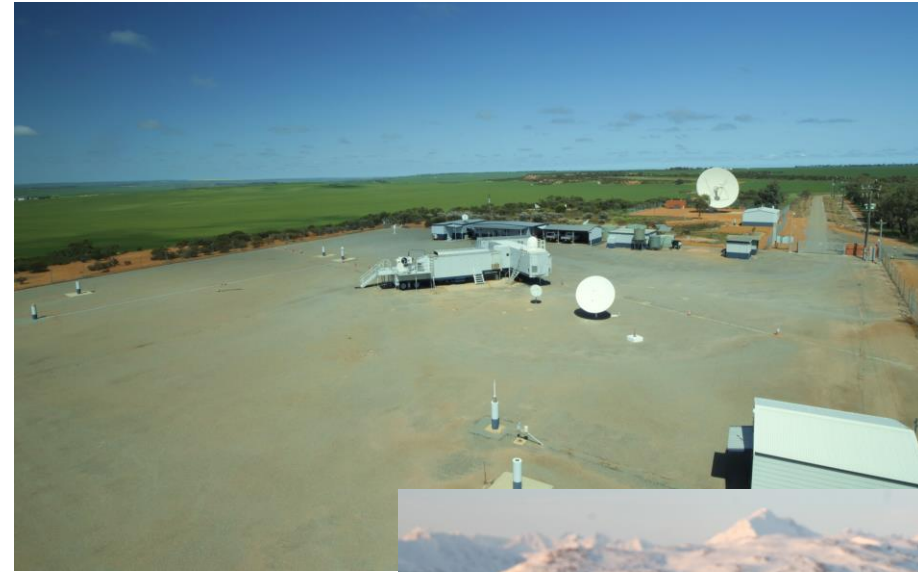
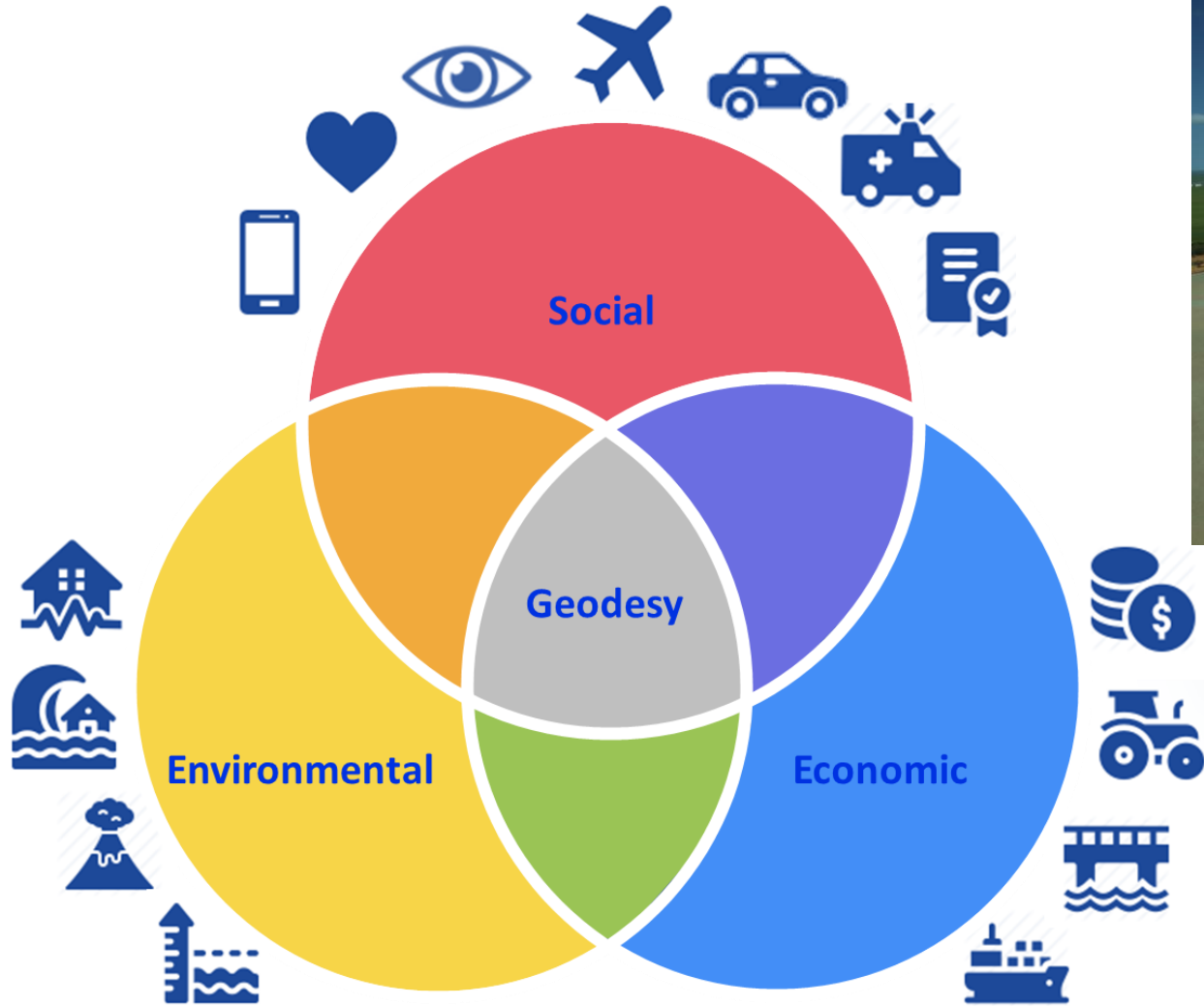
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Global Geodetic Reference Frame



“Science of measuring the shape, orientation and gravity field of the Earth and how it changes over time.”



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Global Fundamental Geospatial Data Themes



Global Geodetic Reference Frame



Geographical Names



Addresses



Functional Areas



Buildings and Settlements



Land Parcels



Transport Networks



Elevation and Depth



Population Distribution



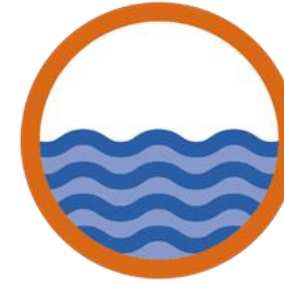
Land Cover and Land Use



Geology and Soils



Physical Infrastructure



Water



Orthoimagery

Document: <https://ggim.un.org/documents/Fundamental%20Data%20Publication.pdf>

StoryMap: <https://undesa.maps.arcgis.com/apps/Cascade/index.html?appid=4741ad51ff7a463d833d18cbcec29fff>



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Strategic Framework on Geospatial Information and Services for Disasters

Scope and Purpose

The strategic framework aims to guide all stakeholders and partners in the management of geospatial information and services in all phases of disaster risk management

Expected Outcome

The social, economic, and environmental risks and impacts of disasters are prevented or reduced through the use of geospatial information and services

Goal

Quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations within and among all stakeholders and partners and in all phases of disaster risk management

Priorities for Action

Member States with the support of regional and international organizations as well as other relevant organizations should focus their action on the following 5 priorities for action:



Priority 1 Governance and Policies

Policies, collaborative agreements and legal frameworks aiming at improving the availability and accessibility of quality geospatial information and services among all stakeholders and partners established and implemented in all phases of DRM



Priority 2 Awareness Raising and Capacity Building

Awareness is raised among concerned entities on the importance of geospatial information and services and all necessary technical and human capacities are built and/or strengthened



Priority 3 Data Management

Geospatial databases and information products are developed based on common standards, protocols and processes as important tools in every decision-making process across all phases of DRM



Priority 4 Common Infrastructure and Services

Common facilities and services are established for all key stakeholders and partners to have a common operational picture of emergency scenarios



Priority 5 Resource Mobilization

All necessary technical, human and financial resources are available to sustain all the activities of DRM

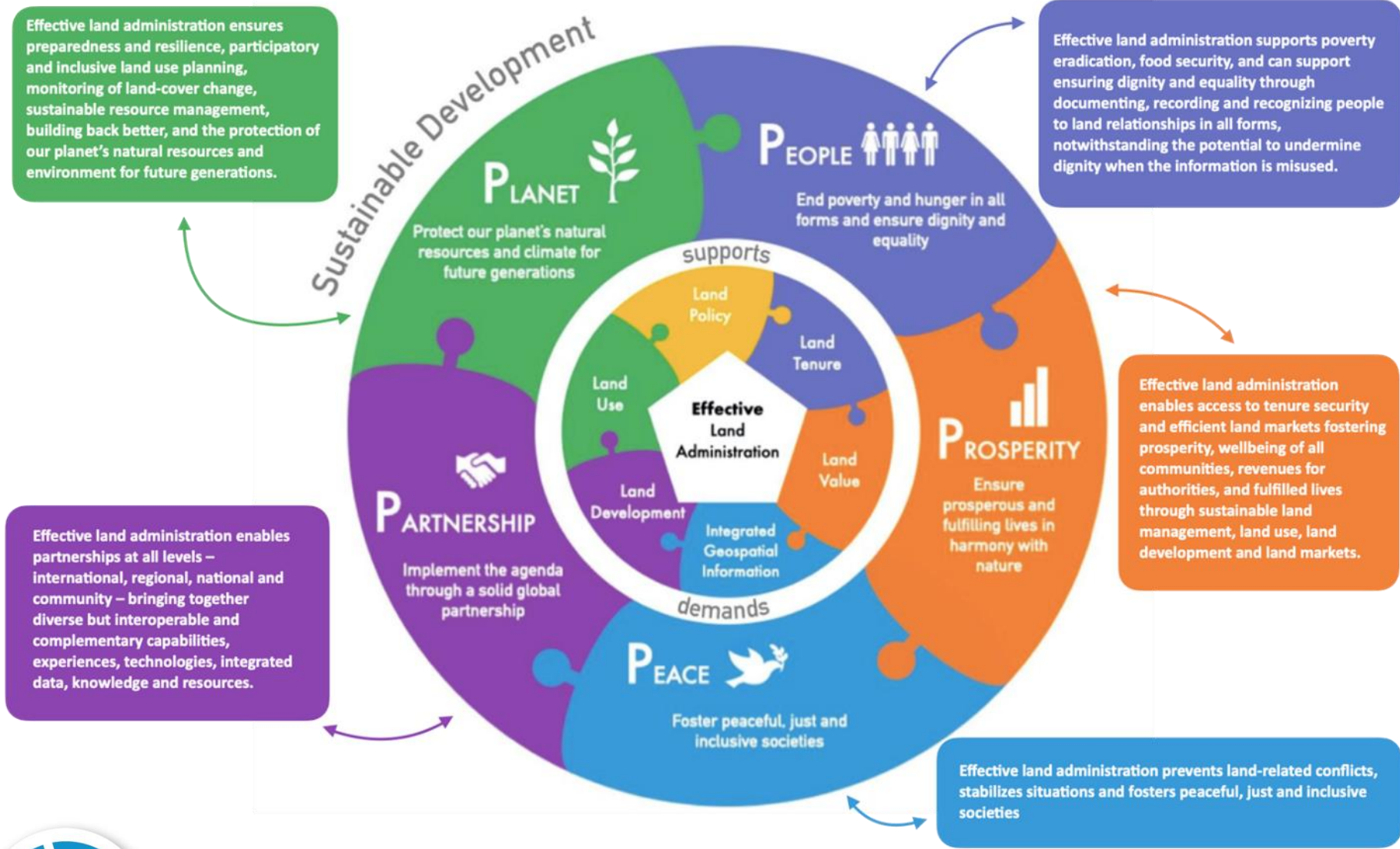
Guiding Principles

The strategic framework is guided by the 2030 Agenda for Sustainable Development, International Strategy for Disaster Reduction, Sendai Framework for Disaster Risk Reduction (2015-2030), the UN-GGIM Global Statistical Geospatial Framework, UN General Assembly resolution on international cooperation on humanitarian assistance in the field of natural disasters, from relief to development and other relevant instruments. It is also guided by the principles of open data and requirements of national data infrastructure, and by the UN-GGIM's Statement of Shared Guiding Principles for the Management of Geospatial Information.

During disaster situations, the data-sharing mechanism to support decision-making is generally not in place. As a result, the many actors and stakeholders simultaneously engaged in response are not only gathering volumes of concurrent and inconsistent geospatial datasets, but they are also concerned with issues of coordination and communication. This underscores the strong relevance of a Strategic Framework.



Framework for Effective Land Administration (FELA)



Sustainable development demands effective land administration. Effective land administration supports sustainable development.

The Framework for Effective Land Administration (FELA) is fully aligned with the Integrated Geospatial Information Framework (IGIF) as an overarching policy guide supporting the achievements of the SDGs.

Following a broad and inclusive global consultation, UN-GGIM adopted the FELA at its Tenth Session in 2020.

https://ggim.un.org/meetings/GGIM-committee/10th-Session/documents/E-C.20-2020-29-Add_2-Framework-for-Effective-Land-Administration.pdf



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Global Statistical Geospatial Framework (GSGF)



PRINCIPLES

- Accessible & usable
- Statistical and geospatial interoperability
- Common geographies for dissemination of statistics
- Geocoded unit record data in a data management environment
- Use of fundamental geospatial infrastructure and geocoding

KEY ELEMENTS

Standards and Good Practices

National Laws and Policy

Technical Infrastructure

Institutional Collaboration

INPUT

Geospatial

- Fundamental data
- Supplementary data
- New data sources

Statistical

- Censuses
- Surveys
- Administrative data records
- Big data and other sources

OUTPUT

Integration

Harmonised and standardised information

Interoperability Comparability

Diffusion

Decision making

Analysis

https://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/The_GSGF.pdf



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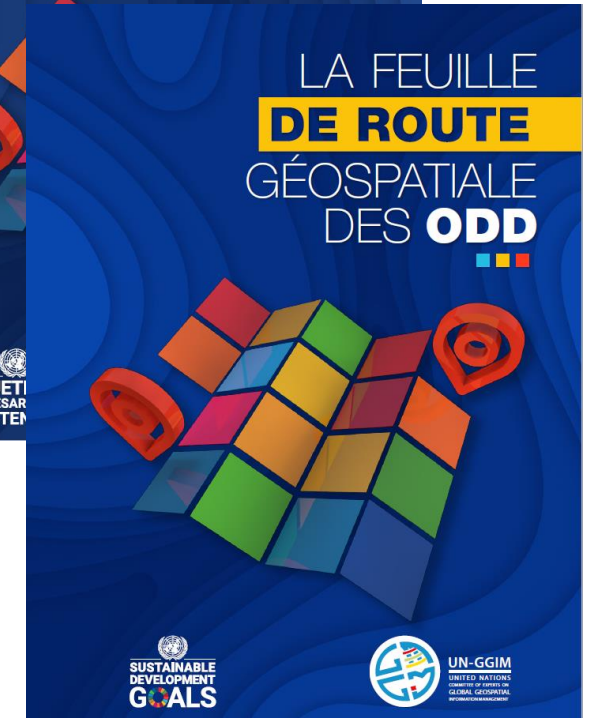
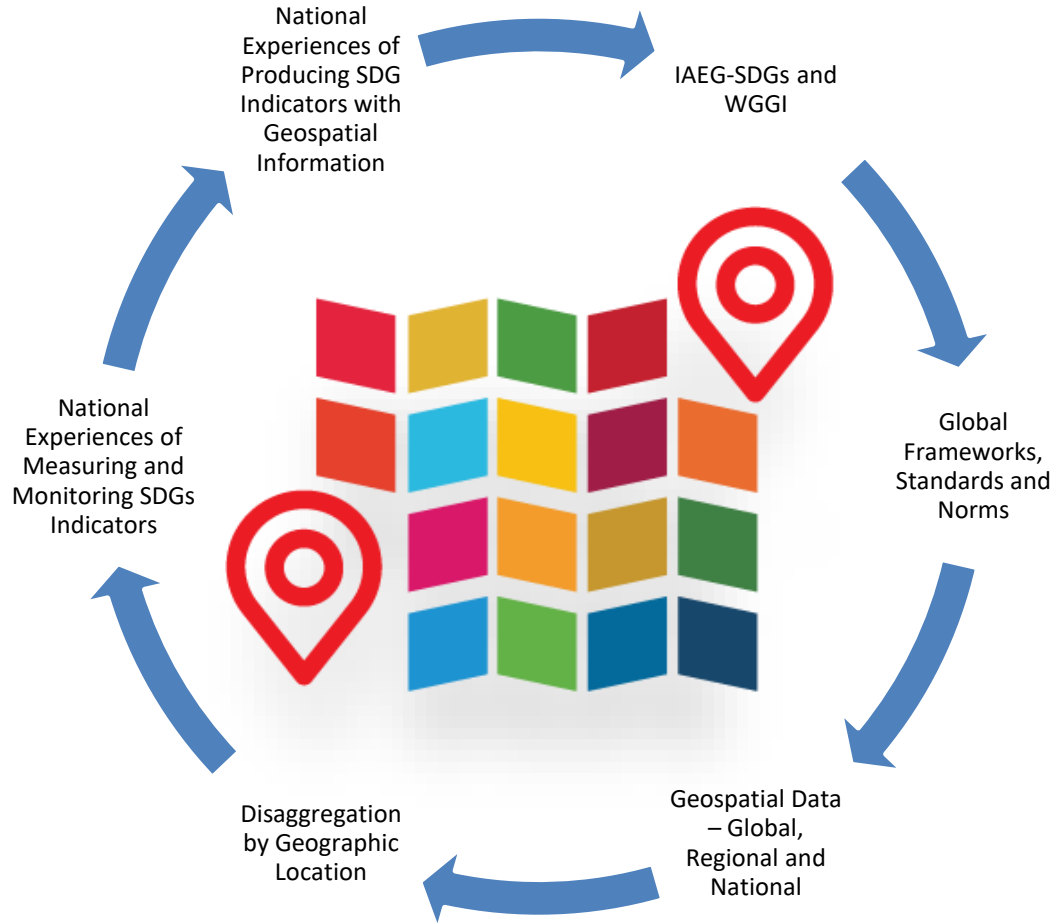
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SDGs GEOSPATIAL ROADMAP



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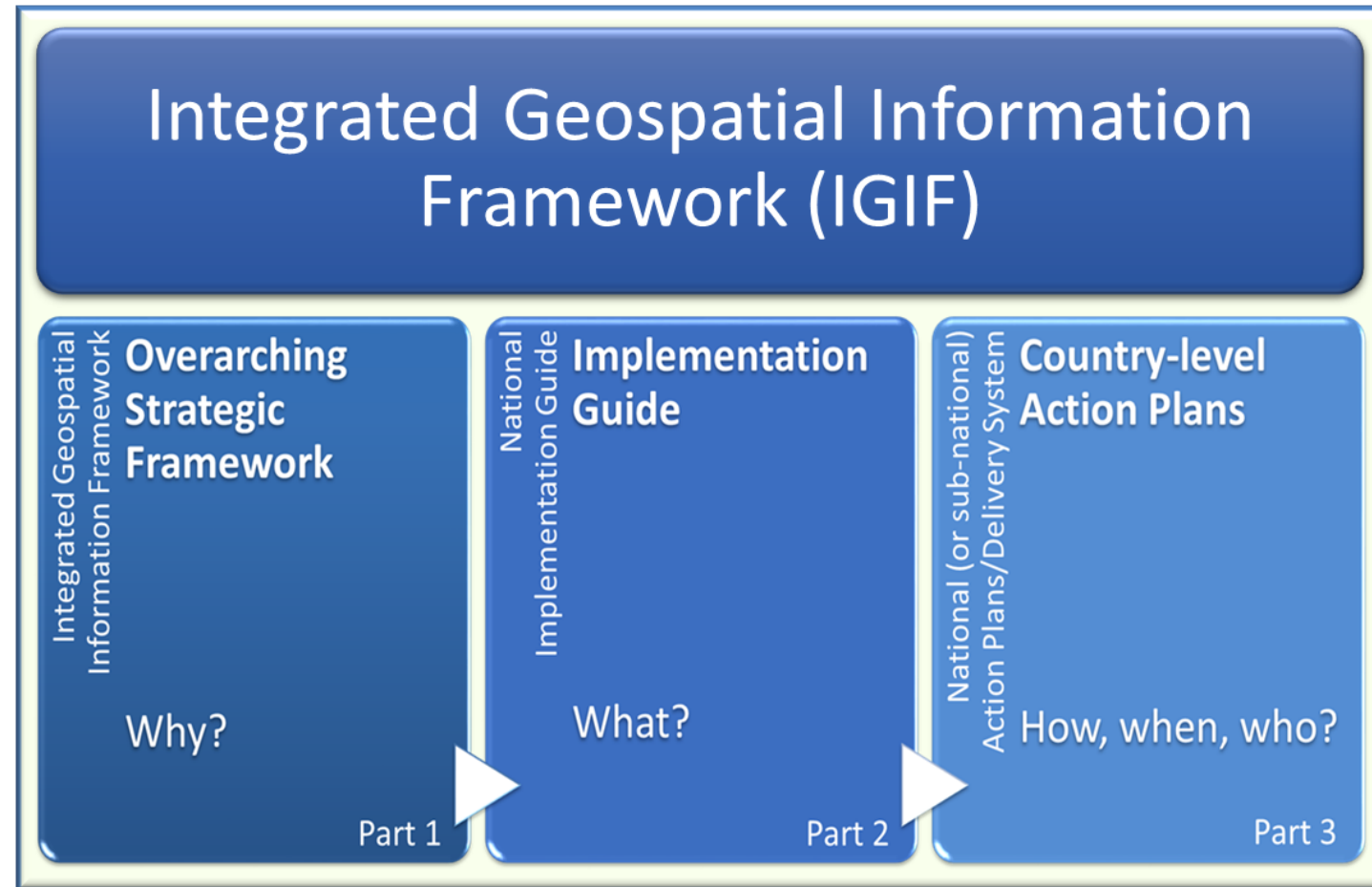
The IGIF is a multi-dimensional Framework aimed at strengthening national geospatial information management in countries, developing countries in particular.

It comprises an overarching **Strategy** - from local to global, **Implementation** guidance, and **Action** plans at the country level.

With a focus on the ability for geospatial information to be integrated with any other meaningful data to solve societal and environmental problems, the IGIF acts as a catalyst for economic growth and opportunity and stimulates improved understanding and decision-making for national development priorities and the SDGs.



**WHERE
GEOGRAPHY
MEETS
HUMANITY**



<http://ggim.un.org/IGIF/>



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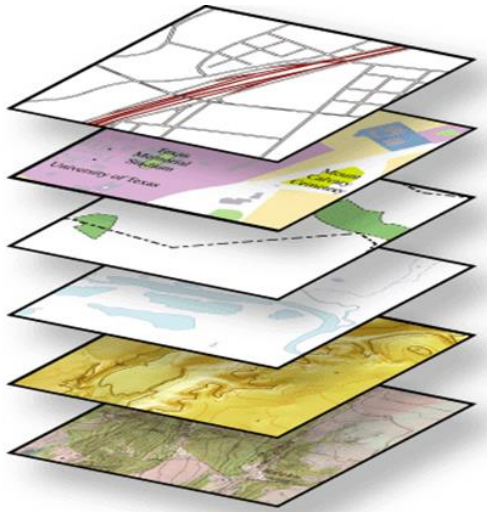
WHY IS THE IGIF NEEDED?

Geospatial information has emerged as a major contributor to socio-economic transformation in many countries, including e-government, e-service and e-commerce.

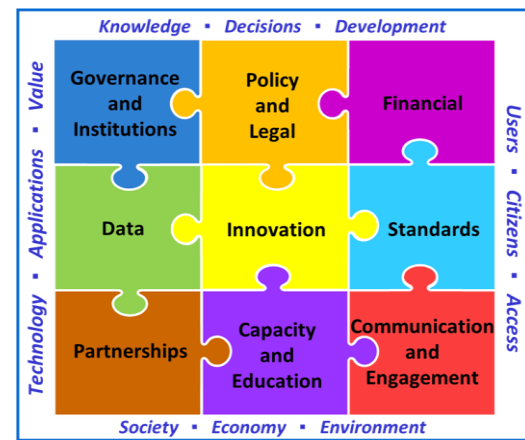
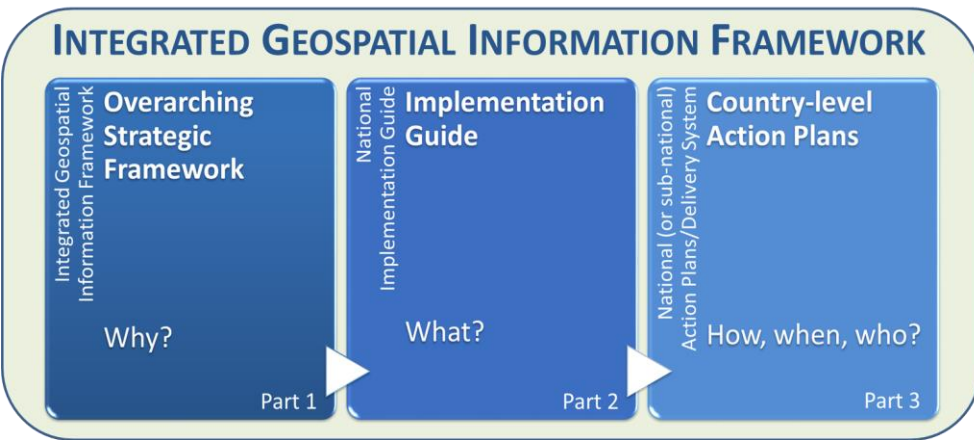
Yet there is still a considerable lack of awareness and understanding of the vital and integrative role of geospatial information and related enabling architectures, such as National Spatial Data Infrastructures (NSDIs), in contributing to local, national, regional, and global development.



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



Geospatial information is a critical component of the national infrastructure and knowledge economy; a blueprint of what happens where, and the means to integrate a wide variety of government services.



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<http://ggim.un.org/IGIF/>

#IGIF

By strengthening nationally integrated geospatial information management, the UN IGIF enables a more comprehensive approach to data integration by providing the digital connection between people, their place, their activities, and their environment.

**WHERE
GEOGRAPHY
MEETS
HUMANITY**



Geospatial information has immense social and economic value. Citizens, communities, business sectors, governments, and many other stakeholders benefit every day.

UNITED NATIONS INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK (UN IGIF)



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.

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
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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 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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IGIF: STRATEGIC DRIVERS

Addis Ababa Action Agenda

Multilateral trade agreements

Transforming our World: 2030 Agenda for Sustainable Development

INSPIRE

National Strategic Priorities

United Nations Ocean Conference: Call for Action

National Development Agendas

Sendai Framework for Disaster Risk Reduction 2015–2030

New Urban Agenda

Small Island Developing States Accelerated Modalities of Action (SAMOA Pathway)

United Nations Framework Convention on Climate Change (Paris Agreement)

National Transformation Programmes

National Transformation Programmes



Global development agendas are a major driver for maintaining quality geospatial data to better inform policy and demonstrate national progress globally.



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IGIF: STRATEGIC DRIVERS

The Frameworks Strategic Intent



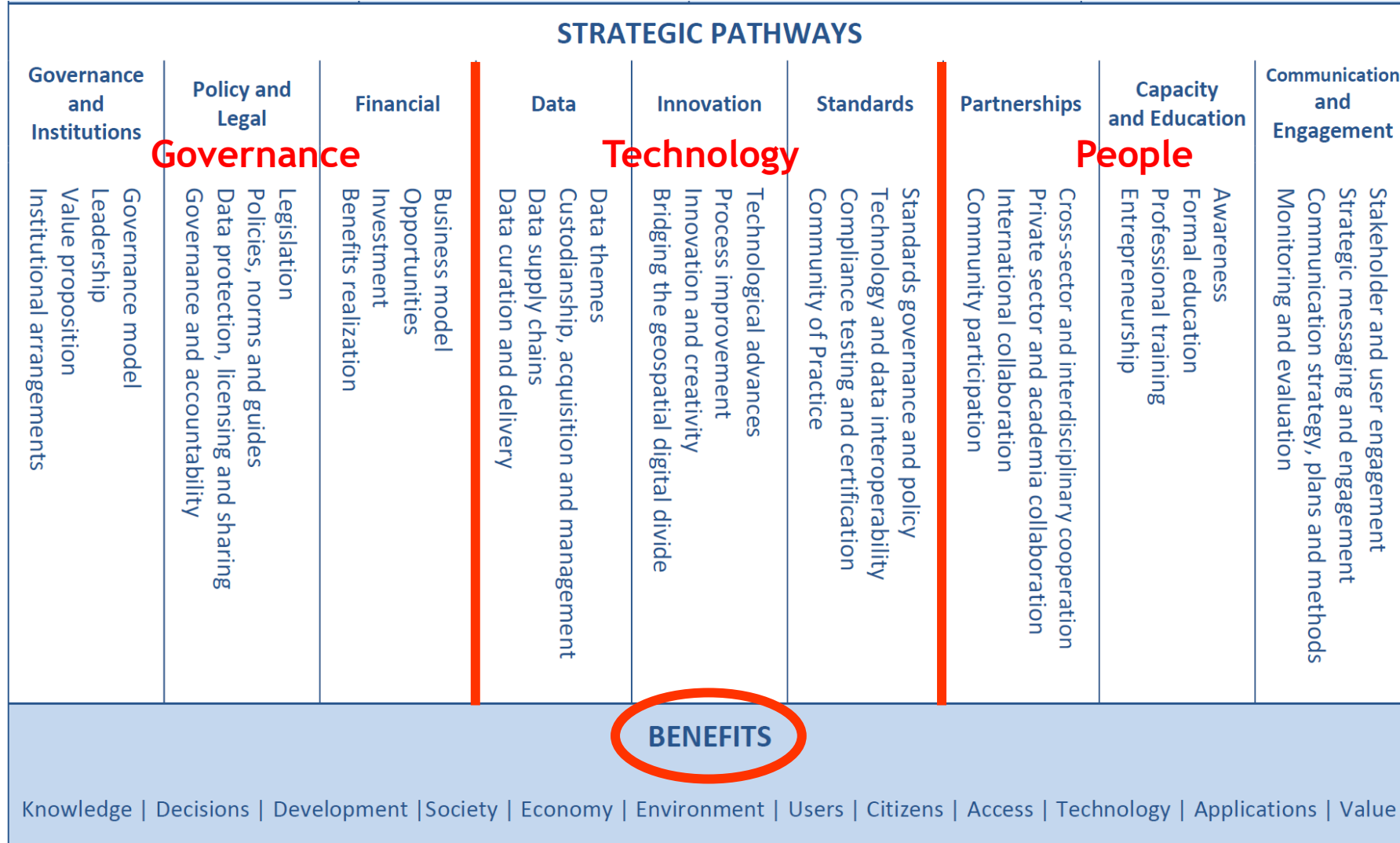
- Digital Transformation - Moving countries towards e-economies, e-service and e-commerce to improve citizen services
- Build capacity for using geospatial technology
- Enhance informed government decision-making processes
- Facilitate private sector development
- Take practical actions to achieve a digital transformation
- Being able to bridge the geospatial digital divide



THE IGIF IS ANCHORED BY 9 STRATEGIC PATHWAYS TO GUIDE GOVERNMENTS TOWARDS IMPLEMENTATION



Geospatial information has immense social and economic value. Citizens, communities, business sectors, governments, and many other stakeholders benefit every day.



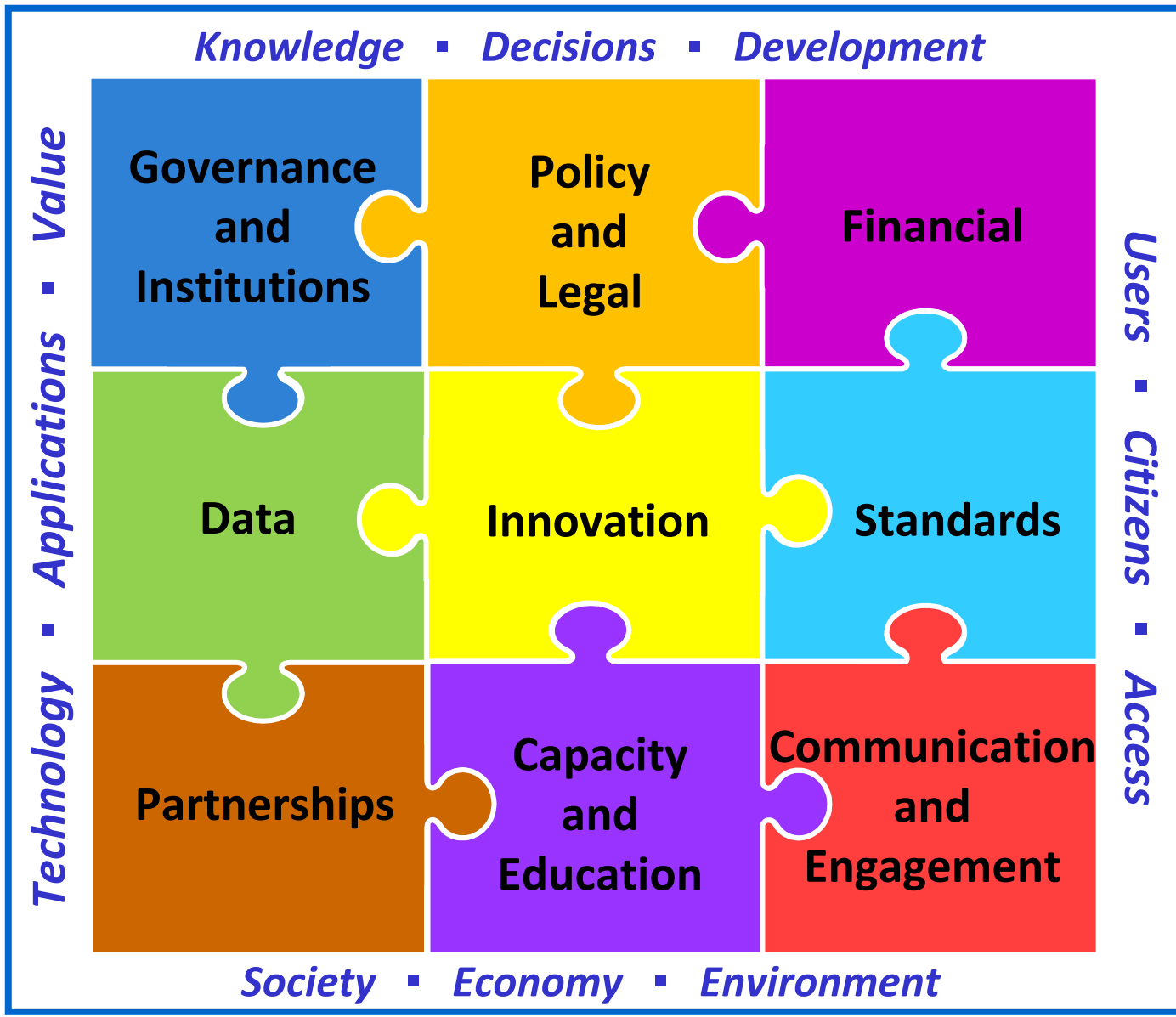
Anchored by 9 Strategic Pathways, the IGIF is a mechanism for articulating and demonstrating national leadership in geospatial information, and the capacity to take positive steps. The Strategic Pathways 'implement' the IGIF through actions.



Governance →

Technology →

People →



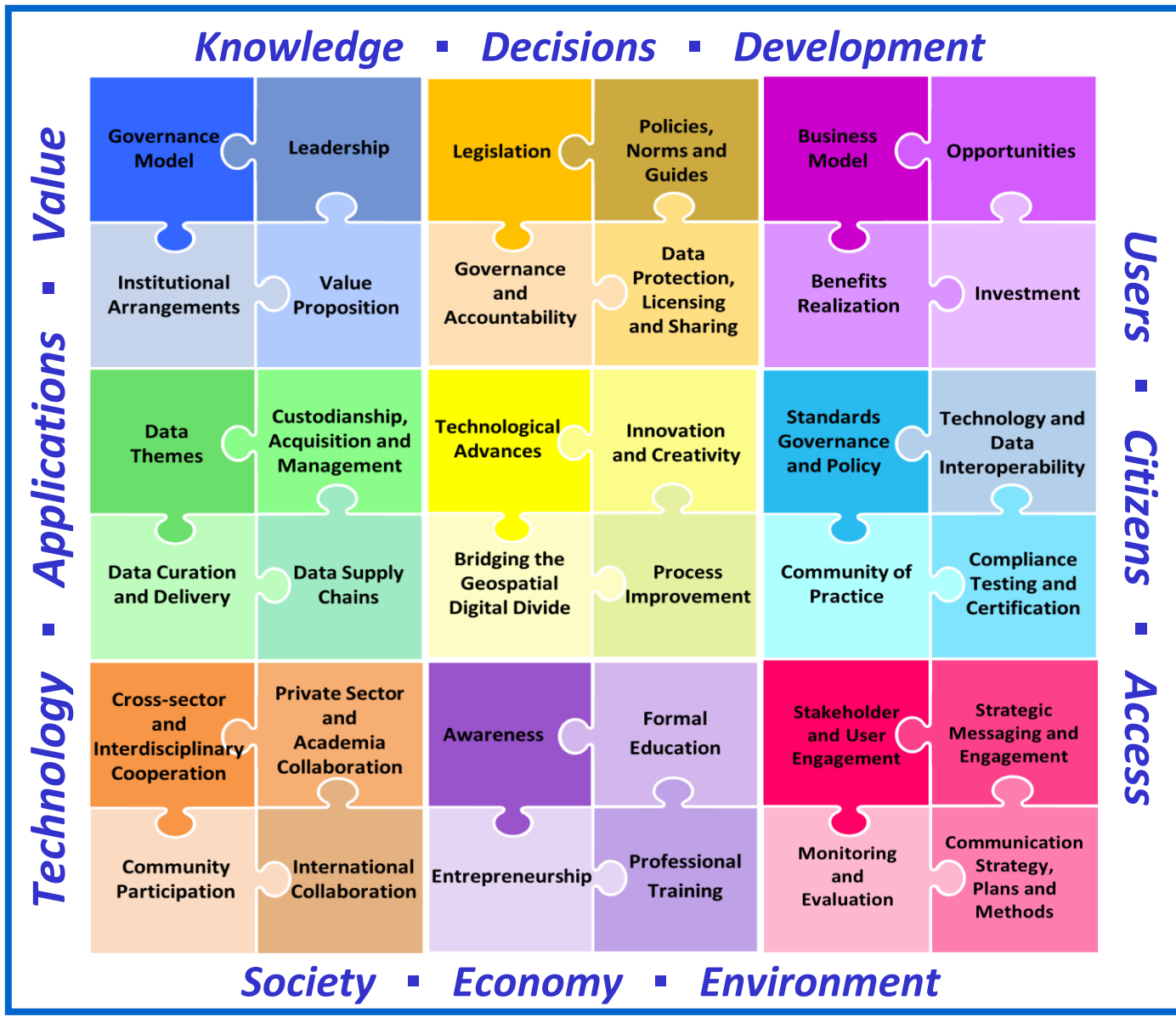
9 Strategic Pathways solve the IGF puzzle



Governance →

Technology →

People →



9 Strategic Pathways solve the IGF puzzle ...with 36 Key Elements



Powering Digital Transformation, innovation and national sustainable development through the efficient and effective use of geospatial information.



National Spatial Data Infrastructure

A Strategy for Geo-driven Digital Transformation and Innovation in Mongolia
2020-2025



Envisioning a New Future

One of the primary components of a the NSDI is to identify the location of Mongolia's physical assets such as land parcels, natural resources, utilities and the built environment, as well as the results of high impact processes such as climate change and urbanization.

Without knowledge about these locations, decision-making on many matters of national importance is significantly impaired.

The strategic framework (Figure 2) and following vision, mission and goal statements recognise that 'everything happens somewhere' and that knowing what is 'happening' and 'where' is crucial to social, economic and environmental development planning.

Vision

The vision statement reflects a common aspiration to deliver optimal use of geospatial information to effectively measure, analyze, monitor and achieve sustainable social, economic and environmental development – leaving no one behind

Our Vision is for:

Geo-driven eGovernment and innovation that empowers efficient and effective use of geospatial information towards national sustainable development and economic growth.

Mission

The mission statement recognizes that leaders will promote and support innovation and provide the guidance, coordination and standards necessary to deliver integrated geospatial information so that it can be leveraged to achieve sustainable solutions to current and future challenges.

Our Mission is to:

Strengthen integrated geospatial information management and promote the value of geospatial information through leadership, coordination, partnerships, advanced technology and geo-standards.



Vision

Geo-driven eGovernment and innovation that empowers efficient and effective use of geospatial information towards national sustainable development and economic growth.

Mission

Strengthen integrated geospatial information management and promote the value of geospatial information through leadership, coordination, partnerships, advanced technology and geo-standards.

Strategic Alignment

- Land Administration and State Land Management
- National and Sectoral Development Planning
- eGovernance
- Mining
- Transport
- Disaster Management
- Agriculture
- Utilities
- Environment and Tourism
- Defense
- Health

Principles

- Strategic Positioning
- Collaboration
- Leadership
- Data Sharing
- Accountability
- Longevity

Goals

- Quality Information
- Accessible and Useful
- Good Governance
- Innovation and Capacity

Benefits

- Creating New Job Opportunities
- Improved Public Sector Efficiency
- Generating Citizen Services
- Stimulating Private Sector Investment
- Saving Lives in Emergencies
- Improved Adaptation to Climate Change

Action Plan Strategic Pathways

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

Vision and Mission



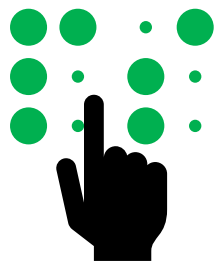
Geo-driven eGovernment and Innovation that empowers efficient and effective use of geospatial information towards national sustainable development.



Strengthen integrated geospatial information management and promote the value of geospatial information through leadership, coordination, partnerships, advanced technology and geo-standards.

Goals

1. QUALITY INFORMATION



2. ACCESSIBLE AND USEFUL

3. GOOD GOVERNANCE



4. INNOVATION AND CAPACITY

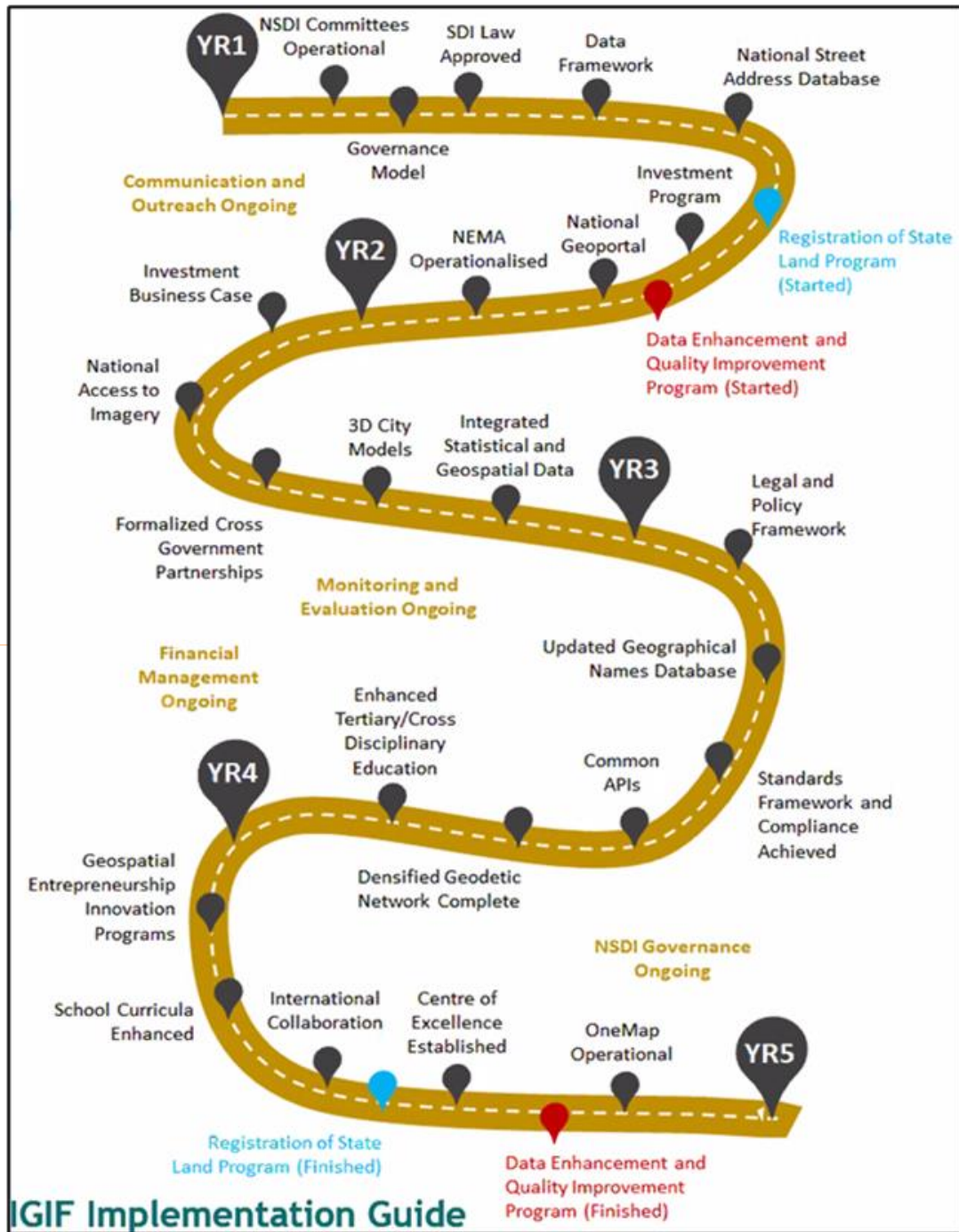


Strategic Alignment

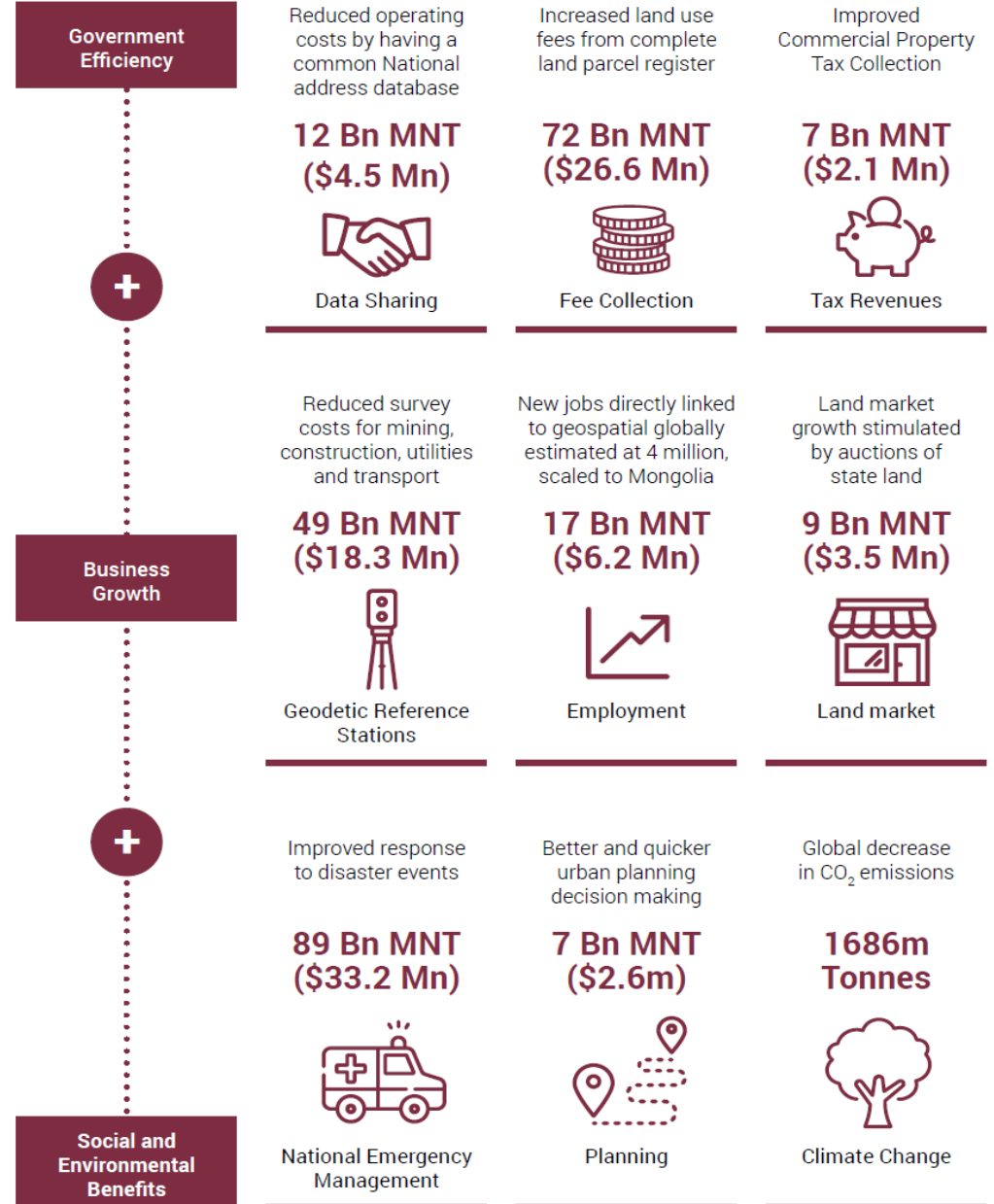


Benefits

- ✓ Creating job opportunities
- ✓ Improved public sector efficiency
- ✓ Generating citizen benefits
- ✓ Stimulating private sector investment
- ✓ Saving lives in emergencies
- ✓ Improved adaptation to climate change



Economic Impact of using Geospatial Information in Mongolia



Action Plan

The Action Plan is the “heart” of NSDI implementation. The plan is arranged according to the nine strategic pathways of the United Nations endorsed Integrated Geospatial Information Framework (IGIF) (Figure 5). The pathways consist of - Governance and Institutions, Policy and Legal, Financial, Data, Innovation, Standards, Partnerships, Capacity and Education, and Communication and Engagement

The Action Plan is designed for implementation over a 5-year timeframe and operation for a least a further 7 years. It contains a total of 44 inter-dependent actions that form an integrated roadmap with outlines of costs and timeframes.

The pathway actions are illustrated in Figure 6, and discussed below.



Figure 5 The nine strategic pathways of the IGIF (Available at www.ggim.un.org/IGIF).



1 | Governance and Institutions

- Establish NSDI Committee, Program Office, Working Groups and Advisory Group
- Define the NSDI Governance Model
- Formulate the Geospatial Information Value Proposition
- Develop NSDI Geospatial Strategy
- Implement Monitoring and Evaluation Framework



4 | Data

- Establish Data Framework to organize government data holdings
- Densify the Geodetic Framework
- Complete the Cadastre, and Registration of State Land
- Provide National Access to Satellite Imagery
- Conduct Data Enhancement and Quality Improvements
- Create a single National Street Address Database
- Implement a 3D City Model for High Density City Area of Ulaanbaatar and AIMAG centres
- Integrate Statistical and Geospatial Data
- Update Geographical Names Database
- Ensure secure storage and protection of data and systems
- Identify geospatial datasets for Pandemic Response



7 | Partnerships

- Strengthen and Formalize Partnerships between government agencies and private sector within Mongolia
- Establish twinning arrangements with other countries to share experiences
- Seek International Collaboration



2 | Policy and Legal

- Endorse SDI Law (in progress)
- Establish NSDI Policy and Legal Framework including privacy laws to guide data release and use of geospatial data
- Prepare a Policy and Legal Compliance Strategy



5 | Innovation

- Develop National Geoportals
- Operationalize National Emergency Management Agency geospatial system
- Design National One Map Database System
- Design and Develop Common APIs for NSDI contributing agencies
- Embed Geospatial in existing Public Sector Innovation Programs
- Develop Centre for Geospatial Excellence



8 | Capacity and Education

- Develop an NSDI Capacity Building and Education Strategy
- Conduct an NSDI Skills Gap Analysis
- Enhance Capabilities in Tertiary Level Education
- Enhance Teaching and Awareness of Geospatial Information in School Curricula
- Foster Geospatial Entrepreneurship
- Provide training on the use/misuse of data resources to all stakeholders



3 | Financial

- Establish NSDI Financial Program Management and Leadership
- Review Best Practice NSDI Investment Programs
- Evaluate Alternate Funding Models
- Develop the Investment Business Case



6 | Standards

- Strengthen and formalize cross-government partnerships
- Develop Compliance Mechanisms for Standards
- Build Knowledge and Skills Capacity in application of Standards
- Agree and adopt international standards where appropriate



9 | Communication and Engagement

- Develop an NSDI Communication and Engagement Strategy and Plan
- Create an Outreach Group



#IGIF



"Member States can achieve a more comprehensive and integrated data approach through the implementation of the frameworks and methods that have been developed by UN-GGIM. The IGIF is now being implemented in many Member States. It creates an enabling environment where countries can coordinate, develop, strengthen, and promote the efficient and effective use, and sharing, of geospatial information."

Mr. Lui Zhenmin
Under-Secretary-General for
Economic and Social Affairs
United Nations

UNITED NATIONS INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK (UN IGIF)

SDG Data Alliance

Based on the foundational principle of reducing inequalities of all kinds, the W.K. Kellogg Foundation, Esri, PVBLIC Foundation, the United Nations Global Geospatial Information Management Section in the Statistics Division, Department of Economic and Social Affairs (DESA), joined forces in 2021 to form **the SDG Data Alliance**.

Using the power of **purpose-driven collaboration** and leading GIS technology, this influential group of partners **will accelerate achievement of the SDGs** by creating 20 SDG Data Hubs across developing countries in Africa, Asia and the Pacific and Latin America and the Caribbean.





A Multi-Stakeholder Partnership

19 Focus Countries



Burkina Faso



Cameroon



Chile



Dominican Republic



Eswatini



Ethiopia



Fiji



Guatemala



Haiti



Honduras



Morocco



Mozambique



Panama



Rwanda



Senegal



South Africa



St. Lucia



Tonga



Tunisia

Reducing inequality (SDG 10) is the most important step countries can take to improve standards of living



The **SDG Data Alliance's** technology, expertise, and financial support enables countries to more precisely allocate resources to address all forms of inequity - reducing inequalities of all kinds.

Including

- **Equity for women, reducing hunger**
- **Reducing poverty**
- **Improving access to clean water**
- **Taking action to reduce the impact of climate change**

The SDG DATA ALLIANCE is influenced by Governance, Technology & People



SDG Data Alliance provides the detailed guidance towards **'integrating'** geospatial information with any other meaningful data to solve our societal problems



Objectives and Outcomes

- **Leverage and strengthen** the in-country expertise from geospatial experts within and across governmental agencies and organizations leveraging the data hubs
- **Address national and global reporting** requirements to report on the SDGs with specific focus on SDG 10
- **Accelerate achievement of the SDGs** by accurately identifying areas for focus and investment





Geospatial Data for Good....Supporting National Ownership

12 May 2022, Geneva, Switzerland

Thank You 😊

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

