Global guidelines supporting risk management using Geospatial Technologies and Data

Statistics Division ECLAC

UN ECLAC DRM Workshop #2:
"Technical Issues Towards Effective Applications of Geospatial Technology & Data in Support of DRM in the Caribbean"

8 September 2021

Initiative of the United Nations for Global Geospatial Information Management UN-GGIM

Takes joint decisions and **establishes guidelines on the production and use of geospatial** information within national and global regulatory frameworks;

Promotes common principles, policies, methods, mechanisms and standards for the **interoperability of geospatial data** and services ;

Provides a platform for the development of effective strategies on **how to build and strengthen national geospatial information capacity**, especially in developing countries.

UN-GGIM regional committees

UN-GGIM Strategy

REQUIREMENTS	GLOBAL POLICY FRAMEWORK	Transforming our World: The 2030 Agenda for Sustainable Development					
		Sendai Framework for Disaster Risk Reduction 2015-2030	SIDS Accelerated Modalities of Action (SAMOA) Pathway	Addis Ababa Action Agenda	Paris Agreement on Climate Change	HABITAT III Urban Agenda	
	GEOSPATIAL CHALLENGES & DRIVERS	Environmental management, Disaster management, Sustainable development, Population, Urban planning, Humanitarian assistance, Food security, Education, National security, Land management, Climate change, Water scarcity, Oceans & marine, Institutional governance, Legal & policy, Health & welfare, Poverty reduction, Sustainable cities, Socio-economic metrics					
	DIRECT NATIONAL BENEFITS & EFFICIENCIES	• Reduced duplication of effort in the capture, management, and delivery of fundamental geospatial information • Authoritative, reliable and maintained geospatial data available nationally, regionally, and globally • Increased return on investment through better coordination, use and reuse of data, information and systems • Better evidence-based decision making, supported by good data, science and policy • More open, accountable, responsive and efficient governments • Presentation and delivery of timely and 'fit for purpose' data in times of need • Increased collaboration and integration of national data and information systems across all levels of government • Best practices and use cases for enriching national processes on geospatial information management					
	OPERATING PRINCIPLES	Sound Nat. Policies, Legal Frameworks & Institutional Arrangements	Provision of Fundamental Authoritative Data and Information	Agreed Standards, Methods, Guides and Frameworks	Principles on Geospatial Information and Open Data	Integration and Interoperability of National Information Systems	Information Sharing and Knowledge Transfer	Building Local to Global Capacity & Capability
DELIVERABLES	WORKING ACTIVITIES AND OUTPUTS	• Geospatial Information for Sustainable Development: 2030 Agenda, Sendai Framework, etc. • Integration of Geospatial & Statistical Information: Implement the Global Statistical Geospatial Framework • Geospatial Information and Services for Disasters: Implement Strategic Framework • Global Geodetic Reference Frame: Roadmap to Implement • Determination of global fundamental data themes • Marine geospatial information • Land administration and management • Legal and policy frameworks • National institutional arrangements • Implementation and adoption of standards for the global geospatial information community					

UN-GGIM Committee of Experts: Main areas of work at a global level

1. Development of the global **geodetic frame of reference**
2. Integrated Geospatial Information Framework **(IGIF)**
3. Geospatial information and services for **disasters** (Global Framework - document available)
4. Geospatial information in support of the **2030 Agenda for Sustainable Development** (geospatial lens)
5. **Standards** adoption and implementation by the global geospatial information community
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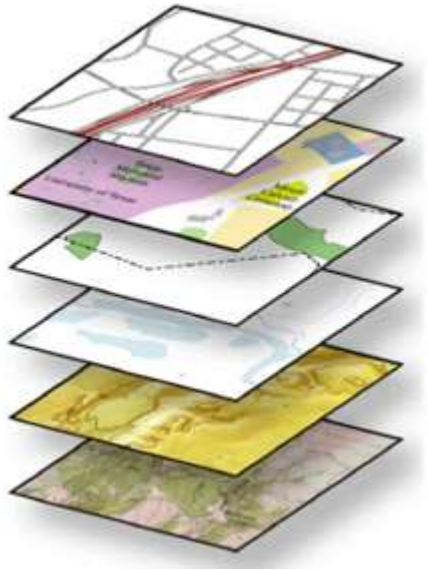
Integrated Geospatial Information Framework (IGIF)

The Integrated Geospatial Information Framework is a guideline document endorsed by the United Nations and generated in collaboration with the World Bank, which aims to **provide a foundation and guidance** for countries in **developing and strengthening their national and subnational institutional arrangements** in the management of geospatial information and related infrastructures.



The Integrated Geospatial Information Framework consists of three documents to support the work of the countries

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN NATIONAL GEOSPATIAL INFORMATION MANAGEMENT

PART 1: OVERARCHING STRATEGIC FRAMEWORK

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

- General **strategic messages**
- The **"why"** of geospatial information management
- Aimed at **decision makers**

PUBLICADO

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN NATIONAL GEOSPATIAL INFORMATION MANAGEMENT

PART 2: IMPLEMENTATION GUIDE

[CONSULTATION DRAFT: WORK-IN-PROGRESS]

- **Guidance and specific actions** to implement the Framework
- Contains **references, good practices and specific principles**
- Reference document, **non-prescriptive**

EN DESARROLLO

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN NATIONAL GEOSPATIAL INFORMATION MANAGEMENT

PART 3: ACTION PLAN

- **Templates and guides** for putting the Framework into practice
- Provides the **'how, when and who'** approach
- Identification of activities in the **short, medium and long term**

PRÓXIMA ETAPA

IGIF: vision, mission, strategic drivers, principles and underlying objectives

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

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PART 1: OVERARCHING STRATEGIC FRAMEWORK

VISIÓN

El uso eficiente de información geoespacial por parte de todos los países para medir, monitorear y lograr un desarrollo social, económico y ambiental sostenible, sin dejar a nadie atrás

MISIÓN

Promover y apoyar la innovación y proveer el liderazgo, la coordinación y los estándares necesarios para proporcionar información geoespacial integrada, que se puede aprovechar para encontrar soluciones sostenibles para el desarrollo social, económico y ambiental

CONDUCTORES ESTRATÉGICOS

Agenda Nacional de Desarrollo - Prioridades Estratégicas Nacionales - Programa Nacional de Transformación - Expectativas de la Comunidad - Acuerdos comerciales multilaterales - Transformando nuestro mundo: Agenda 2030 para el Desarrollo Sostenible - Nueva Agenda Urbana - Marco de Sendai para la Reducción del Riesgo de Desastres 2015 – 2030 - Agenda de Acción de Addis Abeba - Modalidades de Acción Aceleradas en los Pequeños Estados Insulares en Desarrollo (SAMOA Pathway) - Convención Marco de las Naciones Unidas sobre el Cambio Climático (Acuerdo de las Naciones Unidas): Llamada a la acción

PRINCIPIOS BÁSICOS

Habilitación Estratégica	Transparente y Responsable	Confiable, Accesible y Fácil de Usar	Colaboración y Cooperación	Solución integradora	Sostenible y Valorado	Liderazgo y Compromiso

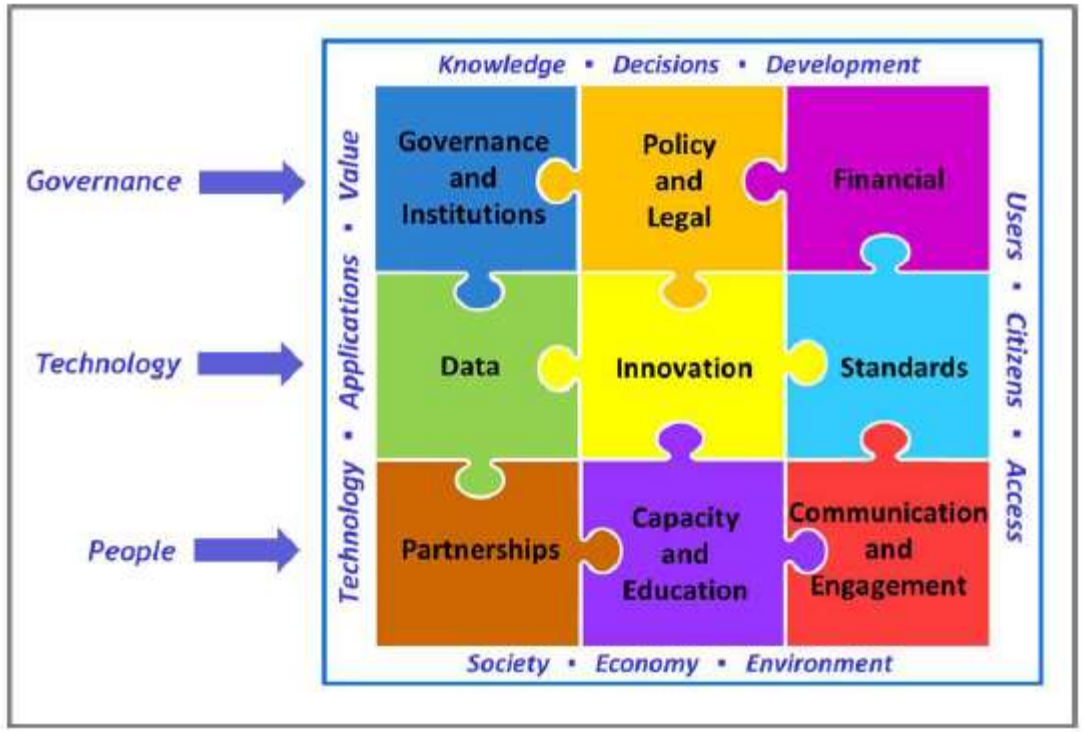
OBJETIVOS

Gestión Eficaz de la Información Geoespacial	Transferencia de Conocimiento, Capacidades y Competencias, Aumentados	Sistemas y Servicios Integrados de Información Geoespacial	Retorno Económico de la Inversión
Programas de Educación y Formación Sostenibles	Asociaciones y Cooperación Internacional Apalancadas	Comunicación y Compromiso Nacional Mejorados	Beneficios y Valor Societal Enriquecidos

The Integrated Geospatial Information Framework contains nine strategic pathways that are an extension of the components of an SDI

The framework is structured around 9 strategic pathways associated with three 3 levels: **governance, technology and people.**

Each strategic path contains a **set of specific elements** that allow organizing the definition of activities, results and products.



Source: UN-GGIM Integrated Geospatial Information Framework

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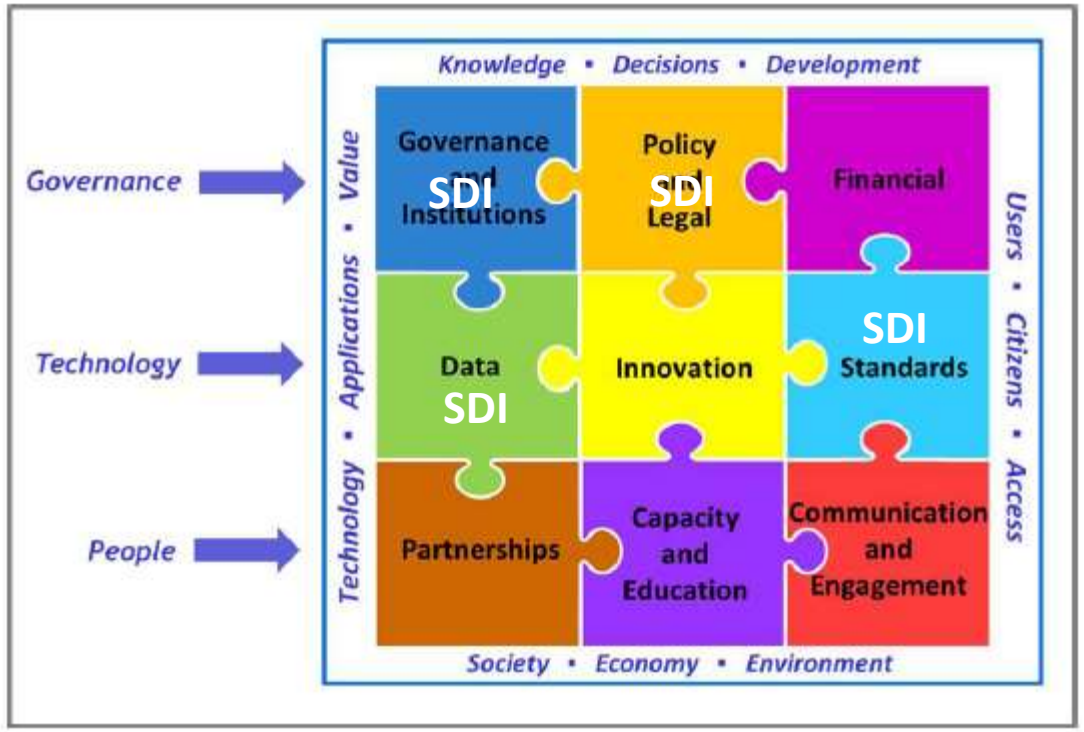
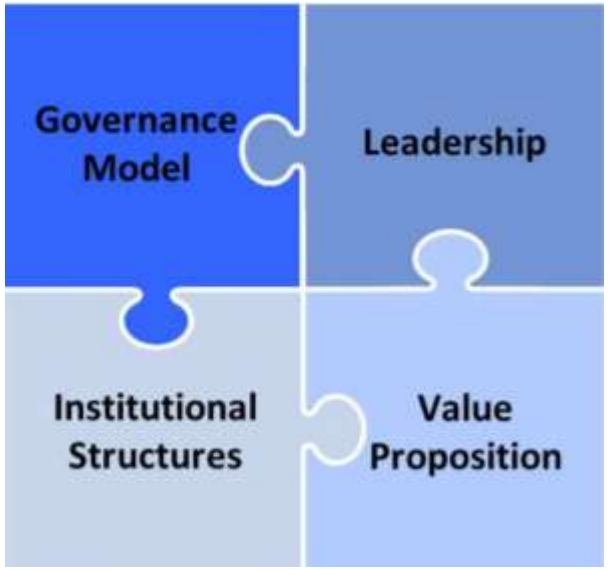


Source: UN-GGIM Integrated Geospatial Information Framework

1. Governance and institutions



- ✓ **Efficient planning and coordination** of government geospatial information resources.
- ✓ **Strengthening of institutional mandates** and political commitment.
- ✓ **Cooperative data exchange environment**;
- ✓ **Shared understanding** of the value of integrated geospatial information management.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

1. Governance and Instititutions

Implentation aspects

Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

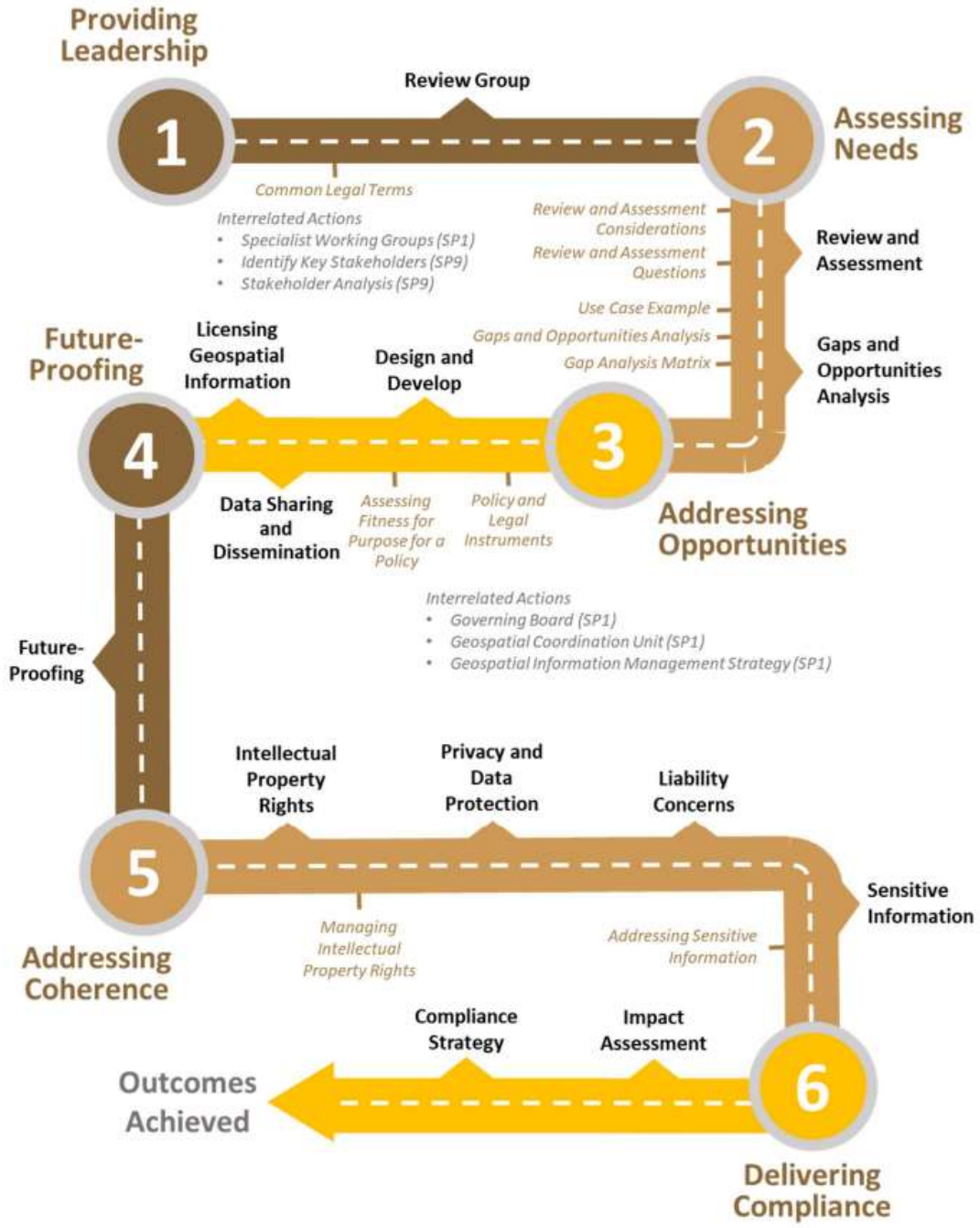
2. Policy and Legal

- ✓ A **robust and enabling policy and legal environment** that maximizes the utility of geospatial information
- ✓ Management, exchange, integration and **effective and secure** application of geospatial information
- ✓ A **legal and policy framework that evolves over time** and responds to societal progress and technological developments
- ✓ Clarity in **responsibilities and mandates**, **strengthening of governance and accountability** in the management of geospatial information.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

2. Policy and Legal

Implementation aspects



Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

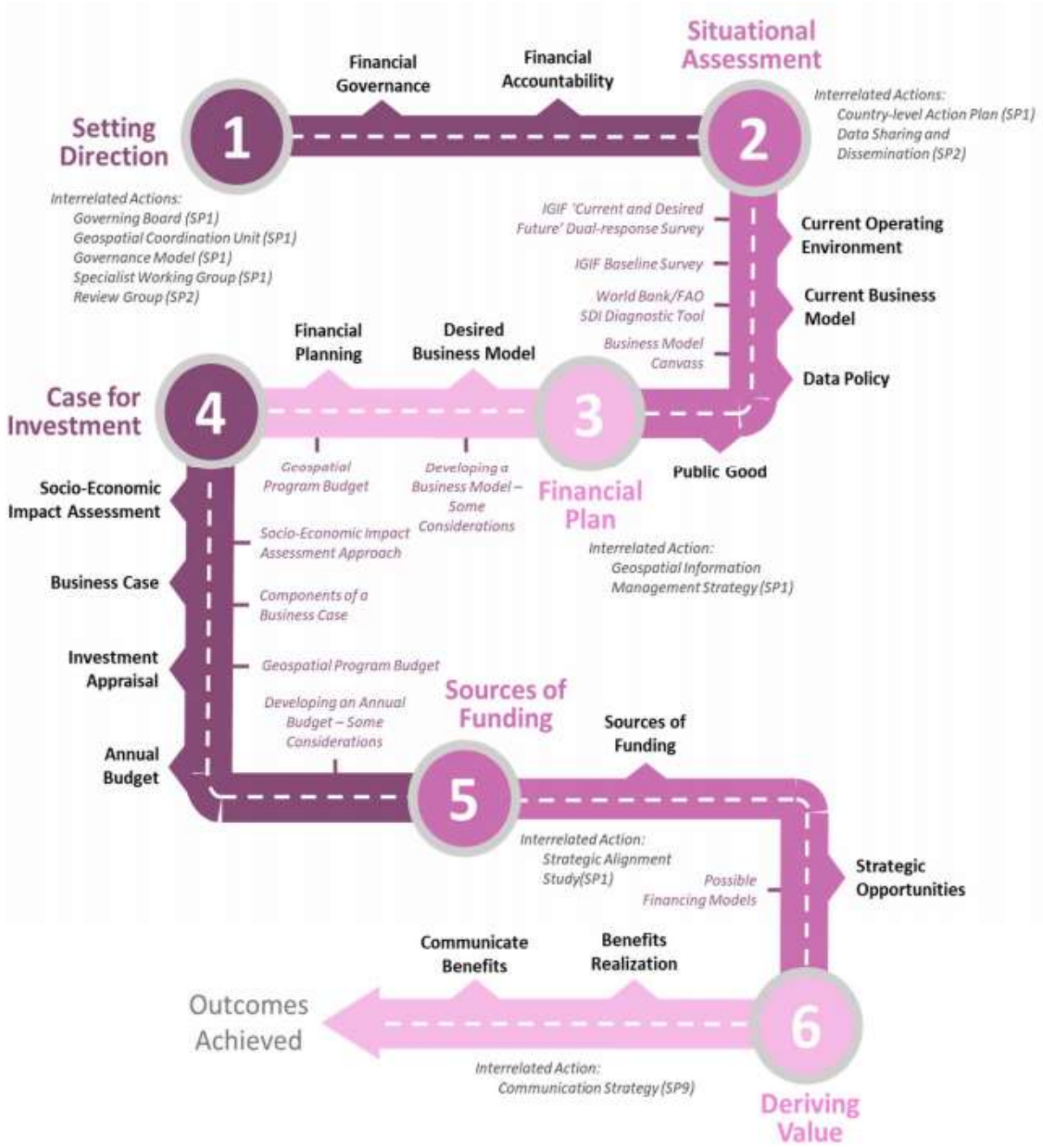
3. Financial

- ✓ Financial planning as a **task of the intersectoral committee**
- ✓ **Study of geospatial capabilities** in organizations that are part of the national geospatial initiative
- ✓ Alignment with the **strategic objectives of governments**
- ✓ **Socio-economic impact** analysis.
- ✓ Building **alliances**
- ✓ Research on **financing models**

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

3. Financial

Implementation aspects



Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

4. Data

- ✓ **Greater range and scope of official and integrated geospatial data** for decision-making and policy support.
- ✓ **Critical mass of data** centrally coordinated to **support national development** and innovation.
- ✓ **Cost reduction** through productivity improvements based on well-defined data supply chains, which eliminate duplication and **ensure standardized data access for integration and reuse**.
- ✓ Ability to measure progress towards achieving socio-economic benefits, including **sustainable development goals**.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

4. Data

Implementation aspects

Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

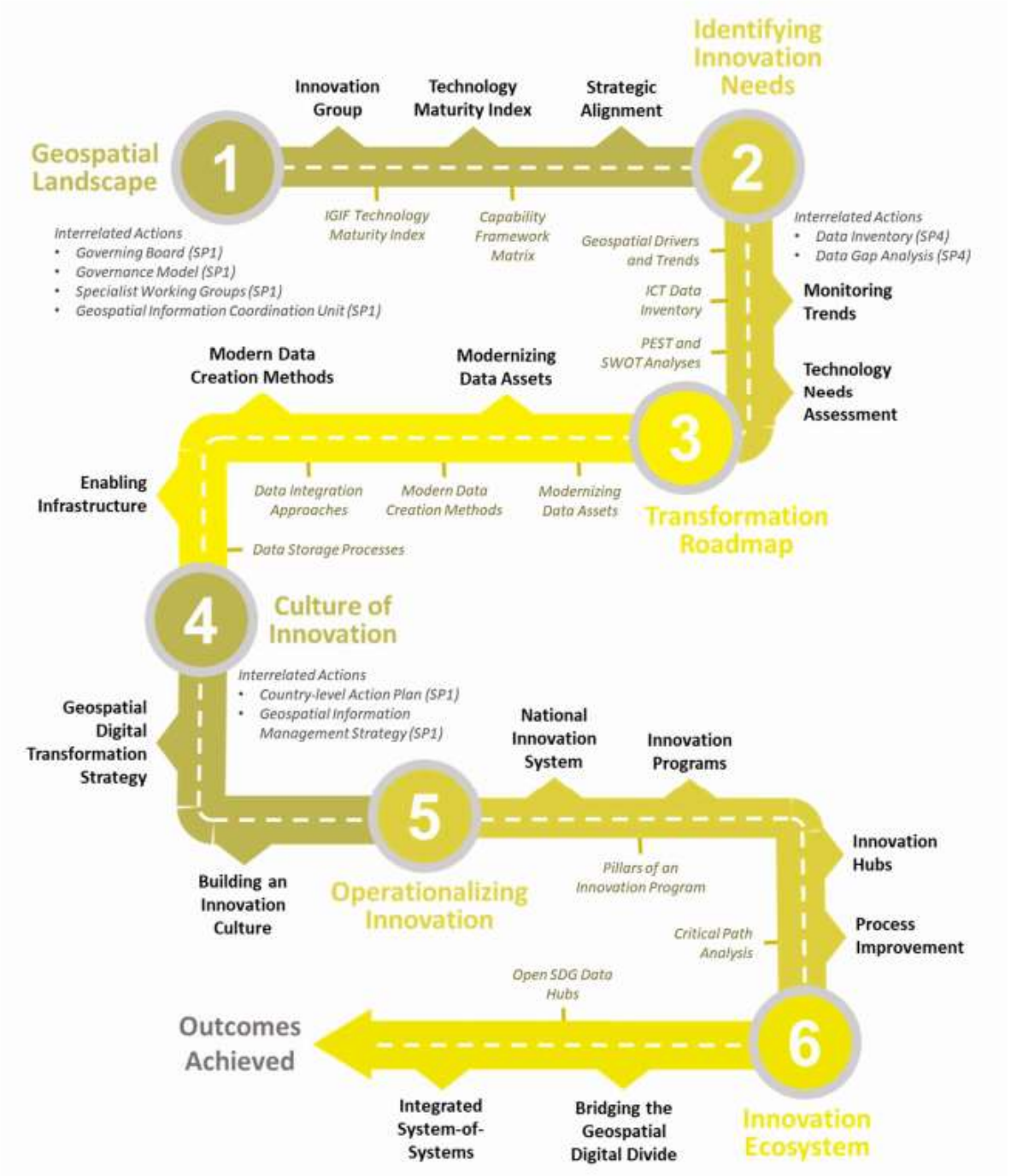
5. Innovation

- ✓ Improvement in the **processes of collection, management, distribution and analysis** of geospatial information, for a more effective decision-making based on evidence.
- ✓ Increased **productivity and efficiency** achieved through an environment enabled for innovation.
- ✓ Innovative workforce that creates and executes **new processes** and develops **new products and services**.
- ✓ Ability to address the **geospatial digital divide** through technologies and an innovation ecosystem.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

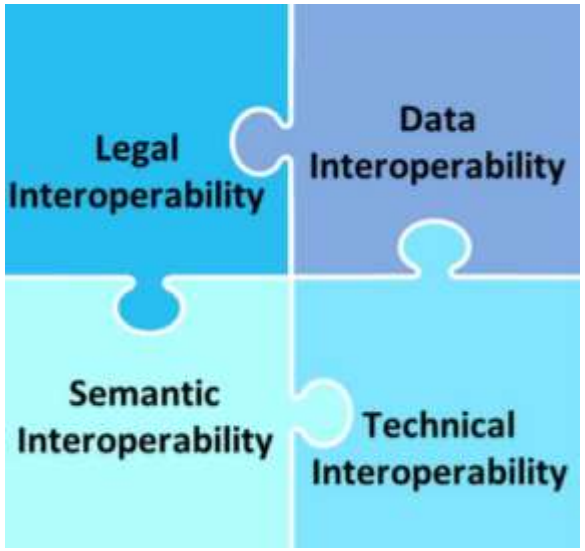
5. Innovation

Implementation aspects



Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

6. Standards



- ✓ Reduction of **barriers to the exchange and integration of data** to support decision-making, policies and State services.
- ✓ Enhanced skills to **share geospatial information across jurisdictional boundaries** (local, national, and global) and to cooperatively address issues of common importance.
- ✓ Rapid mobilization of **new data sources and new technologies**, avoiding dependence on specific technology providers.
- ✓ **Efficiency in the production** and life cycle management of geospatial data; saving effort, time and costs in the reuse of data.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

6. Standards

Implementation aspects

Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

7. Partnerships

- ✓ Greater **capacity for development** through the exchange, learning and transfer of knowledge;
- ✓ Greater knowledge of the organization, experience and skills;
- ✓ **Expanded capacity** through complementary resources
- ✓ Agility and flexibility in **digital transformation and reform**; and
- ✓ **Increased creativity and innovation** through collaboration in mutual endeavors.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

7. Partnerships

Implementation aspects

Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

8. Capacity and Education

Broad geospatial awareness and capabilities at all levels through effective capacity development and education programs

Increased **adoption and application of geospatial information, technologies** and processes by government, organizations, communities, and individuals

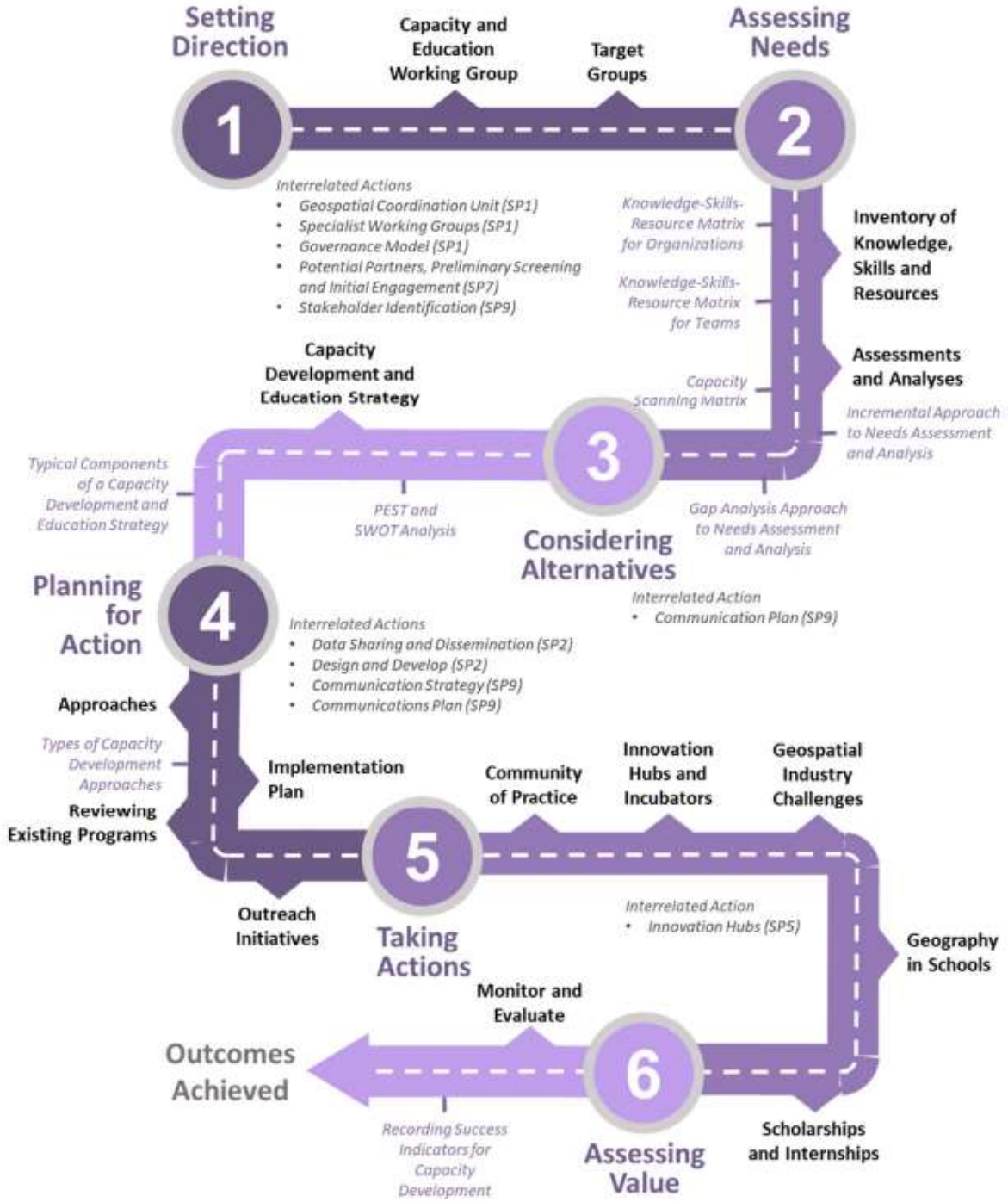
Stimulate **creativity and innovative solutions to address real-world challenges**, economic opportunities and growth, and wellbeing of society

Primary to secondary students, post-secondary students, and workplace persons equipped with **increasing knowledge and proficiencies in geography and geospatial sciences**.

Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

8. Capacity and Education

Implementation aspects



Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

9. Communication and engagement

- ✓ Greater **awareness and active participation** in the process of strengthening geospatial information management.
- ✓ **Increased use** of geospatial information within government, the private sector, and the community at large.
- ✓ Strong **sense of trust** in government information and confidence in its use.
- ✓ Greater **synergy with the private, scientific, academic and research sectors,** leading to innovations and great achievements.
- ✓ Opportunities to make recommendations that **improve development and increase the benefits** of geospatial information for their communities and for the country.

Source: Integrated Geospatial Information Framework (Consultation Draft) UN-GGIM/World Bank 2018

9. Communication and engagement

Implementation aspects

Source: Integrated Geospatial Information Framework Implementation Guide (Consultation Draft) UN-GGIM/World Bank 2020

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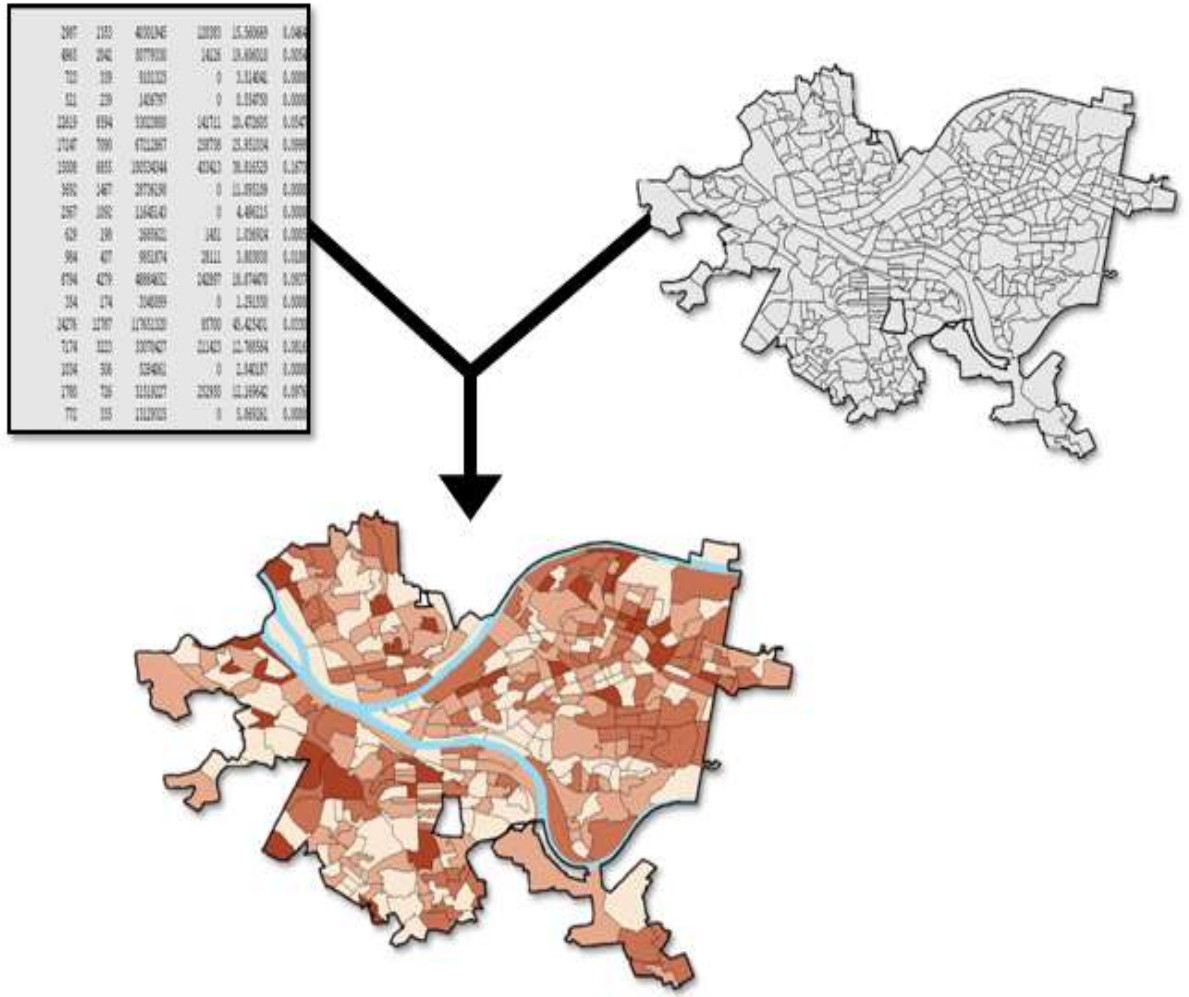
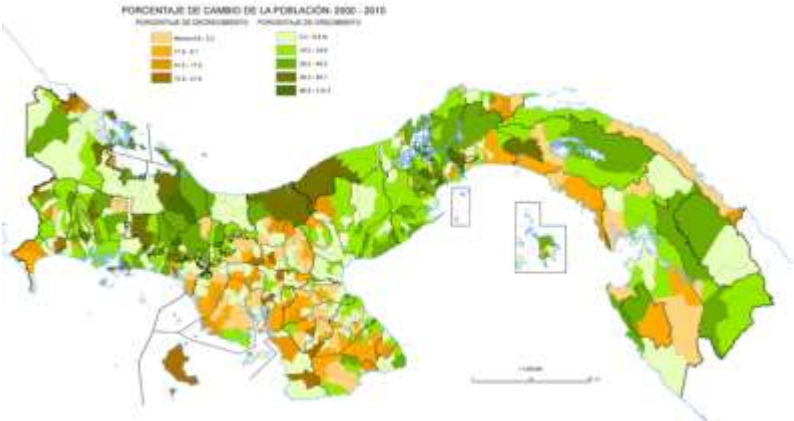
Integration of statistical and geospatial information

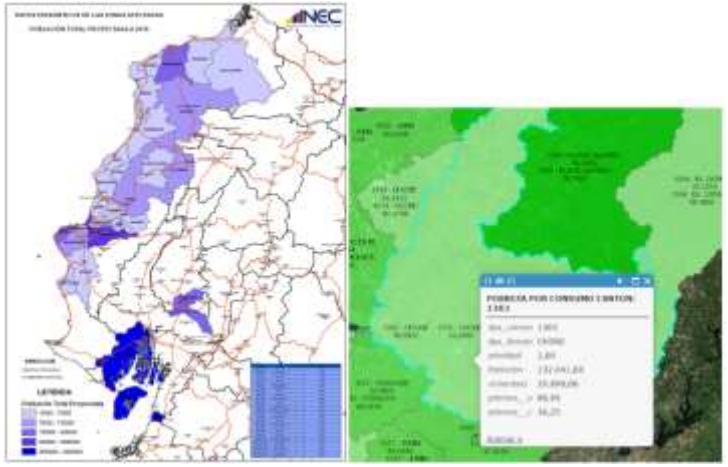


Why is the integration of statistical and geospatial information important?

- ✓ **New, better and more integrated information** for analysis and decision-making processes
- ✓ More information on **small geographic areas**
- ✓ **New insights and data relationships** that would not have been possible through analysis of social, economic or environmental data in isolation from each other
- ✓ **Support** to local, sub-national, national, regional and global **decision-making processes**
- ✓ Support for the **measurement and monitoring** of the objectives and the global indicator framework (SDG).

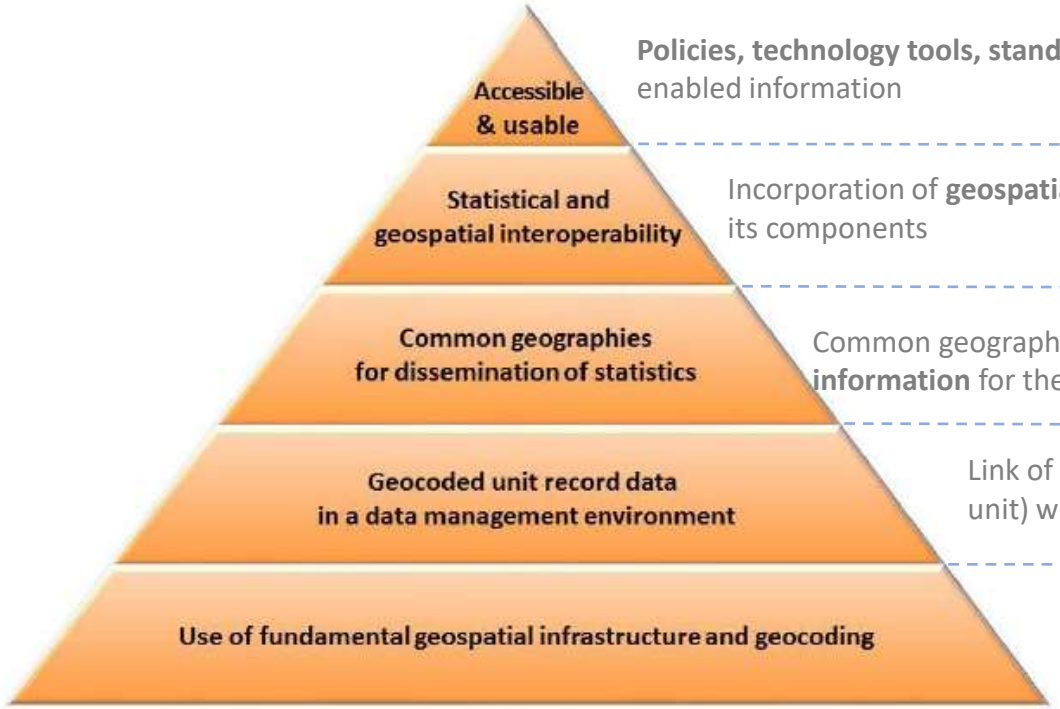


Source: Instituto Geográfico Nacional Tommy Guardia, Panamá



Source: Instituto Nacional de Estadística y Censos, Ecuador

The Global Geospatial Statistical Framework is composed of five principles that open a space for joint and collaborative work between both communities of practice, at the regional and national levels.



Policies, technology tools, standards and guidelines that support the **publication, access, analysis** and **visualization** of geospatially enabled information

Incorporation of **geospatial frameworks, standards and processes** in the common statistical production architecture and its components

Common geographies for the **discovery, access, integration, analysis and visualization of continuous statistical information** for the areas of interest. Data from disparate sources can be integrated using common geography

Link of a **geocode for each statistical unit record** (person, household, company, building or parcel / land unit) within a data management environment.

High-quality and standardized location description, to assign precise coordinates or a small geographic area or a standard grid reference **for each statistical unit**

Source: UN-GGIM Global Statistical Geospatial Framework

Contributions from the geospatial and statistical communities to the implementation of a geostatistical framework

- Administrative units
- Georeferenced postal addresses
- Property division
- Building identifiers
- Transport networks
- Topographic maps, elevation and depth data
- Satellite image data
- Geocoding standards
- Metadata standards
- Geodetic Reference Frames
- OGC interoperability protocols
- Technological tools for geospatial data management (GIS, Map services)

- Census geographies
- Social, economic, agricultural, environmental Statistics
- Demographic and census data
- Administrative records
- Statistical business process models
- National and international privacy protocols
- Principles of registration data for statistical and administrative units and their storage and management.
- Metadata standardsInteroperability standards (SDMX, ESS methodological work (GEOSTAT))
- Technological tools for statistical data management

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Fundamental Geospatial Data

Source: UN-GGIM

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Strategic Framework on Geospatial Information and Services

Source: UN-GGIM Working Group on Geospatial Information and Services for Disasters

ECLAC support at the regional and national level

Support the implementation of the **global agenda** at the **national level**

Provide **technical assistance** for the implementation of national geospatial frameworks and spatial data infrastructures (SDI)

Support the process of **integration of statistical and geospatial information** in LAC countries

Promote the **use of geospatial information** in the implementation of the 2030 Agenda for sustainable development

Facilitate the coordination of ECLAC with the global agencies of the United Nations and other global and regional organizations in the management of geospatial information

Apply the diagnosis and **monitor regional progress** related to the management of geospatial information

INTEGRATION

SHARED BENEFITS

COLLABORATIVE WORK

TRANSPARENCE

MANAGEMENT MODERNIZATION

EFFICIENT USE OF THE RESOURCES

NACIONES UNIDAS

CEPAL

Thank you ¡

Statistics Division ECLAC

UN ECLAC DRM Workshop #2:
"Technical Issues Towards Effective Applications of Geospatial Technology & Data in Support of DRM in the Caribbean"

8 September 2021