Jet Propulsion Laboratory
California Institute of Technology

UN GGIM Subcommittee on Geodesy Education, Training, and Capacity Building Initiatives and applications to the UN GGIM-World Bank Integrated Geospatial Information Framework

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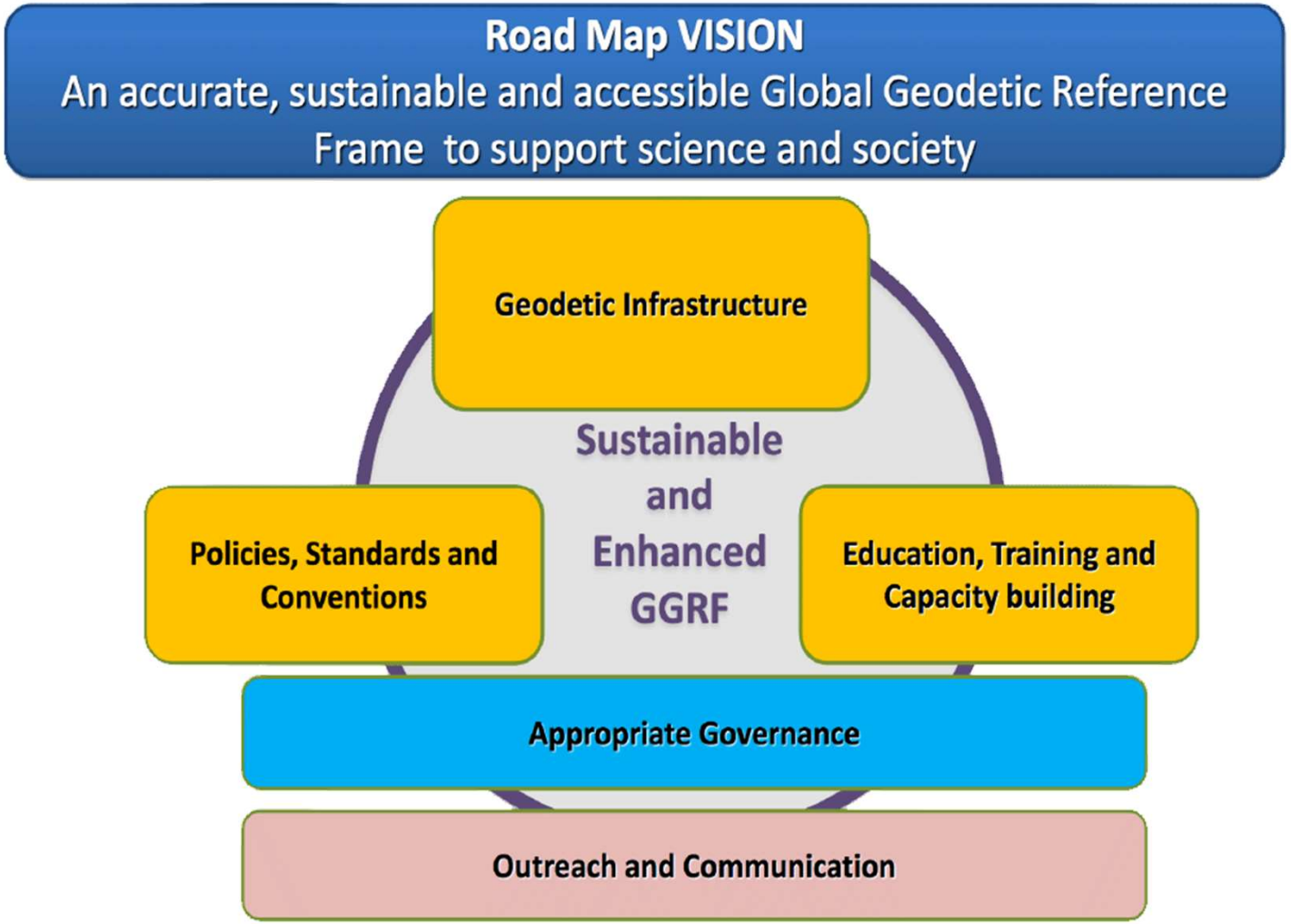
UN GGIM Subcommittee on Geodesy
Working toward an accurate, sustainable and accessible
Global Geodetic Reference Frame
to support science and society



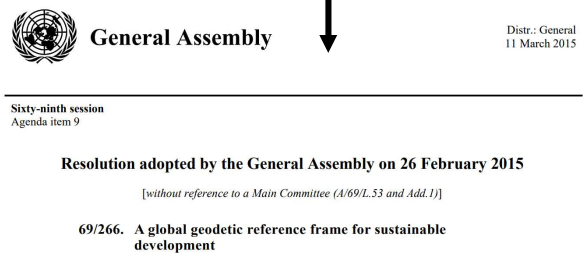
Graphic courtesy of Gary Johnston/ UN GGIM SCoG

…So many acronyms…

…So many acronyms…

UN-GGIM
UNITED NATIONS INITIATIVE ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

UN GGIM Subcommittee on Geodesy (UN-GGIM SCoG)



General Assembly

Distr.: General
11 March 2015

Sixty-ninth session
Agenda item 9

Resolution adopted by the General Assembly on 26 February 2015

[*without reference to a Main Committee (A/69/L.53 and Add.1)*]

69/266. A global geodetic reference frame for sustainable development

UN-GGIM = United Nations Initiative on Global Geospatial Information Management

- Initiative of UN - led by United Nations Member States
- Aims to address global challenges regarding the use of geospatial information

SCoG = Subcommittee on Geodesy

- Recognising the growing demand for more precise positioning services, UN-GGIM created a UN GGIM Subcommittee on Geodesy (SCoG; formerly Working Group for a Global Geodetic Reference Frame).

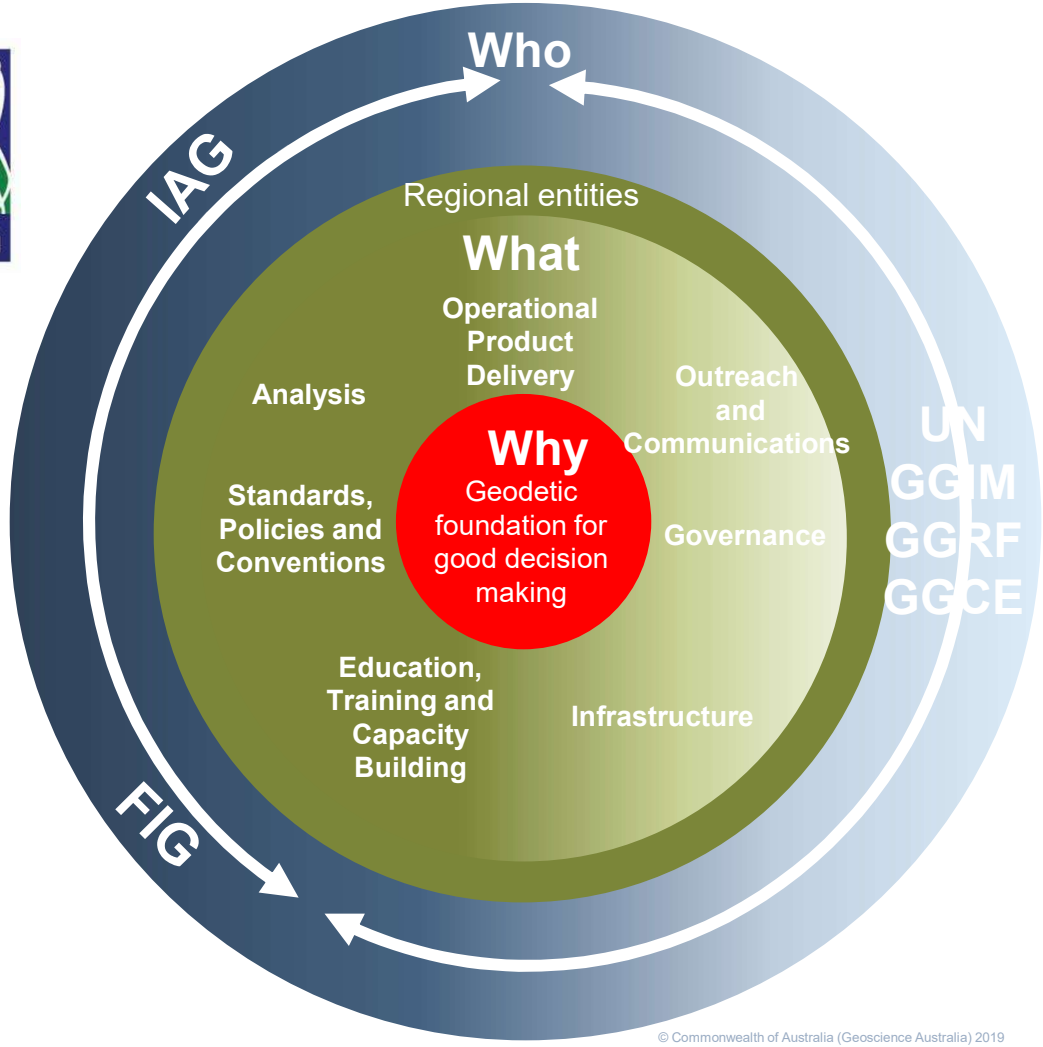
GGRF = Global Geodetic Reference Frame

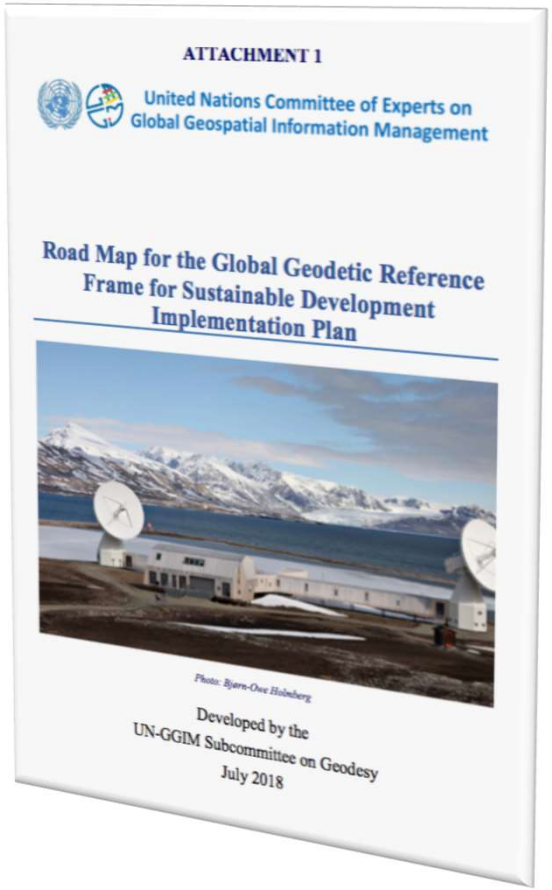
- Formulated and facilitated the Resolution for a Global Geodetic Reference Frame for Sustainable Development (UNGGRF).

UN-GGIM
UNITED NATIONS INITIATIVE ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

IAG

Working together to provide a geodetic foundation for good decision making for sustainable development





SCoG Education, Training, and Capacity Building

Current situation

- Utilisation of the GGRF helps build a foundation for a country's development and sustainability. A lack of geodetic skills blocks this utilisation. Hence, **a lack of geodetic competence and capability hinders a Member States development and sustainability**
- The skills required to install and operate geodetic instruments, and analyse the data, are very specific and mastered by only a small number of people worldwide
- The aforementioned skillsets are not generally taught in mainstream higher education programs
- Some countries have geodetic capability, but only in small numbers of people, resulting in reduced capacity to contribute to the GGRF
- Other countries have neither capability nor capacity
- IAG and FIG currently offer some capability development activities

SCoG Education, Training, and Capacity Building

Recommendations

- Development organisations consider investments in national and regional geodetic capacity building to ensure efficient access to, and utilisation of, the GGRF in developing countries.
- Member States, **in cooperation with the IAG**, establish a global geodetic technical assistance program
- Member States, which **have the capacity, assist Member States with less capacity** to build sufficient geodetic capacity to efficiently and accurately access and utilise the GGRF in order to realise the sustainable development goals.
- Member States take actions to ensure educational and research institutions **recognise the importance of geodetic science, and increase the availability of geodetic-focused degrees and programs of study**, as well as increase the number and availability of geodetic courses in other associated degrees.
- Member States **openly share all geodetic skills**

Capacity Building through International Cooperation

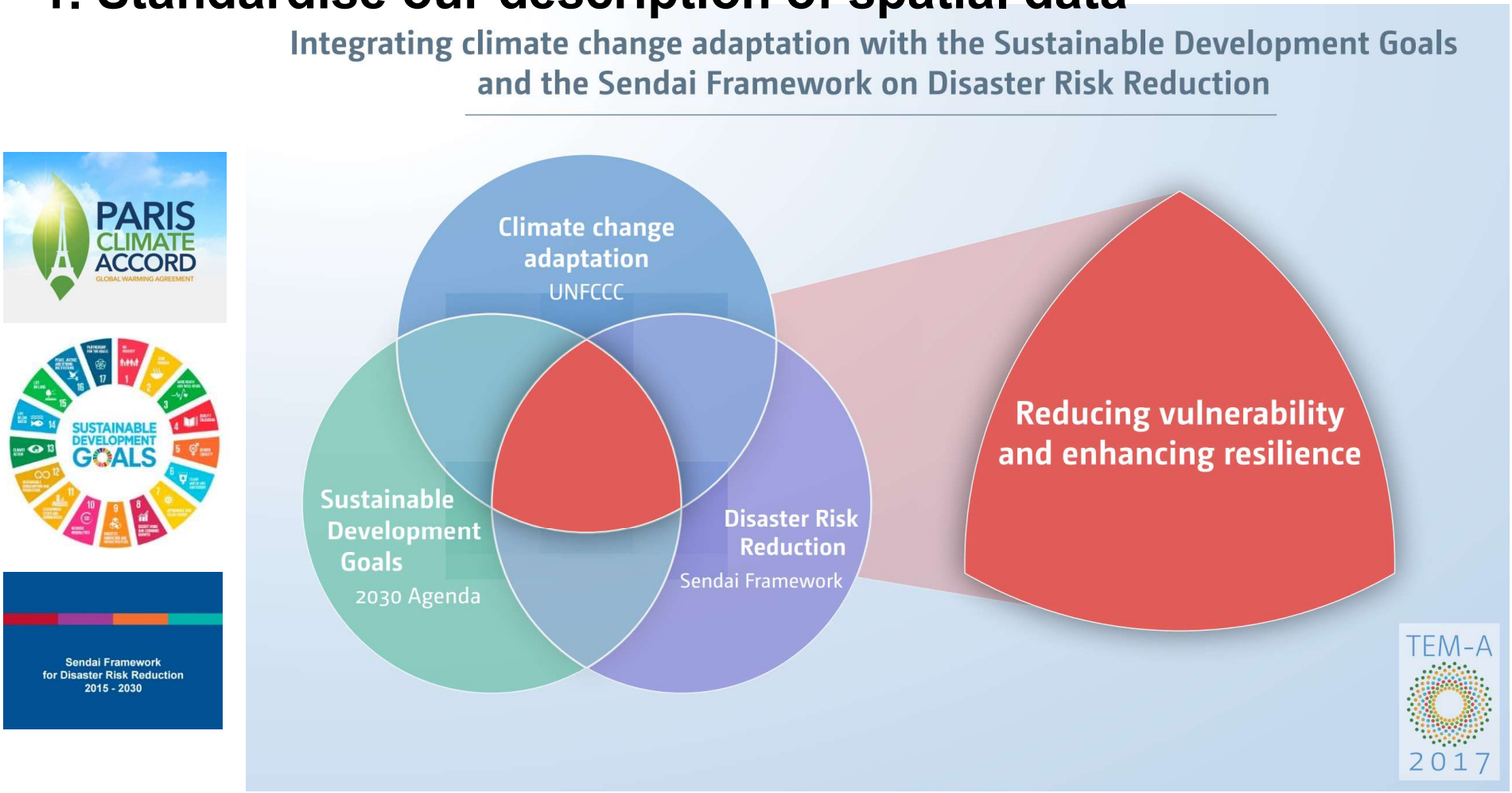
UNDRR
UN Office for Disaster Risk Reduction

Sendai Framework
for Disaster Risk Reduction
2015 - 2030

- Geodetic **Capacity Assessment and Gap Analysis**
- Identification of Existing Capacity Building Resources and **Enabling Discovery and intuitive Interoperability**
- **Regionally Focused** Capacity Building **Workshops**
- Standardized Capacity Building and Development **Frameworks**
- Cross-linkages to **Sustainable Development Goals (SDGs)**
- Cross-linkages to **Sendai Framework for Disaster Risk Reduction**

How can we utilize
Sustainable Development Goals
Sendai Targets + Indicators
to support GNSS Capacity Building?

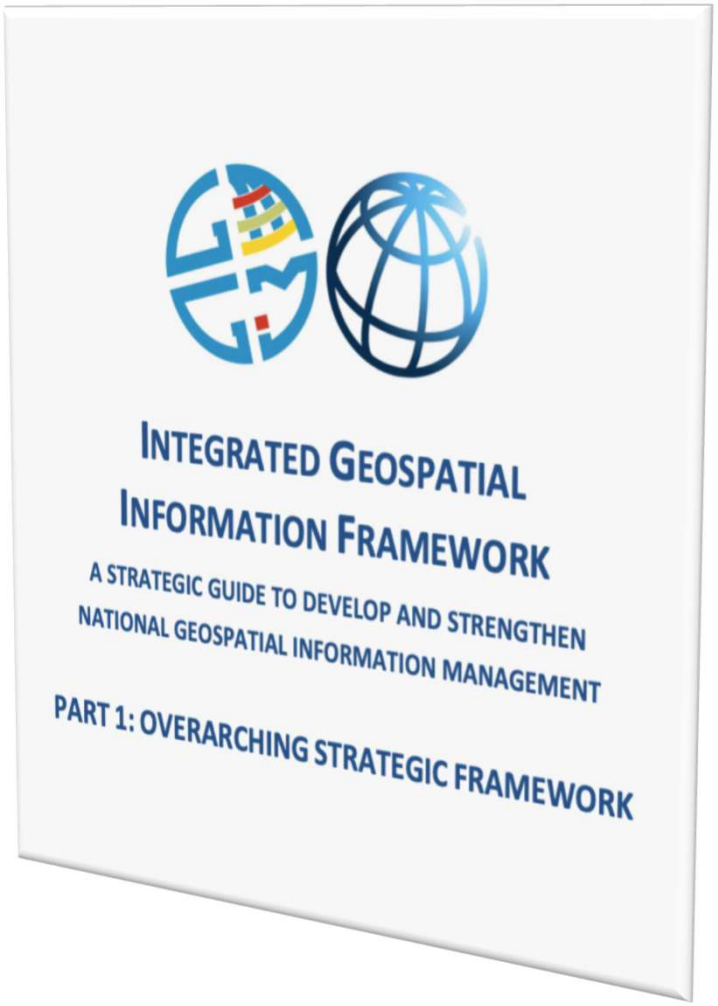
1. Standardise our description of spatial data



GGIM-World Bank

Integrated Geospatial Information Framework

- UN and World Bank collaborative roadmap to help governments develop, access, and use geospatial information to make effective policies and more accurately direct aid and development resources.
- Makes concrete recommendations on establishing national geospatial information management and putting that information to use.
- Calls for partnerships with civil society, businesses, and academic institutions who have access to relevant data and technology.



An Integrated Geospatial Information Framework

What is the UN GGIM-World Bank IGIF?

- Guide for developing, integrating and strengthening geospatial information management.
  - Some countries don't have management tools to for geospatial data
  - Some countries do, but they could be better
- Developed jointly by the United Nations and the World Bank.

An Integrated Geospatial Information Framework

Why do we need this Framework?

"Everything happens somewhere"

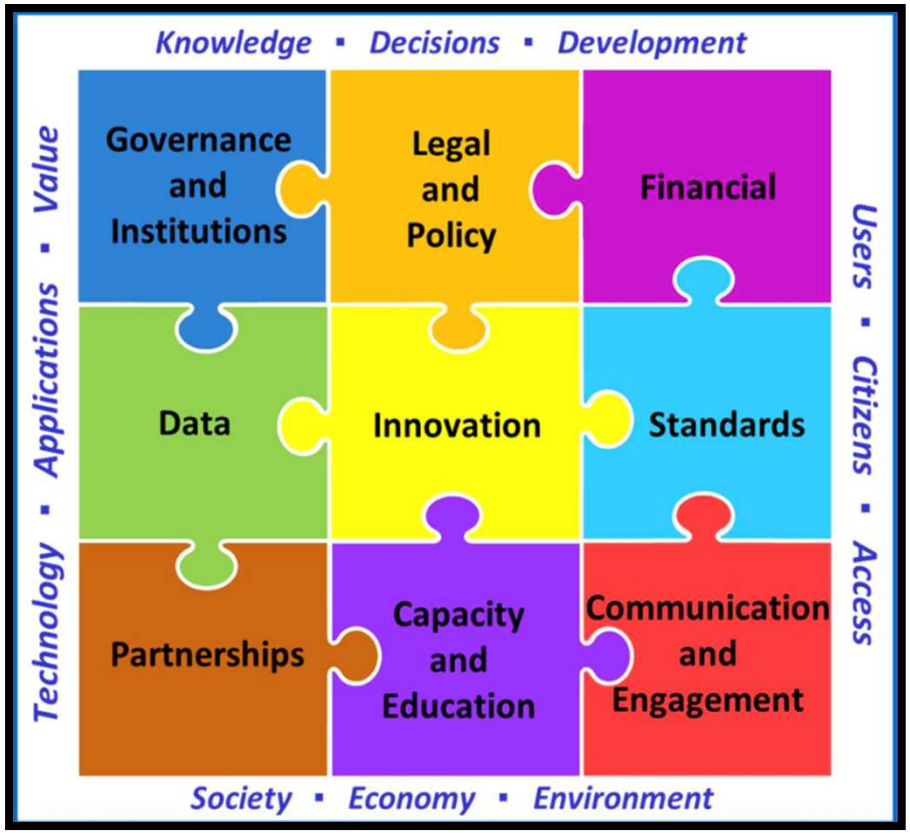
- Increasing recognition that spatial information is fundamental to good decision making.
- To maximise the use of our spatial data, there is a need to:
  1. standardise how we talk about spatial data;
  2. identify gaps and develop 'fit for purpose' plans; and
  3. improve the quality, accuracy, interoperability and accessibility of spatial data.
- The Integrated Geospatial Information Framework aims to help achieve these goals.

UN GGIM-World Bank
Integrated Geospatial Information Framework

Governance →

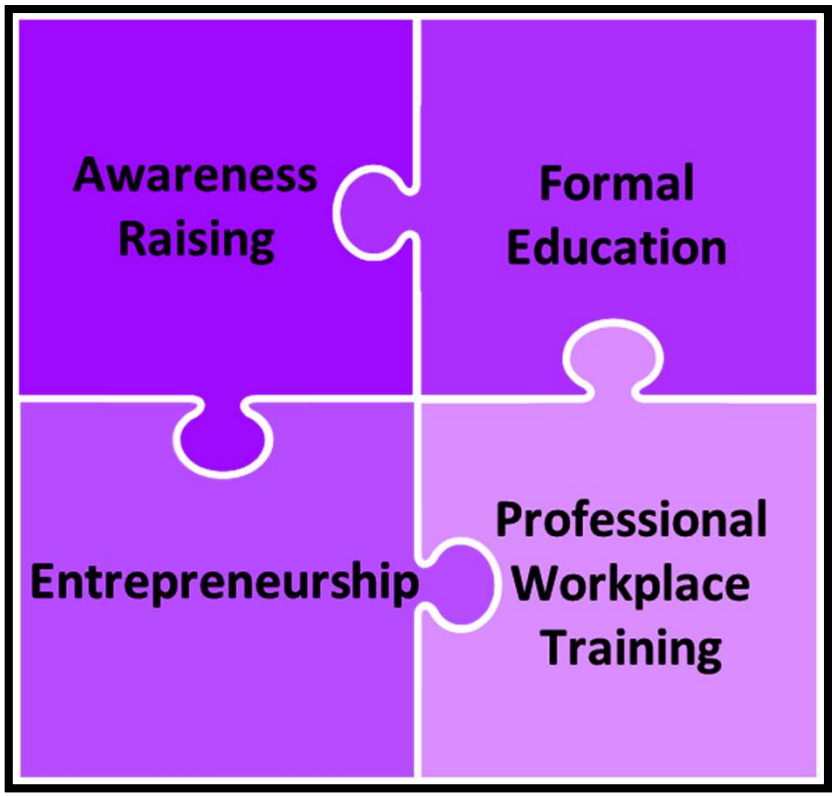
Technology →

People →



- **9 strategic pathways**
- **3 main area of influence:**
  - **governance;**
  - **technology; and**
  - **people**.
- Seek to maximise the geospatial information by making it **available and accessible** to governments, community, businesses, academia, and civil societies innovate, co-create and develop new products, services, and applications that deliver new **knowledge for evidence-based policy and decision-making**.

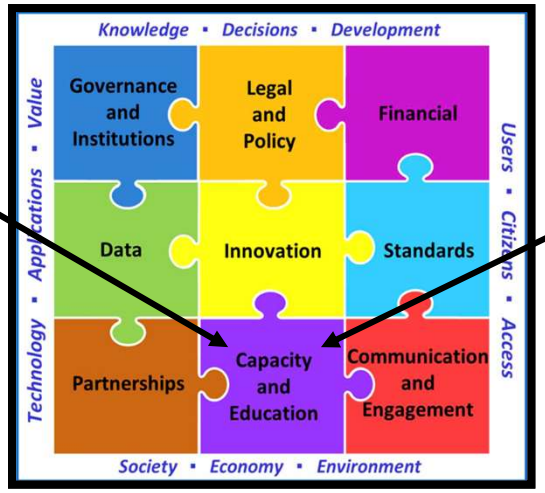
STRATEGIC PATHWAY 8
CAPACITY AND EDUCATION



- *This strategic pathway establishes **enduring capacity building programs and education systems** so that geospatial information management and entrepreneurship can be sustained in the longer term.*
- *The objective is to **raise awareness and develop and strengthen the skills, instincts, abilities, processes and resources** that organizations and communities require to utilize geospatial information for decision-making*

Standardise our description of spatial data

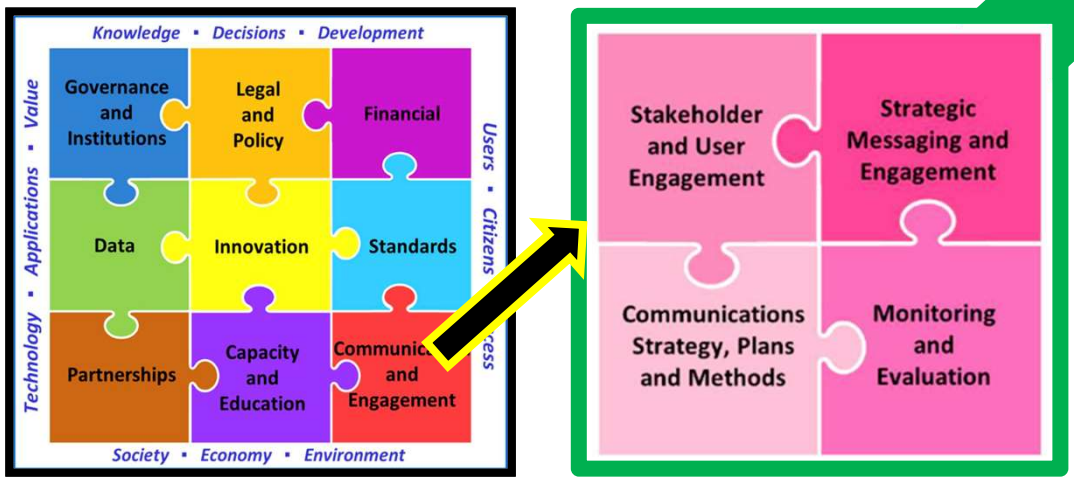
TARGET 4.3
By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.



TARGET F:
Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present framework by 2030;

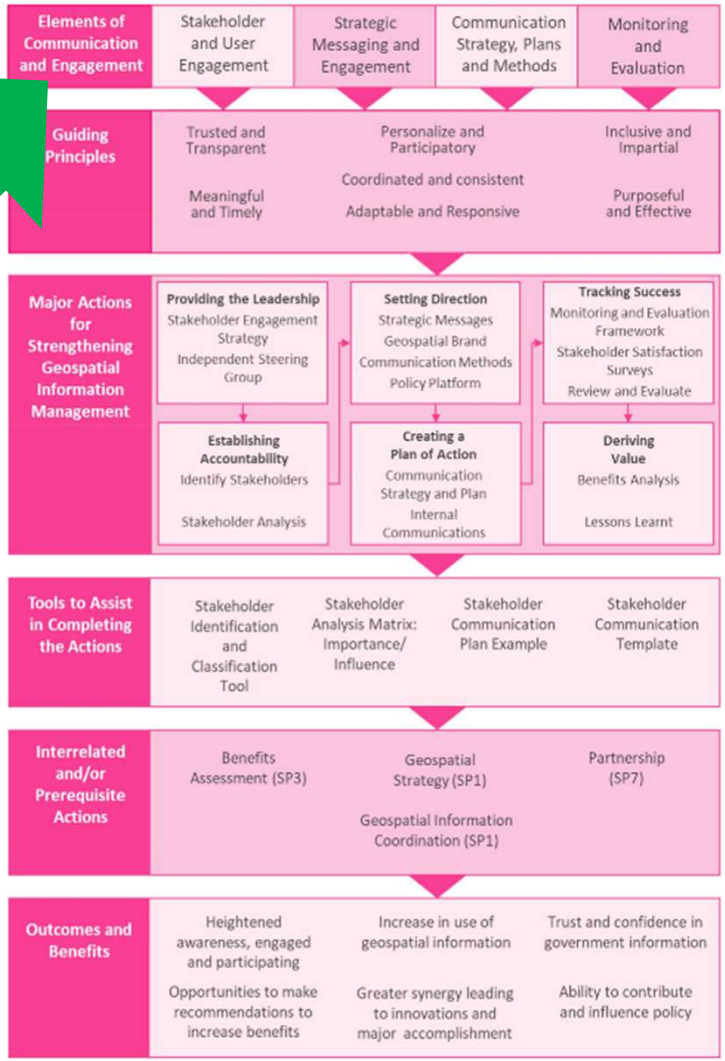
Describe country / agency spatial data infrastructure using standardised language and makes it more efficient to track progress of countries ability to meet targets to Sustainable Development Goals, Sendai Framework, Paris Accord etc.

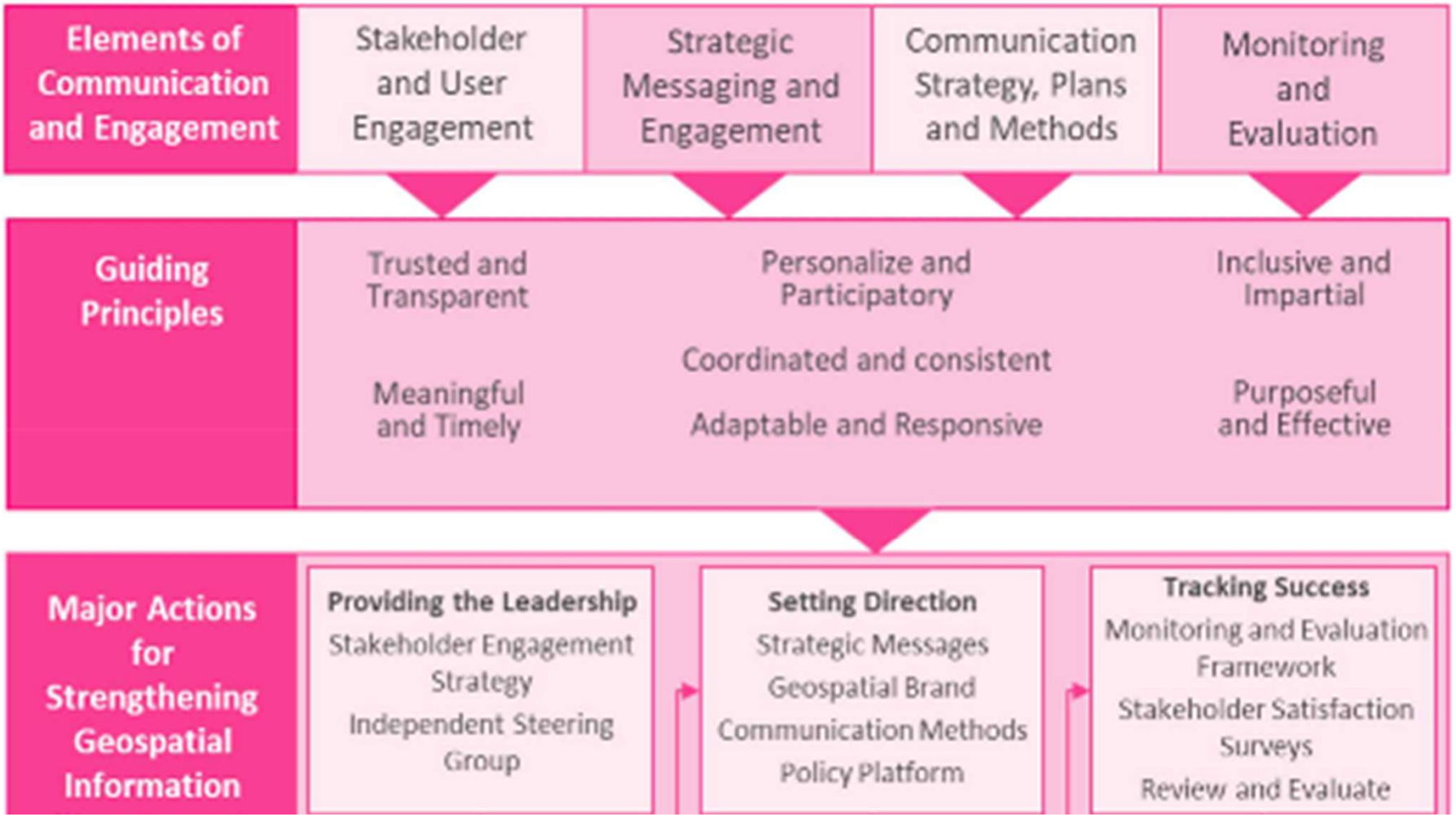
Part 2: Implementation Guide Overall Structure Communications Example

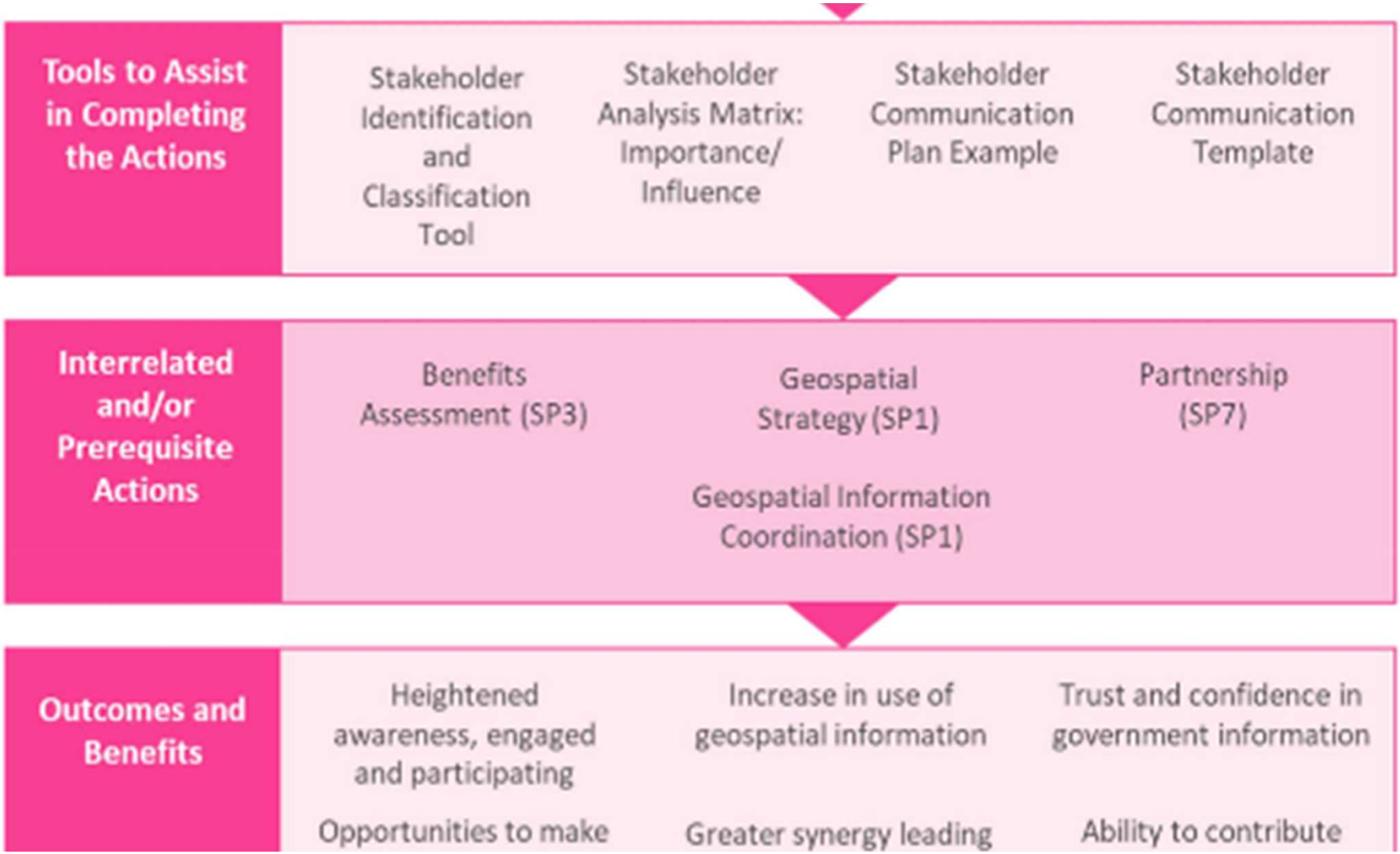


The overall structure shows the four key elements, guiding principles, actions and interrelated actions; and the tools provided to support the achievement of these outcomes

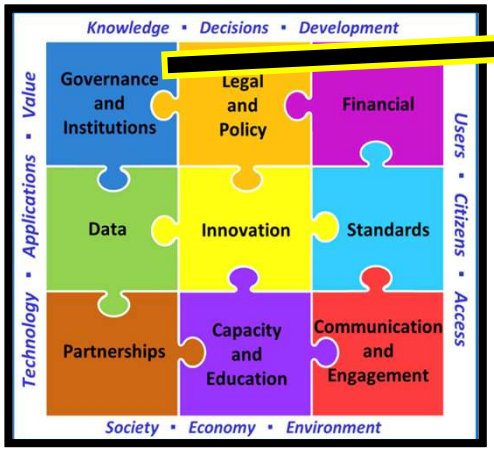
http://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/IGIF_SP9-Communication_and_Engagement_FIRST_DRAFT.pdf

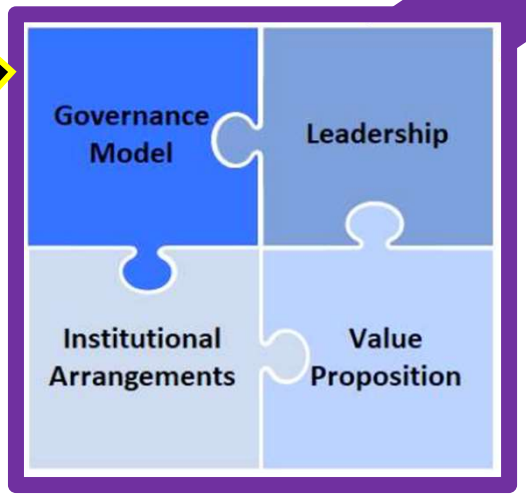


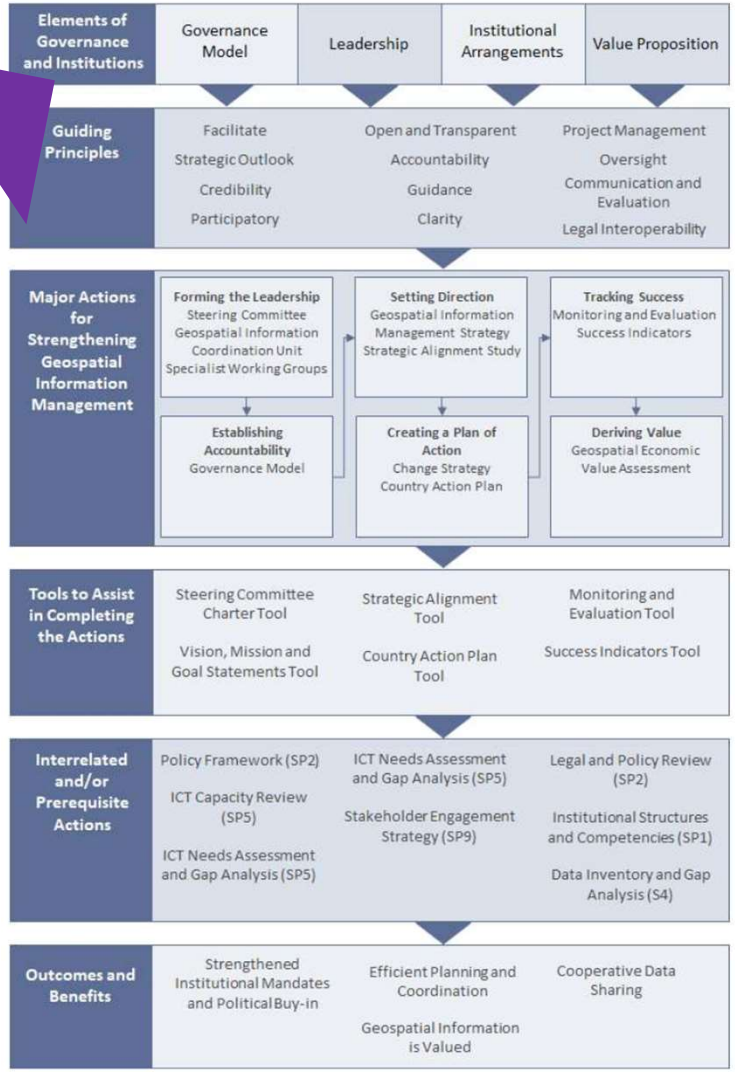

Elements of Communication and Engagement
Stakeholder and User Engagement
Strategic Messaging and Engagement
Communication Strategy, Plans and Methods
Monitoring and Evaluation
Guiding Principles
Trusted and Transparent
Meaningful and Timely
Personalize and Participatory
Coordinated and consistent
Adaptable and Responsive
Inclusive and Impartial
Purposeful and Effective
Major Actions for Strengthening Geospatial Information
Providing the Leadership
Stakeholder Engagement Strategy
Independent Steering Group
Setting Direction
Strategic Messages
Geospatial Brand
Communication Methods
Policy Platform
Tracking Success
Monitoring and Evaluation Framework
Stakeholder Satisfaction Surveys
Review and Evaluate


Tools to Assist in Completing the Actions
Stakeholder Identification and Classification Tool
Stakeholder Analysis Matrix: Importance/ Influence
Stakeholder Communication Plan Example
Stakeholder Communication Template
Interrelated and/or Prerequisite Actions
Benefits Assessment (SP3)
Geospatial Strategy (SP1)
Geospatial Information Coordination (SP1)
Partnership (SP7)
Outcomes and Benefits
Heightened awareness, engaged and participating
Increase in use of geospatial information
Trust and confidence in government information
Opportunities to make
Greater synergy leading
Ability to contribute

Part 2: Implementation Guide Overall Structure Governance Example



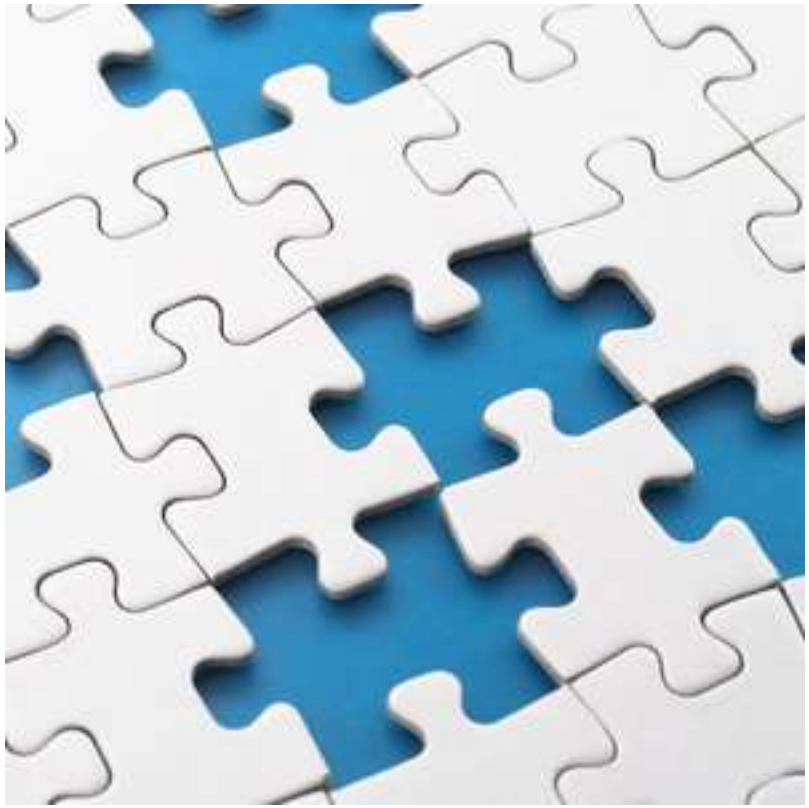




The overall structure shows the four key elements, guiding principles, actions and interrelated actions; and the tools provided to support the achievement of these outcomes

http://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/IGIF_SP1-Governance_and_Institutions_FIRST_DRAFT.pdf

Identify gaps and develop ‘fit for purpose’ plans



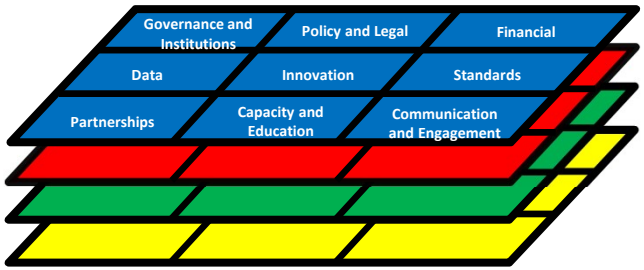
- Identify critical gaps in spatial data infrastructure and describe them in a standardised way.
  - This can be used to support applications for assistance (e.g. World Bank).
- Developing countries can compare their IGIF to developed countries IGIF and develop a plan for further development.
  - This plan can be tailored to individual country’s situations and circumstances.

Part 1: Overarching Strategic Framework

The Why – via 7 underpinning principles, 8 goals and 9 strategic pathways

Part 2: Implementation Guide

The What – expanding on each of the 9 strategic pathways, the Guide comprises reference guides, good practices and specific principles for each of the strategic pathways. The aim is to provide guidance for governments to establish 'nationally' integrated geospatial information frameworks



Thematic Layers

Geodesy (*to be developed by UNGGIM SCoG*)
Land Administration (*UNGGIM have a draft prepared*)
Water
…

Part 3: Country-level Action Plans

Practical templates and guides explaining how work will be done.

Part 3: Country Action Plans

- Use the advice from Part 2: Implementation Guide and the Thematic Layers to develop a Country Action Plan
- A way of articulating a country's spatial data infrastructure now, future aspirations and a description of 'how' they plan to get there.
- Importantly, it is using **standardised descriptions of spatial data infrastructure** which makes requests to World Bank (or other donors) simpler when critical gaps are identified.
- Pick and choose elements from other countries Action Plans to improve your own
- Country Action Plans are **'fit for purpose'**

Country Action Plan – height determination

Goal	Action
1. Physical height determination using GNSS with 20 cm accuracy	1a. Enable efficient access to a global gravity model (e.g. EGM2020)
2. Physical height determination using GNSS with 10 cm accuracy	2a. Observe terrestrial and airborne gravity data
	2b. Development of a regional gravity model

For more Information and to download newsletters and other resources prepared by the Subcommittee on Geodesy:

GGIM.un.org

www.unggrf.org

@UNGGRF

Factsheet

December 2015

UN-GGIM – Global Geodetic Reference Frame Working Group

The UN-GGIM Roadmap for the Global Geodetic Reference Frame

In February 2015 the UN General Assembly adopted the resolution "A Global Geodetic Reference Frame for Sustainable Development" - the first resolution recognizing the importance of a globally-coordinated approach to geodesy.

The GGRF Working Group is working on the development of a roadmap that will describe how governments can contribute to the sustainability and enhancement of the Global Geodetic Reference Frame.

unggrf.org

Actions forward

– From a UN mandate to a roadmap for global geodesy

"The momentum the adoption of the UN resolution has created will position the global geodetic community well for the complex task ahead, developing a roadmap for GGRF enhancement."

Gary Johnston, co-chair UN-GGIM/GGRF Working Group

NEW YORK: ***Ambassador Peter Thomson from Fiji introducing the resolution to the UN General Assembly.***

After the UN General Assembly adopted the resolution "A Global Geodetic Reference Frame for Sustainable Development", the GGRF Working Group has been working on a roadmap for global geodesy.

Role of the roadmap

The UN-GGIM Roadmap for the Global Geodetic Reference Frame is intended to identify the role that governments, through UN-GGIM, can play in improving the sustainability and enhancement of global geodesy.

"The roadmap is intended to provide an understanding interface between the geodetic community, who are scientifically skilled, and administrators in the national mapping and space agencies, and their governments", says co-chair Gary Johnston.

He explains that the roadmap is not intended to be a full scale technical document describing every element of geodesy. "It is rather intended to be an actions focused document that references existing technical material, or recommends the development of more detailed plans," says Johnston.

The roadmap needs to address the operational paragraphs from the UN General Assembly resolution

- Global cooperation in providing technical assistance in geodesy for those countries in need to ensure the development, sustainability and advancement of a GGRF
- Implement open geodetic data sharing
- Improve and maintain national geodetic infrastructure
- Enhanced multilateral cooperation that addresses infrastructure gaps and duplications globally
- Improved outreach to make the GGRF more visible and understandable to society

The roadmap needs to indicate a series of recommended actions

- Infrastructure
- Policy, Standards and Conventions
- Education, Training and Capacity building
- Communication and Outreach
- Governance

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Cheers

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Thanks