

9th Plenary Meeting of the UN GGIM Asia-Pacific

First Steps to Developing an IGIF Geodesy and Positioning Thematic Layer: Designing Policy Responsive to Community Needs and Best Practices

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Summary and Background

The need to know our location on earth down to the smallest possible measurement may only be satisfied by international collaborations in geodesy.

Global geodesy is dependent on findable, usable, and interoperable contributions from nations all around the globe, since no single country can maintain the Global Geodetic Reference Frame alone.

No country has the capacity, be it physical, infrastructural, analytical, or financial, to make such precise measurements on its own.

By collaborating with international partners and NGOs, we are able to collectively leverage limited assets to the top of current geodetic knowledge and capability

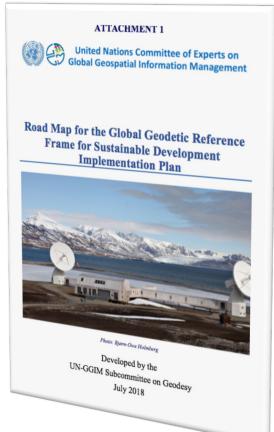
Problem (as agreed by geodetic community):

- To maximize the potential social benefit of geodesy, infrastructure must be diversely distributed and maintained around the world.
- People must be trained to analyze, process, and distribute geodetic positioning data needed to satisfy scientific observation requirements.

Policy Problem (one of several causes of the problem):

 Usability of public geodetic infrastructure is at risk of degradation (partially) due to inadequate capacity development

Current Status: UN GGIM Subcommittee on Geodesy 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
- Geodetic 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

Considering An Integrated Geospatial Information Framework

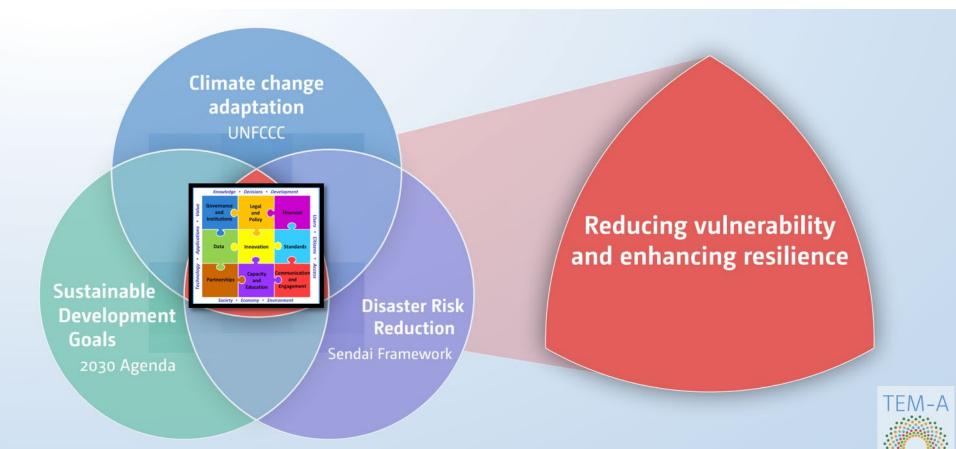


Why do we need this Framework?

"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.

IGIF: Helping standardize our description of spatial data, complementing major UN activities, goals, & frameworks

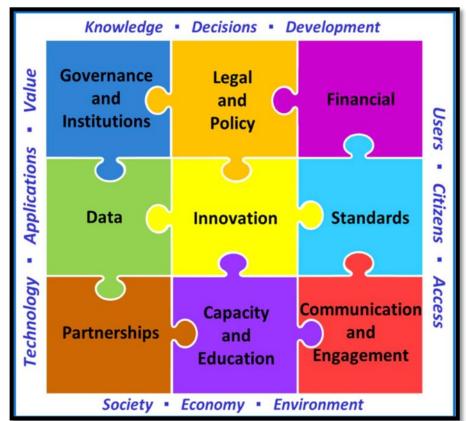


UN GGIM-World BankIntegrated Geospatial Information Framework

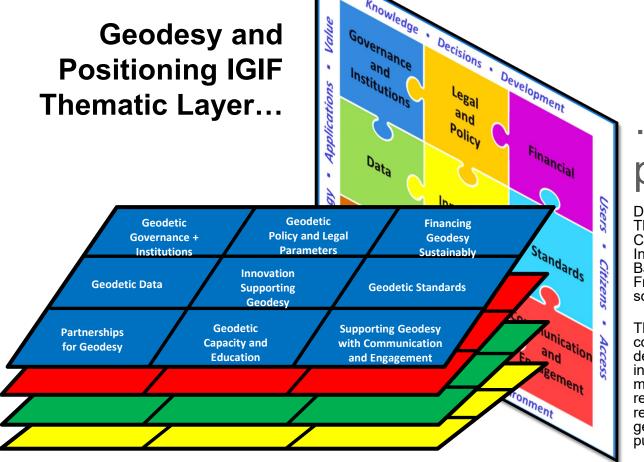
Governance →

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.



...a promising policy solution

Developing a Geodesy and Positioning Thematic Layer of the United Nations Committee of Experts on Global Geospatial Information Management (UN GGIM)-World Bank Integrated Geospatial Information Framework (IGIF) appears to be a promising solution.

The IGIF has the potential to serve as a collaborative roadmap to help governments develop, access, and use geospatial information to make effective policies and more accurately direct aid and development resources. It seeks to make concrete recommendations on establishing national geospatial information management and putting that information to use.

Ishikawa Diagram: Geodetic Capacity Development Survey Results

Existing capacity development resources are insufficient

No system to support training trainers and educators

Academic and vocational training is limited.

Academic and vocational training is limited and often concentrated in more developed countries/regions

Academic and vocational training is not presented in an intuitive/usable manner

Existing capacity development resources cannot be found or accessed

Lack of specific/credible mechanisms or frameworks to enable sharing of technical knowledge

Training and resources are often not available in local/regional languages

Public are not aware of resources or funding

Inconsistent terminology/categorization, and lack of standardized technical translations

Lack of coordination among agencies and organizations creating and providing training

Training is infrequent

Travel to "free" training is cost-prohibitive

Usability of public

(partially) due to

development

inadequate capacity

geodetic infrastructure is at risk of degradation

Institutional norms create unreliable interoperability of geodetic data

Lack of awareness of how or whom to contact at UN or other NGOs providing support

Lack of understanding strategy, approach, and requirements to access data Lack of assurances that volunteer/"sweat equity" contributions will be supported sustainably

Gaps exist in resource

content diversity and level

sufficient knowledge,

Current lack of people with

qualifications, and/or skills

Lack of adequate succession planning and knowledge transfer

for key/highly skilled personnel

Attendees of workshops are selected based on politics rather than need/qualification

Institutional and Organizational norms inhibit or prevent effective capacity building

Benefits of geodesy are not well understood/supported by policymakers and decision makers

Governments are unable or unwilling to share data and information

General lack of policies

General lack of policies and legislative basis to support geodesy

well understood by the general (voting) public

Lack of appropriate material to advocate the importance, achievements and support the justification of capacity development

Benefits of geodesy are not

"Free rider" issue of governments using openly available data and training but not contributing in kind/according to ability

Government (national) support for geodesy is limited and often inconsistent

Basic Theory of Change

Geodesy and
Positioning Thematic
Layer for the IGIF

Existing capacity
building resources
are aligned and
translated to
common vocabulary
and format of IGIF

Future capacity building events, resources, and initiatives are organized within common framework of IGIF

Geodetic capacity
development
resources are easily
found, utilized, and
available in multiple
languages by current
and new users and
producers of
geodetic data

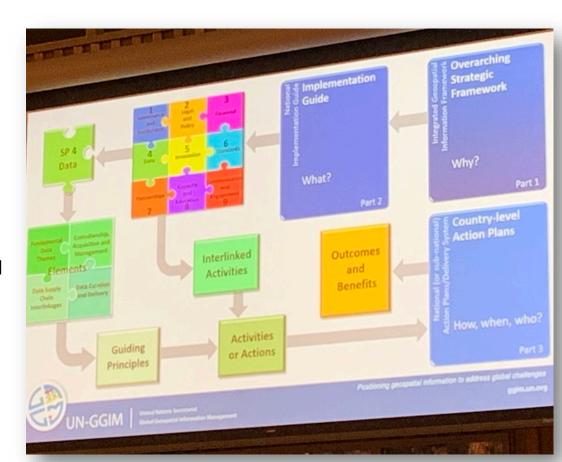
Degradation of globally-shared geodetic infrastructure due to lack of capacity development is stopped

Policy Recommendation

Developing a Geodesy and Positioning Thematic Layer dedicated to:

- Identifying (through implementation of common vocabulary and standardized terminology), and
- Aligning (through internationally accepted organizational templates and outlines) the

geodetic capacity development needs with broader geospatial uses and applications of the UN GGIM-World Bank IGIF.



How to Build an IGIF Geodesy Thematic Layer? Some initial thoughts...

- Identify where the IGIF already addresses the role of geodesy
- 2. Identify "stakeholder" areas that may not specifically address geodesy, but are clearly connected to current projects, efforts, and concerns.
- 3. Learn from colleagues who have participated in the Part 3: Country Action Plan first-round development

No one country or organization can do this alone!

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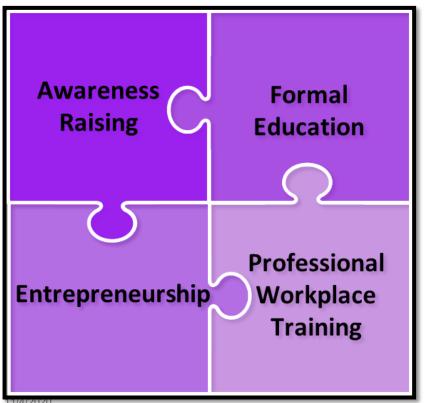
1: The IGIF directly addresses Geodesy: Spotlight on Strategic Pathway 4 - Data

- Section 4.6.14 Specifically addresses the role of geodesy in detail:
 - Notes that "the geodetic infrastructure is a prerequisite for the accurate collection, integration, and utilization of all other geospatial data."
- **Appendix Section 4.11** provides guidance for countries who are needing to determine and establish national geodetic infrastructure and/or improve their existing geodetic infrastructure.

http://ggim.un.org/IGIF/documents/SP4-Data_10Jan2020_GLOBAL_CONSULTATION.pdf

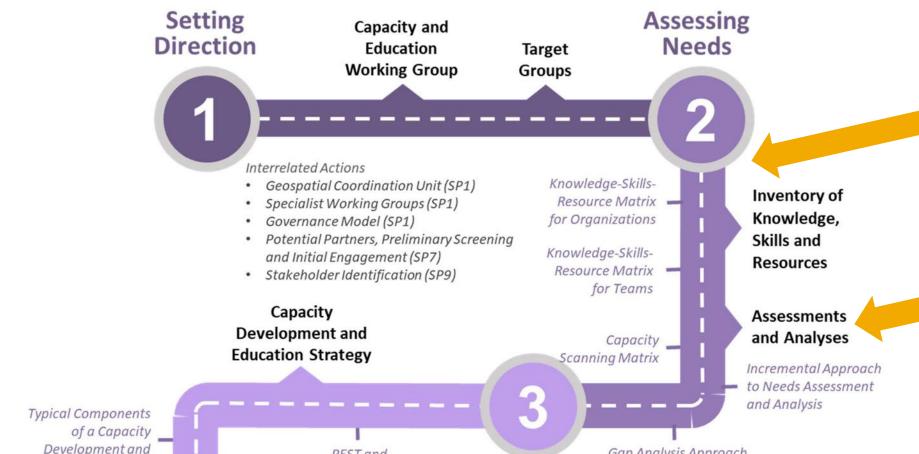
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2: The IGIF addresses Capacity Development: **Spotlight on Strategic Pathway 8 – Capacity & Education**



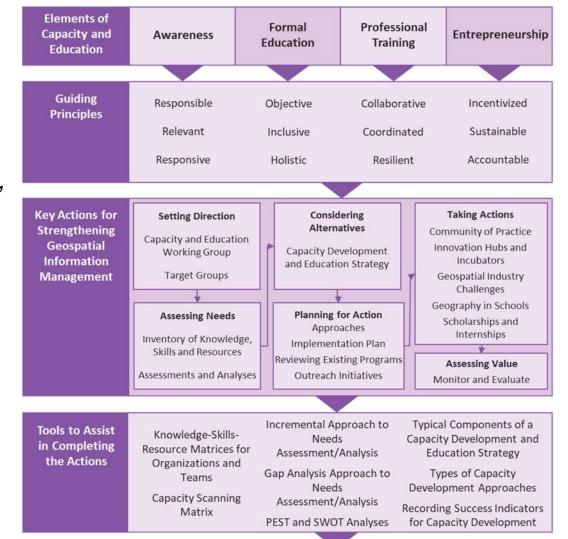
- This strategic pathway establishes enduring capacity building programs and education systems so that geospatial information management and entrepreneurship can be sustained in the longer term.
- The objective is to raise awareness and develop and strengthen the skills, instincts, abilities, processes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

SCoG Capacity Building – Following the Pathway

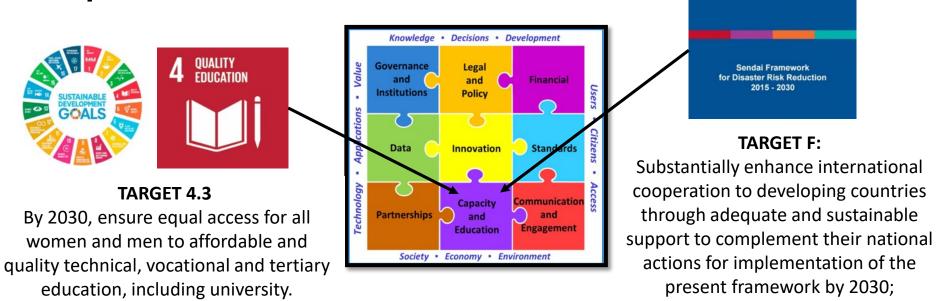


IGIF Toolbox

➤ Looking to the four key elements, guiding principles, actions and interrelated actions for guidance and structure moving forward



Using ITRF for standardising and aligning our description of spatial data



- > Country / agency spatial data infrastructure using standardised language
- ➤ Facilitate tracking progress of countries ability to meet targets to Sustainable Development Goals, Sendai Framework, Paris Accord etc.
- > Enabling sustainable funding through the World Bank

3: Next Steps - Community Feedback Needed!

Has your country or organization developed, or is developing, an IGIF Country Action Plan?

 Feedback and lessons learned from colleagues who have participated in Country Action Plan development is essential, welcomed and greatly appreciated!

Sharing advice on tailoring IGIF for developing geodesy portions of Country Action Plans that are 'fit for purpose'

 Next steps for IGIF alignment in the region may provide a good example for other regions

Have you identified a part of the IGIF that has been useful to your work supporting geodesy?

Let us know!

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

GGIM.un.org www.unggrf.org @UNGGRF



UN-GGIM – Global Geodetic Reference Frame Working Group

The UN-GGIM Roadmap for the Global Geodetic Reference Frame ine une uneman normal for the union recountry reference frame. "A Global 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 viol describe how governments can contribute to the sustainability and enhancement of the Global Geodetic Reference Frame.

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."



NEW YORK: Ambassador Peter Thomson from Fiji introducing the resu 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**

- Global cooperation in provid technical assistance in geodesy for those countries in need to ensure the development, sustainability and advancer
- · 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



UN-GGIM United Nations Committee of Experts on



jpl.nasa.gov

