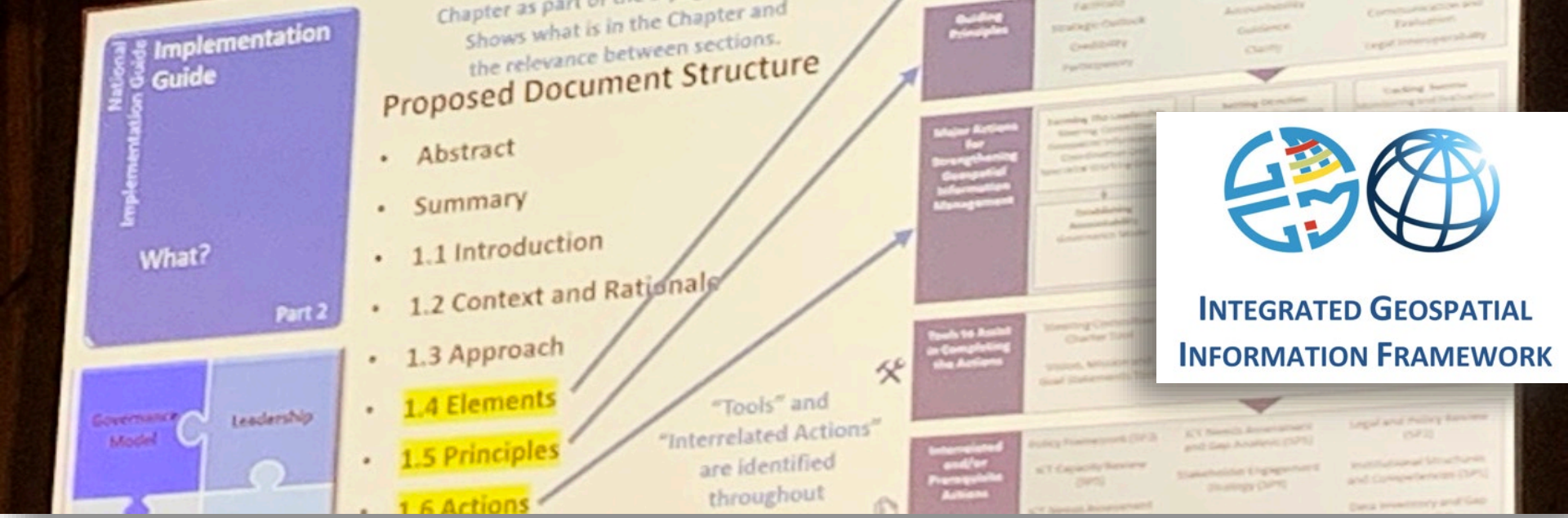


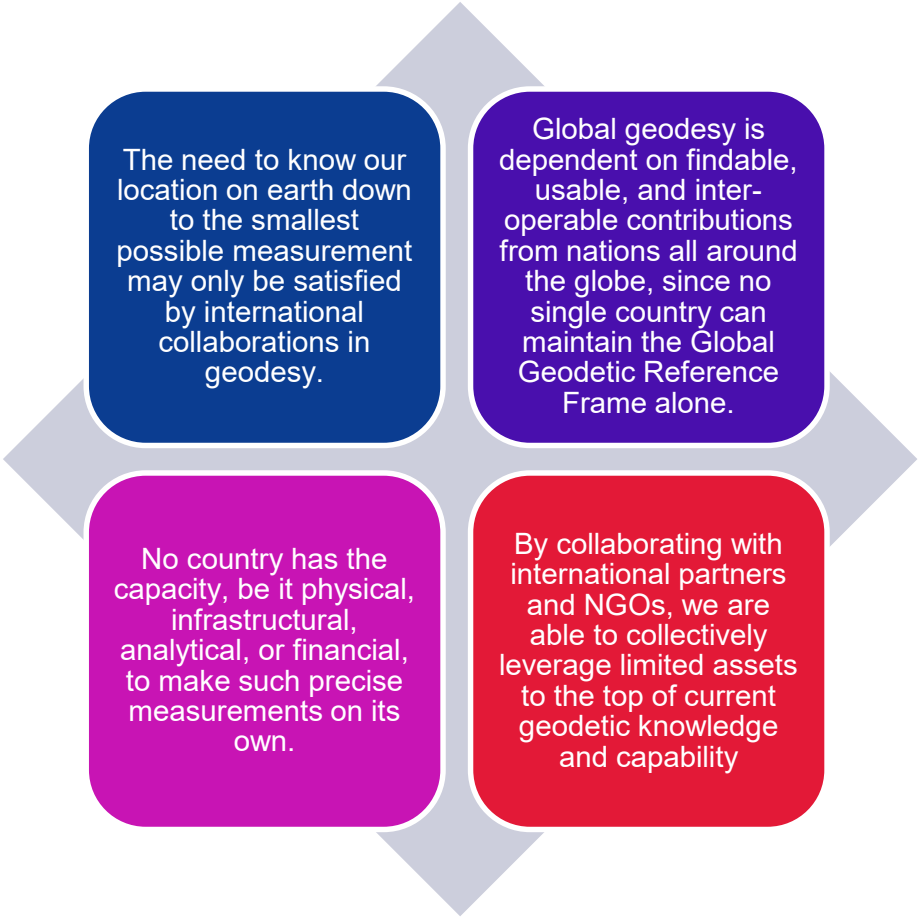
9th Plenary Meeting of the UN GGIM Asia-Pacific

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

3 November 2020 – Convened Virtually

Allison B. Craddock
Director of the International GNSS Service (IGS) Central Bureau
Jet Propulsion Laboratory
California Institute of Technology

Summary and Background



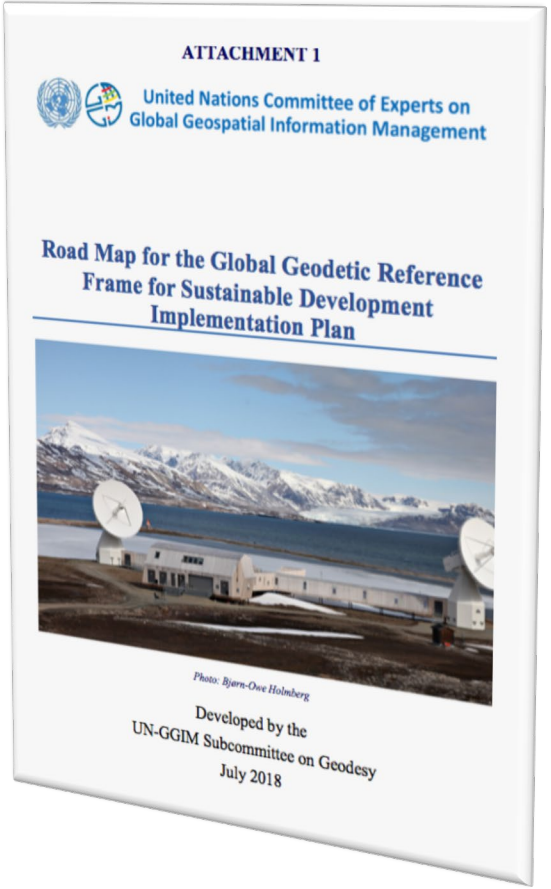
Problem *(as agreed by geodetic community)**:***

- **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

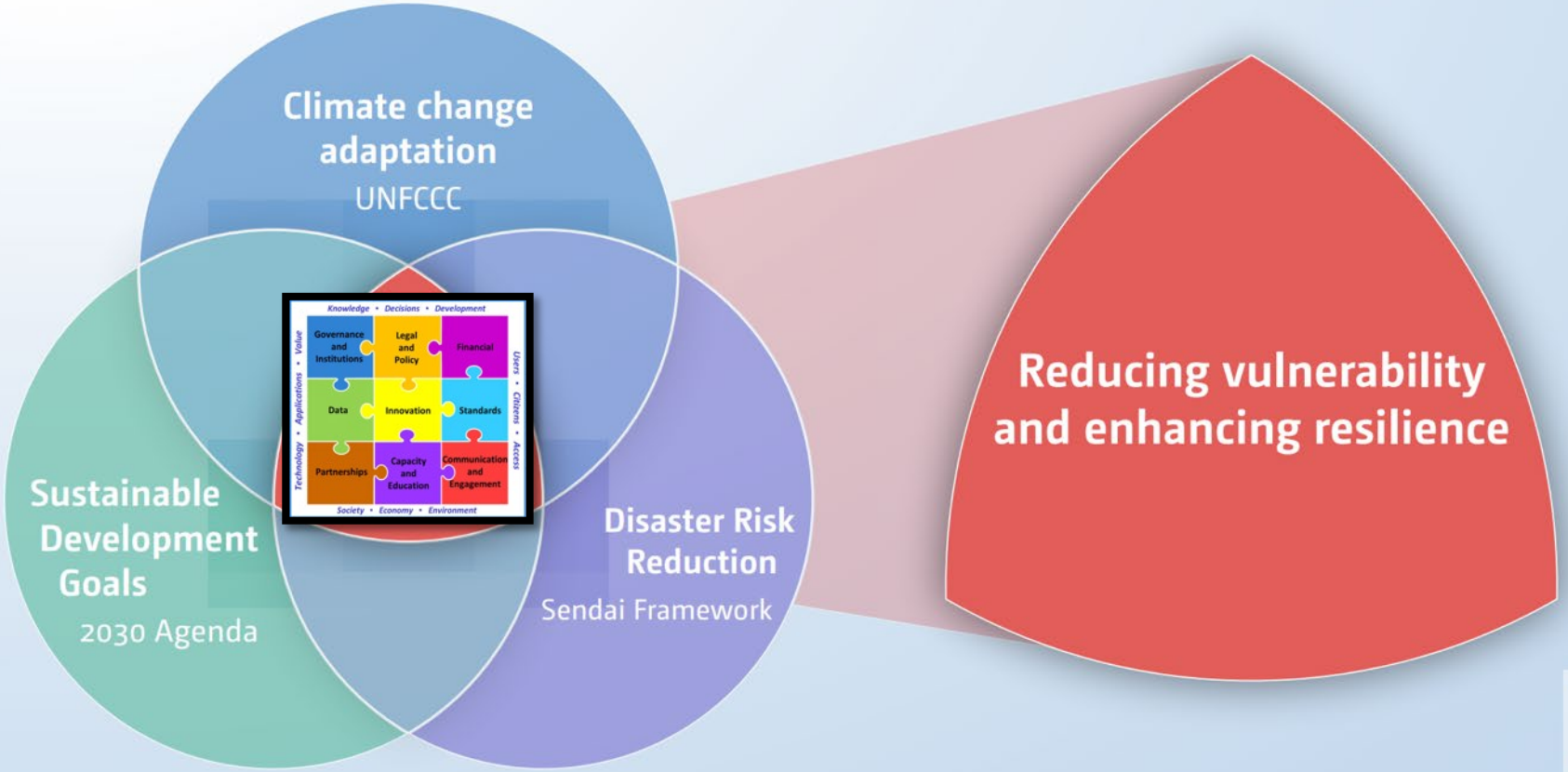
Why do we need this Framework?

"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.

Slide courtesy of Nick Brown, Geoscience Australia

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

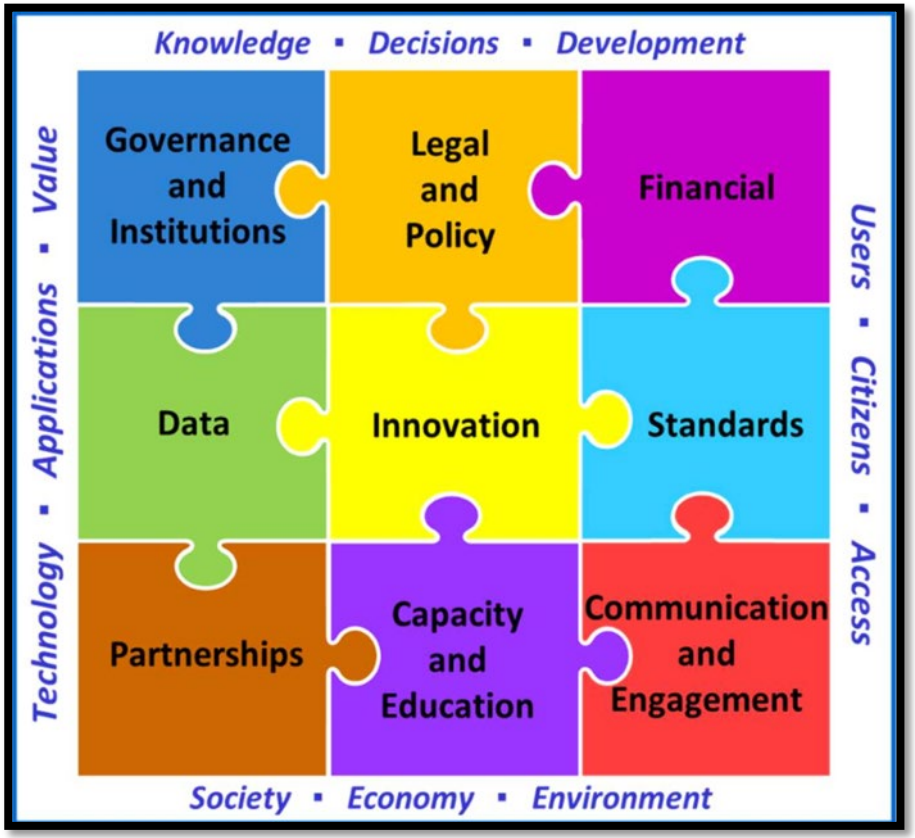


UN GGIM-World Bank
Integrated Geospatial Information Framework

Governance →

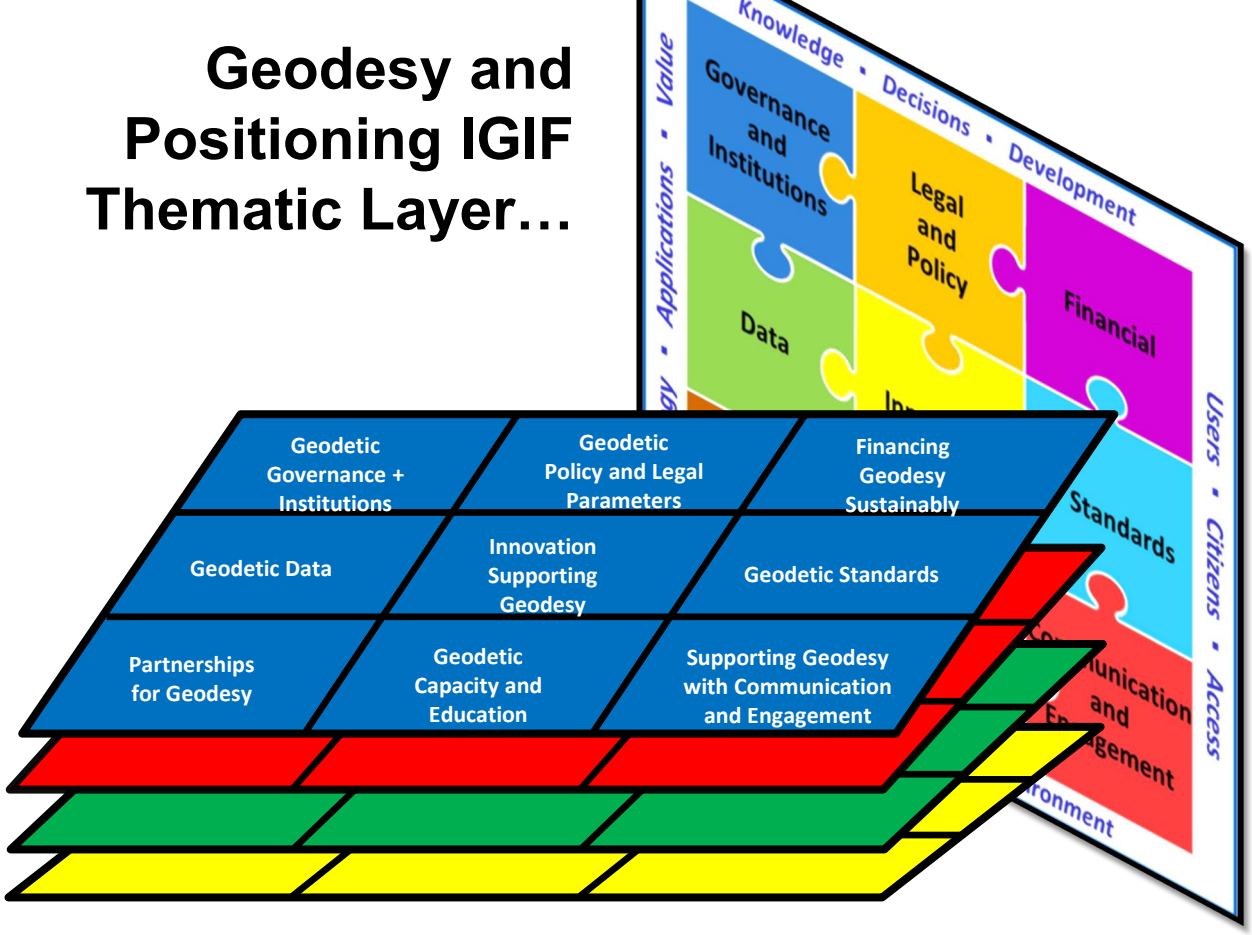
Technology →

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**.

Geodesy and Positioning IGIF Thematic Layer…

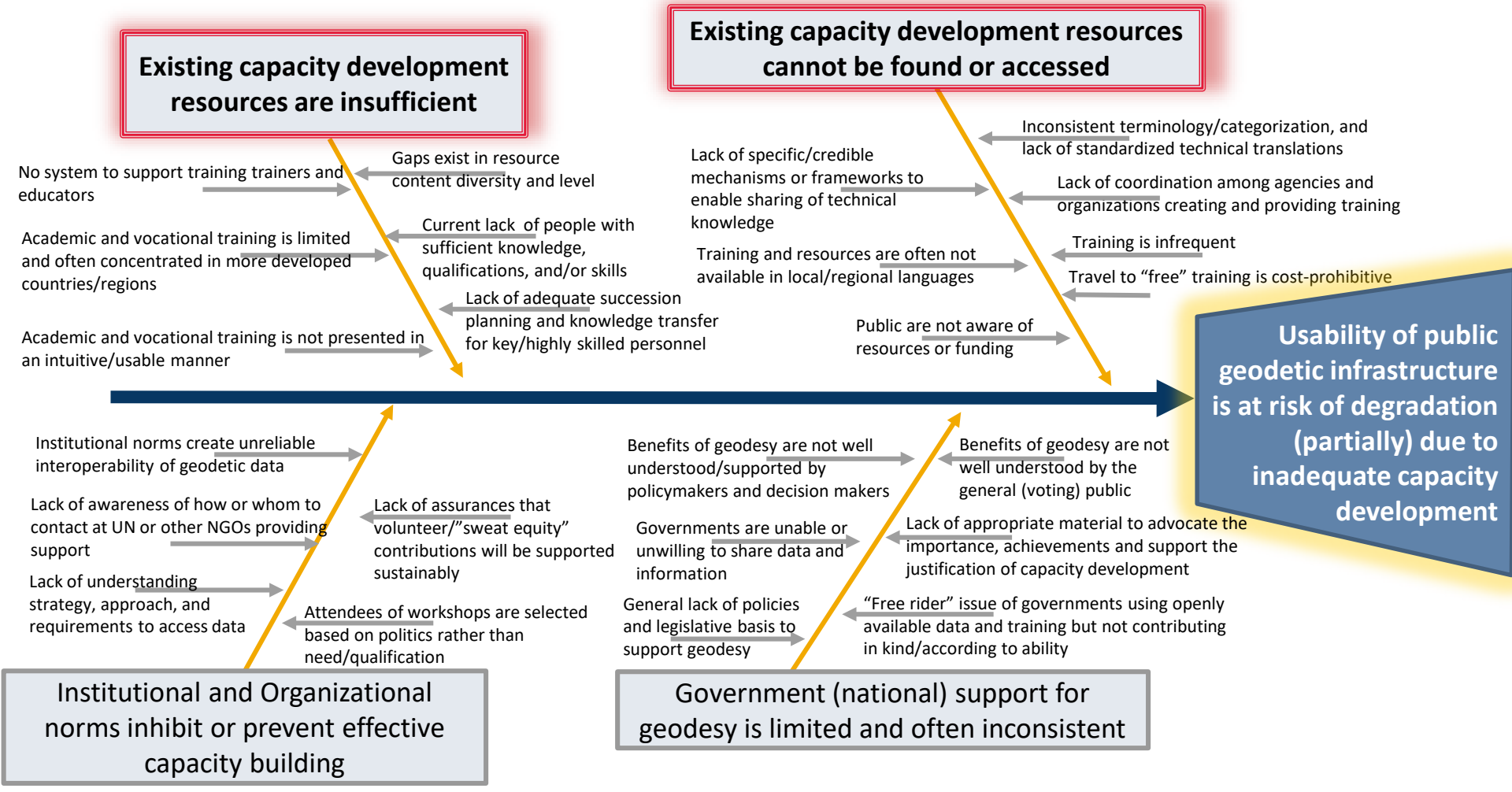


…a promising policy solution

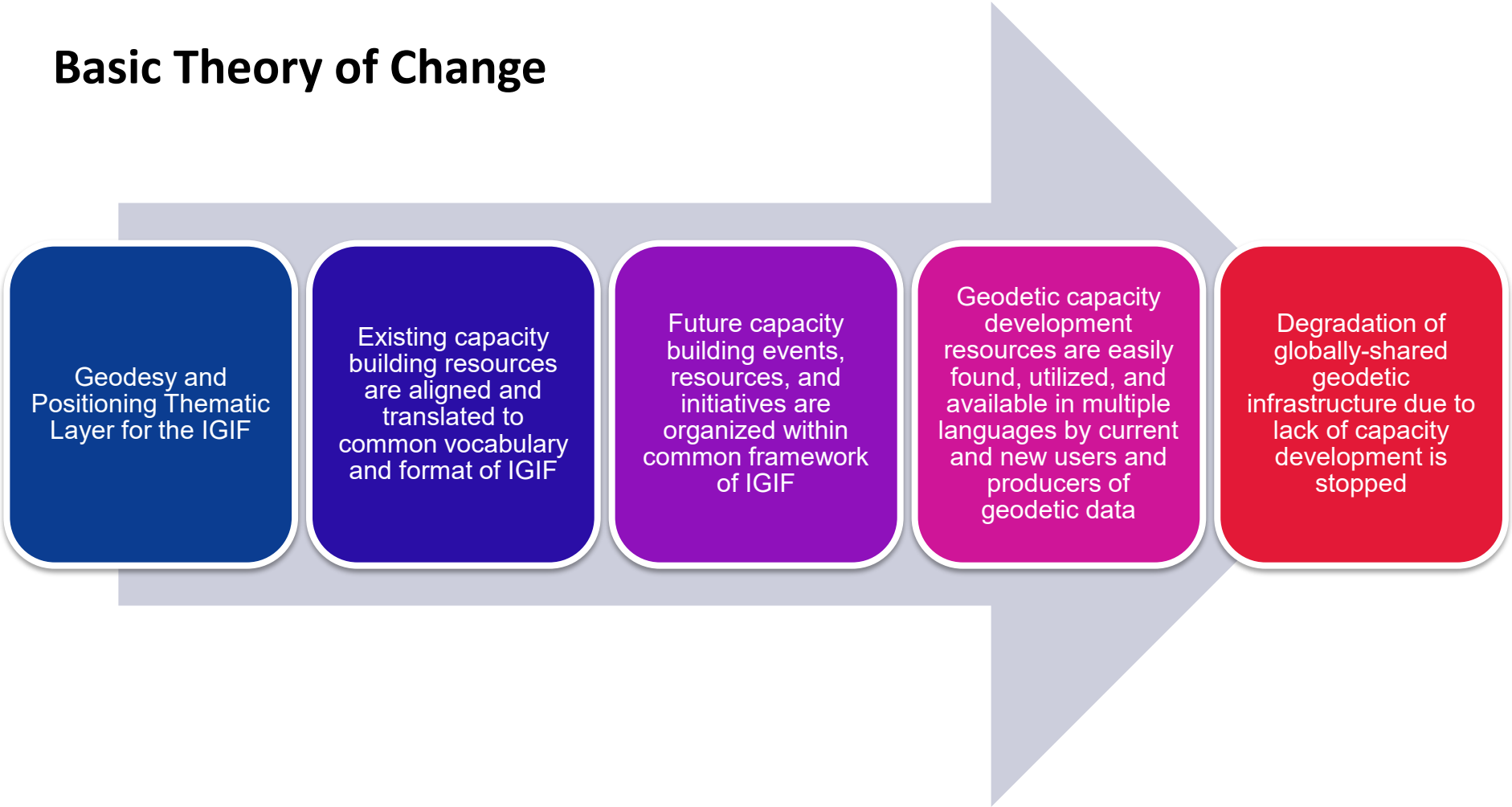
Developing a Geodesy and Positioning Thematic Layer of the United Nations Committee of Experts on Global Geospatial Information Management (UN GGIM)-World Bank Integrated Geospatial Information Framework (IGIF) appears to be a promising solution.

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



Basic Theory of Change

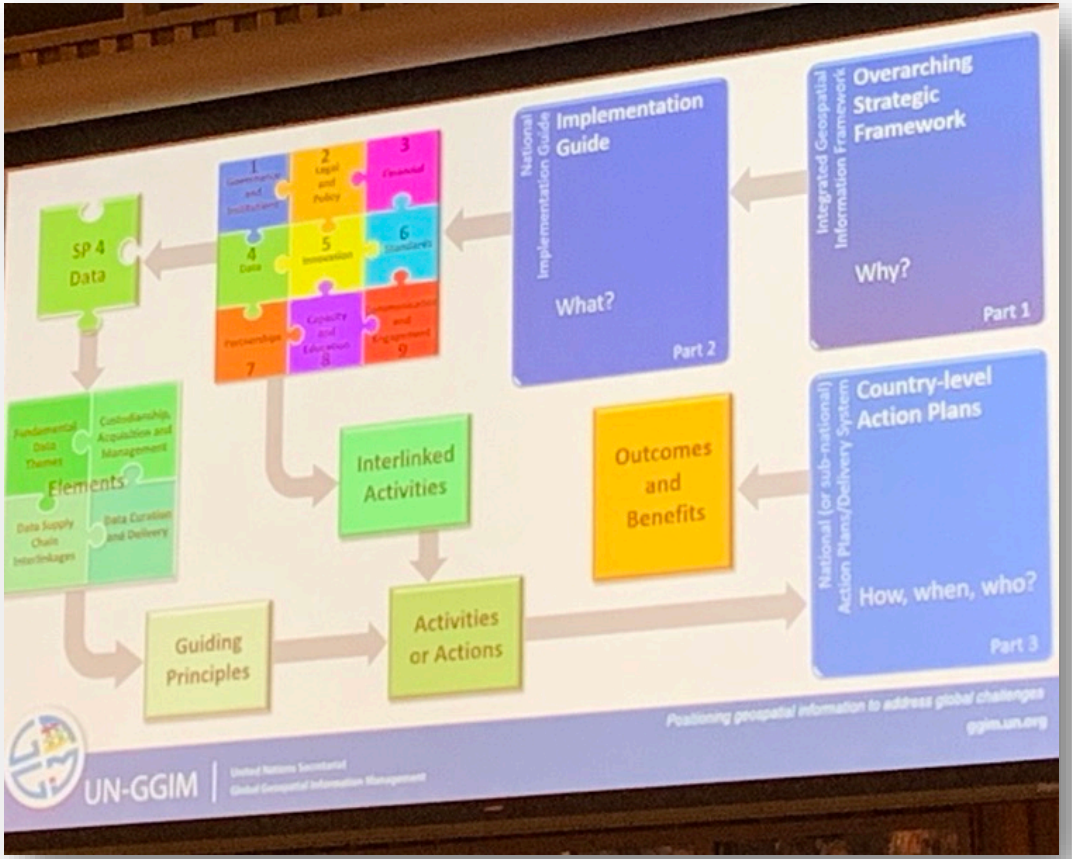


Policy Recommendation

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…

1. 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**

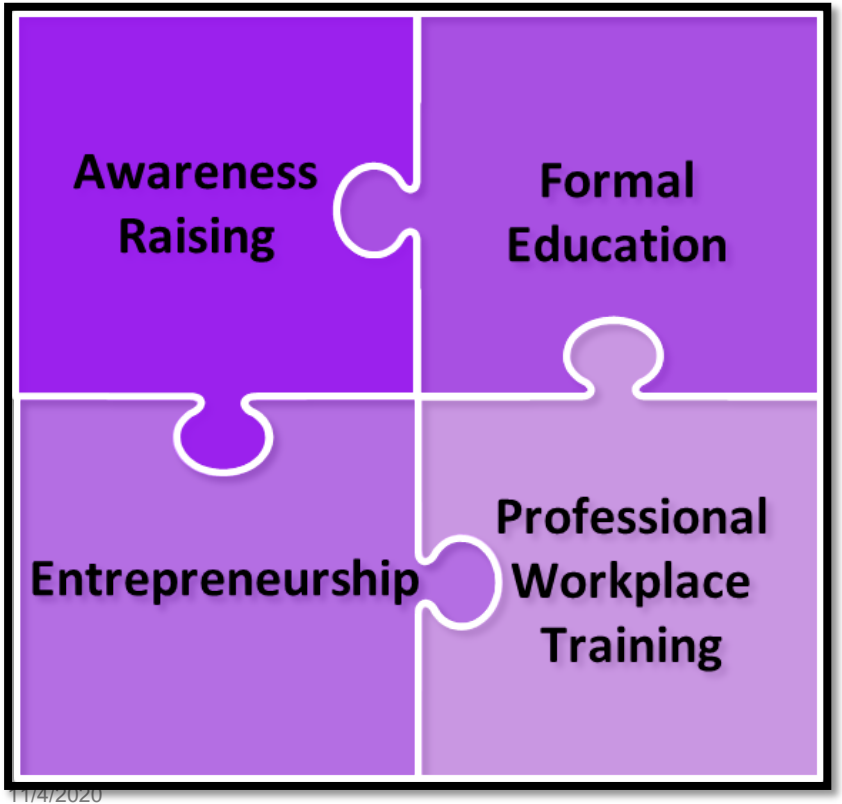
No one country or organization can do this alone!

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.*

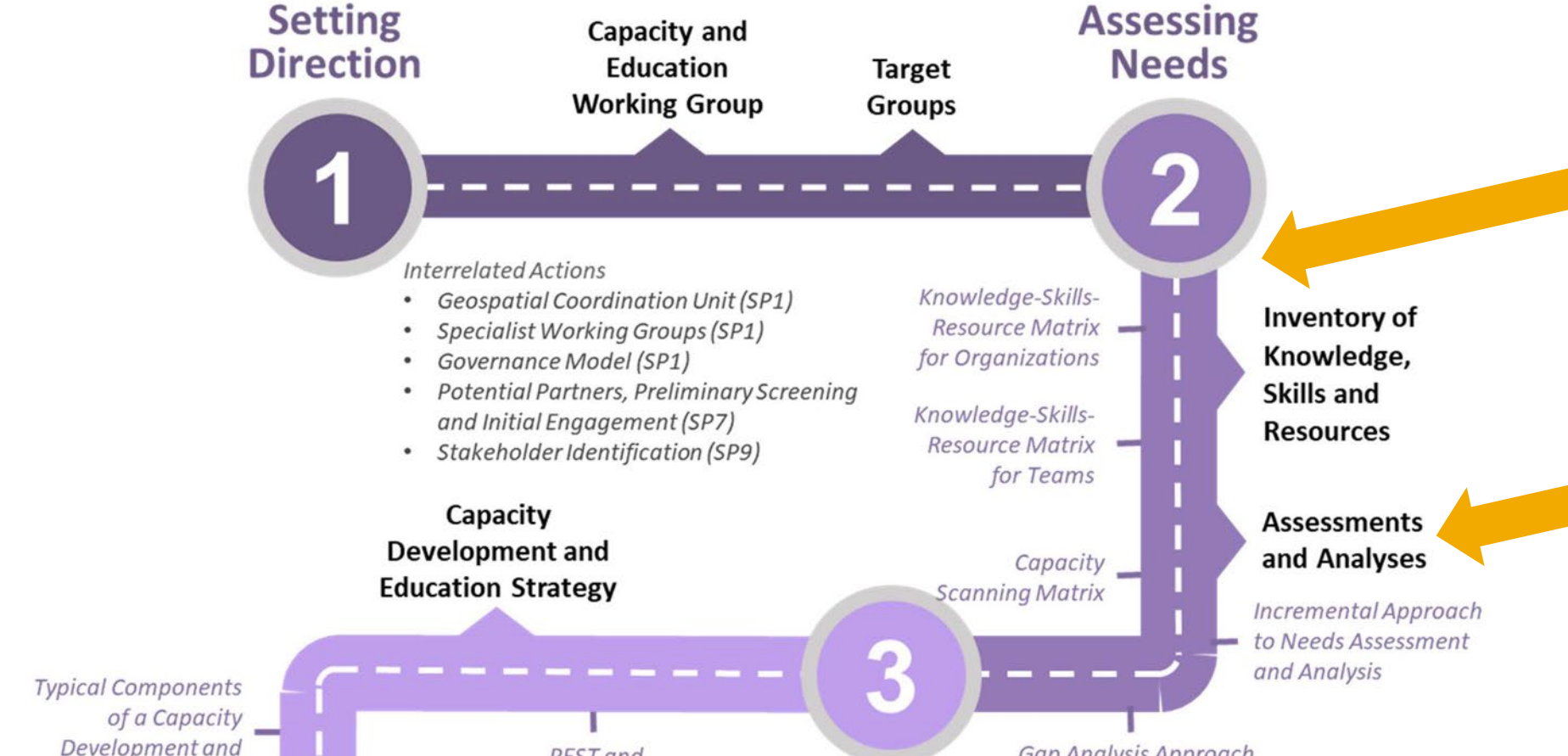
http://ggim.un.org/IGIF/documents/SP4-Data_10Jan2020_GLOBAL_CONSULTATION.pdf

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



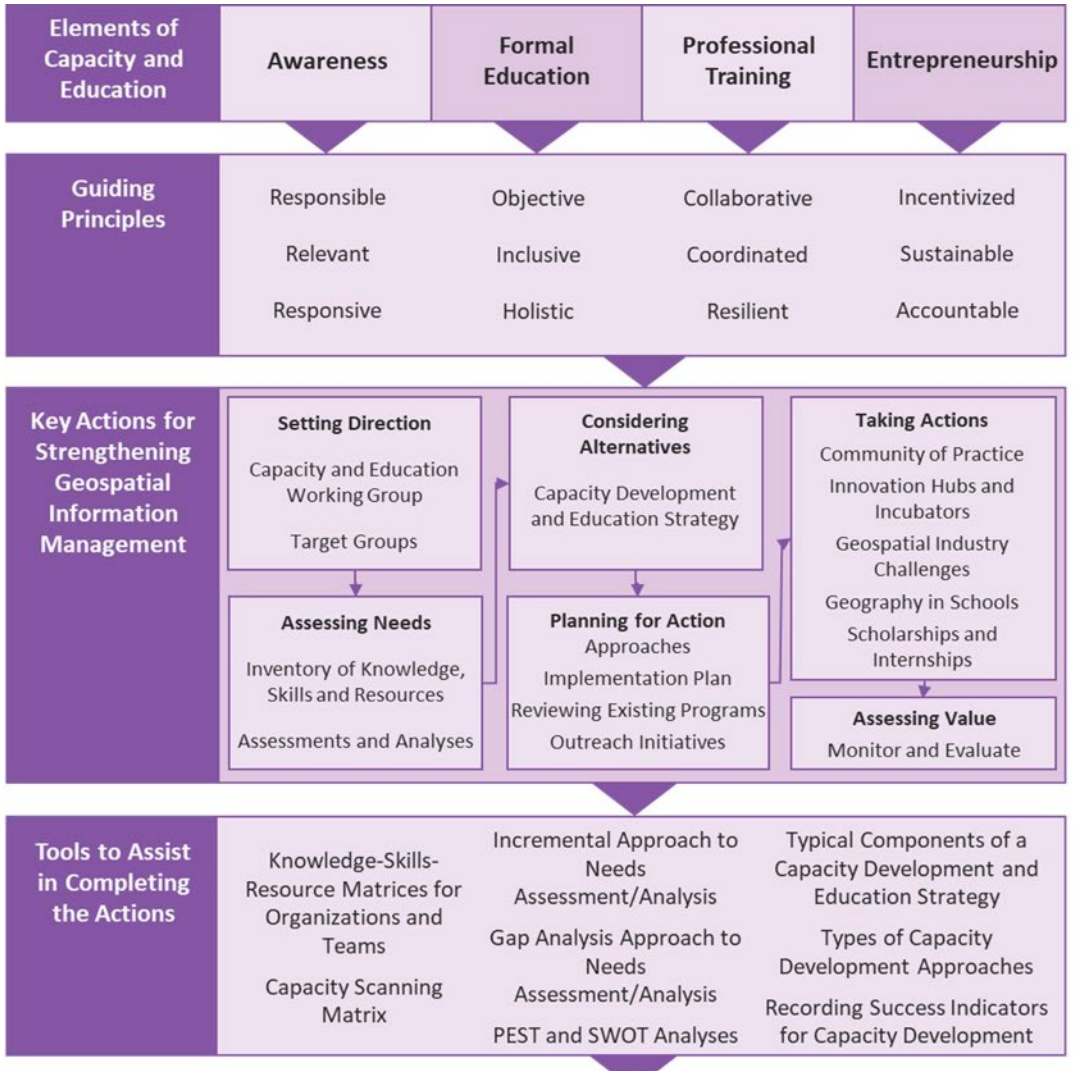
- *This strategic pathway establishes **enduring capacity building programs and education systems** so that geospatial information management and entrepreneurship can be sustained in the longer term.*
- *The objective is to **raise awareness and develop and strengthen the skills, instincts, abilities,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

SCoG Capacity Building – Following the Pathway



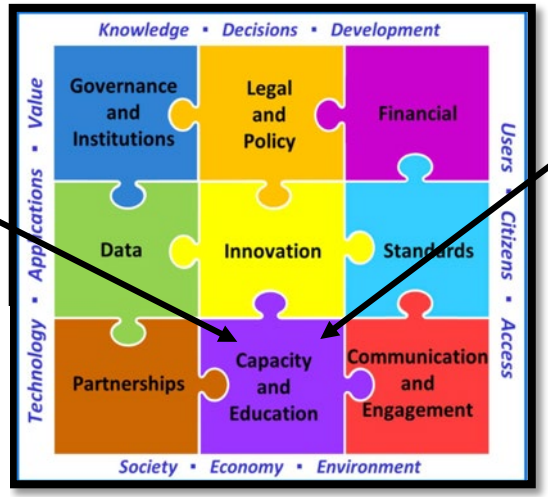
IGIF Toolbox

- *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

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;

- **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**

Slide courtesy Nick Brown, Geoscience Australia

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!

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

Factsheet

December 2015

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

UN-GGIM | United Nations Committee of Experts on Global Geospatial Information Management

ggim.un.org

Jet Propulsion Laboratory
California Institute of Technology

jpl.nasa.gov

Thanks