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Open meeting on UN Subcommittee on Geodesy and Education, Training and Capacity Building

Mikael Lilje – Team leader ETCB

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Education, Training and Capacity Building Efforts in support of the GGRF Roadmap Implementation Plan

Proposed Five-Year Education, Training, and Capacity Building Implementation Plan

Mikael Lilje (Sweden), Focus Group Lead

Augustin Bamouni (Burkina Faso), Graeme Blick (New Zealand), Allison Craddock (United States), Paul Cruddace (United Kingdom), Basara Miyahara (Japan), Maria Cristina Pacino (International Association of Geodesy), Dan Roman (United States), Robert Sarib (Australia), Sharafat Gadimova (UNOOSA International Committee on GNSS)

May 2018

United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Overview

UN-GGIM is a formal inter-governmental UN Committee of Experts to:

- Discuss, enhance and coordinate GGIM activities by involving Member States at the highest level
- Work with Governments to make joint decisions and set directions on the use of geospatial information within national and global policy frameworks
- Address global issues and contribute collective knowledge as a community with shared interests and concerns

United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Overview

UN-GGIM is a formal inter-governmental UN Committee of Experts to:

- Develop effective strategies to raise geospatial awareness and usefulness, to develop capacity particularly in developing countries
- To make timely, reliable, and authoritative geospatial information consistently and readily available to support national, regional, and global development.

- UN-GGIM-Regions as e.g. UNGGIM:Europe
- UN-GGRF WG => Subcommittee on Geodesy

Major work items of the UN-GGIM

- A global geodetic reference frame
- Adoption and implementation of standards
- Determining global fundamental data sets
- Geospatial information supporting sustainable development
- Identification of trends in national institutional arrangements in geospatial information management
- Integrating geospatial, statistical, and other forms of data
- Legal and policy frameworks
- Land administration and management
- Disaster risk reduction and resiliency
- Marine geospatial information

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EMBRACING OUR SMART WORLD WHERE THE CONTINENTS CONNECT:

ENHANCING THE GEOSPATIAL MATURITY OF SOCIETIES

An accurate, sustainable and accessible Global Geodetic Reference Frame to support science and society

Photo: Bjørn-Owe Holmberg

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UN Resolution 2015:
Global Geodetic Reference Frames for Sustainable Development
Based on work with UNGGIM working group on Geodesy

Discussing e.g.
- Need of global geodetic infrastructure
- Data sharing
- Education, Training and Capacity Building


Photo: Kyoung-Soo Eom

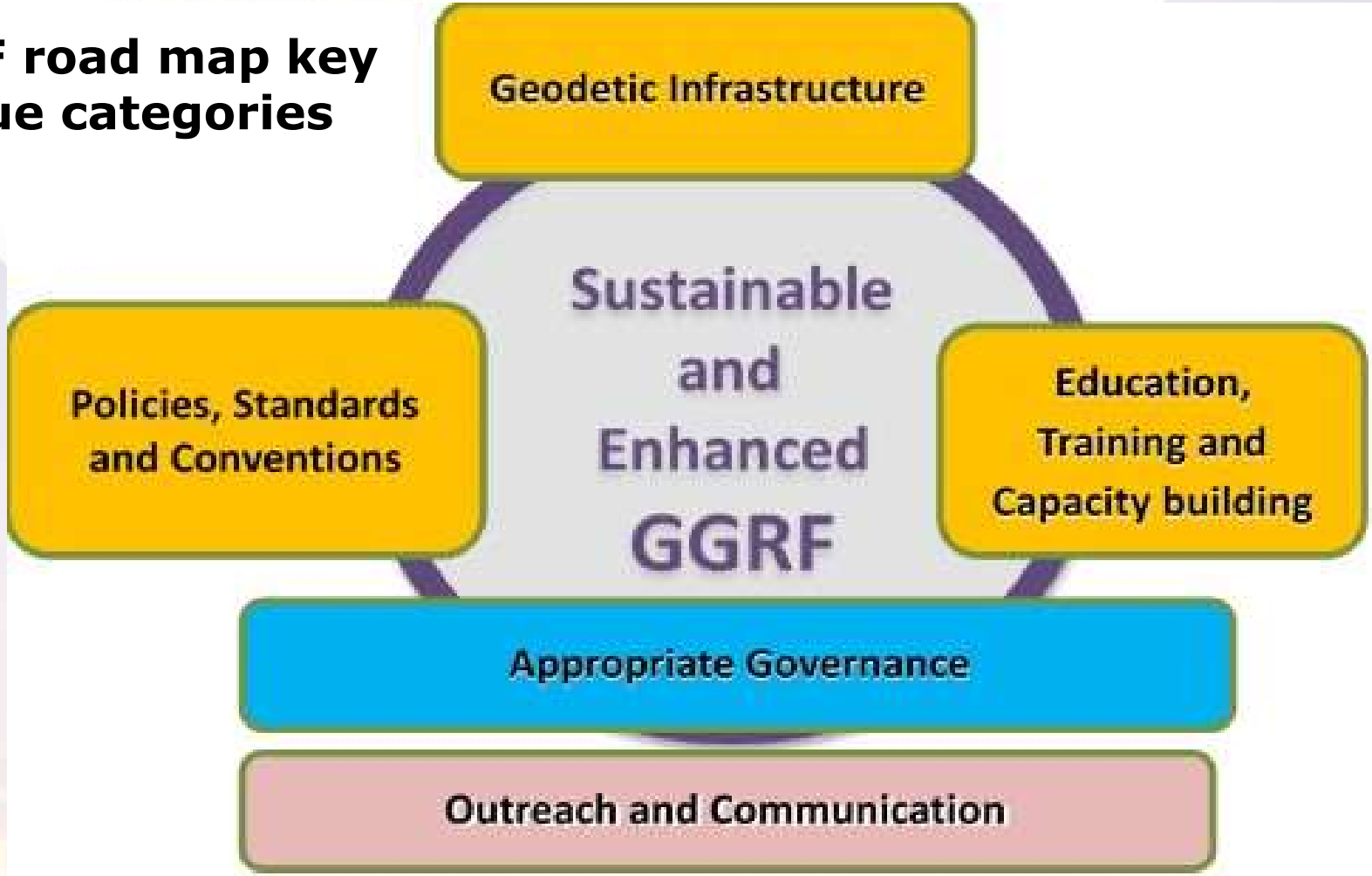
The UN-GGIM Committee of Experts

- Endorsed the global geodetic roadmap in 2016 as a "principle-based briefing document for national Governments"
- Welcomed the development of an implementation plan to link the road map recommendations to national policy developments
- Elevated the GGRF working group (WG) in 2017 to a Sub-Committee on Geodesy (SCoG) to strengthen the GGRF
- Requested the development of a position paper to define the appropriate governance arrangements for the GGRF. To be presented in 2018.

The start of the UNGGIM Subcommittee on Geodesy

First formal meeting held 26-27 November, 2017

GGRF road map key issue categories



Education, Training and Capacity building

The ETCB focus group seeks to

-assess the current availability of education, training, and capacity building resources

-identify gaps in capacity or other areas of need

-propose short- and long-term solutions to realize the full scientific and social benefit of the Global Geodetic Reference Frame.

Photo: Geoscience Australia

Think globally, act regionally?

- Even though basic ETCB needs are global, a regional focus strategy is essential!
- The nature, size, and variety of challenges differ regionally and may include linguistic, technological, economic, and cultural impediments.
- It is also clear that access to highly skilled personnel varies widely among Member States, thus necessitating the need to ensure that knowledge and competence is readily and openly shared.
- A key to optimizing the efficiency of the group's objectives is to identify and make existing educational and capacity building resources easily discoverable.

Our currently proposed mission

Five years from now there will be:

- A higher level of geodetic technical capability, particularly among developing nations
- A developed capacity building programme that focuses at the regional level and emphasizes supporting efforts in developing nations
- Recognized certification and achievement documentation programs, supported by regular technical training courses and material that is openly available to all nations

Our currently proposed mission

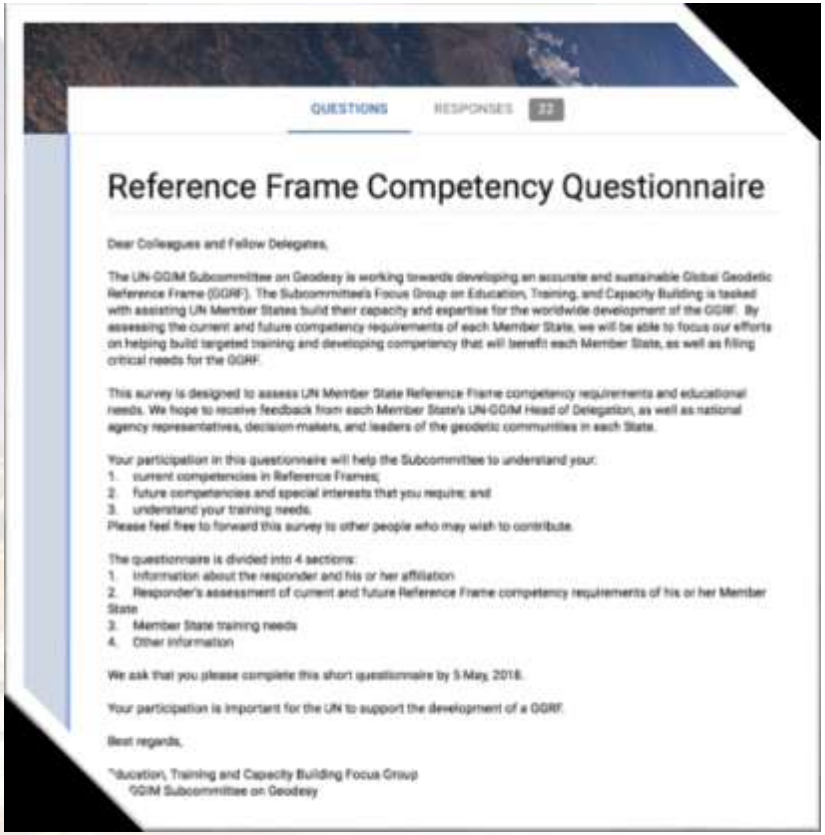
Five years from now there will be:

- A permanent working group for UN Geodesy Education, Training, and Capacity Building established and operating under the auspices of the UN GGIM Subcommittee on Geodesy
- Documented evidence of geodetic education, training, and capacity building in support of the United Nations Sustainable Development Goals (SDGs).

Proposed Next Steps

- Provide a framework for Member States to identify their 'Level' of competency and capacity requirements
- Maintain a register of Member States self-reported 'Level' of competency, and professional and technical requirements
- Identify training and educational gaps for Member States, working on a regional basis where appropriate
- Provide training modules and assist with running specialized training courses to fill gaps
- Encourage other agencies to run specialized training where gaps have been identified
- Maintain a register of courses and training opportunities
- Maintain a register of trainers and training institutions

Self-evaluation questionnaire sent out



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Reference Frame Competency Questionnaire

Dear Colleagues and Fellow Delegates,

The UN-GGIM Subcommittee on Geodesy is working towards developing an accurate and sustainable Global Geodetic Reference Frame (GGRF). The Subcommittee's Focus Group on Education, Training, and Capacity Building is tasked with assisting UN Member States build their capacity and expertise for the worldwide development of the GGRF. By assessing the current and future competency requirements of each Member State, we will be able to focus our efforts on helping build targeted training and developing competency that will benefit each Member State, as well as filling critical needs for the GGRF.

This survey is designed to assess UN Member State Reference Frame competency requirements and educational needs. We hope to receive feedback from each Member State's UN-GGIM Head of Delegation, as well as national agency representatives, decision-makers, and leaders of the geodetic communities in each State.

Your participation in this questionnaire will help the Subcommittee to understand your:
1. current competencies in Reference Frames;
2. future competencies and special interests that you require; and
3. understand your training needs.

Please feel free to forward this survey to other people who may wish to contribute.

The questionnaire is divided into 4 sections:
1. Information about the responder and his or her affiliation
2. Responder's assessment of current and future Reference Frame competency requirements of his or her Member State
3. Member State training needs
4. Other information

We ask that you please complete this short questionnaire by 5 May, 2018.

Your participation is important for the UN to support the development of a GGRF.

Best regards,

Education, Training and Capacity Building Focus Group
UN-GGIM Subcommittee on Geodesy

- Response will be evaluated coming months. Evaluation both concerning feedback on questionnaire as well as responses.
- Using the results from the questionnaire we will be able to present an implementation plan for the subcommittee to consider at its next meeting.

Survey available here: http://bit.ly/ggimscgq

Level	Competence Requirements	Training provided by	
1	Basic understanding of: • GNSS • Reference frames, including geoid models, vertical and horizontal datums	• Educational institutions – universities and polytechnic institutes • Government mapping agency • Private companies	Countries that might have one CORs and maintain a traditional geodetic network of reference marks – e.g. small Pacific Island Nations?
2	The above plus knowledge of: • Constructing, building and running a small CORs network • GNSS processing using standard software - e.g. Trimble, Compass Solution (ComNav), LGO(Leica),…. • Least squares processing and provision of datum access • Geoids models, precision, determinations and basic implementation • Implementation of a vertical datum including use of geoid models	• Educational institutions – universities and polytechs • UN-GGIM Geodesy Capacity Group • FIG • Government mapping agency • Private companies	Countries with small CORs network and those who adopt global Reference frames for their nation reference frames – e.g. Fiji?
3	The above plus high knowledge of: • Implementing and running large CORs networks • High end GNSS processing and datum access • Geoid model computation and implementation into a vertical datums • Monitoring earth dynamics and including in datum realization • Geodetic database management	• Specialized courses – e.g. geoid school • UN-GGIM Geodesy Capacity Group • IAG and FIG • Government mapping agency • Private companies	Countries with a more extensive CORS and developing their own specialized national and vertical datum – e.g. New Zealand and Sweden?
4	The above plus expert knowledge of: • Reference frame determination and computation • High end GNSS analysis and processing • SLR including analysis and processing • VLBI including analysis and processing • Gravity collection, processing and geoid determination • Analysis centre – combining various geodetic techniques to determine reference frame parameters • Use of other potential geodetic techniques – e.g. DORIS and InSAR	• IAG • Specialist training courses run by NASA/JPL – e.g. on VLBI or SLR • Private companies • Specialized software training courses – e.g. Bernese	Countries engaged in Global Reference frame determination and Geodesy Science - e.g. US, Australia and Germany?

Qustions to be discussed

- What are the main challenges for your country / region regarding a long term, stable reference frame and competence connected to this?
- What are the main impediments for your country / region?
- What could be FIGs role?
- Can your country contribute in regards of training / expertise to your region?

First United Nations World Geospatial Information Congress

27 – 29 November 2018

Deqing, Zhejiang, China

Deqing, Zhejiang

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Global Geospatial Information Management

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