



# Implementation plan for the UN-GGIM GGRF Resolution

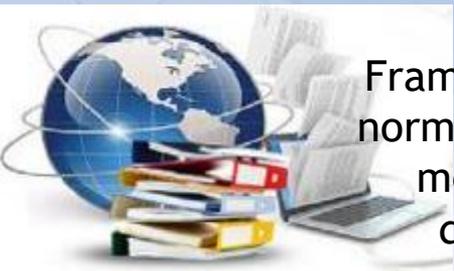
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SIMPOSIO  
**SIRGAS 2017**  
SISTEMA DE REFERENCIA  
GEOCÉNTRICO PARA LAS  
AMÉRICAS



# What is UN-GGIM?

- UN-GGIM
  - Committee of Experts on Global Geospatial Information Management
  - Economic and Social Council on 27 July 2011
  - To promote international cooperation in the field of global geospatial information
  - TOR: Committee comprised of experts from all Member States, as well as experts from international organizations as observers.
- UN-GGIM-Regionals
- UN-GGRF WG => Subcommittee on Geodesy



Frameworks, guides, norms, standards and methodological development

Normative strengthening, capacity building and implementation of GGIM in support of the 2030 Agenda

-  Strengthening global geospatial information management
-  Contribution of regional committees, thematic groups and networks
-  Legal and policy frameworks and issues related to authoritative data
-  Trends in national institutional arrangements
-  Adoption of standards and technical specifications
-  Strengthening collaboration with UNGEGN
-  United Nations activities in geospatial information management
-  Secretariat programme management

### UN-GGIM: Strengthening the Global Data Ecosystem



The activities and efforts that contribute to the unique local-to-global value of UN-GGIM for Member States

-  Global geodetic reference frame
-  Global fundamental geospatial data themes
-  Integration of geospatial, statistical and other information
-  Geospatial information and services for disasters
-  Land administration and management
-  Geospatial information for sustainable development
-  National geospatial data and information systems
-  Marine geospatial information

## UN-GGIM: Global meetings

### Annual Sessions of the UN-GGIM Committee of Experts:

1. Seoul, Republic of Korea, October 2011
2. UNHQ, New York, August 2012
3. Cambridge, United Kingdom, July 2013
4. UNHQ, New York, August 2014
5. UNHQ, New York, August 2015
6. UNHQ, New York, August 2016
7. UNHQ, New York, August 2017

### High-Level Forums on Global Geospatial Information Management:

1. Seoul, Republic of Korea, October 2011
2. Doha, Qatar, February 2013
3. Beijing, China, October 2014
4. Addis Ababa, Ethiopia, April 2016
5. Mexico City, Mexico, November 2017



# UN-GGIM: Integration of regions

## Establishing a regional architecture of UN-GGIM

**UN-GGIM Bureau:**

Co-Chairs: USA, China and the Netherlands; Rapporteur: Cameroon

**UN-GGIM Regional Committees & Chairs:**

- Asia-Pacific: Japan
- Americas: Mexico, Chile
- Europe: Sweden
- Africa: Ethiopia
- Arab States: Saudi Arabia

**UN-GGIM International Networks:**

- Geospatial Societies, Academic Network, Private Sector Network



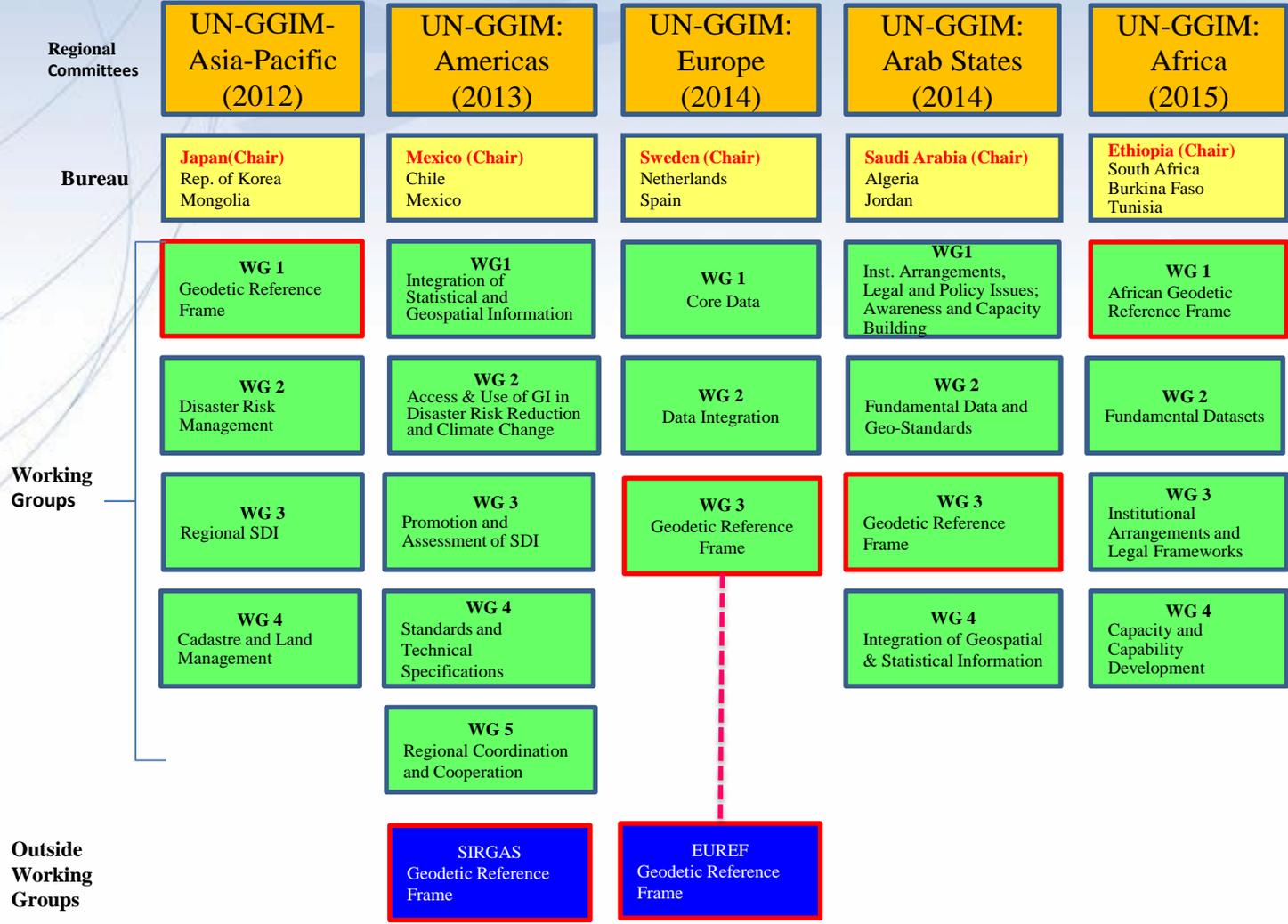
UN-GGIM

United Nations Secretariat  
Global Geospatial Information Management

*Positioning geospatial information to address global challenges*

[ggim.un.org](http://ggim.un.org)

# UN-GGIM - Committee of Experts





# United Nations SubCommittee on Geodesy

UN SCoG

# Americas Members on UN SCoG

1. Argentina - Diego Piñón. Email [dpinon@ign.gob.ar](mailto:dpinon@ign.gob.ar)

Director of Geodesy, National Geographic Institute

2. Canada - Calvin Klatt. Email [calvin.klatt@canada.ca](mailto:calvin.klatt@canada.ca)

Director and Chief Geodesist, Canadian Geodetic Survey

3. Mexico - Francisco Javier Medina Parra

Email: [Francisco.Medina@inegi.org.mx](mailto:Francisco.Medina@inegi.org.mx)

Director of Geodetic Framework, National Institute of Statistics and Geography

4. United States of America - Daniel Roman

Email: [dan.roman@noaa.gov](mailto:dan.roman@noaa.gov)

Chief Geodesist, National Geodetic Survey, National Oceanic and Atmospheric Administration

5. Vacant

6. Vacant

7. Vacant



# The mandate



## The UN-GGIM Committee of Experts

- Endorsed the global geodetic roadmap 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) 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

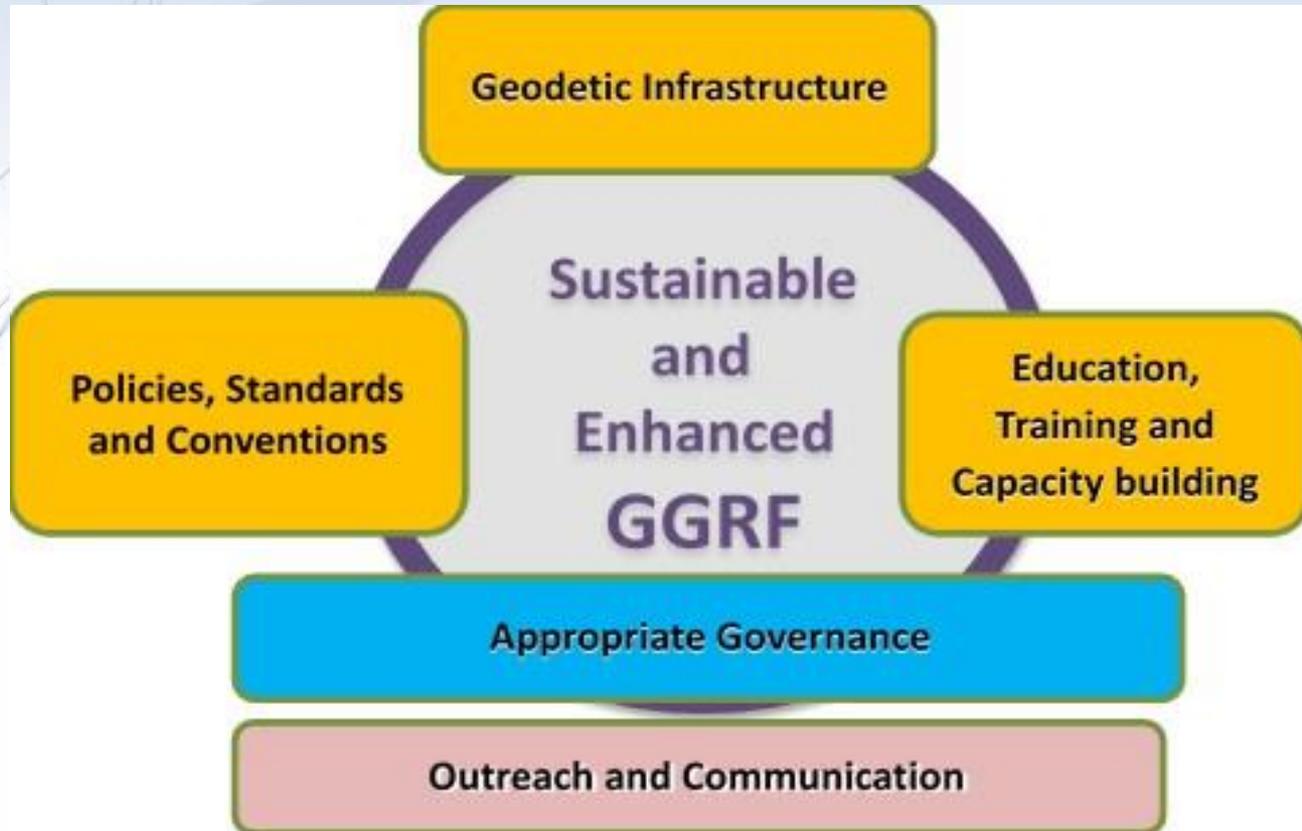


# The vision of the implementation plan



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

# GGRF road map key issue categories



# Organisational structure

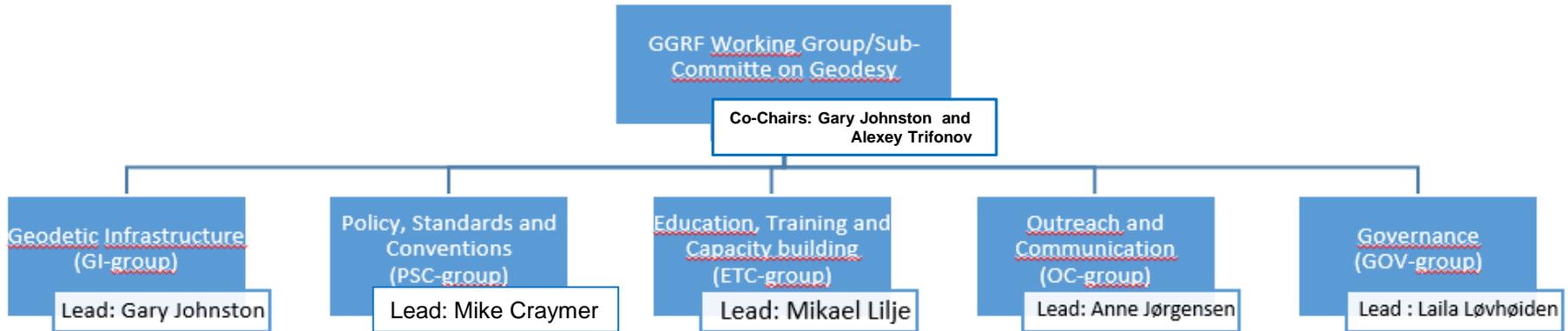


Figure 2: Organisation of work



# Geodetic Infrastructure



## Current situation

- Significant investment in geodetic infrastructure by member States
- Coordination undertaken by the International association of Geodesy (IAG) and its technique services
- Geographical distribution of infrastructure is biased towards Northern
- Gaps in the networks of infrastructure exist, even in the North
- Many of the legacy infrastructure are aging and difficult to maintain, and some do not meet current and planned future specification requirements
- Operating costs for geodetic infrastructure are a risk for sustainable operation
- GNSS contributes to the GGRF in a variety of ways
- GNSS is the primary means of accessing the GGRF
- Coordination across nations, regions and globally is not always fully effective



# Geodetic Infrastructure



## Recommendations

- Member States establish sufficient geodetic infrastructure to allow efficient and accurate access to the GGRF. Member States who have the capacity to assist those countries with less capacity do so through bi-lateral and multi-lateral agreements or other arrangements
- Member States, working within a coordinated science plan developed by the IAG, commit to maintain current investments in the existing Core Observatories in order to ensure the continuation of the provision of services
- Member States make efforts to upgrade the current observing systems at geodetic observatories, in particular VLBI and SLR instruments to next generation technologies
- Member States support the IAG's continued efforts to quantify through simulation the global distribution and specification requirements for geodetic observatories
- Member States commit to fill the gaps where Core Observatories are needed in order to ensure an optimal geometry and coverage wherever they may exist



# Data sharing, Policy, Standards and Conventions



## Current situation

- Geodetic data sharing is inconsistent across Member States and the UN-GGIM regions at this time
- A lack of reliable internet access, and concerns about conflicting commercial arrangements, sovereign security, and other associated legal impediments limit effective data sharing
- A sparseness of infrastructure, technical expertise, and coordination also impedes sharing of some data types
- IAG has developed policies, standards and conventions that are openly shared
- Data sharing needs to be undertaken with full consideration of licensing, quality, liability, authority, and security issues, while at the same time respecting local and national legal and policy frameworks



# Data sharing, Policy, Standards and Conventions



## Recommendations

- Member States support the efforts already undertaken by IAG and standards organisations such as ISO toward geodetic standards, and make these standards openly available.
- Member States more openly share their data, standard operating procedures, expertise, and technology
- Member States resolve their concerns that currently limit data sharing and establish appropriate governmental mandates where required, as a valuable contribution to the enhancement of the GGRF

# 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

# 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

# Communication and Outreach



## Current situation

- General awareness around the value proposition of the GGRF is necessary for its sustainability
- If decision makers do not understand the value of an investment in the GGRF, then they are unlikely to prioritise GGRF investments above other initiatives
- Geodetic science is not well understood by decision makers, particularly at the political level
- Geodesy is inherently a complex field of science, and communicating the nuances of geodetic science to a diverse audience is not an easy task
- The lack of available communications tools and skills limits the geodetic effectiveness of outreach, and jeopardises the sustainability of the GGRF accordingly

# Communication and Outreach



## Recommendations

- Member States cooperate to establish an agreed and coordinated global geodetic outreach program
- Member States support and enhance outreach in accordance with the global geodetic outreach program
- Member States initiate, encourage, and promote better outreach cooperation between national communications experts and geodetic experts
- Member States use the developed communication strategy and tools (including newsletters, video, [unggrf.org](http://unggrf.org) and social media @unggrf) for the purpose of raising the base level of awareness around the benefits of the GGRF to society
- If necessary, Member States translate communication tools into multiple languages to make them understandable on a national basis



# Governance



## Current situation

- There are currently a variety of governance mechanisms in place that loosely coordinate the maintenance and development of the GGRF including the IAG and its technique services. These governance mechanisms are not sufficient to ensure the sustainability of the GGRF in an optimum way
- Some bilateral agreements exist between space agencies and national mapping organisations, but there is no comprehensive internationally binding governance for the GGRF
- Contributions to the GGRF are given by individual Member States with no guarantee of availability and continuity in the long term
- There is very little political visibility of the role the GGRF plays in their State, which may be improved by more robust intergovernmental arrangements
- The role of regional entities, some of which are only recently established, needs to be enhanced



# Governance



## Recommendations

- The Member States note the importance of effective governance to the sustainability and enhancement of the GGRF
- The Members States collectively commence the development of an implementation plan for the recommendations in the GGRF road map



# Summary



The highlights of the 5 categories of action issues are:

- Actions must be taken to maintain and upgrade current national infrastructure and secure all Member States accurate access to the Global Geodetic Reference Frame;
- Member States are urged to support efforts to develop geodetic standards, and more openly share their data, standardised operating procedures, expertise, and technology;
- Actions must be taken to raise geodetic competence and skills, as a lack of geodetic capability currently limits utilisation of the global geodetic reference frame in many countries, and hinders their achievement of the sustainable development goals. It also threatens the development and sustainability of the Global Geodetic Reference Frame;
- Actions must be taken to raise the general awareness around the value proposition of the Global Geodetic Reference Frame
- Actions must be taken to improve the Global Geodetic Reference Frame governance mechanism, as this is needed to ensure the sustainability and improvement of the Global Geodetic Reference Frame.



# Thank You !

# QUESTIONS?



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# SIRGAS as defined by SIRGAS

- Is the Geocentric Reference System for the **Americas**
  - Corresponds to the **ITRS**
  - Includes the definition and realization of a **vertical reference system**
- UNRCC-Americas 7<sup>th</sup> Conference recommended adoption of SIRGAS for **all** of the Americas
  - SIRGAS is a member of the **IAG Commission 1** through SC 1.3b (Regional Reference Frame for South- and Central America)
  - Working Group of the **Cartographic Commission of the PAIGH**

# SIRGAS Structure

- US Concerns
  - Functionally a scientific organization only
  - Limited in scope of constituency (IAG SC 1.3b)
  - Permanently assists UN-GGIM-Americas
  - Outside of the UN governance structure
- Potential Remedies for Organization
  - Include IAG SC 1.3c (Ref. Frame for N. America)
  - Include IAG SC 2.4b (Grav. & Geoid for S. America)
  - Include IAG SC 2.4c (G. & G. for N. & C. America)
  - Needs to be inside the UN Governance Structure or have a counterpart inside

# IAG Commission Structure

## SC 1.3 Regional Reference Frames

Chair: C. Bruyninx (Belgium)

### SC 1.3a Europe

Chair: M. Poutanen (Finland)

### SC 1.3b South and **Central** America

Chair: W. Martinez (Colombia)

### SC 1.3c North America

Chairs: M. Craymer (Canada) and D. Roman (USA)

### SC 1.3d Africa

Chair: E. Saria (Tanzania)

### SC 1.3e Asia-Pacific

Chair: J. Dawson (Australia)

### SC 1.3f Antarctica

Chair: M. Horwath (Germany)

## SC 2.4: Regional Geoid Determination

Chair: M.C. Pacino (Argentina)

### SC 2.4a Europe

Chair: Heiner Denker (Germany)

### SC 2.4b South America

Chair: M.C. Pacino (Argentina)

### SC 2.4c **Central** and North America

Chairs: M. Veronneau (Canada)

### SC 2.4d Africa

Chair: Hussein Abd-Elmotaal (Egypt)

### SC 2.4e Asia-Pacific

Chair: Jay Hyoun Kwon (Korea)

### SC 2.4f Antarctica

Chair: Mirko Scheinert (Germany)