



Federal Agency for
Cartography and Geodesy



United Nations Global Geodetic Centre of Excellence in Bonn

Forum on Global Geodetic Reference Frame for Sustainable development
12th Session UN GGIM
August 2, 2022

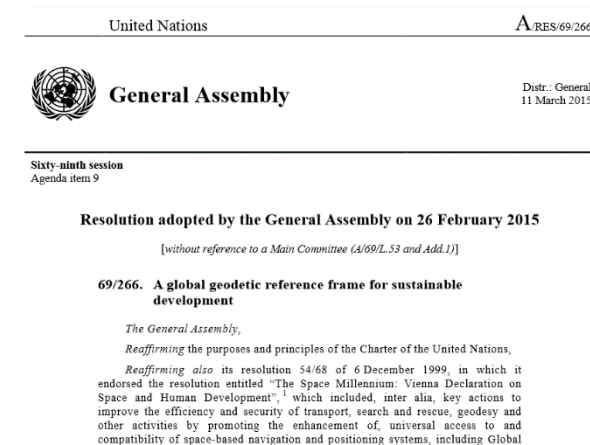
Johannes Bouman

Content

1. How the GGCE blends in
2. How the GGCE may support the GGRF and how MS may support the GGCE
3. Current status and next steps

Global Geodetic Reference Frame - GGRF

- UN-GGIM resolution for a “Global Geodetic Reference Frame for Sustainable Development (GGRF)”
- Adopted on 26 February 2015 by the UN General Assembly
- GGRF is the first geoscience-related resolution
- Main GGRF goals:
 - Establish an authoritative, reliable, highly accurate, and global, geospatial referencing infrastructure
 - Support the collection, integration and utilization of all other geospatial data
 - Improve earth observation and positioning



The GGRF is fundamental for monitoring changes to the Earth including the continents, ice caps, oceans and the atmosphere. It is also fundamental for mapping, navigation and universal timing.

Role of the UN-GGIM Subcommittee of Geodesy

- In 2016, the UN-GGIM Committee of Experts established a permanent “Subcommittee on Geodesy” (SCoG)
- Main tasks of the SCoG:
 - Develop the GGRF Road Map and GGRF implementation plan
 - Addressing five focus areas:
 - Governance
 - Geodetic Infrastructure
 - Policies, Standards and Conventions
 - Education, Training and Capacity Building
 - Communication and Outreach



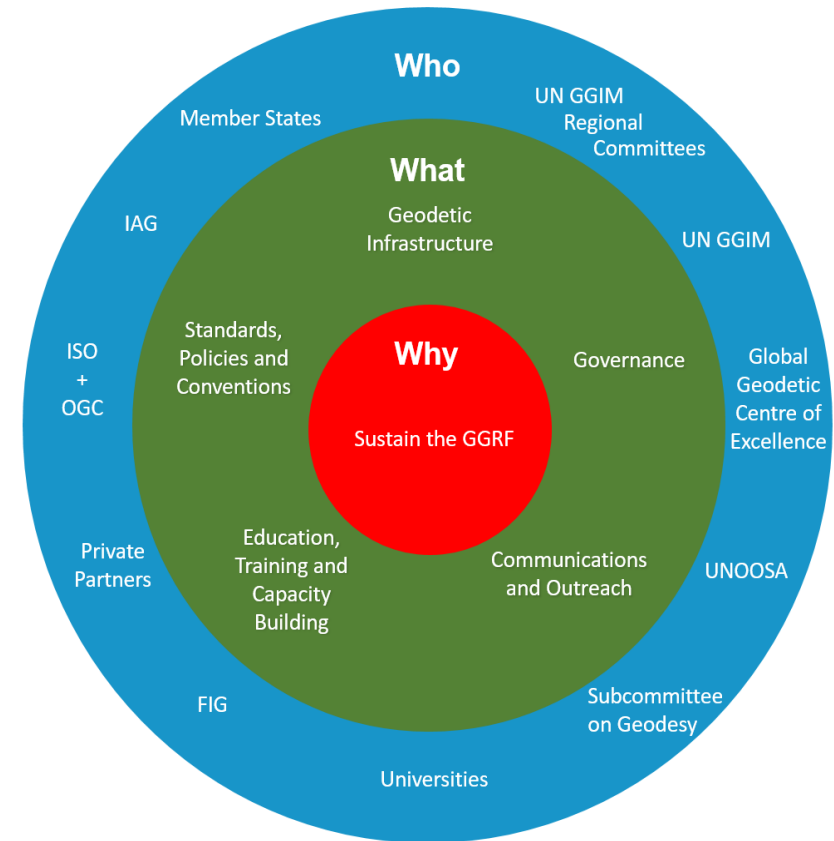
Source: INEGI

Many players to sustain the GGRF

To sustain the GGRF the support and cooperation of Member States and organisations are needed.

Global players, amongst others:

- Member States
 - Build and maintain the geodetic infrastructure
- International Association of Geodesy: IAG
 - operational services and product delivery
- International Federation of Surveyors: FIG
 - education, training and capacity development
- United Nations (Statistics Division)
 - works with and supports Member States

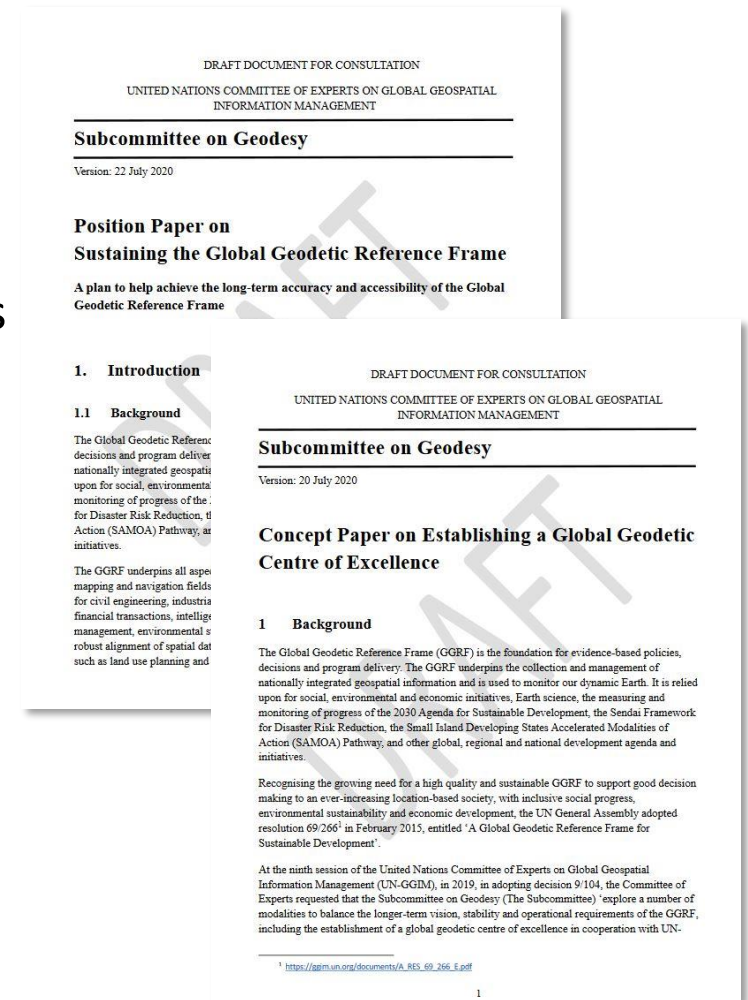


Why we need to work together to sustain the GGRF, what needs to be done and who can help.

A new player is born: Global Geodetic Center of Excellence - GGCE

The Subcommittee on Geodesy was tasked to develop a

- **Position Paper** on “Sustaining the GGRF”
 - describes the current state and future requirements of the GGRF
 - introduces a range of work packages for each of the five focus areas
 - introduces the potential and role of a Global Geodetic Centre of Excellence
- **Concept Paper** on “Establishing a Global Geodetic Centre of Excellence” (GGCE)
 - describes the potential and envisaged tasks of the GGCE
- Both reference documents were submitted to UN-GGIM-10 in 2020



Tasks of the Global Geodetic Centre of Excellence – GGCE

Tasks of the GGCE are tailored to the five focus areas:

- Enhance global cooperation and coordination
- Strengthen geodetic infrastructure
- Assist Member States in line with standards, policies and conventions
- Support education, training and capacity building
- Improve communication and raise awareness

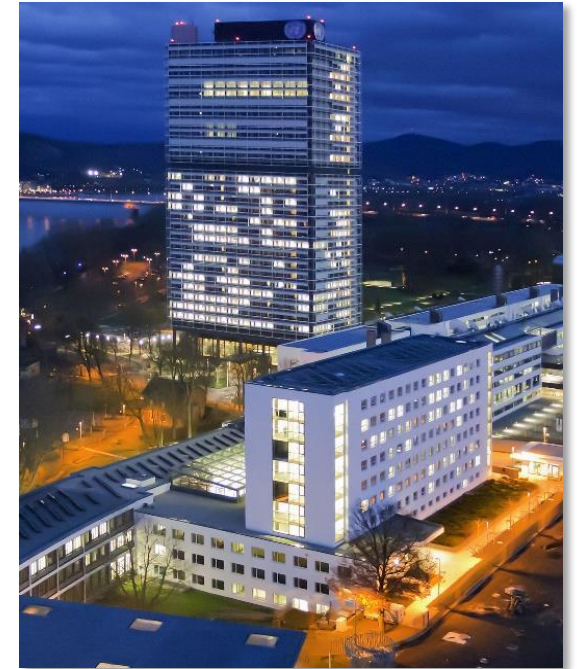


Establishment of the GGCE in Germany

Offer of the German Federal Government was accepted and supported on 11.09.2020 at the 10th UN-GGIM Committee of Experts

The GGCE in Germany

- located at the UN Campus Bonn
 - financed and supported by BKG
 - supported with virtual secondment by Norway
 - Steering Committee (UN DESA + Germany)
 - Technical Advisory Committee (SCoG, IAG, FIG, Space Agencies, ...)
- } ~ 7 FTE



UN Campus Bonn; Source: Press office of the city of Bonn

Status

- Maintenance of GGRF so far by MS, IAG and others on a best-effort basis
- Formal definition of GGRF too abstract for technical implementation

Idea

- GGRF Association - creating visible critical mass
- Identification of stakeholders on GGRF
- Inventory of GGRF components and addressing needs
- Labelling of the components belonging to GGRF → Visibility for MS and decision makers (“GGRF stamp”)

Integration

- GGCE and GGRF initiatives are supported by the professional community (IAG, FIG, ...).

How the GGCE may support the GGRF: An example

MoU / agreements with GGCE or enabled through the GGCE

- Example: BKG and TU Vienna have an MoU to collaborate on VLBI correlation. BEV is interested to become a partner as well
 - Letter of Collaboration, to be approved by the GGCE Steering Committee
- Trust Fund
 - Multiple Member States donate a smaller or larger amount of money
 - Correlator is (partially) financed through Trust Fund
- Letters of Collaboration / Trust Fund could also be used to sustain contributions to the IAG Services

How the GGCE may support the GGRF: Indicators

Quality management and Essential Geodetic Variables

- Quality management is the act of overseeing all activities and tasks that must be accomplished to maintain a desired level of excellence [Investopedia]
- Key performance indicators: e.g. latency, accuracy, reliability, ...
- Link to Essential Geodetic Variables (EGV)
 - Further development of EGVs → Decision makers
 - IAG, SCoG, GGCE
- QM / certification as a condition for agreements with GGCE?
- Enables the derivation of GGRF health indicators?
 - Decision makers
 - Sustainability

Critical Infrastructure

- GPS and Galileo, have become primary source of precise position and timing information
- Critical to safe operation of a number of critical infrastructures like the power grid, telecom networks, financial systems, etc.
- National positioning services: a critical infrastructure themselves (e.g. Austria, Germany)
- The Geodetic Observatory Wettzell (GOW) is part of the German critical infrastructure
 - Its measurements are essential for the operation of Galileo and satellites in general
 - Implies that other geodetic observatories, downstream data analysis, ..., are critical infrastructures
- Possible roles of the GGCE
 - Sharing information and experience
 - Support the development of strategies for CI implementation
 - Support coordination among domestic agencies and internationally
- Advantages and disadvantages
 - Audits, paper work, IT security measures, construction measures (UPS, ...), etc.
 - Contributes to GGRF sustainability & visibility and political relevance

What's next?

Formal establishment of the GGCE

- Agreement, Note Verbal, Offices at the UN Campus in Bonn
- Appointment of Head of GGCE and UN Staff (3)
- Integration of secondments (Germany 2, Norway 1, others ?)
- Negotiations between the Germany and UN began in autumn 2020
- Formal departmental participation in Germany expected to be finalized in 2022

Global Geodetic Development Plan (GGDP)

- Development under leadership of the SCoG together GGCE, IAG, FIG, etc.
- Work Plan of the GGCE: Prioritization of what is to be achieved in the next years (depending on the available resources)

