

Geodetic Capacity Development

UN Subcommittee on Geodesy
Working Group on Education, Training and Capacity Development

Dr. Daniel Roman, Chair



UN-GGIM

United Nations Secretariat
Global Geospatial Information Management

ggim.un.org



Reference Frame Competency Survey – 2018

- A summary of the results and findings from the 2018 Survey was published at FIG 2020 WW Amsterdam



- **“A Global Survey of Reference Frame Competency in terms of Education, Training and Capacity Building (ETCB): Results, Analysis and Update”**
 - Ryan Keenan (Australia), Allison Craddock (USA), Mikael Lilje (Sweden), Rob Sarib (Australia) and Demian Gomez (USA)

https://www.fig.net/resources/proceedings/fig_proceedings/fig2020/papers/ts02g/TS02_G_keenan_craddock_et_al_10753.pdf





Reference Frame Competency Survey – 2021

- A summary of the results and findings from the 2021 Survey was published at FIG 2023 WW Orlando



- **“A Global Survey of Reference Frame Competency in terms of Education, Training and Capacity Building (ETCB): Results, Analysis and Update’**
 - Ryan Keenan (Australia), Allison Craddock (USA), Mikael Lilje (Sweden), Robert Sarib (Australia) and Graeme Blick (New Zealand)

https://www.fig.net/resources/proceedings/fig_proceedings/fig2023/papers/ts05g/TS05_G_keenan_craddock_et_al_12230.pdf





Reference Frame Competency Survey – 2018

Key Takeaways:

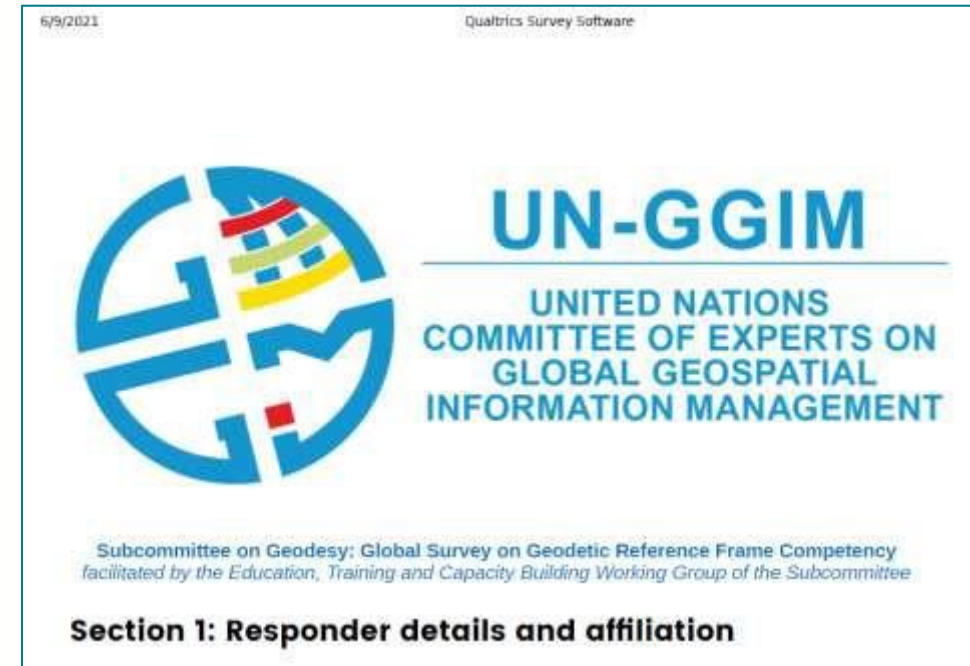
1. Majority aimed to **increase their competencies** by at least 1 level within the next 3 years
2. Very strong need for **continued ETCB contributions** from developed countries
3. Very strong support for a **global facilitator of all ETCB** resources (e.g. proposed GGCE)
4. **More insights needed** into the current (and target) competencies across the UN-GGIM Regions





Reference Frame Competency Survey – 2021

- ETCB WG created an updated Survey
 - To better understand *regional* ‘**Geodetic Capacity Development**’ needs
 - What competencies are already possessed? What will needed for the future?
- Invite sent to all UN-GGIM Regions in June 2021
 - Motivation for 2021 Survey and Who-How- Why they should respond
- Deadline end of Feb 2022



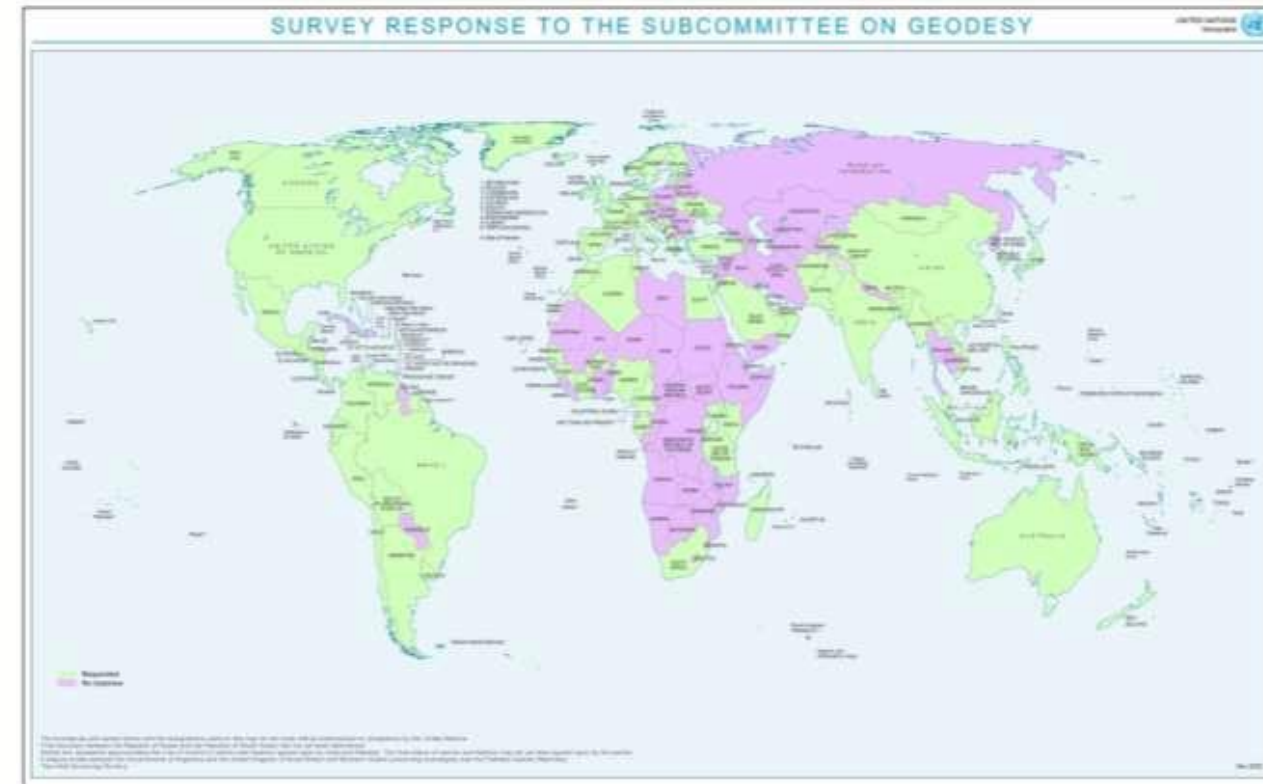


Survey 2021 – Preliminary Results I

- Increased responses and

RFC SURVEY	2018	2021
No. of Questions	28	66
No. of Responses	98	207
No. of Member States	65	101

- Deeper insights into the current competencies, qualifications and skill sets of the respondents

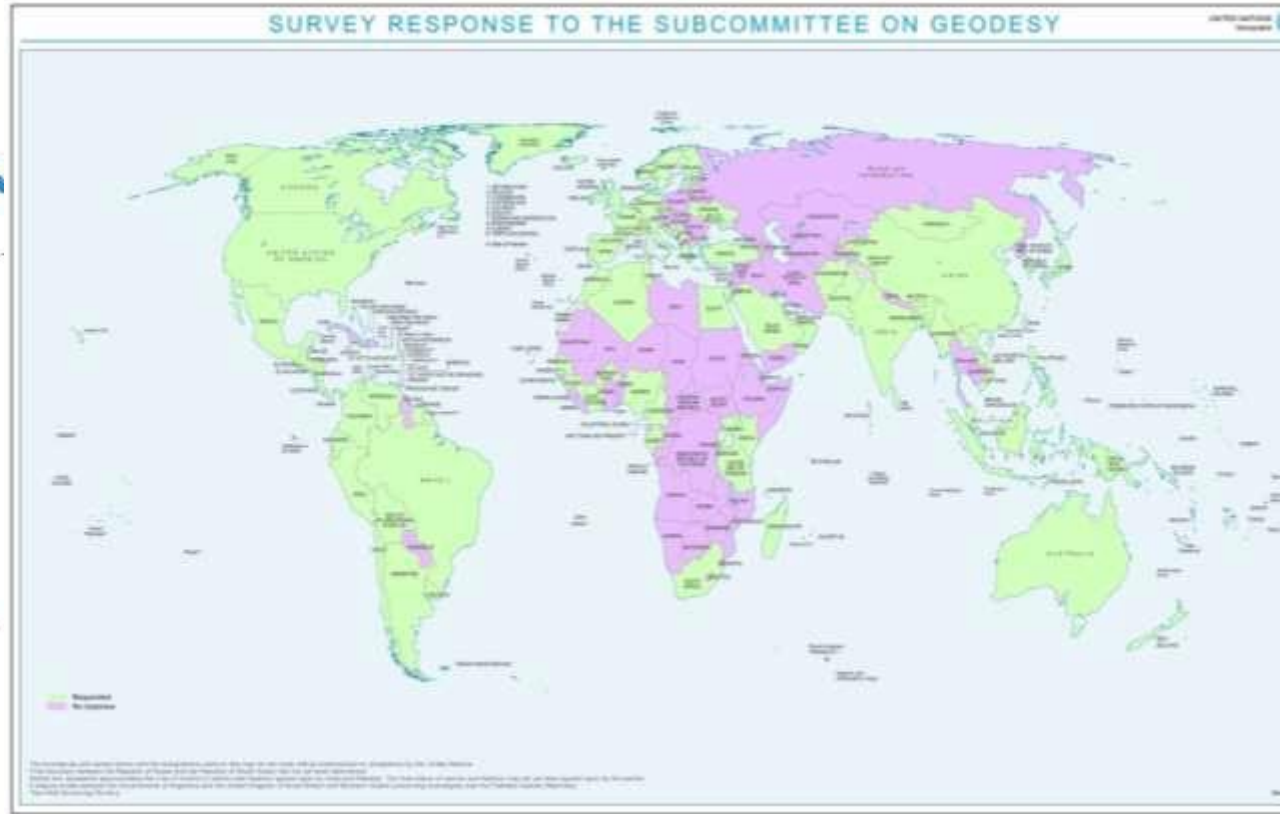




Survey 2018



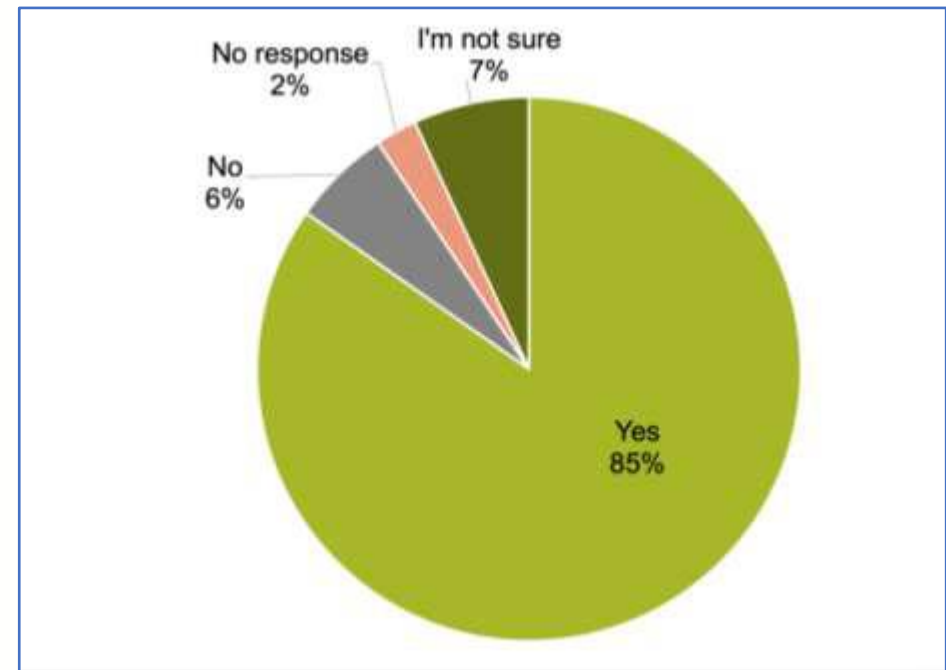
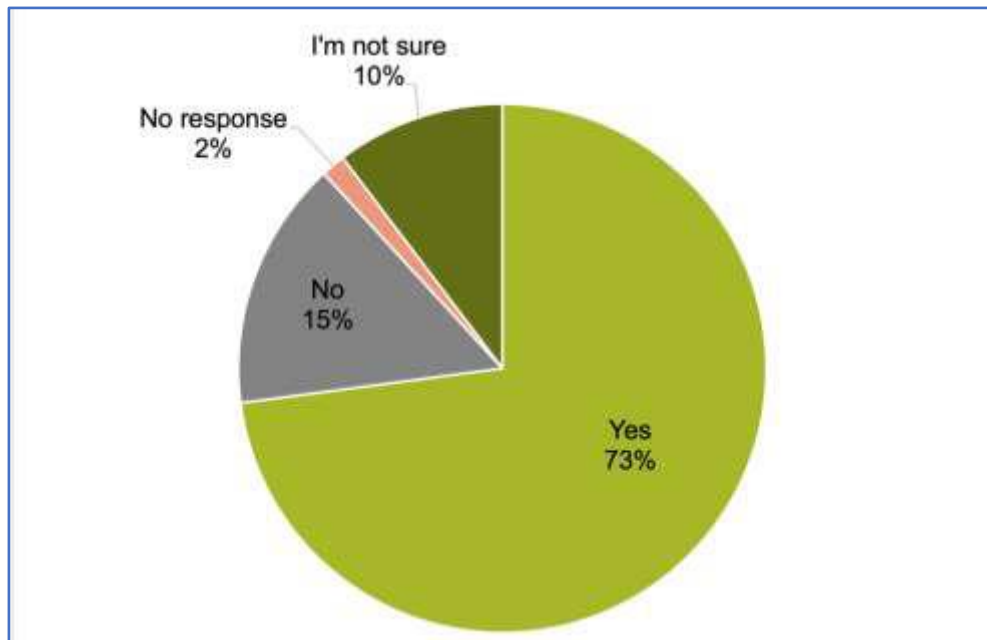
Survey





Survey 2021 – Preliminary Results II – Reference Frames

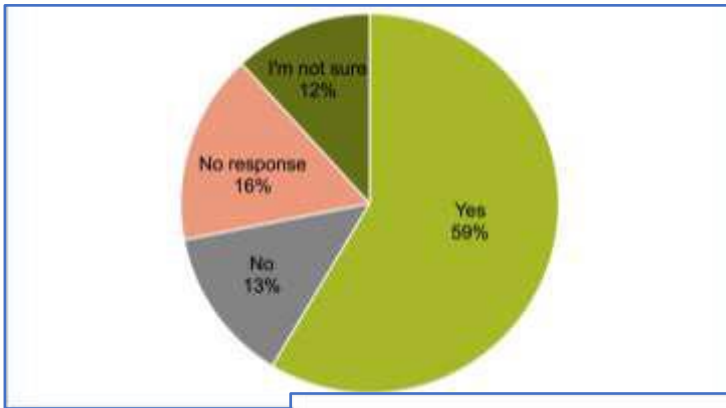
- Geocentric Reference Frame on ITRF?
- National Vertical Reference Frame?



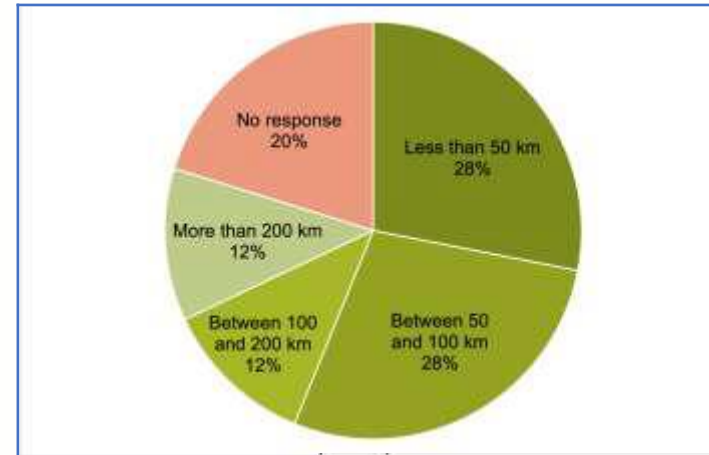


Survey 2021 – Preliminary Results III – CORS Infrastructure

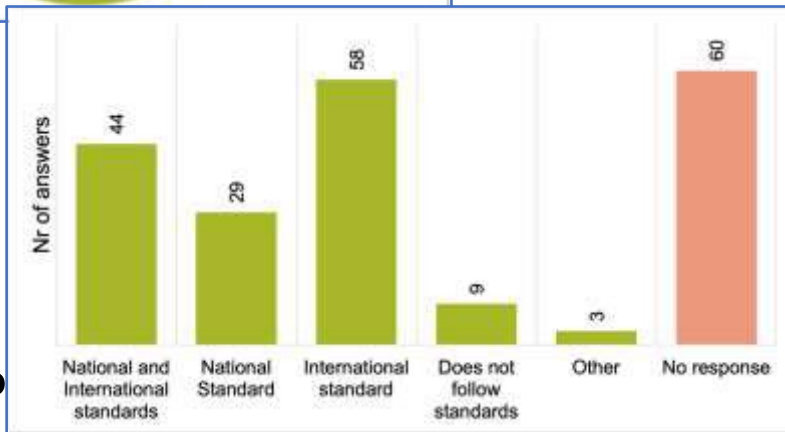
CORS
Presence?



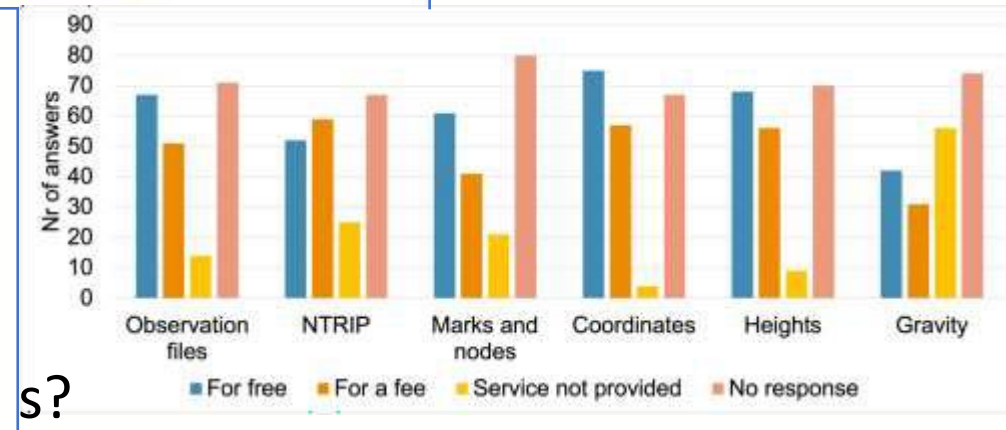
CORS
Spacing?



CORS
Standards?



CORS
Services?





Survey 2021 – Major Findings

- Continued agreement with 2018 Survey
- Clear need for sustained GGRF
- Challenges in maintaining capability and capacity, resources (human & fiscal)
- Clear need of developing nations to receive assistance ETCB / knowledge transfer from Developed nations
- CC (Capacity & Capability) should be part of a CADP (Country Action Development Plan)





Next Steps for These Analyses ... and Beyond

- Findings & Results will be shared with SCoG in support of their Strategy for ensuring GGRF sustainability
- Expectations that the GGCE can facilitate and further action some findings
- Final Report expected in 2024 Q1
 - *?Presentation to UN SCoG 2024?*
 - *?Presentation at FIG WW 2024 Accra?*

**Ultimately ‘making Geodetic Capacity Development’
FAIR**

(findable, accessible, interoperable and reusable)

- While these analyses will continue, new factors are changing roles and activities ...





UN Global Geodetic Centre of Excellence (UN GGCE)

- Overarching goal
 - to assist Member States & geodetic organizations
 - to coordinate and collaborate
 - to sustain, enhance, access & utilize an accurate, accessible and sustainable GGRF
 - to support science, society & global development
- The objective is to support, within available resources, the implementation of General Assembly resolution 69/266 (UN GGRF)
- Strengthening and advancing:
 - Global geodetic cooperation and coordination;
 - Worldwide geodetic infrastructure;
 - Standards and policies;
 - Education, training and capacity development;
 - Communication and awareness.

United Nations » Department of Economic and Social Affairs » Statistics Division



TOPICS ▾ DATA ▾ METHODOLOGY ▾ EVENTS ▾



United Nations Global Geodetic Centre of Excellence > UN Campus in Bonn, Germany



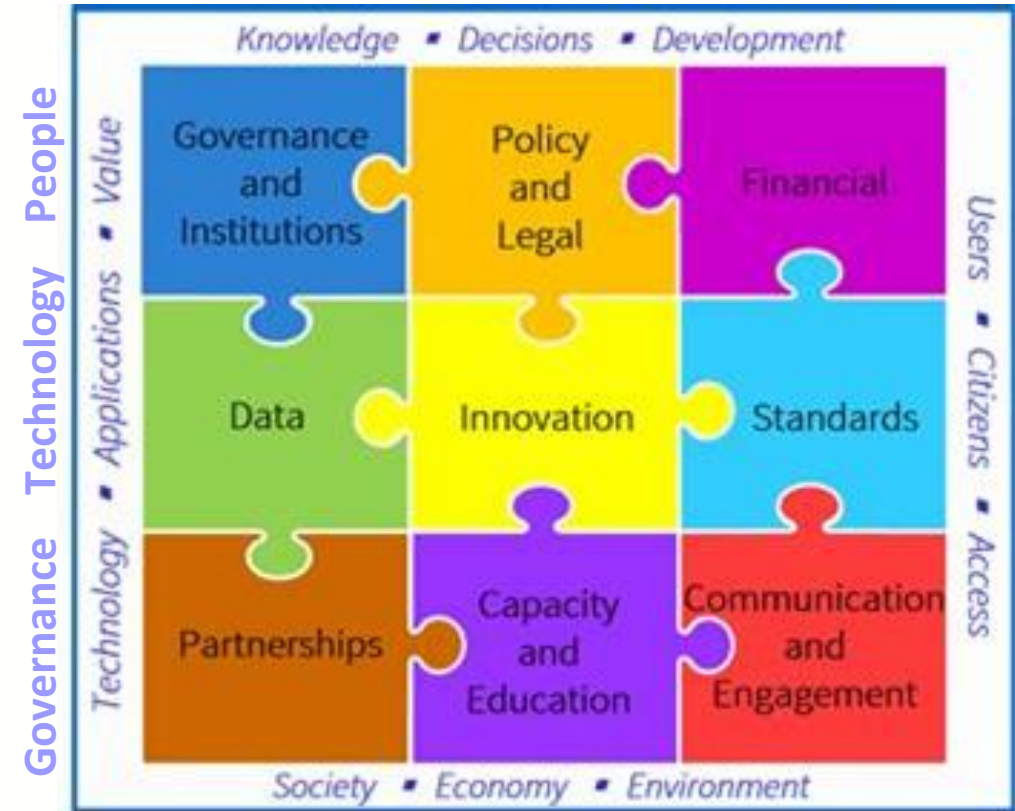
Source: Adobe Stock | johannes86





UN SCoG WG Actions – Joint with IAG and FIG

1. **Global Geodesy Needs Assessment**
Global/regional needs vs IGIF Strategic Pathways
2. **State of Geodesy Report**
Geodesy contributions at global/regional
3. Support the UN GGCE
Global Geodesy Development Plan
4. **Support and promote sustainable GGRF**
Global coordination, coherence, and partnerships
5. **Raise awareness & advocate for global geodesy**
6. **Engage in capacity & capability development**
7. **Develop branding and communicate**





UN SCoG - Global to Regional Relationships

- Coordinates globally with UN GGIM, IAG, FIG, ISO, OGC, GEO, etc.
Overlapping mission areas – need to examine what is missed
- Works with regional Geodetic Reference Frame working groups
 - GRFA in UN GGIM Americas, GRF in AP region
- Works with regional bodies focused on geodesy
 - APREF, SIRGAS, NAREF, AFREF, etc.
- Part of governance mandate to coordinate efforts and minimize overlap of support to maximize capacity development
- Surveys to national reps on geodetic infrastructure, training, education needs
- Will coordinate work with GGCE, which will maintain operational picture





Acknowledgements | Questions | Contacts

- The authors acknowledge:
 - Respondents for their time, constructive feedback and contribution to the survey
 - All groups involved with UN-GGIM SCoG and GGCE working to realise the vision of a sustainable and reliable GGRF.
- Contacts:
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