



FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting
Our World,
Conquering
New Frontiers

Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

Global Survey

Reference Frame Competency – 2021

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Organized By



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Motivation for the Reference Frame Competency Survey

February 2015 – 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.

UN-GGIM SCoG’ WG ETCB was tasked to create:

- A Global Survey of Reference Frame (RF) Competency – open from early 2018 for 22 months

Goal: Implement a self-assessment by Member States of their competency creating, maintaining and improving their national reference frames

Competency Assessment Levels

Geodetic

Reference Frames

GNSS CORS

Geospatial Information

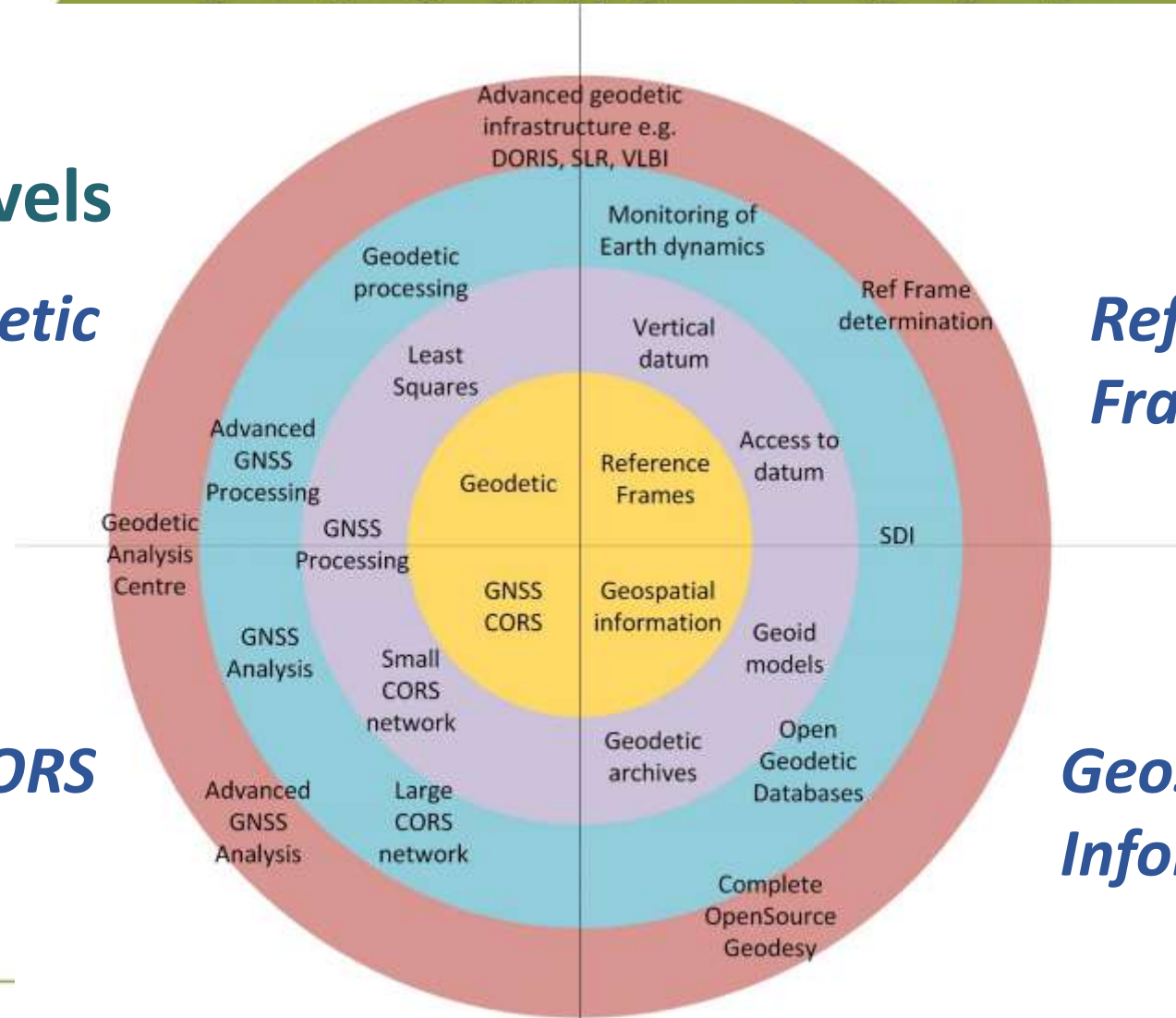




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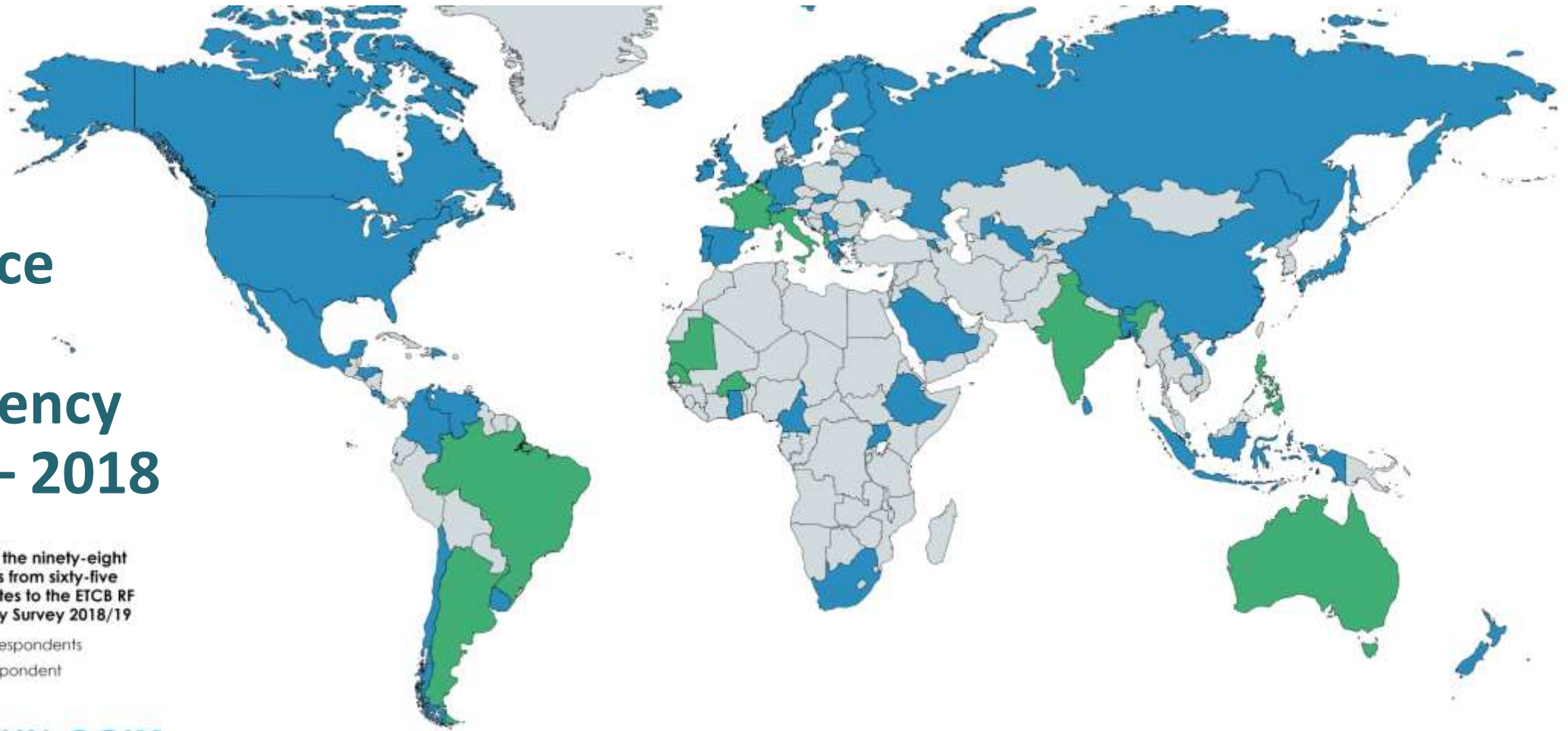
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Reference Frame Competency Survey – 2018

Locations of the ninety-eight Respondents from sixty-five Member States to the ETCB RF Competency Survey 2018/19

- Multiple Respondents
- Single Respondent

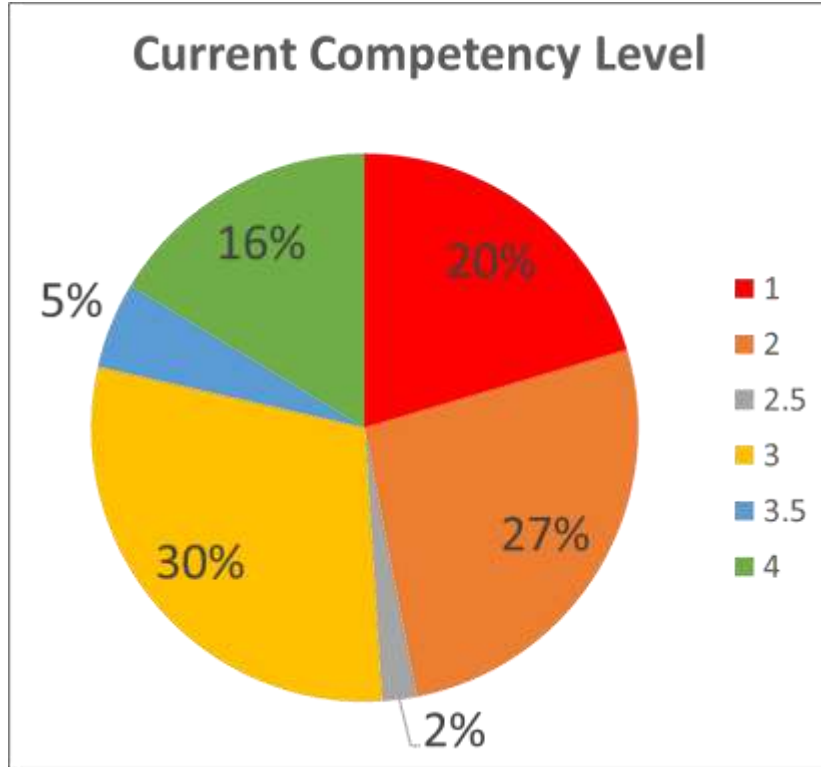


98 Respondents from 65 Member States

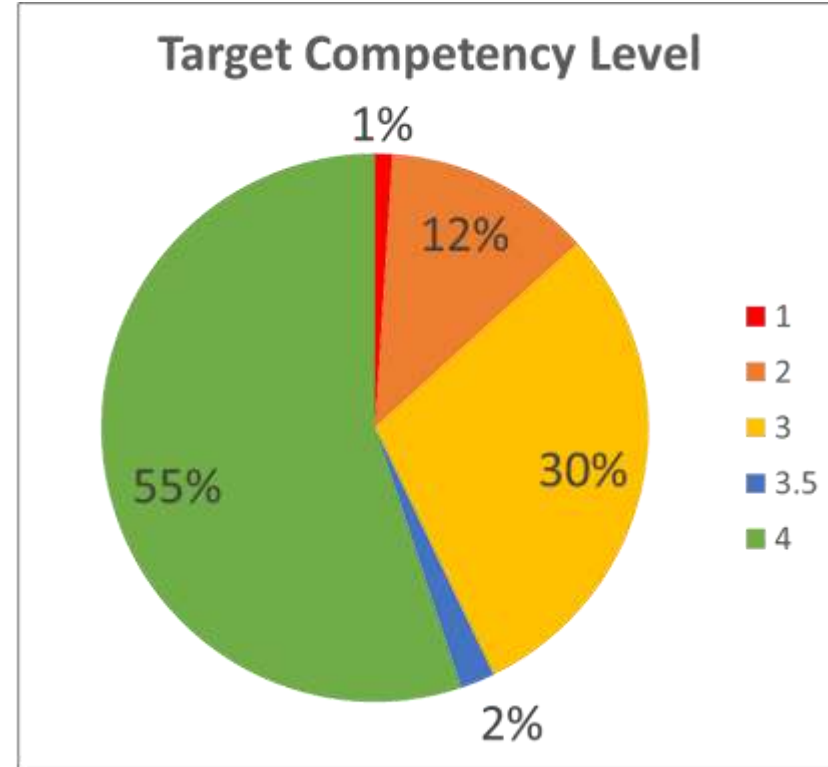
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Reference Frame Competency Survey – 2018



Mean Current Competency Level = 2.5



Mean Target Competency Level = 3.4

GSOs want to “level up”

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), Robert Sarib (Australia) and Graeme Blick (New Zealand)

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

Reference Frame Competency Survey – 2018

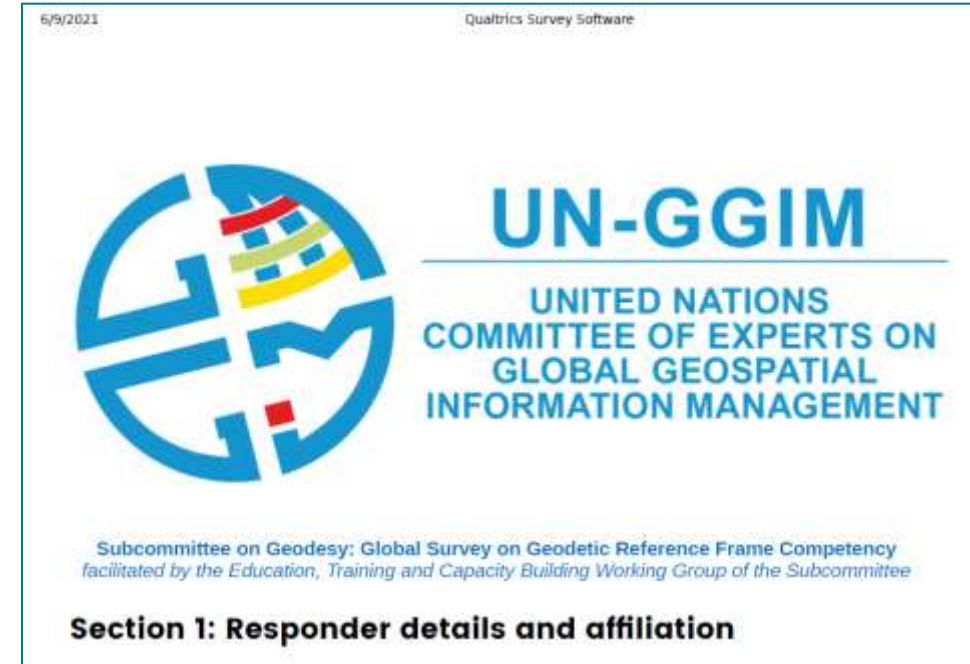
Key Takeaways:

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

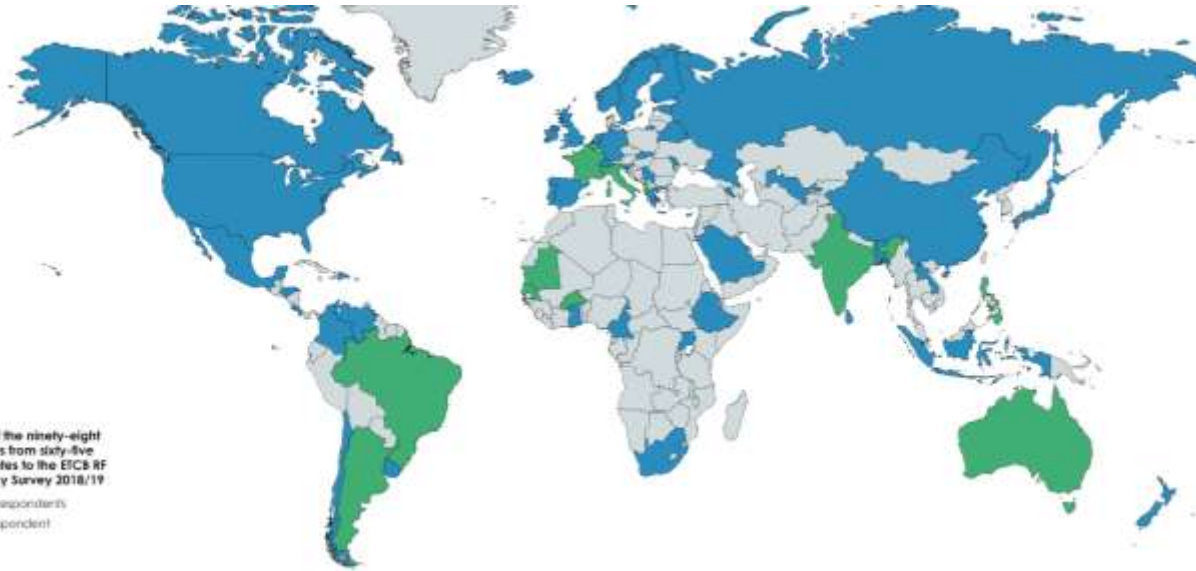
- Increased responses and details

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

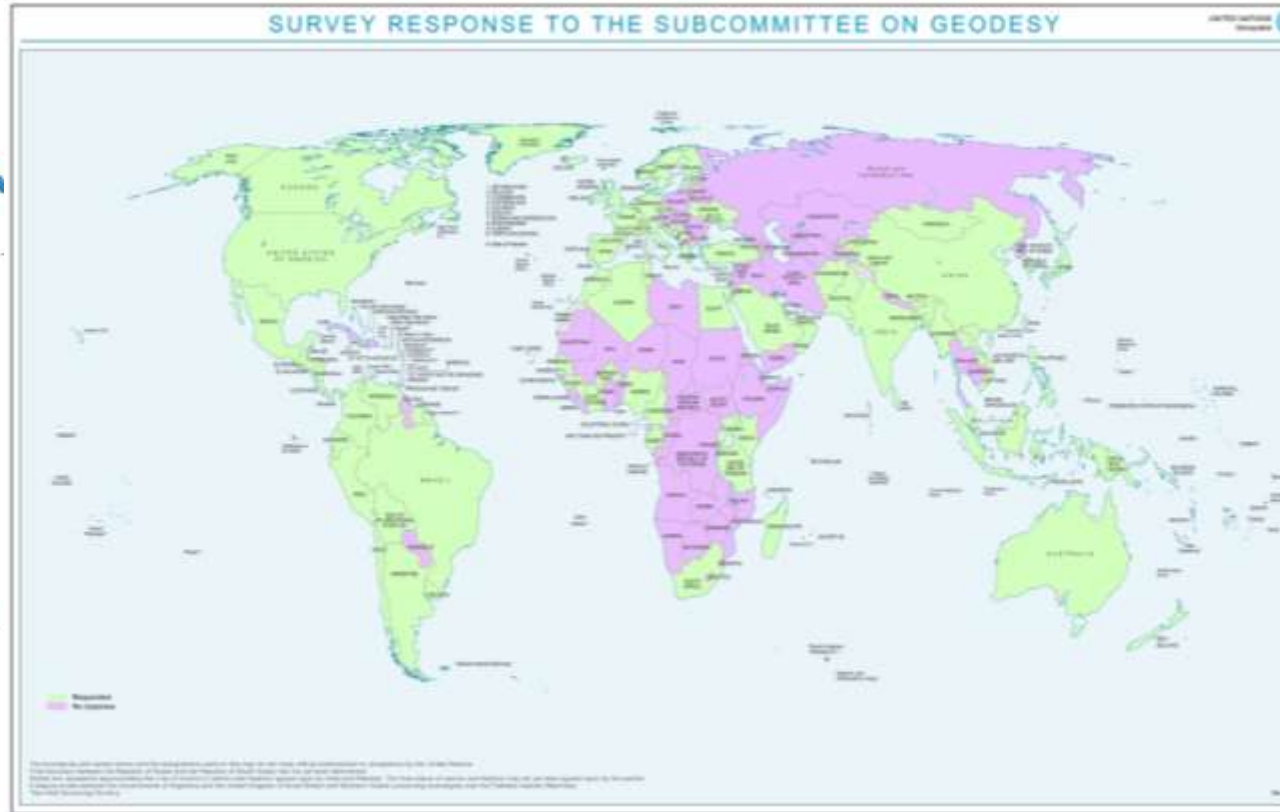
- Deeper insights into the current competencies, qualifications and skill sets of the respondents



Survey 2018

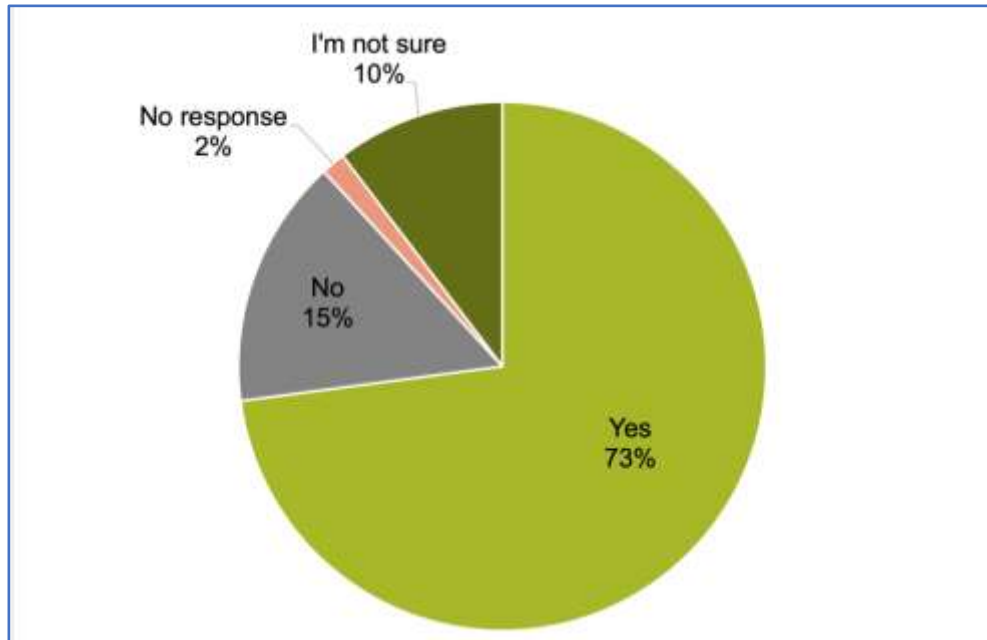


Survey 2021

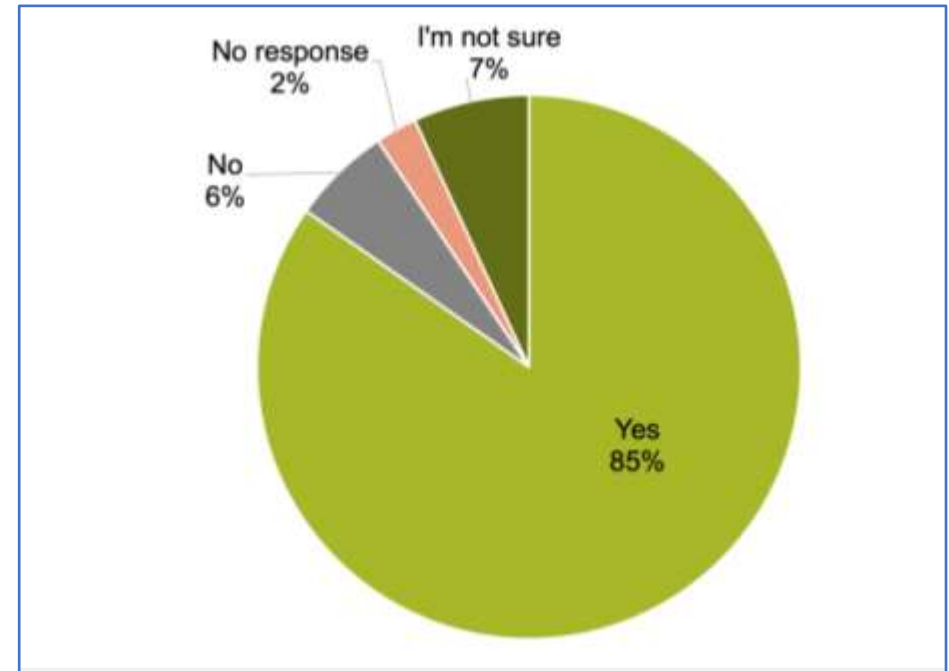


Survey 2021 – Preliminary Results II – Reference Frames

- Geocentric Reference Frame on ITRF?

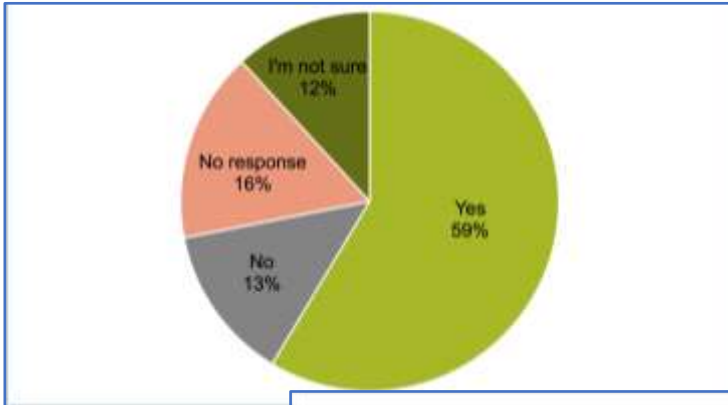


- National Vertical Reference Frame?

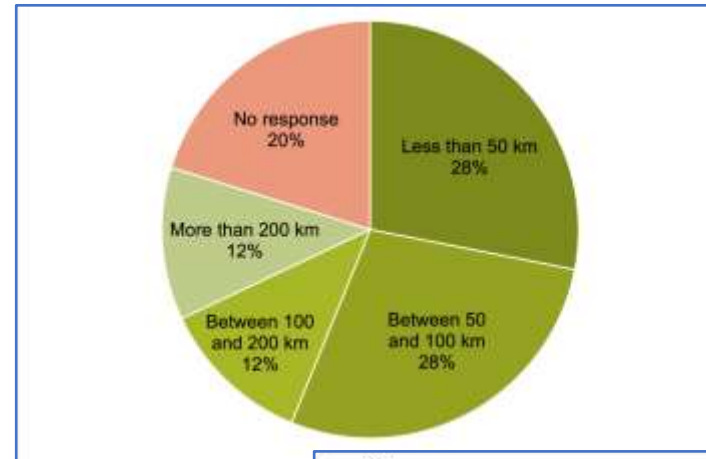


Survey 2021 – Preliminary Results III – CORS Infrastructure

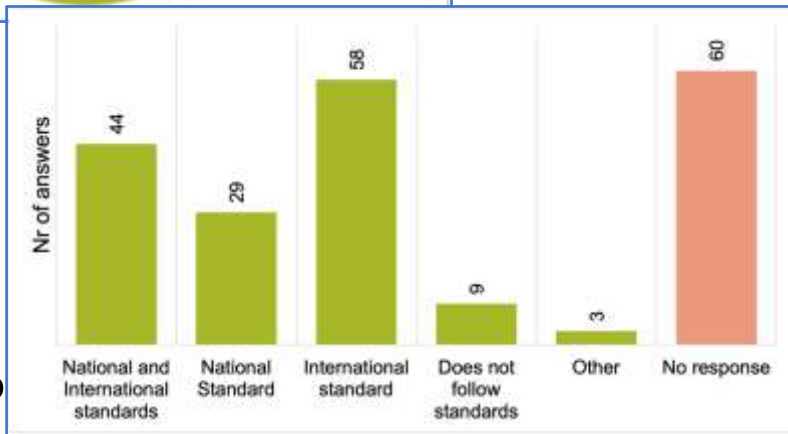
CORS Presence?



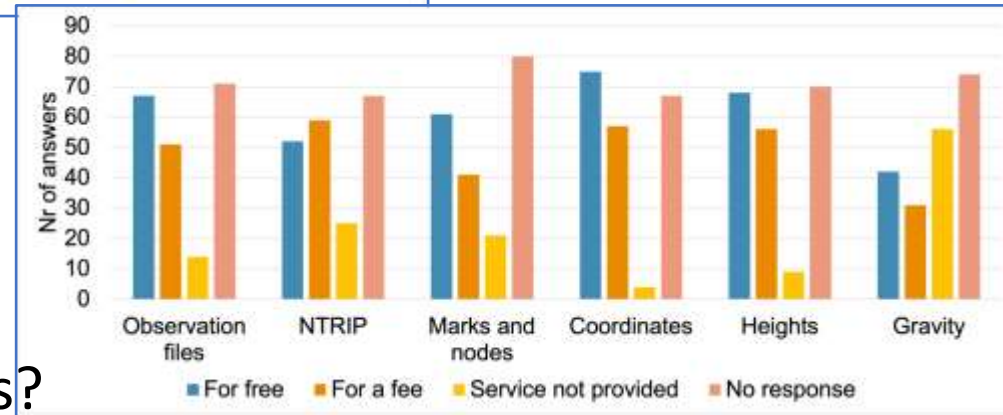
CORS Spacing?



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

- 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)**

Acknowledgements | Questions | Contacts

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