

Report on FIG Activities at the 12th UN GGIM AP Plenary Meeting Kuta, Indonesia

12th Plenary meeting of the United Nations Global Geospatial Information Management for Asia and the Pacific (UN GGIM AP) was held at the Discovery Kartika Plaza Hotel on 6-10 November 2023, in Indonesia (Bali). The Plenary meeting coincided with the Asia-Pacific Geospatial Forum (APGF 2023), which had a theme “Embracing Geospatial Innovation for Sustainable World”. Both events were hosted by the Geospatial Information Agency of Indonesia (BIG).

It was estimated the UN GGIM AP Plenary and the APGF 2023 attracted over 200 participants from the Asia and the Pacific region. The event comprised of 2 days of technical sessions, 3 workshops held over 1.5 days, and a full day for the Plenary meeting. For details of the meeting and the event (including presentations), navigate to –

- UN GGIM AP Plenary Meeting - <https://www.un-ggim-ap.org/meeting/twelfth-plenary-meeting-un-ggim-ap>
- APGF 2023 - <https://apgf2023.id/>

Briefly, the UN GGIM AP is one of the five regional committees of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). The AP regional committee comprises of national geospatial information authorities from 56 countries in Asia and the Pacific region (<https://www.un-ggim-ap.org/content/members>). For this meeting in Bali, 19 member states or countries were in attendance however each country had multiple delegates or representatives.

The current President of the UN GGIM AP is Mr. Antonius Bambang Wijanarto from Indonesia. Mr Wijanarto was appointed to the position in October 2022, and leads an Executive Board, which is made up of 9 other member states of the UN GGIM AP, for a term of 3 years (refer to <https://www.un-ggim-ap.org/eb-members>). Mr Wijanarto is also the Deputy Head of BIG. Also, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) serves as secretariat for UN-GGIM-AP, and provides administrative support to the Executive Board and the member states.

In some ways the objectives and structure of FIG, and the UN GGIM AP are similar as the main aim of the UN GGIM AP is “to promote the use of geospatial information for identifying problems and finding solutions, so that the economic, social and environmental benefits of geospatial information will be maximized in Asia and the Pacific region”. To implement initiatives and to achieve its objectives, the UN GGIM AP have established four working groups and they are –

- Geodetic Reference Frame - <https://www.un-ggim-ap.org/wg/working-group-1-geodetic-reference-frame>
- Cadastre Land Management - <https://www.un-ggim-ap.org/wg/working-group-2-cadastre-and-land-management>

- Integrating Geospatial Information and Statistics - <https://www.un-ggim-ap.org/wg/working-group-3-integrating-geospatial-information-and-statistics>
- Integrated Geospatial Information Framework - <https://www.un-ggim-ap.org/wg/working-group-4-integrated-geospatial-information-framework>

From inspection of the UN GGIM AP working groups work plans, and participating in events (present and past), there are opportunities for FIG Commissions, Task Forces, and Networks to progress their work program through collaboration, sharing of ideas and information and exchanging technical knowledge and experiences. For example, geospatial and survey technical interests, administrative topics, as well as regional or global initiatives, that are mutual to both entities are – disaster risk management and building resilience, measuring and monitoring climate change, capacity and capability building, implementing the IGIF and FELA, sustainability of cities, obtaining the SDGs, digital transformation or modernisation of fundamental datasets or systems, reference frames, standards and practices, and applications of geospatial information. In other words, not one country or organisation can do it alone; and FIG is a key to operational success of many initiatives as they the link to the grass root surveyors.

In this report are the views and observations on the sessions, workshops and meetings compiled by FIG representatives from Commission 5 and 7, the Asia Pacific Capacity Development Network (AP CDN), the Pacific Geospatial Survey Council (PGSC) and the UN Subcommittee on Geodesy WG on Capacity and Education. The attendees were (left to right in the photo) –

- Ms. Malia Pale, Ministry of Lands and Natural Resources of Tonga
- Mr. Asakaia Tabuabisataki, Lands Department of Fiji
- Mr. Viliami Folau, Ministry of Lands and Natural Resources of Tonga
- Mr. Daniel Roman, NOAA National Geodetic Survey of USA
- Ms. Meizyanne Hicks, Ministry of Lands and Mineral Resources of Fiji
- Mr. Rob Sarib, Intergovernmental Committee on Surveying and Mapping of Australia
- Mr. Rohan Bennett – Kadaster International



Asia Pacific Geospatial Forum (APGF 2023)

The technical sessions in this forum comprised of presentations on the status of geospatial information infrastructure and systems, the impacts of geospatial innovation on cities, and how innovation assists with “sustainability” and land administration. The presentations were delivered by various UN GGIM AP member states. The highlights to note were -

- Countries are modernising or “geo-innovating” their geospatial data and information systems; and it appears spatial digital transformation is the key outcome.
- There are issues with reliable georeferenced mapping – this includes having a clear understanding of the level of integrity of data captured and processing
- Agencies are working on 2D digital twins and others are progressing towards 3D
- LiDaR appears to be the main data collection technique being used for 3D modelling
- Many land registries are working on digitising the land parcel register, which is replacing paper-based records and moving to electronic titling. Note countries in this region are at various stages.
- Many countries are using high-resolution imagery (satellite) and aerial photography to undertake base mapping and using drone technology where appropriate.
- Many countries understand the need to have a collaborative approach with other agencies to achieve outcomes.
- Legislative reform is important for some countries especially with regulating standards and practices.
- Governance of geospatial information appears to be a co-operative approach between government, government business enterprises and the private sector.
- The need for spatial information planning is a necessity at all levels of land development in a city; and to assist effective decision-making, a digital twin is proving to be an essential tool to manage the built environment.
- Many countries are creating various on-line portals (local server and /or web cloud based) to provide access to digital datasets or models; and some are examining artificial intelligence for cloud processing
- Some countries are taking an early invention approach to capability development by promoting / advocating “geospatial information” as a profession at primary schools and creating specific development programs for interested or selected candidates.
- Some of the ongoing challenges identified with innovation / modernising are - changing paradigms, resourcing / funding of national initiatives, implementing the Integrated Geospatial Information Framework (IGIF), discovering a driver that can resonant with decision makers, linking the objectives to a common economic / social driver that will provide a community outcome, capacity and capability of the workforce.
- Many counties appear to leverage the opportunity to better evaluate / determine land / parcel property taxing as a key incentive or driver to undertake geospatial innovation (modernisation).

- Innovation approaches seem to follow the method of digitisation, digitalisation and digital transformation, more specifically –
 - Digitisation focused on converting paper records and data
 - Digitalisation was about changing and adaption of digital systems, process and formats
 - Digital Transformation of all activities appeared to be about the integration of digital datasets to change the organisations business to produce an application or service, such as a digital twin.
- Digital twins comprise of elements such as reference frames, positioning networks, location intelligence, platforms to support **FAIR** principles, geospatial and built environment models (including subsurface) rapid mapping via mobile and aerial based methods, and data integration at the 2D and 3D level. Noting that FAIR represents **F**indable, **A**ccessible, **I**nteroperable and **R**eusable
- LandXML, despite no longer being actively maintained as a data transfer standard, appears to be a popular land information data transfer standard in the region, along with CityGML for building information models, such as digital twins
- The cadastral data model that seems to be accepted is ISO 19152, which defines a reference Land Administration Domain Model (LADM) covering basic information-related components of land administration (land tenure), with the revised standard to include planning, valuation, and the marine environment.
- Note, many countries are adopting the use of a geoid model integrated at tide stations to provide vertical control coastal/emergency management



UN GGIM AP - Working Group 1 Geodetic Reference Frames (GRF)

The following highlights were noted from the GRF workshop and meetings -

- Mr. Richard Gross from the International Association of Geodesy (IAG) advised they are exploring the establishment of a Task Force of Inclusion, that is looking at the next generation of geodesists. This project could be of interest to the Commission 5
- There is a Global Geodetic Centre of Excellence (GGCE) “Listening Tour” in Asia and the Pacific convened by Mr Nicholas Brown. The date set aside is **24 January 2024**.
- Several countries are interested in how Australia maintains the national datum and its link to the ITRF, in particularly Fiji interested in Geoscience Australia’s (GAs) experts to help with developing Fiji national datum based on campaign and CORS data.

- Pacific Geospatial Survey Council (PGSC) were active at the workshop as both Tonga (Mr. Viliami Folau) and Fiji (Mr. Asakaia Tabuabisatak) presented on the GNSS Tsunami Early Warning Systems (GTEWS) project, and the activities of the PGSC respectively.



- Asia Pacific Reference Frame (APREF) progressing nicely with over 1000 GNSS CORS, over 300 campaign-based sites, and 20 IGS locations as control.
- There is a call from the working group that they are interested in capacity and capability development workshops and would like to collaborate more with Commission 5 and the Asia Pacific Capacity Development Network
- South Korea is interested in GA's Ginan open-source software of generating corrections based on CORS network data
- Indonesia colleagues are interested in how GA deals with big network (over 1000 stations) of APREF data processing
- Mr. Dan Roman from National Oceanic and Atmospheric Administration (NOAA) and his colleagues are interested in the Asia Pacific Regional Geodetic Project (APRGP) annual GNSS campaign data for the densification of stations in Asia and the Pacific region, and the expansion of APREF to include more of the NOAA CORS Network.
- International height reference frame project is almost complete and will now look at the implementation phase of the project, which includes engagement and communication aspects. The intent is to provide a common reference field to unify vertical datums in all countries.

UN GGIM AP - Working Group 2 Cadastre and Land Management (CLM)



Based on various discussions during the event and official meetings, the ensuing notes and views provide a perspective on the current state of the CLM working group -

- The work plan for the 2022-25 term appears to be still in development.
- Based on the CLM meeting, report and the resolutions prepared for the Plenary meeting, the main objectives of this working group were –
 - Raise the awareness of the benefits of effective and efficient land administration and management;
 - Member states to engage in FELA, as a pathway to implementing the IGIF; and
 - Strengthen and development of human capacity and capability in relation to innovation in cadastre, land administration and management.
 - Ensure there is alignment with the objectives of the Land Administration and Management Expert Group of the UN GGIM
- Noting the above objectives are predicated on the ongoing collaboration, and sharing of knowledge / information with other UN GGIM AP groups and likeminded international organisations.
- The Chair of this working group is from South Korea however it was understood the CLM Chair had prior engagements that were in conflict with this event and meeting. As a consequence, the member from Singapore, Mr. Kean Huat Soon, had to perform the duties as interim CLM Chair.
- At the working group meeting there appears to have been 6 member states represented (Singapore, Australia, Indonesia, Tonga, Iran and China), and several observers including FIG Commission 7's Chair Mr. Rohan Bennett, Mr. Luc Groot from Kadaster International, Ms. Raffaella Anilio representing the UN GGIM AP Americas, and Ms. Malia Pale from Tonga.
- Australian and Chinese CLM representatives were officially recognised as members of the working group at the CLM meeting and at the Plenary meeting. The new members are Mr. Rob Sarib (currently FIG AP CDN Chair) and Mr. Greg Ledwidge from Australia, and Ms. Xiaohong Jiang from China.
- It was evident there was a desire and the need to increase engagement and communication between CLM member states on work plan matters and technical challenges.
- It was noticeable, Singapore was eager to exchange information and ideas regarding the “integration of domains – cadastral (land and marine), built and maritime”
- There is opportunity for FIG Commission 7, Networks and Task Forces to –
 - Examine formal arrangements to facilitate the exchange or sharing of information; and to work collaboratively on specific like-minded projects or initiatives (including 3D land administration, AI and remote sensing applications)
 - Investigate competency / capacity / capability frameworks to meet the future surveying and geospatial challenges, keeping mind the principles of FFPLA, and the importance of inclusion of women and vulnerable groups;
 - Explore pathways to recognising surveying and geospatial qualifications in the region, including programs for work and skills migration;
 - Assist with the implementation of Framework for Effective Land Administration (FELA) and the IGIF; and

- Quantifying and qualifying the benefits of a modernised cadastral, land administration and management system for better decision making
- Assist with the further development of standards in the land administration domain including LADM, 3D cadastres, and vocational and tertiary educational offerings
- Ensuring land surveying is increasingly integrated with broader land management functions, including land planning, land valuation, and land development
- It appears there could be a CLM meeting in May 2024 at the LOCATE conference in Sydney Australia.

UN GGIM AP - Working Group 4 Integrated Geospatial Information Framework



The following are notes on the newly formed working group on the IGIF, as well as various comments from meetings and workshops convened at the event regarding the IGIF.

- Several sessions were convened to facilitate engagement between UN GGIM regions – such as the Americas, Africa, Arab States and Europe.
- It is evident that member states could benefit from greater collaboration, co-operation, co-ordination, and communication at the country and regional levels.
- More specifically, consideration of joint work or sharing of information relating to implementation of IGIF at the country action plan (CAP) level, aspects of FELA, support to the GGCE, capacity / capability development initiatives, and pathways to achieve national priorities with respect to geospatial information and SDGs.
- Typical IGIF challenges – funding / resourcing initiatives; “chunking” the IGIF framework down to manageable and applicable pathways (what strategies / pathways are actually useful or relevant for the member state); developing a CAP that is focused and receive favourable consideration from donor organisations; having the people with the capability to produce a CAP.

- There was a special session for developing countries regarding capacity development and consultation to raise awareness on IGIF and how CAPs are developed leveraging the IGIF.



12th UN GGIM AP Plenary Meeting Highlights

- Out of the 56 UN GGIM AP member states, only 19 were present at the formal Plenary meeting; however it was estimated there were over 75 participants at the meeting, with member states having multiple delegates, and numerous observers.
- Executive Board provided a report; and will be finalising new UN GGIM AP terms of reference so that they align with the plans adopted by the United Nations Committee of Experts on Global Geospatial Information Management (UN GGIM) at the August meeting in New York.
- Member states received reports from regional Committees of UN GGIM: Americas, UN GGIM: Arab States, UN GGIM: Africa, and UN GGIM: Europe. It was agreed by member states that more sharing of information and experiences between regions can only benefit the UN GGIM.
- Establishment of regional Academic Network as well as Private Sector Network was confirmed by UN GGIM AP member states
- All Working Groups presented their work plans and resolutions to progress their work were accepted by member states.
- For a meeting information and the draft resolutions refer to <https://un-ggim-ap.org/meeting/twelfth-plenary-meeting-un-ggim-ap> .
- It was notified that the next Executive Board meeting is at LOCATE 2024, Sydney.
- The 13th UN GGIM AP Plenary will be held in India Nov / Dec 2024; specific location to be advised.
- UN GGIM: Africa indicated the possibility of holding a working meeting concurrent with the FIG 2024 Working Week in Accra, Ghana.

