



International Fédération of Surveyors  
Fédération Internationale des Géomètres  
Internationale Vereinigung der Vermessungsingenieure

## Asia Pacific Capacity Development Network



## 2020/21 General Assembly Report

Chair Rob Sarib



**eWORKING WEEK 2021 20-25 JUNE**

SMART SURVEYORS FOR LAND  
AND WATER MANAGEMENT

**CHALLENGES IN A NEW REALITY**

# FIG Asia Pacific Capacity Development Network



FOUNDATIONS of SUCCESS

***Good Will and Volunteerism is NOT Sustainable***

***Formalise collaboration / co-operation - Shared objectives and expectations ;  
Defined roles and responsibilities ; Measurable benefits and value ;  
Shared commitment***



# FIG Asia Pacific Capacity Development Network



Co-operate with organisations who represent a diverse group of members

Work *collaboratively* to build the *capabilities* of geospatial and surveying professional to meet the *challenges of the future*

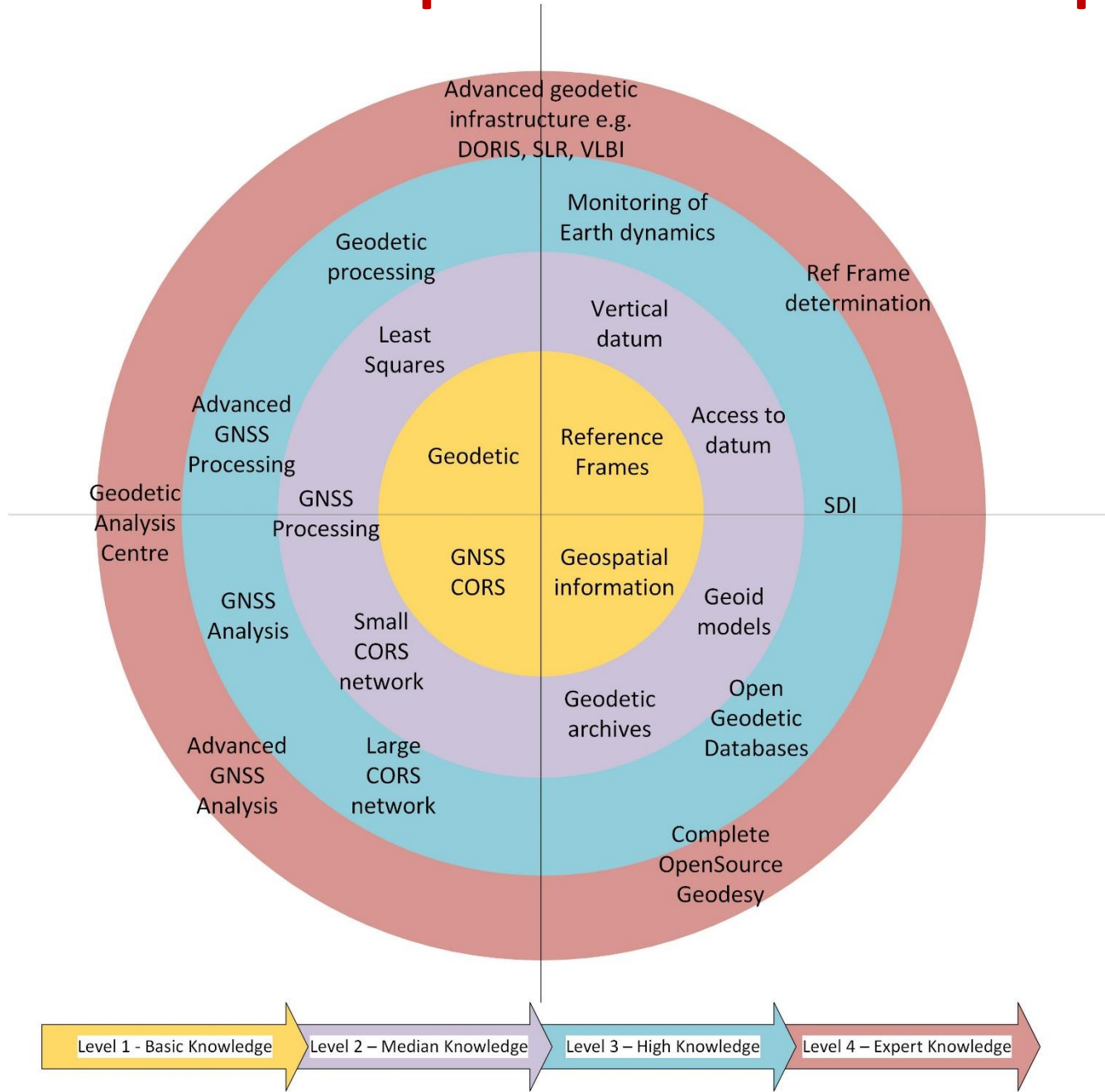
# FIG AP CDN – Capabilities to be Developed

Level	Competency Requirements	Training provided by	Comments
1	<p>Basic understanding of:</p> <ul style="list-style-type: none"> <li>• GNSS</li> <li>• Reference frames, including geoid models, vertical and horizontal datums</li> <li>• Geospatial information integration and interoperability</li> </ul>	<ul style="list-style-type: none"> <li>• Educational institutions – universities and polytechnic institutes</li> <li>• Government geodetic, survey and mapping agency</li> <li>• Private companies</li> <li>• Global Geodetic Centre of Excellence (GGCE) participant</li> </ul>	<p>Countries that might have one CORs and maintain a traditional geodetic network of reference marks.</p>
2	<p>The above plus knowledge of:</p> <ul style="list-style-type: none"> <li>• Constructing, building and running a small CORs network</li> <li>• GNSS processing using standard commercial / consumer off-the-shelf software</li> <li>• Least squares processing and provision of datum access</li> <li>• Geoids models, precision, determinations and basic implementation</li> <li>• Implementation of a vertical datum including use of geoid models</li> </ul>	<ul style="list-style-type: none"> <li>• Educational institutions – universities and polytechs</li> <li>• UN-GGIM Geodesy Capacity Group</li> <li>• FIG / IAG</li> <li>• Government geodetic, survey and mapping agency</li> <li>• Private companies</li> <li>• GGCE participant</li> </ul>	<p>Countries with small CORs network and those who adopt global Reference frames for their nation reference frames.</p>

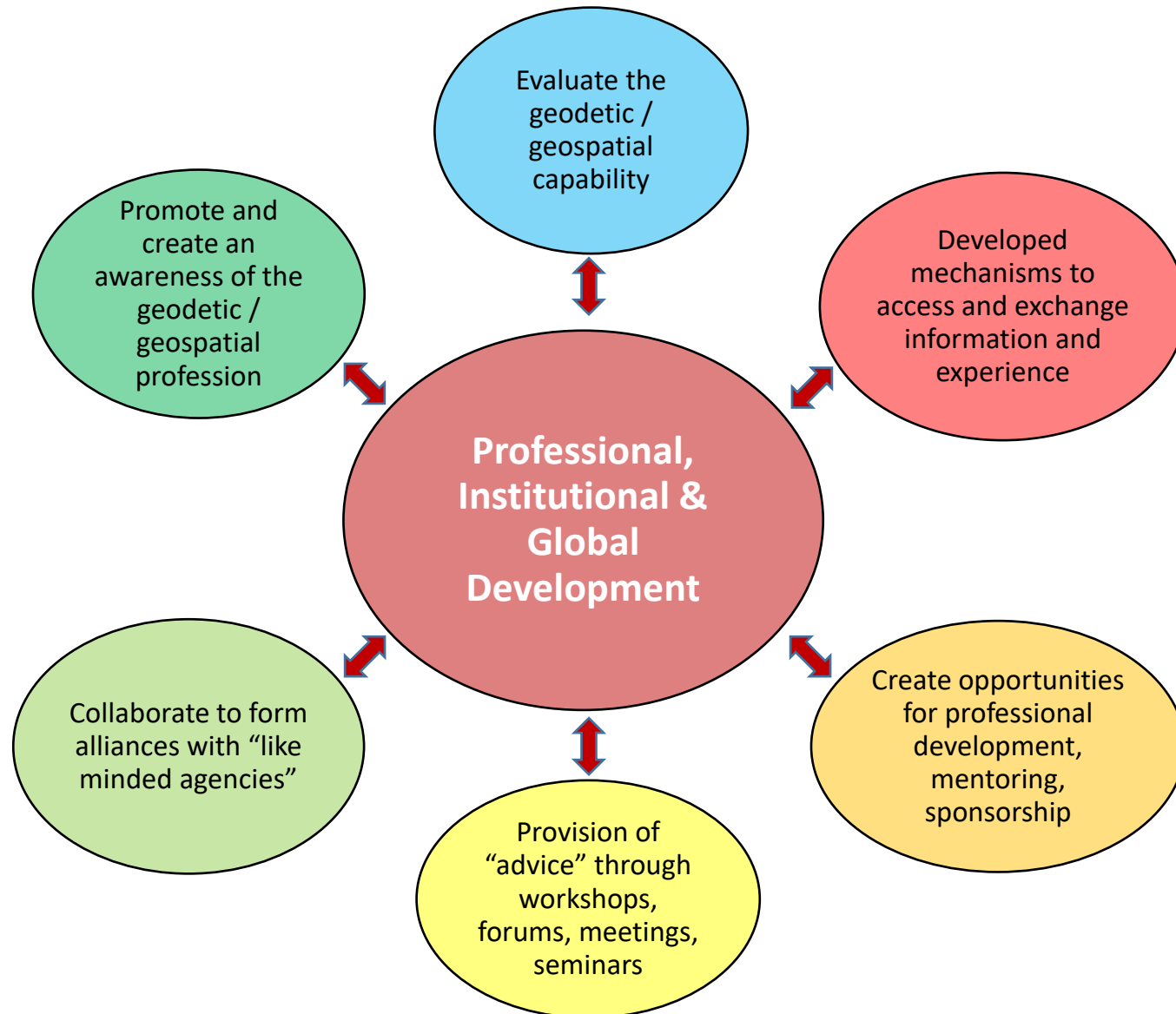
# FIG AP CDN – Capabilities to be Developed

3	<p>The above plus high knowledge of:</p> <ul style="list-style-type: none"> <li>• Implementing and running large CORs networks</li> <li>• High end GNSS processing and datum access</li> <li>• Geoid model computation and implementation into a vertical datums</li> <li>• Monitoring earth dynamics and including in datum realization</li> <li>• Geodetic database management</li> </ul>	<ul style="list-style-type: none"> <li>• Specialized courses – e.g. geoid school</li> <li>• UN-GGIM Geodesy Capacity Group</li> <li>• IAG / FIG</li> <li>• Government geodetic, survey and mapping agency</li> <li>• Private companies</li> <li>• GGCE participant</li> </ul>	<p>Countries with a more extensive CORS and developing their own specialized national and vertical datum.</p>
4	<p>The above plus expert knowledge of:</p> <ul style="list-style-type: none"> <li>• Reference frame determination and computation</li> <li>• High end GNSS analysis and processing</li> <li>• SLR including analysis and processing</li> <li>• VLBI including analysis and processing</li> <li>• Gravity collection, processing and geoid determination</li> <li>• Analysis centre – combining various geodetic techniques to determine reference frame parameters</li> <li>• Use of other potential geodetic techniques – e.g. DORIS and InSAR</li> </ul>	<ul style="list-style-type: none"> <li>• IAG</li> <li>• Specialist training courses run by space or government geodetic, survey and mapping agency – e.g. on VLBI or SLR</li> <li>• Private companies</li> <li>• GGCE participant</li> <li>• Specialized software training courses – e.g. Bernese and GipsyX</li> </ul>	<p>Countries engaged in Global Reference frame determination and Geodesy Science.</p>

# FIG AP CDN – Capabilities to be Developed



# FIG AP CDN - Delivery of Capacity Development





# FIG AP CDN – 2020 Activities



- **UN Global Geodetic Centre of Excellence – Progress from the UN-GGIM Sub Committee on Geodesy** - Martin Lidberg (Sweden), Laila Loevhoeiden (Norway), Nicholas Brown (Australia), Johannes Bouman (Germany) and Jorgensen Anne (Norway)
- **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) and Robert Sarib (Australia)
- **Capacity Development Program for a Modernised Geodetic Framework** -Robert Sarib (Australia)

[https://www.fig.net/fig2020/technical\\_program.htm](https://www.fig.net/fig2020/technical_program.htm)



# FIG AP CDN – 2020 Activities

March/April 2020 International Issue

VOLUME 19 - ISSUE 2

<https://flickread.com/edition/html/index.php?pdf=5e54f8b386d1d#24>

• GIS  
• GPS  
• CAD  
• REMOTE SENSING  
• PHOTOGRAMMETRY  
• SURVEYING  
• CARTOGRAPHY  
• IMAGE PROCESSING  
• BUSINESS GEOGRAPHICS

March/April 2020 | Volume 19 | Issue 2

# Geo:

GeoConnexion International Magazine

## GOOD VIBES USING FIBRE OPTICS TO LOCATE TRAFFIC

## AR GETS REAL DRIVE TO MAP

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# CAPACITY DEVELOPMENT FOR GEODETIC SURVEY ORGANISATIONS

LEADERS OF GEODETIC SURVEY ORGANISATIONS MUST DISCOVER AND DEFINE THE CASE FOR CAPACITY DEVELOPMENT PROGRAMMES. ROBERT SARIB EXPLAINS HOW AND LOOKS AT THE FOUR ELEMENTS NECESSARY FOR SUCCESS

**FIG UPDATE**

In this and the next pages, geodetic survey organisations (GSOs) face a turbulent future. They will have to cope with today's storms and tomorrow's changing tides. In addition, they will have to cope with the digital revolution that is sweeping across the globe. The digital revolution is not just a change in technology, it is a change in the way we think, work and live. It is a change in the way we do business. It is a change in the way we do things. It is a change in the way we do everything.

**1. Institutional engagement**  
The geodetic survey organisations, regulatory bodies, and other stakeholders of the geodetic industry must be engaged in the process of capacity development. This is not just a matter of informing them, but of involving them in the process. It is a matter of building a shared vision and a common purpose. It is a matter of creating a sense of ownership and responsibility. It is a matter of ensuring that the process is transparent and accountable. It is a matter of ensuring that the process is inclusive and participatory. It is a matter of ensuring that the process is sustainable and long-term.

**2. Leadership management**  
Leadership is a key element of capacity development. Leaders must be able to provide clear vision and direction, and to inspire and motivate others. They must be able to set a clear vision and a common purpose, and to communicate this vision and purpose effectively. They must be able to build a strong team, and to manage this team effectively. They must be able to make difficult decisions, and to take responsibility for these decisions. They must be able to adapt to change, and to lead others through change. They must be able to build a culture of innovation and excellence. They must be able to build a culture of trust and integrity. They must be able to build a culture of respect and dignity. They must be able to build a culture of excellence and achievement.

**3. Financial management**  
Financial management is a key element of capacity development. Leaders must be able to manage the financial resources of the organisation effectively. They must be able to develop a clear financial strategy, and to implement this strategy effectively. They must be able to monitor and control the financial performance of the organisation, and to take corrective action when necessary. They must be able to build a strong financial base, and to ensure that this base is sustainable and long-term. They must be able to build a culture of financial responsibility and accountability. They must be able to build a culture of transparency and integrity. They must be able to build a culture of excellence and achievement.

**4. Accessibility**  
Accessibility is a key element of capacity development. Leaders must be able to ensure that the capacity development process is accessible to all stakeholders. This is not just a matter of providing information, but of ensuring that this information is understandable and actionable. It is a matter of ensuring that the process is inclusive and participatory. It is a matter of ensuring that the process is transparent and accountable. It is a matter of ensuring that the process is sustainable and long-term.

**Four elements to success**  
GSOs must also appreciate the four key elements that will define the success of the capacity development process:

- **Institutional engagement**  
The geodetic survey organisations, regulatory bodies, and other stakeholders of the geodetic industry must be engaged in the process of capacity development.
- **Leadership management**  
Leadership is a key element of capacity development. Leaders must be able to provide clear vision and direction, and to inspire and motivate others.
- **Financial management**  
Financial management is a key element of capacity development. Leaders must be able to manage the financial resources of the organisation effectively.
- **Accessibility**  
Accessibility is a key element of capacity development. Leaders must be able to ensure that the capacity development process is accessible to all stakeholders.

**Our recommendations for the future**  
The geodetic survey organisations, regulatory bodies, and other stakeholders of the geodetic industry must be engaged in the process of capacity development. This is not just a matter of informing them, but of involving them in the process. It is a matter of building a shared vision and a common purpose. It is a matter of creating a sense of ownership and responsibility. It is a matter of ensuring that the process is transparent and accountable. It is a matter of ensuring that the process is inclusive and participatory. It is a matter of ensuring that the process is sustainable and long-term.

**AP CDN'S RECOMMENDATIONS**  
The AP CDN's recommendations are based on the findings of the research and the experiences of the geodetic industry. They are intended to provide a framework for the development of capacity development programmes. They are intended to provide a guide to the development of capacity development programmes. They are intended to provide a framework for the development of capacity development programmes. They are intended to provide a guide to the development of capacity development programmes.

Robert Sarib is a senior consultant in the AP CDN's Capacity Development Team.

24 | March/April 2020 | GeoConnexion International Magazine

# FIG AP CDN – 2020 Activities

- GIS
- GPS
- CAD
- REMOTE SENSING
- PHOTOGRAMMETRY
- SURVEYING
- CARTOGRAPHY
- IMAGE PROCESSING
- BUSINESS GEOGRAPHICS

September 2020 | Volume 19 | Issue 5

# Geo:

GeoConnexion International Magazine

## September 2020 International Issue

VOLUME 19 - ISSUE 5

<https://flickread.com/edition/html/index.php?pdf=5f466278e266a#28>

### EMERGENCY DISPATCH

HOW TO SEND UAVS TO MONITOR SITUATIONS AUTOMATICALLY AND SAFELY

### MAKING CONSTRUCTION BOMB-PROOF

SCANNING AT THE CLIFF-FACE

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## MODERN TIMES

**HOW READY ARE GEODETIC SURVEY ORGANISATIONS TO MODERNISE THEIR NATIONAL GEODETIC REFERENCE FRAMES? RESPONSES TO A UN QUESTIONNAIRE REVEAL THE CHALLENGES, AS WELL AS POTENTIAL SOLUTIONS.**

**RYAN KEENAN AND ROB SARIB CRUNCH THE NUMBERS**

The need to modernise geodetic reference frames (GRF) has highlighted the importance of establishing the foundations for education, training and capacity building (TCB) to ensure that the related infrastructure and systems are sustainable. Regarding this, the FIG working group on modernised reference frames (GRF) Global Geospatial Information Management (GGIM) Sub-Committee on Geodesy (SCG) created a questionnaire that asked national geodetic survey organisations (NGSO) to examine their present and future competency levels in terms of their national GRF.

Analysis of the responses revealed the following:

- Current and target competency levels are highly dependent on the size, location, topography and economic setting of their member state.
- Most want to 'up-skill'.
- All have challenges maintaining their current and target competencies in all relevant technologies and the transfer of their organisations and/or.
- Most anticipate the necessary duration to improve competency to be eight years, with 40% expecting to meet up to four years.

The major challenges and TCB competency identified were: institutional capacity building; training, education and research related. This includes a lack of equipment, skills and support to carry forward their current working frameworks of geodesy, infrastructure and systems. In addition, in developing it is a priority option, especially when there is no one to take over the GRF work. It has also been noted that locally identifying a lot of potential for the sector and the most appropriate people to attend relevant training and workshops is difficult, however, if they can, many experts are available to provide training in core competencies. There is a national system to support the application to support the training. There is also a lack of resources pertaining to budget, equipment, software, products and support by infrastructure, training and education institutions and full coverage of building, and there is a deficiency in staff, facilities, and support in well-structured centres.

**The following solutions were identified:**

**Training to raise GRF competency** This will be in the area of high-level TCB by education on working together with

equipment, operating and maintaining a GRF system and a support training in geodesy theory and instrumentation.

**Researching** A capacity development measure plan to increase personnel, resources, training, education and skills from national sources as well as external sources, specifically to attract a global and remote response when most of funding options, stability and systems mechanisms from national and international sources and structure that will ensure for sustainable planning of staff and capabilities in regional issues by development investment and workshops.

**Education** More resources for education and specialization of education training and exchange aimed at students, PhD, MSc, BSc and UN-UNESCO that focus on advisory and benefits of a GRF to decision-makers, stakeholders and community data sharing regional competencies, new GRF and geodesy technologies, applications and systems, and learning mechanisms that are widely accessible, easy to discover, sustainable, viable, and innovative.

**Collaboration and Knowledge exchange** Regional capacity development workshops detailing the technical aspects of GRF, standards and practices, sharing products and geospatial data, along with exploring novel or web-based means of engaging with the public sector, academia and independent experts to provide advice and support.

**Increased regional alliances** Recent activities in South East around the Pacific Basin indicates that parties that have led to increase within an regional cooperation between states through state GRF and modernise with development partners and other civil organisations to address both present and future challenges in GRF cooperation in the APAC region.

**Next steps** Moving forward, SCG will benefit from an independent study to the state of their current competencies, a structured future resources and alignment and harmonisation of their target competencies with their own regional providers, where and outcomes from comparison of this analysis they should create a capacity development plan (CDP) in consultation with some regional member states, and the assistance and support of all civil society of industry. CDP should be the national GRF strategy to incorporate the concepts of the UN GRF and UN-UNESCO framework and development framework. Some of the key words that should be the key to success in this area is: digital, integration, innovation, management, education, information management, education, technology and UN-UNESCO.

Ryan Keenan and Rob Sarib are members of UN-UNESCO GRF and FIG AP CDN.



The all independent assessment of current and future competency systems of the national geodetic reference frames (GRF) and regional geodetic reference frames (RGRF) in the following level of competency, knowledge and how prepared are provided.

### 360° Reflective Target Prism

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## Position 111 February-March 2021

Published on Mar 9, 2021

[https://issuu.com/theintermediagroup/docs/position\\_111\\_february-march\\_2021](https://issuu.com/theintermediagroup/docs/position_111_february-march_2021)



February/March 2021 – No. 111

feature

### Pushing boundaries Geodetic modernisation

#### Evidence from countries and territories

Efforts to develop local capacity for geodesy in both tech and making serious headway in the Asia Pacific region. He from the Pacific Islands showcasing the latest developments courtesy of the United Nations Committee on Global Geospatial Information Management and FIG's Asia Pacific Capacity

#### Introduction

by – Allison Craddock and Rob Sarib

Global geodesy is dependent on findable, accessible, interoperable and reusable (FAIR) contributions from nations all around the globe. Experts state, no single country can maintain the Global Geodetic Reference Frame (GGRF), thus regional collaboration amongst countries to leverage their limited assets, geodetic infrastructure, knowledge and capabilities to perform precise measurements is a necessity.

To support regional collaboration between government geodesy survey organisations (GSDOs) and non-government organisations (NGOs), countries employ, to varying degrees, the United Nations Global Geospatial Information Management (UN GGIM) and World Bank 'Integrated Geospatial Information Framework (IGIF)'. This guiding framework facilitates a common approach to preparing national or country action plans (CAPs) for the development, integration, strengthening and maximisation of geodetic and geospatial infrastructure and systems, as well as resourcing, and developing capabilities. For some countries it is a 'roadmap and pathway' to reducing the geodetic and geospatial digital divide with their more prosperous neighbours, securing socio-economic prosperity and providing justification or rationale for development partner funding of geodetic or geospatial projects.

Briefly, there are nine strategic pathways within three main areas of influence, anchoring the IGIF, which are governance, technology, and people. The nine strategic pathways attempt to foster and amplify the innovative and integrative nature of geospatial information by making it accessible to governments,

businesses, academia, and civil society to optimise or generate new products, services, and applications that provide evidence-based decision-making.

Broadly speaking, the IGIF and formulation of CAPs serve a collaborative roadmap to help governments develop, access, and use geospatial information to make policies and more accurately do development resources. FIG GSDOs, using both the IGIF and local to concrete recommendations on establishing national geodesy infrastructure / systems improving geodetic capabilities tangible outcomes for the GSD stakeholders. Also, with strict harmonised organisational plan GSDOs are empowered with opp to partner with traditional and traditional geospatial groups e from NGOs, commercial entities academic institutions, and sci agencies who have access to r technology, and knowledge.

The implementation strategy tools for the IGIF and CAPs are in several documents and most which were finalised and released early 2020. However, several c from the Pacific Islands Count Territories (PICTs), recognise potential benefits of operations parts of the IGIF in various po statements, and commenced o action planning to advance the modernisation of their geodetic build geodetic and geospatial ( capability, and to leverage into collaborative efforts.

The following are case stud three national, and one region which demonstrate the activity modernisation in the PICTs.

feature

modernisation programs in CAPs, there are also other initiatives that will require assistance, such as –

- Revision of legislation of the Native Lands Act, and relevant Survey legislation to align with Tuvalu's IGIF and CAP aspirations, and
- Upgrading of Tuvalu's Navigation Charts, to assist commercial shipping and cruise liners to navigate Tuvalu's waters safely, thus improve the trade and tourism industry, once the COVID-19 influences have subsided.

#### Embracing challenges through Partnerships, Pacific Geospatial & Surveying Council (PGSC) and the Pacific Community (SPC)

by – Andriak Lal, senior geodetic surveyor

In November 2014, a group of Pacific regional surveying and geospatial experts met in the margins of the annual Pacific Geospatial Information Systems and Remote Sensing (GIS/RS) User Conference in Suva, Fiji. It was at this meeting that the PGSC was first envisaged and a charter governing its mission and objectives was developed. In addition, the Pacific Community (SPC) established the Pacific Geospatial and Surveying Partnership Desk to provide secretariat services and support the PGSC in achieving its goals and objectives.

Briefly, the PGSC, is an independent regional advisory body that provides a forum for Pacific island geospatial information and survey authorities to discuss and address regional challenges. The PGSC aims to collaborate with regional and international organisations, associations, educational institutions and technical groups to support progress on national, regional and global development objectives for sustainable geospatial information in the Pacific enabled by world-class geospatial information and surveying services.

The 14 country members of the PGSC subscribe that geospatial information underpins the majority of economic and

sustainable development activities in the world today. The advice provided by Pacific Island geospatial scientists and surveyors contribute to the security and well-being of Pacific people, supporting numerous industries and sectors. These include: natural resource management, civil engineering, climate change adaptation, disaster risk reduction, transport, land ownership, health, and agriculture to name a few.

The SPC is the principal scientific and technical organisation in the Pacific region, proudly supporting development since 1947. From a geodetic modernisation perspective the SPC Geodetic Survey Team deliver professional advice and services to the PICTs. This primarily involves provision of instrumentation; onsite technical guidance or support on numerous field survey operations or techniques; processing and management of geodetic data; geodetic datum and positioning matters; GNSS base stations; GNSS measurements for survey control, monitoring, cadastral or geospatial activities; and precision leveling monitoring surveys, including assisting with tide gauge measurements for the Pacific Sea Level & Monitoring Project in the Pacific.

Partnerships are critical to the successful implementation of the Pacific Geospatial and Surveying Council Strategy 2017-2027. The responsibilities of regional surveyors and geospatial managers frequently correspond to broader initiatives, which all contribute toward achievement of United Nations Sustainable Development Goals. The PGSC relies upon collaboration, and is an important contributor towards sustaining a GGRF, and global efforts to improve positioning and geospatial information management.

The goals of the PGSC, the Partnership Desk and SPC are focused on:

- Positioning
- Geospatial Policy & Data Management
- Capacity Building
- Since 2014 the PGSC, Partnership Desk, SPC and development partners such



20 position February/March 2021



Static GNSS Geodetic Control Surveying Station at Edinburgh Island in Suva, Fiji. Photo by Andriak Lal

as International Association of Geodesy (IAGU), UN GGIM AP, UN Office of Outer Space Affairs, FIG and neighbouring GSDOs, have cooperated to enhance and engage the geospatial and surveying community in the PICTs. This has been achieved through supporting, organising and hosting various activities in the region such as seminars, workshops, capacity development events, and meetings, as well as online forums and webinars on identified geodetic or geospatial topics and challenges.

Recently, in August 2020, the 3th Pacific Geospatial and Surveying Council (PGSC) meeting was held virtually from the 11th to 14th and 23th August 2020, and was hosted by the SPC in Suva, Fiji. There were almost 200 attendees each day, to participate in virtual panel discussions on presentations from international experts, regional partners and PGSC members. The meeting, like previous ones, was an opportunity for the PGSC members and partners to report, collaborate and plan on leadership, standards and technology, sustainability, and capacity development, in line with the PGSC Strategy 2017-2027. Please refer to the web locations for the article regarding this meeting Pacific calls for Integrated Geospatial Information Management, and for meeting proceedings.

Installation of survey benchmark in Suva, Fiji. Photo by Andriak Lal



#### Modern Geodetic Infrastructure – Key to Consistency and Efficiency

by – Sanjesh Kumar, senior surveyor, Asakala Tabua, surveyor-general Fiji

Fiji is highly vulnerable to natural disasters such as cyclones, coastal inundation and flooding due to climate change and subsequent sea level rise. These natural events affect the food security, livestock, infrastructure, health, housing and livelihoods of more than 800,000 Fijians. It is therefore critical for Fiji to mitigate the influence of natural disasters and climate change. Surveyors can alleviate this impact by applying their skills to disaster preparedness, building resilience, quantifying the environmental and social changes, and providing qualitative analysis. The keys to monitoring and measuring such changes is access to reliable satellite positioning technology, high resolution and accurate geospatial data and information.

Underpinning these activities, Fiji recognised the need and importance of a consistent, comprehensive and modernised geodetic reference frame, and positioning network.

To achieve a modernised datum, Fiji has embraced the challenges and



Above and below: Static GNSS Stations as part of the 7 days field survey campaign



identified the action required to migrate from a local datum to a GGRF, in August 2015. This mandate to modernise their geodetic datum, also set the roadmap for the integration, interoperability and management of geospatial information and systems at the local, national, regional and global level.

Prior to modernisation, Fiji's geodetic datum was based on the World Geodetic System 1972 (WGS72) and comprised of a network of triangulation and trilateration observations, which interconnected the main and outermost islands. The adjustment and propagation of co-ordinates for the datum were significantly biased by survey inconsistencies and produced survey uncertainties in the order of several decimetres. Despite this, WGS72 met user's need for a period of time, however today this reference frame and the accuracy of the co-ordinates, can no longer satisfy the requirements of modern-day geospatial demands or applications, such as real-time positioning, and autonomous vehicles.

Also, with the advent of accurate geospatial data being readily available, rapid technological changes, geospatial trends and digital disruption, the management of the 'gap' is more complex and challenging. With this in mind, the Fiji government saw the establishment of a modern geodetic infrastructure and datum as pathway to bridging the gap. The government also acknowledged the necessity to build the capacity and capabilities of its people to ensure a sustainable geodetic reference frame for the future.

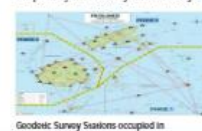
Briefly, datum modernisation started with the construction of eight (8) GNSS CORS across Fiji. These stations complemented two (2) GNSS CORS, managed by Geoscience Australia and the SPC. Soon after the construction of the GNSS CORS, survey teams were

deployed to carry out reconnaissance and identification of existing 'passive' geodetic control stations (GSDS) that could be connected to the GNSS CORS, and form the fiducial observations for the geodetic network adjustment.

In order for this geodetic field campaign to be successful, collaboration and assistance with the Fiji Hydrographic Office, Fiji Navy, SPC, PGSC and Partnership Desk was necessary. The campaign involved more than sixty (60) survey personnel and included a three-day workshop in the operation of GNSS survey equipment. This training and capacity building for the survey personnel was facilitated by the SPC and Partnership Desk in October 2019.

The field campaign involved, the occupation of 164 GSDS with GNSS receivers, and was divided into three (3) phases. The GSDS were occupied continuously for 7 days, and each phase was completed in November 2019, December 2019 and February 2020 respectively. A number of these GSDS occupied were existing Doppler stations, and first order trigonometric stations, which were originally observed in the early 1980s. Observations on first order trigonometric geodetic stations were primarily on the islands of Viti Levu and Vanua Levu, as well as the Maritime Islands. Other observations were taken to selected parcels, and standard survey marks in major towns and cities.

A substantial amount of the GNSS survey data acquired during the field survey campaign will be used to validate the position of Fiji's existing geodetic system and the determination of a new geodetic datum aligned to the ITRF / GGRF. The GNSS data will subsequently be integrated with the Pacific GNSS CORS Network for the computation of the new transformation parameters, and be the primary network adjustment of Fiji. ■



Geodetic Survey Stations occupied in the Field Survey campaign.

# FIG AP CDN – Related 2020 Activities



**The 5<sup>th</sup> Pacific Geospatial & Surveying Council Meeting**

**11-12 August 2020- Open Participation**

- Formal opening
- Regional updates and emerging issues

**13-14 August 2020- Members Only**

- PGSC business and governance

Invitations, agenda, and details to follow  
Contact [pgsc\\_desk@spc.int](mailto:pgsc_desk@spc.int) with queries

- Report - <https://www.councilpacificaffairs.org/news-media/pacific-calls-for-integrated-geospatial-information-management/>
- Technical Papers - <http://pgsc.gem.spc.int/5th-meeting-papers/>
- PGSC Meeting Outcome - <http://pgsc.gem.spc.int/wp-content/uploads/2020/09/PGSC-5-Outcome-statement-and-declaration-Final-1.pdf>



# FIG AP CDN – Related 2020 Activities



The screenshot shows the UN-GGIM-AP website header with the logo and navigation menu. The main content area features a large image of a tropical beach with turquoise water and a sandy shore. Below the image is a navigation bar with tabs for Overview, Agenda, Participants, Logistics, Documents, and Recording. To the right of the image is a 'Downloads' section with links to Agenda\_Plenary 9, Agenda\_WG1, Agenda\_WG2, and Agenda\_WG3.

UN-GGIM-AP  
REGIONAL COMMITTEE OF  
UNITED NATIONS  
GLOBAL GEOSPATIAL  
INFORMATION MANAGEMENT  
FOR ASIA AND THE PACIFIC

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Home

## Ninth Plenary Meeting of UN-GGIM-AP



BIG

Overview Agenda Participants Logistics Documents Recording

### Downloads

- Agenda\_Plenary 9
- Agenda\_WG1
- Agenda\_WG2
- Agenda\_WG3

- Proceedings and Resolutions –  
<https://www.un-ggim-ap.org/meeting/ninth-plenary-meeting-un-ggim-ap>

*Engagement, Communication, Collaboration and Sharing*

# FIG AP CDN – Related 2021 Activities



UN-GGIM

UNITED NATIONS  
COMMITTEE OF EXPERTS ON  
GLOBAL GEOSPATIAL  
INFORMATION MANAGEMENT

Subcommittee on Geodesy

GLOBAL GEODESY FORUM

THE POWER OF WHERE –  
THE VALUE OF GEODESY TO SOCIETY

**Date:** Earth Day, Thursday, 22 April 2021 | **Time:** 10:30 am – 12:00 noon (UTC) / 6:30 am – 8:00 am (EDT-New York)

With an Opening Address from  
His Excellency Ambassador Peter Thomson  
UN Secretary-General's Special Envoy for the Ocean  
Global Geodesy Ambassador

For program details and recording, please visit the forum website at –

[http://ggim.un.org/meetings/2021/Global\\_Geodesy\\_Forum/](http://ggim.un.org/meetings/2021/Global_Geodesy_Forum/)

# FIG AP CDN – Work Plan Objectives

Advocate the importance of modernising a geodetic datum



Discover flexible, agile and accessible means to enhance core competencies and share technical knowledge / experiences



Demonstrate the benefits of capacity development and collaboration



Resolve capability and administrative challenges



Work with FIG African Regional Network and other 'like' regional bodies (ie SIRGAS)



Development of a new FIG AP CDN website



Leverage partnerships / opportunities to discover and improve pathways for professional development and mutual recognition of qualifications.



*Engagement, Communication, Collaboration and Sharing*

# FIG AP CDN – Liaisons / Activities with Partners

## (GSOs, IAG, UNOOSA, UN GGIM AP / SCoG ETCB etc )

- Advocacy and exposure that organisational change, capacity building, and integrated action planning will -
  - Support geodetic and geospatial infrastructure modernisation
  - Reduce the digital divide / technical skills gap between the developed and emerging economies,
  - Achieve the Sustainable Development Goals, and
  - Better manage disasters before, during and after.
- Support the Global Geodetic Reference Frame (GGRF) and the UN GGIM Integrated Geospatial Information Framework (IGIF) via -
  - Development of the Geodetic and Positioning thematic layer for the implementation of the IGIF
  - Educational, training, capacity building initiatives of the Global Geodetic Centre of Excellence (GGCE) that will empower emerging countries to contribute to a sustainable GGRF.

*Engagement, Communication, Collaboration and Sharing*



# Capacity Development (CD) Initiatives

- Technical geodetic and geospatial seminars
  - Fundamentals of geodetic surveying
  - GNSS CORS and positioning infrastructure and applications
  - Vertical reference – surfaces, geoids, tides, gravity, datum integration.
  - Manipulation and integration of geodetic / geospatial datasets (cadastre)
  - Geospatial information - dataset and database management, integrated systems and interoperability of databases, visualisation, dissemination / access
  - Combining geodetic and geospatial information measurement techniques and their applications – imagery, LiDAR, tidal, positioning etc



*Engagement, Communication, Collaboration and Sharing*

# Capacity Development (CD) Initiatives

- “Soft skills” geodetic and geospatial information seminars
  - Preparing CD organisational / operational plans; align plans with country action planning, GGRF, IGIF; “why, what and how”; change management
  - Understanding and leveraging the interaction of CD with GGRF, IGIF, GGCE
  - Developing a Geodetic and Positioning layer / framework for the IGIF - similar to “FELA – Framework for Effective Land Administration”
  - Developing / Modernising the legal, policy, standards and practices, guides frameworks
  - Advocating / exposing the importance of what we do and produce to decision makers; benefits to science, society and the environment; materials or mechanisms that do this effectively



*Engagement, Communication, Collaboration and Sharing*

# FIG e-Working Week - Challenges in a New Reality



**e**WORKING WEEK 2021 20-25 JUNE  
SMART SURVEYORS FOR LAND  
AND WATER MANAGEMENT  
**CHALLENGES IN A NEW REALITY**



**Session - Coordination of Global to Regional Geodetic Efforts through the United Nations**

**Commission: 2 & 5**

Discussion paper

## **A Geodetic and Positioning Thematic Layer – Identifying Tools to Connect the GGRF and IGIF**

Allison Craddock (USA), Graeme Blick (New Zealand), Ryan Keenan (Australia), Mikael Lilje (Sweden) and Rob Sarib (Australia)

# Future 2021 Activities

UN SCoG ETCB & UN GGIM

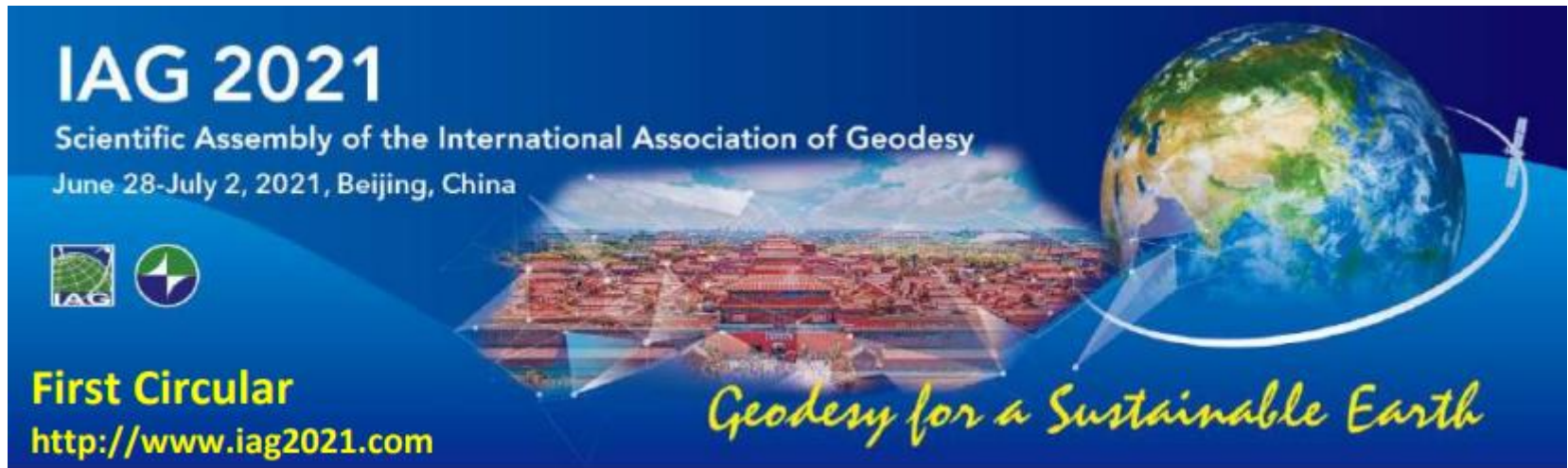
**2021 Regional Geodetic Capacity  
Development Questionnaire**



*Opportunity to  
have your say!*



# Future 2021 Related Activities ?



## Symposium 5, Session 6: Geodesy contributions to address societal challenges

This session solicits contributions focusing on aspects of :

- Development of sustainable Global Geodetic Reference Frame (GGRF)
- Global and Regional collaboration to sustain GGRF
- Recent progress from the UN, GEO and other stakeholders
- Common challenges in geodesy that are related to societal issues

# Future 2021 Related Activities ?

**Possible GNSS CORS / Modernising Geodetic Datums / Capacity Development sessions .....**

United Nations/Mongolia Workshop on  
the Applications of Global Navigation Satellite Systems

ULAANBAATAR, MONGOLIA, 25 - 29 OCTOBER 2021

Organized jointly by  
**UN OOSA and**  
**Mongolian Geospatial Association**

Co-organized and co-sponsored by  
**International Committee on Global Navigation Satellite Systems and**  
**Agency for Land Administration and Management, Geodesy and Cartography**  
**of the Government of Mongolia**



UNITED NATIONS  
Office for Outer Space Affairs

SPACE4SDGS



BRINGING THE BENEFITS OF SPACE TO HUMANKIND