



International Engagement Subcommittee Report

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Chair International Engagement Subcommittee
(President, IGNSS Association Australia)

International Engagement Subcommittee

- Members:
 - Matt Higgins, Chair
 - Renato Filjar
1st Vice-Chair
 - Sonia Alves-Costa
2nd Vice-Chair
 - Terry Moore
 - Jade Morton
 - Jeffrey Shane
 - Russ Shields
 - Todd Walter
- *Non-US citizens input on issues from international perspective.*
- *Balanced by input from US members on what the US needs from international engagement.*
- Role/ Study Areas:
 - Interfacing with international community (ICG, etc.)
 - Pursue GNSS compatibility & interoperability
 - GNSS service & performance gaps vs. synergies
 - Collaboration vs. competition

1 - Interfacing with international community

- Need to find a good balance between:
 - “Outbound” engagement - “promoting” GPS (linked to the “Gold Standard” discussions) vs
 - “Inbound” engagement – How can US users benefit from international systems and are there barriers to adoption?
- Need to recognise role of UN International Committee on GNSS (ICG).
 - US State Department plays a key role in the ICG (working with other US Govt agencies). So how can we add value while not undermining, contradicting or duplicating the existing work of US Govt in ICG?
- There is also a lot of existing international liaison by US entities in specific domains
 - Including domains of our members in ITS, Aviation, Science, Geodesy etc. So again, what role can we play to help the PNT-AB to add value while complementing existing US engagement in international forums like ICAO, ITU, IGS etc?
- *Given need to liaise with State Department, we decided not to concentrate on this aspect until Governance for dealing with Govt Departments was clarified.*

2 - Pursue GNSS compatibility & interoperability

- Compatibility and Interoperability are key elements of the work of UN ICG.
 - So how can US Board best assist and complement existing activities of US Govt Agencies?
- *Again this issue we decided to not concentrate on this aspect until Governance was clarified.*

3 - GNSS service & performance gaps vs. synergies

4 – Collaboration vs Competition

- *We have been working on these issues in preparation for this meeting...*
- What capabilities in other GNSS might be attractive for US users?
- Should those capabilities be developed in future GPS?
- This goes to the heart of the discussion... **Is GPS still the Gold Standard?**

Potential GNSS Metrics

- Presented by Parkinson and Betz to US PNT-AB April 2021.
- Concise way to explain situation to decision makers from the user perspective.
- Conceptual Comparison *either current or projected*
- Colors in table are as example only to illustrate the concept.
- SC will work on completing this Table.

Metric		GPS	GLONASS	Galileo	Bediou
Availability		Green	Red	Yellow	Green
Accuracy	No Augmentations	Green	White	Green	Green
	With Augmentation	White	White	White	White
Integrity	No Augmentations	Green	White	White	White
	With Augmentation	Color Key to this example Exceeds Standards			Blue
# of Signals/# of Frequencies		Meets Global expectations			Green
Unmodulated Signal		Marginal – behind Standards			Yellow
Constellation Strength		Inadequate			Red
Availability of Regional or Global Integrity/Corrections		White	White	White	Blue
Time to First Fix (w or w/o corrections)		White	White	White	White
Continuity		Draft only to illustrate concept			

Capabilities of Other Systems – At System Level

Could turn this into FAQ

Capability	Issue	Comments	Useful for US	Best on GPS or other technology	Planned for GPS	Recommend Response
GEO Satellites	GEOs “inside” BeiDou	Deals with lack of SBAS by doing it within same program	No	Other	No	Covered by WAAS
IGSO Satellites	Deployed in Several Systems	QZSS IGSOs (for example) improve availability in urban canyons etc	?	GPS or Augmentation?	No	Investigate?
Iono Model	GPS Broadcast Iono Model not performing as well as other systems	Jade Morton has paper reference	Yes?	GPS	?	Depends on GPS III if no investigate?
Configurable Payload (SDR)	Planned for Galileo and other systems(?)	Outlined by Logan Scott previous meeting	Yes?	GPS	?	Depends on GPS III etc
Intersatellite Links	BeiDou comms & ranging Galileo planned in 2nd Gen	Comms improves systems updates ranging improves orbit accuracy	Yes?	GPS	?	Depends on GPS III etc
Ground Segment Coverage	Multiple Galileo uplinks stations	Allows reduced age-of-data	Yes but linked intersatellite links	GPS	?	Depends on GPS III etc

Draft only to illustrate concept

Capabilities of Other Systems – At Service Level

Again, could turn this into FAQ

Capability	Issue	Comments	Useful for US	Best on GPS or other technology	Planned for GPS	Recommend Response
Search and Rescue	Galileo has return link for SAR	GPS contributes to “MEO-SAR” but no return link	?	?	?	Investigate?
Emergency Warning Service	Galileo and QZSS leading	Warning comes through GNSS chip in consumer devices when mobile comms are down.	?	Advantage of receiver ubiquity.	No?	Investigate?
Short Messaging Service	BeiDou only system	Useful when mobile comms are down	?	better via sat comm	No?	No further response
High Accuracy Service	System Delivered PPP on several systems	Galileo High Accuracy Service is in testing.	Yes?	GNSS has advantages but via Internet also useful	No	ECAS SC investigating
Open Authentication	Galileo deploying	Improved resilience to spoofing	Yes	?	No	Best pursued by PTA SC?
Commercial Authentication	Galileo deploying	Improved resilience to spoofing	?	?	No	?

Draft only to illustrate concept

Next Steps

- Assign various components of the preceding tables to SC Members to complete the details.
 - Better understanding of each issue and possible action by US Government.
- Evolve toward a paper and FAQs with possible recommendations to put to the next Board meeting later in 2022.
- As that work matures start to consider Roles 1 and 2 on international engagement working with key players like State Department.