

ICG WORKING GROUP S
Systems, Signals, and Services
ICG-18 Meeting

Wellington, New Zealand
8-10 October 2024
AGENDA (as of 30 September 2024)
(Note: All times are local Wellington)

Tuesday, 08 October

0950-1015 Introduction

- 1) WG-S Co-chairs Opening Remarks
- 2) Approval of the Agenda
- 3) WG-S Events in 2024

1015-1115 GNSS System Provider Updates*

- 1) BeiDou (BDS)
- 2) Galileo
 - a. Galileo Signal in Space Improvements update
- 3) GLONASS
- 4) GPS
 - a. Resilient GPS

Juan Pablo BOYERO, European Commission

Chris ERICKSON, U.S.

- 5) IRNSS/NAVIC
 - a. Methodology of Power Sharing Verification for the Composite Modulated Signal in Navigation Payloads
Deepak MISHRA, Harsh AGRAWAL, SAC/ISRO, India
 - b. Candidate Signal Design for L2 Band Navigation Services
Dhaval UPADHYAY, Vijay Singh BHADOURIA, SAC/ISRO, India
 - c. Flexible Next Generation NavIC Payload
Anand Mohan ROY, Neeraj MISHRA, Purushotham TAMMALI, SAC/ISRO, India

PROVISIONAL AGENDA

6) QZSS

- * Note: This is an opportunity for group discussion on any information relevant to WG-S that requires clarification or elaboration based on the system provider updates presented in the plenary session on Monday, 16 October.

1115-1200 System-of-Systems Operation (Orbital Debris Mitigation)

1) PRESENTATIONS

a. ESA Zero Debris Policy

Werner ENDERLE, European Space Agency

b. Update from IADC

IADC Representative

2) Discussion on IADC Report (November 2020)

ACTION to Working Group: WG-S to prepare a response to IADC with feedback on the report.

3) Review actions and next steps

ACTION to Working Group: WG-S to prepare a response to IADC with feedback on the report. Working Group members should complete the draft template on orbit plans that was presented by China and be prepared to discuss at the next WG-S meeting.

1200-1230 Civil Signal Authentication

1) PRESENTATIONS

a. Galileo's Authentication

Ignacio Fernandez HERNANDEZ, European Commission

b. QZSS Message Authentication Service Status

Yoko SAKAI and Rui HIROKAWA, Japan

2) Review actions and next steps

1230-1330 Lunch

1330-1400 GNSS Compatibility & Spectrum (*IDM Standards and Information Exchange*)

PROVISIONAL AGENDA

1) PRESENTATIONS

2) IDM Task Force Report

Rick HAMILTON/James AVILES, Weimin ZHEN

3) Update Task Force Members/Participants List

4) Review previous recommendations, actions and next steps

- a. Actions/Outcomes from April 2024 IDM Workshop
- b. ACTION: Next IDM Workshop
- c. Recommendation 14.1: Booklet on GNSS/RNSS Spectrum Protection

1400-1430 GNSS Compatibility & Spectrum (*Signal Compatibility and Spectrum Protection*)

1) PRESENTATIONS

- a. Co-existence studies between GAGAN on-board receiver and RLAN/IMT services operating in C-band

Dhaval UPADHYAY, Saket BUCH, Vijay Singh BHADOURIA, SAC/ISRO, India

- b. Study and analysis of ISL configuration for a MEO satellite system

PVB SHILPA, Anita KUMARI, RamaRao G, Hemanth REDDY, URSC/ISRO, India

2) Update Subgroup Members/Participants List

3) Review previous recommendations and actions

1430-1515 LEO PNT

1) PRESENTATIONS

- a. LEO-PNT Interoperability and Compatibility

Roberto PRIETO, European Space Agency

2) Follow-up discussion from 2024 LEO PNT Workshop (June 2024)

China, ESA, U.S., Tri-organizers

3) Actions, recommendations, and next steps

NEW DRAFT WG-S RECOMMENDATION (for consideration)

The Working Group on Systems, Signals and Services (WG-S) should consider holding annual workshops focused on LEO PNT issues pertaining to topics supported by WG-S, including compatibility and interoperability. These workshops will be organized by relevant members of WG-S and a determination of who will organize and chair the next workshop will be determined at the annual ICG meeting.

To further these discussions ICG members are encouraged to invite LEO PNT providers to join their delegation in support of the workshops.

1515-1540 Interoperability & Service Standards (*Open Service Standards*)

1) PRESENTATIONS

TBD

2) Update from the Performance Standards Team

Alexey BOLKUNOV, Russia & Sasha MITELMAN, U.S.

3) Update "Dream Team" Members/Participants List

4) Review actions and next steps

1540-1600 Coffee Break

1600-1730 Joint Working Group Session (S, B, C & D invited)

Global Geodesy (led by WG-D)

Lunar PNT (led by WG-B)

Precise Point Positioning (PPP) Interoperability (led by WG-S)

1) PRESENTATIONS

a. QZSS PPP/PPP-RTK Status

Yoko SAKAI and Rui HIROKAWA, Japan

2) Update from the PPP Task Force (WG-S)

Rui HIROKAWA, Japan, Simon REYNOLDS, Australia & Ignacio

FERNANDEZ-HERNANDEZ, EU

3) Update Task Force distribution list

4) Review actions and next steps

a. Fourth Workshop to be held in 2025

Wednesday, 09 October

0830-1030 Joint Working Group Session (WG-S and WG-D):

Interoperability & Service Standards (Multi-GNSS Interoperability Timing)

- 1) Review previous discussions, actions from WG-S and WG-D

WG-S Action: Timing experts from Working Group S, in coordination with Working Groups B and D, should consider reaching out to their domestic receiver manufacturers (industry) to get feedback on multi-GNSS time interoperability requirements using the common list of questions and criteria that was circulated in August.

Any feedback received by ICG-18 should be presented for further discussion.

- 2) PRESENTATIONS

- a. Survey of Receiver Manufacturers on GGTO & the Performance of BDS Time Service

Haibo YUAN

- 3) Update timing experts' distribution list

- 4) New actions and next steps

Open Service Information Sharing and Service Performance Monitoring (International GNSS Monitoring and Assessment)

- 1) PRESENTATIONS

TBD

- 2) Report of the IGMA Task Force (WG-S)

Satoshi KOGURE, Shuli SONG, Erik SCHONEMANN

- 3) Update Task Force distribution list

- 4) Review actions recommendations and next steps

1030-1050 Coffee Break

1050-1130 WG-S Work Plan Updates and Other Recommendations

- 1) Discussion on Work Plan Updates
- 2) New Recommendations

PROVISIONAL AGENDA

NEW DRAFT WG-S RECOMMENDATION (for consideration)

The Working Group on Systems, Signals and Services (WG-S) recommends that the ICG endorse an update to its work plan.

The detailed work plan will include the following new areas of work:

- PPP Interoperability
- Civil Signal Authentication
- LEO PNT Compatibility and Interoperability
- Lunar PNT compatibility (with GNSS/RNSS)

3) Other Recommendations

NEW DRAFT WG-S RECOMMENDATION (for consideration)

The Working Group on Systems, Signals and Services (WG-S) recommends that the following workshops be organized in 2025 with support from the working group members and other ICG participants, as relevant:

- Timing Interoperability
- PPP Interoperability
- IGMA and Performance Standards
- IDM
- LEO PNT Compatibility and Interoperability

1130-1230 GNSS Compatibility & Spectrum Wrap-up

1) Summary Report of the Compatibility & Spectrum Subgroup

Dominic HAYES, EU & Takahiro MITOME, Japan

1230-1330 Lunch

Thursday, 10 October

0830-0900 Interoperability & Service Standards Wrap-up

1) Summary Report of the Interoperability & Service Standards Subgroup

Jeff AUERBACH, U.S. & Xiaochun LU, China

0900-0930 Refinement of the WG-S Report to the Committee and Providers Forum

0930-1030 *Review and Consensus on Working Group Actions and Recommendations; Review Final WG-S Report to the Committee and Providers Forum*

- 1) Compatibility and Spectrum Actions and Recommendations

Sergey REVNIVYKH & Jeff AUERBACH

- 2) Interoperability and Service Provision Actions and Recommendations

Sergey REVNIVYKH & Jeff AUERBACH

- 3) Other Recommendations

- 4) Review of Co-Chairs Presentation to the ICG Plenary

- 5) Possible Times and Locations for Intersessional Meeting(s)

- 6) Closing Remarks

Sergey REVNIVYKH & Jeff AUERBACH

1030-1100 Coffee Break