

SUMMARY
of the Thirtieth Meeting of the Providers' Forum
held in conjunction with the Eighteenth Meeting of the International Committee
on Global Navigation Satellite Systems (ICG)

6 and 10 October 2024

Wellington, New Zealand

The thirtieth meeting of the Providers' Forum, chaired by the United States, was held in conjunction with the eighteenth meeting of ICG in Wellington on 6 and 10 October 2024, in a hybrid format with both in-person and virtual participation. The meeting agenda is annexed to the present report. China, India, Japan, the Russian Federation, the United States and the European Union were represented at the meeting.

After considering the items on its agenda, the Providers' Forum adopted the report on its thirtieth meeting, containing the discussions and recommendations set out below.

Open service information dissemination

The organizers of the second ICG workshop on future low Earth orbit positioning, navigation and timing systems presented a summary. There was good engagement by those planning such systems, and a table of the expected systems, with key characteristics, were shown. Systems were either stand-alone or planned to augment existing GNSS. The importance of compatibility with existing medium Earth orbit and geostationary Earth orbit GNSS was emphasized. The participation of commercial low Earth orbit positioning, navigation and timing systems continued to be encouraged.

ESA presented work conducted on the Proba-3, the Lunar Pathfinder and the GNSS Experiment, known as the EXPOL projects. They were aimed at supporting activities to provide robust, accurate and precise lunar and cislunar positioning, navigation and timing services by making improvements to precise orbit determination and in high-eccentric orbits and high dynamic environments, and at demonstrating the clear advantage of and need for interoperability.

The United States provided an update on the country's objectives and plans for an open architecture lunar positioning, navigation and timing system focusing on specific user needs, a gradual expansion from utilizing GNSS on the Moon to dedicated lunar systems and promoting interoperability specifications to enable international compatibility.

Service performance monitoring

China provided information on the progress made on its international GNSS Monitoring and Assessment System (iGMAS). The performance of four global navigation satellite systems was reviewed through daily monitoring of per-slot availability and continuity, signal-in-space range error, UTC offset error, standard positioning accuracy, and the BDS-3 B2b-PPP enhanced services over the past year. Information was presented on the on-orbit calibration of BDS-3 phase centre offset/phase centre variation of B1C/B2a and B1I/B3I with BDS-3/GPS/Galileo combinations in iGMAS, and the preliminary estimated phase centre variation pattern and phase centre offset were shared.

Multi-GNSS demonstration project in the Asia-Oceania region

Japan provided an update on Multi-GNSS Asia, which promoted multi-GNSS in the Asia-Oceania region. The next annual Multi-GNSS Asia conference was planned to be held in Phuket, Thailand, from 4 to 7 March 2025. All GNSS providers were invited to present their system updates.

Information centres of the International Committee on Global Navigation Satellite Systems: regional centres for space science and technology education, affiliated to the United Nations

A representative of the executive secretariat of ICG provided an overview of the regional centres established in each region covered by the regional economic commissions of the United Nations (for Africa, Asia and the Pacific, Latin America and the Caribbean and West Asia). The ICG executive secretariat described the nine-month postgraduate courses offered by the regional centres, which were followed by a year of participation in a pilot project in the home country of participants, after which students presented their thesis at the regional centre in order to receive a certificate of course completion.

The providers noted that the African Regional Centre for Space Science and Technology – in French Language, in Rabat, hosted a training course on GNSS data processing from 6 to 10 May 2024. The training course included a series of lectures on GPS and GALILEO services provided by experts from the United States and the European Commission respectively, as well as hands-on activities devoted to GNSS high-accuracy data processing methods which were organized by the experts from the Center for Spatial Information Science of the University of Tokyo, Japan.

The providers further noted that a course on the BeiDou Navigation Satellite System and future perspectives of GNSS was held at the African Regional Centre for Space Science and Technology Education – in English language in Ile-Ife, Nigeria, from 5 to 9 August 2024. The course, organized in cooperation with the experts from the National Time Service Centre of the Chinese Academy of Sciences, was held simultaneously with a nine-month postgraduate course on GNSS.

Potential areas of coordination between the International Committee on Global Navigation Satellite Systems and international organizations

The liaisons from the Interagency Operations Advisory Group to ICG presented an update on the Group's work to provide a forum for identifying the common needs of multiple international agencies for coordinating space communications policy, high-level procedures, technical interfaces and other matters related to interoperability and space communications. ICG and the Interagency Operations Advisory Group will host a multilateral cis-lunar positioning, navigation and timing workshop in Vienna from 11 to 13 February 2025, organized by a leadership team from China, Japan, the United States of America and the European Union. The workshop would serve as a mechanism to better understand the scope and depth of lunar positioning, navigation and timing systems that were being developed; propose recommendations that could be taken up by developers of lunar positioning, navigation and timing systems; and facilitate the refinement of interoperable, compatible and available lunar positioning, navigation and timing systems of the future. The workshop co-leaders would also seek collaboration with other international bodies such as the International Space Exploration Coordination Group, the Consultative Committee for Space Data Systems and the Space Frequency Coordination Group in order to strengthen the international coordination and standardization of lunar positioning, navigation and timing systems.

Other matters

Requests for membership of the Providers' Forum

The providers discussed the request from the Republic of Korea in a letter dated 15 January 2024 regarding the membership status of the Provider's Forum. No consensus was reached.

Requests for membership of the International Committee on Global Navigation Satellite Systems

The providers discussed the request of Pakistan for membership of ICG (notes verbales dated 4 January 2021, 24 May 2023 and 6 October 2024).

India highlighted that despite the objectionable depiction of international boundaries by Pakistan in the presentation made in support of its application at ICG, India had remained constructively engaged on this matter. In the spirit of cooperation, India had sought information from Pakistan in February 2022 to enable the consideration of its application. The responses of Pakistan to its technical queries had been received by February 2024. India had requested Pakistan to provide additional information through some follow-up queries in October 2024, with a view to completing its assessment of the application. At the present meeting, India was not in a position to support the application of Pakistan. Therefore, there was no consensus.

Review of the terms of reference of the Providers' Forum

On the basis of proposals submitted by China, India and the United States, the providers reviewed the terms of reference of the Providers' Forum. Since it was found that more careful review was required, it was agreed to continue the discussion in an ad hoc working group of the Providers' Forum and that the results would be reviewed at a future meeting of the Providers' Forum.

Review of the terms of reference of the International Committee on Global Navigation Satellite Systems

On the basis of proposals submitted by Australia, China, India, Japan, the Republic of Korea and the United States, the providers reviewed the terms of reference of ICG. The ad hoc working group of ICG discussed those proposals, and no consensus was reached. Additional review was needed by the ad hoc working group, and the results were to be discussed at a future meeting of the Providers' Forum and ICG.

The Providers' Forum agreed that China would chair the meetings of the Providers' Forum to be held in 2025.