



सत्यमेव जयते

नागर विमानन मंत्रालय, भारत सरकार
MINISTRY OF CIVIL AVIATION, GOVERNMENT OF INDIA



ICAO APAC SBAS-GBAS IMPLEMENTATION WORKSHOP FOR AIRSPACE USERS

“Enhancing airport accessibility and safety on final approach with SBAS and GBAS”

14th to 16th October 2025
Bengaluru, India



Summary and outcomes of the workshop

Raphael GUILLET

Chief of the ICAO Asia Pacific
Regional Sub-Office

Summary

Three days to cover :

- Concept and Benefits / ICAO provision / APAC Task Force
- SBAS and GBAS system development and certification in APAC and outside
 - Visit of GAGAN complex
- Airborne solutions and fleet readiness
- Procedure design/ATC training/Flight validation/regulatory framework
- LPV and GLS procedure deployment
- Feedback from airlines

Participants : 150 onsite and 35 online

- States both CAA/ANSPs from States implementing SBAS/GBAS and interested neighboring States
- Industry
- Airlines

[Presentations are available here : APAC Meetings | International Civil Aviation Organization](#)



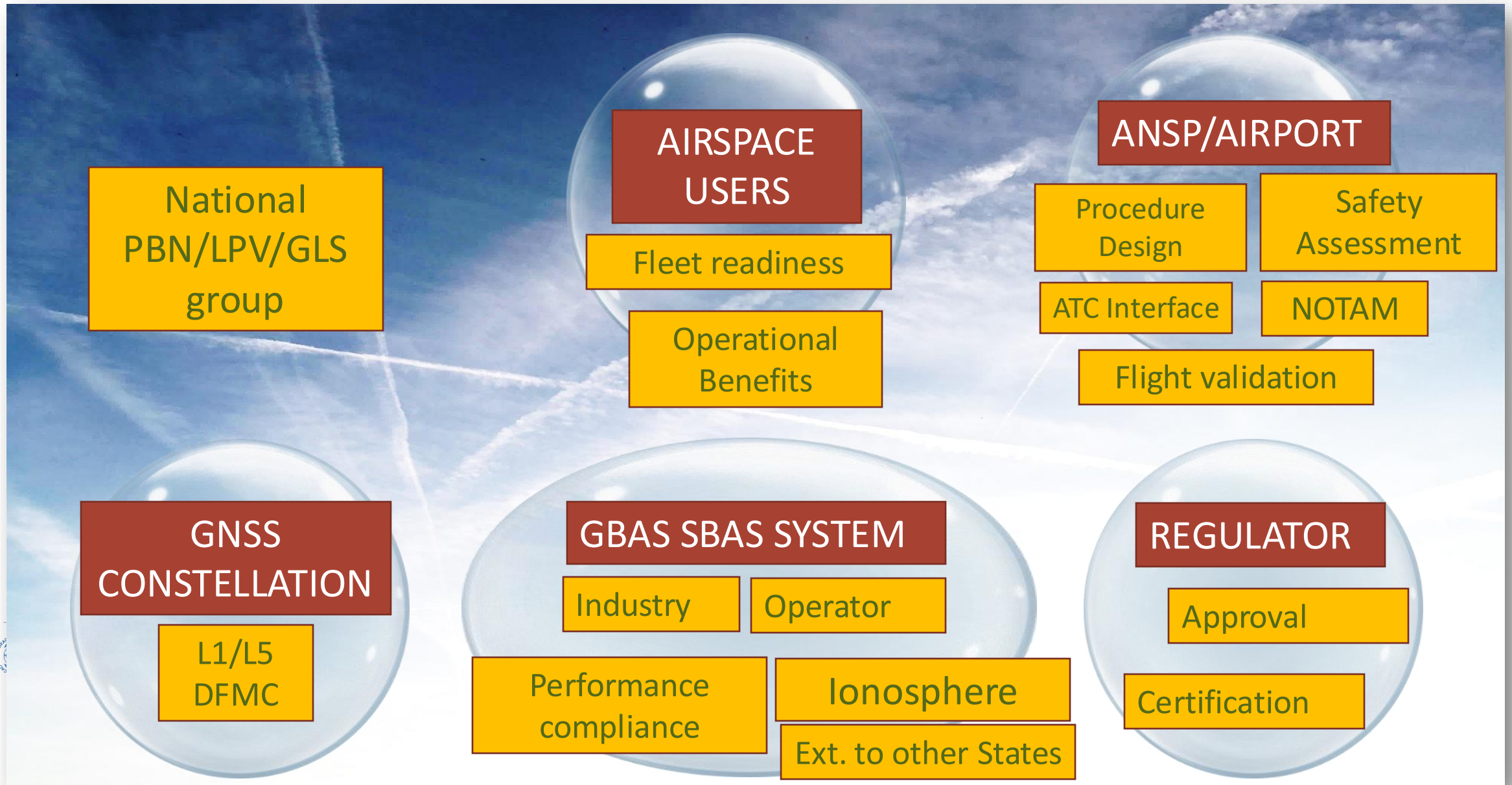
A big thank to all participants for the very interactive sessions

4



Outcomes

5



Outcomes

- ✓ All presentations are available here <https://www.icao.int/APAC/meetingdocs?fid=572>,
- ✓ **Presentation of Indigo :** [https://www.icao.int/sites/default/files/APAC/Meetings/2025/2025 GBASSBAS Implementation Workshop for Air Space/Presentations/2-1-5-Guided-by-GAGAL IndiGo-s-Path-to-Precision-Efficiency-Bhatnagar.pdf](https://www.icao.int/sites/default/files/APAC/Meetings/2025/2025%20GBASSBAS%20Implementation%20Workshop%20for%20Air%20Space/Presentations/2-1-5-Guided-by-GAGAL%20IndiGo-s-Path-to-Precision-Efficiency-Bhatnagar.pdf)

A wide-angle, low-perspective shot of an airplane's wing and engine, extending from the left side of the frame towards the right. The wing is white with a blue stripe along the leading edge. The engine is large and white with a blue stripe. The background is a clear, deep blue sky. The horizon line is visible in the distance, showing a thin layer of clouds or the ground below. The overall composition is clean and modern, with a strong sense of direction and movement.

Outcomes

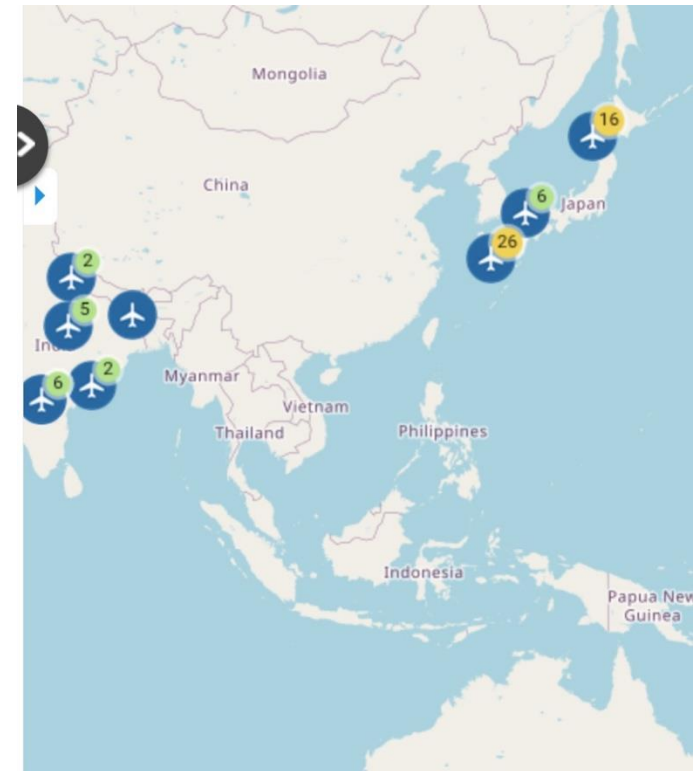
- ✓ Maps of published GLS and LPV procedures in the APAC region

<https://www2023.icao.int/APAC/Pages/GBAS-SBAS-MAP.aspx>

Published GLS procedures



Published LPV procedures





What's next ?

- ✓ Next GBAS SBAS ITF meeting planned mid May 2026 in Australia
- ✓ Report the workshop outcomes to the next CNS meeting in July 2026 in Bangkok
- ✓ Keep updating the maps with published GLS and LPV procedures in the APAC region
- ✓ Continue communications towards APAC airlines with IATA

A special thank to

9



नागर विमानन मंत्रालय
MINISTRY OF CIVIL AVIATION



भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

for making this workshop possible





Thank You!

A photograph of an air traffic controller in a white shirt and headset, viewed from the side, working at a console with multiple computer monitors. The monitors display various flight data and maps. In the background, a large window provides a panoramic view of an airport tarmac and a city skyline at dusk.

GBAS SBAS expected benefits / ATC

- ✓ **Stabilized & Predictable Approaches**

Highly precise paths reduce deviations, unstable approaches, and missed approaches — improving traffic sequencing and predictability.

- ✓ **Lower ATCO Workload**

Aircraft follow procedures down to DH with minimal vectoring, easing monitoring demands and reducing urgent re-directs.

- ✓ **Reliable Alternate to (ILS) or other landing procedures**

Maintains landing capability and traffic flow when ILS or other types of landing procedures is unavailable or under maintenance.

- ✓ **Enable High-Capacity Parallel Operations**

Precision supports simultaneous parallel approaches, sustaining runway throughput safely and efficiently.

Outcomes

Improve safety and efficiency of procedures, reducing CO2 emissions

Less ground navaid infrastructure, saving costs

– GBAS :

- ✓ One station to serve several runway ends
- ✓ Much less sensitive area around GBAS station compared to ILS installation
- ✓ Flexibility in the modifications of the approach data

– SBAS :

- ✓ One system serving many airports
- ✓ Can be used by Helicopter for PINS approach