

IPACG FIT/34

INMARSAT SAFETY SERVICES UPDATE

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INMARSAT
25-26 JAN 2022

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inmarsat
AVIATION

Update on Classic Aero

Current status

Network improvements

Update on SB Safety and Iris

Current status

China

AGENDA

Classic Aero GES Software and Hardware Upgrades

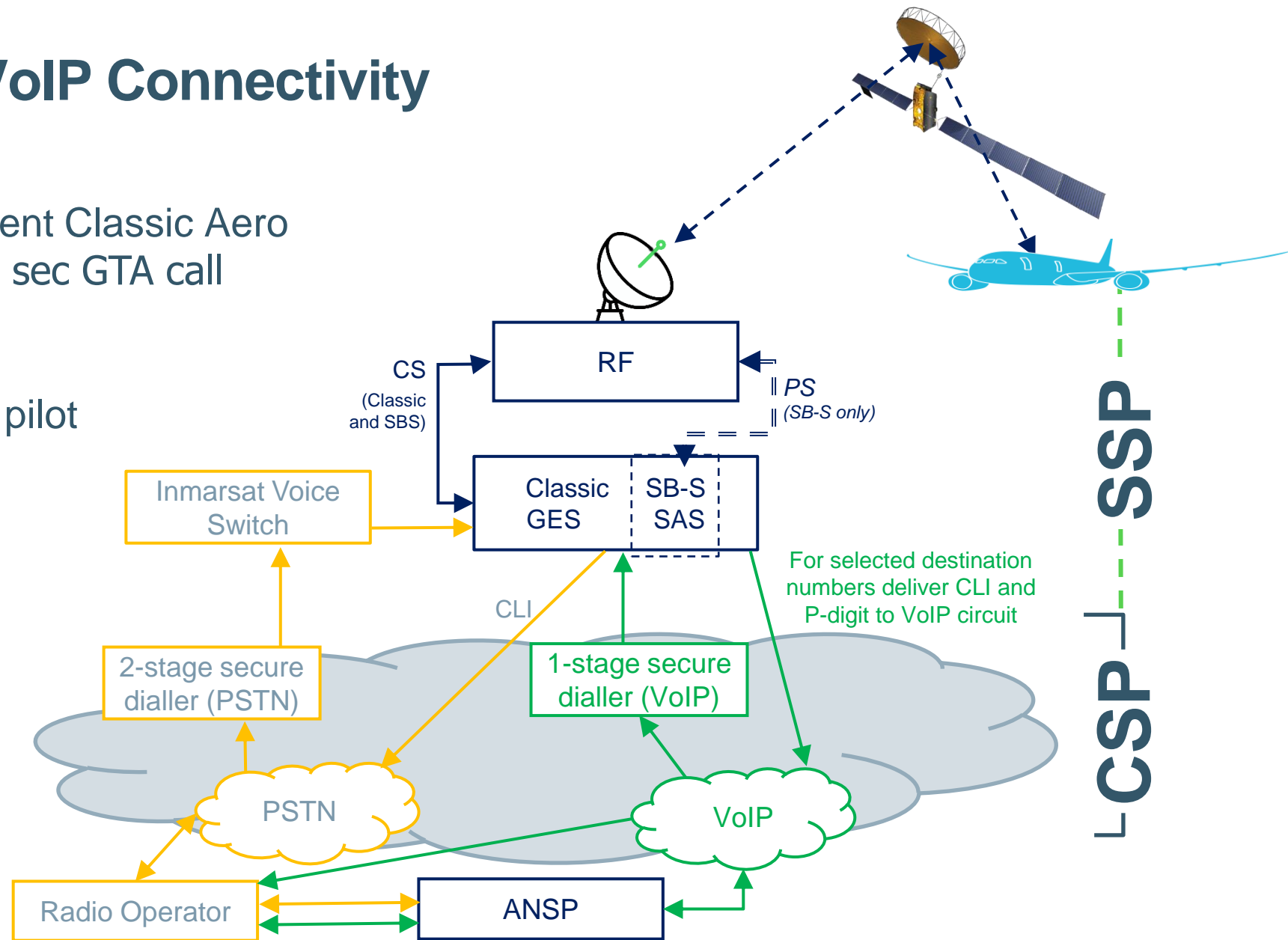
- Log-on Storm recovery
 - Inmarsat requested the Classic GES manufacturer (SED, now Calian) to analyse and model different configurations of GES settings to improve log-on storm recovery in the event of service outage
 - Extensive modelling was conducted leading to recommendation of a preferred configuration
 - Recommendations implemented March 2021
- 3F5 (AORE, 54W) extension project
 - New ground station infrastructure at Laurentides, Quebec, completed Q3 2021 to extend the life of its satellite I3 F5 (AORE).
 - Services were switched from the GES at Burum to Laurentides on 13th July 2021, which is now a dual OR station supporting AORW via AMER and AORE via 3F5.

Outage Notification

- Inmarsat has completed implementation and internal testing of *Service Now*, a tool used for change, incident, and problem management
- Internal notifications in *ServiceNow* are being changed to utilize the NAT Outage Detection and Reporting (NODAR) template
- The template will integrate communications and additional language in the body of the notification email to CSPs
- Inmarsat has also revised its notification processes
- Next step is coordinating trials with the CSPs

SATVOICE 1-Stage VoIP Connectivity

- Fast satellite VoIP with current Classic Aero network & equipage \approx 8-15 sec GTA call setup
- Enabler for direct controller pilot communications
- Operational:
 - NavCanada
 - JCAB
- CAAS Operational trial
- OPDLWG RCP tasking



I-6 Constellation

- Two Inmarsat-6 satellites developed by Airbus Defence and Space:
- Support a new generation of capabilities for global safety services
- I-6 F1 successfully launched on 22 Dec 2021
- I-6 F2 scheduled for launch in 2022
- Both satellites scheduled for commercial service introduction in 2023
 - Minimum service life of 15 years
 - Also feature Ka-band payloads hosted on the L-band satellites



SB-Safety Service Status

- SB-S 1.0 – Entered commercial service in 2018; Around 200 aircraft activated/using the service
 - Additional security controls are being applied to SB-S 1.0
- SB-S 2.0 – Due to enter commercial service January 2022
- Iris – An ESA/Inmarsat partnership bringing SATCOM-based ATM to dense continental airspace
 - The ground infrastructure is deployed at Burum and Paumalu. Avionics vendors are implementing the multilink management. Plans are to equip up to 20 narrow-bodied aircraft for initial operational service.
 - Operational service targeted for early 2023 (EASA certified)
 - While focused on Europe (ATN/OSI), the global infrastructure enables service to be supported elsewhere
 - Supports ATN B1/B2 services in multilink with VDL: an ATN/IPS prototype is currently being developed, to be tested in 2022

SB-S 2.0 Capability

- CPDLC/ADS-C meeting RCP130/RSP160
- SATVOICE Prioritized circuit switched and packet switched channels
- 4D Integral Position and Velocity Reporting (down to 10 second intervals)
- IP channel to support data exchange for ATFM, expanded AOC services, EFB applications, etc
- Enhanced security to meet aircraft manufacturer and regulatory requirements
 - SB-S 2.0 terminals provide a PKI authenticated VPN tunnel between the aircraft terminal and the Ground Data link Gateway (GDGW)
 - Additional security controls are being applied and a COTS VPN is also established between the SB-S 2.0 GDGWs and the CSP networks
- Exchange of 4D flight trajectories (ADS-C EPP) and 4D route clearances to support trajectory-based operations and ATFM
- ATN B1/B2 services in multilink with VDL

Retrofit & Linefit SB-S

SB-S: Retrofit

Available now



A320/neo



737



767

SB-S: Linefit

2021 – 2022



A320/neo



A330



A350



737NG/MAX



777X

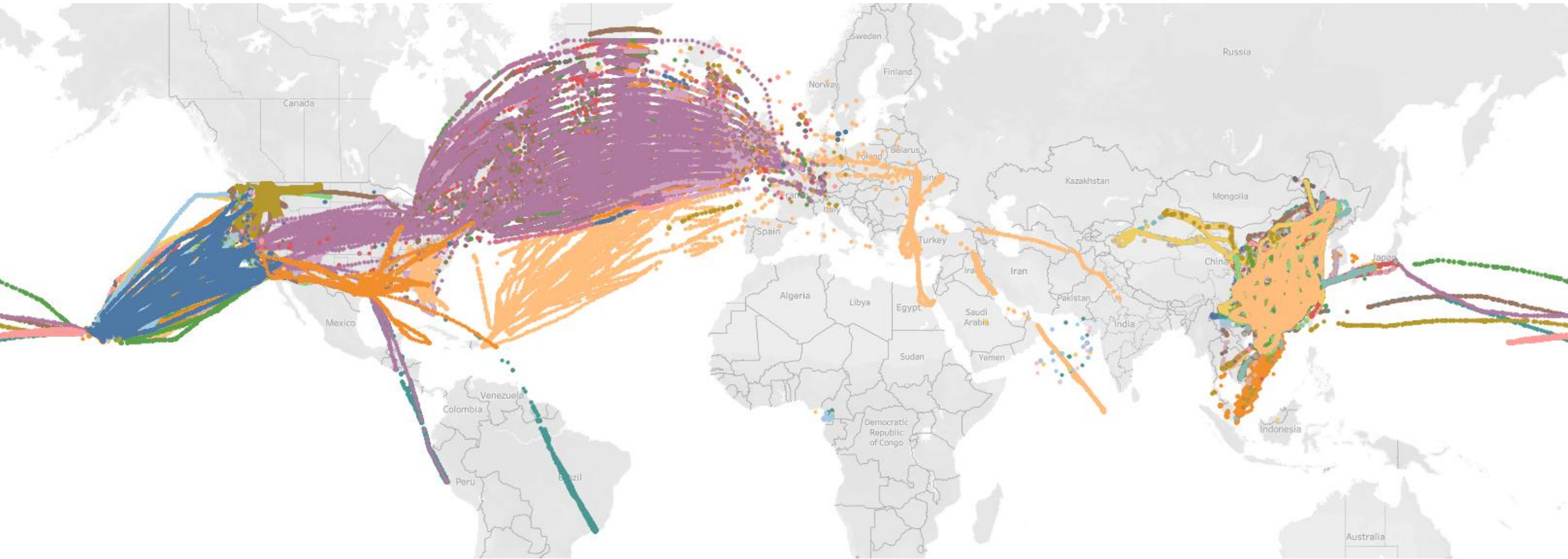
AIRBUS



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SB-S Integral Position Reporting Data

1 Oct '19 to 28 Jan 2021



China Update

Introduction of CTTIC as Classic Aero DP

- Inmarsat has implemented infrastructure to support CTTIC as a Classic Aero DP
- ADCC are the ACARS processing entity in China operating a GMP
- Voice and Data over-the-air testing completed
- FANS performance evaluation conducted Aug '21
- FANS and AOC ACARS Ground test (Air China A350, B-307C) September 8 and 10, and October 12. Chinese ATC (Lanzhou), Boeing and ADCC FANS test platforms confirmed successful FANS communications.
- Successful in-China flight evaluation (Air China A350, B-307C) Beijing to Shenzhen and return on 19 November. FANS testing with ADCC. D-ATIS requests to global hub airports (including LA, Paris, Milan, Bangkok, Dubai).
- ISAT/CTTIC/ADCC are now close to configuring Air China A350, B-307C to operate utilising this infrastructure for global evaluation, planned for one month in Q1 2022.

China Update

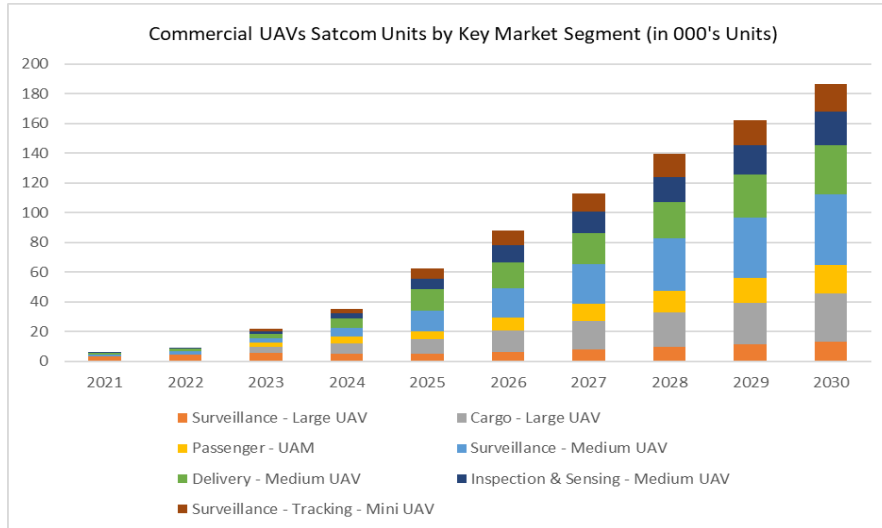
Since ADCC are now processing satcom ocean region data, a new set of ACARS identifiers will be used in the messaging:

ID	Service	Ocean Region
B1A	SB-S	AMER
B1P	SB-S	APAC
B1E	SB-S	EMEA
B1M	SB-S	MEAS
B3I	I3 Virtual	IOR
B3P	I3 Virtual	POR
B3W	I3 Virtual	AORW
B3E	I3	AORE
B4A	I4	AMER
B4P	I4	APAC
B4E	I4	EMEA

Inmarsat Commercial UAV Solutions

Current estimates show BVLOS growth from a few thousand units in 2021 to more than one million in 2030. As UAV operations expand into more complex airspace – toward integration into controlled airspace with manned aircraft – so does the **need for robust, secure communications and multiple communication links on the vehicles**

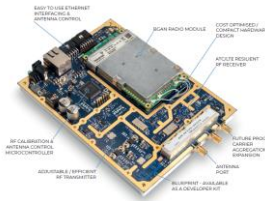
Forecast



Cobham UAV200



Honeywell
Small Form Factor
Terminal



TTP - BRM-Works
Solution

Sector



Cargo



Urban transport



Delivery



Surveil/Inspect.

Current Program

- Utilising Inmarsat L band assets for CNS/C2 in a small form factor solution (Satcom terminals: UT1, UT2, UT3)
- UT1 Terminal providers: Cobham, Honeywell and TTP – Available now!
- Developing reduced CSWaP UT2 & UT3 – Multi-channel Data Link – Available 2022
- Supporting Global Regulations for BVLOS Commercial UAV Operations with Commercial UAV Safety Solutions
- Working strategically with partners to develop the emerging Commercial UAV Eco System

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Thank You

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