# **Presentation of Iris**

### ESA Workshop "DIGITAL SKY & BEYOND" 18<sup>th</sup> May 2018

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# Our business

Mission-critical communications where terrestrial networks are unreliable or don't exist









The next evolution: Secure broadband in the cockpit

SwiftBroadband – Safety

A complete suite of cockpit communications for oceanic operations over new lower cost and lightweight terminals and antennas

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# 100,000 ADS-C Reports per day, 35M per year

The standard for aircraft oceanic cockpit satcom



aviation

## Approved by ICAO

FAA PARC has approved FANS over SB-S using ICAO PBCS/GOLD



The mobile satellite company

# IRIS: A satellite data link system for air traffic management



### Sponsored by the European Space Agency to support SESAR ATM expertise with Satellite expertise

- ✓ To develop a secure satellite-based datalink for ATM in continental areas
  - Able to support ATC services: CPDLC, i4D/Full 4D and increased information sharing capabilities (AOC)
  - Initial focus on Europe: enough capacity for air traffic operations for the next 20 years, meeting specific European ATC standards (ATN/OSI protocol).
  - Complementing VDL2 (short term), Primary datalink for Multilink (long term)
- ✓ With <u>global</u> perspective: enough capacity for world-wide operations, compliant with global standards (ATN/IPS)
- ✓ Fairly mature: building on INM existing SBB satellite network SB-Safety FANS 1A already capable

#### Starting in 2011, from R&D to system engineering, validation and deployment :

- Iris Precursor: Initial design, deployment and test of security and ATC elements to complement the existing INM infrastructure. Complemented by a SESAR1 project.
- ✓ Iris Service Evolution, study to anticipate the long term global needs (>2030)
- ✓ Iris with Initial Operational Capability, finalising the infrastructure and preparing the deployment for use by 2020

### Iris is a key enabler for SESAR...

### ...in the mission to modernise ATM over Europe



- De-risking the DLS recovery plan
- Target service entry in 2021, through a certified Service Provider
- Upcoming validation on commercial flights



# IRIS BENEFITS

- Improved availability and bandwidth over what is available thru VDL2 only
- Adds security to cockpit communication
- Supporting an early implementation of trajectory-based operations
- Applicable to a range of aircraft types for FANS1/A & ATN operations
- Global Data Link Convergence (ICAO and SESAR goal)











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# End to end Validation: Iris

#### Iris Precursor: 2 campaigns with NLR (Oct 2016 - June 2018)

- 4 flights in October 2016. Primary goal: end to end ATN CPDLC & ADS-C messages through the Iris Precursor secure Aerorack & Honeywell prototype terminal;
- Nominal performance (excluding outages) shows that latency requirements are met (RSP 160 RCP 130)
- Spot beam transitions seamless
- Next campaign: includes real avionics from Honeywell (red label software SDU), integrated to the ATSU and FMS (both rented to Airbus). The aircraft will connect through SITA to 1 ANSPs systems (MUAC)

#### **Iris IOC**

- Revenue flights with a limited number of aircraft (≈20) equipped with specified avionics (ATN B1 and B2)
- ANSPs: min 2 with I4D capability (ATN B2) Actually 5 with confirmed interest
- Airlines: operating A320 and/or E170/190 family aircraft , flying in the core area of Europe (synergy with participants to SESAR 2020 DIGITS to be favoured)
- Flight trials will include ATC and AOC services
- Main flight trial activity is anticipated from Q4 2019 but earlier trials could be considered depending on opportunities



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Organise/synchronise availability of all elements:

• Airborne elements

Challenges

- Ground elements (satcom network, ANSPs)
- Evolution of the satellite network (future)

Certification (organisation, system validation)

Value chain – distribution of the services

# THE SERVICE MODEL



Inmarsat has to organise the Iris services distribution, taking into account:

- Infrastructure owned and managed by INM
- The need to get EASA certification for Pan-European ATM services
- The current and planned evolution of the DLS in Europe
- Future extension of services to other regions

The Iris Service Provider (the ISP)

- INM contracts the ISP to distribute ATC services
- The ISP distributes the services to ANSPs (governance model similar to what is being planned for VDL2 )

# PRIVATE PUBLIC PARTNERSHIP: WIN-WIN

### inmarsat aviation

#### Iris investments:

- Iris benefits from the existing satellite infrastructure already in place, commercially sustainable, multi users
- Developments related to Iris (specific): limited in scope, largely funded by ESA and INM (PPP)
- And beyond "material" developments": security, certification, service model, business case
  Deployment: mainly aircraft equipage, connection to ANSP (marginal), certification
  SESAR to support timely use of Iris investments
- Support with the appropriate regulatory elements (Rule Making, CP2)
- Plan / organise deployment