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# ICAO ASBU Seminar

**SAM REGIONAL OFFICE** 14 – 18 DE AGOSTO 2017

# Thales Involvement in ICAO

- **Thales is a member of the *International Coordinating Council of Aerospace Industries Associations* (ICCAIA)**


- **ICCAIA is recognized by the International Civil Aviation Organization (ICAO) and is granted observer status on many of the ICAO's Committees and Panels, including the ICAO Air Navigation Commission (ANC). ICCAIA also participates actively in many international meetings.**





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# Thales Involvement in ICAO

## Today we are participating in several areas:

### ASBU Panel Project Team (ASBU PPT):

- Review of the Aviation System Block Upgrade framework, within the Global Technical Level of the GANP

### In the ATM Requirements & Performance Panel (ATMRPP) :

- Undertake specific studies and develop and/or review technical provisions to support the integration of the GANP and develop concepts and provisions aimed at the realization of the vision established by the Global ATM Operational Concept.





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# Thales Involvement in ICAO

- **Global and Safety Air Navigation industry and Implementation Symposium (GANIS/SANIS)**

- **Thales will be a significant contributor and presenter at the upcoming** Second Global Air Navigation Industry Symposium (GANIS/2), and first Safety and Air Navigation Implementation Symposium (SANIS/1) in December 2017

- Other areas of participation
  - Remote Piloted Aerial systems
  - Cyber security





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# Thales Product Roadmap & Mapping ICAO / SESAR

## TopSky-ATC Roadmap

- To increase the awareness of the user on product roadmap, THALES issue the scheme of its products / components mapped to ICAO ASBUs and SESAR master plan.
- The roadmap is regularly updated to keep track of on-going development including references to standards, community specifications, Implementing Rules, descriptions of proposed or implemented solutions.





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# Approach – 1/2

## TopSky-ATC product line, many customers require flexibility

- We normally address each customer's requirements individually and we will continue to do so

## Generalisation required :

- Greater customisation of TopSky-ATC Vs Greater alignment to versions
  - We have addressed SESAR PCP and shared a *'Ready'* date – which means ready for systems integration – customers can plan deployment accordingly
  - We have addressed ASBU and shared a *'Deployment'* date – applies to subscription model customers





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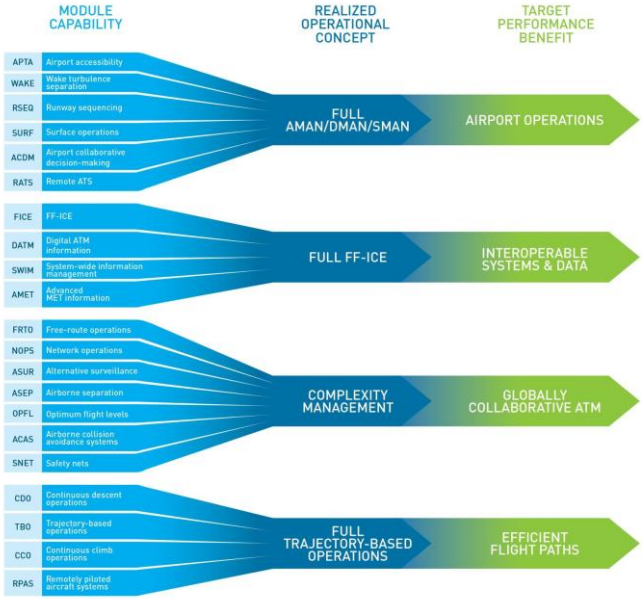
# Approach 2/2

## Thales Product mapping:

- **ICAO/SESAR PCP Compliance = TopSky-ATC + TopSky-Tower + ECOsystem**
- Also **Maestro (AMAN/DMAN)** as a component of all three or stand-alone
- Also **TopSky-AIS** delivered through **ECOsystem** or stand-alone

## For ICAO Aviation System Block Upgrades

- Capability threads from each Performance Improvement Area (PIA) with no ground automation component impact (i.e. airborne or equipment only) are not considered in the analysis





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# ICAO ASBU
# Deployment Roadmap

# ASBU Block 0

**Airport Operations / Greener Airports**

- APTA 65 ✓
- WAKE 70 ✓
- RSEQ 15 ✓
- SURF 75 ✓
- ACDM 80 ✓

**Globally Interoperable Systems & Data**

- FICE 25 ✓
- DATM 30 ✓
- AMET 105 ✓

**Optimum Capacity & Flexible Flights**

- FRTO 10 ✓
- NOPS 35 ✓
- ASUR 86 ✓
- ASEP 85 n/a
- OPFL 84 ✓
- ACAS 101 n/a
- SNET 102 ✓

**Efficient Flight Paths**

- CDO 05 ✓
- TBO 40 ✓
- CCO 20 ✓

**TopSky Suite is ASBU Block 0 Ready and Deployed**





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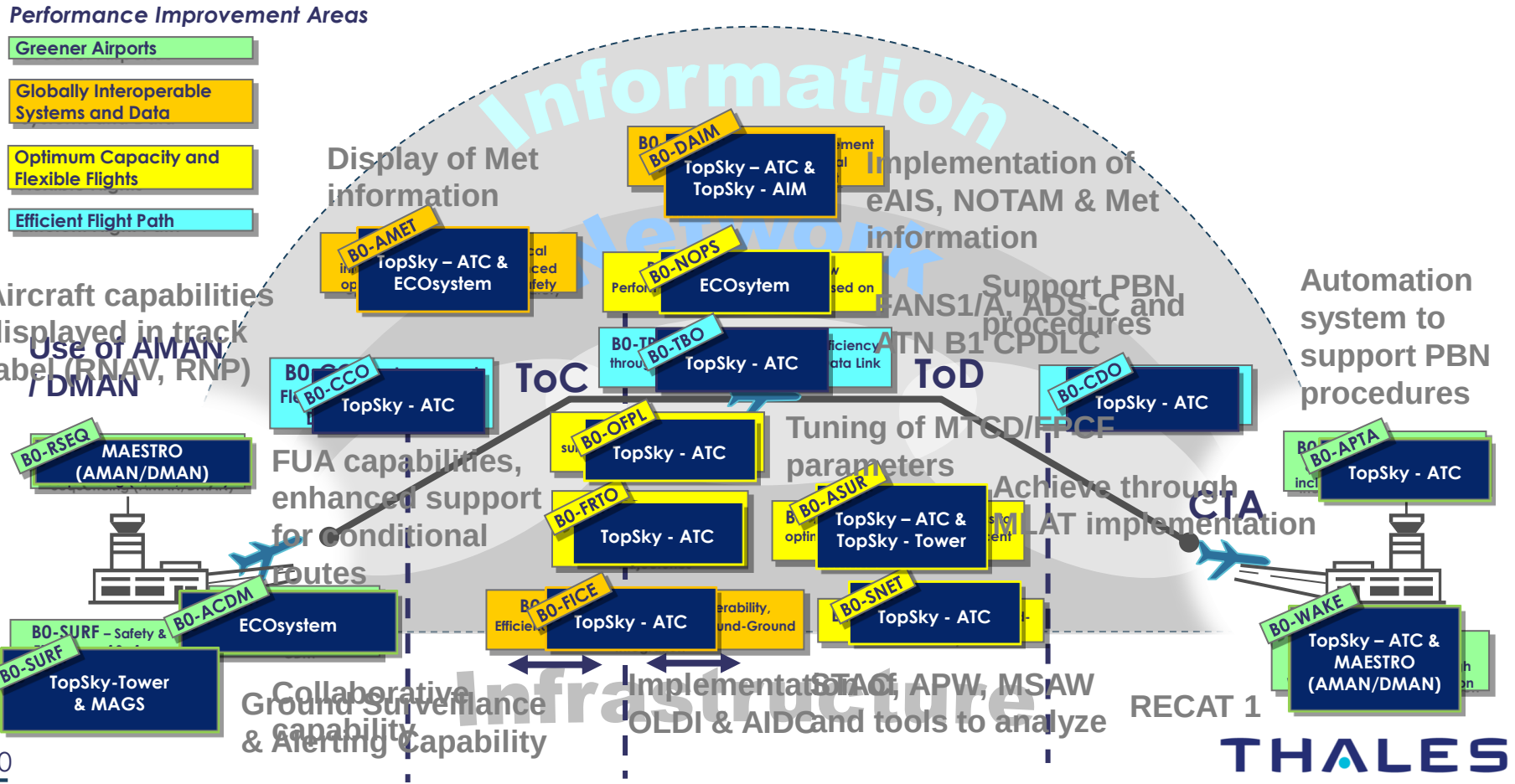
# TopSky Suite mapping with ASBU Block 0





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# ASBU Block 1

**Airport Operations / Greener Airports**

- APTA 65 n/a
- WAKE 70 2018
- RSEQ 15 ✓
- SURF 75 n/a
- ACDM 80 2018
- RATS 81 2019

**Globally Interoperable Systems & Data**

- FICE 25 2020
- DATM 30 2020
- SWIM 31 2018
- AMET 105 2017

**Optimum Capacity & Flexible Flights**

- FRTO 10 ✓
- NOPS 35 2020
- ASEP 85 ✓
- SNET 102 ✓

**Efficient Flight Paths**

- CDO 05 n/a
- TBO 40 2020
- RPAS 90 n/a

**Some ASBU Block 1 is deployed. Lack of SWIM definition drives delay.**





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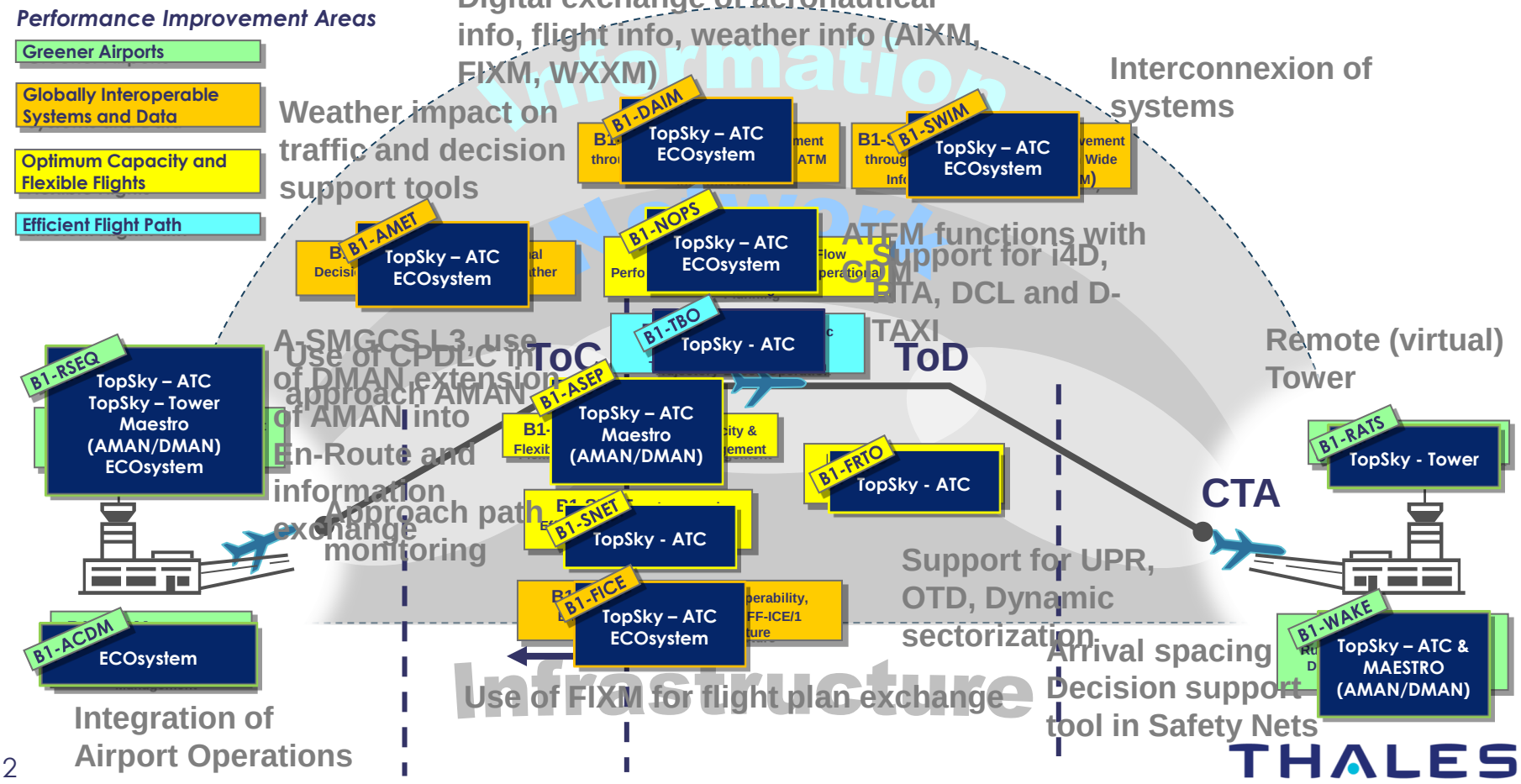
# TopSky Suite mapping with ASBU Block 1





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# SESAR PCP
# Ready Dates

# European ATM Master Plan & SESAR Deployment

## European ATM Master Plan

- The roadmap governing the transition from Single European Sky ATM Research (SESAR) to deployment.
- Ensures alignment with ICAO's Aviation System Block Upgrades (ASBU) for global interoperability and synchronization.

## SESAR Deployment Programme

- Progressive deployment, aligned with European ATM Master Plan, through successive Common Projects
- First Common Project (Pilot Common Project – PCP) defined and in progress
- PCP has 6 main functional areas called "ATM Functionalities"
- ATM Functionalities (AF) have mandatory geographical deployment and operational target dates
- Second Common Project (CP2) under definition (expected 2017)





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# PCP – ATM Functionalities 1 & 2

| ATM Functionality | Sub-AF (or topics) | TopSky products | Main Enabling TopSky Components | Ready date | PCP Operational date | Area |
|---|---|---|---|---|---|---|
| AF-1 Extended AMAN and PBN in high density TMA | Arrival Management extended to en-route Airspace (1.1) | **TopSky-ATC Maestro** | **Maestro** – AMAN extended horizon | 2017 | 2024 | France Austria Denmark Ireland Sweden Belgium |
| | Enhanced Terminal Airspace using RNP-Based Operations (1.2) | **TopSky-ATC** | **TopSky-Safety Net** – **TCT**: ensuring safe operations in RNP environment | 2017 | | |
| AF-2 Airport Integration and Throughput | Departure Management (2.1, 2.2) | **TopSky-Tower Maestro** | **Maestro** – DMAN, AMAN/DMAN integration | 2017 | 2021 | |
| | Time-Based Separation for Final Approach (2.3) | **TopSky-ATC TopSky-Tower** | **Wake Vortex Encounters Advisory** supporting TBS and RECAT operations | 2018 | 2024 | |
| | Automated Assistance to Controller for Surface Mvt Planning and Routing (2.4) | **TopSky-Tower** | | | 2024 | |
| | Airport Safety Nets (2.5) | **TopSky-Tower** | | | 2021 | |





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# PCP – ATM Functionalities 3 & 4

| ATM Functionality | Sub-AF (or topics) | TopSky products | Main Enabling TopSky Components | Ready date | PCP Operational date | Area |
|---|---|---|---|---|---|---|
| AF-3 Flexible Airspace Management and Free Route | Airspace Management & Advanced Flexible Use of Airspace (3.1) | **TopSky-ATC** | **TopSky-Safety Net – TCT CD&R**<br>Ensuring safe & efficient operations in Direct Routing & Free Routing airspace | 2016<br>2017<br>2019 | 2024 | In the airspace for which the Member States are responsible at and above flight level 310 in the ICAO EUR region |
| | Free Route (3.2) | | | | 2018 / 2024 | |
| AF-4 Network Collaborative Management | NM systems evolution (all sub-AFs) | **TopSky-ATC ECOsystem** | **TopSky-ATC** adaptation to **FDPs**, adapting to NM evolutions<br><br>**ECOsystem** – Flight Management Position consolidating NM, MET and local information | 2017 | 2022 | Network Collaborative Management shall be deployed in the EATMN |





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# PCP – ATM Functionalities 5 & 6

| ATM Functionality | Sub-AF (or topics) | TopSky products | Main Enabling TopSky Components | Ready date | PCP Operational date | PCP area of application |
|---|---|---|---|---|---|---|
| AF-5 Initial SWIM | Yellow Profile (NM, MET, AIM, …) | **TopSky-ATC**<br>**TopSky-Tower**<br>**ECOsystem** | **TopSky-ATC & TopSky-Tower SWIM connector** to access B2B Services for NM, MET and other information, relying on standard data model when relevant (FIXM, WXXM, AIXM)<br><br>**ECOsystem** as a platform for services | 2018<br><br>2017 | 2025 | France<br>Austria<br>Denmark<br>Sweden<br>Serbia<br>Hungary<br>Belgium |
| | Blue Profile (Flight Object IOP) | **TopSky-ATC**<br>**TopSky-Tower** | **TopSky-ATC**: **FDPs** migration to **Coflight** | 2022* | 2025 | |
| AF-6 Initial Trajectory Information Sharing | Downlink of Extended Projected Profile via ADS-C (ATN B2) | **TopSky-ATC** | TopSky-ATC **AGDP** component implementing ATN B2 services including ADS-C, **HMI** and **FDPs** evolutions to display / process the information | 2022* | 2025 | Airspace for which the Member States are responsible In the ICAO EUR region |

* Lack of SWIM definition drives delay





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# Example of live trial within SESAR and of ASBU interest


**FF-ICE:** Flight & Flow In a Collaborative Environment

**Pre-operational demonstration of global interoperability for flight information through FF-ICE Step 1**





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# Thales Product Roadmaps prepared for ASBU Block Upgrades

**All Thales ATM products currently comply with Block 0 and 1 requirements (ready or deployed) and have plans to be Block 2 and 3 ready in the timeframes required.**

- **TopSKY- ATC and Simulator**
- **Maestro AMAN/DMAN**
- **AIM**
- **AMHS**
- **ECOsystem**
- **Surveillance**





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