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Discussion on Block 0 – Industry Capabilities
Making the most of what we have today.

Block 0: Deployment Experience
SAM IG/9- Lima, 15 May 2012

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Introduction

Block 0 (2013) goal is to ensure ANSPs across the globe have access to key safety and efficiency capabilities:

- **Maximise use of "what we have"**
- **Combined with appropriate Best-Practices**
- **Fix some key safety and efficiency issues and improve the environmental outcomes**

Thales ATM solutions:

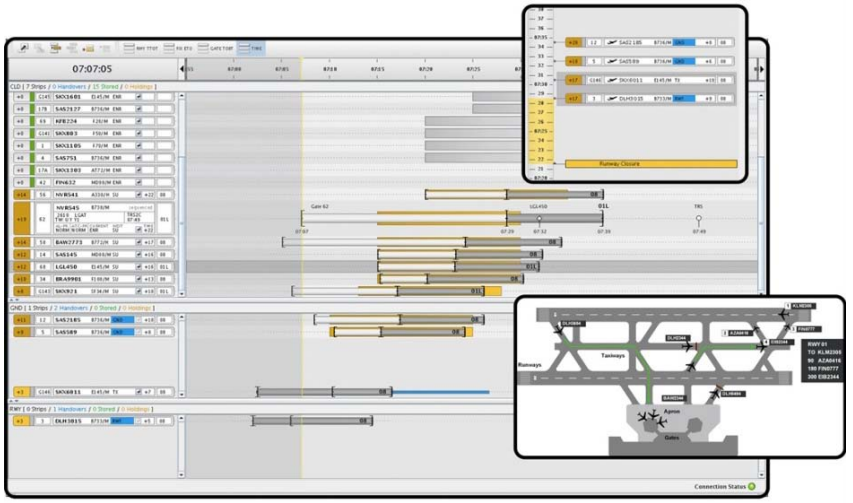
- **Fully enable implementation of Block 0**

Demonstrated through the current implementation of some Block 0 modules

Making Airports Greener and More Efficient

B0-15: Improved Traffic Flow through Runway Metering

- AMAN (& DMAN) operational in different operating environments: Charles de Gaulle, Sydney, Johannesburg, Copenhagen, TMA (US)...
- Benefits: capacity, efficiency and positive environmental impact



B0-75: Improved Runway Safety

- A-SMGCS operational in Abu Dhabi, Bangkok.....
- Improved situational awareness and runway incursion alerts
- Benefits: safety and capacity in all weather conditions

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Ensuring the Global Interoperability of Systems and Data

B0-25 Increased performance through Ground-Ground Integration

- ATS Inter-facility Data Communication (AIDC) operational: Asia-Pacific, Africa and Latin America
- On-Line Data Interchange (OLDI) operational: Europe
- Benefits: capacity, efficiency, interoperability and safety

B0-30: Service Improvement through Digital Aeronautical Information Management

- Global standard AIXM
- Systems operational in France, Taiwan...
- European coordinated provision of AIM (EAD)
- Benefits: cost effectiveness and safety

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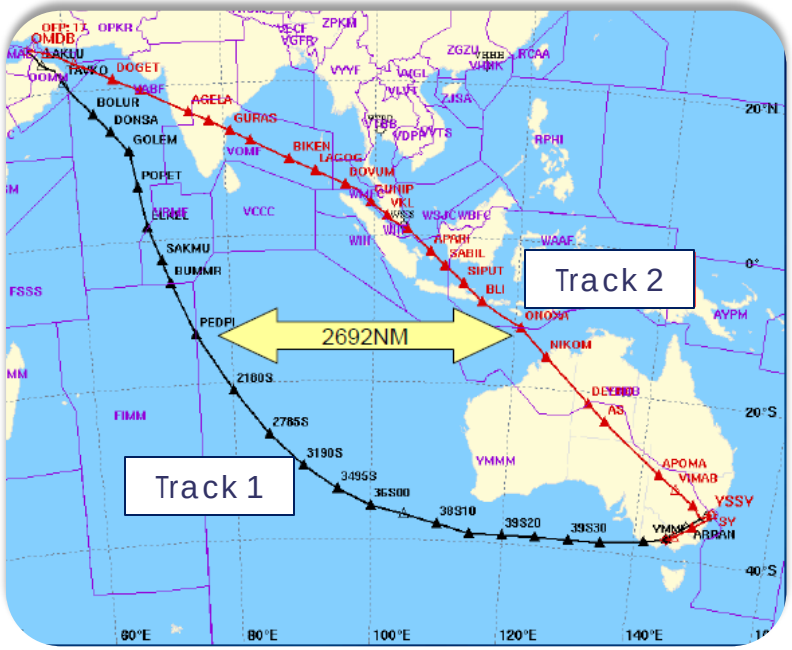
Achieving Optimum Capacity and Flexible Flights

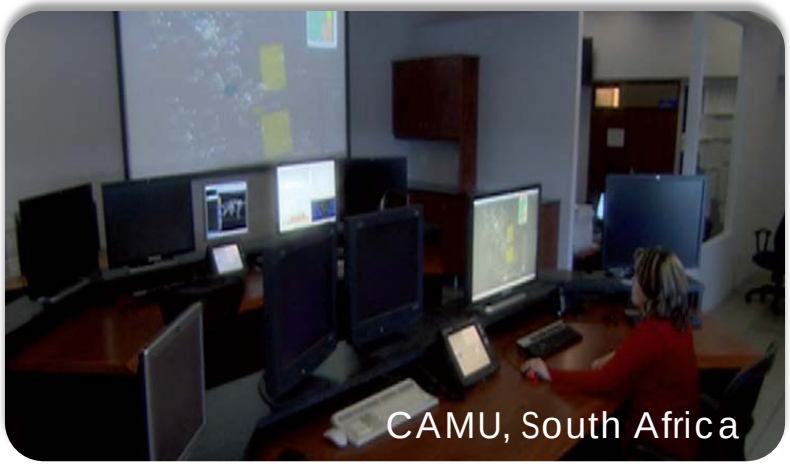
B0-10 Improved Operations Through Enhanced En-route Trajectories

- Ground automation supporting Flexible Use of Airspace and Flex Tracks; integrating data from FANS equipped aircraft…
- Benefits: flight efficiency, flexibility and positive environmental impact
- Flex Tracks and User Preferred Routing operational in South Pacific and Indian Ocean…



B0-35 Improved Air Traffic Flow Management

- Solutions operational: Europe (CFMU), US (Command Centre) and South Africa (CAMU)
- Benefits: capacity, efficiency, flexibility and airspace accessibility
- Different operational concepts depending on the specific operating environment



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Flying Efficient paths

B0-05 & B0-20: Improved Performance in Descent and Departure Profiles

- Advanced aircraft capabilities available but currently underutilised
- Ground systems are available that support procedures using RNP, RNAV, CDO and CCO
- Mainly an airspace/route structure and procedures design issue for Block 0
- Existing IATA/CANSO activities on PBN go teams
- Benefits: flight efficiency and positive environmental impact

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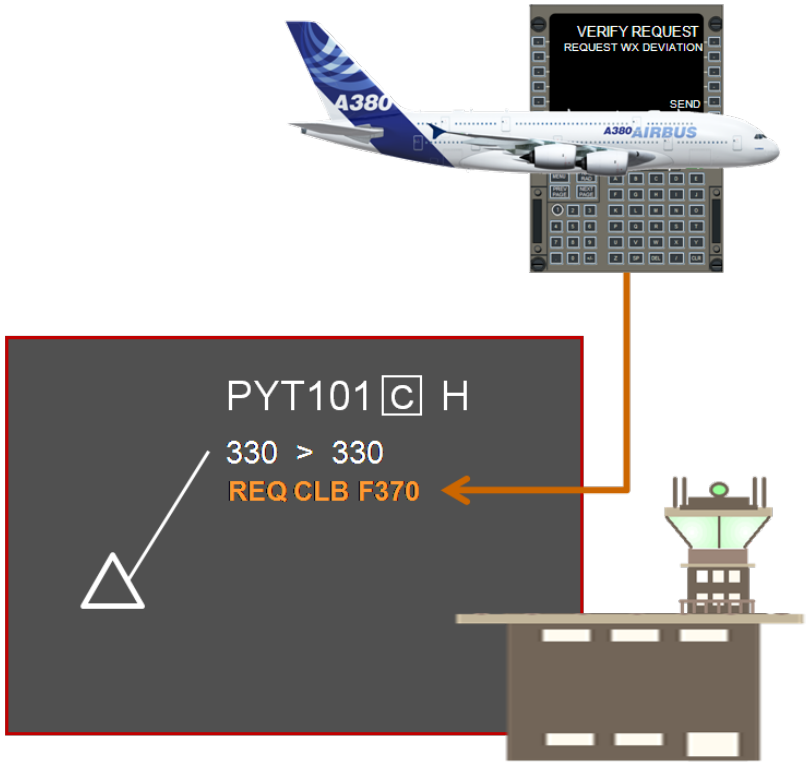
Flying Efficient paths

B0-40 Improved Performance through the Application of Data-Link en Route

- Ground systems supporting CPDLC and ADS-C for FANS-1/A+ and Link2000+
- Operational many places globally mainly in Oceanic and transcontinental airspace. Initial operations in high surveillance airspace in Maastricht
- Benefits vary with the environment: capacity, efficiency and safety...



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Bringing Experience to Block 0

- Capabilities for Block 0 already available in both the air and ground systems
- Commitment to the use of existing standards, currently underutilised
  - → Though some standards could have been simplified
- Procedure and airspace design are needed to facilitate some of the Block 0 implementations
- The need for education, sharing the experience of early implementers

There is no technical excuse to do nothing

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Discussion on Block 1– Industry Capabilities
Towards block 1 …..

Block 1: Planning
SAM IG/9- Lima, 15 May 2012

Ludmilla Gonzales
Latin America Business Development Manager , Thales

Introduction

Blocks 1 (2018) and later blocks (starting 2023) aim to make advanced capabilities of NextGen and SESAR available to the broader ANSP community

Thales ATM solutions:

- **Enable implementation of elements of Block 1.**
- **Roadmap aligned with ASBU; timing depends on validation status of NextGen/SESAR**
- **Anticipated benefits are being assessed as part as of R&D work**

Demonstrated through active involvement in initiatives related to some Block 1 modules

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Making Airports Greener and More Efficient

B1-70: Increased runway throughput through dynamic Wake turbulence separation

- Improved throughput on departure and arrival runways through the dynamic management of wake-vortex separation minima based on the real time identification of wake-vortex hazards
- SESAR p12.02.02 (Runway Management)

B1-75: Enhance Safety & Efficiency of Surface Operations (ATSA-SURF)

- Airport surface surveillance for ANSP and flight crews with safety logic, cockpit moving map displays and visual systems for taxi operations
- SESAR p12.03.01 (Improved Surveillance for Surface Management) & 12.03.02 (Enhanced Surface Safety Nets)

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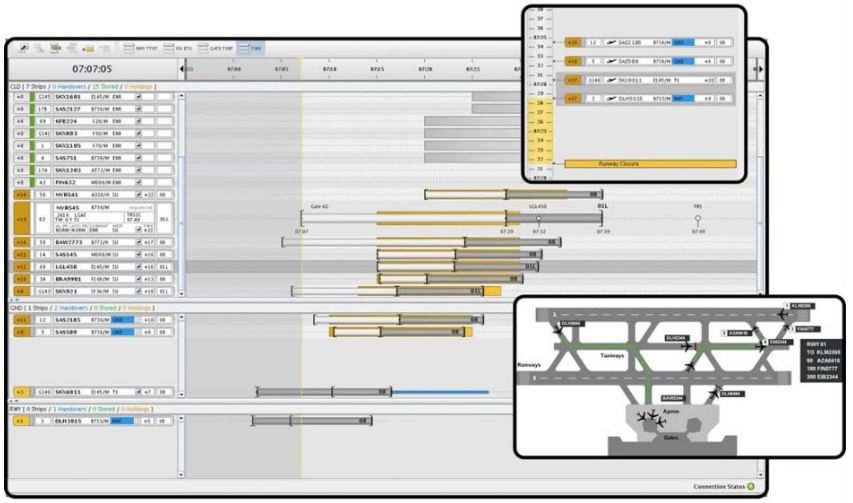
Making Airports Greener and More Efficient

B1-15: Improved airport operations through Departure, Surface & Arrival Management

- Extended arrival metering, integration of surface management with departure sequencing bring robustness to runways management and increase airport performances and flight efficiency
- SESAR p12.04.04 (Integration of Departure Management and Surface Management)



B1-80: Optimised airport operations through airport CDM

- Airport operational improvements through the way operational partners at airport work together
- SESAR p12.06.08 (Introduction of the UDPP and collaborative departure sequence)

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Ensuring the Global Interoperability of Systems and Data

B1-25: Increased interoperability, efficiency and capacity through FF-ICE/1 application before departure

- Introduction of FF-ICE step 1, to implement ground-ground exchanges using common flight information reference model FIXM/XML and the Flight Object used before departure
- SESAR p10.02.05 (Flight Object IOP System Requirement & Validation)

B1-31: Performance improvement through the application of SWIM

- Implementation of SWIM services (applications and infrastructure) creating the Aviation intranet based on standard data models, and internet-based protocols to maximise interoperability
- SESAR p14.02.09 (SWIM Platform development and demonstrator delivery)

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Ensuring the Global Interoperability of Systems and Data

B1-30: Service Improvement through integration of all Digital ATM information

- Implementation of the ATM information reference model integrating all ATM information using UML and enabling XML data representations and data exchange based on internet protocols with WXXM for meteorological information
- SESAR p13.02.02 (Aeronautical Information Management sub-system definition)

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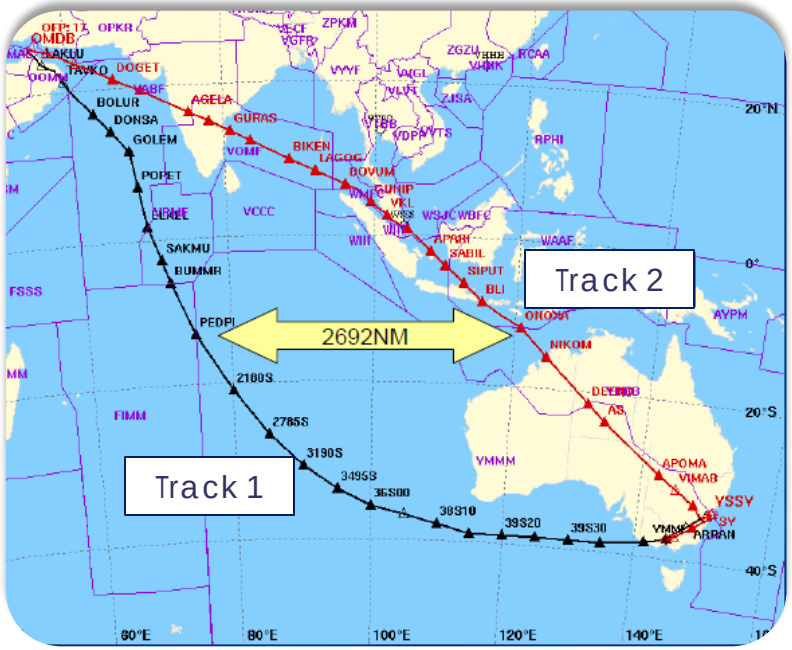
Achieving Optimum Capacity and Flexible Flights

B1-10 : Improved operations through free routing.

- Introduction of free routing in defined airspace, where the flight plan is not defined as segments of a published route network or track system to facilitate adherence to the user-preferred profile
- Current work : already supported by current systems (direct routings, Flex tracks UPRs)



B1-105: Better operational decisions through integrated weather information (Strategic > 40 mins).

- Weather information supporting automated decision process or aids involving: weather information, weather translation, ATM impact conversion and ATM decision support
- Current work : SESAR WP11

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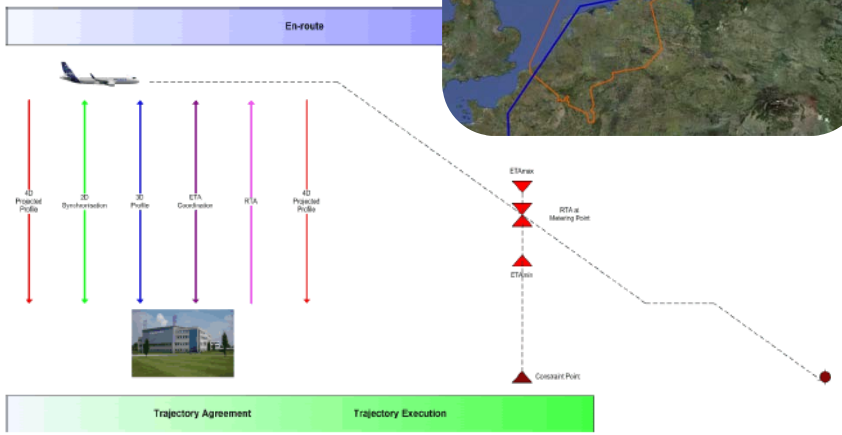
Flying Efficient paths

B1-05 : Improved flexibility and efficiency in descent profiles (OPDs)

- Deployment of performance-based aircraft and arrival procedures that allow the aircraft to fly their Optimised Profile Descents taking account of airspace & traffic complexity
- Current work : initial support by current systems, additional work in SESAR/NextGen

B1-40: Improved traffic synchronisation and initial TBO

- Use of 4DTRAD capability & airport apps in trajectory-based operations to improve traffic flows synchronisation at en-route merging points and to optimize the approach sequence through air ground exchanges & specifically a single control time of arrival
- Additional benefits: enable the mechanisms for air-ground trajectory exchange irrespective of the I-4D concept validation
- Current work : SESAR Initial-4D



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Some Key Considerations

Aircraft capabilities for I-4D will progressively be available from 2018:

Ground capabilities for I-4D can be delivered in a consistent timeframe

Improved weather models are being developed but advanced concepts and common weather picture will not be available to the FMS until after 2025

NextGen and SESAR have different SWIM drivers : other ANSPs or regions need to consider the applicability of each model:

Additional TBO capabilities available in SESAR Step 2 but current NextGen plans are beyond 2025 for most capabilities

Key dependencies on SESAR & NextGen could influence final Block 1 implementation

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