ATNS ASBU Block 0 Implementation Status

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Specialist Airspace Modeling and Simulation

ATNS

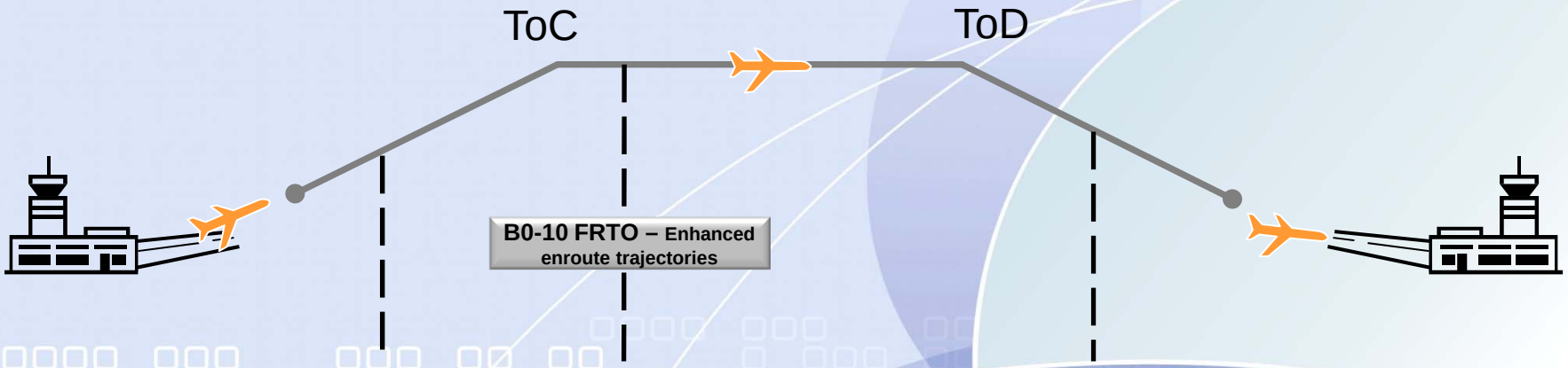
Discussion Points

- B0-FRTO
- B0-NOPS
- B0-ACAS
- B0-ASUR

B0-FRTO

Performance Improvement Area: **Optimum Capacity and Flexible Flights**

Module Description	ATNS Implementation Elements
Allow the use of airspace which would otherwise be segregated (i.e. Special Use Airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight lengths and fuel burn	1) SSR Blesberg Replacement 2) Enroute and Terminal NAVAIDS 3) Flexible use of airspace is exercised on a daily basis 4) Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) partnership between ATNS, Air services Australia and Airports Authority of India. 5) Atlantic Ocean Random Routing Area currently allow for horizontal random operations. ATNS in collaboration with the users and other ATM service providers to implement vertical random operations in the medium term 6) RNAV route review and the User Preferred Routes (UPR) in oceanic airspace



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The current secondary surveillance system at Blesberg was installed in 2002 and is to be replaced with a Mode-S compliant system. Due to the National initiatives relating to sustainability and reducing CO2 emissions, the new surveillance solution will be specified to allow for harmonious co-existence with renewable resources (including wind farms, etc.).

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Terminal and En-Route Navaids Replacements

Based on the fact that the life of the Pronav1 equipment within this permission period has already been extended past 15 years, this initiative will renew the of off-airport Terminal and en-route navigation aid infrastructure. This project can potentially be implemented together with the on airport terminal navigation aid replacement project (Nav_2013_165).

DME-DME Network

This permission period (2015/2020) makes provision for the contracted financial commitments from the previous permission period, associated with the terminal DME-DME network established within identified airports terminal areas.

En-Route DME-DME Network Establishment

Based on the DME-DME network implemented within identified airports terminal areas the requirement for the network to be extended to cover additional airports as well as high level coverage within the en-route areas will be investigated for implementation in the next permission period.

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During a workshop held in July 2012 between all the relevant parties in the Cape Town FIR it was agreed to a phased approach to review the present RNAV routes, develop additional RNAV routes, review ATS route A402 lower limits, withdrawal of certain ATS routes, the Cape Town CTR, TMA, the Cape Town CTA A, FAD45, Area/FIS sectorization and the re-alignment of the Cape Town FIR.

These changes and development are required because the traffic demands have continued to grow and thus the workload and responsibilities of the existing controller function have also grown. Thus measures have had to be considered that will enable the workload of the position to be contained within acceptable safety and service provision parameters and at the same time increase the efficiency.

Subsequently, with the use of IDS Airspace designer, the required changes and deletions were made applying PBN principles to ensure significant savings to airlines (Track Miles) utilising the new RNAV route structure.

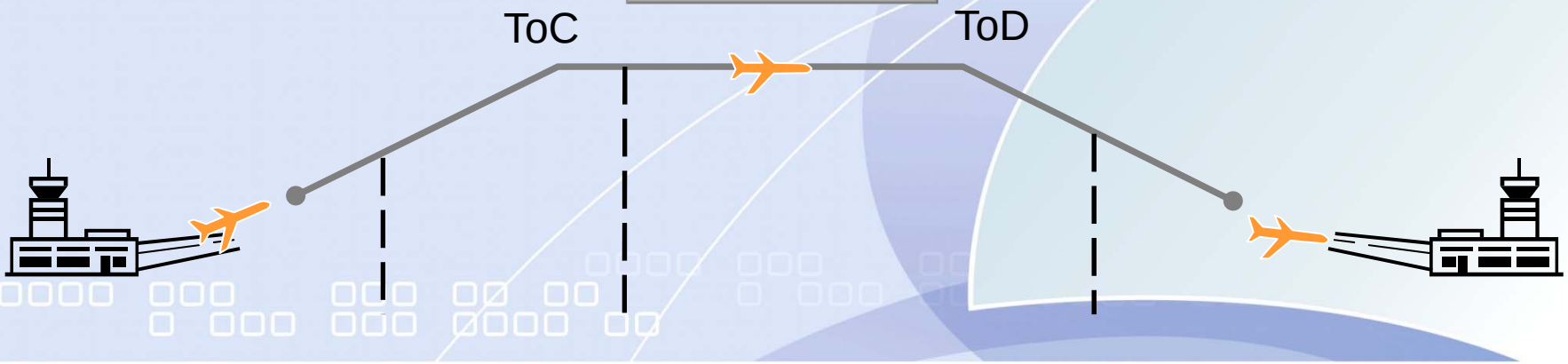
The new RNAV route structure became AIRAC effective in April 2015.

B0-NOPS

Performance Improvement Area: **Optimum Capacity and Flexible Flights**

Module Description	ATNS Implementation Elements
Air traffic flow management (ATFM) is used to manage the flow of traffic in a way that minimizes delays and maximizes the use of the entire airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or flight information region (FIR)/sector boundaries and reroute traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.	1) Additional capacity has been catered for in high visibility events and the current CAMU tool in addition to AMAN is currently successfully managing the traffic flow

B0-35 NOPS Air Traffic Flow & Capacity Management with a Network Operations View



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MAESTRO AMAN/DEMAN Integration with the CAMU System

With the introduction of the new CAATS ATM system (replacement of the Eurocat-X), more emphasis will be placed on the departure and arrival scheduling during the tactical phase of operation. In order to ensure correlation between the CAMU a new interface is required between the CAMU system and the Maestro AMAN/DEMAN. Updated software algorithms are required to ensure correlation between the "calculated time of take-off" (CTOT) and the tactical arrival and departure scheduling. The algorithms will also introduce a new correlation parameter called "target take-off time" to be used instead of the current CTOTS.

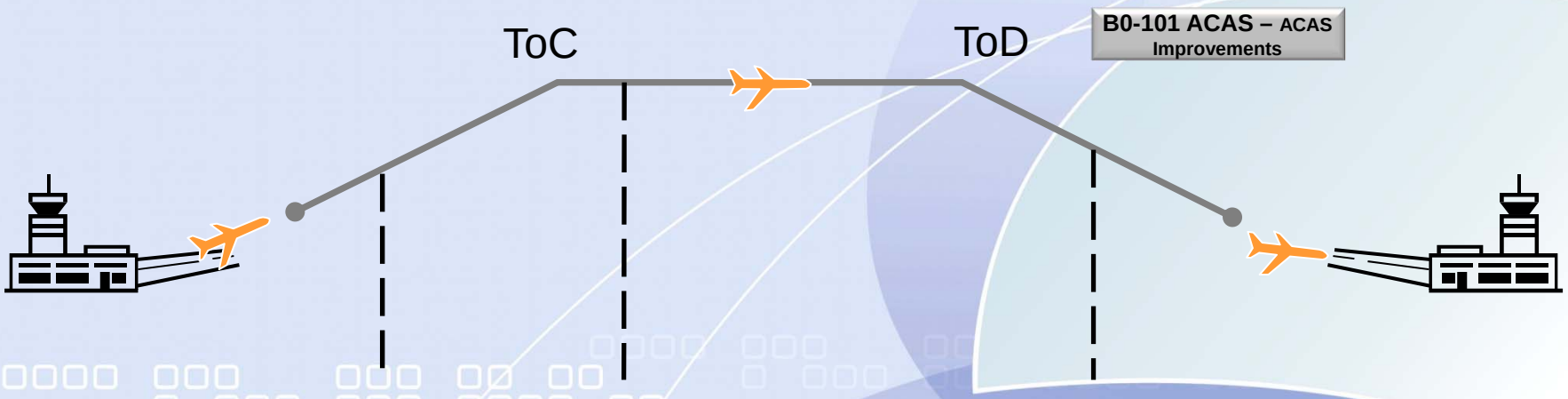
Upgrade of CTOT Calculation Software Algorithms

As mentioned above, upgraded software algorithms are required for the integration of the CAMU system to the Maestro AMAN/DEMAN. Not only will the upgraded software algorithms provide for enhanced arrival and departure time management, but will also be tightly integrated to the IATA Airport Slot Allocation System to reduce current pseudo delay time between airport slots and calculated or target take-off times.

B0-ACAS

Performance Improvement Area: **Optimum Capacity and Flexible Flights**

Module Description	ATNS Implementation Elements
Provides short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.	1) GNSS Implementation (Phase 2 - GBAS) 2) (Short Term Collision Avoidance) STCA system has been employed with the Eurocat platform and will be included in the future TOPSKY ATM system.



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GNSS Implementation (Phase 2 - GBAS)

GNSS together with ground based and airborne navigation equipment will become the mainstay of navigation over the next decade. To ensure that GNSS can be utilised to the maximum extent, a variety of augmentation systems will supplement the navigation satellite constellations. Space Based Augmentation Systems (SBAS) to allow enhanced en-route and non-precision approaches and Ground Based Augmentation Systems (GBAS) will be evaluated and cost benefit analysis assesed for the purpose of allowing aircrafts to make precision approaches. This projects makes provision for the installation of a GBAS at FAOR in the next permission period.

B0-ACAS

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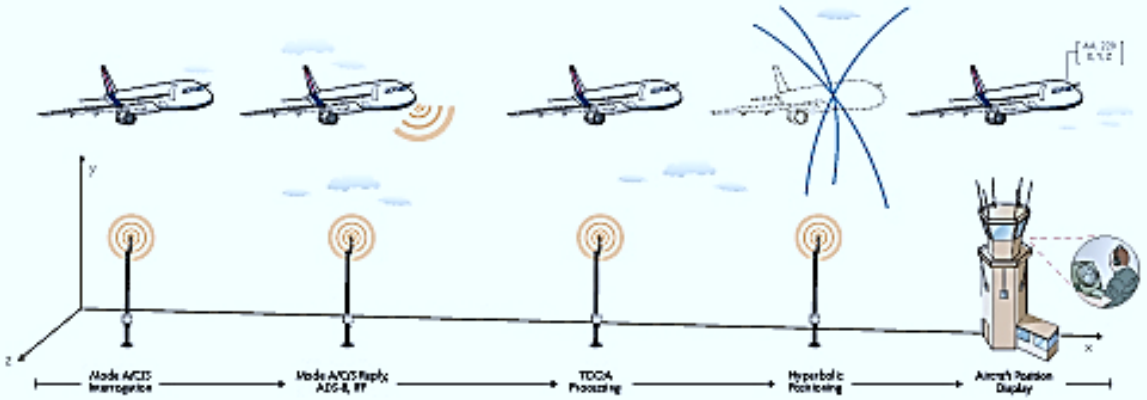
CAATS Upgrade Cycle (TopSky Hardware Renewals)

The new ATM System was contracted in 2013, with an anticipated final commissioning date of July 2015. The OEM was contracted to provide ATNS with a 15-year Software and a 3 year Hardware Support Contract whilst ATNS will take responsibility of the Hardware Support from year 3 to 15. Based on the COTS nature of the system hardware, provision is made for the cyclic replacement of hardware throughout the equipment life (15 years) based on obsolescence and support principles

B0-ASUR

Performance Improvement Area: **Optimum Capacity and Flexible Flights**

Module Description	ATNS Implementation Elements
Provides initial capability for lower cost ground surveillance supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems. This capability will be expressed in various ATM services, e.g. traffic information, search and rescue and separation provision.	1) Implementation of MLAT (WAM) in the Lowveld and Northern Cape



MLAT ground stations receive replies from all transponder-equipped aircraft, including legacy radar and ADS-B avionics, and determine aircraft position based on the time difference of arrival (TDOA) of the replies.

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Multilateration / ADS-B in Lowveld and Northern Cape

This permission period (2015/2020) makes provision for the contracted financial commitments from the previous permission period, associated with the establishment of the Wide Area Multilateration in the Lowveld and North Cape.

Questions?

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Thank you