CMATS – The Civil Military ATM System

OneSKY Australia Program Update

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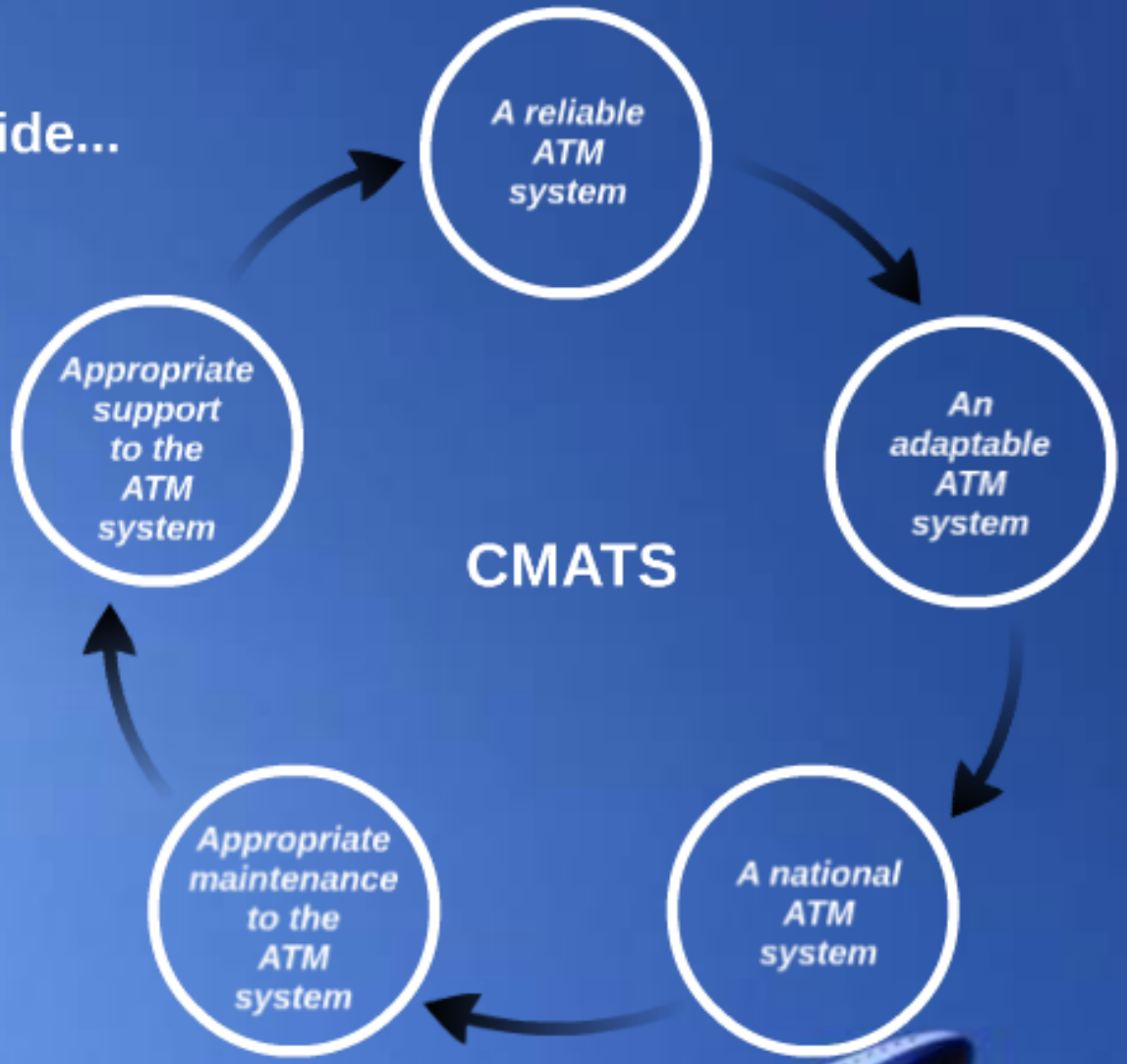
OneSKY Australia Program Primary Goals

To provide...



OneSKY Australia program

- By 2021, Australia will be providing air traffic control services using the most advanced and integrated air traffic control system in the world.
- Will unify Australian skies under a new, harmonised air traffic management system ‘one sky’ for Australia.

OneSKY Australia program

- Enables a new level of operational and cost efficiency and safety, while reduces delays for the travelling public and providing opportunities to improve environmental outcomes.

- It will place Airservices and Defence in a position to manage forecast growth of air traffic movement in Australia.

Improved safety and efficiency

- Shared situational awareness for civilian and military controllers through use of common data, additional new system safety nets and alerts, greater information security.

- The future system will also allow maximum use of these systems within Australia's skies, helping to minimise noise for communities and delays for the travelling public.

One flight information region

- Means that any controller, at any one of the 200 consoles around the country, will be able to access the same flight information at any time, removing the potential for sharing incorrect information.

- It will also allow for greater use of flexible airspace and user preferred routes.

Modular and adaptable

- The future system will be able to easily absorb and integrate future technology enhancements.
- Reduce the costs of upgrading to the latest available technology in the future through updates to sections rather than whole, and allow quicker response to changes in the operating environment.

Greater use of four dimensional trajectories

- Air traffic controllers will know, with greater certainty and accuracy, the precise flight path an aircraft will take before an aircrafts takes off. This will allow them to map out the projected trajectories of all flights in airspace.

- Project a clear picture of how airspace works in four dimensions and help reduce delays for passengers. The current system works in three dimensions.

Key Facts

- Replaces the current civilian system known as The Australian Advanced Air Traffic System (TAAATS) that was built in the 1990s and commissioned in 2000.
- TAAATS has had more than 200 incremental system changes since it was first commissioned.
- The Request for Tender identified 172 specific operational needs for the future system.

Key Facts

- The Request for Tender identified 172 specific operational needs for the future system.
- Fifty-one of these are new capabilities, with a further 87 that are only partially delivered through our current system.
- An additional four safety functionalities will be introduced including alerts for medium-term conflict detection, long-term conflict detection, cleared flight level, violation of controlled airspace and conflict probe.

Key Facts

- Integrated surveillance processing and alerting for all technologies, including Automatic Dependent Surveillance-Broadcast (ADS-B).
- Increase of radar feeds from 32 to 45 with expanded offshore surveillance area supporting future extensions of ADS-B coverage.
- Enhanced information security protocols, dual redundant architecture and a nominal 24-hour, 95 per cent technical disaster recovery of a partition at alternate locations.

Scope

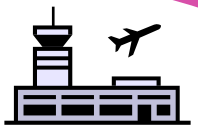
Airservices
CMATS replaces TAAATS Enroute and Approach automation at 4 locations.

- Adelaide and Cairns TCUs being integrated to ATSCs before transition.
- Eurocat Tower automation being replaced by INTAS.

Defence
CMATS replaces ADATS Tower and Approach automation at 12 locations.

Communication, Navigation, and Surveillance Systems

Civil Enroute and Approach Systems

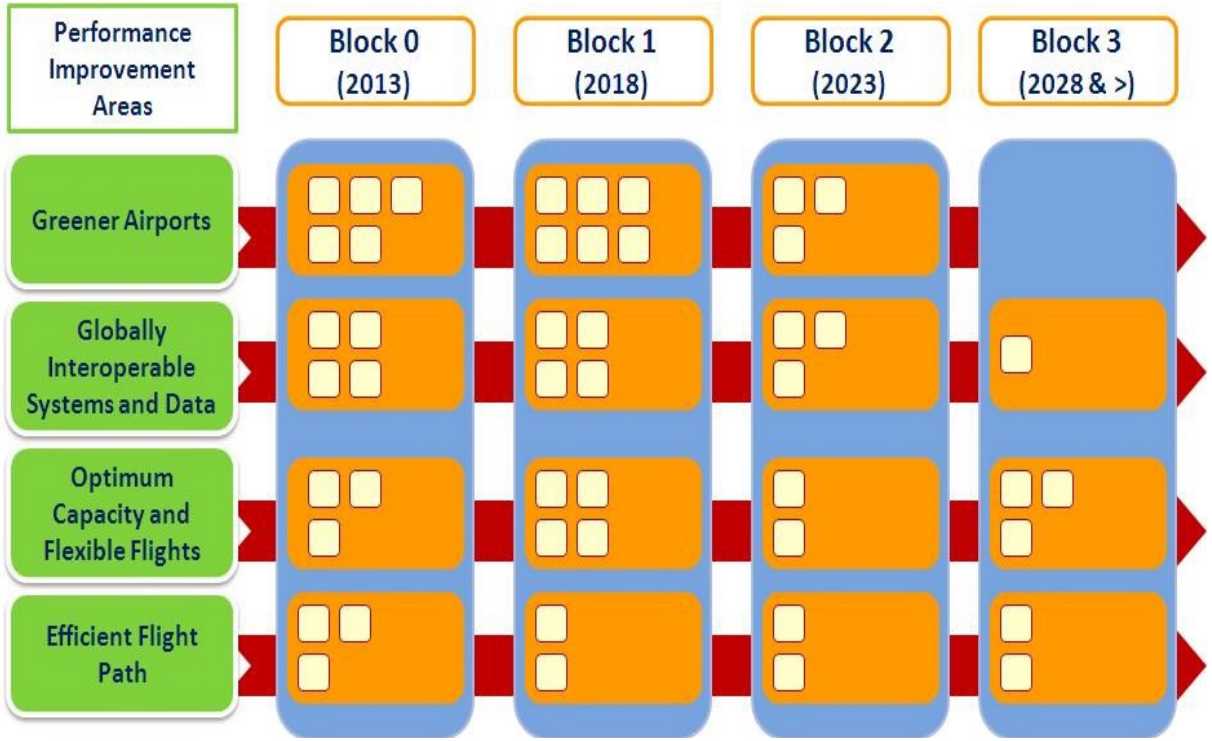


Military Tower and Approach Systems

Civil Tower Systems

Military Deployable ATC Systems

Global Interoperability



New Operational Capability

TAAATS	CMATS
Supports tower, terminal area, continental enroute, and oceanic services in civil airspace.	Supports tower (Defence sites), terminal area, continental enroute, and oceanic services in civil and military airspace.
Separate Melbourne and Brisbane civil platforms with limited flight data sharing to support situational awareness and automated coordination. Manual coordination with ADATS platforms.	A single national platform, a common flight data region, and data synchronisation between all civil and military partitions.
Common civil-military situational awareness, through common data display, alerting and tools in Perth / Pearce terminal areas.	Common civil-military situational awareness, through common data display alerting and tools for entire Australian FIR.
Some Defence ATC radars interfaced to ML or BN or PH platforms.	All Airservices and Defence ATC radars interfaced to the national system
Integrated AMAN (Maestro) for major airports	Integrated AMAN and DMAN for major airports, and interfaced to National Operations Centre ATFM systems.
Various safety nets and alerts including STCA, MSAW, DAIW and RAM. FPSNA in limited use.	Various safety nets and alerts including STCA, MSAW, SUA and RAM. New functions include MTCD, LTCD, CFL, VCA, and Conflict Probe.

New Operational Capability

TAAATS	CMATS
Limited ability to combine/de-combine airspace volumes on same platform and ability to release military volumes to civil jurisdiction and manage Special Use Airspace (SUA).	Ability to combine/de-combine any adjoining airspace volumes. Dynamic configuration of sector boundaries, SUA and real-time civil-military jurisdiction change possible. Demand forecasting functionality to optimise sectorisation.
Limited PBN Approach operations.	Ability to manage multiple PBN procedures to a runway.
Separate displays of weather and other aeronautical data systems at controller workstation	Integrated display and processing of weather and aeronautical data within system to aid situational awareness and ATC decision making. Able to process Digital NOTAMs.
	Allows display and 'probe' of proposed trajectories for conflict detection and traffic management needs.
	Flight data will be updated by NOC ATFM systems.
	Will support ASAS and Mode S downlinks (e.g. TCAS Resolution Advisories).

New Technical Capability

TAAATS	CMATS
Commissioned in 1998 and last major hardware upgrade in 2003. Over 200 incremental system changes since commissioning.	Modern ICT design and industry data exchange standards, contemporary hardware and software and best-practice software assurance.
Complexity and cost in system upgrades due to design, bespoke interfaces, age and divergence over time from 'standard' product.	Modular design and maximum use of industry standard interfaces to facilitate upgrade. Intent to remain aligned to product roadmap and global standardisation of ASBUs.
Limited resilience to cyber attack and limited disaster recovery of a partition at an alternate site.	Enhanced information security protocols, dual redundant architecture and improved disaster recovery of a partition at an alternate site.
System capacity of current platforms constraining additional functionality in some areas.	System capacity specifications accommodate anticipated airport developments and traffic growth over system life.
System upgrades require operation in degraded fallback mode while reconfiguring system.	Seamless upgrade capability will allow software and adaptation data change without impact to ATC operations or reduction in services.
Limited Test & Evaluation (T&E) capability to replicate operational platform for testing prior to commissioning.	Enhanced T&E platform with small R&D capability for HMI, system functions and procedures development.
	Various improvements to WHS, HMI, record & playback, and fail soft contingency capability.

Questions?

Short video on CMATs:

https://www.youtube.com/watch?v=pfYcvmIZePg