Detect & Avoid
Design, Test & Evaluation Guideline

Appendix D:
Requirement Set

Version 1.0

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RevAero UTM Demonstration 2023

RevAero Flight Trials 2022

RevAero; a Defence Jobs QLD delegate at Avalon Airshow 2022

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Version History

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Contributions

The Guideline has drawn on many different sources of DAA research, development, standardisation, and guidance material across the globe including information produced by the following organisations:

- RTCA
- ASTM
- JARUS
- FAA
- MIT
- EASA

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References:

[1] T. Putland, T. Martin, A. McLaren & K. Cruickshank, "*Detect & Avoid Design, Test & Evaluation Guideline-Appendix D,*" Revolution Aerospace, Brisbane, Queensland, Australia, January 2024.

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Contents

1 Introduction

This document contains the set of high-level, functional, safety, and analysis requirements for a Detect and Avoid (DAA) system fitted to an Uncrewed Aircraft System (UAS).

Compliance with the Requirement Set alone does not provide a complete safety argument around the design, production, and operation of a DAA-equipped UAS. Instead, it provides a starting point for designers and operators pursuing an approval for a DAA system, which will in turn be used support the safety of operations of a UAS equipped therewith.

The requirements have been developed with reference to the Operational Services and Environment Description (OSED), at Appendix A to the Guideline. Importantly, the requirements in this document are only valid in the context of the operations described within OSED. Any operations deviating from the scope of the OSED would requiring further safety analysis to assess the impact of those deviations, and to re-validate or supplement the Requirement Set to support safety in those operations.

The requirement set is presented here without their associated rationale, or discussion regarding the derivation of these requirements. For the full context around the development of these requirements, referee to Annex E of the Guideline.

2 DAA System DT&E Requirement Set

Req. ID	Requirement Text	Rationale
2.1 Core Requirements		
CR-001	The DAA system shall provide an equivalent level of safety to other airspace users and people on the ground as is currently expected due to crewed aviation activities in uncontrolled Class G airspace.	From CASR 101.029 and 11.055, the key criterion for granting an authorisation is driven by ensuring that granting the authorisation does not have an adverse effect on the safety of air navigation.

CR-002	The DAA system shall attempt to:
	• Prevent Mid Air Collisions:
	  o Avoid collisions.
	  o Reduce the risk of collision by remaining well clear.
	• Do No Harm:
	  o To airworthiness of Ownship
	  o To coordination between encountering aircraft
	  o To third parties on the ground
	• Do Not Impede:
	  o Minimise disruption to the National Airspace System
		These are high level goals of a DAA system, derived from the findings of the FAA Sense and Avoid Second Caucus Workshop. These are the root "goodness" values of the DAA system.

CR-003	The DAA system shall meet all required risk ratio requirements necessary to satisfy the target level of safety in ARC-c Airspace.	The risk ratio is globally accepted metric for assessing the performance of a DAA system. To harmonise internationally, the ASTM risk ratios are the most appropriate ones for use in the operational context of this guideline (uncontrolled class G <10,00ft AMSL)
CR-004	The Maximum allowable encounter rate, including both natural and induced encounters shall be determined.	The ability for a DAA System to meet the TLOS is heavily affected by the encounter rate of the operation. The encounter rate limit should include both natural encounters and induced encounters to ensure the TLOS is truly met. By meeting the target level of safety, we can ensure that the regulatory goal of not having an adverse effect on the safety of air navigation is satisfied for a given pairwise interaction.

Req. ID	Requirement Text	Rationale
CR-005	Hazards associated with development errors and anomalous system behaviour of the AAT function shall be minimised by use of aerospace best practice system safety engineering techniques. The Avoid Air Traffic Function can be considered a protective function, the external event being an aircraft on a collision course.	The FAA have concluded that aerospace best practice system safety processes (i.e., XX.1301 and XX.1309) are appropriate to manage the safety performance of DAA systems. Utilising the hazard severity of a MAC (Catastrophic), and the TLOS for MACs, an appropriate analogous aircraft category can be derived, and these aviation practices can be applied as if that category of aircraft was being designed. The same justification for aerospace best practice system safety techniques to apply for airspace hazards applies to ground hazards. The identified hazard severity (Catastrophic) and TLOS (1 fatality per million hours) an appropriate aircraft analogy can be found.
CR-006	The DAA system shall not cause a hazard to third parties on the ground greater than expected by the target level of safety.	In a similar vein to CR-003, the currently accepted TLOS for third parties on the ground presents us with a metric that, if satisfied by the implementation of a DAA system, will meet the regulatory objective not to create an adverse effect on the safety of air navigation.
2.2 System Safety and Reliability Requirement		
SSR-001	The functions and systems involved in an annunciated loss of function of the AAT function shall be developed to FDAL D, and a maximum failure rate of less than 1 per 100 flight hours (1×10^{-2} pfh).	Based off FHA-001 outcome. Uses current failure condition assessment criteria (catastrophic MAC) driven by external event probabilities. FHA uses FAA AC 23.1309 as backbone to assessment.
SSR-002	The functions and systems involved in an unannunciated loss of function of the AAT function shall be developed to a Function Development Assurance Level of FDAL C, and a maximum failure rate of less than 1 per 10,000 flight hours (1×10^{-4}4 pfh).	Based off FHA-002 outcome. Uses current failure condition assessment criteria (catastrophic MAC) driven by external event probabilities. FHA uses FAA AC 23.1309 as backbone to assessment.

Req. ID	Requirement Text	Rationale
SSR-003	The functions and systems involved in a hazardously misleading malfunction of the AAT function shall be developed to a Function Development Assurance Level of FDAL C, and the maximum allowable probability of the event shall be less than 1 per 10,000 flight hours (1×10^{-4} pfh).	Based off FHA-003 outcome. Uses current failure condition assessment criteria (catastrophic MAC) driven by external event probabilities. FHA uses FAA AC 23.1309 as backbone to assessment.
SSR-004	The functions and systems involved containing the AAT function to the intended operational environment shall be developed to: a. In the case of a DAA system that requires the remote pilot to manually manoeuvre the UAV, Development Assurance Level D, and the maximum allowable probability of the event shall be less than 1 per 100 flight hours (1×10^{-2} pfh). b. In the case of a DAA system that has the ability to automatically manoeuvre the UAV, Development Assurance Level C, and the maximum allowable probability of the event shall be less than 1 per 10,000 flight hours (1×10^{-4} pfh).	Based off FHA-004 outcome, which was split based on whether manoeuvres were automated or required pilot input Uses current failure condition assessment criteria (catastrophic MAC) driven by external event probabilities. FHA uses FAA AC 23.1309 as backbone to assessment.
SSR-005	The DAA system shall incorporate Loss of Function Detection functionality capable of detecting a loss of the Avoid Air Traffic function while airborne.	Architectural requirement to ensure that there are two independent functions that ensure the AAT function occurs, or the flight managed via contingencies: • AAT function is working. • Detected loss of function, notifying the RP/AP to undertake contingency action.
SSR-006	The DAA system shall incorporate Functional Testing to identify any malfunctioning functions making up the DAA system before flight.	An assumed corollary to the loss of function detection that can occur on the ground before flight. This function test can be used to ensure that at the point of release, the AAT function was operating as intended (i.e., there were no latent failures before this test that are not captured before flight).

Req. ID	Requirement Text	Rationale
SSR-007	The DAA system shall incorporate a means to contain the operation of the DAA system to within the intended operational environment.	Alongside SSR-005 and SSR-006, the other required functional architecture ensures the system does not operate outside of the intended operational environment.
SSR-008	Where the DAA System uses machine learning for any safety-related functions the learning process shall be assured against an authority recognised standard or guide.	Noting the likely use of machine learning of some kind to generate the capability to detect objects, this is a catch all requirement ensures that any use of machine learning is captured using a known or accepted standard for development assurance of a learning process.
2.3 AAT Functional Performance Requirements		
AAT-001	The functional performance of the avoid air traffic function shall be such that the Logic Risk Ratio requirements are satisfied.	This requirement is a traceability requirement, ensuring that we allocate the correct functional performance assurance that make up a portion of the system risk ratio

Req. ID	Requirement Text	Rationale
AAT-002	The operational states and modes of the AAT function shall be defined. The AAT Function shall be able to transition between modes safely. At a minimum, the AAT function shall have a: o Nominal Mode – used when the AAT Function is operating as intended within the intended operational environment. o Surveillance Only Mode – used during stages of flight where the AAT function is operating as intended, but alerting and/or guidance is not needed and may cause confusion (i.e. take-off and landing). o Pre-Flight Test Mode – used to undertake pre-flight testing of the AAT Function to identify any faults or failures before flight. o Isolated Mode(s) – used (automatically or manually) to isolate the entirety of AAT Function (Core and Supporting Functions) when an in-flight failure has occurred, or the AAT function operates outside of the intended operational environment. Additional modes shall be defined and established.	This is a derived requirement. Already from the above requirements It is required that the system can: • determine if there is a loss of function implies being able to turn off or not allow output of AAT. • prevent operation outside of the intended operational environment, implies being able to select whether to use system or not. • undertake a functional test on the ground (i.e., function is tested without actually implementing guidance). These are the minimum set of states and modes.
AAT-003	The remote pilot shall have the ability to switch between different states and modes under all operating circumstances.	Derived requirement. Ensures that under all circumstances, the remote pilot can control the state and mode that the DAA system is in. Prevents any unwanted logic preventing the safing of the system, or other unintended operation of the DAA system through lockout of the appropriate state or mode.

Req. ID	Requirement Text	Rationale
AAT-004	If there is any automated switching of modes, the remote pilot shall have the ability to disable automated mode switching, without affecting the ability of the pilot to manually switch modes.	The ability for the system to automatically change the mode of the AAT function requires that the person in charge of the safety of flight (RPIC) can override any decisions.
AAT-005	The criteria (manual and/or automated) for transitioning between states and modes shall be established across all phases of flight under all operating circumstances.	if there is any automated switching, the associated criteria need to be established for predictability of system performance.
AAT-006	For any state or mode changes that have a potential impact on safety of flight, all switching between these states and modes shall be accompanied by visual and/or aural alerts to the remote pilot.	If there is automated switching, the remote pilot must be informed to alter/adjust operation as required by the change of modes. If done manually, it is still beneficial to notify and ensure that the pilot is aware of the current mode of the DAA system.
AAT-007	For any automated decision-making capability, the prioritisation of automated decisions and RPIC input shall be defined to prevent unwanted interactions between inter-automated or automated/manual control disagreements.	Driven by the chance that defining any automated modes will need appropriate prioritisation to prevent disagreements between RPIC and DAA, RPIC and UA, UA and DAA.
AAT-008	There shall be a means to safely restart the AAT Function in-flight in the event that the AAT Function is not functioning as intended.	If there is any in-flight failure or poor performance of the AAT function, it is more beneficial that this function can be restarted in flight safely, than cease the mission.
AAT-009	the DAA System shall incorporate a means of estimating the flight performance of the Ownship when calculating manoeuvres.	To calculate avoidance manoeuvres for intruders, an estimate of the manoeuvrability of the system is required. This is an input to the Decide Function.
AAT-010	The estimations of aircraft performance shall be suitably accurate (or are conservative) to ensure that a commanded avoidance manoeuvre will not increase the risk of MAC, NMAC, or LoWC.	A poor estimation of aircraft performance may result in the recommendation and subsequent execution of manoeuvres that increase the risk of LoWC, NMAC or MAC.

Req. ID	Requirement Text	Rationale
AAT-011	The declaration range (and time) based on the expected intruders and Ownship characteristics shall be established across the range of possible encounter geometries.	Establishing this value for the declaration range allows this to be compared to the detection volume and time taken to complete the AAT function.
AAT-012	The AAT function shall refer to a global timing schema to ensure appropriate measurement of time across the entire functioning of the AAT function.	Time is a critical factor in ensuring timely alerts and guidance. To facilitate a harmonised picture of time across the functions, a global time variable being tracked is needed.
AAT-013	The global timing schema accuracy shall be suitable.	This is a requirement directly driven by AAT-011, if there is a global timing scheme, the accuracy of the timing should be established.
AAT-014	• The time taken (average/ 95%) to complete a full cycle of the AAT function across all operating environments shall be established.	Driven by AAT-008 the measurement of timing is critical.
AAT-015	The avoid air traffic function shall consist of the: • Detect Function • Track Function • Decide Function • Command Function • Execute Function • Convey Function • In-Flight Monitor Function • Containment Function • Built-In Test Function	These functions are required to both; undertake the AAT function in the intended environment and provide functionality required by the FHA implemented functional architecture.
2.4 Detect Function Requirements		
DET-001	The Detect Function shall have adequate functionality to ensure the AAT function meets the logic risk ratios and meets the DAA objectives (CR-002).	Top level requirement driven by AAT-011. Captures traceability of all sub requirements attached to the Detect Function.
DET-002	The Detect Function shall detect intruders of interest and non-interest.	This requirement is the first of the "classification" requirements. With any detection system that will detect a useful number of intruders of interest, there will be some detections that are not valid or useful for the purposes of the AAT function.

Req. ID	Requirement Text	Rationale
DET-003	The criteria for classifying intruders as "intruders of interest" or "intruders of non-interest" shall be defined.	This is a traceability requirement, driven from the requirement to meet the logic risk ratio (DET-001) and to detect intruders of interest/non-interest (DET-002). In order to meet the RR, it is critical that the classification of targets of non-interest/interest is done correctly. confidence criteria (i.e., an 80% confidence of an intruder = intruder) should be included
DET-004	The Detect Function may detect adverse environments for the purposes of meeting VMC criteria (i.e., standoff distances from cloud).	If the system is operating off a visual based system, stand-off from cloud is needed to ensure adequate time to detect and avoid an aircraft that breaks through the into a collision course with the aircraft. There may be non-technical means to achieve this too. Additionally, it might be argued that as the AAT function must also detect cooperative intruders, this requirement may not be necessary (aside from the rare case of an IFR aircraft with a non-transmitting ADS-B receiver, or a VFR aircraft that has entered IMC and happens to break through the cloud on a collision course with the UAS).
DET-005	The Detect Function shall be able to detect cooperative intruders through the cooperative means.	Standards relating to the AAT function will generally require a higher RR performance for cooperative aircraft. This is reflected in CR-003 RR for cooperative aircraft. To facilitate this, the Detect Function must be able to detect cooperative aircraft.
DET-006	The Detect Function shall have a means to detect non-cooperative intruders.	As part of the OSED, the AAT function will be operating in airspace with non-cooperative aircraft. To meet safety objectives, there must be a means to detect the non-cooperative intruders.
DET-007	The field of regard for the Detect Function shall be specified and include all masking effects. The field of regard shall be such that the required risk ratios are satisfied. The specification of the Field of Regard shall take into consideration any compensation undertaken by the Detect Function that reduces the effective FoR.	Key to a functioning detector is the ability to perceive a threat from the potential areas it may come from. In the case of an AAT function, bearing (angles from a cardinal direction) in 2 dimensions, as well as the range at which a detect occurs are critical parameters. The field of regard must be specified as part of characterising the performance of the detector.

Req. ID	Requirement Text	Rationale
DET-008	The Detect Function's performance shall be established across the intended operational environment (including true positive rate, true negative rate, false detection rate, miss rate).	These are required performance values for any classifier/detector. The intended operational environment should cover all expected combinations of: • intruder types and geometries (speeds/accelerations/paths) • background clutter (RF/cloud/sun/horizon etc.) These values, when determined across the entire operational environment can be used to infer risk ratios/induced encounter rates etc.
DET-009	the sensor(s) average false detection rate(s) shall be established.	This requirement ensures that an hourly rate (based off the intended operational environment) of false alarms is quantified.
DET-010	The Detect Function's uncertainty of detected objects position (bearing, elevation, range, or 3D position in the space and if available, velocity) shall be established across the intended operational environment.	DET-008 only deals with the correct classification of an intruder (from a binary classification perspective). Within a true detection, the detector's uncertainty of the intruder's position (range and bearing) and, in the case where data is available (i.e., ADS-B) velocity needs to be established to account for the uncertainty as part of the Decide Function.
DET-011	The scan rate (average, 95%) across the entire FOV shall be established.	The time taken to complete the Detect Function will likely be driven primarily by the scan rate (the time taken to ingest all pixels in a scene). This performance should be determined to correctly classify the latency of the Detect Function.
DET-012	The latency (average, 95%) of the Detect Function shall be established	as part of AAT-012 the Detect Function time forms part of determining the time taken to complete an AAT cycle. Classifying this can also assist in any detection of loss of function of the Detect Function.
DET-013	The maximum and minimum ranges at which a detection can occur for each type of intruder (cooperative and non-cooperative) across the Field of Regard shall be established.	This requirement is a key performance metric when calculating the capability of the system in any analysis of worst-case encounters.

Req. ID	Requirement Text	Rationale
DET-014	The maximum range at which adverse environments can be reliably detected (for the purposes of ensuring operation in VMC) may be established across the Field of Regard.	This requirement assists in the analysis of the performance of this system, to ensure it can meet standoff requirements from cloud.
DET-015	The functionality of the Detect Function in each operating mode shall be established.	Under each operating mode, the functionality of the Detect Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the Detect Function has a detectable failure, the DAA system may be placed into the Isolated Mode, and not be able to interact with other UAS functions.
2.5 Track Function Requirements		
TRK-001	The Track Function shall have adequate functionality to ensure the AAT function meets the logic risk ratio and meets the DAA objectives (CR-002).	This is a traceability requirement to ensure the Track Function's performance is characterised and able to form part of the analysis for AAT-011.
TRK-002	The Track Function shall create, update, and remove tracks of intruders of interest and non-interest.	This requirement ensures the Track Function includes these key features (creation/update/removal of tracks).
TRK-003	The Track Function may track adverse environmental conditions.	If the DAA System is also used to ensure adequate standoff from IFR conditions, their detections will be tracked by the Track Function.
TRK-004	The Track Function shall prioritise intruder tracks.	There may be a point where the Track Function may become saturated with high numbers of tracks. In such a case, there should be some criteria for tracks not to be passed to the Decide Function. This is to prevent track saturation and avoid unintended function if the Track Function cannot pass all tracks to the Decide Function.
TRK-005	The criteria for the prioritisation of tracks shall be established.	Traceability requirement from TRK-004 to ensure the criteria for prioritisation is explicitly stated.

Req. ID	Requirement Text	Rationale
TRK-006	The Track Function shall be able to ingest information in different formats (cooperative and non-cooperative intruders).	It is likely that non-cooperative and cooperative data will utilise different formats and data which will need to be converted into a format needed for the Decide Function. This requirement ensures that data is provided in the format set by DEC-002.
TRK-007	The Track Function shall establish intruder unique ID, position, velocity, range, and timestamp.	This requirement, alongside TRK-006 ensures that the necessary data is provided to the Decide Function.
TRK-008	The Track Function shall receive Ownship position, velocity, and heading data, as well as the time at which the data was valid.	This requirement is derived. To ensure the Track Function can establish the requirements of TRK-007 The Ownship position, velocity, and heading data is required.
TRK-009	The accuracy of the Ownship's position, velocity and heading information shall be established.	Derived from TRK-008. The accuracy of the Ownship data is required to ensure correct function of the Decide Function.
TRK-010	The Track Function's correctness shall be established across the intended operational environment (true positive rate, true negative rate, false track rate, miss rate).	key performance metric for trackers (i.e., classifier) to ensure correct characterisation of function. This data is used to calculate higher requirement performance objectives (i.e., induced encounter rates, risk ratio).
TRK-011	The average false track rate (per flight hour) of the Track Function shall be determined.	As part of the induced encounter rate, the average false track rate per hour needs to be calculated. This requirement ensures that value is derived.
TRK-012	The quality of the Track Function (track matching error, track completeness, track uncertainty) shall be established.	A derived requirement from TRK-010 capturing more detail of the tracker performance. Of note is the uncertainty of tracks, which is needed for the Decide Function to incorporate into calculations.
TRK-013	The criteria for establishing, updating, coasting, and removing a track shall be established.	Key criteria for a tracker to establish, update, and remove a track. This criterion drives the effectiveness of the tracker via requirements TRK-010 and TRK-012
TRK-014	The maximum number of simultaneous tracks that can be tracked without adversely affecting tracker performance shall be established.	This requirement is needed as part of design decisions for the track prioritisation and the dropping of non-prioritised tracks to prevent poor functioning of the tracker.

Req. ID	Requirement Text	Rationale
TRK-015	The latency of the Track Function to complete a cycle (initiating, updating, and removing tracks) across all tracks in the expected operational environment shall be established.	This is a traceability requirement that ensures the latency of the tracker is captured as part of AAT-012. Additionally, the known time it takes to complete a track cycle can inform fault detection.
TRK-016	The latency (average, 95%) taken to establish, update, or remove a track shall be established.	This requirement derives from TRK-015 applied to an individual track.
TRK-017	The expected performance of the Track Function to classify and filter out tracks of non-interest shall be established.	These metrics will be necessary to roll up into the overall effectiveness of the DAA System's ability to prevent LoWC, NMAC, and MAC, as measured by the Risk Ratios.
TRK-018	The Closest Point of Approach (vertical, horizontal) of intruders shall be estimated (where possible), and the data shall be recorded as part of the data logged per requirement REC-001.	The CPA is a key performance parameter for recording and logging actual encounter events. This data can be used to ensure the correct and continuing safe function of the DAA system.
TRK-019	The functionality of the Track Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the Track Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the Track Function has a detectable failure, the DAA system may be placed into the Isolated Mode, and not be able to interact with other UAS functions.
2.6 Decide Function Requirements		
DEC-001	The Decide Function shall have adequate functionality to ensure the AAT function meets the logic risk ratio and meets the DAA objectives (CR-002). This will include: • the classification and prioritisation of threats (intruders of interest). • the calculation of avoidance manoeuvres based on the prioritised threats. • the determination of alerts and guidance to the Command Function, based on those determined manoeuvres.	Traceability requirement from AAT-001 to ensure the Decide Function's performance affecting the risk ratio is captured. This is also the point where the purpose of the Decide Function is stipulated.

Req. ID	Requirement Text	Rationale
DEC-002	The required format and type of data utilised in the Decide Function shall be defined.	Derived requirement. In order to ensure correct calculation of avoidance manoeuvres, the data should all be specified to the Decide Function in the correct format and type.
DEC-003	The criteria for the classification and prioritisation of tracks as threats (i.e. alerting schema and their priority) shall be established across all expected encounter scenarios	Derived from DEC-001, this requirement ensures that the criteria for prioritisation are established.
DEC-004	The algorithm for the determination of manoeuvre guidance shall be established across all expected encounter scenarios	This is the foremost requirement of the Decide Function. This requirement allows for traceability down to the algorithmic and classification requirements of the Decide Function.
DEC-005	The Decide Function shall prioritise avoidance manoeuvres during an encounter with an intruder (or intruders).	In the case where there are multiple solutions for an avoidance, or in scenarios where there is a priority of manoeuvring that should be implemented, the Decide Function should take that into consideration (example, two aircraft on a direct collision course, but one is substantially further away than the other. The Ownship should prioritise the one closer than the one further, until that priority changes).
DEC-006	The Decide Function shall take into consideration the Ownship's manoeuvrability (at the time of function) and flight envelope in determining alerting and guidance	The manoeuvrability and flight envelope of the Ownship is a key variable in the determination of manoeuvres and must be considered as part of any avoidance manoeuvre calculation.
DEC-007	The Decide Function shall take into consideration any manoeuvrability restrictions based on ground hazards	Although there are different methods in which to take into consideration ground hazards (i.e., detecting ground obstacles, using a digital terrain model, have a hard floor below which manoeuvres are not permitted) the Decide Function should still take these into consideration when determining any alerting and guidance.

Req. ID	Requirement Text	Rationale
DEC-008	The Decide Function shall determine DAA alerting and guidance relating to avoidance manoeuvres during an encounter with an intruder.	The actual alerts and guidance required to inform the pilot will take a different form than the priority classification and prioritised manoeuvre path, and this alerting/guidance needs to be determined to then be passed to the Convey Function (and then to the remote pilot or decision-making system).
DEC-009	In the case where multiple manoeuvre guidance options are provided to the command function, the priority of each potential manoeuvre should be established	There are likely situations where multiple manoeuvre paths can be suggested (i.e. a right turn and left turn will lead to an avoidance of WCV. This requirement ensures that in addition to determining the multiple means to avoid the situation, a prioritisation of which manoeuvre is "more beneficial" should be established.
DEC-010	The criteria for prioritising multiple manoeuvres shall be established	This requirement follows from DEC-009, to ensure that the criteria for prioritisation are established.
DEC-011	The validity of the Decide Function's alerting and guidance shall be demonstrated	This is a verification requirement to ensure the algorithm for determining alerting and guidance is appropriate.
DEC-012	The average false alert rate of the Decide Function shall be determined, and shown to be acceptable to meet risk ratio requirements	This is a further derived requirement to capture the number of false alerts that are provided from the Decide Function to the Command Function. False alerting rate is used as part of requirements to prevent nuisance alerting, and to infer the induced encounter rate.
DEC-013	The average false alert rate shall not exceed a value where the rate has an adverse effect on the safety of operation, or causes a nuisance to the flight crew	This is a derived requirement, due to the known issue of humans ignoring overly sensitive false alarms.
DEC-014	The decision latency (average, 95%) of the Decide Function shall be established across all expected encounter scenarios	This requirement ensures traceability to the overarching timing requirement and can be used to infer fault detection in the Decide Function.

Req. ID	Requirement Text	Rationale
DEC-015	The functionality of the Decide Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the Decide Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in surveillance only mode, then the Decide Function may be "disabled", or its outputs suppressed, as only the track data would be provided to the RPIC.
2.7 Command Function Requirements		
CMD-001	The Command Function shall have adequate functionality to ensure the AAT function meets the logic risk ratio and meets the DAA objectives (CR-002). The Command Function may be automated or commanded by the remote pilot.	Initial traceability requirement to ensure that the Command Function provides all the functionality required by the risk ratios.
CMD-002	The Command Function shall determine the appropriate command manoeuvre when necessary to maintain safety.	High level requirement for the Command Function. For the case where the command is issued by a pilot, this is the pilot's responsibility to undertake.
CMD-003	The Command Function, where possible and without affecting the safety of the primary manoeuvre, should attempt to minimise disruption to other aviation traffic.	As per CR-002, there should be some criteria for minimising disruption to other aviation traffic. This requirement ensures the command function includes this determination and should include the return to the intended flight path.
CMD-004	The criteria for manoeuvre selection, including criteria for minimising disruption to other aviation traffic shall be established.	In the case where the command is automated, this requirement ensures there criteria for consideration for the reduction of disruption to aviation traffic.
CMD-005	If applicable, the criteria for enacting (and not enacting) automated manoeuvres shall be established.	This requirement is derived to ensure that there exists a stipulated criteria for the automated command based on the alerting and guidance provided.
CMD-006	If the command is issued automatically, then an alert that this has occurred shall be provided by the Command Function to the remote pilot via the Convey Function.	This requirement is necessary so in the case of an automated manoeuvre, the remote pilot is kept informed of the automated manoeuvre.

Req. ID	Requirement Text	Rationale
CMD-007	If the command is issued automatically, throughout the automated manoeuvre, the remote pilot shall be able to intervene and override any avoidance command.	As the pilot is ultimately responsible for the flight, there may be sufficient reason for the pilot to intervene in a manoeuvre even though an avoidance manoeuvre has been issued.
CMD-008	If the pilot intervenes in an avoidance manoeuvre, automated manoeuvres cannot be issued by the command function until the pilot positively enables this function again.	In a similar vein to CMD-007, the pilot is ultimately responsible for the safety of the flight and should have the capability to intervene (if necessary). To prevent a command tug-of-war, there should be logic within the functionality of command function that upon pilot intervention, the automated manoeuvre capability is disabled.
CMD-009	The latency (average, 95%) of the Command Function when initiating an avoidance command shall be established. For human commanded manoeuvres, a pilot response model shall be used.	This is a further decomposition of the timing requirement in AAT-012. Additionally, the knowledge of the average latency can be used as part of fault detection
CMD-010	The functionality of the Command Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the Command Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in surveillance only mode, then the Command Function may be "disabled", or its outputs suppressed, as only the track data would be provided to the RPIC.
2.8 Execute Function Requirements		
EXC-001	The Execute Function shall have adequate functionality to ensure the AAT function meets the logic risk ratio and meets the DAA objectives (CR-002). This should include: • receiving manoeuvre commands • executing manoeuvre commands	High level requirement for the Execute Function, ensuring there is traceability from AAT-001 and AAT-011.
EXC-002	The Execute Function shall execute all manoeuvres from the Command Function.	Basic requirement to ensure the execute function completes commanded manoeuvres.

Req. ID	Requirement Text	Rationale
EXC-003	The time taken (average, worst case reversal) to reestablish well clear shall be established. (Execute an alert to the operator and suggest an Avoidance manoeuvre)	This is a further decomposition of the timing requirement in AAT-010. Additionally, the knowledge of the average latency can be used as part of fault detection.
2.9 Convey Function (Inter-Function) Requirements		
CVY-001	The Convey Function shall have adequate functionality to ensure all relevant information is passed between UAS functions, and to the remote crew in a timely manner.	High level requirement for the Convey Function. Ensuring that the functionality required by AAT-001 and AAT-011 is traceable to the function itself.
CVY-002	The Convey Function shall convey information from the Detect Function (intruders of interest/non-interest, position, and velocity information) to relevant functions.	Each of these lower-level requirements provides a further breakdown of CVY-001 to address each Inter-Function interface individually
CVY-003	The Convey Function shall convey information from the Track Function (intruders of interest/non-interest) to relevant functions.	Each of these lower-level requirements provides a further breakdown of CVY-001 to address each Inter-Function interface individually
CVY-004	The Convey Function shall convey information from the Decide Function (alerts, manoeuvre guidance and options based upon prioritisation) to relevant functions.	Each of these lower-level requirements provides a further breakdown of CVY-001 to address each Inter-Function interface individually
CVY-005	The Convey Function shall convey DAA system health information (loss of function, manoeuvrability) to relevant functions and the remote pilot (or automated functions).	Each of these lower-level requirements provides a further breakdown of CVY-001 to address each Inter-Function interface individually
CVY-006	The Ownship's position and velocity estimate (including uncertainty), and the time at which the estimate was valid, shall be provided to relevant functions.	Each of these lower-level requirements provides a further breakdown of CVY-001 to address each Inter-Function interface individually
CVY-007	The information, formats, and timing of information between the detect, track, decide, command, execute, monitor, and contain functions shall be established to ensure appropriate interfacing between functions.	Data interfaces between functions must be assured to be interoperable, in order to prevent internal errors leading to unintended, and potentially unsafe behaviour of the system.

Req. ID	Requirement Text	Rationale
CVY-008	The time taken (average, 95%) to convey information between functions shall be established.	This is a further decomposition of the timing requirement in AAT-012. Additionally, the knowledge of the average latency can be used as part of fault detection.
CVY-009	The functionality of the Convey Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the Convey Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in isolated mode, then the Convey Function may be "disabled".
2.10 Convey Function (User Interface) Requirements		
UI-001	The DAA User Interface (UI) shall display relevant information to the Remote Crew in a way that does not cause confusion or reduce the crew's situational awareness. This shall occur in a timely manner.	Initial functional requirement for the User Interface.
UI-002	The symbology used for all information presented to the remote crew shall be clear and unambiguous.	Across all possible sets of information provided to the remote crew, it should be clear what each piece of information is. This requires that there is some definition of the symbology used within the UI Function.
UI-003	The DAA UI shall provide the remote pilot with intruder tracks.	The purpose of a DAA system is to allow the remote crew to be informed of the airspace situation immediately around the Ownship such that they can make the best decision to ensure the safety of flight. A clear part of this information are the intruder tracks.
UI-004	The DAA UI shall provide visual indicators allowing intruders of interest to be clearly differentiated from intruders of non-interest.	Because of the inherent sensitivity requirements of the detector, intruders of non-interest will be detected. These should be clearly tagged to ensure the remote crew understand the relative importance of all intruders on the display.
UI-005	The DAA UI shall provide clear indication of the position and heading of the Ownship.	The positions and tracks of intruders only makes sense when placed in relation to the Ownship's position and heading. This information should be clearly available to the remote crew to orient their internal airspace picture.

Req. ID	Requirement Text	Rationale
UI-006	The DAA UI shall display intruders to an appropriate minimum range.	Requirement to ensure the intruders are continually displayed until they reach some minimum range.
UI-007	The DAA UI shall display intruders to an appropriate maximum range.	Requirement to ensure the intruders are continually displayed from some maximum range (i.e. the declaration range).
UI-008	The DAA UI shall display relevant alerts (and their priority). This may be a combination of visual and aural alerts.	Key aspect of the AAT function is to provide alerts to the remote crew. The type and priority of these alerts should also be clear to the remote crew. This requirement ensures this information is provided.
UI-009	The DAA UI shall display manoeuvre guidance instructions associated with relevant alerts (and their priority). This may be in the form of manoeuvre bands.	Alongside the provision of alerts as part of the AAT function is the provision of manoeuvre guidance for those alerts (if applicable). This requirement ensures that manoeuvre guidance is provided to the remote crew.
UI-010	The DAA UI may display the location of adverse environmental conditions.	As an optional detect and track functionality for adverse environmental conditions, this information can be provided to the remote pilot such that they can maintain VMC.
UI-011	The DAA UI shall clearly display relevant Ownship state information. This may include historical as well as current information.	Alongside the AAT Core Function requirements, it is critical that the remote crew has an understanding of the state of the Ownship.
UI-012	The Ownship information relevant to the AAT Function presented to the remote crew shall be established.	This requirement ensures that the information from the Ownship necessary to complete the AAT function successfully (including knowledge of failed states/functions) is defined.
UI-013	The DAA UI shall clearly provide information on the current operational mode of the DAA function.	The current operational mode of the AAT Function (aligned with the modes defined in AAT-002) at any point in time is critical information for the remote crew.

Req. ID	Requirement Text	Rationale
UI-014	The DAA UI shall clearly indicate the current health of the AAT Function. The health state as provided to the UI function by IFM-004, CON-004, and PFT-005 via the Convey Function.	A higher level requirement to capture the ability of the UI to provide AAT function health information as defined as part of the supporting AAT Function: • In flight failures detected by the in-flight monitor. • Pre-flight test failures from the pre-flight test system. Loss of containment as detected by the CON function.
UI-015	The DAA UI shall show clear indication of loss of DAA function. This may include the loss of the detect, track, and/or alerting functions.	Derivative of UI-014, any loss of the AAT Function should be clearly articulated to the remote crew, as this will allow the remote pilot to transition the AAT Function to the correct operational mode (i.e. isolate mode) and begin the relevant contingency procedures.
UI-016	The DAA UI shall show clear indication of a loss of containment of the AAT Function (as per the CON Function).	Derivative of UI-014, any loss of containment of the AAT Function should be clearly articulated to the remote crew, as this will allow the remote pilot to transition the AAT Function to the correct operational mode (i.e. isolate mode) and begin the relevant contingency procedures.
UI-017	The DAA UI shall provide clear indication of the result of pre-flight functional tests to the remote pilot.	Derivative of UI-014, any failure of the AAT Function to pass the pre-flight test should be clearly articulated to the remote crew, as this will allow the remote pilot to prevent the commencement of flight.
UI-018	In the case of automated manoeuvres, the UI shall clearly inform the remote pilot aurally and visually that the AAT Function is undertaking an automated manoeuvre.	If automated manoeuvres are possible, it is paramount that any manoeuvre made is immediately indicated to the remote crew, in particular the remote pilot as the person responsible for the safety of the operation.
UI-019	In the case that an automated manoeuvre has been undertaken, the intended flight path under automated manoeuvre shall be clearly articulated to the remote pilot.	To give further situational awareness to the remote crew during an automated manoeuvre, it should be clear what the intended automated flight path is. This requirement ensures this information is provided to the remote crew.

Req. ID	Requirement Text	Rationale
UI-020	The DAA UI may display visual feed of the EO/IR sensor.	An optional requirement. It may be beneficial to provide the remote crew with a visual feed from the EO/IR sensor, particularly if detected tracks can be highlighted relative to the Ownship's heading.
UI-021	The DAA UI shall provide all relevant information to the pilot in a timely manner.	High level requirement to ensure there is some consideration of the timing of information provided to the remote crew such that they can make reasonable decisions in a reasonable amount of time.
UI-022	The time (average, 95%) taken for the UI to display information shall be established.	Derivative of AAT-012, ensuring that the latency to associated with the UI function is captured as part of the overall timing of the AAT Function
UI-023	The functionality of the User Interface Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the UI Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in isolated mode, then the UI Function may be "disabled".
2.11 In Flight Monitor Function Requirements		
IFM-001	The In-Flight Monitor Function shall be able to detect a loss of function (in flight) of the following Core AAT Functions: • Detect, • Track, • Decide, • Command, • Execute, • Convey, And the following supporting AAT functions: • AAT Containment. • In Flight Monitor. And notify the RPIC via the Convey Function such that contingency procedures can be initiated to safely return the flight to normal or to end flight.	Initial requirement to provide traceability from AAT-015.

Req. ID	Requirement Text	Rationale
IFM-002	For the following Core AAT Functions: • Detect, • Track, • Decide, • Command, • Execute, • Convey, And the following supporting AAT functions: • AAT Containment • In Flight Monitor The criteria to establish whether these functions are non-functional shall be established. • If there are multiple degraded, non-functional states, these shall be uniquely identified.	Follows directly from IFM-001, in order to detect a loss of function, the criteria for a loss of function across the core AAT Functions, the AAT Containment Function, and the In Flight Monitor Function shall be defined. Note that the Pre-Flight Test Function is not included here as it does not operate in flight (and PFT-007 ensures the PFT Function can be interrupted if it does indeed come on in flight).
IFM-003	The means by which the In-Flight Test Function measures the health of the Core AAT Functions and AAT Containment Functions shall be established.	Alongside criteria for what is considered functional across the AAT Functions, the means by which this criterion is inferred needs to be defined. This may be through data directly from the functions (i.e. checksums), or by some external sensor that measures data that allows the inference of functionality.
IFM-004	The IFM Function shall provide the Convey Function with the relevant health information for the RPIC.	Critical piece to ensure the health status of the AAT Function is provided to the RPIC via the Convey Function.
IFM-005	The functionality of the IFM Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the IFM Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in nominal mode, then the IFM Function is active.
2.12 Containment Function Requirements		
CON-001	The Containment Function shall ensure that the DAA system only functions within the intended operating environment.	Top level requirement for the Containment Function. Provides traceability to subsequent requirements.

Req. ID	Requirement Text	Rationale
CON-002	The operational environment for the Containment Function to ensure operation within the intended operating shall be established across all operating modes.	To be able to define the criteria by which the Containment Function makes a determination that the AAT Function is operating outside of the intended operating environment, this needs to be well defined.
CON-003	The criteria used to determine if the AAT Function is operating within the intended operating environment shall be defined	This requirement differs from CON-002 by requiring the specific measurable criteria that will allow the inference of the operating environment an whether the Containment Function is required to take action.
CON-004	The Containment Function shall provide relevant information to the Convey Function to display to the RPIC	This requirement ensures that there is some functionality to provide relevant information (in this case the current "operational environment" state of the operation), such that the RPIC can monitor and make the appropriate decision.
CON-005	Criteria for the enactment of the containment function in cases where the act of undertaking an avoidance manoeuvre would cause an automated containment functionality to prevent the use of the AAT function shall be defined.	To prevent unwanted functionality, the priority of manoeuvres and containment when in conflict must be defined and criteria established.
CON-006	The functionality of the AAT Containment Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the AAT Containment Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in nominal mode, then the AAT Containment Function is active.
2.13 Pre-Flight Test Function Requirements		
PFT-001	The Pre-Flight Test function shall include functional pre-flight tests on DAA subsystems to ascertain the health of each subsystem (including the In-Flight Monitor and Containment Function) before flight.	Top level requirement to capture the pre-flight test requirements.
PFT-002	The functional tests undertaken, and the functions tested during the functional pre-flight test shall be established.	This requirement ensures that the pre-flight tests undertaken are well defined, and their effect on various functions (as well as what is not effected) is defined.

Req. ID	Requirement Text	Rationale
PFT-003	The calibrated test data used as part of the pre-flight test shall be established.	In order to have a pre-flight test, the actual simulated data injected into the system during the pre-flight test needs to be defined.
PFT-004	The pass/fail criteria for the functional pre-flight test shall be established.	In order to make sense of the pre-flight test function, pass/fail criteria against all relevant test data needs to be established, such that the system can provide this data to the RPIC upon completion of the test.
PFT-005	There shall be a clear and unambiguous indication to the flight crew that the pre-flight test has completed, and the system has passed or failed the test. This should include a partially complete test being considered not successful.	At the end of the functional test, there should be a clear go/no-go result for the flight crew to make the decision to commence flight or to cancel the flight. A non-complete test (even if all the test points up to the point of cancellation are successfully passed) should be considered a non-successful test.
PFT-006	The functionality of the Pre-Flight Test Function whilst the AAT Function is in each operating mode shall be established.	Under each operating mode, the functionality of the Pre-Flight Test Function may be different, depending on the software implemented. These modal functionalities need to be defined. For example, if the system is in nominal mode, then the Pre-Flight Test Function is “disabled”.
PFT-007	There shall be a means for the pilot to interrupt the pre-flight test function at any point and move the system to any other mode safely.	To prevent any unusual circumstances where the pre-flight test mode is engaged during flight (or on the ground), needs to be interrupted, but there is no interruption capability, the ability to the pilot to interrupt the test, and transition the system to another mode safely needs to be included.
2.14 Records and logging Requirements		
REC-001	The AAT function shall be able to record and log information and data on: • all encounters that occur during operation, and • any incidents, functional failures, anomalies that occur during operation relevant to the DAA system.	This is the initial parent requirements that ensures the DAA system includes record and log information.

Req. ID	Requirement Text	Rationale
REC-002	The AAT function shall be able to log data relevant to all detected intruders during a typical operation.	This requirement ensures that all relevant data as part of any encounter throughout a typical operating is captured.
REC-003	The AAT function shall be able to log system information relevant to any functional failures, incidents, or anomalies that affect the systems that make up the AAT function.	Further to the intruder data, fault and failure data is critical to ensuring continuing airworthiness and to measure the expected in-flight reliability against the estimated design reliability.
2.15 Environmental Qualification Requirements		
ENV-001	The DAA system shall be designed and verified for the intended operating environment.	This is the parent requirement for all environmental requirements. The functional design and safety requirements are based on the assumption that they function within the intended operating environment, this requirement ensures that this must be designed for, and verified. In order for this requirement to be met, the design and verification should take into consideration: • The physical environment all the systems involved in the AAT function within. • The possible encounter geometries, and the clutter and background environment the sensor will likely encounter during operation. • The potential interference and effects between the Ownship subsystems.
ENV-002	The physical operational environment (i.e., temperature, pressure, humidity, vibration) that the hardware/software involved in the AAT function is intended to operate within shall be defined and the systems qualified for use in that environment.	The first consideration is the capacity for the systems to endure the intended operational environments effect on the AAT function. The definition is required for both verifying the demonstration of resilience is valid, and to ensure this information is propagated through to the remote pilot.
ENV-003	The environmental conditions for safe operation of the DAA system shall be defined and included in the aircraft's flight manual (or equivalent).	To ensure a remote pilot is able to adhere to any environmental limits, and to plan flights, environmental limits must be included as a supplement to the aircraft's flight manual (or equivalent).

Req. ID	Requirement Text	Rationale
ENV-004	Verification and validation of the DAA system's ability to detect and track intruders shall adequately cover the intended operational environment.	The key external information that the AAT function is attempting to ingest accurately is intruder track data. The previous requirements (ENV-002, ENV-003) are focused on traditional environmental qualification. Because of the unique breadth and variability in the particular sense environment (which may not have a direct, adverse effect on the system function like pressure or temperature do) it is critical that the capacity of the sensor suite to detect intruders (cooperative and non-cooperative) is demonstrated across this environment. This requirement provides a traceable link to the specific requirements ENV-005 and ENV-006.
ENV-005	The encounter set used for simulation and verification and validation of the DAA system's ability to detect and track intruders shall adequately cover the expected encounters during operation.	The first key sense environment variable is the encounter set (i.e., all possible encounter aircraft types, speeds, geometries). Any testing suite must adequately cover the potential encounter environment to demonstrate generalisability of any algorithms across this encounter set.
ENV-006	Verification and validation of the DAA system's ability to detect and track intruders of interest shall adequately cover the expected intruder of interest characteristics across the intended operational environment.	In addition to the encounter sets in ENV-005, the capability of the detector to handle the characteristics of the intruder types across the encounter set need to be demonstrated.
ENV-007	The environmental clutter and background for detectors (visual, RF etc.) used for simulation and verification of the DAA system's ability to detect and track intruders shall adequately cover the expected environment during operation.	Particularly for passive sensors like EO/IR detectors, being able to handle all possible variations in clutter (sense information in the same region as potential intruders that could lead to poorer performance) and background (the sense information of the reference or background scene from which intruders or clutter is differentiated). This requirement ensures that these two key variables are covered, and acceptable performance of the sensors is verified.

Req. ID	Requirement Text	Rationale
ENV-008	The DAA system shall not have an adverse effect on the functionality of any UAS systems.	From the perspective of the DAA system (i.e., the additional hardware and software added to the UAS to provide AAT functionality not inherent to the UAS), the UAS itself is a potential source of external interference and hazard. This requirement ensures that the integration between the UAS and DAA system preserves the functioning of the UAS.
ENV-009	The UAS system shall not have an adverse effect on the functionality of the DAA system.	This is the corollary requirement to ENV-007, to ensure that the integration between the UAS and DAA system preserves the functioning of the DAA system.
2.16 Procedures and Personnel Requirements		
PAP-001	Human errors that can affect the system risk ratio shall be minimised to an acceptable level.	This is the parent requirements that ensures that procedures and personnel controls are included as part of the mitigations
PAP-002	Suitable operational procedures for the use of the DAA system in all nominal and off-nominal situations shall be defined.	In order to ensure remote pilots can manage the DAA system in all nominal and off-nominal states and modes, operational procedures must be developed across all these states and modes
PAP-003	Operational procedures shall include at least: • Pre- and post-flight inspections, • Procedures to cope with unintended adverse operating conditions (e.g., precipitation exceeds allowable operational limits for DAA system), • Normal use of DAA system procedures, • Contingency procedures for DAA system (to cope with abnormal situations), • Emergency procedures (to cope with emergency situations).	This requirement further refines what the operational procedures should include. Heavily influenced by JARUS procedures recommendations.
PAP-004	The adequacy of the Contingency and Emergency procedures shall be demonstrated effective with positive results	Because it can be difficult to analyse the effectiveness of procedures, this requirement ensures that the procedures are demonstrated effective (simulated or flight test).

Req. ID	Requirement Text	Rationale
PAP-005	The UAS-crew user interfaces (UIs) shall be clearly and succinctly presented and shall not confuse, cause unreasonable fatigue, or contribute to remote crew error that could adversely affect the system risk ratio.	The interface between the remote pilot and the UAS/DAA systems is a significant cause of human error. This requirement ensures the minimisation of: • Misinterpretation of DAA information by the remote pilot, • Increased workload and stress on the remote pilot leading to errors or lapses, • Overly confusing or redundant information leading to omission of procedures
PAP-006	The flight crew involved in safety critical operation of the UAS or DAA system used during the avoid traffic function shall be appropriately trained, qualified, and competent to operate the DAA equipped UAS.	This requirement ensures that the appropriate training and qualification of remote pilots who use the DAA system.
2.17 Continuing Airworthiness and Maintenance Requirements		
CAM-001	Continuing airworthiness of the UAS and DAA system shall ensure the ongoing airworthiness of the UAS and DAA system.	Parent requirement to ensure that continuing airworthiness controls are captured.
CAM-002	If necessary, a maintenance schedule shall be developed that ensures the systems that make up the AAT function continue to be airworthy.	This requirement drives the continuing airworthiness management of the DAA system, by requiring a maintenance schedule is developed if necessary.
CAM-003	Any maintenance processes that need to be undertaken shall be defined.	This requirement ensures any maintenance instructions (including defect rectification, troubleshooting) are defined.
CAM-004	Personnel responsible for certifying that maintenance has been completed in accordance with applicable instructions, and responsible for releasing the aircraft will be appropriately competent to complete this task	The last element, ensuring that continuing airworthiness processes are undertaken correctly and are certified by an appropriate person before release to service.
2.18 Configuration Control Requirements		
CFG-001	The configuration control of software and hardware shall meet appropriate standards to ensure only approved configurations are operated.	This requirement ensures that configuration management is included as a control for all hardware and software involved in the AAT function.

Req. ID	Requirement Text	Rationale
CFG-002	All systems involved in the AAT function shall be manufactured to ensure conformity of the manufactured items to the design at a level commensurate with the risk of the part not being conformant.	To ensure that the physical hardware and software manufactured conforms with the approved design, this requirement is required.