



Protector TAA

Airspace Access Strategy Brief



Protector RASM
Airspace Access Strategy Brief - 7th Feb 2017

Terminology, Context and Incremental Approach

Within the Protector CQ programme the following terms are used related to “Airspace Integration”:

- FISAS (Flight In Segregated AirSpace)
- FINAS (Flight Into Non-segregated AirSpace)

• FINAS capability stages are then considered in line with the following ICAO/CAA/EUROCONTROL/FAA recognised airspace access regulatory stages:

- **Accommodation** (Initial operations under authority restriction, mostly in segregated airspace)
- **Initial Integration** (Alleviation of most restrictions/limitations through harmonized regulations and mature technologies)
- **Final Integration** or “Evolution” (Complete integration into European civil aviation system, allowing unfettered access to airspace)

Noting that:

- Protector capability is limited within IOC timescales.
- Necessary regulations and standards are still in development.
- Protector Cert./Qual. (CQ) management is through FINAS CQ Interface Panels, held at GA-ASI, Poway.

Operational Capabilities/Outcomes

Time, Complexity



Accommodation (Restricted MTC at IOC) (MTC for segregated airspace)

- Case-by-case basis
- OAT IFR en-route flight in UK class A-C airspace, separated from manned flights.
- Terminal Access to specified military ATZ only. Minimizes exposure beyond A-C airspace.
- Minimum exposure OAT transit through pre-defined class G airspace between RAF Waddington and class A-C airspace (NOTAM publicised).
Note: CAP 722 equivalence provided by SoS for S&A subject to Operational Safety Case.
- Contingency procedures pre-agreed and predictable, according to certification limitations.

CQ programme limited to class A-C operation



Integration (Initial) (Full MTC at FOC – Class A-G)

- **Routine flight**
- OAT IFR flight in UK airspace without geographic/route restrictions, separated from other flights by ATS (in class A-C airspace) and onboard D&A (in class D-G airspace).
Note: Based on performance requirements, some areas will still be off limit, such as major airports and Terminal Airspace and some bottlenecks for all airspace users.
- OAT IFR cross-border flight within European airspace through pre-defined NATO transit routes with routine Dip Clearances.
- OAT IFR flight in global airspace routes with Diplomatic Clearances.

CQ programme covers full operations

Note: Final Integration allowing VFR-like operations and civil regulatory compliance, which allows “unfettered access”, does not apply to Protector at this time.

Acronyms:

OAT: Operational Air Traffic

GAT: General Air Traffic

Configurations

Time, Complexity



Accommodation (Restricted MTC)

- Basic CNS/ATM equipage, composing:
 - D&A "Bridge" solution: TCAS II v7.1, Mode S (ELS), ADS-B (1090 ES).
 - "Off-Route Service" compliant C2 Link (limited to BRLOS).
- Limited D&A "Bridge" System, designed/certified with limitations:
 - Collision Avoidance function only against cooperative traffic.
 - Only single EO/IR cameras are designed/certified for taxi operations only.

CQ programme limited to class A-C operation



Integration (Initial) (Full MTC)

- Advanced CNS/ATM equipage, composing:
 - D&A Enhanced "Bridge"
 - D&A 'bridge' solution: TCAS II + TSO-Certified D&A System (incl TSO-certified DRR).
 - "Route-Service" compliant C2 Link for both RLOS and BRLOS (incl. TSO'd equipment, with option to switch between best link for specific airspace usage).
- Full D&A system, designed and certified without limitations:
 - Collision Avoidance function against coop. & non-coop traffic.
 - Note: 2024 determined by regulations, standards, equipment availability and approvals.

CQ programme covers full operations

Note: Final Integration allowing VFR-like operations and civil regulatory compliance, which allows "unfettered access", does not apply to Protector at this time.

Processes and Methodologies

Time, Complexity



Accommodation (Restricted MTC)

- Certification that RPAS is airworthy against applicable requirements. Full compliance to Special Conditions F-25/O-01, and AEP 4761 USARs 1301/1309 for IFR flight in class A-C airspace only.
- **C2 Link and D&A capabilities cannot be assured by TC, due to lack of standards, hence Restricted TC.**
- Operational Approval for limited FINAS based on Safety Case approach (outside MTC).
- Approved by UK MAA; Recognised by UK CAA.



Integration (Initial) (Full MTC)

- Operational Approval based on Certified equipment fully complying to RPAS certification standards for D&A and C2 Link. (e.g. NATO S&A requirements, and RTCA/EUROCAE TSOs/ETSOs)
- Output of Protector CQ programme (FINAS CQ Panel) leading to full compliance with certification requirements (Special Conditions F-25/O-01, USAR 1301/1309) for IFR flight in class A-G airspace. To be developed in parallel to ICAO SARPs development.
- Operational Approval based fully on MTC.

Note: Final Integration allowing VFR-like operations and civil regulatory compliance, which allows “unfettered access”, does not apply to Protector at this time.

CQ programme limited to class A-C operation

CQ programme covers full operations

“Final Integration” (Currently out of Scope to Protector)



Capabilities & Outcomes:

“Seamless” flight with no efficiency impacts for routine flights.

- GAT flight within global airspace in compliance to ICAO Annexes and regional regulatory implementations. (“Seamless” Integration)
- Cross-border flight based only upon “File and Fly” principle.
- “Unfettered” access to all airspace.
- Managed the same as any other (manned) aircraft, i.e. VFR-like operations with delegated separation.
- **Note:** It is also likely that manned aircraft will be required to fit new CNS equipment.



Configuration:

TBD, as required to comply with:

- Operating experience from above phases;
- Requirements for civil certification, outside military TCB;
- ICAO ASBU requirements; and
- US/European/Asian “NextGen” ATM requirements.
- **Note:** Integration of ACAS Xu for D&A and civil (5030-5091 MHz) spectrum for C2 Link are two examples.



Processes and Methodologies:

- Certification against validated civil standards for D&A and C2 Link.
- Operational approval based on integration of certified equipment for Full/Open FINAS will require new MTC.
- Fully assured critical enablers (D&A, C2 link)
- Within through-life equipment programme, review developed civil/Intl. CNS requirements to maintain full freedom of flight in international airspace.