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STUDY ON HIGHER AIRSPACE OPERATIONS (HAO)

Higher Airspace Operations (HAO) are emerging as a strategic domain for European armed forces. This study supported the European Defence Agency (EDA) in ensuring that military requirements are fully identified, understood, and effectively integrated into ongoing European HAO framework developments. Anticipating these requirements is essential to avoid future operational constraints and to safeguard Europe's strategic interests and freedom of action in Higher Airspace (HA).

A rapidly evolving domain

Over the past decade, developments in Higher Airspace Operations (HAO) have accelerated significantly both at national and European levels. Building on preparatory work initiated in 2018, the European Commission proposed an **HAO Roadmap** in March 2023 and tasked the European Union Aviation Safety Agency (EASA) with developing a regulatory framework for this new operational domain. In parallel, EASA has initiated a range of supporting studies and preparatory actions.

Against this predominantly civilian-driven momentum, a clear need has emerged to **better define and systematically integrate the military and civil–military dimensions** within the HAO domain.

Key military considerations

From a military perspective, several key considerations arise:

- **Sovereignty:** ensuring the ability to monitor, protect and control national airspace up to its upper limits.
- **Operational advantage:** leveraging advanced capabilities (e.g. HAPS, enhanced sensing, persistent surveillance) to maintain an operational and strategic edge.
- **Civil-military cooperation:** enabling effective control of and coordination with civilian and commercial actors operating in Higher Airspace.

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Strategic relevance for defence

Emerging capabilities, including High-Altitude Platform Systems (HAPS), stratospheric balloons, and hypersonic systems, offer new possibilities for **intelligence gathering, communication, and operational flexibility,** often at lower cost than space-based assets. At the same time, these capabilities also create new vulnerabilities if exploited by adversaries or other non-cooperative actors.

Study purpose

This study supports the EDA and its Member States in developing a coherent approach to HAOs, **ensuring that military requirements are effectively reflected in the evolving European framework**. It pursues three main objectives:

1. Identify and analyse military requirements, challenges, and opportunities related to HAO
2. Examine common operational baselines, Air Traffic Management (ATM) dependencies and associated governance prerequisites
3. Develop actionable recommendations to support decision-making at EU and national level.

Key outcomes

The study was conducted in three main phases:

- **Strategic landscape and military stakes:** This phase provided a comprehensive overview of ongoing civilian and military developments in Higher Airspace and clarified the associated military stakes. Initial **military requirements** and key challenges were identified, including surveillance, interception, governance, and regulatory aspects, as well as implications for European strategic autonomy and industrial competitiveness.

- **Scenario and dependency analysis:** Building on the landscape assessment, four representative operational scenarios were analysed in depth, selected for their maturity and operational relevance. This approach enabled the identification of common operational baselines, key dependencies, particularly related to Air Traffic Management (ATM), and associated governance requirements. In addition, **four prospective governance models** for HAO were developed, reflecting different allocations of roles and responsibilities between civil and military actors and different approaches to European-level coordination.

- **Recommendations:** The final phase consolidated the findings into a coherent and sequenced set of recommendations addressed to EDA, EU institutions, and Member States. These are structured along **four strategic axes:**
    1. Assured military access to and control of Higher Airspace
    2. Safe, interoperable, and resilient HAO
    3. Coherent European governance and an effective civil–military interface
    4. A competitive European HAO technological and industrial base.

Looking ahead

The study positions the European Defence Agency (EDA) and its participating Member States **to engage proactively in the rapidly evolving Higher Airspace domain and to shape it in line with European defence and strategic autonomy objectives**. It provides a structured basis to inform future policy development, capability planning, and cooperation at both EU and national levels.

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