Above and Beyond: A Roadmap for the Military Airworthiness Certification for Hybrid Air Vehicles

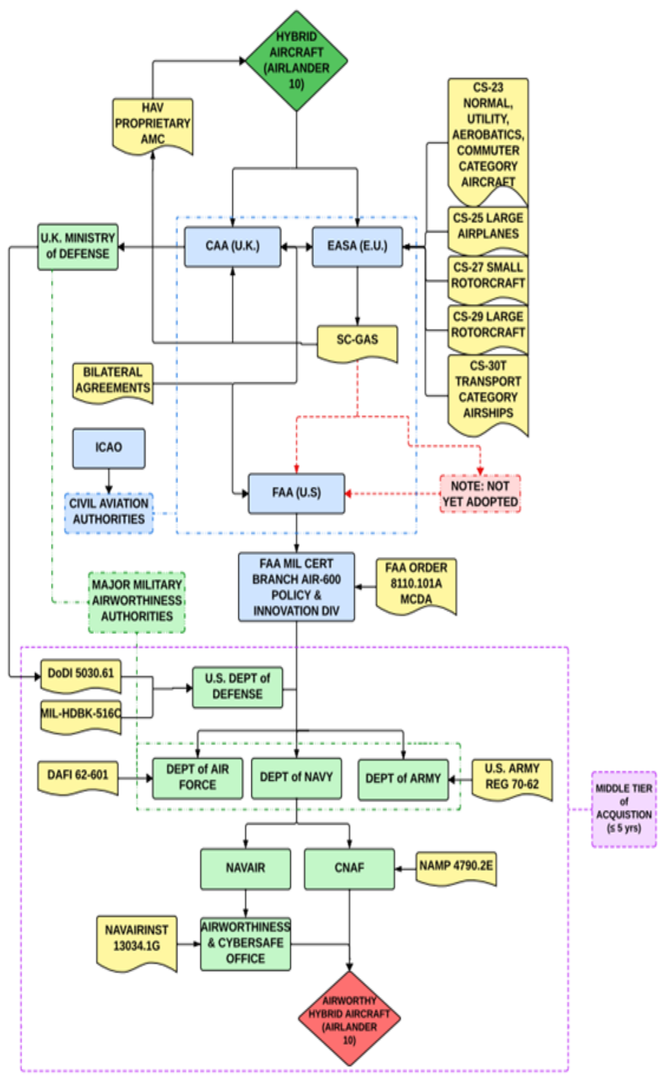
Naval Postgraduate School

Abstract

This research evaluates and develops a roadmap for the USN's airworthiness certification (flight clearance) process for hybrid air vehicles, utilizing the HAV Airlander 10 as a case study. Supporting the USN's Force Design 2045, the DoD's Middle Tier Acquisition process, and Executive Order: Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base, this study explores the airworthiness frameworks of multinational civil and military airworthiness authorities and the feasibility of integrating hybrid air vehicles into the DoD. This research addresses the challenges of aligning military airworthiness standards with civilian certification frameworks, given the Navy's 62-year hiatus from lighter-than-air programs and the complexities of certifying a foreign-developed platform. This study provides critical insights for NAVAIR to navigate the process by analyzing regulatory structures, historical precedents, and future airworthiness technologies, bridging the gap between civil and military organizations while advancing aviation technologies for national security use.

Methods

- Literature Review
- Comparative Analysis
- Process Analytics
- Case Studies



Results & Impact

- Pathway identified for airworthiness certification for a new foreign-manufactured Type Aircraft.
- Acquisition pathway and projected timeline of fleet integration.
- Key differences between civil & military airworthiness certification frameworks identified.
- Contributes to successfully integrating hybrid aircraft into the DoD & DoN.

Future Research

- Exploring airworthiness requirements for remote piloting, unmanned, and autonomous operations.
- Exploring maintenance and operational requirements for a successful squadron standup.
- Exploring engineering differences and systems integration.
- Exploring the use of Airlander 50 for logistics transport.

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Acquisition Research Program ARP

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