Submission: 138

SkyKraft

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Space-enabled Air Traffic Management

Skykraft Response to Potential future expansion of Automatic Dependent Surveillance Broadcast (ADS-B) mandate in Australia Consultation Paper

Introduction

Skykraft welcomes the opportunity to contribute to the Department of Infrastructure, Transport consultation on the potential future of Automatic Dependent Surveillance–Broadcast (ADS-B) mandates in Australia. As an Australian space technology company building and operating a constellation of satellites to provide space-enabled Air Traffic Management (ATM) services, Skykraft is uniquely positioned to address the challenges of surveillance coverage, infrastructure investment, and integration of new entrants such as drones and advanced air mobility (AAM).

Our submission focuses on three key themes:

1. Delivering comprehensive surveillance coverage across the Australian Flight Information Regions (FIRs) without requiring further extensive ground infrastructure;

2. Ensuring the scalability of surveillance to accommodate drones and AAM while preserving the integrity of ADS-B performance; and

3. Supporting alternative approaches such as Universal Access Transceiver (UAT) for low-power platforms to protect the 1090 MHz channel.

National Coverage Without Additional Ground Infrastructure

Australia faces a unique surveillance challenge due to its vast geography, low population density outside major centres, and extensive oceanic FIRs. Whilst ADS-B has already improved surveillance in controlled domestic and en-route environments, gaps remain in remote and oceanic airspace. Traditionally, closing these gaps has required significant investment in additional ground stations, often in challenging terrain or low-utility locations.

Skykraft's space-enabled ATM system offers a more effective solution. A constellation of Australian-built satellites equipped with ADS-B payloads will from 2027 provide seamless surveillance coverage from the ground up across all Australian airspace, including remote, oceanic, and upper airspace environments. This capability reduces or even negates the need for additional terrestrial infrastructure, offering a more efficient, resilient, and cost-effective approach.

The benefits of a space-enabled system extend beyond filling current gaps. It allows Australia to move toward a unified, nationally consistent surveillance capability that does not depend on site-specific ground infrastructure.

Enabling Drone Corridors and Advanced Air Mobility

The aviation environment is rapidly evolving with the expected growth of drones and AAM systems. Integrating these new entrants into controlled and uncontrolled airspace requires reliable surveillance mechanisms that extend beyond the traditional focus on commercial air transport.

Skykraft's constellation is designed to receive all ADS-B signals, including those transmitted by low-power Electronic Conspicuity (EC) transponders. This makes it ideally suited to provide surveillance infill for drone corridors, regional operations, and emerging AAM routes. Space-based reception ensures that these operations can be monitored not just in metropolitan areas, but across regional Australia and in cross-border or oceanic environments.

This capability offers regulator and Airservices Australia a practical pathway to implement drone corridors safely and efficiently, without the need to build dense ground surveillance networks specifically for unmanned traffic. By leveraging Skykraft's space-enabled system, the surveillance requirements for drones and AAM can be integrated seamlessly with those for conventional aviation.

Managing 1090 MHz Congestion Risks

While ADS-B has proven highly effective, its long-term sustainability is challenged by potential congestion in the 1090 MHz channel. The anticipated proliferation of drones and AAM platforms equipped with low-power EC transponders could exacerbate this risk. In high-density environments, the sheer number of transmissions may degrade performance for larger, higher-risk aircraft, potentially undermining the safety and efficiency benefits of ADS-B.

Maintaining reliable ADS-B performance on 1090 MHz for commercial air transport, business aviation, and higher-end general aviation must remain the priority.

Skykraft urges the Department to:

1. recognise, evaluate and proactively address this risk in the mandate framework.
2. consider the impact of any decision over a long-time frame (probably 30+ years).
3. consider the utility of alternative channels for smaller drones and AAM platforms, especially for categories where a large-scale proliferation of platforms is possible.

UAT as an Alternative for Drones and Smaller UUA Platforms

One viable alternative is to mandate the use of low-power Universal Access Transceiver (UAT) for drones and small AAM vehicles. UAT has already been successfully deployed in the United States to support both ADS-B surveillance and broadcast of traffic/weather information to general aviation. By migrating smaller platforms to UAT in Australia, regulators could significantly reduce the risk of 1090 MHz congestion while preserving interoperability and surveillance integrity.

Skykraft's constellation is capable of receiving low-power UAT transponders across the Australian FIRs. These transponders are readily available with weight and power consumption suitable for drones and smaller AAM. This ensures that smaller drones and AAM systems can be fully integrated into the national surveillance picture, without compromising the performance of ADS-B on 1090 MHz for larger aircraft. UAT also offers the potential to carry additional information streams (such as situational data or advisories) that could further enhance safety in drone and AAM operations.

We recommend that the Department explore a dual-channel strategy: preserving 1090 MHz ADS-B for conventional aviation while enabling UAT as the standard for low-power drones and AAM. This approach provides scalability, protects system integrity, and creates a clear regulatory pathway for integrating future traffic growth.

Recommendations

Skykraft recommends that the Department consider the following as part of the ADS-B mandate review:

1. Adoption a performance-based mandate that takes into account the diversity of possible infrastructure implementations (e.g. terrestrial and space-enabled infrastructure), including in consideration of drone corridors and integration of AAM and EC signals.
2. Adoption of a performance-based mandate that takes into account the feasibility of implementation for different airspace users including consideration of allowing devices with lower cost, power and mass on platforms where any additional risk is acceptable.
3. The importance of matching a national ADS-B mandate with national benefit via national surveillance coverage from the ground up.
4. Mitigation of the 1090 MHz channel congestion risk by explicit recognition of the potential impact of large-scale drone and AAM equipage.
5. Development of a dual-channel strategy whereby 1090 MHz ADS-B is reserved

for higher-end aviation, while an alternative channel (such as the 978 channel used for UAT in the United States) becomes the mandated channel for low-power drones and AAM.

6. Ensure regulatory flexibility to allow for evolving technologies, hybrid approaches, and incremental adoption without creating undue burden on smaller operators.

In addition to providing space-enabled ADS-B services, Skykraft will soon launch a space-enabled Very High Frequency (VHF) communications service. This capability will extend VHF coverage across the whole of Australia's airspace, including remote and oceanic regions that are not currently well served by terrestrial VHF infrastructure.

When combined with ADS-B, the space-enabled VHF service will create a powerful integrated surveillance and communications capability. This dual-service model will allow air traffic controllers and pilots to operate with unprecedented situational awareness and real-time communication, even in areas previously considered beyond reliable coverage.

The benefits of this integration include more efficient management of air traffic flows, improved safety outcomes, and significant enhancements to search and rescue operations. For example, an aircraft in distress in a remote region will not only be visible through ADS-B, but also able to communicate directly with controllers via the space-enabled VHF service. This layered capability delivers resilience, redundancy, and faster response times in critical scenarios.

Skykraft believes that incorporating both ADS-B and VHF into a space-enabled ATM architecture provides Australia with a sovereign capability that will deliver long-term safety, efficiency, and environmental benefits to the aviation sector.

Conclusion

Skykraft strongly supports the Department's efforts to ensure that Australia's surveillance framework remains fit-for-purpose in the face of evolving aviation demands. Space-enabled ATM systems provide a unique opportunity for Australia to secure full, sovereign coverage of its airspace, while preparing for the safe integration of drones and AAM. By considering UAT as a complementary channel, regulators can preserve the integrity of ADS-B on 1090 MHz and create a sustainable, scalable surveillance environment for decades to come.

Skykraft looks forward to continued engagement with the Department, CASA, Airservices Australia, and industry stakeholders to deliver these outcomes and ensure that Australia remains at the forefront of global aviation safety and innovation.