Enabling the Future of Air Mobility

High-Assurance Data Services and ATM Automation

Over the next decade, the global airspace system is poised to welcome an increasing number of novel aircraft operations, such as flights by Uncrewed Aircraft Systems (UAS), Electric Vertical Take-Off and Landing (eVTOL) vehicles, and other highly automated aircraft. These innovations will open new markets for aviation, but also bring two major changes to the airspace:
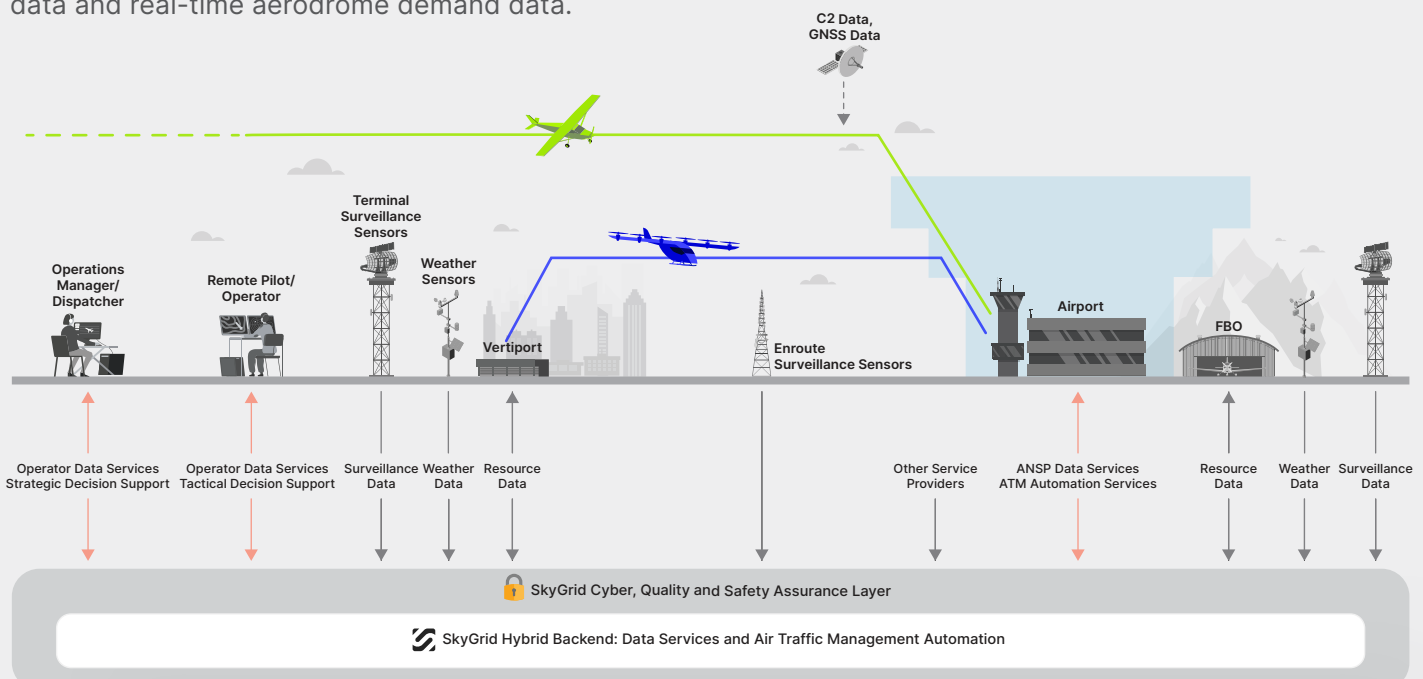
> The integration of uncrewed operations into airspaces currently used by piloted aircraft.
> An increase in both the number and diversity of aircraft operating in already congested airspaces, including high volume traffic at lower altitudes.

To operate effectively in this new environment, airspace users and stakeholders will require access to new **high-assurance**, **ground-based services**. SkyGrid, a Boeing company, is leading the development of these technologies.

Addressing Uncrewed Operations

Uncrewed aircraft will require new high-assurance data services to maintain their situational awareness of the operating environment without a pilot onboard, and to enable automated decision-making by the aircraft system. For example, these aircraft will require reliable traffic surveillance data from a ground system to maintain safe separation from other airspace users.
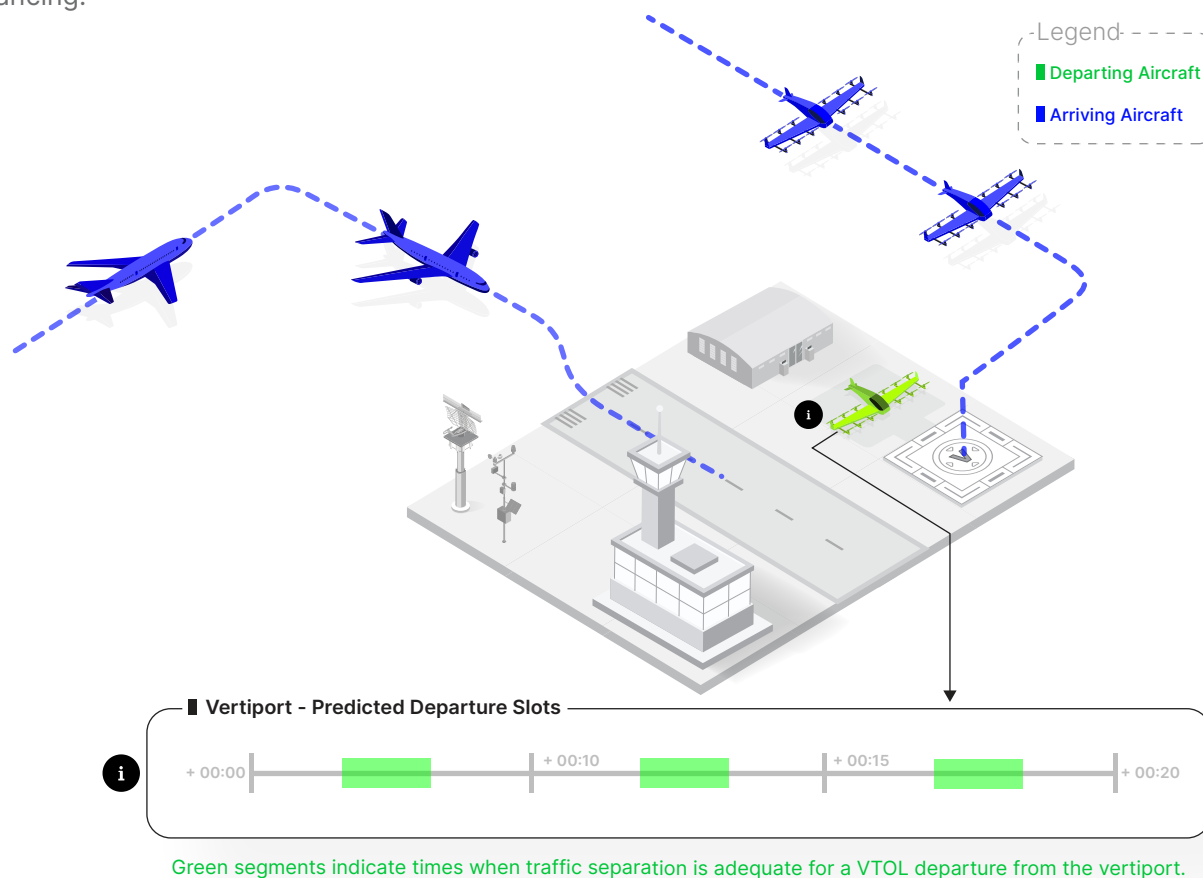
Through its *Ground-Based Traffic Surveillance* service, SkyGrid will augment the existing surveillance services of Air Navigation Service Providers (ANSP) with new high-integrity, low-altitude surveillance data. This data will enable uncrewed aircraft to remain well clear of other traffic even when not receiving separation services from Air Traffic Control (ATC). Other data services being developed by SkyGrid include high-resolution weather data and real-time aerodrome demand data.

Addressing Airspace Congestion

As airspace becomes more crowded and operations more diverse, automated traffic management services will become valuable tools for reducing the workload imposed by new operations on air traffic controllers. For instance, automated traffic management services may be used to reduce the required ATC involvement in routine tasks related to managing new operations, such as flight plan approvals and departure sequencing. In turn, these services may enable a greater number of new operations without compromising the ability of controllers to safely manage existing traffic.

Through its *Traffic Synchronization* service, SkyGrid will advise operators and air traffic controllers of ideal takeoff times for individual flights, bringing greater automation to the task of sequencing departures in airspaces with complex dependent operations and multiple aerodromes. Other Air Traffic Management (ATM) automation tools being developed by SkyGrid include Flight Plan Validation and aerodrome Demand-Capacity Balancing.

Legend
- ■ Departing Aircraft
- ■ Arriving Aircraft

Vertiport - Predicted Departure Slots

+ 00:00   + 00:10   + 00:15   + 00:20

Green segments indicate times when traffic separation is adequate for a VTOL departure from the vertiport.

About SkyGrid

SkyGrid is dedicated to advancing high-assurance technologies that enable safer, more efficient, and more accessible air transportation, while also enhancing scalability for ANSPs. We are committed to working with ANSPs worldwide to both improve their current operations and integrate new ones into their airspace, such as Advanced Air Mobility (AAM). For more information, you may read SkyGrid's full Concept of Operations at www.skygrid.com/conops.

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