Going Airborne: Kent State's Pioneering Leap into Integrated Advanced Air Mobility

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GOING AIRBORNE (USE CASE)

Kent State's Pioneering Leap Into Integrated Advanced Air Mobility

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INTRODUCTION

Kent State University's College of Aeronautics and Engineering is embarking on an ambitious journey to revolutionize educational aeronautics and urban mobility. The initiative aims to bridge the gap between futuristic concepts and current realities by integrating drones and electric Vertical Takeoff and Landing (eVTOL) systems into everyday operations. This is not just a research endeavor but a transformative project that intends to blend academic rigor with the practicalities of advanced aerial mobility.

HYPOTHESIS

The hypothesis driving this research is that the integration of drone and eVTOL technology in the 5-mile expanse between the campus and the airport will not only enhance educational outcomes but also lay the groundwork for the routine use of these advanced vehicles in urban environments. By addressing the technical, navigational, public acceptance, public demand, and safety challenges, the project hypothesizes that these aerial vehicles can become a seamless part of daily life, enhancing connectivity and mobility in the region.

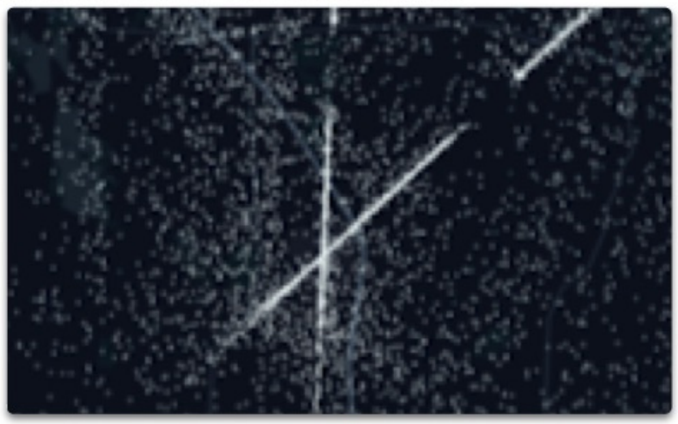
METHODOLOGY & USE CASES

The methodology involves a comprehensive approach to vehicle design, navigation, and safety protocol development. The research spans multiple disciplines, from Aeronautical Engineering to Cybersecurity, ensuring a broad exploration of the potentialities of drone and eVTOL operations. It involves a meticulous examination of weather dynamics, payload capacities, and communication systems to address the multifaceted challenges of aerial integration over the designated area.

Low to High Risk Operations: Our research spans low-risk data collection with drones to high-risk passenger transport with eVTOLs, exploring various use cases and their impact.
Navigating Busy Airspace: Kent State, nestled in Ohio's busiest airspace, serves as a unique testing ground for the "Dark Space Theory," exploring optimal entry corridors for personal mobility vehicles like eVTOLs.

Campus-Airport Connectivity: Imagine a 3-minute flight between campus and the airport, compared to the current 15-45 minute traffic-dependent commute! AAM offers a solution to the region's growing pains, including:

- Parking woes: Bid farewell to campus parking struggles.
- Accessibility issues: AAM offers a convenient option for those with mobility limitations.
- Enhanced student mobility: Attend classes seamlessly, regardless of traffic congestion.
- Coexistence of manned traffic and unmanned vehicles.



CAK Dark Space Analysis

COLLABORATION & INTEGRATION

While the research is in progress, preliminary results indicate a positive trajectory toward achieving the set goals. The exploration has provided valuable insights into the complexities of integrating advanced aerial vehicles into controlled airspace and has begun to test public interest and readiness for this leap in urban mobility. It also aims to identify the resources necessary to support this expansive multi-disciplinary project, from technological to human capital.

Public Acceptance and Integration:
The journey doesn't stop at technology. We understand the importance of public acceptance and demand. Through BVLOS test runs, a dedicated command and control center, and community engagement initiatives, we aim to pave the way for safe and responsible AAM integration.

We're currently conducting a broad research regarding public demand vs. acceptance of technology and how they'll influence the introduction of this new technology.

Collaboration and Talent Development:
We envision partnerships with leading OEMs like Joby and Archer. By introducing students to real-world AAM scenarios and use cases, we aim to develop the talent needed for this burgeoning ecosystem. To start out, we're collaborating with Ohio's very own Event 38 by acquiring an E455 eVTOL drone - the first of many to test use cases and introduce our students to Mission Readiness, Flight Systems, and more!

Kent State's 'The Mighty Thing'; E455 eVTOL Drone

CONCLUSION

The conclusion of the research will reflect on the implications of integrating drones and eVTOLs into everyday life, considering both the advancements in educational aeronautics and the broader societal impact. It will evaluate the success of the project in pushing the boundaries of traditional mobility and the potential for scaling these operations beyond the campus-airport strip. The final assessments will aim to provide a blueprint for safely and effectively introducing these aircraft into national airspace, marking a significant step forward in integrated aerial mobility.