

A Strategic Vision from Parallax Advanced Research for Expanding Air Mobility Ecosystem

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aam

Dec 2, 2024

As the Advanced Air Mobility (AAM) industry moves from the conceptual phase into operational reality, companies like Parallax Advanced Research are at the forefront of ensuring that this next-generation transportation system is both feasible and sustainable. Bob Tanner, executive director of Aerospace Partnerships at Parallax Advanced Research, explains how the company's ongoing work, particularly on the Advanced Air Mobility Elevating Northeast Ohio (AAMEN) project led by The National Center for Defense Manufacturing and Machining (NCDMM) and the Air Force Research Laboratory's Vigilant Spirit® technology, is contributing to the creation of a safe, efficient, and scalable AAM ecosystem. These efforts highlight Parallax's deep-rooted commitment to research and development and a focus on community collaboration to unlock the potential of AAM for a wider audience.



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Building the Foundation: Parallax's Legacy in AAM Research

"For AAM, research is foundational," Tanner said, underscoring Parallax's long history of research with the Department of Defense (DoD) and now its focused application within the commercial civil airspace. "We're moving into an era where operationalizing these technologies is key. We've reached a point where years of testing, safety demonstrations, and security evaluations can be applied in real-time, real-world settings."

The AAMEN Project: Infrastructure for the Future

A cornerstone of Parallax's AAM efforts is the Advanced Air Mobility Elevating Northeast Ohio (AAMEN) project, which is led by The National Center for Defense Manufacturing and Machining (NCDMM) and seeks to establish a deployable, adaptable infrastructure for managing low-altitude airspace operations. Parallax is supporting NCDMM with the development and deployment of mobile units that enable airspace navigation, communication, and monitoring. AAMEN is developing systems that support command and control, data monitoring, and real-time safety assurance. By integrating such infrastructure, Parallax is laying the groundwork for scalable, secure AAM solutions.

"Rather than traditional infrastructure, these mobile units bring services to where they're needed," Tanner said. "Specifically, Vigilant Spirit® allows the command and control of UAS and ensures safety, communication, and navigation. Once validated, this model can scale nationally, opening doors for industry growth."

Beyond Regional Impact to Expanding AAM Nationally

The AAMEN project initially focuses on Ohio, but its implications are nationwide. These deployments are expected to provide critical data to the Federal Aviation Administration (FAA), NASA, and local governments, creating a blueprint for safe, widespread implementation.

"With our test sites in Ohio, we can gather essential data to share with the FAA and other stakeholders, enabling them to create regulations and guidelines based on real-world data," Tanner said. "These mobile units are essentially test beds that allow us to identify challenges and refine solutions before expanding across the country."

The Role of Partnerships and A Collaborative Ecosystem

Partnerships are vital to Parallax's strategy. Institutions such as Kent State University, with its respected air traffic control program, and Sinclair Community College, renowned for hands-on UAS training, are key collaborators. Together, these institutions are educating the next generation of airspace operators, preparing them for the unique demands of low-altitude airspace management.

"This collaboration isn't just about technology," said Tanner. "It's about people and education. We're working with universities to ensure these technologies are understood, managed, and continuously improved upon."

Youngstown Business Incubator (YBI), based in Youngstown, Ohio, is also an important collaborator and is conducting market analysis to help introduce these systems to the public and ensure they align with community needs.

Tackling Industry Challenges and Setting Future Goals

According to Tanner, the most significant challenges in AAM are regulatory development, digital infrastructure, and public acceptance. The FAA is progressing toward regulations for beyond visual line of sight (BVLOS) operations, but approval processes will take time. Developing a seamless digital infrastructure is also important, especially for maintaining connectivity in remote areas. Lastly, public acceptance will be necessary to long-term adoption, as communities must see the practical benefits of AAM before they fully embrace it.

"AAM and UAS will become as useful as cellular communications in the next decade," said Tanner. "These technologies will revolutionize mobility, enhance efficiency across industries, and enable new possibilities for personal and commercial transportation."

Vigilant Spirit®: A New Era in Command and Control

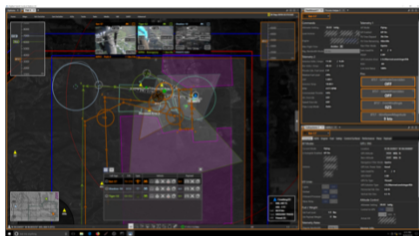


Photo Caption: Vigilant Spirit® command and control dashboard

Parallax UAS engineers and researchers currently lead the development of the Air Force Research Laboratory's Vigilant Spirit® capability, and while Parallax is currently the primary developer of Vigilant Spirit®, others have contributed throughout its development. As a "one-to-many" platform, it allows a single operator to manage multiple UAS, ensuring efficient airspace management while maintaining safety. Vigilant Spirit® is designed to support Department of Defense, specifically U.S. Air Force operations, but it has potential use for state and local governments as they transition to managing AAM as a new level of air traffic.

"As flights increase and traditional aviation integrates with AAM, Vigilant Spirit® could enable efficient oversight and adaptability," Tanner said. "It could be a powerful tool for local governments, enabling them to safely manage a range of vehicles in different airspace settings."

Envisioning a Connected, Adaptable AAM Future

Parallax's work in AAM represents more than technology—it's about creating an ecosystem where research, industry, government, and communities converge. As projects like AAMEN take root and partnerships deepen, Parallax is helping build a robust, sustainable framework for AAM. With continued innovation and collaboration, AAM stands poised to redefine mobility, bringing unparalleled opportunities for efficiency, safety, and community engagement in the years ahead.

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Acknowledgement of Support and Disclaimer

This material is based upon work supported by the United States Air Force under Contract No. FA2394-24-C-B063. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the United States Air Force.

About NCDMM

NCDMM delivers innovative and collaborative manufacturing solutions that enhance our nation's workforce and economic competitiveness. NCDMM has extensive knowledge and depth in commercial and defense manufacturing areas to continually innovate, improve, and advance manufacturing technologies and methodologies. Our experienced team specializes in identifying the needs, players, technologies, and processes to attain optimal solutions for our customers. We connect the dots. That's the NCDMM methodology. NCDMM also manages [America Makes](#), [AMARII](#), [AMIC](#), and [El Paso Makes](#), and is a subsidiary of the Manufacturing Technology Deployment Group, Inc. ([MTDG](#)).

About Parallax Advanced Research and the Ohio Aerospace Institute

Parallax Advanced Research is a 501(c)(3) private nonprofit research institute that tackles global challenges through strategic partnerships with government, industry, and academia. It accelerates innovation, addresses critical global issues, and develops groundbreaking ideas with its partners. With offices in Ohio and Virginia, Parallax aims to deliver new solutions and speed them to market. In 2023, Parallax and the Ohio Aerospace Institute formed a collaborative affiliation to drive innovation and technological advancements in Ohio and for the nation. The Ohio Aerospace Institute plays a pivotal role in advancing the aerospace industry in Ohio and the nation by fostering collaborations between universities, aerospace industries, and government organizations, and managing aerospace research, education, and workforce development projects.



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Parallax is an advanced research institute that tackles global challenges by accelerating innovation and developing technology and solutions through strategic partnerships with government, industry, and academia across Ohio and the Nation. Together with academia, Parallax accelerates innovation that leads to new breakthroughs. Together with the government, Parallax tackles critical global challenges and delivers new solutions. Together with the industry, Parallax develops groundbreaking ideas and speeds them to market.

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