

ADVANCED AIR MOBILITY INTERAGENCY WORKING GROUP

NASA AMES RESEARCH CENTER, MOUNTAIN VIEW, CA
June 28, 2023

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Bottom Line Up Front (BLUF):

Two panels, one focused on industry, airports, and workforce considerations and one focused on community integration and engagement, presented to and took questions from members of the AAM IWG at NASA Ames. There was reasonable alignment among the remarks prepared by each panelist and generally good engagement from the IWG participants. Representatives from FCC, TSA, and FAA were the most involved in the discussion. The IWG acknowledged that there is a need for an implementation plan to underpin the National Strategy document that they have been chartered with producing. While autonomy was mentioned, it was not a major focus of the industry conversation with more time spent on infrastructure and workforce development. The second panel had a community focus and made the distinction between community acceptance and community engagement, with the latter being the necessary focus. Equity considerations and a need for a clear set of public benefits were emphasized.

The afternoon was for government employees only, with industry participants being dismissed after lunch. Overall there was a lot of valuable information provided to the IWG members with them being pushed to support an ambitious timeline that can support industry needs.

Introduction from the AAM IWG website¹:

In October 2022, President Biden signed into law the Advanced Air Mobility Coordination and Leadership Act (the Act) and directed the Secretary of Transportation to establish the Advanced Air Mobility Interagency Working Group (AAM IWG). The purpose of the AAM IWG is to plan for and coordinate efforts to integrate advanced air mobility aircraft into the national airspace system, particularly passenger carrying aircraft, in order to grow new transportation options, amplify economic activity and

¹ <https://www.transportation.gov/mission/office-secretary/office-aviation-and-international-affairs/advanced-air-mobility/advanced>

jobs, advance environmental sustainability and new technologies, and support emergency preparedness and competitiveness.

The AAM IWG is comprised of 22 members from the following Federal departments and agencies:

- Department of Transportation
- Department of State
- Department of Defense
- Department of Justice
- Department of the Interior
- Department of Agriculture
- Department of Commerce
- Department of Labor
- Department of Energy
- Department of Veterans Affairs
- Department of Homeland Security
- National Aeronautics & Space Administration
- Office of Management and Budget
- Council of Economic Advisors
- National Security Council
- Office of Science and Technology Policy
- Office of the National Cyber Director
- Federal Communications Commission
- Department of Education

The AAM IWG will develop a national strategy that includes recommendations regarding the safety, operations, security, infrastructure, air traffic concepts, and other Federal investment or actions necessary to support the evolution of early AAM to higher levels of activity and societal benefit; and a comprehensive plan detailing the roles and responsibilities of each Federal department and agency, and of State, local, and Tribal governments, necessary to facilitate or implement the recommendations developed.

June 28, 2023 Executive Roundtable

The meeting was emceed by Peter Irvine, USDOT Executive Lead for Aviation Policy. Representatives from multiple agencies were present, with the core panel as follows:

AAM IWG Panelists:

- Carlos Monje, AAM IWG Chair, Under Secretary of Transportation for Policy, U.S.DOT
- Carol A. (Annie) Petsonk, Assistant Secretary for Aviation and International Affairs, U.S.DOT
- Jessica Sypniewski, Deputy Assistant Administrator for NextGen, FAA
- Raquel Girvin, Regional Administrator, Western-Pacific Region, FAA
- Meg King, Executive Director of Strategy, Policy Coordinator, and Innovation, TSA
- Edgar Waggoner, Deputy Associate Administrator for Programs, Aeronautics Research Mission Directorate, NASA

There were also many other participants from the FCC and FAA in the room, many of whom were engaged and asking questions as part of the discussion.

Industry Panel

The first panel of the morning was comprised of industry association representatives:

- Peter (Pete) Bunce, President and CEO, GAMA
- Anna Dietrich, Senior Policy Advisor, AUVSI
- Chris Oswald, Senior Vice President for Safety & Regulatory Affairs, ACI-NA
- Curt Castagna, President and Chief Executive Officer, NATA
- Andrew LeBovidge, Executive Vice President, NATCA
- Gary Peterson, Executive Director, Transport Workers Union
- Heidi Williams, Senior Director, Air Traffic Services & Infrastructure, NBAA

Pete Bunce at GAMA emphasized topics across Aircraft Certification, Operations, Pilot Certification, Infrastructure, Airspace, Automation, Security, Research, Workforce and National Strategy. He focused on the need to invest in infrastructure, including repurposing closed shopping malls. Automation was acknowledged as a major focus and area of potential for AAM companies and technology development; his remarks focused more on the early implementation of simplified vehicle operations (SVO) and the integration of technologies that mitigate common causes of accidents. His prepared notes asked that the “DOT and FAA should seek opportunities for real-world data in developing guidance materials, Technical Standards Orders (TSOs) and other resources that establish performance standards and requirements for the implementation of these systems.” He also encouraged the IWG to include hydrogen in their thinking, suggested that jobs in AAM were “exciting” and being filled, and closed with saying that we needed to be looking to being the global leaders in this industry by the 2030’s.

Anna Dietrich from AUVSI emphasized the need for timely leadership and bold action on AAM, including several actionable items from the “Blueprint for Autonomy” that AUVSI published in May. Her full remarks are included at the end of these notes.

Chris Oswald from ACI-NA focused on integration is eVTOL aircraft with existing airport infrastructure and operations. His priority was that new entrants are introduced in a way that does not disrupt or endanger existing airport users or the operation of what is the most complex airspace in the world in the U.S. He was concerned with the security implications of protecting critical infrastructure, funding necessary infrastructure, and the ability of the electrical grid to support electric aircraft operations. “Do no harm” is the guiding philosophy that he wants to see applied to the implementation of AAM.

Curt Castagna from NATA also emphasized the need for integration of AAM into our existing multimodal transportation networks. He mentioned the need to leverage 14 CFR Part 135 operations and lessons learned from that history. Airport integration considerations aligned with the remarks made by C. Oswald and were extended to community integration and zoning considerations around potential new vertiports. He recommended that communities be provided with a guidance document on how to integrate AAM.

Heidi Williams from NBAA emphasized many of the points previously made, including the focus Part 135 operations. She encouraged the group to use the framework that is already in place and to avoid creating a new overly burdensome set of regulations, instead granting exemptions as needed but with

care. Critical next steps she called out include collaboration with industry, funding support for operational and infrastructure engagement and community engagement.

Andrew LeBovidge of NATCA highlighted the need for workforce development and recruiting new professionals and enhancing existing infrastructure to properly integrate AAM. To do the work needed, he called out that long-term stable funding is necessary. Simultaneously, we do have capabilities to integrate AAM now, at least at a “crawl” entry into service level of operations; we don’t need to wait for a new air traffic management system. He also called out that the National Strategy must take into account labor stakeholders.

Gary Peterson of the Transport Workers Union was the last panelist to deliver their prepared remarks. He expressed concern over our ability to fill positions today that will only be exacerbated when AAM creates new workforce demands. Additional concerns focused on how is safety ensured going forward as we take out the human element with autonomy and technology outpaces the training programs currently available and wanted consideration for how today’s education system can handle the advancements that are happening and provide training for these new aircraft. He also noted that infrastructure is not being developed as fast as automation is happening.

Industry Panel Discussion:

The IWG panelists asked about the evolution of air traffic management from UTM to AAM, what data needs to be carries on data communication links, what the TSA can do to support AAM and what we can be doing as a country to address workforce shortages.

Community Panel

The second panel of the morning focused on community engagement:

- Mykel Kochenderfer, Associate Professor, Stanford University
- Avonne Bell, Director of Connected Life, CTIA
- Yolanka Wulff, President, Community Air Mobility Initiative
- Gabriela Juarez, Planner, Los Angeles Department of City Planning
- James Grimley, Executive Director for Advanced Technology Initiatives, Choctaw Nation

Mykel Kochenderfer of Stanford talked about the importance of simulation and studying AAM to validate systems before they are deployed in communities. It is critical to understand any issues as soon as possible and to be able to trust the systems being validated as well as the tools being used to do that validation.

Avonne Bell of CTIA talked about finding the balance between advancing aviation and foundational safety. Communications, and the potential for commercial wireless networks to support both aviation safety and innovation should not be underestimated. It is important to not hinder flexible use spectrum licenses from being able to support new entrants. As the wireless industry looks for ways to support communications and navigation for AAM, there are lessons that can be learned from UAS implementation that can inform AAM.

Yolanka Wulff from CAMI talked about the need to have coordinated conversations with state and local communities where AAM technology will be implemented that include as many stakeholders as possible. While aviation has not traditionally integrated closely with other forms of transportation, for AAM to

reach its true potential, it will need to be coordinated into multi modal transportation systems; many of the other components of these systems are also changing rapidly today, complicating planning processes further. In order to appropriately assess institutional readiness and plan appropriately for AAM, regional planning needs funding support.

Gabriela Juarez from the Los Angeles Department of Transportation echoed many of the points made by Y. Wulff from CAMI. She also emphasized that creating a vocabulary that is uniform for everyone is important for the necessary collaboration to occur. She also talked about how AAM would fit into the landscape of other concerns that the city is currently dealing with – equity, energy and sustainability, and the housing crisis.

James Grimsley of the Choctaw Nation shared how AAM has the potential to replace expensive and inadequate ground transportation infrastructure to provide rural connectivity at a fraction of the cost of maintenance for the existing highway system. He noted that AAM is necessary to get both quality of life and transportation to the levels needed in his community. He also noted that AAM could serve as a bridge between rural and urban areas.

Community Panel Discussion:

Topics covered and questions asked during the discussion with the second session panelist included that there needs to be an understanding as to what the technology will do from a public benefit perspective: is there a benefit that not just outweighs the cons but also justifies the use of limited resources to implement AAM? Funding and a common approach to implementing AAM at the regional and local level are both critical. As a city or local government, the question that is always front of mind is “what problem are you solving?” There needs to be a clear answer to this for AAM. It was asked how are we going to integrate AI? The answers came back to building trust. It was asked how communications are being considered for multimodal integration? The answer must start with looking at the system from the perspective of the traveler.

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Full Remarks: Anna Dietrich, Sr. Policy Advisor, AUVSI

Good morning. I'm Anna Dietrich and I'm here in my capacity as a policy advisor to AUVSI, the Association for Uncrewed Vehicle Systems International, at the request of Brian Wynne, AUVSI President. AUVSI is the world's largest non-profit organization dedicated to the advancement of uncrewed systems, autonomy, and robotics. We represent corporations and professionals from more than 60 countries that are involved in industry, government, and academia in the defense, civil, and commercial industries.

In May we published a "Blueprint for Autonomy," a collaboratively generated document that focuses on five foundational areas of effort - Motivation, Technology, Airworthiness, Operations, and Integration - and details nearly 300 specific actions that need to be accomplished for the autonomous vision of AAM to be realized. The timing for these actions span the immediate to medium term, so these are all things that we as stakeholders can be rolling up our sleeves on now. In that spirit, I applaud the efforts of this group and hope that your timelines can keep up with the pace of innovation and keep our nation's leadership in aviation strong.

Issues of interest to AUVSI's membership relate primarily to the normalization of autonomous operations, including those beyond the visual line of sight of the remote operator, and span the full spectrum of aviation, from small UAS through passenger carrying urban air mobility, to regional cargo operations, and beyond.

Some specific actions taken from the "Blueprint" are:

- legislation to clarify that the 14 CFR 91.113 requirement to "see" and avoid can be satisfied by technology;
- completion and publication of rule language that follows the recommendations of the BVLOS ARC report;
- Continued appropriations for and execution of programs such as AFWERX/Agility Prime and the Advanced Aviation Infrastructure Modernization (AAIM) Act grants to support innovative AAM businesses;
- a unified, bold approach to accounting for the safety benefits and net impact on risk of autonomy in both the certification and operation of autonomous systems as well as in respect to pilot and operator training; and
- a pathway towards a set of flight rules, communications systems, and regulations that allow autonomous aircraft to be safely, seamlessly, and securely integrated with all other users of the national airspace.

This industry can only flourish if we modernize – and automate, as was suggested in the FAA NextGen's "Charting Aviation's Future" paper from September 2022 – the systems that guide our aircraft and manage access to our airspace. VFR corridors and voice-based ATC may serve for entry into service, but we cannot allow it to be the long-term plan. This is admittedly not easy, but this investment will unlock AAM's potential and increase the safety and efficiency of current aviation activities. Now is the time to start building this new system, both physically and from a regulatory perspective.

On the topic of security, AUVSI has built draft industry-led cybersecurity standards from our Trusted Cyber Working Group which could serve as a launching point for government efforts on AAM

cybersecurity. While we have briefed some members of this group on that work, we would be happy to further share that information with the IWG.

We need a whole-of-government approach that embraces this emerging technology and the industry it is creating. Regulators have continued to apply legacy thinking to the safety analyses done and requirements proposed for AAM that fails to account for its unique benefits and capabilities, especially when it comes to autonomy. This type of thinking will lead to missed opportunities and lower levels of safety. We must do better, think innovatively, and realize that safety does not just come from within our comfort zones.

Saying that we must wait ten years before the advantages of simplified vehicle operations (SVO), autonomy, performance-based operational requirements, and other innovations can be officially considered is a disservice to our country's traveling public, economy, and world leadership. Current activities – including military work, test site and other restricted operations, industry standards development, and ongoing research – are already providing information that can be used to meet the expected burden of care while keeping up with these advancements.

I do not mean to minimize the work required. Quite the opposite. I am asking that the necessary resources – and especially the bold leadership required to deploy them – be provided at the highest levels of government. The working level individuals on whom the responsibility for cocreating the future of transportation in our nation lies need your support and clarity of purpose.

I am honored to be able to address this group today, and grateful to have the timing of my career align with a revolution in aviation that is as transformative and as exciting as any to have come before. I ask that you each rise to this moment in history and work with us to take the next key step in transportation.