



NAC Aeronautics Committee Report

Dr. John-Paul Clarke
Chair, NAC Aero Committee
NASA Headquarters
May 9, 2024

Aeronautics Committee Membership

Dr. John-Paul Clarke, Chair
University of Texas at Austin

Mr. Peter Bunce
General Aviation Manufacturers
Association

Dr. Todd Citron
The Boeing Company

Mr. Jay Dryer
Office of the Secretary of Defense

Ms. Lisa Ellman
Commercial Drone Alliance

Dr. Nicole Key
Purdue University

Mr. Billy Nolen
Archer

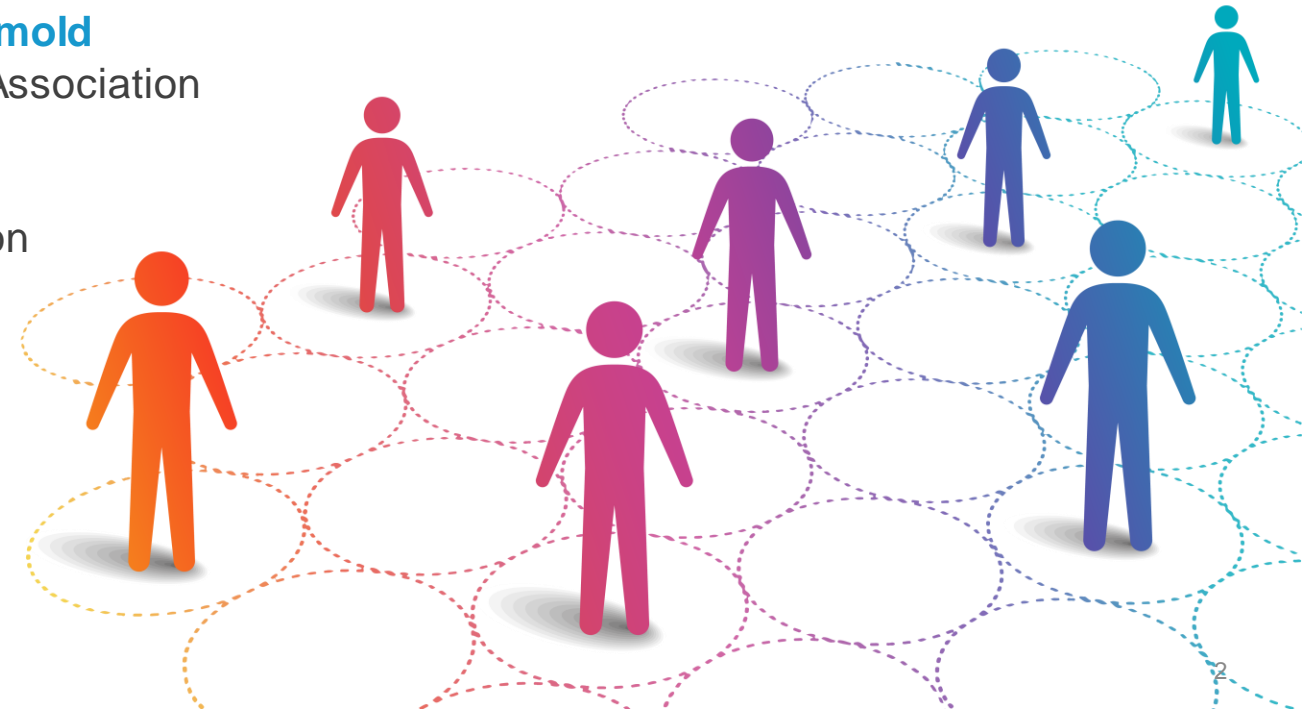
Ms. Susan Pfingstler
JetBlue

Dr. Helen Reed
Texas A&M University

Ms. Dorothy “Di” Reimold
Aerospace Industries Association

Dr. Hassan Shahidi
Flight Safety Foundation

Dr. Michael Winter
Pratt & Whitney





Introduction

- The Committee met three times in 2023: March (AFRC); June (HQ); November (GRC)
- Topics Discussed at the March 13, 2024, meeting at Headquarters:
 - ARMD FY25 Budget Overview
 - Workforce Development Efforts
 - NASA 2040

Aviation is Vital to our Nation's Economy



- \$1.25 trillion economic impact from commercial aviation in 2022
- \$77.3 billion positive manufacturing trade balance in 2022
- 8.97 million flights by U.S. carriers worldwide in 2022
- 24 million tons of freight transported by U.S. airlines in 2022
- 2.2 million aerospace/defense jobs; 603,000 in aeronautics/aircraft in 2022



ULTRA-EFFICIENT AIRLINERS



FUTURE AIRSPACE AND SAFETY



HIGH-SPEED COMMERCIAL FLIGHT



ADVANCED AIR MOBILITY



FY 2025 PRESIDENT'S BUDGET

Real Progress. Real Value.

Aeronautics FY 2025 Budget Request

\$ Millions	FY 2024 CR 1/	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Aeronautics	\$935.0	\$965.8	\$985.1	\$1,004.8	\$1,024.9	\$1,045.4
Airspace Operations and Safety		151.2	164.3	174.1	177.7	180.9
Advanced Air Vehicles		278.8	269.6	262.4	248.8	218.7
Integrated Aviation Systems		264.4	277.0	277.6	300.9	342.0
Transformative Aeronautics Concepts		155.3	157.6	171.1	175.2	179.0
Aerosciences Evaluation and Test Capabilities		116.2	116.5	119.5	122.3	124.7

1/ FY 2024 reflects annualized funding amounts based on funding specified in Public Law 117-328, Consolidated Appropriations Act, 2023.

- Supports a robust Sustainable Flight National Partnership to enable highly efficient next generation aircraft and ensure U.S. leadership in aviation
 - Demonstrate in FY 2026 with industry partners the first-ever megawatt-class electrified powertrain systems and components for large transport aircraft
 - Flight test in FY 2028 of a full-scale sustainable flight demonstrator X-plane to validate integrated systems and their benefits
 - Ground test in FY 2028 of advanced small turbine cores that will increase engine thermal efficiency and reduce fuel burn
 - Improve the rate of composite manufacturing by 4 to 6 times faster than current production rates with two major ground tests, wing and fuselage, in FY 2027.
 - Develop technologies needed to increase use of sustainable aviation fuels
 - Develop a robust model-based systems analysis and engineering framework at the aircraft system level
 - Field demonstrations through FY 2027 with the Federal Aviation Administration, airline and airport partners of digital departure and oceanic airborne rerouting tools that reduce delays, fuel burn and emissions.
 - Research and study non-CO2 greenhouse gas emissions such as contrails

Aeronautics FY 2025 Budget Request continued

\$ Millions	FY 2024 CR 1/	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Aeronautics	\$935.0	\$965.8	\$985.1	\$1,004.8	\$1,024.9	\$1,045.4
Airspace Operations and Safety		151.2	164.3	174.1	177.7	180.9
Advanced Air Vehicles		278.8	269.6	262.4	248.8	218.7
Integrated Aviation Systems		264.4	277.0	277.6	300.9	342.0
Transformative Aeronautics Concepts		155.3	157.6	171.1	175.2	179.0
Aerosciences Evaluation and Test Capabilities		116.2	116.5	119.5	122.3	124.7

1/ FY 2024 reflects annualized funding amounts based on funding specified in Public Law 117-328, Consolidated Appropriations Act, 2023.

- Conducts the first flight of the X-59 Low Boom Flight Demonstrator and envelope expansion flights to prove airworthiness. These flight tests will provide data to the global aviation community to reassess the ban on supersonic flight over land and implement noise regulations acceptable to local communities
- Enables the FAA adopted Extensible Traffic Management (XTM) concept to create safe airspace access for emerging aviation systems
- Supports Advanced Air Mobility to ensure U.S. leadership in an emerging aviation market that studies have projected to generate an annual market value of \$115 billion by 2035
- Fosters NASA and University innovation in physics-based tools, novel technologies, and advanced system concepts that supports the future of the entire aerospace industry.

FY 2025 Budget Request – Changes

ARMD's FY 2025 budget request changes relative to FY 2024 (at a full year CR level of \$935M)

- NASA adjusted funding for elements of the Sustainable Flight National Partnership.
 - Increased Sustainable Flight Demonstrator project as the X-66 aircraft moves into the design/build phase.
 - Decreased Electrified Powertrain Flight Demonstrations (EPFD) project in near term, with rephasing to address extended flight demonstration schedule and preserve overall lifecycle cost.
 - Increased the Hi-Rate Composite Aircraft Manufacturing (HiCAM) project to ensure two major ground tests, wing and fuselage.
 - Decreased Hybrid Thermally Efficient Core project to reflect the latest contract payment schedule.
- NASA increased funding for the Low Boom Flight Demonstrator project to cover rebaselined commitments for cost and schedule. The project was rebaselined due to poor contractor performance and to a lesser extent, COVID impacts from 2020 through 2022 that caused delays to X-59 aircraft delivery.
- NASA increased the Advanced Air Transport Technology project for research and studies on non-CO2 greenhouse gas emissions such as contrails.



Committee Finding – ARMD FY25 Budget



- The Committee finds that the ARMD's research portfolio substantively addresses key challenges in aeronautics. However, more thorough emphasis could be placed on the synergies between ARMD's programs to develop and identify projects addressing issues that apply to more than one program, as well as quantifying how the programs jointly provide benefits greater than the sum of their parts. For example, materials research for engine-core technology may also provide benefits to hypersonic research.

Workforce Efforts

PRESENTED BY

Mike Kincaid, Associate Administrator, Office of
STEM Engagement

John Cavolowsky, Director, Transformative
Aeronautics Concepts Program

- NASA STEM Engagement Overview
- ARMD-focused STEM Engagement
- Transformative Aeronautics Concepts Program (TACP)



NASA STEM

NASA STEM Engagement Program Elements

NASA'S MISSION THEMATIC AREAS



NASA STEM ENGAGEMENT PROJECTS

<h3>SPACE GRANT</h3>	<p>A national network of colleges and universities with over 1,000 affiliate institutions and organizations located in all 50 states, the District of Columbia, and Puerto Rico.</p> <p>Purpose: Expands opportunities for students to participate in NASA's aeronautics and space projects.</p>
<h3>EPSCoR</h3>	<p>The Established Program to Stimulate Competitive Research (EPSCoR) funds partnerships with government, higher education, and industry in 28 eligible jurisdictions (25 states and three territories).</p> <p>Purpose: Effects sustainable improvements in a state or region's research infrastructure, capacity, and competitiveness.</p>
<h3>MUREP</h3>	<p>The Minority University Research and Education Project (MUREP) supports minority-serving institutions (MSIs) to enhance research, academic, and technology capabilities.</p> <p>Purpose: Increases retention of underserved and underrepresented groups in STEM.</p>
<h3>NEXT GEN STEM</h3>	<p>Next Generation STEM (Next Gen STEM) creates K-12 and informal education STEM engagement initiatives aligned to NASA mission priorities.</p> <p>Purpose: Attracts and retains student interest in STEM careers, building a vibrant next-generation workforce.</p>

EDUCATIONAL TOOLS AND PLATFORMS

Focus: Access and scalability

- Suite of tools and platforms enabling student engagement and data collection
 - NASA STEM Gateway (Phase 1 operational in early FY21)
 - stem.nasa.gov
 - intern.nasa.gov

PERFORMANCE MEASUREMENT AND EVALUATION

Focus: Outcomes and metrics

- Learning agenda
- Targeted studies

STRATEGIC PARTNERSHIPS

Focus: Scalability

- Comprehensive approach to foster and stimulate strategic partnerships
- New strategy began in FY 2020

INTERNSHIPS AND FELLOWSHIPS

Focus: Diversity and Inclusion

- Enterprise model in collaboration with mission directorates and centers

ENABLING CROSS-CUTTING FUNCTIONS

STEM ENGAGEMENT BENEFICIARIES



K-Elementary School
Middle School
High School
Undergraduate
Graduate

TACP Workforce Development Perspectives

- Outline

- Broad approaches across TACP portfolio – similar efforts are pursued by other programs in ARMD
- Refresh awareness of University Innovation Project investments and activities, but will do so lightly
- Introduce efforts underway in Transformational Tools and Technologies and Convergent Aeronautics Solutions Projects, and reflect upon their impacts in support of internal workforce growth

- Questions for the Committee

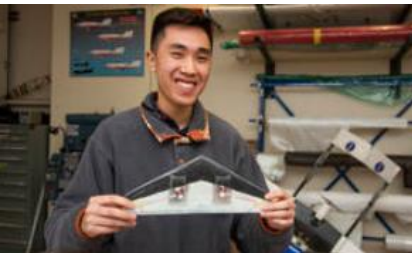
- Are these efforts and investments in the right areas? Addressing the right issues?
- How should we expect this to help the broader aeronautics enterprise?
- Is any of this likely to affect the critical concerns about recruitment and retention?



NASA Aeronautics STEM Goals (K-12, Post-secondary)



K-12 Learning Resources



NASA Aero Interns and Mentoring



Aero Challenges

Engage. Inform. Inspire.

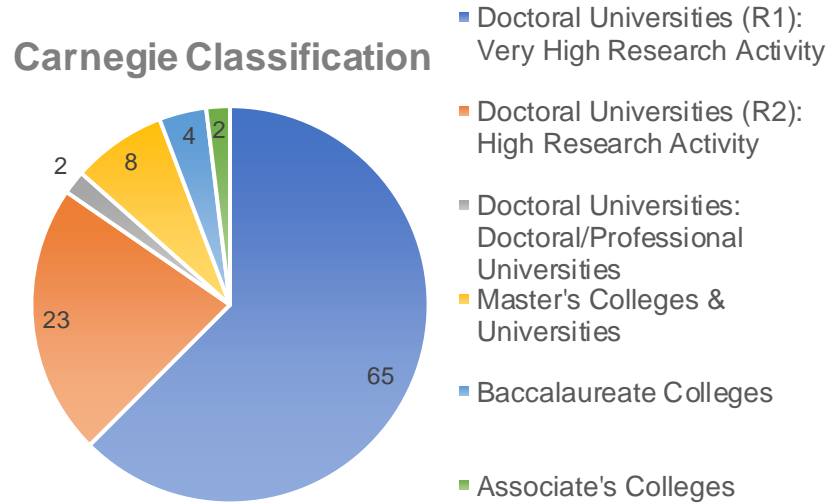
- Engage external communities to build relationships that can support STEM opportunities linked to NASA Aero research milestones.
- Create timely and engaging activities connected with NASA Aero milestones that help youth discover and experience real-life applications of STEM skills.
- Identify and execute opportunities to expand the applicant/award pool for NASA solicitations.
- Offer youth (e.g., interns, grantees who've engaged with NASA Aero in a significant way) the option to stay connected to the NASA Aero family.

NASA Aeronautics: Pre-K-12 STEM Resources

- ✈️ **STEM Toolkits (X-59, Sustainable Aviation, AAM)**
**Collaboration between ARMD and OSTEM*
- ✈️ **STEM en Español**
- ✈️ **Aeronautics @ Home**
- ✈️ **Smart Skies**
- ✈️ **Literacy and STEM**
- ✈️ **Educator Facebook Page and Monthly Newsletter (K-12 and post-secondary)**
- ✈️ **Dream with Us Design Challenge**
- ✈️ **Flight Log**



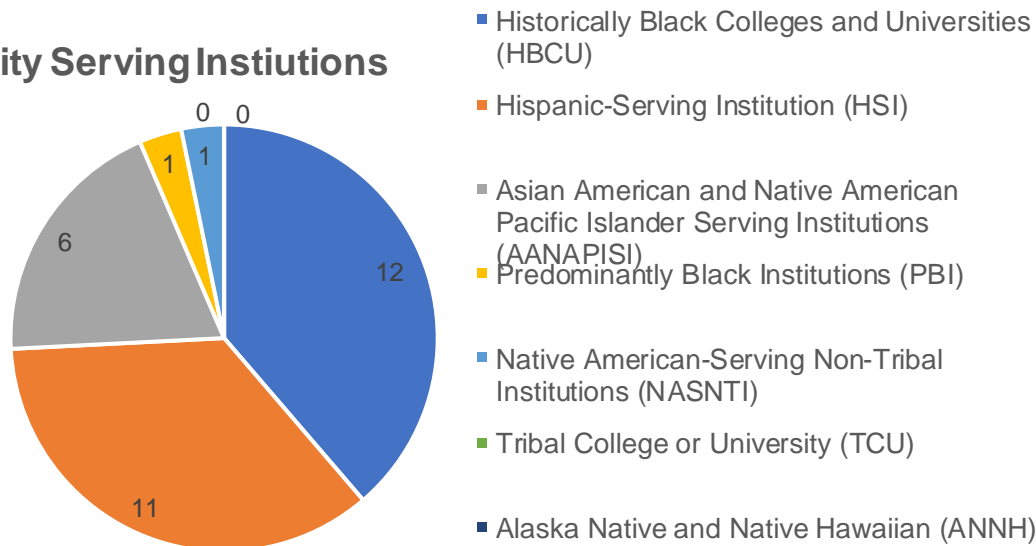
University Initiative (UI) Awarded 104 Universities (ULI, USRC, FAMTC, and Blue Skies)



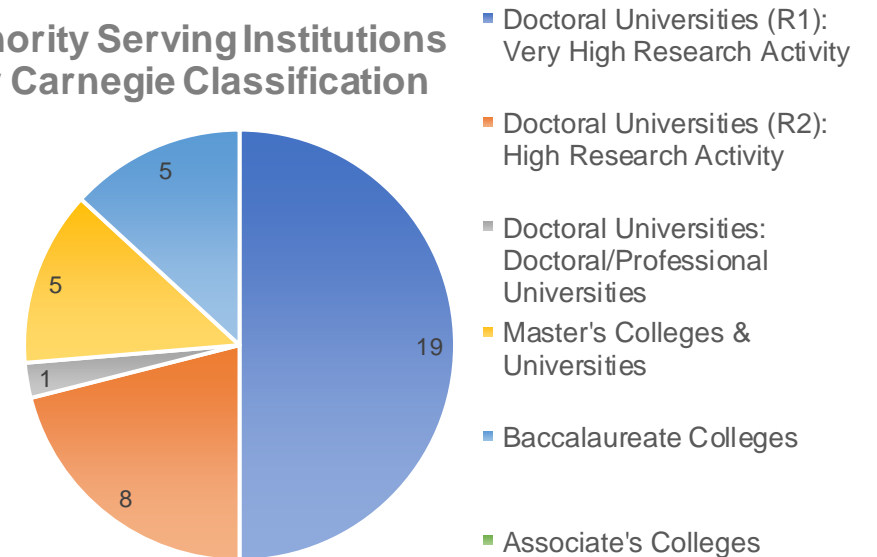
- **38 out of 104 Unique Non-R1 Universities in ULI, USRC, Maintenance NRAs, and Gateway to Blue Skies**

- **3 of 30 ULI Leads are from R2 Universities:**
 - *New Mexico State University*
 - *North Carolina A&T State University*
 - *Tennessee Technological University*

Minority Serving Institutions



Minority Serving Institutions by Carnegie Classification



TACP Workforce Efforts

- NRAs: Establishing Visions with the Community
 - Assessing Promising New Ideas with Universities
- Mentoring Students Through Research Opportunities
 - TTT Research Supported 31 Students/Postdocs, 21 Interns, and 11 Pathways in FY23
- Developing and Growing Future Innovative Researchers
 - TTT Research Inspires Early Career and Future Leaders to Be Innovative and Work in New Areas
- Convergent Aeronautics Solutions (CAS) Project Supported Discretionary Funding for Center Innovation
 - Supporting discretionary center investment in our innovative workforce
- CAS Discovery graduate interns
 - What if graduate students could implement their early-stage innovation methods and training within NASA/CAS?
- CAS-supported early career and new hires
 - *Enabling agility, skill and talent development, and availability*



Workforce & Culture Change



Committee Finding – Workforce Development Efforts



- The Committee is pleased with the efforts made by ARMD to recruit and retain its workforce. In particular, the Committee applauds the effort to reach out to individual, ad-hoc research activities as a way to integrate different kinds of thinkers and establish a mid-career pathway for them.
- The Committee commends ARMD's efforts to create resources and content specifically for teachers and finds a further need to expand the distribution of these teacher-oriented products.
- The Committee finds there is an opportunity to engage students and other prospective workforce members with outreach from younger members of NASA's workforce, who are not as far removed from being students themselves and are more likely able to communicate their journey.
- The Committee finds there could be avenues by which NASA could help industry bring together its outreach initiatives as a joint enterprise-level effort. For example, since NASA is not able to absorb all the applicants to initiatives such as internships or ULIs, these applicants could potentially be connected to other opportunities on the industry side.
- The Committee finds ARMD's efforts to reach out to non-STEM majors is a worthwhile endeavor worthy of further pursuit, especially considering that future workforce needs and demands extend beyond STEM capabilities and activities.

LEADERSHIP HAS COMMITTED TO A CHANGE JOURNEY: NASA 2040



**NASA's
current state**



Transformation



NASA 2040

- ✓ Robust, inspiring **mission**
- ✓ Lasting record of **accomplishment**
- ✓ Diverse, committed, talented **workforce**
- ✓ Poised for enduring **stakeholder** support
- ✗ Lack of **clear roles for NASA in the future**
- ✗ Slow **decision velocity**
- ✗ Insufficient **financial** flexibility
- ✗ Uncertain **workforce** strategy
- ✗ Aging critical **infrastructure** and IT

Cross-functional agency teams will identify and recommend strategic changes to our agency structure, mission strategy, budget alignment and institutional operations that support our future vision.

“The preeminent institution for research, technology, and engineering, to lead science, aeronautics, and space exploration for humanity.”

ASPIRATIONS FOR NASA 2040

Taking NASA from...

A lack of clarity on overall strategy, where Mission Directorates and Centers feel fragmented

A challenging matrixed structure where lines may appear clear, but decisions are increasingly escalating to the top

Opaque budget and finance processes and reporting that leave leaders frustrated

A people strategy that is facing recruiting and retention challenges from industry, with stunted growth in DEI targets

Infrastructure needs that exceed annual budgets, with projects competing for priority

A corporate technology transformation in progress, but not keeping pace with agency-wide demand

Overly burdensome core processes that yield unproductive meetings and protracted timelines

To...

An articulated strategy of what NASA will / won't do in the future, that sets milestones and organizational goals aligned for 2040

An aligned organization with **clear roles and responsibilities**, and accepted norms for decision-making and escalation

Refined budget processes that are **strategic and account for the total cost of missions**

A strategic workforce plan and **employee value proposition** that attracts and retains a diverse workforce of the best and brightest

Infrastructure management with **immediate, near-, and long-range plans** that can bring NASA's infrastructure into the modern age

A better integrated and expedited transformation effort for a NASA that is **data-driven, secure, and leading in innovation**

Redesigned processes that empower the workforce with **greater speed, collaboration and transparency**

Committee Finding – NASA 2040



- The Committee commends NASA for taking on the NASA 2040 initiative and recognizes that transforming the agency is a daunting challenge.
- The Committee finds there is an opportunity to align and converge the spirit of the NASA 2040 initiative with the government-wide vision for a NAS 2040. As NASA envisions what aeronautics holistically looks like in 20 years, it could also consider how to synergize its capabilities, infrastructure, and budgetary limitations to set itself up for bold leadership and success – as well as establish a north star for concisely articulating what ARMD is all about.

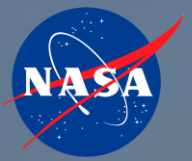
ACERO Brief Overview

[NASA & FAA Partnership - Research Transition Team](#)



ACERO's Goal:

Develop, integrate, demonstrate, and transition to operations, NASA and industry aviation technologies to identify, monitor, and mitigate wildland fires and other emergencies, to enhance safety, improve efficiency of operations, and minimize economic loss.



Advanced Capabilities for Emergency Response Operations

DAYTIME OPERATIONS

NIGHTTIME OPERATIONS



AIR TACTICAL GROUP SUPERVISOR



TERRESTRIAL COMMUNICATIONS



TANKER



PILOTED HELICOPTER



AIRCRAFT AUTONOMY



LOGISTICS



REMOTE SENSING



REMOTELY PILOTED HELICOPTER



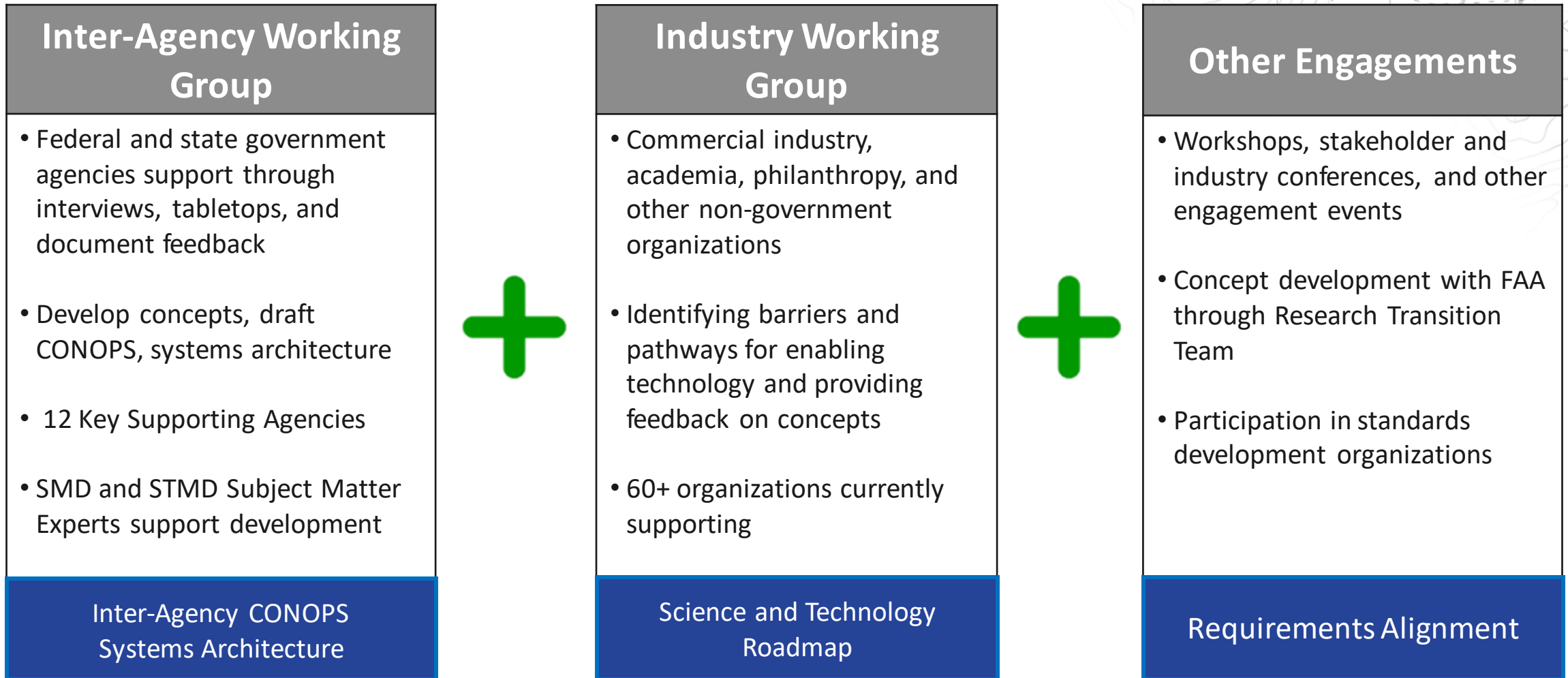
AIRSPACE MANAGEMENT



DECISION SUPPORT

Mission Statement: Develop, integrate, demonstrate, and transition to operations, NASA and industry aviation technologies to identify, monitor, and mitigate wildland fires and other emergencies, to enhance safety, improve efficiency of operations, and minimize economic loss.

CONOPS Partnerships and Engagements



Summary



- Wildfires are a growing global issue and ACERO aims to address these challenges by:
 - Leading the development of an Inter-agency CONOPS and technology roadmap
 - Harmonizing a systems architecture that supports information exchange and improved near-real time response for wildland fire management
- ACERO will focus on development and demonstration of a set of technologies that enable second shift operations in degraded visual environments
 - Airspace Management and Shared Situation Awareness
 - Safety and Mission-related autonomy to support suppression and logistics operations
 - Communications architecture and aircraft-based communication network solution
- ACERO will transfer reference implementations, lessons learned, and validated requirements to key stakeholder agencies, industry partners, and standards development organizations

Summary Findings from 2023 & 2024 Meetings

Findings from HQ Meeting in March 2024 (as presented)



ARMD FY25 Budget

- The Committee finds that the ARMD's research portfolio substantively addresses key challenges in aeronautics. However, more thorough emphasis could be placed on the synergies between ARMD's programs to develop and identify projects addressing issues that apply to more than one program, as well as quantifying how the programs jointly provide benefits greater than the sum of their parts. For example, materials research for engine-core technology may also provide benefits to hypersonic research.

Workforce Development Efforts

- The Committee is pleased with the efforts made by ARMD to recruit and retain its workforce. In particular, the Committee applauds the effort to reach out to individual, ad-hoc research activities as a way to integrate different kinds of thinkers and establish a mid-career pathway for them.
- The Committee commends ARMD's efforts to create resources and content specifically for teachers and finds a further need to expand the distribution of these teacher-oriented products.
- The Committee finds there is an opportunity to engage students and other prospective workforce members with outreach from younger members of NASA's workforce, who are not as far removed from being students themselves and are more likely able to communicate their journey.
- The Committee finds there could be avenues by which NASA could help industry bring together its outreach initiatives as a joint enterprise-level effort. For example, since NASA is not able to absorb all the applicants to initiatives such as internships or ULIs, these applicants could potentially be connected to other opportunities on the industry side.
- The Committee finds ARMD's efforts to reach out to non-STEM majors is a worthwhile endeavor worthy of further pursuit, especially considering that future workforce needs and demands extend beyond STEM capabilities and activities.

NASA 2040

- The Committee commends NASA for taking on the NASA 2040 initiative and recognizes that transforming the agency is a daunting challenge.
- The Committee finds there is an opportunity to align and converge the spirit of the NASA 2040 initiative with the government-wide vision for a NAS 2040. As NASA envisions what aeronautics holistically looks like in 20 years, it could also consider how to synergize its capabilities, infrastructure, and budgetary limitations to set itself up for bold leadership and success – as well as establish a north star for concisely articulating what ARMD is all about.

Findings from AFRC Meeting in March 2023



Sustainable Flight Demonstrator

- The Committee finds there is an opportunity to include the FAA where appropriate in the Sustainable Flight Demonstrator development and airworthiness discussions, thereby providing early insights into technical aspects of this configuration and considerations, and access to subject-matter experts, that may be beneficial for future FAA certification assessments.
- The Committee finds the Funded Space Act Agreement for the Sustainable Flight Demonstrator is an exemplar mechanism for collaboration with industry, especially because it enables industry to have “skin in the game.” The Committee also commends NASA and Boeing for considering airworthiness certification early in the process.

ARMD FY24 Budget Overview

- The Committee finds there is an opportunity for more collaboration with airlines and other airspace users to quantify constraints placed on airspace operation by the absence of certain technologies as well as the growing need for airspace use by traditional and new entrants, and to determine how greater coordination might alleviate the inefficiencies that are introduced by these constraints.
- The Committee finds that NASA should more closely examine how issues with respect to the reporting of data to the International Civil Aviation Organization (due to US sanctions on Russia) could interfere with the Quesst mission.

University Leadership Initiative Round 6 Selections

- The Committee finds there is potential for the University Leadership Initiative to serve as a mechanism for exploring ideas and concepts beyond those defined in the six ARMD thrusts.



Findings from HQ Meeting in June 2023



Future of Vehicle Technology Development

1. The Committee finds that NASA would benefit from clearly articulated mechanisms to transition promising out-of-the-box ideas, such as those presented in the recent Gateway to Blue Skies competition, into the research mainstream (e.g., providing internships and pathways opportunities, as well as hiring students who have distinguished themselves, developing internal research efforts and NRAs based on promising ideas, etc.).
2. The Committee finds that NASA should, when determining “what NASA could do,” consider leading all-encompassing, whole-of-government efforts (e.g., R&D, policy, lifecycle analysis, operations, etc.). For example, as it pertains to the Sustainable Flight National Partnership, NASA might consider leading and coordinating government-wide research and development in alternative energy and propulsion that may fall under the regulation of an agency other than the FAA.

Future of Flight Demonstrations

1. The Committee finds that lessons learned from prior demonstration projects such as the X-57 Maxwell and X-59 aircraft should be curated and documented to reduce the learning curve for future endeavors and the next-generation workforce. There is also benefit in incorporating best practices and lessons learned from demonstrations by other agencies.
2. The Committee finds there may be value in not just X-planes, but also X-systems that address challenges in Advanced Air Mobility, autonomy, airspace management, and digital platforms, as well as generating attention and excitement from students.

NASA Support to Certification

1. The Committee finds NASA should integrate cybersecurity into Advanced Air Mobility’s research pipeline earlier. NASA may be able to bring, with its multidisciplinary approach, developmental research tools and systems to put in the hooks for others to tackle cybersecurity challenges. NASA should explore partnerships with other organizations such as the Department of Homeland Security, the Intelligence Community, industry and others to help address such challenges and leveraging existing agency and industry efforts around cybersecurity, as cybersecurity challenges faced by AAM don’t exist in a vacuum.
2. The Committee finds that interactions between NASA and FAA are both extensive and robust and commends NASA for its work in fostering this relationship.
3. The Committee finds greater collaboration should be pursued with the FAA on continuing airworthiness, operationalization, and risk computation and management given NASA’s expertise in managing risk.
4. The Committee finds NASA has been and must continue to support early stage and non-traditional businesses. In general, exploring additional ways to meaningfully enable, engage and sustain commercial business involvement should be pursued.

Findings from GRC Meeting in November 2023



AETC

- The Committee is pleased to see the declining backlog of deferred maintenance for facilities in the Aerosciences Evaluation and Test Capabilities portfolio, as maintaining infrastructure is central to sustaining NASA's flight research. The Committee is also pleased there is real-time data collection on the reliability and operational status of each facility.

Verification and Validation:

- The Committee finds that it would be useful to reexamine the verification and validation process from time to time, with particular emphasis on better coordinating lessons learned from multiple programs and projects via a combined digital thread. Having a feedback loop ranging from development through implementation can ensure target levels of safety are achieved in real-world use of new technologies.

DEIA

- The Committee finds that placing additional focus on workforce retention would be a beneficial step in achieving ARMD's vision for its organizational culture.

Sky for All

- The Committee finds that there is a continued need to address security and cybersecurity concerns that arise as new federated systems for aviation management come into use.
- The Committee finds that NASA should continue its focus on the beneficial definition of the services that have helped with Unmanned Aircraft Systems Traffic Management and performance-based service definitions, with an intent to understand the certification implications of the services.

Findings from GRC Meeting in November 2023 (Continued)



ACERO

- The Committee commends the Advanced Capabilities for Emergency Response Operations project for its work bringing the project to fruition, and for its work partnering with external organizations. The Committee also finds, however, that the project should place greater effort into effectively organizing all the voices participating in the research to optimally manage its capabilities.
- The Committee encourages NASA to explore methods to enable synergistic technologies and architectures for both its Sky for All vision and ACERO project.
- The Committee finds that there is an opportunity to leverage lessons learned in wildland fire management operations context, particularly working with larger vehicles, to other Advanced Air Mobility applications and concepts not just at the end of the project, but during the research process as well.



ARMD

- The Committee commends ARMD for its effort to report back to the Committee with results and further developments stemming from prior findings and recommendations.

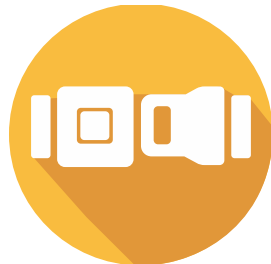
2024 NAC Aeronautics Committee Work Plan (DRAFT)

SPRING	SUMMER	FALL
Committee Ethics Training	EPFD	AAVP Strategic Assessment
ARMD FY25 Budget Overview	BVLOS	X-59 and Quesst mission
TACP/CAS/UI Workforce Efforts	AAM Vision for FAA Deliveries	Hypersonics
NASA 2040	AACES 2050 awards	ATM – CNS workshop
	NTX	2023 Committee Findings and Recommendations Response

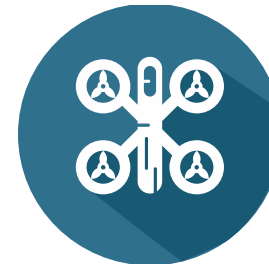
March 13, 2024 (HQ)



June 25-26, 2024 (NTX, Dallas, TX)



November 19-20, 2024 (AFRC)



Follow Us



www.nasa.gov/aero



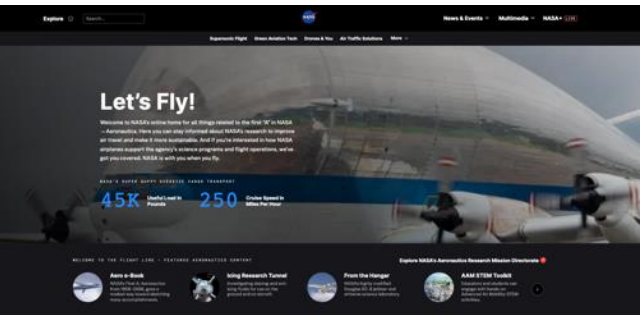
[@NASAAero](https://twitter.com/NASAAero)



[@NASAAero](https://www.instagram.com/NASAAero)



[@NASAAero](https://www.facebook.com/NASAAero)



NASA Aeronautics [@NASAAero](https://twitter.com/NASAAero)
Advanced Air Mobility
Quiet Supersonic Flight Over Land
A Transformed Airspace
Sustainable Aviation
Verification: nasa.gov/socialmedia
nasa.gov/aero Joined August 2014
70 Following 129.8K Followers

