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16. Abstract The Federal Aviation Administration (FAA) Office of Aerospace Medicine (AAM) tasked the MITRE Corporation's Center for Advanced Aviation System Development (MITRE CAASD) to continue connecting stakeholders to explore establishing an Aeromedical Certification Collaborative (ACC) that takes a data-driven fresh look at the role of aeromedical certification in aviation safety risk management. This report is a follow-on to prior foundational efforts (reference <a href="https://doi.org/10.21949/1529621">https://doi.org/10.21949/1529621</a> ). MITRE CAASD designed and executed ACC stakeholder engagement with commercial aviation pilots, mainline and cargo airlines, Aviation Medical Examiners, other professionals involved in pilot health issues, trade and pilots' associations, and FAA AAM. MITRE CAASD engagement included: <ul style="list-style-type: none"> <li>• Continued support for ACC and ACC Mental Health Working Group (MHWG) workshops, including ideation, prioritization, and refinement of mental health study ideas from April 2024 – June 2024.</li> <li>• Engaged in one-on-one pre-briefings and follow-ups with participants as requested/needed</li> </ul> <p>These activities, notably the work of the ACC MHWG, results in a set of prioritized possible studies aligned with the ACC concept, formalized expectations, and potential data needs associated with each study. As a result, FAA AAM will be able to improve safety risk management activities using sensitive, collaborative data-sharing to identify aviation safety risks associated with pilot health. The future impact of this work will allow FAA to develop performance-based standards for medical fitness for flight and safe operation of the airspace based on analysis of operational and medical data. FAA will be able to balance aviation safety needs while minimizing cost and burden on pilots and other stakeholders.</p>			
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# **Aeromedical Certification Collaborative (ACC)**

## **Progress Report**

April 2024 – June 2024



**Federal Aviation  
Administration**

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# Contractual Scope and Outputs

The Federal Aviation Administration (FAA) tasked The MITRE Corporation Center for Advanced Aviation System Development (MITRE CAASD) to advance aeromedical data-driven collaboration with industry.

## Purpose

- This task continued prior efforts to research establishing an Aeromedical Certification Collaborative (ACC) with industry. The goal for [ACC](#) is to co-design the future aeromedical safety system through information sharing and collaborative research regarding aeromedical safety risks.
- MITRE CAASD is uniquely suited to be the trusted connector among ACC stakeholders based on our experience as the CAASD Federally Funded Research and Development Center (FFRDC) operator (i.e., deep knowledge of FAA and aviation safety) combined with expertise as an independent, conflict-free convener of dozens of collaboratives established in the public interest. As a Trusted Third Party, we fairly manage participant equities, protect data, and foster a safe space for collaboration (i.e., mitigate competitive/defensive dynamics among participants).

## Outputs – Progress Report and Briefing

1. A summary of stakeholder engagement activities.
2. A summary of efforts to execute an operational collaboration concept prototype, including enablers, safeguards, roles, expectations for contributions and benefits.
3. A summary of potential research projects suitable for stewardship by the collaborative concept.

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# Background and Drivers of the ACC

Shared challenge of improving aviation safety risk management drives need for collaboration.

- Prior research<sup>1</sup> shows aeromedical certification stakeholders such as pilots, pilots' and trade associations, airlines, providers/Aviation Medical Examiners (AMEs), and the FAA see and feel shared challenges with the current state and seek a fresh look:
  - Pilots seek a more timely and transparent process that supports their livelihood and health.
  - Airlines seek to sustain safety while boosting operational efficiency and flexibility.
  - Unions seek to enhance pilot retention, careers, and availability as well as future pilots.
  - FAA seeks a data-driven future for aeromedical certification as part of a shared risk model for aviation safety.
- Achieving these outcomes requires data-driven insights on the performance-based aviation safety risk associated with a condition, which are not currently available, consideration of ecosystem-wide risk mitigations, and cross-sector collaboration.
- Since no single entity has all the needed data or the ability to completely mitigate associated risks, parties must work together to share and analyze sensitive data with appropriate safeguards.
  - Pilots and the FAA have medical (i.e., diagnosis, treatment) data.
  - Airlines have operational and safety performance data.

<sup>1</sup> See for example: Dienst J, Sienknecht T, Graf V, Lehner B, Roessner S (2023). *Aeromedical Collaboration Outreach*. <https://doi.org/10.21949/1529621>

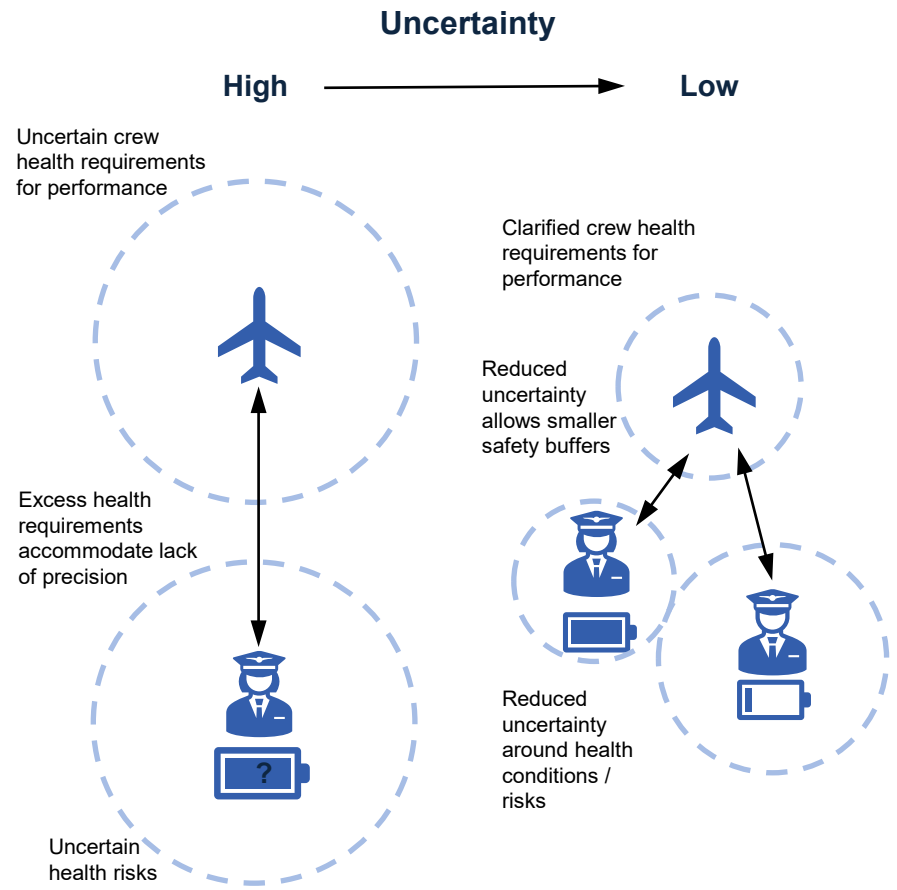
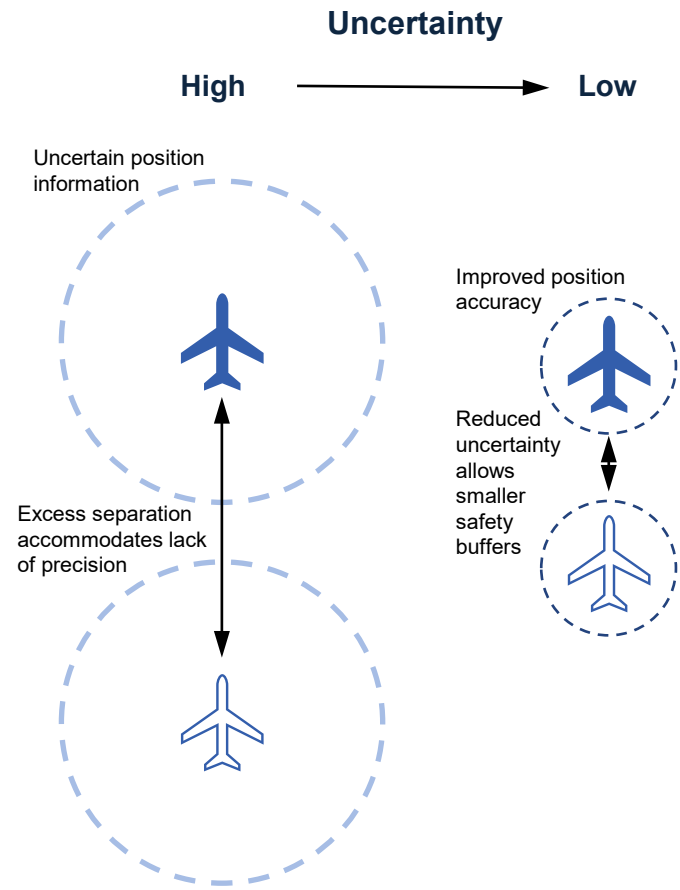
# Better Data can Reduce Uncertainty

By analogy to separation, reducing health-related performance risk yields many benefits

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Reducing positional uncertainty allows more aircraft to fly.

Reducing health-related performance uncertainty allows more pilots to fly.

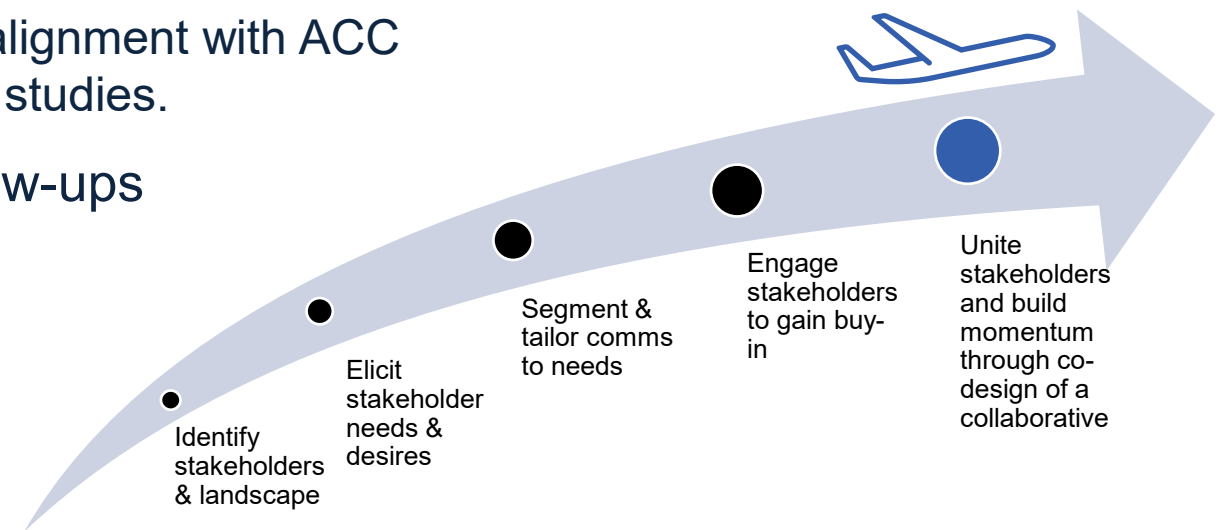


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# Summary of Stakeholder Engagement

Multiple engagement activities during this phase continue to define collaborative research.

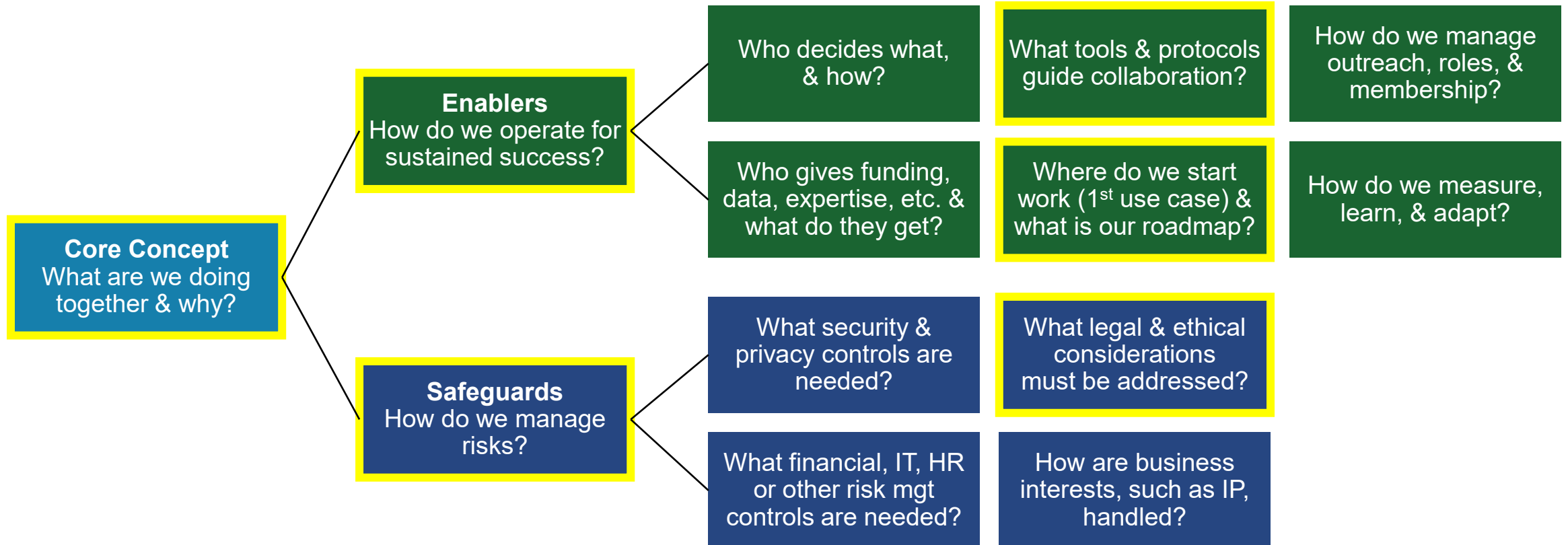
- Continued support for ACC and ACC Mental Health Working Group (MHWG) workshops:
  - April 16, 2024 MHWG: Ideated studies and discussed FAA Mental Health and Aviation Medical Clearances Aviation Rulemaking Committee [report](#).
  - May 15, 2024 MHWG: Refined and initially prioritized mental health study ideas.
  - May 29, 2024 ACC: Reviewed MH study ideas and explored physical health and other/process studies, inviting input from the full ACC.
  - June 19, 2024 ACC: Refined prioritized studies' alignment with ACC purpose and initially identified data that supports studies.
- Engaged in one-on-one pre-briefings and follow-ups with participants as requested/needed.
- Scheduled meetings into early summer.



# Co-design Process: Iterative Concept Refinement

Built on initial ACC concept from kickoff – refined use cases and expected safeguards

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**Legend:** Yellow highlights indicate current process status

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# Participants Sought MNDAs to Codify Safeguards





Mutual Non-Disclosure Agreement based on standard from other collaboratives

MNDA intended to safeguard discussions and exploration of possible studies (not for actually sharing data for studies)

- Hold information in strict confidence
- Limit distribution within org / need to know
- Use information only for permitted purpose

**MNDA status: 5 of 15 signed**

## ACC Ground Rules

			
<b>Safety focus</b>	<b>Good faith</b>	<b>Non-attribution</b>	<b>Ethical behavior</b>
Collaborate only to advance public trust and aviation safety	Engage actively, openly, equitably, professionally, and non-punitively	Don't publicly name sources of info from this forum	Participate with integrity, following applicable laws, e.g., non-collusion



**MITRE** NDA № \_\_\_\_\_

**MUTUAL NON-DISCLOSURE AGREEMENT**

**Between**

**The MITRE Corporation**

**and**

\_\_\_\_\_

**THIS Mutual Non-Disclosure Agreement** (the "Agreement") made by and between The MITRE Corporation, ("MITRE"), a not-for-profit Delaware corporation, having a principal place of business at 7515 Colshire Drive, McLean, VA 22102-7539, and \_\_\_\_\_ ("\_\_\_\_"), with a principal place of business at \_\_\_\_\_, shall be effective as of \_\_\_\_\_ ("Effective Date").

**Definitions.** Both MITRE and \_\_\_\_\_ (individually a "Party" or collectively the "Parties"), intend to disclose to each other proprietary/confidential information ("Information") as further described below, and in consideration of the receipt thereof, each Party hereby agrees to protect that Information as required hereunder.

**Background and Purpose.** The Information to be disclosed by each Party (as the Discloser), and the purpose for its disclosure, are described as follows: As voluntary participants of an Aeromedical Certification Collaborative ("ACC") that is taking a fresh, data-driven look at the role of aeromedical certification in aviation safety risk management, including but not limited to the performance-based aviation safety risk associated with pilot medical conditions, Parties will disclose Information such as their expectations for the ACC mission and operating model; related research and practices; and potential studies and the nature and availability of related data (e.g., safety, human factors, crew scheduling, medical diagnosis and treatment).

The Parties further agree as follows:

- 1. Use.** Each Party (as the "Recipient") shall hold the Discloser's Information in strict confidence and shall use it only for the purpose described above. The Recipient shall limit distribution of the Discloser's Information only to those individuals within its organization who have a need to know such Information in order to accomplish the purpose defined above. The Recipient shall not disclose any of the Discloser's Information to a third party without the Discloser's prior written approval. Notwithstanding this restriction, MITRE may disclose ACC progress or status that does not attribute the source of any Information received from \_\_\_\_\_ to MITRE's U.S. Government Customer, as required for its support.
- 2. Protection.** Each Party shall protect the Discloser's Information at least with the same degree of care that it protects its own Information, provided, however, that this obligation shall not apply to any portion of the Information that:

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# ACC Participants Refined Study Ideas

Participants refined and prioritized study ideas by category

- Participants identified possible research studies in three categories:
  - Mental health: 9 studies.
  - Physical health: 6 studies.
  - Other/process-related: 5 studies.
- Studies, such as many of the other/process studies, may be optimally suited to be addressed in other forums such as the FAA Summit focusing on near-term aeromedical process changes.
- The top 5 priority study ideas aligned with ACC are profiled on following slides.

The participants' role in identifying and exploring possible studies is deeply appreciated. ACC recognizes that does not necessarily imply participants' endorsement of nor commitment to execute any study. Additional work is expected to clarify any possible voluntary role in future ACC efforts/studies.

# ACC Participants Prioritized Study Ideas

Participants prioritized study ideas within each category

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## Mental Health

1. Effectiveness of peer support on managed, uncomplicated depression/anxiety
2. Effect of managed, uncomplicated depression/anxiety on performance
3. Analysis of mental health medication stabilization evidence

## Physical Health

1. Effect of managed physical condition on pilot performance
2. Effect of Obstructive Sleep Apnea (OSA) on fatigue/performance

# Mental Health Study Idea #1

Ideas prioritized by the ACC

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## Effectiveness of peer education/support in uncomplicated depression/anxiety

- **Problem:** Overcoming stigma of mental health and encouraging healthy lifespan through peer education (promote early detection/prevention and risk mitigation).
- **Objective:** Evaluate the efficacy of peer education to improve mental health and human performance among pilots.

# Mental Health Study Idea #2

Ideas prioritized by the ACC

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## Effect of managed, uncomplicated depression/anxiety on performance

- **Problem:** Insufficient information on the performance effect of MH much less the associated risk.
- **Objective:** If a cohort with depression or related medication (e.g., selective serotonin reuptake inhibitor) use can be identified/recruited, look back at performance data to see if different from others. Is there operational risk associated with each level of depression as assessed e.g., by PHQ-2/-9?

# Mental Health Study Idea #3

Ideas prioritized by the ACC

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## Analysis of mental health medication stabilization evidence

- **Problem:** FAA requirement for minimum 6 months grounding while medication stabilizes is not necessarily aligned with prevailing practice among peer CAAs or medical experts.
- **Objective:** Define a stabilization period for MH medications aligned with prevailing practice and evidence. How might pilots fly with additional safeguards (e.g., monitoring) during/after stabilization? How can short-term adjustment disorder/situational depression be addressed distinctly from continued conditions, such as those handled by Human Intervention Motivation Study?

# Physical Health Study Idea #1

Ideas prioritized by the ACC

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## Effect of managed physical condition on pilot performance

- **Problem:** Guidance for conditions is not necessarily aligned with prevailing practice/evidence nor linked to performance/risk.
- **Objective:** Study the impact of physical health conditions, such as heart disease, cancer, and neurological conditions, on pilots' performance.

# Physical Health Study Idea #2

Ideas prioritized by the ACC

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## Effect of Obstructive Sleep Apnea (OSA) on fatigue/performance

- **Problem:** Relationship between updated guidance for OSA and performance/risk is unclear.
- **Objective:** Study the relationship of managed OSA (e.g., proper fit and usage of constant positive airway pressure device) on pilots' performance (e.g., fatigue).

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# MITRE CAASD's Recommendations

Support momentum from initial meetings to shape collaborative concept

- To achieve the ACC vision and desired outcomes, MITRE CAASD recommends that:
  - MITRE CAASD continue to engage core participants in shaping the ACC concept and its enablers and safeguards, serving as trusted third party/connector.
  - MITRE CAASD work with FAA to develop a strategy for ACC that leverages prior FAA AVS investments.
  - Industry contribute time/expertise to ACC and work to determine how they might shape expectations for and contribute (e.g., data, support) to collaborative research.
  - The FAA strengthen internal relationships and coordination, particularly to enhance proactive engagement with industry, partnering with its FFRDC operator to that end.
  - The FAA sustain focus and resourcing for what is reasonably attainable for ACC this year, as well as champion ACC and actively participate as appropriate. Some related activities (e.g., process study) may be funded by other FAA components and/or external entities. FAA-funded ACC activities would include:
    - Sustaining participation in ACC co-design workshops to clarify core concept, select viable/valuable studies
    - Co-designing agreements (e.g., charter/collaborative research agreement)
    - Conducting secure data fusion and analysis proof-of-concept per established safeguards (next phase)



# Acronyms / Abbreviations

ACC	Aeromedical Certification Collaborative
AME	Aviation Medical Examiner
CAASD	Center for Advanced Aviation System Development
FAA	Federal Aviation Administration
FFRDC	Federally Funded Research and Development Center
MITRE	The MITRE Corporation
MHWG	Mental Health Working Group
OSA	Obstructive Sleep Apnea

# Notices

## Disclaimer

The views, opinions and/or findings contained in this report are those of The MITRE Corporation and should not be construed as an official government position, policy, or decision, unless designated by other documentation.

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