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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 https://doi.org/10.21949/1529621). MITRE CAASD designed and executed ACC stakeholder engagement with commercial aviation pilots, mainline and cargo airlines, Aviation Medical Examiners (AMEs), other professionals involved in pilot health issues, trade and pilots' associations, and FAA AAM. MITRE CAASD engagement included: <ul style="list-style-type: none"> • One-on-one outreach with four pilot and trade associations to prepare for 2023 info sessions, to shape compelling case for collaboration and encourage member interest. • Three 2023 info sessions (total 26 attendees) to drive interest in joining the collaborative; recruited more medical providers/ AMEs and airlines due to 11/30, 12/8, 12/13 sessions. • Pre-briefings/advance coordination with selected kickoff invitees at their request. • ACC kickoff on March 5, 2024, with 18 participants. • One-on-one follow-ups with participants at their request. • ACC workgroup on March 27, 2024 to explore initial use case (i.e., mental health). These activities, notably the kickoff, resulted in a shared initial ACC concept and favorable participant feedback. The impact of this work is that AAM will be able to make performance-based data-driven decisions based on analysis of operational and medical data that are not otherwise possible, enhancing public trust in aviation safety and reducing burden on pilots and others.			
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Aeromedical Certification Collaborative (ACC)

Progress Report for November 2023 – March 2024

31 March 2024



**Federal Aviation
Administration**

Background
Process
Engagement
Concept

Contractual Scope and Outputs

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

Purpose

- This task (period of performance ending 31 March 2024) 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, steward research and data, and share information and analysis 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 process for translating stakeholder input into active co-design of a feasible collaborative solution
3. An operational collaboration concept, including enablers, safeguards, roles, expectations for contributions and benefits, and plans for an initial prototype (to be executed in next phase)

Background
Process
Engagement
Concept

Background and Drivers of the ACC

Shared challenge of improving aviation safety risk mgt drives need for collaboration

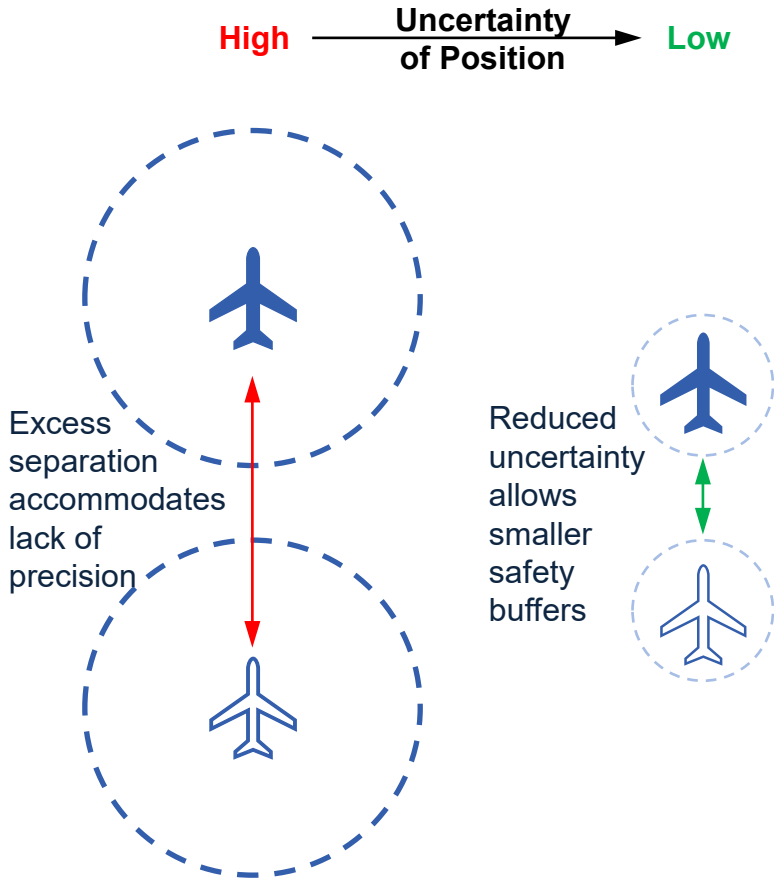
- Prior research¹ shows aeromedical certification stakeholders such as pilots, pilots' and trade associations, airlines, providers/Aviation Medical Examiner (AMEs), and the FAA experience shared challenges with the current state and seek to collaborate on taking a fresh look at the future state
 - Pilots seek a more timely and transparent process that supports their livelihood and health
 - Airlines seek to maintain 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 aeromedical certification solution as part of a shared aviation safety risk model
- Achieving these outcomes requires research into performance-based aviation safety risk associated with a medical condition (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, their health providers, AMEs, and the FAA have medical data (i.e., condition, medication)
 - Airlines have operational and performance data

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

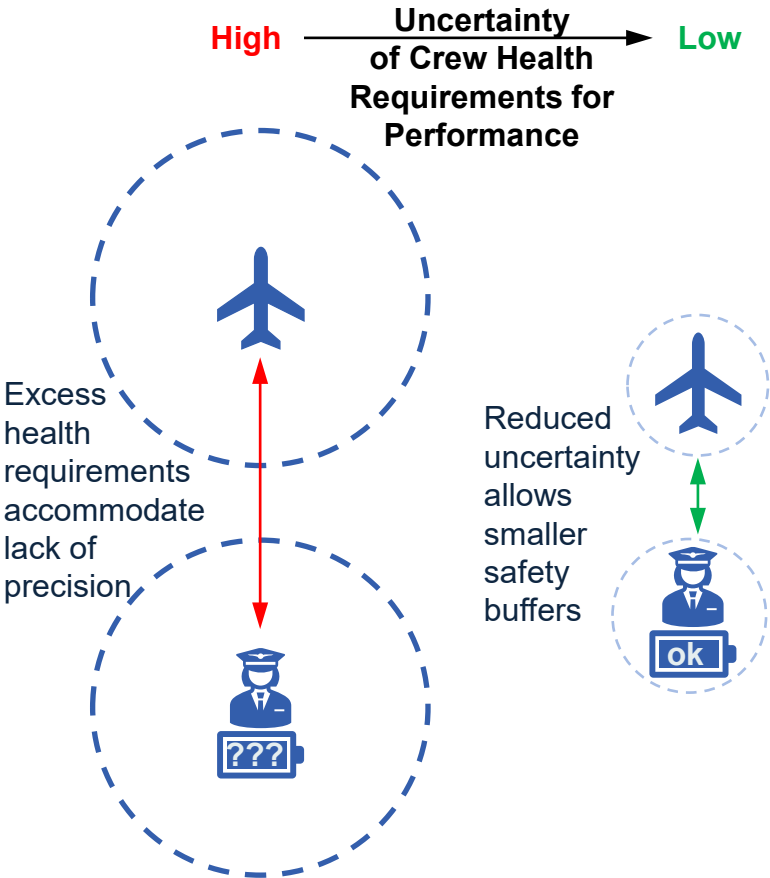
Better Data can Reduce Uncertainty

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

Reducing positional uncertainty allows more aircraft to fly



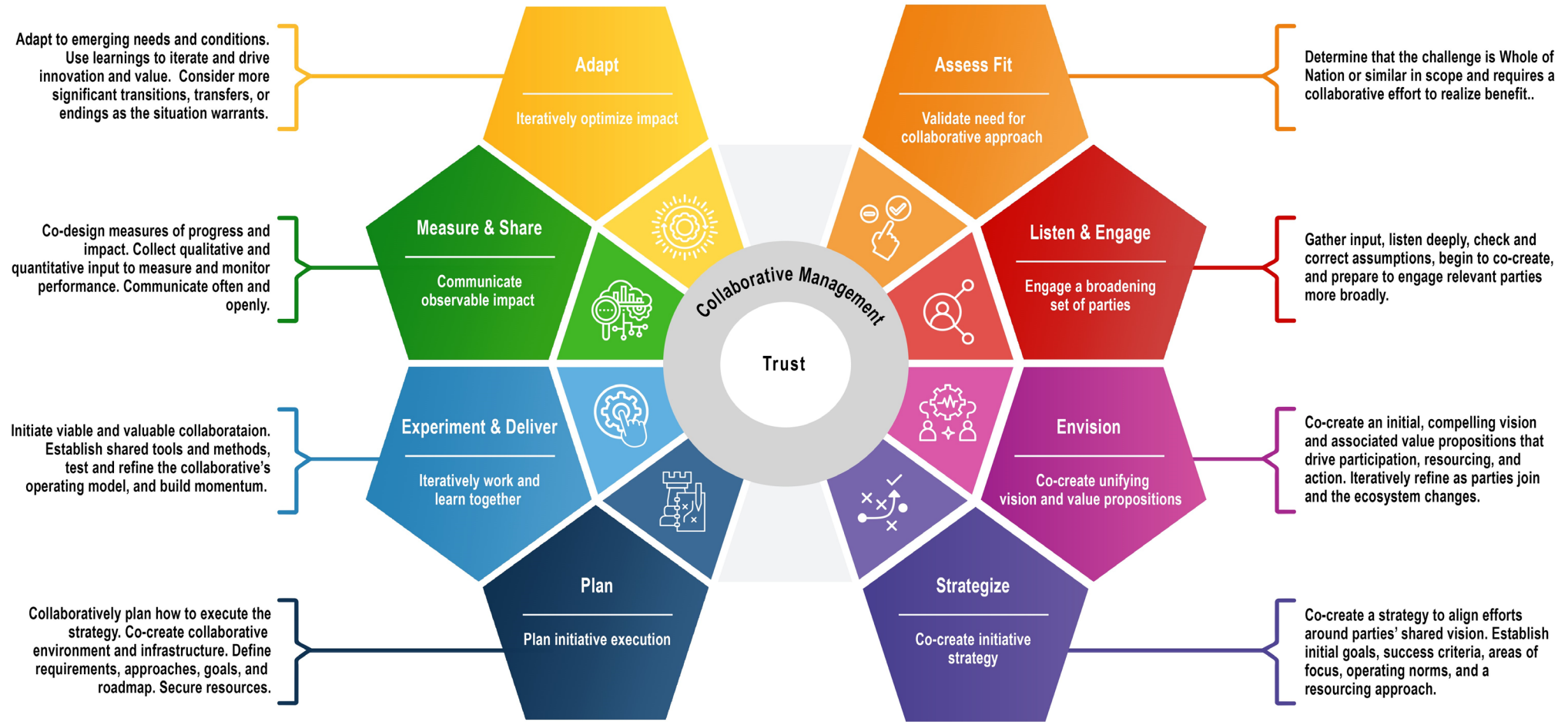
Reducing health-related performance uncertainty allows more pilots to fly



MITRE's Co-design Process Accelerated ACC

MITRE Assemble™ workflow and tools foster co-design of collaborative solutions

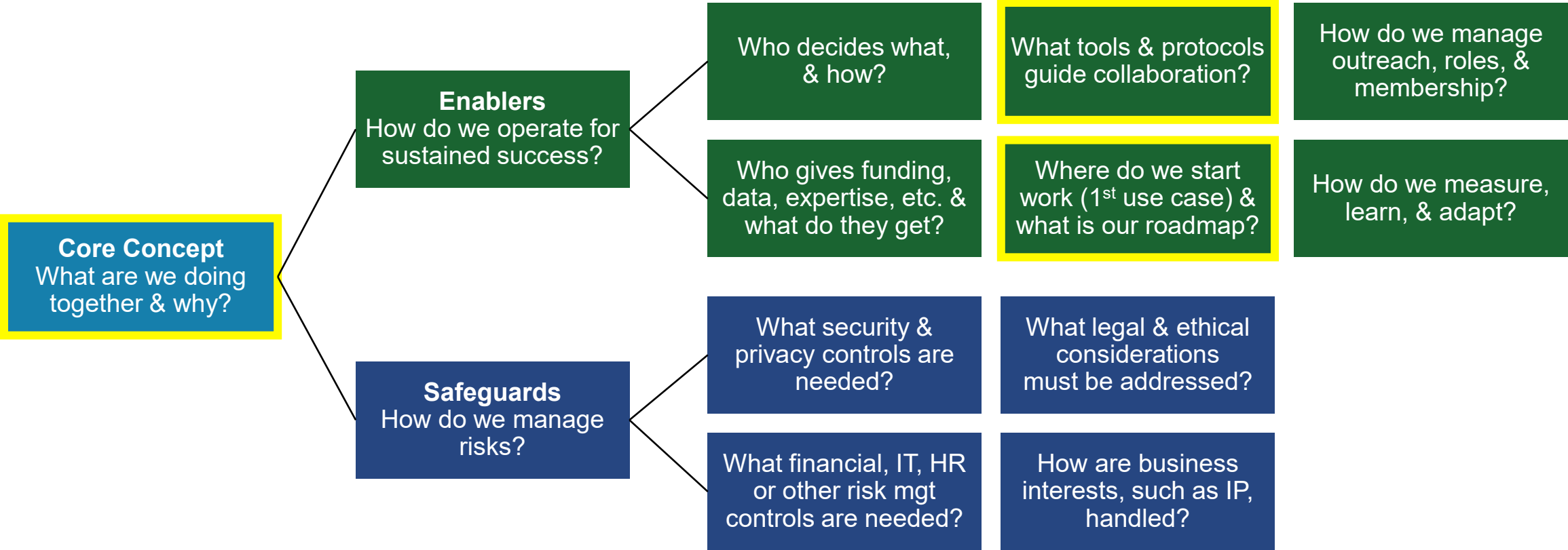
Background
Process
Engagement
Concept



Background
Process
Engagement
Concept

Co-design Process: Iterative Concept Refinement

March 5, 2024 ACC kickoff intended to clarify concept, ground rules, and use cases



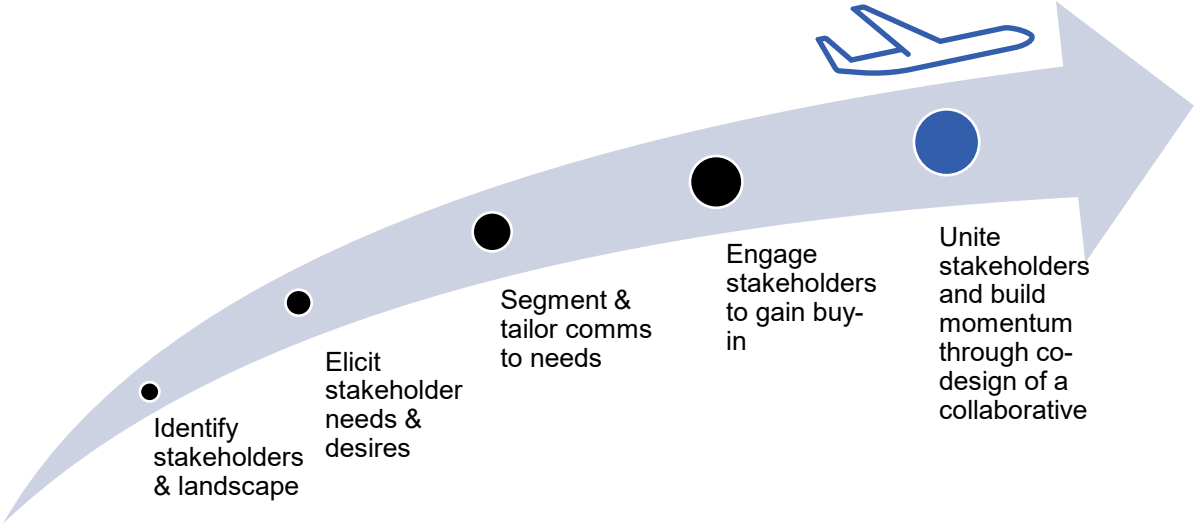
Legend: Yellow highlights indicate current process status

Background
Process
Engagement
Concept

Summary of MITRE CAASD Stakeholder Engagement

Multiple engagement activities foster buy-in

- Conducted one-on-one outreach with 4 pilot and trade associations to prepare for 2023 info sessions, to shape compelling case for collaboration and encourage member interest
- Held three 2023 info sessions (total 26 attendees) to drive interest in joining the collaborative
 - Recruited more medical providers/AMEs and airlines due to 11/30, 12/8, 12/13 sessions
- Provided prebriefings / advance coordination with selected kickoff invitees as they requested
- Held March 5, 2024 kickoff with 18 participants
- Engaged in one-on-one follow-ups with participants as they requested
- Prepared March 27, 2024 workgroup meeting to explore initial mental health use case (e.g., mild depression/anxiety)



Background
Process
Engagement
Concept

Strategic Engagement to Inform, Shape, and Recruit

Pre-kickoff coordination informed objectives, candidate attendees, and agenda

Objectives

Pre-kickoff: Coordinate with participants to inform the kickoff objectives and agenda, identify other candidate participants

Kickoff: Demonstrate a willingness to explore how we might work together

Kickoff and near-term:

- Create a shared, compelling vision of our work together
- Define how we might collaborate using data to inform a better future state
- Identify potential studies or use cases to further explore, and next steps including follow-on workshops and activities

Participants

Participants represented major stakeholder segments identified in Phase 1

Pilots & Associations



Airlines



AMEs / Providers



FAA

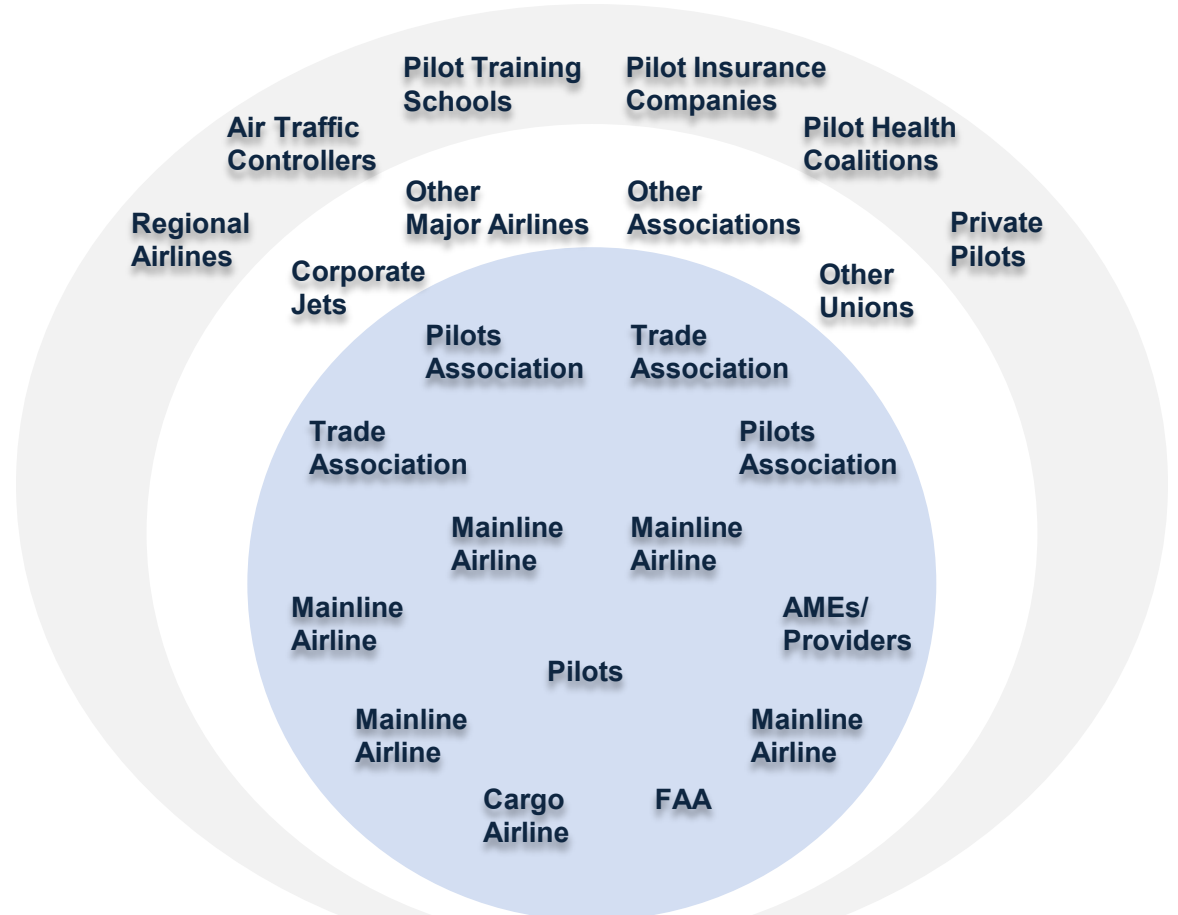
Background
Process
Engagement
Concept

Potential Future Stakeholder Engagement

ACC traction will inform stakeholders and drive consideration of roles for new participants

MITRE CAASD’s stakeholder analysis identified five main segments (others to be included later as aligned):

- **Pilots:** Concerned about process delays and uncertainties that affect their livelihood and health.
- **Airlines:** Affected by workforce’s ability to fly, interested in operational performance, safety, and efficiency. Initial outreach was with large airlines given United States flight coverage and ability to provide data.
- **Providers/AME:** Interested in pilots’ health and well-being, open to improved process, and hold pilots’ medical history data.
- **Associations:** Unions can advocate for pilots, amplify collaboration, and have established communication. Initial outreach was with pilots’ associations that are aligned with participating airlines as possible. Outreach was also with trade associations that encourage aviation sector development and advocate for their members’ interests.
- **Government:** FAA Office of Aerospace Medicine (AAM) is interested in optimizing future state of aviation safety risk management through data-driven collaboration.

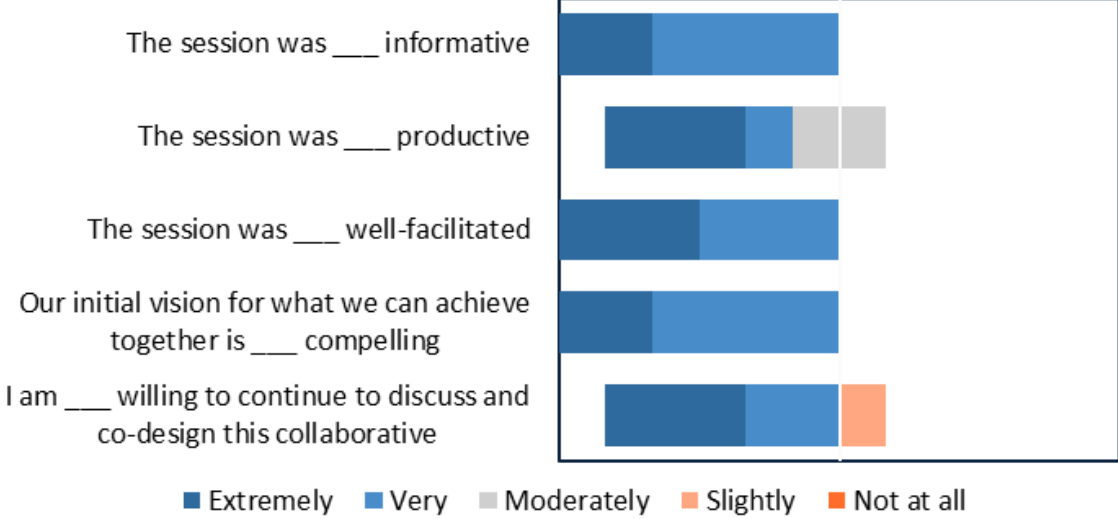


Current Stakeholder Engagement Landscape

Kickoff Participants Demonstrated Collaboration

Participants engaged in looking beyond current state to envision 5-year future

- Team gave real-time input and ideation



- See key takeaways on following slides as *noted*

I thought the discussions were great, and they were informative for me

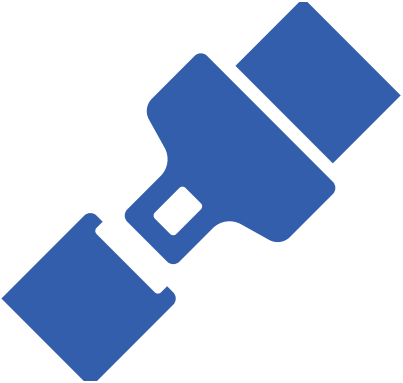
Nicely done. A very nebulous topic that is very hard to get a handle on

March 5, 2024 Kickoff Agenda Item	Takeaways
10:00 Welcome, Introductions, and Logistics Group introductions and warm-up	
FAA Perspective Dr. Susan Northrup, Federal Air Surgeon	
Research Findings to Date MITRE CAASD presentation – what have we heard?	
Ground Rules Facilitated exercise – how should we work together?	<i>See slide 11</i>
Shared Vision Facilitated exercise – what might we achieve in collaboration?	<i>See slide 12</i>
LUNCH	
Use Case Exploration Facilitated exercise – what is useful to analyze?	<i>See slide 13</i>
BREAK	
Use Case Discussion Facilitated exercise – where might we start?	<i>See slide 13</i>
Next Steps Facilitated discussion – where do we go from here?	<i>See slide 14</i>
3:30 Closing	

Background
Process
Engagement
Concept

Kickoff Participants Established Initial Ground Rules

Good faith – non-punitive use – is critical; many also expect need to formalize safeguards



Safety focus

Collaborate only to advance public trust and aviation safety



Good faith

Engage actively, openly, equitably, professionally, and non-punitively



Non-attribution

Don't publicly name sources of info from this forum



Ethical behavior

Participate with integrity, following applicable laws, e.g., non-collusion

Notes: At this time, participation does not equal commitment to data sharing. Additional work is required to translate participation into data sharing. Work is underway scoping use cases.

Kickoff Participants Defined the ACC Concept (1/2)

Participants defined the ACC vision, what success looks like, and key attributes

- Vision: FAA and industry collaborate to co-develop data-driven future of aeromedical safety risk management
- Success, in the form of headlines ripped from future newspapers:
 - “Aviation industry embraces modern science to improve pilot health”
 - “FAA and Airlines partner for next generation of pilot med[ical] cert[ification]”
 - “Pilots no longer fear [reporting] mental health”
- Key attributes shared among airline, union, pilot, and government stakeholders:
 - Reduce healthcare avoidance, nondisclosure, burden on pilots
 - Data-driven, risk-based approach to improve safety and efficiency (optimize regulation)

Kickoff Participants Defined the ACC Concept (2/2)

Participants defined the ACC initial use cases for further exploration in a working group

Notwithstanding work to-date on current state, participants suggested these topics for consideration as future state use cases:

- Mild depression / mild anxiety
- Attention Deficit Hyperactivity Disorder (ADHD)
- Disqualifying medications
- Executive dysfunction
- Obstructive sleep apnea
- Cardiac assessment (e.g., need for annual electrocardiogram (EKGs))
- Vision performance
- Human immunodeficiency virus (HIV) / hepatitis C (Hep C)
- Co-occurring disorders (e.g., substance abuse/mental health)*
- Clinical practice guidelines / Conditions AMEs Can Issue (CACI) standardization

*The first workgroup addressed mental health on March 27

Summary of Aeromedical Certification Collaboration Kickoff March 5, 2024

Background
Process
Engagement
Concept

“ It’s not about protecting planes from pilots, but about how we can safely have pilots fly airplanes ”

Short-Term Outcomes

Demonstrate a willingness to explore how we might work together

- Create a shared, compelling vision of our work together
- Define how we might collaborate using data to inform a better future state
- Identify potential studies or use cases to explore, and next steps including follow-on workshops and activities

Ground Rules (Living Document)

Safety Focus | Good Faith | Non-Attribution| Ethical Behavior

- Minimize outside intrusions, be present
- Treat everyone with dignity and respect
- Everybody has an equal voice, so speak up
- Suspend judgement, be open to other’s ideas
- We can agree to disagree but not be disagreeable
- End of the day, this is all about pilots and safety
- Work collegially to form a consensus
- Have fun

Next Steps

Continue collaboration in larger group and initiate workgroup for use case refinement

Use Cases: High Feasibility / High Potential Value

- Pilot mental health (ADHD, mild depression/anxiety)
- Co-occurring disorders (substance abuse & mental health)
- Relevance of disqualifying medications
- Cardiac assessment (annual EKG – overkill)
- Obstructive sleep apnea
- Clinical practice guidelines/CACI standardization
- (and others)

Headlines

Impact of our work in 2029



Reflections

- Need data-driven, risk-based approach
- Reduce healthcare avoidance and non-disclosure
- Reduce burden on pilots and FAA
- Integrate new medicine/technology
- Improve efficiency w/o compromising safety

History

- Certification primarily based on condition vs. performance
- Aspects haven’t changed in 100 years
- Process is seen as burdensome and not always fair

Group Experiences & Abilities

Physician: population health & SDOH	Overarching int'l/domestic view	Committed advocate for pilots
Years of airline carrier experience	Daily view of challenges of medical certification	Patience
Enablers & safeguards	40 years clinical & flight medicine	Mental health HIMS
Passion for advancing art/science of aerospace medicine	Deep knowledge of pilots who lost certification	

Current State Observations

- Everything is on the table: Is our hazard assessment correct? How do we manage safety risk? What is acceptable risk? What does oversight (assurance) mean?
- Policies and procedures have improved in the FAA (i.e., diabetes and SSRI)
- HIMS program and union/company programs are successful
- Unknown effect of condition/medication on performance and self-disclosure rates
- There is not much that is data-driven in current aeromedical system
- Will likely need to co-define mutually agreeable safeguards (e.g., NDA) soon

Challenges

- Aeromedical certification is overconservative because link to performance unclear
- Current method will not scale
- FAA’s budget is not growing & process will break
- Multiple owners of safety risk – need coordination
- Need more AMEs
- Process is overly complex (i.e., time, resources, cost)

Visual Takeaways Shared with Participants

Shows participants able to work together to frame what’s possible and fosters buy-in to see their work reflected back

Note: Participants’ views are solely their own and do not necessarily reflect those of their organizations nor imply endorsement of ACC

Background
Process
Engagement
Concept

MITRE CAASD's Recommendations

Support momentum from kickoff to refine ACC concept

- To achieve the ACC vision and desired outcomes, MITRE CAASD recommends that:
 - MITRE CAASD continue to engage core participants in shaping the aeromedical certification collaborative concept and its enablers and safeguards, serving as trusted third party/connector
 - Industry contribute time/expertise to ACC and work to determine how to share data and what agreements, safeguards, and enablers they require
 - ACC participants pursue priority use cases
 - FAA sustain focus and resourcing for what is reasonably attainable for ACC this year, as well as champion ACC and actively participate as appropriate
 - Preparing for and holding co-design workshops
 - Clarifying core partnership concept
 - Co-designing agreements
 - Selecting viable prototype/study
 - Conducting data sharing and analysis per established safeguards (next phase)

Acronyms / Abbreviations

AAM	Office of Aerospace Medicine
ACC	Aeromedical Certification Collaborative
ADHD	Attention Deficit Hyperactivity Disorder
AME	Aviation Medical Examiner
CAASD	Center for Advanced Aviation System Development
CACI	Conditions AMEs Can Issue
FAA	Federal Aviation Administration
FFRDC	Federally Funded Research and Development Center
MITRE	The MITRE Corporation

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