

Research, Engineering, and Development Advisory Committee REDAC: Sub-committee on Aircraft Safety (SAS) Meeting



**Federal Aviation
Administration**

AVS Research, Engineering
and Development



Presented to: REDAC SAS

Date: 8/11/21

Purpose

- Overview of updates to the Aviation Safety R&D Process to be used to produce the FY24 Aviation Safety Research Portfolio
 - Refresher
 - Process Updates
 - Updated BLI Plans
 - Key Portfolio Dates

Refresher



AVS Mission

To provide the safest, most efficient aerospace system in the world through a data-driven, risk-based, systems approach for standards, certification, and oversight.

AVS-sponsored Research

The primary purpose of AVS-sponsored research is to support the development of regulations, standards, and guidance materials needed to meet the FAA safety goals and objectives.

Basic Process Steps

- Formulate Out-year Budget Request (i.e. FY24)
 - Update 5-year BLI Plans
 - Develop Research Project Proposals within each BLI
 - Rank and Budget Program Research Project Proposals
 - Obtain recommendations from REDAC
 - Finalize Aviation Safety Portfolio for submission to OST/OMB
- Execute planned research adjusted for current-year Appropriation Language (i.e. FY22) and other changing conditions

FY23
forward

AVS RE&D Management Team (REDMT)

- The AVS REDMT is the Chartered decision-making body with the authority to make decisions based on service/office input and support for the Aviation Safety R&D Program.
- The team is comprised of at least one or two managers from each of AVS Services/Offices that sponsor research
- The team is chaired by the AVS R&D Program Managers in the Office of Accident Investigation and Prevention
- AVS REDMT members lead the BLI Teams



BLI Teams

- A BLI Team is formed around each of the BLIs in the Aviation Safety RE&D Portfolio to plan and execute research.
- The BLI Teams are led by the AVS REDMT Members from Services/Offices (S/Os) that sponsor research within the given BLI with one REDMT member designated as the “lead” for the purposes of organizing and running the meetings.
- In addition to the AVS REDMT members, the BLI Teams are comprised of:
 - Research Sponsors from the S/Os that sponsor research within the given BLI (*i.e. Subject Matter Experts: Chief Scientists & Technical Advisors, Senior Technical Specialists, Aviation Safety Engineers and Inspectors, etc.*)
 - Research Managers from the research offices (i.e. ANG and CAMI) that plan, manage, and execute the research within the given BLI (*i.e. Subject Matter Experts: Program/Project managers, researchers, budget analysts, etc.*)



FY24 Research BLIs & BLI Teams

AVS BLI Ref Number	BLI Title	BLI Team Sponsoring Services/Offices (lead member in bold)	BLI Team Research Offices (BLI Lead organizations in bold)
A11A	Fire and Safety Research	AIR	ANG-E2
A11B	Propulsion and Fuel Systems*	AIR	ANG-E2
A11C	Advanced Materials/Structural Safety	AIR , AFX	ANG-E2
A11D.AI**	Aircraft Icing	AIR , AFX	ANG-E2
A11D.SDS**	Software and Digital Systems	AIR	ANG-E2
A11E	Continued Airworthiness	AIR	ANG-E2
A11G	Flightdeck/Maintenance/System Integration Human Factors	AFX , AIR, AAM	ANG-C1 , AAM-500
A11H	System Safety Management/Terminal Area Safety	AFX , AIR, AOV, AVP	ANG-E2
A11J	Aeromedical	AAM , AFX, AIR	AAM-600
A11L	Unmanned Aircraft Systems	AUS , AIR, AFX, AAM, AOV, AVP	ANG-C2
A11M	Alternative Fuels for General Aviation	AIR	ANG-E2

*NOTE: Aircraft Catastrophic Failure Prevention Research was incorporated into Propulsion and Fuel Systems Budget Narratives starting in FY19.

**NOTE: Previous to the finalized FY22 President's budget Aircraft Icing and Software and Digital Systems were together in a single BLI



Process Updates

- **BLI Plans:** Reworked and Updated BLI Plans to be more top-down and strategic with executive sign-off.
- **Research Project Proposals:** Clarified definitions, roles & responsibilities, improved alignment with FAA R&D Program, and strengthened the connection to the BLI Plans.
- **Obtain recommendations from REDAC:** Beginning to use the BLI Plans to communicate program and status with SAS.
- **Ranking and Budget Programming:** Clarified pairwise question definitions and strengthened the connection to the BLI Plans.
- **Finalize Aviation Safety Portfolio:** Strengthened connection to the BLI Plans.



Updated BLI Planning



5-Year BLI Plans

Original Intent of Plans

- Top-down and more strategic
- 5-Year planning (*with annual/regular updates*)
- Annual (1 year) budgeting is just a slice of the full 5-Year Plan, as opposed to developing an annual “single year” plan

State from last year

- Mostly bottom-up (i.e. continuation of existing research projects and projects grouped into programs)
- BLI Teams worked independently and the Plans were not consistent nor fully integrated at the AVS and FAA Level

Updated Planning

- Added a specific requirement/need pre-planning activity for each S/O
- Updated and standardized information required in the BLI plans
- Standardized the use of projects across program
- Added line-of-sight tie between S/O desired Operational Capabilities, Safety Outcomes, and the Research Project Proposals

S/O Requirements/Needs for Research

- **Operational Capability:** The desired future ability to do something new in the aerospace ecosystem (i.e. new technologies and/or operations). For example, *electric propulsion in air taxi operations* would be an operational capability.
 - In the context of the BLI Plans, these are the future abilities that require/need research to inform the safety regulations and standards that will allow these.
 - Each Service/Office provides a prioritized list of their the Operational Capabilities they are seeking to enable in the future.
- **Outcome:** The measureable safety goal that will be used by the S/O sponsor to verify achievement of the targeted operational capability.
- **Research Questions/Outputs:** The description of the gaps in knowledge/data/etc. the Service/Office needs to inform their regulations and standards to enable the Operational Capabilities.
 - In the context of the BLI Plans, an OC can have many Research Questions/Outputs
 - Each research question/output generates a separate Research Project Proposal.

FY22-27 BLI Plans: Sponsor pre-planning

Service/Office (S/O) Sponsor Requirements/Needs Definition:

- Individual REDMT Members work within respective S/Os to:
 - Define the Requirement Essential Elements of Information (EEI)
 - Operational Capabilities and desired Safety Outcomes
 - Primary Sponsor Points of Contact
 - S/O Operational Capability Priority
 - Proposed BLI Assignment
 - Conduct Gap Analysis
 - Determine what information or data is currently unavailable that is needed to achieve the targeted operational capability
 - Determine the Research Questions & Research Outputs needed to fill the gaps
 - Obtain S/O Executive approval

BLI Plan Preparation:

- BLI REDMT Members and the BLI Team members update Parts 1 & 2 of the BLI Plans
 - BLI Scope
 - S/O prioritized Operational Capabilities and desired Safety Outcomes
 - Research Questions and Research Outputs for each Operational Capability
 - S/O Executive signature

SAS Discussion Question

- Given that some of the Operational Capabilities defined herein are the technologies and operations that industry wants to introduce into the airspace ecosystem, how can the REDAC-SAS help the FAA identify and prioritize potential Operational Capabilities for the FAA to consider in future years?



Key Portfolio Dates

06/21/2021

- Kick-off FY24 Portfolio Build

8/10-11/2021

- Summer/Fall SAS Meeting

10/1/2021

- FY22 Begins

10/7/2021

- Tentative Summer/Fall full-REDAC

2/10/2022

- FY24 AVS Draft Portfolio

3/TBD/2022

- Winter/Spring 2022 SAS Meeting

4/TBD/2022

- Tentative Winter/Spring full-REDAC

6/1/2022

- FY24 FAA Portfolio sent to OST

Questions I can answer?





Back-up Materials - NONE