

REDAC and Subcommittee: Roles and Responsibilities

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**Federal Aviation
Administration**



Basis for REDAC

- 49 USC § 44508 - Research advisory committee
- Established a research advisory committee in the FAA, which shall
 - A. Provide advice and recommendations to the Administrator of the Federal Aviation Administration about needs, objectives, plans, approaches, content, and accomplishments of the aviation research program;
 - B. Assist in ensuring that the research is coordinated with similar research being conducted outside the Administration;



Basis for REDAC, cont'd

- C. Review the operations of the regional centers of air transportation excellence; and
- D. Annually review the allocation made by the Administrator of the amounts authorized among the major categories of research and development activities carried out by the Administration and provide advice and recommendations to the Administrator on whether such allocation is appropriate to meet the needs and objectives identified under subparagraph (A).



Basis for REDAC, cont'd

- The Administrator may establish subordinate committees to provide advice on specific areas of research.
- FAA established the following:
 - Aircraft Safety
 - Airports
 - Environment and Energy
 - Human Factors
 - NAS Operations



Operation of REDAC and Subcommittees

- Two sets of meetings (full committee and subcommittees) held annually
- First meeting in summer/fall timeframe
 - Purpose is to provide strategic guidance to the FAA to develop the upcoming FY+3 research portfolio
 - HF Subcommittee – advice on writing requirements
 - FAA informs the subcommittee so they can provide the strategic guidance
 - Review of past year activities and accomplishments
 - Selected deep dives
 - Drafts of FY+3 requirements (FY 2016 draft requirements)



Operation of REDAC and Subcommittees

- Two sets of meetings (full committee and subcommittees) held annually
- Second meeting in winter/spring timeframe
 - Purpose is to review the R&D portfolio developed based on their strategic guidance from fall meeting
 - FAA briefs the proposed R&D FY+2 portfolio
 - Subcommittee provides recommendations on the proposed portfolio



Purpose of Subcommittees

- Formed by FAA to assist REDAC
 - Provide advice to REDAC on specific areas of research
 - Assist in identifying overarching issues that could affect R&D portfolio
 - Help the FAA establish the best possible R&D portfolio within the constraints of FAA's available resources



Subcommittee Designated Federal Official (DFO) Responsibilities

- Work with Subcommittee Chair to schedule subcommittee meetings
- Coordinate meeting agenda with the Subcommittee Chair
- Attend all committee meetings
- Work with subcommittee chair to finalize recommendations
- Accountable for providing all meeting materials to the subcommittee two weeks before meeting
- Responsible for taking minutes and coordinating with the Subcommittee Chair to have meeting minutes finalized two weeks after meeting



R&R Supplement for HF Subcommittee

Draft FY 2016 Requirements Reveiw



Phases of AVS Prioritization Process

- Phase 1: Technical Prioritization
- Phase 2: Requirement Cost Estimates
- Phase 3: Portfolio Budget Programming
- Phase 4: Final Review and Approval

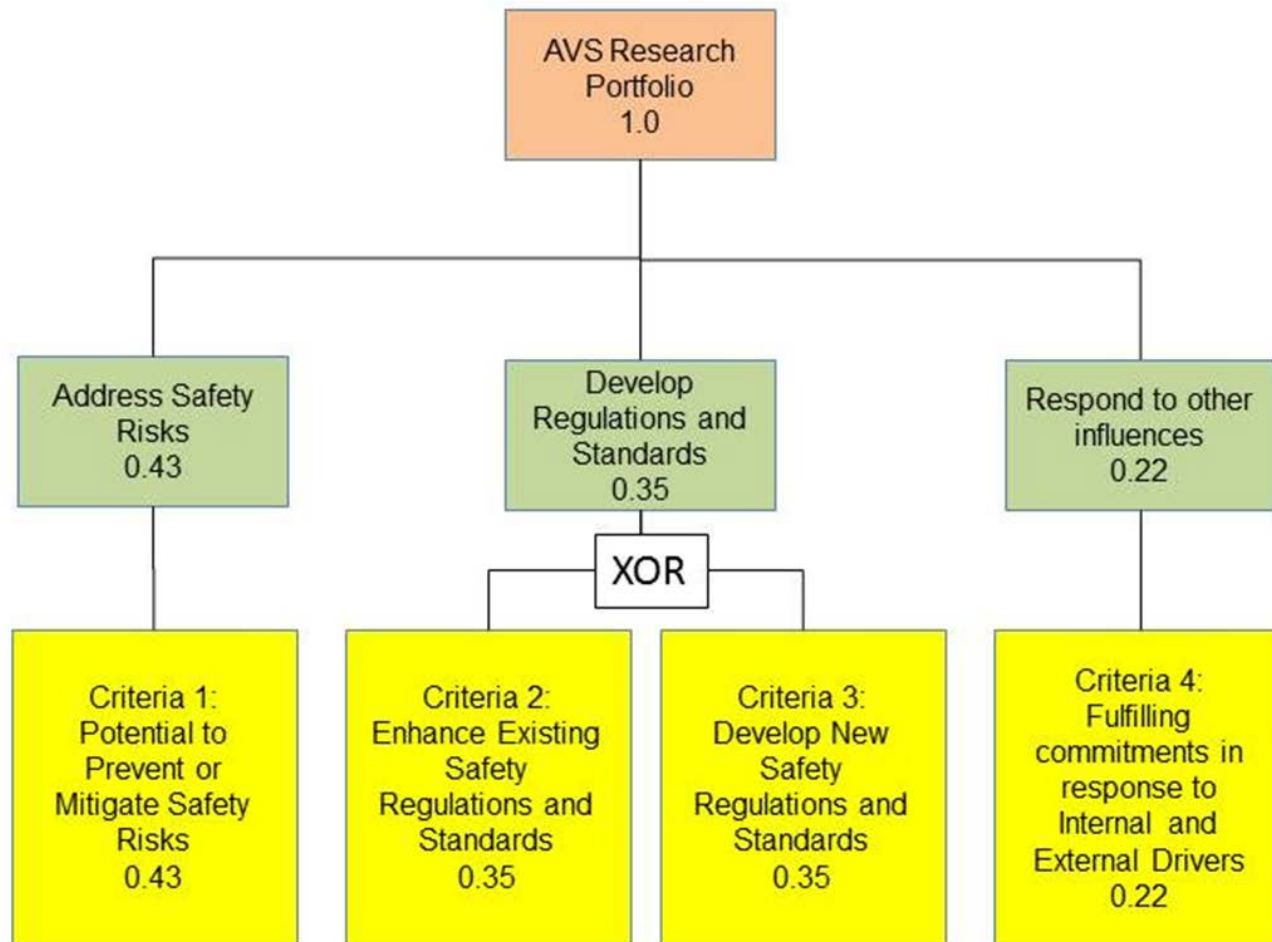


Phase 1: Technical Prioritization

- Technical criteria and weights
 - Potential to prevent or mitigate safety risk (0.43)
 - Enhance existing safety regulations and standards (0.35) -OR-
 - Develop new safety regulations and standards (0.35)
 - Fulfilling commitments in response to internal and external drivers (0.22)
- Requirements are ranked from highest to lowest relative priority based on the composite score



Phase 1: AVS RE&D Ranking Criteria



Criteria: choose the 3 criteria that make the strongest case for the requirement.



Scoring for Ranking Criteria

Rank	Evidence	Impact	Rating
1	High	High	Essential
2	Low	High	Very Important
3	High	Low	Important
4	Low	Low	Useful
5	None	None	None



Criteria 1 – Potential to prevent or mitigate safety risks

- **EVIDENCE** - There is evidence of one or more of the following
 1. Past aviation-related accidents, incidents, injuries, and/or health issues that this requirement will address (either prevent or mitigate).
 2. Potential aviation-related accidents, incidents, injuries, and/or health issues that could occur that this requirement will address (either prevent or mitigate).
 3. A significant need to identify and quantify unknown or potential accidents, incidents, injuries, and/or health hazards.



Criteria 1 – Potential to prevent or mitigate safety risks

- **IMPACT** - The outcome of the requirement (if successful) will have a specific impact on one or more of the following:
 - The prevention of accidents, incidents, injuries, and/or health issues or mitigation of fatalities and injuries if there is an accident or incident.
 - The ability of the organization to understand the safety risk of potential accidents, incidents, injuries, and/or health hazards and take timely and appropriate action.
 - The ability of the organization to identify and quantify unknown or potential accidents, incidents, injuries, and/or health hazards).



Criteria 2 – Enhance existing safety regulations or standards

- **EVIDENCE** - There is evidence of a deficiency (need to improve current regulations and standards) in existing regulations and standards that this requirement will address.
 - Evidence should include the specific rationale justifying the necessity for the research to support enhancement of existing safety regulations and standards.
 - Timely updates to existing regulations and standards are critical to fulfilling the AVS mission.

NOTE: In this usage, safety regulations and standards is meant to encompass directives, advisory material, means of compliance practices, rulemaking, policy letters, and any official document issued by any organization in AVS.)



Criteria 2 – Enhance existing safety regulations or standards

- **IMPACT** - The outcome of the requirement (if successful) will have a specific, timely, and positive impact in addressing deficiency in existing regulations or standards.

NOTE: If the TCRG uses criteria 2 to justify the ranking of a requirement for a given fiscal year, then criteria 3 does not apply in that fiscal year. Criteria 3 may be used in subsequent fiscal years.



Criteria 3 – Develop new safety regulations or standards

- **EVIDENCE** - There is **evidence** of a need to develop new safety regulations and standards.
 1. Should include the specific rationale justifying the necessity for the research to support development of the new safety regulations and standards.
 2. Timely development of appropriate regulations and standards is critical to fulfilling the AVS mission.

NOTE: In this usage, safety regulations and standards encompasses directives, advisory material, means of compliance practices, rulemaking, policy letters, and any official document issued by any organization in AVS.



Criteria 3 – Develop new safety regulations or standards

- **IMPACT** - The outcome of this requirement (if successful) will have a specific, timely, and positive impact on the ability of AVS to perform its mission.

NOTE: If the TCRG uses criteria 3 to justify the ranking of a requirement for a given fiscal year, then criteria 2 does not apply in that fiscal year. Criteria 2 may be used in subsequent fiscal years.



Phase 2: Requirement Cost Estimates

- Performing organizations develop cost estimates for requirement prioritized in Phase 1
- Cost estimates will include:
 - High, medium, and low cost plan for the year of execution
 - Fiscal year costs for the duration of the research project
 - Estimated travel costs by requirement and explanation of how the travel supports the requirement
 - Number of RE&D in-house fulltime equivalents (FTEs) that will support the requirement, by fiscal year, for the expected duration of the research project
 - Estimates of performing organizations' facility costs on a per unit basis and all other associated overhead costs for each research project that uses a facility
- Performers work closely with sponsors to ensure requirement and cost estimate are clearly aligned and to clarify any ambiguities in the requirement. Sponsors may be asked to validate cost estimates against planned activity.



Phase 3: Portfolio Budget Programming

- Each AVS RED Group member reviews the cost estimates for each requirement
- AVS RED Group meets to discuss and program funds to the requirements
 - Funding is programmed to requirements in priority order until the budget target is exhausted
 - Carryover funding is reviewed and considered in the development of the draft portfolio



Phase 4: Final Review and Approval

- Draft portfolio recommended by the AVS RED Group undergoes an iterative set of reviews
 - S/O Review and Approval: S/Os validate the prioritization, provide guidance, and recommend adjustments to ensure that the most critical AVS research will be accomplished within the anticipated budget targets.
 - Other Reviews: Include Aircraft Safety PPT, REB, REDAC, and SAS.
 - Final AVSMT Review and Approval:
- Final approval of the AVS R&D Portfolio is granted by AVS-1 and the AVSMT (~Mar-Apr 2014)



Examples of Top Ranked Requirements

The following FY 2015 requirements were ranked in the Top 15:

1. **TAS-15-01** Models for Advanced Flight Simulators For Advanced Maneuvers
2. **FCMS-15-02** Preventing Loss of Control in Part 23 by Safer Automation using Envelope Protection
3. **UAS-15-02** Sense and Avoid (SAA) System Certification Considerations Testing and Validation of Non-deterministic Data Processing



END

Questions???



AVS Requirements Terminology

- Exit Criteria – measureable goal of a phase that must be met before moving to the next phase.
- Implementation Plan – detailed description of what the sponsoring organization is going to do with the outputs to achieve the stated outcome. Plans could include publishing policy and guidance, deploying training, publishing industry standards, rulemaking, etc.
- Metric – measurement of a change from a baseline. In R&D, the metrics are used to judge the completion of a phase against the exit criteria to justify moving to the next phase.
- Milestone – significant event in the process of conducting the research project that indicates a decision point or release of an output.
- Outcome – future state desired by the sponsoring organization in a given area under their responsibility.
- Output – results of the research, usually in the form of a final FAA report; the deliverables supplied at the completion of a set of research tasks.
- Phase – logical groupings of milestones and tasks with specific exit criteria and timelines for each phase within a research project.
- Requirement Write-up – description of the necessary research entered into the required AVS R&D Submission Form on the AVS RE&D Management System SharePoint website.
- Research Project – organized collection of tasks, milestones, and phases intended to satisfy the research requirement. There is one research project for each research requirement. Outputs from the research project are applied by the sponsor to the execution of the implementation plan.
- Research Requirement – term used to describe an area of inquiry that supports the needs of a sponsor.
- Task – specific step in the process of conducting the research project that leads to an output.



Definitions

- AIR REDMT – Aircraft Certification RE&D Management Team
- AVS REDMT – Aviation Safety RE&D Management Team
- Implementation – The activity planned by the sponsoring organization to use the research output to achieve the desired outcome. (i.e. rule, advisory circular, policy, training, etc.)
- OPI – Office of Primary Interest. The primary sponsor contact with a TCRG. There is only one OPI per TCRG and the individuals that are designated OPIs are delegated program coordination responsibilities by their respective SMT Manager.
- Outcome – A future state desired by the sponsor
- Output – The results of a research project (i.e. reports, data, etc.) that are used by the Sponsor to produce rules/guidance/training/etc. to achieve the desired outcomes
- Performer – The Technical Center organization/individuals that conduct or provide contract oversight for the research
- PPT – Program Planning Team
- REB – RE&D Executive Board
- REDAC – RE&D Advisory Committee. A group of industry, academia, and non-FAA government agency people that advise the FAA Administrator on RE&D.
- RE&D – Research, Engineering, & Development. The term that refers specifically to the process for obtaining and spending budget to accomplish research.
- SAS – Subcommittee on Aircraft Safety (part of REDAC that advises the Administrator on AVS RE&D)
- Sponsor – The individual assigned the responsibility for participating in a given research project by the management of the Sponsoring Organization. Their name will appear in the “Sponsor” field on the requirement write-up. In AIR, technical responsibility is usually delegated from the SMT Manager to one or more individual TCRG Members assigned to the TCRG.
- Sponsoring Organization – The AVS organization that is requesting the research and using it to develop rules/guidance/training/etc. to achieve the desired outcome. The manager has the responsibility and authority in the Sponsoring Organization and may delegate some or all of it to others within their organization. (e.g. within AIR, the Service responsibilities for RE&D are delegated to the SMT)
- TCRG – Technical Community Representative Group consisting of AVS (sponsor) and FAA Technical Center (performer) personnel focused on a particular discipline (i.e. icing, flight controls, etc.)
- TCRG Lead – The focal point responsible for the operation of a given TCRG. Their responsibilities include calling TCRG meetings, disseminating information about the AVS R&D process, helping the TCRG members write requirements, and interfacing with the OPI.
- TCRG Member – The individual assigned by the Sponsoring Organization management to represent their respective organization on the TCRG.



Key Stakeholders and Functions

- Research Sponsor
 - Defines and owns the R&D requirement which supports identification, validation, or development of knowledge, technologies, systems, and procedures required to meet the safety goals of regulatory and oversight programs
 - Develops and takes ownership of requirements; responsible for monitoring research and post-research implementation progress
 - Shares planning and budgeting for research execution with research providers
 - Sponsoring Organizations: AAM, AFS, AIR, AOV, AVP
- Research Performer
 - Manages the research that fulfills the R&D requirement and provides research results
 - Provides technical expertise, advice, and recommendations for research requirements
 - Planning and budgeting for research execution are shared responsibilities between Research Sponsors and Performers
 - Performer Organizations: AAM-500, AAM-600, ANG-C, ANG-E



Key Stakeholders and Functions

- Technical Community Representative Groups (TCRGs)
 - The initial point-of-origin in AVS for identifying research requirements within a particular area of technical responsibility in certification and safety monitoring
 - Work with the larger technical community consisting of individuals and groups in government, industry, and academia who are responsible for a particular technical area
 - Ensure that all proposed requirements are vetted through the sponsoring S/O
 - Suggest new technical requirements, approaches, and technical solutions to meet research requirements
 - Examples of such sources include:
 - Policy staffs
 - FAA management
 - Field inspectors
 - Engineers
 - Pilots
 - National Resource Specialists (NRS)
 - Chief Scientist and Technical Advisors (CSTAs)
 - The aviation community at large
 - The research community
 - Participating Organizations: AVS S/Os, ANG offices, and other FAA LOBs



Key Stakeholders and Functions

- AVS Research, Engineering, and Development (RED) Group
 - Made up of six members representing AVS, AAM, AFS, AIR, AOV, and AVP.
 - Responsible for managing the AVS R&D Process for each participating S/O.
 - Collects all requirements that have been submitted by the TCRGs and approved by the Sponsoring Directorate or Division and prioritizes them using the AVS ranking standards.
 - The AVS RED Group uses a two-phased approach to develop the R&D Portfolio:
 1. Technical evaluation of requirements
 2. Cost evaluation
 - **Each AVS RED Group member is responsible for coordinating concurrence or changes to the proposed AVS R&D Portfolio within their S/O.**
 - Participating Organizations: AAM, AFS, AIR, AOV, AVP
- Office of Primary Interest (OPI)
 - The Program Planning Team (PPT) will identify one OPI for each TCRG. The OPI is has the greatest interest in or need for research in the technical area. The OPI provides the TCRG with leadership and management support.
 - Each OPI will designate an OPI representative, usually an R,E&D coordinator or program manager from a Directorate or Division, who coordinates requirement completion and submittal.
 - Participating Organizations: AAM, AFS, AIR, AVP



Key Stakeholders and Functions

- FAA Program Planning Teams (PPT)
 - The PPTs are the primary preparers of process documentation and include research sponsors and performers.
 - The PPT monitors sponsor development progress of research requirements and, as required, meets to finalize and balance research requests and reconcile the budget target for a fiscal year.
 - AVS is the lead of the Safety PPT.
 - Participating Organizations for Aircraft Safety PPT: AAM, AFS, AIR, AOV, AVP, ANG-C1, ANG-E2
- FAA R,E&D Executive Board (REB)
 - The REB members use a top-down oversight approach to managing the portfolio process to:
 - Guide the initial portfolio planning and preparation phase.
 - Oversee the gathering of multiple projects' budget requests into one comprehensive R,E&D budget.
 - Oversee program impacts of the budget deliberation process.
 - Participating Organizations: ANG, AEE, ARP, AST, AVS, ABA, AIO, ABP-330
- Research, Engineering and Development Advisory Committee (REDAC) and Subcommittees
 - The Congressionally-mandated REDAC, established in 1989, advises the FAA Administrator on research and development issues. It also coordinates the FAA's R,E&D activities with industry and other government agencies.

