

FAA's Strategic Research Agenda

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Purpose and Agenda



Federal Aviation Administration

Purpose:

Present FAA's Research & Development (R&D) program strategy

Agenda:

- Executive Summary
- R&D Drivers
- R&D Management Goals/Objectives
- REDAC's Role and Assistance

Nature of FAA Research & Development

(Executive Summary)

Statute: US Code Titles 42, 49

Applied Research

To analyze information and identify, develop, establish, improve, accelerate and/or enhance practicable <u>methods, procedures and new technologies</u>

Expected Outcome:

Provide scientific results that support the setting and enforcement of <u>standards</u> and <u>regulations</u> that **enable** the aviation industry's ability to predict and prevent Defects, Failures and Malfunctions





Strategic Emphasis on Partnerships

(Executive Summary)







FAA Research & Development at a Glance

(Executive Summary)



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Research Programs by Research Area

(Executive Summary)

Approp.	Research Program
Airport Technologies	
AIP	Airports Cooperative Research
AIP	Airports Technology Research
Aircraft Safety Assurance	
RE&D	Fire Research and Safety
RE&D	Unmanned Aircraft Systems
RE&D	Advanced Materials/Structural Safety
RE&D	Aircraft Catastrophic Failure Prevention
RE&D	Continued Airworthiness
RE&D	Propulsion and Fuel Systems
RE&D	System Safety Management/Terminal Area
	Safety
Digital Systems and Technologies	
RE&D	Aircraft Icing/Digital System Safety
RE&D	NextGen – Information Security
RE&D	NextGen – Flight deck Data Exchange
Environment and Weather Impact Mitigations	
RE&D	Weather Program
RE&D	NextGen – Weather Technology in The
	Cockpit
RE&D	Aircraft Icing/Digital System Safety
RE&D	Environment and Energy
RE&D	NextGen – Environmental Research – Aircraft Technologies and Fuels

Approp.	Research Program
Human Performance and Aeromedical Factors	
RE&D	Flight deck/Maintenance/Systems Integration Human Factors
RE&D	Air Traffic Control/Technical Operations Human Factors
RE&D	NextGen – Air Ground Integration Human Factors
RE&D	Aeromedical Research
F&E	NextGen Transportation System – Enterprise, Concept Development, Human Factors and Demonstrations Portfolio
Aviation Performance and Planning	
RE&D	System Safety Management/Terminal Area Safety
RE&D	Commercial Space Transportation
RE&D	NextGen – Wake Turbulence
F&E	Advanced Technology Development and Prototyping
F&E	NextGen – Separation Management Portfolio
F&E	NextGen – Traffic Flow Management Portfolio
F&E	NextGen – On Demand NAS Portfolio
F&E	NextGen – NAS Infrastructure Portfolio
F&E	NextGen Support Portfolio
F&E	NextGen – Enterprise, Concept Development, Human Factors, and Demonstrations Portfolio
F&E	NextGen transportation System – Unmanned Airspace Systems (UAS)
RE&D	System Planning and Resource Management





Emerging Technologies

(Executive Summary)













Hybrid-electric propulsion technology to be developed for commercial aircraft © Airbu













Research Program Strategy

(Executive Summary)







Administration's R&D Vision

FY 2019 Administration Research and Development Budget Priorities (OMB memo M-17-30)





DOT Strategic Plan - FAA R&D Alignment







R&D Portfolio: Objective & Goals

To ensure understanding of the broader R&D landscape and develop an effective and holistic FAA R&D portfolio

Goals

- 1. Effective communication of R&D plans, work efforts and accomplishments within the context of DOT/FAA strategic goals and broader aviation R&D landscape
- 2. Effective planning and prioritization strategy for R&D investments within a broader landscape





FAA National Aviation Research Plan

Provides 5 year R&D planning outlook across safety, efficiency and environmental principles

Goals

- 1. Improve airport operations, air traffic and air space management capabilities
- 2. Accelerate use of new technologies for aerospace vehicles, airports and spaceports
- 3. Increase infrastructure durability and resiliency
- 4. Improve the operation of the human component of the system
- 5. Improve integrated modeling capabilities and system-wide analysis





NARP Redesign Roadmap



Challenge: Communicating a coherent long-range research strategy while meeting highly prescriptive statutory requirement





Research Program Strategy







Research & Development Landscape





- Drivers?
- Needs?
- Activities?
- Investment levels?
- Valuation of FAA's R&D?
- Partners?
- Etc.

2. How do we apply our understanding to better drive FAA's investments and eliminate duplication?





Understanding



REDAC's Role



Discussion

REDAC INDUSTRY ACADEMIA GOVERNMENT CONFERENCES INDUSTRY/ ACADEMIA DAY

How may we use the upcoming 2019 REDAC meetings to develop Aviation Community R&D Landscapes?

REDAC Subs R&D Landscapes Aircraft Safety **Aircraft Safety Assurance Airport Technology Airports** Human Digital Performance **Systems** Human and and **Factors** Aeromedical **Technologies** Factors **NASOps Aviation Performance & Planning Env./Weather Impact Mitigation** Environment /Energy





REDAC: Comments to date

1. FAA Drafts Landscapes

• Performers/Chief Scientists/Sponsors

2. Landscapes:

- Current state/core capabilities
- Aviation Drivers:
 - Issues
 - Requirements (legislative, technical)
 - the "Why" for current regulations
 - Community environmental factors "What is happening or occurring in the aviation community"
 - REDAC Enabling Technologies

3. REDAC Reviews

- Identifies gaps and expands
- Assists in identifying industry research investments (or sources)





BACKUP





How may REDAC assist?

FAA in developing a comprehensive view of R&D required to support vibrant aviation sector

Identifying:

- Drivers/Needs/Activities/Investments;
- Estimated impact and valuation of FAA R&D;
- Short, medium or long term R&D;
- Duplicate R&D;
- Opportunities to build off of efforts currently underway;
- Potential industry, academia & government partnerships
- Opportunities to share assets;

Outcomes:

- Identify the minimum, if any, research that the FAA <u>must</u> lead
- Identify the level of research investment the aviation community is making or is willing to make
- Identify opportunities to leverage FAA's R&D infrastructure
- Other?





