REDAC / Human Factors

Enterprise Human Factors

BLI Number: 1A12B0/1A11B0

Presenter Name:

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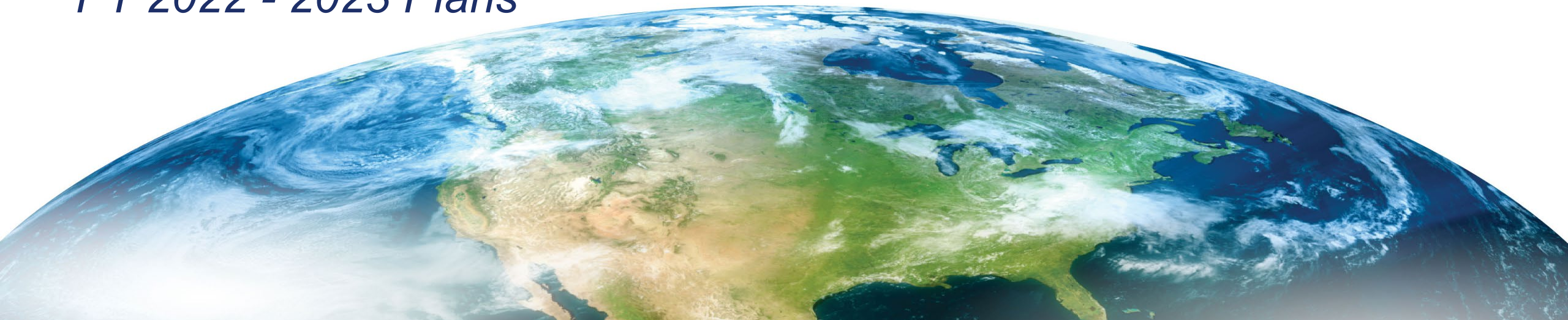
Date: August 19, 2021

Review of FY 2021 Accomplishments and FY 2022 - 2023 Plans



Enterprise Human Factors Overview

What are the benefits to the FAA

- Enterprise human factors research investigates areas that have effects across NAS domains, systems, and programs. The program provides integrated guidance on human performance considerations to concept development teams, validation teams, and/or implementation teams. A primary focus is research that furthers successful integration of systems developed and deployed to enable NextGen concepts.

What determines program success

- Early identification of potential human performance issues and mitigation strategies that can support the usability, acceptability, and safety of NextGen concepts and systems.
- Results provided that can be used to improve individual program's development, validation, and implementation activities, though there are no formal dependencies to specific programs.

Enterprise Human Factors Program Support

People:

- Program Manager: Karl Kaufmann
- Subject Matter Experts: Bill Kaliardos
- Program Support: Carl Berntsen, Evan Harvey, Michelle Perdue

Laboratories:

- ANG-E25 Human Factors Branch, Aviation Research Division Research and Development Human Factors Laboratory
- MITRE Center for Advanced Aviation System Development

Research Focus Areas

1. Traffic Management Human Factors

2. ATC Transformation Human Factors

3. Other Emerging Areas of Interest

Current FY21 Accomplishments

Research Area: Traffic Management Human Factors	
Research Activity	**Status and Product**
TBO Impact on TMU -- *Examine the human factors effects on TMU traffic managers using both cognitive modeling and laboratory methods.*	Phase 1 completed. Reports on cognitive model results of effects on enroute TMUs and cognitive walkthroughs with traffic managers from terminal, enroute, and command center.
TBO Training Model -- *Assess the current state of TBO training, develop a gap analysis and recommendations for enhancing training effectiveness.*	Phase 1 completed. Detailed prioritized roadmap for improving TBO training delivered.
TMU Regional Coordination and Decision Making -- *Identify ad hoc collaboration processes that have developed within regional clusters of facilities. Identify best practices. Forecast changing collaboration needs as NextGen capabilities spread throughout the NAS. Develop recommendations to improve and standardize practices.*	Phase 1 kickoff. Research plan and description of current coordination practices completed.

Current FY21 Accomplishments (Continued)

Research Area: ATC Transformation	
Research Activity	**Status and Product**
Human Factors of Highly Automated Vehicles -- *Develop prioritized research plan to examine potential ATC human factors effects from introduction of new entrants to the NAS.*	Draft research plan completed.
Human Factors Impacts of Large ATC Displays – *Identify factors contributing to visually-induced motion sickness and visual fatigue in controllers using large displays. Develop mitigation recommendations.*	Project kickoff. Display selection complete.

Anticipated Research in FY22-FY23

Research Area: Traffic Management Human Factors
Planned Research Activity
TBO Impact on TMU *Phase 2 of both cognitive model and laboratory method research. Apply cognitive model to terminal environment. Perform simulation-based laboratory tests of phase 1 results of both methods.*
TMU Regional Coordination and Decision Making *Phase 2 will research coordination and collaboration in other domains involving highly interrelated, highly complex, and highly dynamic systems.*
TBO Training Model *Phase 2 will develop an example supplemental training product selected from the phase 1 roadmap and test its effectiveness.*

Research Area: Other
Planned Research Activity
Human Readiness Levels *This project will adapt Human Readiness Levels to FAA needs for application in acquisition and system assessment.*

Emerging FY24+ Focal Areas

Research Area: Traffic Management Human Factors

Traffic Manager Coordination, Collaboration, and Decision Making
Extend work to include Command Center and FOCs.

Future Flow Management/Performance Based Flow Management
Begin analysis of human factors implications of planned changes to ATM.

Research Area: ATC Transformation

Charting Aviation's Future
Begin analysis of human factors implications of planned changes to ATC.

Enterprise Human Factors

Research Requirements

Provide integrated enterprise HF guidance to:

- Increase the utilization rate of concepts and systems among controllers
- Ensure controller acceptance of concepts and systems
- Increase safety through the mitigation of known human factors risk
- Decrease controller workload through improved tools and techniques

Outputs/Outcomes

- HF Assessments, such as to determine operational context, NAS interactions, human actors, human factors risks and opportunities
- Enterprise level HF guidance, such as design/procedure/training recommendations for programs to consider

FY 2024 Planned Research

- ATC and Traffic Management Transformation Effects
- TBO Implementation and Usage Improvements

Out Year Funding Requirements

RE&D

FY21	FY22	FY23
$0	$0	$0

F&E

FY21	FY22	FY23	FY24	FY25	FY26
$1.5M	$1.0M	$1.5M	$1.5M	$2.0M	$2.0M