

# REDAC / Human Factors



Next**GEN**

*Enterprise Human Factors*

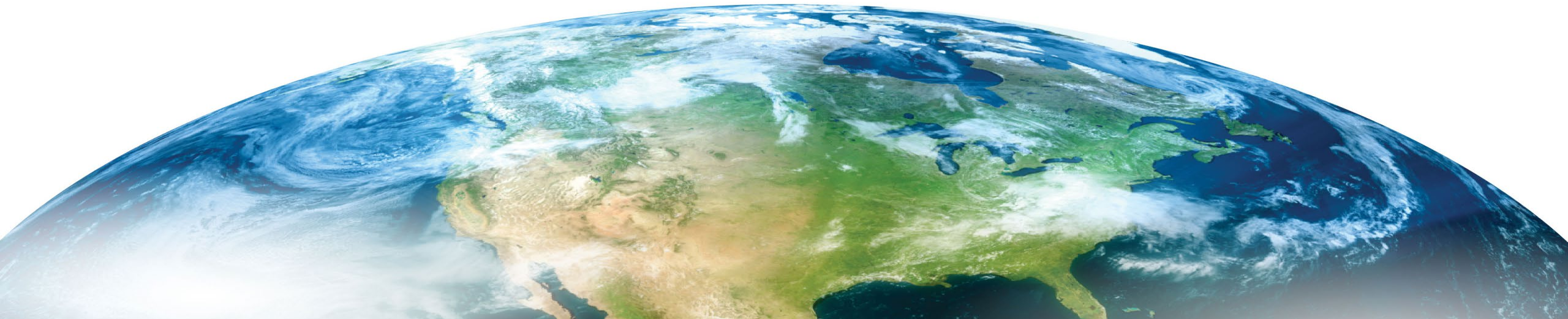
*BLI Number: 1A12B0/1A11B0*

*Presenters' Name:*

*Karl Kaufmann*

*Review of FY 2021 - 2023  
Proposed Portfolio*

*Date: March 24, 2021*



# 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



# Enterprise Human Factors – Accomplishments in FY21

Project	Description/Product	Vendor
TBO HF Impact on Enroute Traffic Manager Unit (TMU) - Cognitive Model Method	<b>Final Report</b> This work will provide a preliminary assessment of TBO impacts on Enroute TMUs for "initial" TBO and "full" TBO. The assessment will be based on a human performance model that provides objective measures of task load, workload, and working memory/cognitive load.	<b>MITRE</b>
Human Factors of Highly Automated Vehicles	<b>Draft Research Plan</b> The research plan will address the implications identified through the project activities. The plan will provide a prioritized list of areas that need investigation and recommendations for how to most productively approach the research.	<b>Cavan Solutions</b>
TBO Training Model	<b>Project Kickoff</b> This work will provide the initial training products for a training program that will supplement controller knowledge and skills learned from current traditional training.	<b>MITRE</b>
Regional TMU Coordination Practices	<b>Project Kickoff</b> This research will investigate the TMU coordination and decision-making processes that have appeared, identify the associated best practices, and, when possible, provide standardization recommendations for widespread regional use.	<b>Cavan Solutions</b>



# Anticipated Research in FY21+

Project	Description/Product	Vendor	Est. Completion
Human Factors Impacts of Highly Automated Vehicles – Phase 2	Execution of selected research areas identified in Phase 1 Research report(s) on specific human factors considerations around integrating highly automated vehicles into the NAS	Cavan Solutions	TBD
TBO Training Model	Follow-on training enhancement work based on TBO Training Model results Initial development and evaluation of TBO training enhancements	MITRE	FY22 Q1
TBO Impact on Traffic Manager Unit (TMU)	Follow-up on results of cognitive model and laboratory method projects Report(s) on TBO Impact on TMU Phase 2	Tech Center	FY21 Q4
Traffic Management Information Flow – National Command Center	Analysis of Command Center information flow/exchange and recommendations for improvement	TBD	TBD

# Emerging FY23 Focal Areas

- ATC Transformation
  - New traffic management concepts
    - Future Flow Management
    - Integration of Highly Automated Vehicles
- Trajectory-Based Operations
  - Traffic Management Unit effects
  - Fostering effective use
- Traffic Management Units
  - Coordination, information sharing, decision-making



# 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 2023 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