REDAC Subcommittee on Human Factors Fall 2013 Review:

Air Traffic Control/Technical Operations Human Factors Research Core Program, A11.i

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## **Overview**

- Program Strategic View
- Program Structure
- Summary





# **Program Strategic View**

- Strategic Plan continues as the baseline for Mission Statement and Strategic Objectives
- Continued emphasis on sponsor requirements and community of interest is unchanged
- Research process will be updated in FY 2014 for new research groupings that better align HQ and CAMI resources to the Strategic Plan





## **Allocation of Performer**



Requirements are assigned to lab personnel with the skill sets needed to perform the research When skills for requirements are not met by lab personnel, external researchers are utilized to fill the gaps





## Interim Research Requirements Development and Definition

### Human Centered Design

Includes Human Factors Standards

- Human System Integration
- Human Factors in Safety, Operations, and Training





#### Core ATC / Technical Operations Human Factors Program, A11.i

Provides leadership and products to ensure the ATC system's human component will safely and reliably perform to deliver expected benefits:

- Human centered design and design standards
- Human system integration

• Human factors in ATO safety, operations, and training

#### **Requirements Process**

- Sponsors in the ATO provide HF research requirements via Research Requirements Development and Definition (R2D2) process
- Requirements vetted against HQ and CAMI available expertise and prioritized with sponsors for highest priorities
- Research outputs coordinated with sponsors for implementation
- Products and process documentation in web library

#### **Partners**

- ATO Program Management Organization, En Route, Terminal, Safety & Technical Training, System Operation, Technical Operations; Human Relations
- Action Plan 15 with EUROCONTROL on Safety and Human Performance

#### Funding

FY 13	FY14	FY15	FY16
10,014K	\$6,000K		

#### **Major Activities**

- Finalize and close all Personnel Selection Research activities (Sep 30 2013)
- ATC/Technical Operations Strategic Research Plan
- Develop HF color Palette for air traffic control displays for future ATC systems
- Revise the Human Factors Design Standard for application in acquisition programs
- Complete design standard for Airport Traffic Control Tower Alerts
- Analyze air traffic human factors safety issues and data to mitigate loss of separation incidents





# **Human Centered Design**

- Traditional area of HF
- Sponsors mostly from Program Management Organization (PMO)
- HF Standards
  - Joint Interagency HF Standardization Working Group
- Emphasizing work station integration and longer range problems
  - Information management





## **Human Centered Design**

	FY 2013	FY 2014	FY 2015	FY2016
Facilities Survey	•	•		
Scenarios and Human Performance Metrics	•	•	•	
Collaborative Decision Making	•	$\diamond$	$\diamond$	
Role of Automation in Technical Operations	•	<b>♦</b>	•	
Data Blocks and Information Management		$\diamond$	$\diamond$	$\diamond$
Safety Alerts	•	•		
Time Based Information Display		$\diamond$	$\diamond$	





## **Human Centered Design - Standardization**

	FY 2013	FY 2014	FY 2015	FY 2016
Human Factors Design Standard Update	<b>♦</b>	<b>♦</b>	<b>♦</b>	
ATC Display Color Standard		<b>♦</b>	•	
ATC Tower Alerts Standard	<b>♦</b>	<b>♦</b>		
ATC Display Color Palette	•	<b>♦</b>		





## **Human Centered Design - Standardization**

	FY 2013	FY 2014	FY 2015	FY 2016
Abbreviations Standard for Tech Ops	<b>♦</b>	<b>♦</b>		
Technical Manual Standards for Tech Ops	•	•		
Technical Operations Symbols Standard	<b>♦</b>	<b>♦</b>		
Tech Ops GUI Style Guide	•	•	•	
Tech Ops GUI Standard	•	•	•	





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# **Human System Integration**

- Renewed emphasis on HF in the Acquisition Management System
- Benefits
  - RNAV
  - DSTs



VextGE

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## **Human Systems Integration**

	FY 2013	FY 2014	FY 2015	FY 2016
HF Integration in Acquisition Management System	$\diamond$	$\diamond$	$\diamond$	<b>◊</b>
HF Acquisition Working Group	<b>♦</b>	$\diamond$	$\diamond$	<b>♦</b>
Automation in ATC		•	•	•
Contract Tower Benefits		<b>♦</b>	•	
Benefits in RNAV/RNP (tentative)				
Benefits in Terminal DST (tentative)				





# Safety, Operations and Training

- Increased opportunity with ATO safety, operations, and training offices drawing on HF expertise to address high priority ATO challenges
  - Non-traditional relationship with community largely unfamiliar with HF
- Example Hosted training requirements workshop focused on key needs spanning initial Academy training, on the job training, Front Line Manager/Operations Manager, new technology training, and Technical Operations
  - How to measure training success?
  - How to best deliver training?
  - How to maintain competence?





## **HF in Safety and Operations**

	FY 2013	FY 2014	FY 2015	FY 2016
Method for Facility-Level Analysis of ATSAP	•	٠	$\diamond$	
HF Methods for Incident Investigation	•	٠	$\diamond$	
Dynamic Comprehension: Time on Position and Controller Performance	•	•	•	
Human Factors Safety and Risk Assessments	•	•	$\diamond$	$\diamond$
Human Factors Operational Performance Research	•	•	$\diamond$	$\diamond$
Top 5 Hazard Mitigation Human Factors Analysis		•	$\diamond$	$\diamond$





# Training

	FY 2013	FY 2014	FY 2015	FY 2016
OJTI Educational Intervention	•	•	•	
Analysis of training responses to Loss of Separation (LOS) events		٠		
Visual scanning methods used by radar controllers to improve academy and OJTI Training		٠	<b>♦</b>	
Analysis to understand causes of attrition from field training		•	•	
Research to understand training for ATC problem solving		•	•	





### Questions ?

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