Human Factors at the FAA

Presented by:
Michelle Yeh
NextGen Human Factors Division (ANG-C1)
March 12, 2013

Topics

• Agency Overview
  – Who is who at the FAA
  – How/where does human factors fit in?

• Human Factors Research
  – Cross cutting, multi-modal HF issues in transportation
  – Fatigue
  – Aging
  – System Design
  – Human System Integration
  – Human Error

Federal Aviation Administration

• Who is who at the FAA?
  – Approximately 50,000 employees
  – Approximately 45,000 employees in “Air Traffic”
  – Approximately 5,000 employees on the “Aircraft” side

Where/how does human factors fit in?
  – Human Factors Division
  – Individual lines of business within the FAA
Human Factors in Acquisition Engineering

Specify Human Factors Concept Requirements
- Identify key human performance operational requirements
- Validate human roles and responsibilities in the concept
- Define human performance metrics

Assess Human Performance Benefits
- Identify key human performance functional requirements
- Perform human performance trade studies
- Define human performance metrics in trade studies

Collect Data on Human Performance
- Quantify human performance in baselining system operations

Design Systems for Usability
- Define human factors requirements in system specifications
- Verify design compliance with human factors standards

Test for Human System Performance
- Integrate human factors in test and evaluation
- Conduct post-deployment assessments
- Manage safety risk, including pilot training

Air Traffic Organization
Aviation Safety
Airports
NextGen
Etc.

FAA Organization

FAA Approval Process

STC Certified

Human factors activities included in the Acquisition Management System and augmented by the research and engineering program.
Cross Cutting, Multi-Modal Research

Outcomes/Products:
• Regulatory & guidance material
• HF requirements for acquisitions
• Training material

Common HF Themes:
• Integration
• Usability
• Interface
• Color
• Symbology
• Displays
• Knobs/buttons
• Labels

Fatigue
• Air Traffic Controllers
• Aircraft Mechanics
• Pilots
• Flight Attendants

Aging
• Air Traffic Controllers
• Pilots
• Flight Attendants

System Design

Human System Integration
Human Error

“No! No! That’s Self-Destruct! Set Distance is the one on the left.”

Workload

“HELLO YAH! I FORGOT THE GEAR BUT THIS WAS AN INSTRUMENT RUN AND THE ILS WAS GOOD, RIGHT?”

Electronic Flight Bag (EFB) Research

Photo courtesy of Boeing.
EFB: From Research to Reality

AVS identifies Research Need

• FAA AC 120-76B
• FAA Order 8900.1 (vol K, ch. 15)
• EFB Job Aid
• JAA TGL 36
• Transport Canada AC 700-020

Research coordinated with FAA and industry to provide HF recommendations to FAA for evaluating, approving, and authorizing use of EFBS.

Outputs

• Human factors considerations in the design and evaluation of Electronic Flight Bags (EFBs), Version 2
• EFB Evaluation Tool Kit
• EFB Industry Surveys
• FAA EFB Workshops

AVS submits research requirement to support development of regulatory and guidance material for EFBS.

Research Program

AVS Uses Research Results

• FAA AC 120-76B
• FAA Order 8900.1 (vol K, ch. 15)
• EFB Job Aid
• JAA TGL 36
• Transport Canada AC 700-020

Examples:

• ADE – Advanced Data Research, Florida, Inc.
• Airbus
• AirGator, Inc.
• Astronautics
• Boeing
• OVC Electronics
• DAC International
• FlightPrep, Stenbock and Evans, Inc.
• Goodrich Sensors and Integrated Systems
• IMS Flight Deck
• Innovative Solutions & Support (IS&S)
• L-3 Communications
• NavAero, Inc.
• Teledyne Controls
• Universal Avionics

Industry Users

Industry Users

Examples:

• ADRF – Advanced Data Research, Florida, Inc.
• Airbus
• AirGator, Inc.
• Astronautics
• Boeing
• CMC Electronics
• DAC International
• FlightPrep, Stenbock and Evans, Inc.
• Goodrich Sensors and Integrated Systems
• IMS Flight Deck
• Innovative Solutions & Support (IS&S)
• L-3 Communications
• NavAero, Inc.
• Teledyne Controls
• Universal Avionics

Identify Additional Research Needs