Outline

- Overview of Volpe
- Aviation Human Factors Division
  - Research Staff
  - Current Volpe Project Teams
- Questions
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Transportation Professionals

- **570** Federal Employees representing a full spectrum of disciplines from engineering to physical and social sciences
- **263** Advanced Degrees
- **>60** Federal Career Interns and Co-op Students
- **>1,000** contractors
Mission, Vision, Capabilities

- **Mission**
  - To improve the Nation's transportation systems

- **Vision**
  - To be the leading Federal Center of Excellence for innovative transportation systems solutions

- **Capabilities**
  - Institutional knowledge of the global transportation system and its stakeholder perspectives
  - Awareness of Federal responsibilities, objectives, and activities in the public interest
  - Experience with the full spectrum of technologies and disciplines relevant to transportation system improvements
Centers of Innovation

- RVT-20 Transportation Policy and Planning (Rachel Winkeller)
- RVT-30 Safety Management Systems (Stephen Popkin)
- RVT-40 Environmental and Energy Systems (Gregg Fleming)
- RVT-50 Transportation Logistics and Security (Michael Dinning)
- RVT-60 Infrastructure Systems and Engineering (Robert Dorer)
- RVT-70 Air Traffic Systems and Operations (Steven Lang)
- RVT-80 Human Factors Research & System App. (S. Popkin, act.)
- RVT-90 Advanced Transportation Technologies (Gary Ritter)
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- RVT-70 Air Traffic Systems and Operations (Steven Lang)
- RVT-90 Advanced Transportation Technologies (Gary Ritter)
Safety Management and Human Factors (RVT-30, Stephen Popkin)

- RVT-31 Safety Information Systems (Bob Berk)
- RVT-32 Aviation Safety Management (Regina Houston)
- RVT-33 Safety Measurement and Analysis (Nancy Kennedy)
- RVT-34 Surface Transportation Human Factors (Mary Stearns)
- RVT-35 Aviation Human Factors (Maura Lohrenz)
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Aviation HF Research Staff

- **Division Chief:** Maura Lohrenz
- **Principle Technical Advisors**
  - Judith Bürki-Cohen
  - Kim Cardosi *
  - Divya Chandra *
- **Scientific and Technical Staff**
  - Alison Bisch
  - Stephanie Chase
  - Caroline Donohoe
  - Rebecca Grayhem
  - Young Jin Jo
  - Andrew Kendra *
  - Tracy Lennertz
  - Amanda Mattson
  - Andrea Sparko
  - Alan Yost *†
  - Michael Zuschlag
- **Students**
  - Emma Levitt
  - Katarina Morowsky

* Licensed pilot
† Former Air Traffic Controller
Aviation HF Research Staff

- Engineering Psychologist (0180)
- IT Specialist (2210)
- Student Trainee (0899, 0199)
- Operations Research Analyst (1515)
Aviation HF Research Staff

- PhD
- MS
- BS
Aviation HF Research Staff
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Current Project Teams

- **NextGen** - Instrument Procedures*
- **NextGen** - Low Visibility Operations (LVO) / Surface Movement Guidance and Control Systems (SMGCS)*
- **C/NG** - Automatic Dependent Surveillance-Broadcast (ADS-B)*
- **CORE** - Head-Up and Head-Mounted Displays (HUD/HMD)
- **CORE** - Airport Moving Maps
- **CORE** - Electronic Flight Bags (EFB)
- **CORE** - General Guidance Document
- **NextGen** - Data Communications (DataComm)
- **NextGen** - Aural DataComm / Auxiliary Synthetic Speech

*Deep-dives presented during REDAC meeting*
Instrument Procedures

- **Volpe Team**
  - Divya Chandra
  - Rebecca Grayhem
  - Andrew Kendra
  - Caroline Donohoe

- **FAA program manager**
  - Dan Herschler (ANG-C1)

- **FAA technical sponsors**
  - Kathy Abbott (AVS), Mark Steinbicker (AFS-470)

- **Purpose**
  - (NextGen) Help FAA develop human factors guidelines for the design, depiction, usability, and flyability of instrument procedures and associated charts.
LVO/SMGCS Usability

- **Volpe Team**
  Stephanie Chase
  Andrea Sparko
  Katarina Morowsky
  Young Jin Jo

- **FAA program manager**
  Michelle Yeh (ANG-C1)

- **FAA technical sponsors**
  Bruce McGray, Terry King (AFS-410)

- **Purpose:** (NextGen) Provide data to support development of best practices for current and proposed Low Visibility Operations (LVO) / Surface Movement Guidance and Control System (SMGCS) chart layout and symbology.
ADS-B Program

Volpe Team
Tracy Lennertz
Kim Cardosi
Stephanie Chase

FAA program managers
Colleen Donovan and Michelle Yeh (ANG-C1)

FAA technical sponsors
Cathy Swider (AIR-120), Kathy Abbott (AVS),
Don Walker (AIR-130), Paul VonHoene (AFS-410)
ADS-B Program

Core Program

- Purpose: Determine current state of Cockpit Displays of Traffic Information (CDTI), and examine CDTI symbology and display management.
- Projects:
  - ADS-B industry survey
  - ADS-B symbology study
  - Use of color on Airport Moving-Maps and CDTIs

NextGen Program

- Purpose: Provide support to the FAA for operational evaluations and input on relevant ADS-B literature.
- Projects:
  - Flight Interval Management (FIM) literature review
  - CDTI operational evaluation for Merging & Spacing
  - Support for In-Trail Procedure (ITP)
HUD/HMD Human Factors

- **Volpe PI:** Mike Zuschlag
- **FAA program manager**
  Steve Plishka
- **FAA technical sponsors**
  Kathy Abbott (AVS), Terry King (AFS-410), Cathy Swider (AIR-120)

**Purpose**
(Core) Support the development of criteria and guidelines for approving HUDs/HMDs, focusing on flight information representation, such as symbology standardization, color coding, alerting, installation-related issues, and integration.
Airport Moving Map

- **Volpe Team**
  - Stephanie Chase
  - Danielle Eon (CTR)
  - Andrew Kendra

- **FAA program managers**
  - Michelle Yeh and Colleen Donovan (ANG-C1)

- **FAA technical sponsor**
  - Cathy Swider (AIR-120)

- **Purpose**
  - (Core) Support development of FAA guidelines and approval criteria for Airport Moving Map displays depicting ownship and traffic information. Identify human factors issues with evolving displays.
Electronic Flight Bags (EFB)

- **Volpe Team**
  - Stephanie Chase
  - Danielle Eon (CTR)
  - Andrew Kendra

- **FAA program managers**
  - Michelle Yeh and Colleen Donovan (ANG-C1)

- **FAA technical sponsors**
  - Cathy Swider (AIR-120), Brad Miller (AIR-130), Ricky Chitwood (AFS-220), Brian Hint (AFS-430)

- **Purpose**
  - (Core) Identify, understand, and help the FAA address human factors issues related to EFB technology.
General Guidance

- **Volpe Team**
  - Young Jin Jo
  - Stephanie Chase

  **FAA program manager**
  - Michelle Yeh (ANG-C1)

- **FAA technical sponsors**
  - Cathy Swider (AIR-120) and Colleen Donovan (formerly AIR-120)

- **Purpose**
  - (Core) Identify and compile FAA HF regulatory and guidance material, industry recommendations and best practices, and other HF research on a variety of flight deck systems (e.g., EFB, GPS, electronic map displays) in one document.
Data Communications

- **Volpe Team**
  Kim Cardosi, Tracy Lennertz

- **FAA program manager**
  Dan Herschler (ANG-C1)

- **FAA technical sponsors**
  Trent Bigler (AFS-470), Christophe Hamel (AIR-130)

- **Purpose:** (NextGen) Provide human factors support for the use and implementation of Data Comm, including development of the message set, crew procedures, and crew training. Support RTCA SC-214, Global Operational Data Link Document (GOLD) flight crew and ATC procedures, the Operational Data Link Panel (OPLINKP), and the Data Comm Implementation Team (DCIT, funded separately by ATO/PMO).
Auxiliary Synthetic Speech

Volpe Team
Judith Bürki-Cohen,
Tracy Lennertz, Andrea Sparko
Andrew Kendra, Alan Yost,
Amanda Mattson, Mike Zuschlag

FAA program manager
Dan Herschler (ANG-C1)

FAA technical sponsors
Christophe Hamel (AIR-130),
Trent Bigler (AFS-470)

Purpose: (NextGen) Examine suitability and recommend minimum requirements for using synthetic speech in flight-deck Data Comm as an auxiliary display modality in a NextGen environment.
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Questions?
Backup Slides
Volpe is a unique, not-for-profit, federal agency that is 100% funded by sponsored projects:

- US DOT fee-for-service research & innovation center
- Authorized by Congress to conduct business via a Working Capital Fund
- Maintain own facility in Cambridge, MA
- Receive no Congressional appropriations, base funding, or agency support to offset facility operations and maintenance costs

Volpe employees are compensated the same as other federal employees (labor and benefits).

Volpe admin (e.g., HR, IT, legal services, facilities, utilities, etc.) covered through overhead charges, shared among all projects.

Volpe costs compare favorably with other service providers.


Grayhem, R. (2010). Early Scotopic Dark Adaptation (Dissertation). Northeastern University, Boston, MA.


