

Air Transportation Centers of Excellence

COE for General Aviation
Public Meeting

COE Organizational Structures

Government-Academic-Industry
Strategic Partnerships

Presented by: Patricia Watts, Program Director
FAA Centers of Excellence
Friday November 18, 2011



Federal Aviation
Administration



COE for General Aviation

- **To be Competitively Selected by FAA Administrator – 2012**
- **Technology Areas:**
 - **Flight Safety**
 - **Communications, Navigation, Surveillance**
 - **Human Factors**
 - **Weather**
 - **Airport Technology**
 - **Propulsion and Structures**
 - **Continued Airworthiness**
 - **System Safety Management**
 - **Unmanned Aircraft Systems (UAS)**
- **Sponsor : FAA Aviation Research Division**



COE for Commercial Space Transportation

- **Competitively Selected by FAA Administrator – 2010**
- **Technology Areas:**
 - **Space Traffic Management & Operations**
 - **Launch Vehicle Systems**
 - **Human Space Flight**
 - **Space Commerce**

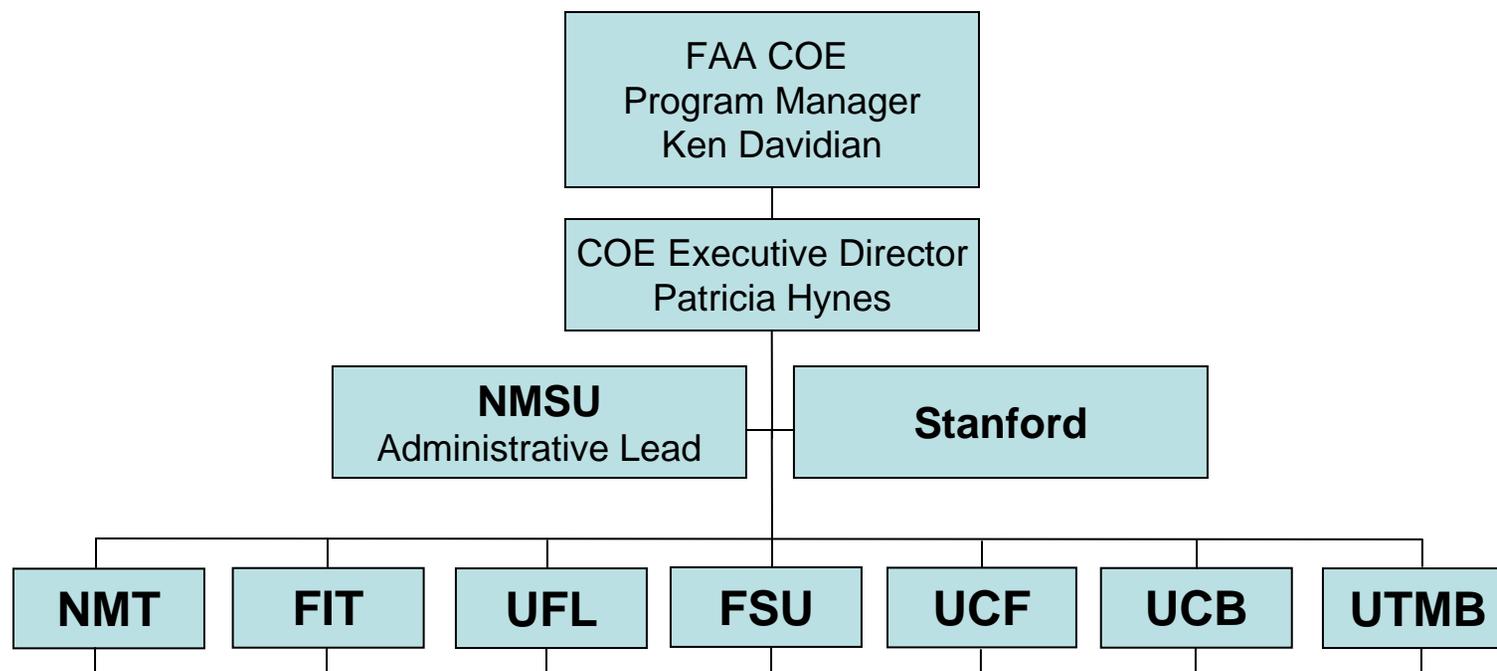
Sponsor: FAA Headquarters - Office of Commercial Space Transportation

Members: New Mexico State University, Stanford University, New Mexico Institute of Mining and Technology, Florida Institute of Technology, Florida State University, University of Central Florida, University of Florida, University of Colorado at Boulder, University of Texas: Medical Branch

Administrative Lead: New Mexico State University
Patricia Hynes: pahynes@nmsu.edu



COE for Commercial Space Transportation



New Mexico State University
Stanford University
Florida Institute of Technology
Florida State University
New Mexico Institute of Mining and Technology

University of Central Florida
University of Colorado at Boulder
University of Florida
University of Texas- Medical Branch



COE for Research in the Intermodal Transport Environment (RITE)

- **Competitively Selected by the FAA Administrator – August 2004**
- **Technology Areas:**
 - **Development of Sensors and Sensor Systems to Monitor Cabin Air Environment and Detect Potential Environment Contaminants**
 - **Investigation of the Health Effects of Potential Contaminants and Other Aspects of Contained Environments**
 - **Field and Laboratory Analysis of Potential Contaminants**
 - **Development of Databases, with Supporting Architecture, for Documentation of Contaminants and Contaminant Incidents**

Sponsor: FAA Headquarters - Office of Aerospace Medicine

Core Members: Harvard University, Purdue University, Auburn University, Boise State University, Kansas State University, University of Medicine and Dentistry of New Jersey;

Affiliate Members: Oklahoma State University, St. Louis University, University of Alabama at Huntsville

Technical Lead: Kansas State University
Byron Jones: Jones@ksu.edu

Administrative Lead: Auburn University
Tony Overfelt: overfra@auburn.edu



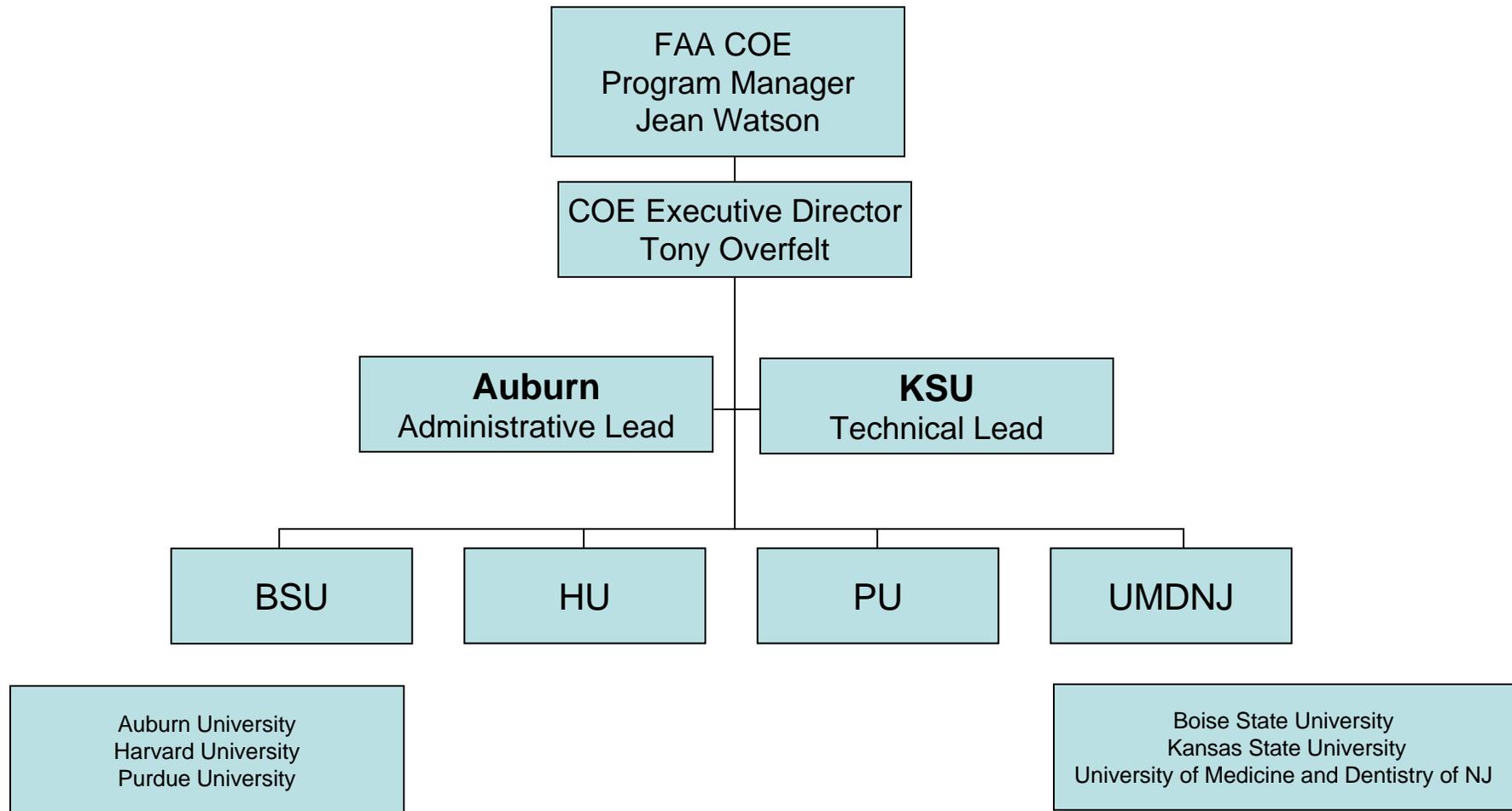
COE for Intermodal Transport Environment Research Affiliates

AeroClave LLC
AirOcare
Air Transport Association
Altera Inc.
Ansys
Battelle
The Boeing Company
Delta Air Lines
Donaldson Company Inc.
Goodrich Sensor Systems
Honeywell

Intergraph
InvisiMED
Keddeg Company
Microchip Technology Inc.
The MITRE Corporation
Pall Aeropower Corp.
Singapore Airlines
Southwest Airlines
STERIS Corporation
TSI Inc.
US Airways



COE for Research in the Intermodal Transport Environment (RITE)



Joint COE for Advanced Materials (JAMS)

- **Competitively Selected by the FAA Administrator – December 2003**
- **Technology Areas:**
 - **Safety and Certification Initiatives of Composites and Advanced Materials on Large Transport Commercial Aircraft**
 - **Safe and Reliable Use of Advanced Materials in Aircraft Workforce Training**
 - **Relationships Between Design, Manufacturing, Operations, and Maintenance**

Sponsor: Technical Center - FAA Airport & Aircraft Safety R&D Group

Members: University of Washington, Wichita State University, Edmonds Community College, Northwestern University, Purdue University, Oregon State University, Tuskegee University, UCLA, University of Delaware, Washington State University, Florida International University, University of Utah

University Co-Leads: Wichita State U. and the U. of Washington
John Tomblin, Ph.D., john.tomblin@wichita.edu
Mark Tuttle, Ph.D., tuttle@u.washington.edu



Joint COE for Advanced Materials Affiliates

Composites and Advanced Materials Team

Industry Affiliates

WICHITA STATE UNIVERSITY

Adam Aircraft
ASTM International
Boeing
Bombardier
Cessna, a Textron Company
CIRRUS Design
Hawker Beechcraft
Piper Aircraft
Spirit AeroSystems

Advanced Materials in Transport Aircraft

Structures Team

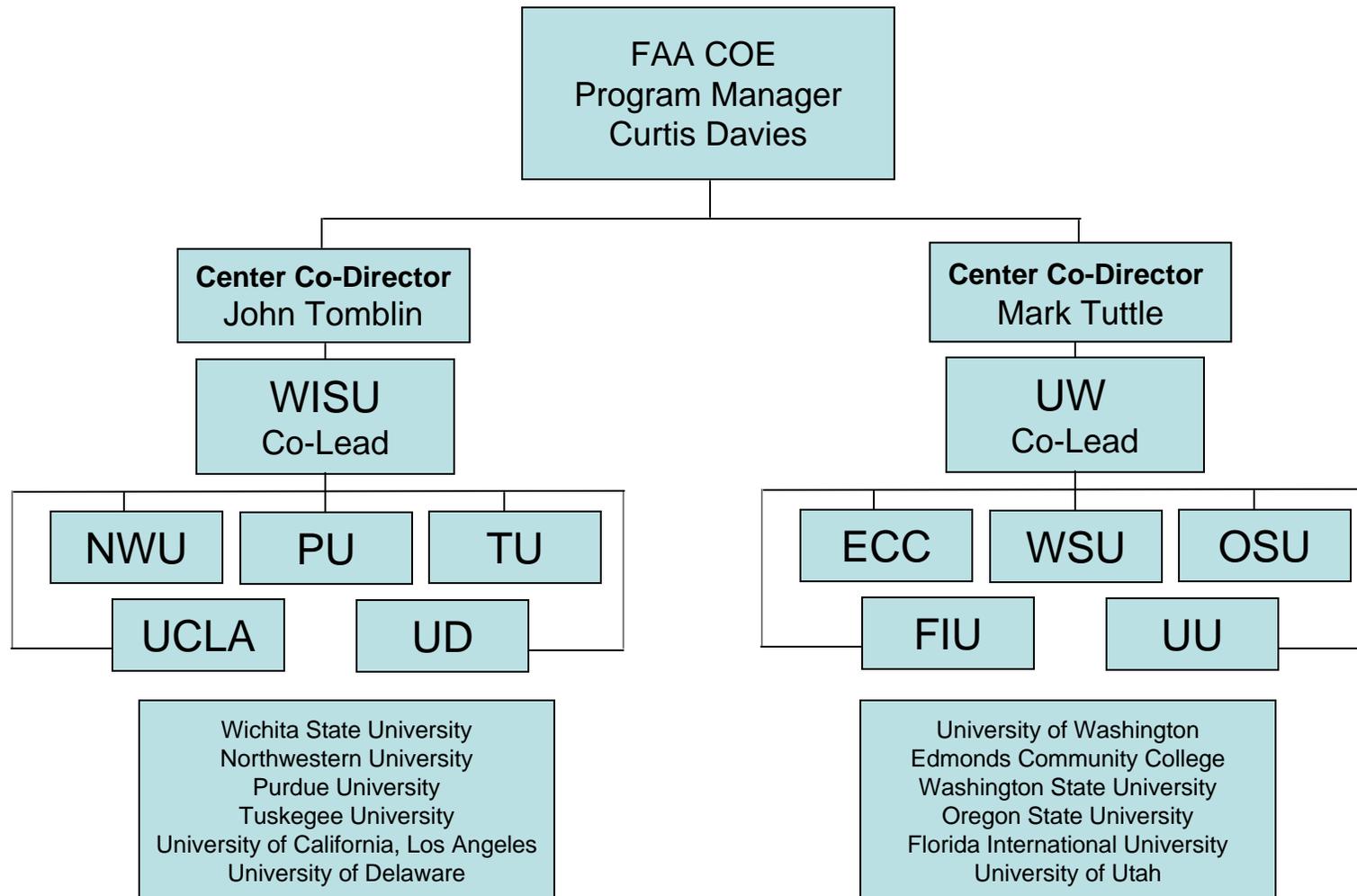
Industry Affiliates

UNIVERSITY OF WASHINGTON

A&P Technology
Bell Helicopter
The Boeing Company
C&D Zodiac
Composite Solutions, Inc.
Cytec Engineered Materials
General Plastics Manufacturing Co.
Heatcon Composite Systems
Hexcel
Integrated Technologies, Inc.
Toray Composites (America), Inc.
Triumph Composite Systems, Inc.



Joint COE for Advanced Materials (JAMS)



FAA/NASA COE for Aircraft Noise & Aviation Emissions Mitigation (PARTNER)

- **Competitively Selected by the FAA Administrator – August 2003**
- **Single Source Contract Authority: \$6M cap**
- **Technology Areas:**
 - **Socio-economic Effects of Noise and Emissions Impacts**
 - **Noise Abatement Flight Procedures**
 - **Compatible Land Use Management**
 - **Airport Operational Controls**
 - **Noise and Emissions Measurements and Health**

Sponsors: FAA Hdq - Office of Environment & Energy in partnership with NASA and Transport Canada

Members: Massachusetts Institute of Technology, Harvard University, Pennsylvania State University, Purdue University, Stanford University, Missouri University of Science and Technology, Georgia Institute of Technology, University of North Carolina – Chapel Hill, University of Illinois Urbana Champaign, Boston University, University of Pennsylvania

University Lead: Massachusetts Institute of Technology
Ian Waitz, iaw@mit.edu



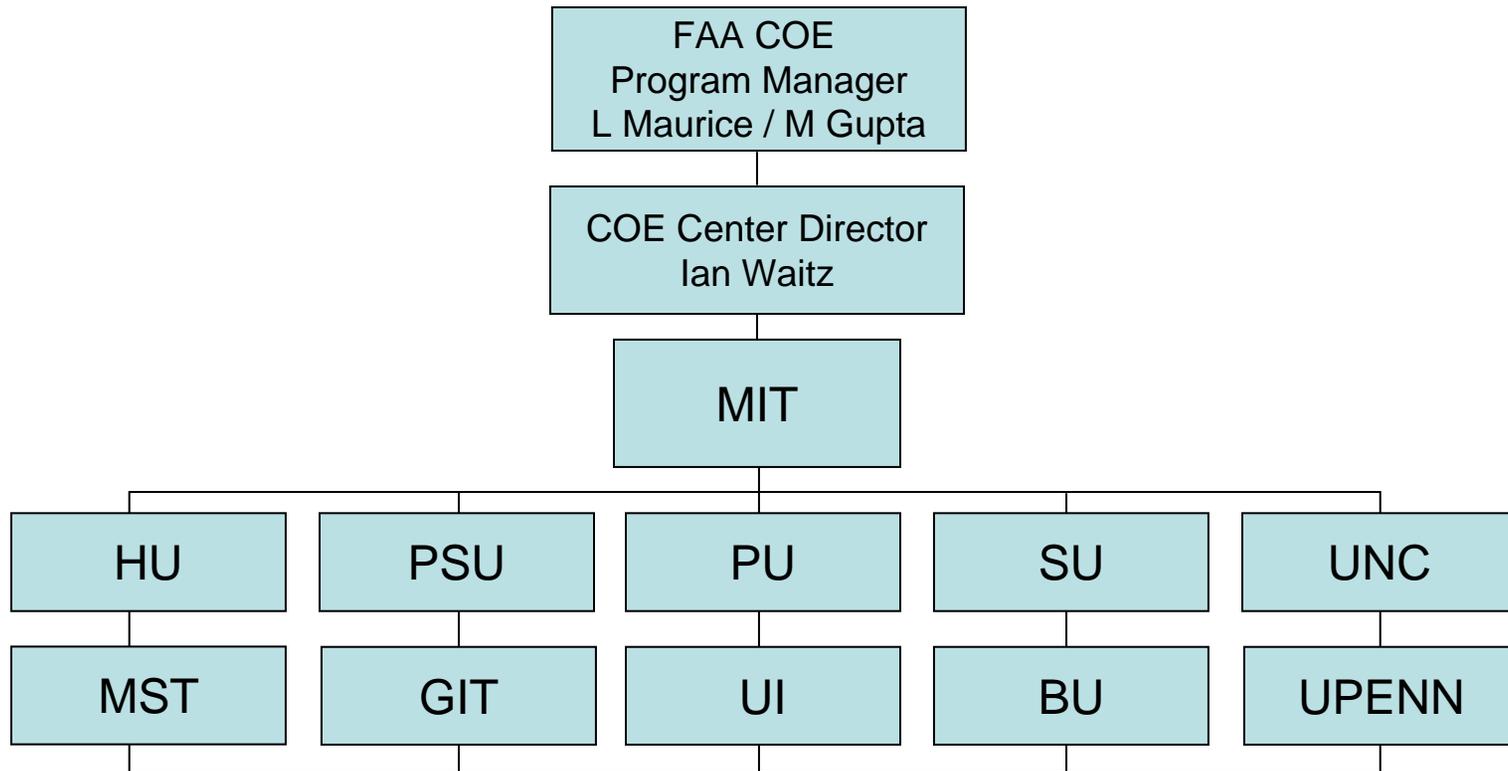
COE for Aircraft Noise & Aviation Emissions Mitigation Affiliates

Aerodyne Research, Inc.
Aerospace Industries Association
Airbus
Air Line Pilots Association
Air Transport Association of America
Airports Council International - North America
American Institute of Aeronautics and Astronautics
Bay Area Air Quality Management District
Bell Helicopter Textron, Inc.
Boeing Commercial Airplanes Group
Delta Air Lines, Inc.
General Electric Aircraft Engines
Gulfstream Aerospace Corporation
Indiana Department of Transportation
Lockheed Martin Aeronautics Company
Logistics Management Institute
Massachusetts Port Authority
Metron Aviation, Inc.

Metropolitan Washington Airports Authority
National Organization to Insure a Sound-controlled Environment (N.O.I.S.E.)
O'Hare Noise Compatibility Commission
Palisades Citizens Association
Pratt & Whitney
Raisbeck Engineering
Regional Airport Authority of Louisville and Jefferson County
Rolls-Royce, plc
San Francisco International Airport/Community Roundtable
Sikorsky Aircraft Corporation
United Parcel Service Airline
United Technologies Pratt & Whitney
Wyle Laboratories



FAA/NASA COE for Aircraft Noise & Aviation Emissions Mitigation (PARTNER)



Massachusetts Institute of Technology
Harvard University
Pennsylvania State University
Purdue University
Stanford University

University of North Carolina – CH
Missouri Science and Technology
Georgia Institute of Technology
University of Illinois
Boston University
University of Pennsylvania



COE for General Aviation (CGAR)

- **Competitive Selection by FAA Administrator Announced by Secretary of Transportation: 2001. Operational through 2011**
- **Single source contract authority: \$20M cap**
- **GA Technology Areas:**
 - **Aging Aircraft**
 - **Crashworthiness**
 - **Propulsion**
 - **Icing**
 - **Advanced Materials**

Sponsor: FAA Technical Center - Airport & Aircraft Safety R&D Division

Members: Embry-Riddle Aeronautical University, University of Alaska at Fairbanks, University of Alaska at Anchorage, University of North Dakota, Wichita State University

University Lead: Embry-Riddle Aeronautical University
Steven Hampton, hamptons@db.erau.edu



COE for General Aviation Affiliates

Industry Affiliates

Aero Shell
Aircraft Welding Works
Alaska Airmen's Association
Alaska Aviation Safety Foundation
Aviation Management Associates
Avidyne Corporation
Bombardier Aerospace
Cessna Aircraft Corporation
Cirrus Aviation
Eclipse Aviation
Elite Air Shares
Frasca International
Goodrich Corporation
HandySoft Corporation

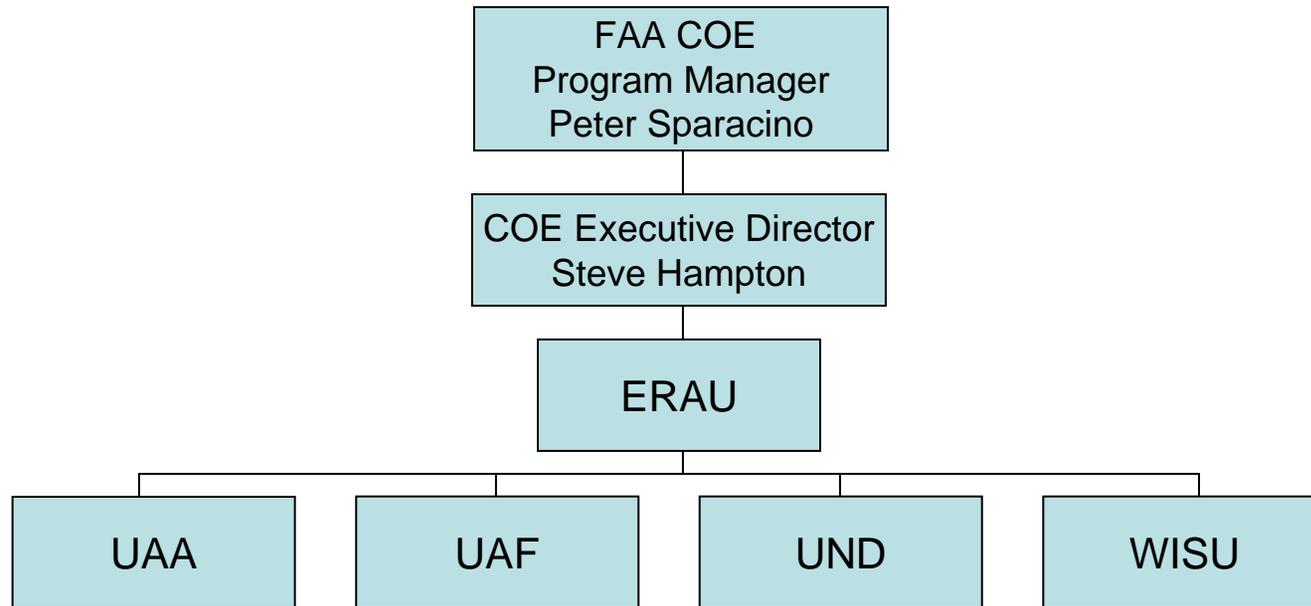
Hartzell Propeller, Inc.
Jeppesen
Lancair
Lockheed Martin
Raytheon Aircraft Company
Sun Microsystems
SMA
The Alaska Science & Technology
The Boeing Company
Vector Training Systems

Advisory Group Members

Aircraft Owners and Pilots Association (AOPA)
Experimental Aircraft Association (EAA)
General Aviation Manufacturers Association (GAMA)
National Business Aviation Association (NBAA)
State Aviation Directors – Florida, Arizona, Alaska, Kansas, and North Dakota



COE for General Aviation (CGAR)



Embry-Riddle Aeronautical University
University of Alaska at Anchorage
University of Alaska at Fairbanks
University of North Dakota
Wichita State University

COE for Airworthiness Assurance (AAE)

- **Competitively Selected by FAA Administrator:**
September 11, 1997 and operational through September 11, 2007
- **Single source contract authority: \$100M cap**
- **Technology Areas:**
 - Maintenance, Inspection, and Repair
 - Crashworthiness
 - Propulsion and Fuel Systems Safety Technologies
 - Advanced Materials

Sponsor: FAA Airport & Aircraft Safety R&D Division

Members: Phase II – Equal University Partners (following list)



COE for Airworthiness Assurance Phase II - University Members

Arizona State University
Baylor University
Carnegie Mellon University
Embry-Riddle Aeronautical University
Florida International University
George Washington University
Iowa State University
Johns Hopkins University
Lehigh University
Mississippi State University
New Jersey Institute of Technology
North Carolina A&T State University
Northwestern University
Ohio State University
Ohio University
Pennsylvania State University

Purdue University
Rutgers University
Tuskegee University
University of Arizona
University of California at Berkeley
University of California at Los Angeles
University of California at Santa Barbara
University of Dayton
University of Maryland
University of Missouri at Columbia
University of North Dakota
University of Utah
University of Washington
Wayne State University
Wichita State University



COE for Airworthiness Assurance Phase II – Industry Affiliates

ABX Air, Inc.
AirTran Airways
Alaska Airlines
Aloha Airlines
American Airlines
American Eagle
Atlantic Coast Airways
Boeing
**Bombardier Aerospace-
Learjet**
Cape Air
Cessna
Continental

Delta
Federal Express
General Electric
Honeywell
JetBlue Airways
Lufthansa
Nantucket Airlines
Northwest
Pratt & Whitney
Raytheon
United Airlines
US Airways



COE for Operations Research (NEXTOR)

- **Competitive Selection Announced by FAA Administrator: 1996**
- **Contract authority: \$10M - Phase I; \$50M - Phase II**
- **Technology Areas:**
 - **Air Traffic Management and Control**
 - **Human Factors**
 - **System Performance and Assessment Measures**
 - **Safety Data Analysis**
 - **Communications, Data Collection and Distribution**
 - **Aviation Economics**

Sponsor: FAA Headquarters - Technology Development & Operations Research

Members: University of California at Berkeley, Massachusetts Institute of Technology, Virginia Polytechnic Institute, University of Maryland, George Mason University

University Contact: University of California at Berkeley
Mark Hansen: mhansen@ce.berkeley.edu



COE for Operations Research Partners and Affiliates

University Partners

Air Force Institute of Technology
Rensselaer
San Jose State University
University of Michigan
University of Minnesota
University of Rochester
University of Southern California
University of Texas at Austin

Industrial Affiliates

The Boeing Company
California Department of Transportation
Draper Laboratory
Federal Express
Honeywell
Leigh Fisher Associates
Logistics Management Institute
Maryland Aviation Administration
Los Angeles World Airports
Massachusetts Port Authority
Metron Aviation, Inc.
Northrop Grumman

Sabre

San Francisco
International Airport
Seagull Technology
Southern California
Association of
Governments
Virginia Department of
Transportation



COE for Airport Technology (CEAT)

- **Competitively Selected by the FAA Administrator: 1995**
- Originally established as the Center of Excellence for Airport Pavement Technology R&D
 - **Granted a two year extension on May 1, 2010 to a 5 year agreement to allow for orderly phase down**
 - **Re-competed during 2010**

Technology Areas:

- **High Performance Concrete**
- **Non-destructive Evaluation of Pavements**
- **Stabilized Base Material**
- **Structural Behavior and Modeling**
- **Airport Pavement Design Concepts/Procedures**
- **Wildlife Research**

Sponsor: FAA Airport & Aircraft Safety R&D Division

Members: University of Illinois, Rensselaer Polytechnic Institute

Public Partners: O'Hare Modernization Program and City of Chicago

University Lead: University of Illinois at Urbana-Champaign
David A. Lange, dlange@uiuc.edu



COE for Airport Technology University Members

CENTER PARTNERS

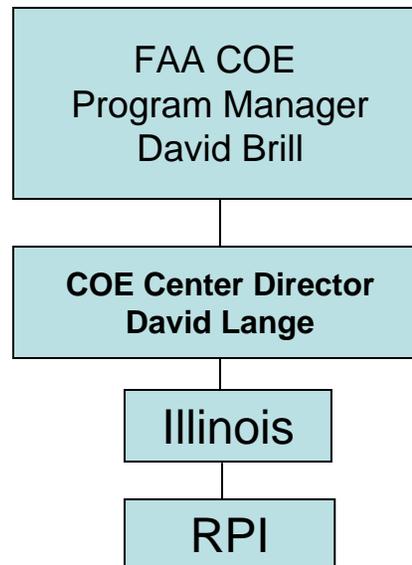
University of Illinois at Urbana Champaign
Rensselaer Polytechnic Institute

PUBLIC PARTNERS

O'Hare Modernization Program
City of Chicago



COE for Airport Technology (CEAT)



University of Illinois
Rensselaer Polytechnic Institute



Joint Center for Computational Modeling of Aircraft Structures

- **Members Designated by Congress: Operational 1993 through 1996**
- **Technology areas funded through matching grants:**
 - **Widespread Fatigue-Damage**
 - **Residual-Life and Residual-Strength Estimations**
 - **Mechanical and Composite-Patch Repairs**
 - **Life-Enhancement Methodologies**
 - **Discrete Source Damage**

Rutgers University and Georgia Institute of Technology



Questions ~

Discussion

