

FAA

Centers of Excellence

Program Overview

Presented by: Patricia Watts, Ph.D.

National COE Program Director

Date: October 19, 2006



Federal Aviation
Administration



COE PROGRAM OVERVIEW

Legislative Authority
COE Oversight
Geographic Distribution
University Members
Other COE Affiliates
Funding
Program Office
Results
Administration
COE Benefits
Attachment: Established Centers
Role of Industry Partners
Legislative Requirement and Outcomes

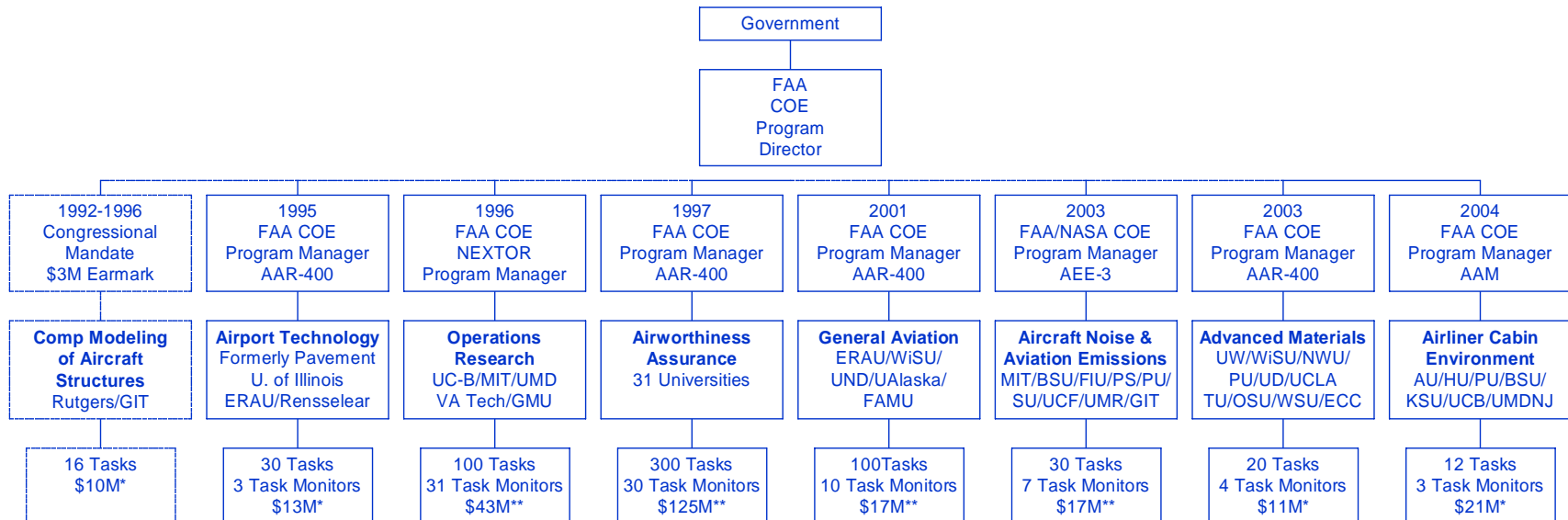


LEGISLATIVE AUTHORITY

Omnibus Budget
Reconciliation Act of 1990
Public Law 101-508
Title IX – Aviation Safety
and Capacity Expansion Act

“The Administrator may make grants to one or more colleges or universities to establish and operate several regional centers of air transportation excellence, whose locations shall be geographically equitable. The responsibilities of each regional center shall include, but not be limited to, the conduct of research concerning airspace and airport planning and design, the air transportation environment, aviation safety and security, the supply of trained air transportation personnel including pilots and mechanics, and other aviation issues pertinent to developing and maintaining a safe and efficient air transportation system....each center may make contracts with nonprofit research organizations and other appropriate persons....”

FAA Air Transportation Centers of Excellence Oversight



* All dollar amounts quoted reflect grant awards and include matching funds.

** All dollar amounts quoted reflect grant awards, matching funds and contracts.



FAA COE GEOGRAPHIC DISTRIBUTION

AIRLINER CABIN ENVIRONMENT RESEARCH

Auburn University –
Administrative Lead

Harvard University – Technical Co-
Lead

Purdue University – Technical
Co-Lead

Boise State University

Kansas State University

University of California at Berkeley

University of Medicine & Dentistry
of New Jersey

NOISE AND EMISSIONS MITIGATION

Massachusetts Institute of
Technology - Lead

Boise State Univ.

Florida International Univ.

Penn State Univ.

Purdue Univ.

Stanford Univ.

Univ. of Central Florida

Univ. of Missouri-Rolla

AIRPORT TECHNOLOGY

University of Illinois - Lead

Embry-Riddle Aeronautical University

North Carolina A&T

Northwestern University

Rensselaer Polytechnic Institute

GENERAL AVIATION

Embry Riddle Aeronautical
University – Lead/Prime

Florida A&M University

University of Alaska

University of North Dakota

Wichita State University

ADVANCED MATERIALS

University of Washington/ Wichita
State University/
Joint-Leads

Edmonds Comm. College

Northwestern University

Purdue University

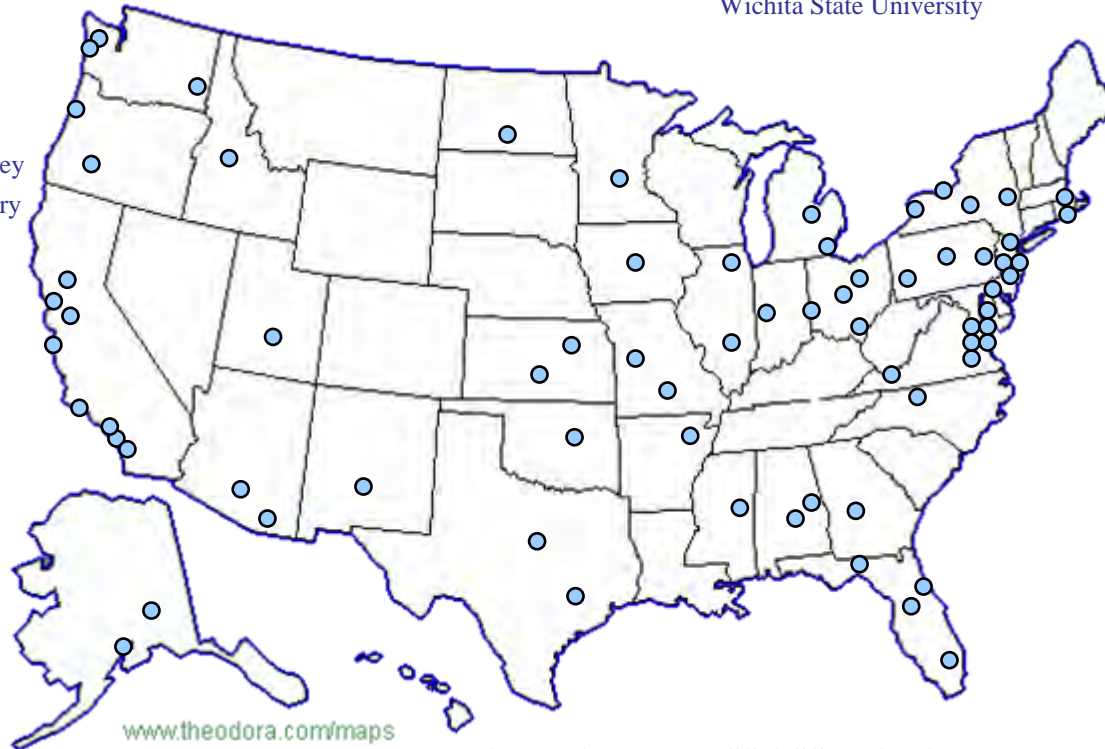
Oregon State University

Tuskegee University

University of California at LA

University of Delaware

Washington State University



OPERATIONS RESEARCH

Co-Leads

University of California at
Berkeley

Massachusetts Institute of
Technology

University of Maryland

Virginia Polytechnic Institute

George Mason University

AIRWORTHINESS ASSURANCE

31 Equal University Partners

COE UNIVERSITY MEMBERS

Air Force Institute of Technology
Arizona State University
Auburn University
Baylor University
Boise State University
Carnegie Mellon University
Edmonds Community College
Embry-Riddle Aeronautical University
Florida Agricultural & Mechanical
University
Florida International University
George Washington University
George Mason University
Georgia Institute of Technology
Harvard University
Iowa State University
Johns Hopkins University
Kansas State University
Lehigh University
Massachusetts Institute of Technology
Mississippi State University
Naval Post Graduate School

New Jersey Institute of Technology
North Carolina A&T University
Northwestern University
Ohio State University
Ohio University
Oklahoma State University
Oregon State University
Pennsylvania State University
Princeton University
Purdue University
Rensselaer Polytechnic Institute
Rutgers University
San Jose State University
St. Louis University
Stanford University
SUNY at Buffalo
Tuskegee University
University of Alaska
University of Arizona
University of California at Berkeley
University of California at Los Angeles
University of California at Santa Barbara

University of Central Florida
University of Dayton
University of Delaware
University of Illinois Urbana Champaign
University of Maryland
Univ. of Medicine & Dentistry of NJ
University of Michigan
University of Minnesota
University of Missouri – Columbia
University of Missouri – Rolla
University of North Dakota
University of Rochester
University of Southern California
University of Texas at Austin
University of Utah
University of Washington
Virginia Polytechnic Institute
Washington State University
Wayne State University
Wichita State University



OTHER COE AFFILIATES

ABX Air, Inc.
 Adam Aircraft
 AdTech Systems Research, Inc.
 Advanced Composites
 Advanced Transportation R&E Laboratory (ATREL)
 Aero Shell
 AeroClave
 Aerodyne Research Inc.
 Aeronica, Inc.
 Aerosafe Inc.
 Aerotech Engineering & Research Corp.
 Air Force Research Laboratory
 Air Tran Airways
 Air Transport Association of America
 Airborne Express
 Airbus Industrie
 Aircraft Owners & Pilots Association (AOPA)
 Airline Pilots Association
 Airports Council International – North America
 Alaska Airmen's Association
 Alaska Airways
 Alaska Science and Technology
 Alcoa Technical Center
 Aldec Inc.
 AlliedSignal Aerospace
 AlliedSignal Engines
 Allison Engine Company
 Aloha Airlines
 Altera Corporation
 American Airlines
 American Eagle – Flagship Airlines, Inc.
 American Institute of Aeronautics and Astronautics
 ARINC/Dayton
 Armstrong Laboratory
 Association of Flight Attendants
 ASTM International
 Atlantic Coast Airways
 AVDATA
 Aviation Data Service, Inc.
 Aviation Management Associates
 Aviation Safety Institute
 Avidyne Corporation
 Avionics Engineering Center

AvTurf, Inc.
 B/E Aerospace Inc.
 Battelle
 Bell Helicopter TEXTRON
 BF Goodrich R&D Center
 Boeing Company
 Bombardier Aerospace-Learjet
 BRE Environmental Engineering
 Brookhaven National Lab
 California DOT
 Cape Air
 CC Technologies Laboratories, Inc.
 Center for Disease Control and Prevention
 Cessna Aircraft
 Chicago O'Hare International Airport
 Cirrus Aviation
 Comair, Inc.
 Composite Solutions
 Continental Airlines
 Delta Airlines
 Department of Transportation
 Donaldson Company, Inc.
 Draper Laboratory
 Eclipse Aviation
 Edison Joining Technology Center
 Elite Air Center
 Engelhard Corporation
 Engineered Arresting Systems Corporation
 Executive Jet Aviation
 Experimental Aircraft Assoc (EAA)
 FedEx Corporation
 FiberCote Industries, Inc.
 First Technology Safety Systems
 Fluent Incorporated
 Ford
 Frasca International
 Frontier Technology
 Galaxy Scientific Corporation
 Galena
 General Atomics
 General Aviation Manufacturers Association

Goodrich
 Gulfstream Aerospace Corporation
 Hamilton Sundstrand & United Technologies Research Center
 HandySoft
 Harris Corporation
 Hartzell Propeller
 Heatcon Composite Systems
 Hexcel
 Honeywell
 Illinois Department of Aeronautics
 Impact Dynamics Incorporated
 Imperium, Inc.
 Indiana Department of Transportation
 Intec
 Integraph Corporation
 International Centre for Indoor Environment & Energy, Technical University of Denmark
 IntraMicron
 JENTEK Sensors, Inc.
 Jeppesen
 Karl Deutsch
 Keddeg Company
 KBS2, Inc.
 Lancair
 Leigh Fisher Associates
 Livermore Software Technology Corp.
 Lockheed Martin Aeronautics Company
 Logical Vision Ltd.
 Logistics Management Institute
 Los Angeles World Airports
 Lufthansa
 Maryland Aviation Administration
 Massachusetts Port Authority
 McDonnell Douglas Aerospace
 Major Incident Response
 Metron Aviation, Inc.
 Metropolitan Washington Airport Authority
 MGA Research Corporation
 MIL-HDBK-17
 Miltec Research & Technology (MRT)
 Nantucket Airlines
 NASA

National Business Aviation Association (NBAA)
 National Organization to Insure a Sound-controlled Environment
 NMS Bio-Defense
 Northrop Grumman Corporation
 Northwest Airlines
 Northwest Composites
 NorthWest Research Associates, Inc.
 NTIAC
 OCALC-ALB
 O'Hare Modernization Program (OMP)
 O'Hare Noise Compatibility Commission
 Ohio Department of Development
 Ohio Department of Transportation
 Orthopedic Research Institute, Inc
 Pacific Scientific
 Panametrics
 Parker-Hanifin Corporation
 Paul Masson Consulting
 Physical Research, Inc.
 Pratt & Whitney
 Professional Flight Attendants Association
 Raisbeck Engineering
 Rannock Corporation
 Raspet Flight Research Laboratory
 Raytheon Aircraft Company
 Regional Airport Authority of Louisville and Jefferson County
 Rockwell International
 Rolls Royce
 Sabre
 SAE International
 San Francisco Inter. Airport/Community Roundtable
 Sandia National Laboratories
 School of Systems and Logistics
 Scientific Studies Corp.
 Seagull Technology
 Sikorsky Aircraft
 Silicon Graphics, Inc.

Simula Technologies Inc.
 Sino Swearingen
 SMA
 Sonix
 Southern Air Transport
 Southern California Association of Governments
 Southwest Research Institute
 Spitfire Aviation Partners
 SQM Technology, Inc.
 SRI International
 State Aviation Directors – Florida, Arizona, Alaska, Kansas, & ND
 State of Illinois
 Strategic Technology Enterprises
 STERIS Corporation
 Stoddard International
 Sun Microsystems
 Syport Systems Inc.
 Technology Resource Group
 TIMCO Aviation Services Inc.
 TORAY Composites (America) Inc.
 TPL, Inc.
 Transport Canada
 TRC, Inc.
 Trigon Engineering Company
 Triumph Group, Inc.
 TSI Incorporated
 United Airlines
 United Parcel Service
 US Airways
 US DOT Volpe National Transportation Systems Center
 US EPA National Risk Management Research Laboratory
 Vector, Inc.
 Virginia Department of Transportation
 Weber Technology Applications
 Wesson International
 Winterset Development
 Wyle Laboratories



UNIQUE FUNDING COMBINATIONS

- **COE Research Grants require matching funds as mandated by Congress**
- **Cost-share contracts may follow competitive process – authorized by the White House Reinvention Lab**
- **Centers may receive funding from any public or private source**
- ***Centers may contract with others as appropriate***



COE FUNDING LEVELS

YEAR	CENTER OF EXCELLENCE	AMOUNT
1992 to 1996	Computational Modeling of Aircraft Structures	\$ 10 M
1995 - present	Airport Technology	\$ 13 M
1996 - present	Operations Research	\$ 43 M
1997 - present	Airworthiness Assurance	\$ 125 M
2001 - present	General Aviation	\$ 17 M
2003 - present	Aircraft Noise and Emissions Mitigation	\$ 18 M
2004 – present	Advanced Materials	\$ 13 M
2004 – present	Airliner Cabin Environment	\$ 21 M
TOTAL	Grants/Contracts/Matching Funds	\$ 260M



COE PROGRAM OFFICE ACTIVITIES

COE for:	Start up	Cooperative Agreements	Awards/ Amndmts	Evals
Computational Modeling	1992	2	48	1995
Pavement/ Airport Technology	1995	6	55	1998 2004
Operations Research	1996	5	95	2000, 2004 2005
Airworthiness Assurance	1997	38	325	2000
General Aviation	2001	10	115	2002, 2004
Noise & Emissions	2003	9	90	2006
Adv'd Materials	2003	10	47	2006
Cabin Environment	2004	10	25	2007
TOTAL	8	90	800	12

RESULTS

COE Partnerships Established	8
University Partners and Affiliates	> 260
Collaborations (NASA, Transport Canada, Sandia, Iceland, DoD, Volpe, etc.)	> 6
Projects Supported	> 500
Graduate Students Supported	> 900
Published Articles, Reports, Doctoral Theses	> 2,000
Matching Funds	< \$ 100 M

Level of Effort (Grants/Contracts/Matching Funds) \$ 260 M



STREAMLINED ADMINISTRATION

- **Projects are funded on an on-going basis following proposal submission and technical evaluations by sponsoring organization(s).**
- **Technical reviews are conducted quarterly during first year, semi-annually thereafter.**
- **COE management, projects, and progress are reassessed every three years; matching funds are audited.**
- **COE members attend an annual joint meeting hosted by industry affiliates to enhance partnership opportunities.**



COE Annual Joint Meetings

- **Students are provided an opportunity to highlight their work and engage in technical discussions with leaders in the field.**
- **Senior scientists have a forum for disseminating research results, coordinating efforts, and fielding research ideas among peers.**
- **Government, COE industry affiliates, and university members have an opportunity for discourse to enhance / expand partnership opportunities, generate matching funds, and review research direction and progress.**



1st Annual Joint Meeting

GENERAL ELECTRIC CO & OHIO STATE UNIVERSITY

Location: GE Aircraft Engines, Cincinnati, Ohio

Dates: November 13 - 16, 2001

Theme: *Bridging the Gap - between government, academia, and industry*

Hosts: General Electric Aircraft Engines and Ohio State University

Student Dinner and Poster Contest hosted and judged by GE senior management team



2nd Annual Joint Meeting

AIRCRAFT MANUFACTURERS & WICHITA STATE UNIVERSITY

- Location:** Wichita, Kansas
Dates: October 21 - 24, 2002
- Theme:** *Partners Working Together for Excellence in Aviation*
- Special Guests:** US Transportation Secretary Norman Y. Mineta
US Congressman Todd Tiahrt
- Hosts:** Boeing, Cessna, Raytheon, & Bombardier-Learjet
Wichita State University

Student Awards:

- **Student Dinner and Poster Contest Awards** provided and presented by local aircraft manufacturers
- **DOT COE Outstanding Student of the Year** recognized



3rd Annual Joint Meeting

AVIATION INDUSTRY & ERAU

Location: Daytona Beach, Florida

Dates: November 4 - 7, 2003

Theme: *FAA COEs - The Next Five Years*

Hosts: Boeing, Harris Corporation, Atlantic Southeast Airlines, Aviation Management Associates, Galaxy Scientific Corp., Sensis Corporation, Jeppesen, Embry-Riddle Aeronautical University

Keynote Speaker: Ambassador Edward Stimpson, ICAO

Student Awards:

- **Poster Contest and JPDO Futures Paper Competition** awards provided and presented by COE industry affiliates
- **DOT FAA COE Outstanding Student of the Year Award** recognized



4th Annual Joint Meeting

COE INDUSTRY AFFILIATES & UNIVERSITY OF CENTRAL FLORIDA

Location: Melbourne and Orlando, Florida

Dates: March 14 - 16, 2005

Theme: *Global Leadership – Commitment to Worldwide Improvement*

Hosts: Harris Corporation, the Boeing Company, Cessna Aircraft Company, Pratt & Whitney, Lockheed-Martin, Raytheon, Tandberg Inc., General Electric, Gulfstream Aerospace Corporation, Galaxy Scientific Corporation, Engine Titanium Consortium (ETC), Aviation Management Associates, Center for Advanced Transportation Systems Simulation (CATSS), and University of Central Florida

Keynote Speaker: Ambassador Thomas Pickering, VP Boeing Company

Dinner Speaker: The Honorable John Goglia, NTSB (retired)

Special Awards:

- Student Poster Contest
- DOT FAA COE Outstanding Student of the Year
- Joseph A. Hartman Boise State University-COE Industry Leadership Award



COE BENEFITS

- **Promotes** academic, government & industry scientific networks prepared to enhance the safety, security & efficiency of the national airspace system
- **Augments** government resources & leverages funds through flexible and responsive partnerships
- **Expands** the U.S. math & science pipeline and facilitates recruitment opportunities
- **Provides** a formal strategy & recognized structure to coordinate a national research agenda and related education, and training
- **Advances** U.S. technology and expertise and satisfies Congressional mandate



The nation must immediately reverse the decline in and promote the growth of a scientifically and technologically trained U.S. aerospace workforce"

Final Report of the Commission on the Future of the United States Aerospace Industry

FAA CENTERS OF EXCELLENCE



For more information, contact:

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National Program Director
Air Transportation Centers of Excellence

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Website: www.coe.faa.gov



FAA Established Centers

COE for Airliner Cabin Environment Research

Joint COE for Advanced Materials

FAA/NASA COE for Aircraft Noise & Aviation Emissions Mitigation

COE for General Aviation

COE for Airworthiness Assurance

COE for Operations Research

COE for Airport Technology

Joint Center for Computational Modeling of Aircraft Structures

(designated by Congress 1992 – 1996)



COE for Airliner Cabin Environment Research (ACER)

- Selected by the Administrator – August 2004
- Technology Areas:
 - Development of Cabin Air Quality 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 Airliner Cabin Environments
 - Field and Laboratory Analysis of Potential Cabin Contaminants
 - Development of Databases, with Supporting Architecture, for Documentation of Contaminants and Contaminant Incidents on Commercial Airliners

Sponsor: FAA Office of Aerospace Medicine

Members: Auburn University, Harvard University, Purdue University, Boise State University, Kansas State University, University of California at Berkeley, University of Medicine and Dentistry of New Jersey, Oklahoma State University, St. Louis University

Technical Co-Leads: Harvard University and Purdue University
Administrative Lead: Auburn University
William F. Gale, Ph.D.
e-mail Address: wfgale@eng.auburn.edu



COE for Airliner Cabin Environment Research Affiliates

AeroClave
AIG Aviation
Airline Pilots Association
Aldec
Altera
Association of Flight Attendants
Battelle
The Boeing Company
Delta Airlines
Donaldson
Engelhard
Fluent
GE Aircraft Engines
General Atomics
Goodrich Sensor Systems

Honeywell
Hamilton Sundst./UTRC
Int. Cent. Indoor Environ. & Energy
Intergraph
IntraMicron
Keddeg Company
Major Incident Response
NMS Biodefense
**Professional Flight Attendants
Association**
Spitfire Aviation Partners
STE – STERIS Corporation
TSI, Inc.



Joint COE for Advanced Materials (JAMS)

- **Announced by the Secretary of Transportation – 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: FAA Airport & Aircraft Safety R&D Division

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

University Leads: Wichita State University and the University of Washington
e-mail Addresses: 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
Advanced Composites
Airbus
Air Force Research Laboratories
ASTM International
Boeing
Bombardier
Cessna, a Textron Company
CIRRUS Design
Ford
MIL-HDBK-17
NASA
Raytheon
SAE International
TORAY
Triumph Composite Systems, Inc.

Advanced Materials in Transport Aircraft

Structures Team

Industry Affiliates

UNIVERSITY OF WASHINGTON

The Boeing Company
Composite Solutions
Cytac Engineering Materials
HEATCON Composite Systems
Hexcel Corporation
Integrated Technologies (Intec), Inc.
Northwest Composites, Inc.
Stoddard International, LLC
TORAY Composites (America), Inc.
Triumph Group, Inc.



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

- **Announced by the 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: Office of Environment & Energy in partnership with NASA and Transport Canada

Members: Massachusetts Institute of Technology, Boise State University, Florida International University, Pennsylvania State University, Purdue University, Stanford University, University of Central Florida, University of Missouri-Rolla, Georgia Institute of Technology, York University

University Lead: MIT
Ian Waitz, Ph.D.
e-mail Address: iaw@mit.edu



COE for Aircraft Noise & Aviation Emissions Mitigation Affiliates

Aerodyne Research, Inc.

Airbus

Air Transport Association of America

Airports Council International - North America

American Institute of Aeronautics and Astronautics

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

Rannoch Corporation

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



COE for General Aviation (CGAR)

- **Competitively Selected: 2001**
- **Single source contract authority: \$20M cap**
- **Technology Areas:**
 - **Aging Aircraft**
 - **Crashworthiness**
 - **Propulsion**
 - **Icing**
 - **Advanced Materials**

Sponsor: FAA Airport & Aircraft Safety R&D Division

Members: Embry-Riddle Aeronautical University, Florida A& M University, University of Alaska, University of North Dakota, Wichita State University

University Lead: Embry-Riddle Aeronautical University
Steven Hampton, Ed.D.
e-mail Address: 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 Airworthiness Assurance (AAE)

- **Competitively Selected: 1997**
- **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 – 31 Equal University Partners (see 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 - 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)

- **Competitively Selected: 1996**
- **Single source contract authority: \$10M - Phase I, \$40M - 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 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: Scott Simcox,
NEXTOR Business Manager
e-mail Address: simcox@uclink.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: 1995 (as the Center of Excellence for Airport Pavement Technology R&D)**
- **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, Northwestern University, Embry-Riddle Aeronautical University (Prescott), North Carolina A&T, Rensselaer Polytechnic Institute

University Lead: University of Illinois at Urbana-Champaign

(Located at the former Chanute Air Force Base, Rantoul, ILL)

Professor David A. Lange

e-mail Address: dlange@uiuc.edu



COE for Airport Technology University Members

CENTER PARTNERS

University of Illinois at Urbana Champaign
Embry-Riddle Aeronautical University (Prescott)
Rensselaer Polytechnic Institute

INDUSTRY PARTNERS

AvTurf, Inc
The Boeing Company
O'Hare Modernization Program (OMP)
Trigon Engineering Company

PUBLIC PARTNERS

City of Chicago
State of Illinois



Joint Center for Computational Modeling of Aircraft Structures

- **First FAA Center of Excellence, Designated by Congress: 1990**
- **Operational: 1992 to 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**

Members Designated by Congress: Rutgers University and Georgia Institute of Technology



ROLE OF INDUSTRY PARTNERS

- **May serve on COE Industry Advisory Board or Steering Committee**
- **Provide matching funds, cash or in-kind in accordance with OMB direction**
 - Labor
 - Materials
 - Lab space
 - Host meetings
 - Other



FAA/COE LEGISLATIVE REQUIREMENTS AND OUTCOMES

