

# **FAA Air Transportation Center of Excellence (COEs)**

## **FAA COE Overview**

**Government/Academic/Industry  
Strategic Partnerships**

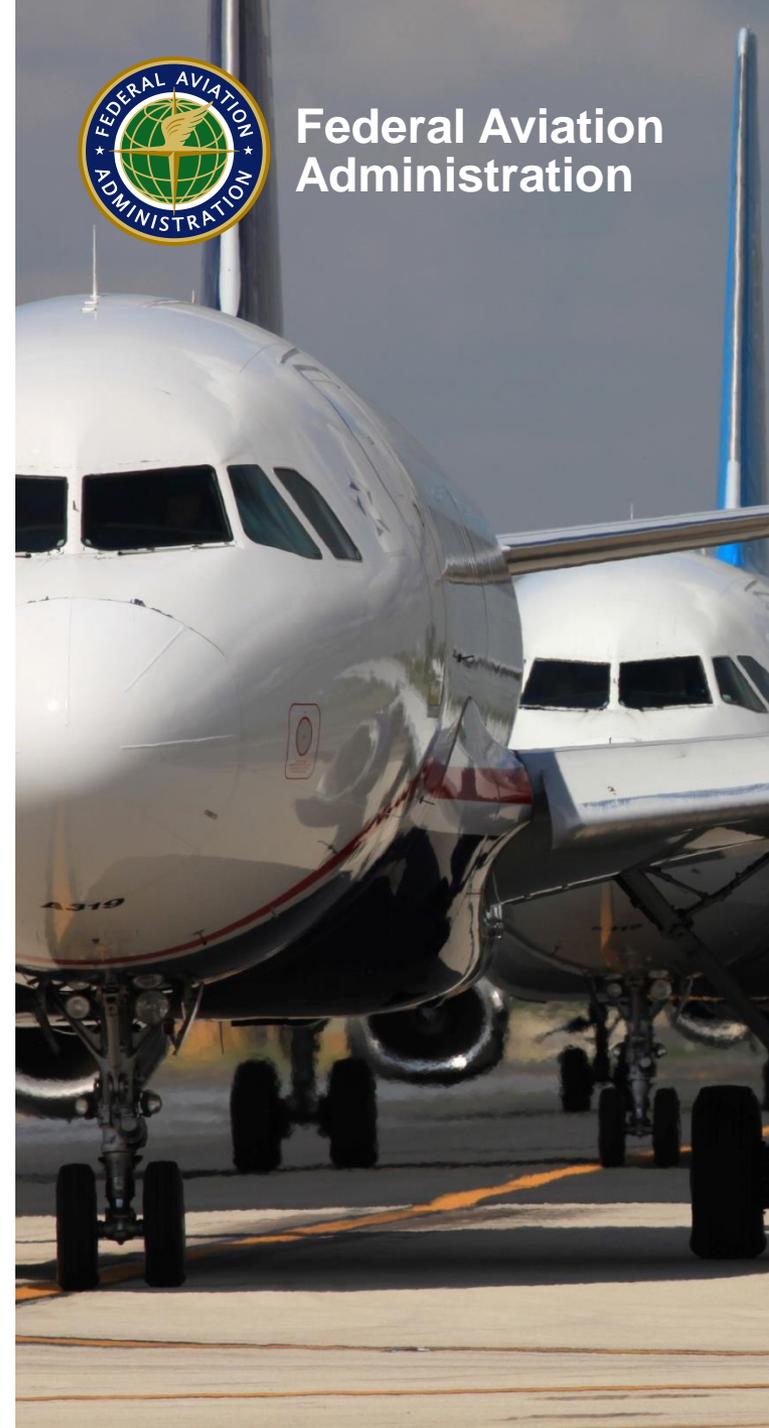
Presented to: REDAC Subcommittee

Presented by: Patricia Watts, Program Director  
FAA Centers of Excellence

Date: March 27, 2018



Federal Aviation  
Administration



# Agenda

## FAA Centers of Excellence (COE) – Overview

- COE Mission
- Funding Vehicle Options
- Grants Legislation
- Geographic Equity
- Evaluation/Selection Process
- Requirements
- FAA COE Benefits



*Administrator, Michael Huerta honors University of Texas Medical Students, FAA Headquarters, Washington, DC*

# COE Mission

- **Enhance** access to university research capabilities and products by awarding single and multiyear research grants and contracts to colleges, universities and affiliate organizations in multidisciplinary aviation/aerospace related disciplines
- **Capture** qualities of academic research:
  - Outreach*
  - Flexibility*
  - Innovation*
  - Education*
  - Tech Transfer*
- **Promote** the growth of a scientifically and technologically trained US workforce  
*(Commission on the Future of the US Aerospace Industry)*
- **Augment** internal resources and research facilities through long-term public / private partnerships and matching contributions



*Dennis Filler, FAA Technical Center Director, introduces Secretary's RAISE Recipient, MIT Student, Kyle Smith, to FAA Hdq Senior Technical Staff*

# FAA Funding Vehicle Options

- **Contracts and Other Agreements –  
for *Federal Purpose***

- Individual Contracts
- Interagency Agreements
- Other Agreements / OTAs

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- **Grants – for *Public Purpose***

- Airport Improvement Grants
- Aviation Research Grants
- Centers of Excellence (COE)



*Secretary of Transportation, Anthony Foxx  
presents RAISE Award to MIT doctoral student, Kyle  
Smith*

# U.S. DOT 'Grants' Legislation

**DOT: 90 - 100 Grants Programs**

## University Centers -

1. OST-R – UTCs  
University Transportation Centers
2. FAA COEs  
Air Transportation Centers of Excellence

Enacted to award grants to enhance FAA's access to resources and research facilities available at colleges, universities, and other non-profit research institutions, train and educate future professionals.



*Secretary Anthony Fox presents RAISE Award during meeting at DOT Hdq.*

# COE Legislative Authority – P.L. 101-508



## **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....”*

# REDAC Authority – P.L. 101-508

- Follows COE Authority

## (b) RESEARCH ADVISORY COMMITTEE-

(1) Section 312(f)(2) of the Federal Aviation Act of 1958 (49 App. U.S.C. 1353(f)(2)) is amended by adding at the end the following new sentence: `In addition, the committee shall review the research and training to be carried out by the regional centers of air transportation excellence established under subsection (h).`.

(2) Section 312(f)(3) of the Federal Aviation Act of 1958 (49 App. U.S.C. 1353(f)(3)) is amended--

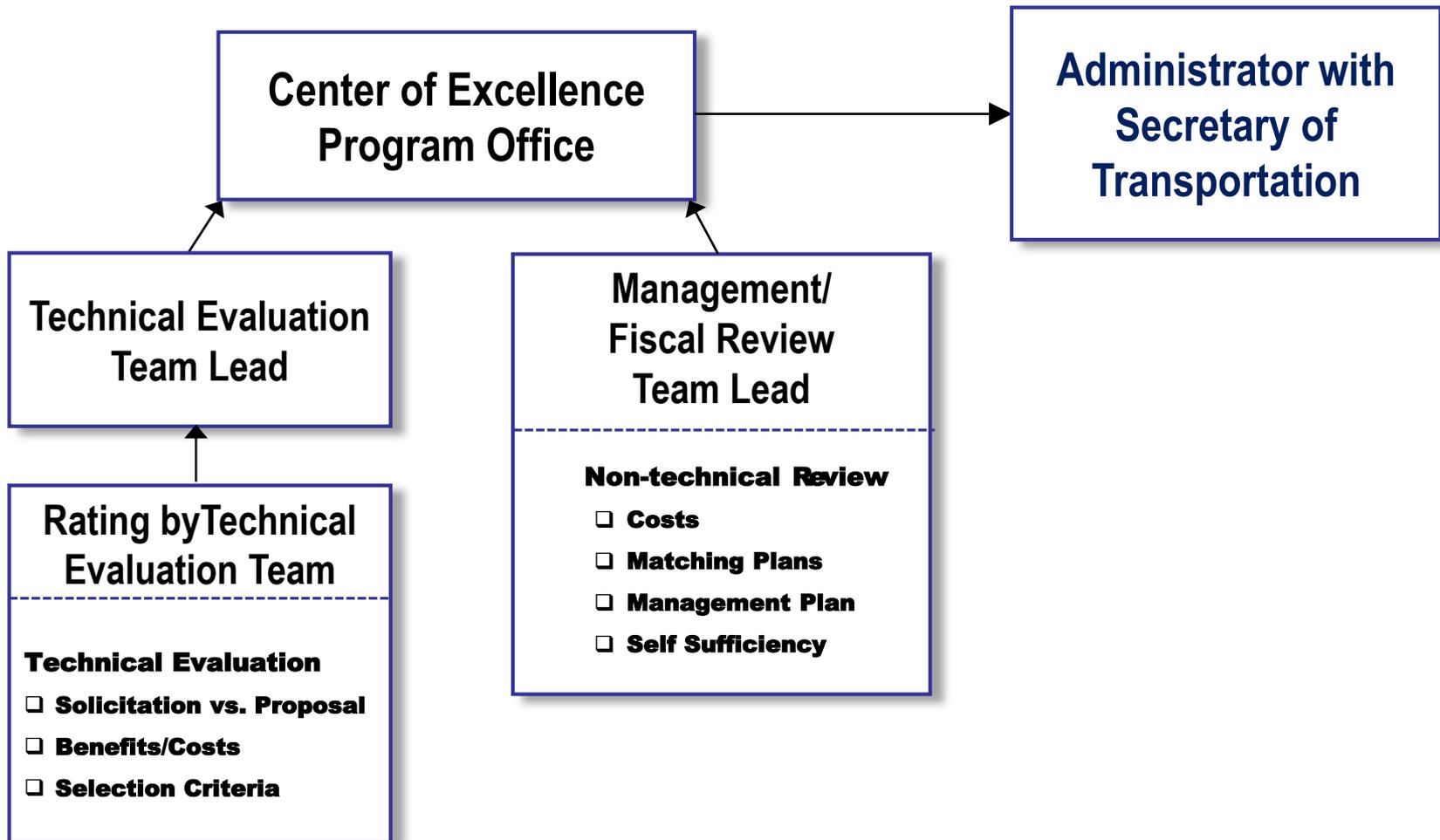
(A) by striking `20' and inserting `30'; and

(B) by striking the last sentence and inserting the following:

`The Administrator in appointing the members of the committee shall ensure that the research centers of air transportation excellence, universities, corporations, associations, consumers, and other Government agencies are represented.`.



# COE Evaluation/Selection Process



# COE Core Teams - Geographic Distribution

## Technical Training & Human Performance

(TTHP)

### Un. of Oklahoma & ERAU Teams

– Announced August 12, 2016

- Auburn Un.
- Drexel Univ.
- Inter American Un.
- Oklahoma State Un.
- Purdue un.
- Tennessee State Un.
- The Ohio State Un.
- Tulsa Community College
- Un. Of Akron
- Un. Of Nebraska at Omaha
- Un. Of North Dakota
- Un. Of Wisconsin-Madison
- Western Michigan Un.
- Wichita State Un.

## Advanced Materials

(JAMS)

- Un. of Washington (Co-Lead)
- Wichita State Un. (Co-Lead)
- Edmonds Community College
- Florida International Un.
- Northwestern Un.
- Purdue Un.
- Oregon State Un.
- Tuskegee Un.
- Un. of California – LA
- Un. of Delaware
- Un. of Utah
- Washington State Un.

## General Aviation (PEGASAS)

- Purdue Un. (Lead)
- Florida Institute of Technology
- Georgia Institute of Technology

- Iowa State Un.
- Ohio State Un.
- Texas A & M Un.

## Commercial Space Transportation(CST)

- Un. of Texas Medical Branch (Admin Lead)
- Baylor Un. School of Medicine
- Florida State Un.
- Florida Institute of Technology
- NM Inst. of Mining & Technology
- New Mexico State Un.
- Stanford Un.
- Un. of Florida
- Un. of Central Florida
- Un. of Colorado – Boulder

## Alternative Jet Fuels & Environment (ASCENT)

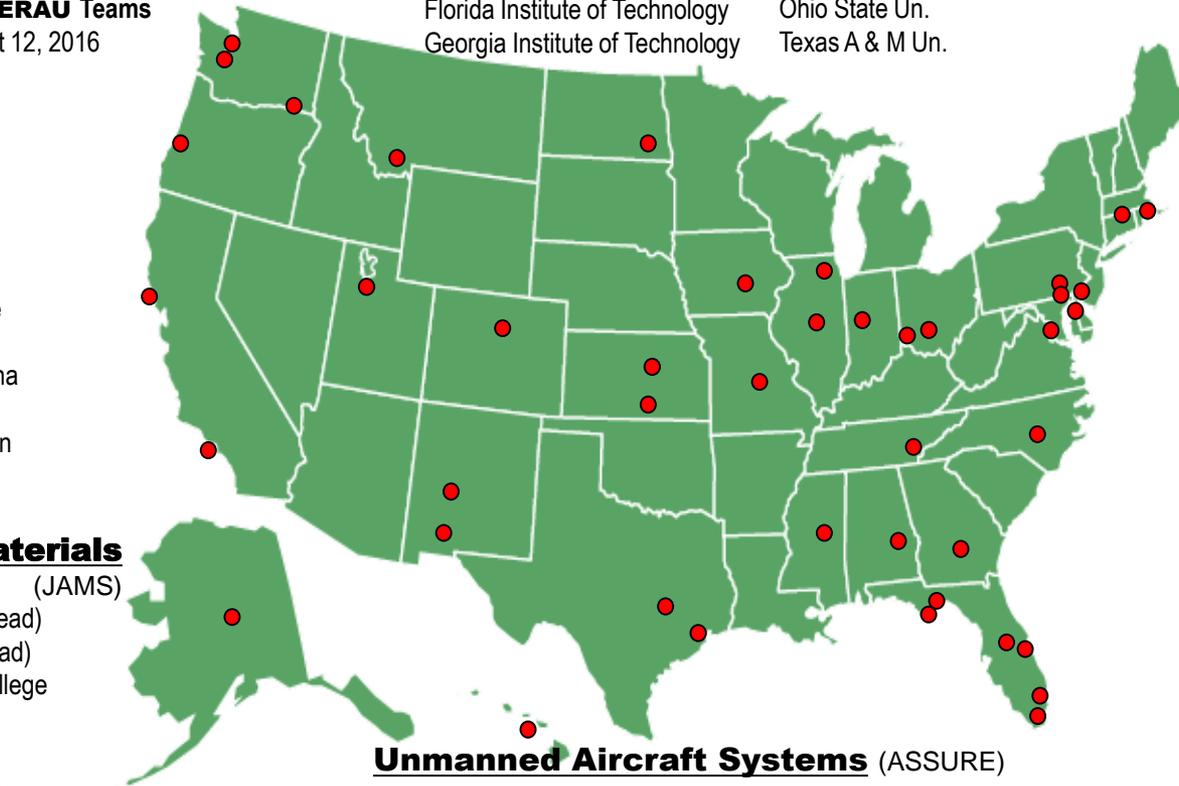
- Washington State Un. (Lead)
- MIT(Co-Lead)
- Boston Un.
- Georgia Institute of Technology
- Missouri Un. of Science & Technology
- Oregon State Un.
- Pennsylvania State Un.
- Purdue Un.
- Stanford Un.
- Un. of Dayton
- Un. of Hawaii
- Un. of Illinois – UC
- Un. of North Carolina – CH
- Un. of Pennsylvania
- Un. of Tennessee
- Un. of Washington

## Unmanned Aircraft Systems (ASSURE)

- Mississippi State Un. (Lead)
- Drexel Un.
- Embry Riddle Aeronautical Un.
- Kansas State Un.
- Montana State Un.

- New Mexico State Un.
- North Carolina State Un.
- Oregon State Un.
- The Ohio State Un.
- Wichita State Un.

- Un. of Alabama in Huntsville
- Un. of Alaska Fairbanks
- Un. of California, Davis
- Un. of Kansas
- Un. of North Dakota



# FAA COE Sponsors - Funding Levels

| Year                                                                                                      | Center of Excellence (Topic Areas)                         | Sponsor      | LOE            |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------|----------------|
| 2016 - 2021                                                                                               | Technical Training and Human Performance – Aug 12, 2016    | ATO          | \$13 M         |
| 2015 - 2020                                                                                               | Unmanned Aircraft Systems (UAS) - May 8, 2015              | AFS/ANG / HQ | \$24 M         |
| 2013 - 2023                                                                                               | Alternative Jet Fuels & Environment (AJF&E) – Phase I      | AEE / HQ     | \$78 M         |
| 2012 - 2022                                                                                               | General Aviation Safety (PEGASAS) – Phase I                | ANG / TC     | \$30 M         |
| 2010 - 2020                                                                                               | Commercial Space Transportation (CST) > Phase II           | AST / HQ     | \$20 M         |
| 2004 - present                                                                                            | Research in the Intermodal Transport Environment (ACERite) | AAM / HQ     | \$49 M         |
| 2004 - present                                                                                            | Joint COE Advanced Materials (JAMS)                        | ANG / TC     | \$70 M         |
| 2003 - present                                                                                            | Aircraft Noise and Emissions Mitigation * (PARTNER)        | AEE /HQ      | \$112 M        |
| 2001 - 2014                                                                                               | General Aviation * (CGAR)                                  | ANG / TC     | \$39 M         |
| 1997 - 2007                                                                                               | Airworthiness Assurance * (AACE)                           | AAR/ANG / TC | \$124 M        |
| 1996 – (2007)                                                                                             | Operations Research * (NEXTOR)                             | ARA / HQ     | \$45 M         |
| 1995 - (2013)                                                                                             | Airport Technology (CEAT)                                  | AAR/AIP / TC | \$42 M         |
| 1992 - 1996                                                                                               | Computational Modeling of Aircraft Structures (CMAS)       | AAR / TC     | \$10 M         |
| <b>NOTE: Figures includes Grants &amp; Matching Contributions; Interagency Agreements and * Contracts</b> |                                                            | <b>Total</b> | <b>\$647 M</b> |



# FAA and COE Requirements

## > **The FAA:**

- ~ Administrator concurs with a Sponsor's request to establish a COE and is the selecting official with the Secretary of Transportation
- ~ COE Program Office conducts a 1-yr competitive process
- ~ Sponsor makes a long-term commitment to provide annual base funding and to support the COE for a period of 5 – 10 years

## > **The COE UNIVERSITIES:**

- ~ Generate 1:1 matching contributions from non-federal sources while engaging industry and other affiliates
- ~ Make long-term commitments to provide: facilities, faculty & students
- ~ Assure management & SME oversight, coordinate activities, avoid duplication of effort

- > **FAA & COE TEAM:** Assure *Geographic equity* re funding and partner locations; maximize synergies throughout COE members



# What's New at DOT – OST ?

- **Secretary's RAISE Award**

- ST Advisory Committee Recommended and the Secretary Establish the Award to: *Recognize Aviation and aerospace Innovative Scientific and Engineering concepts and achievements that could have a significant impact on the future*
- Established in 2013
- Moved Responsibility for the to the COE Program Office from OST in 2016
- 2018 Announcement to be published.....



# **OST Review – Effective 2016**

- **OST Review Not Required**
  - No Cost Extensions for projects previously funded
  - Personnel changes
  - Redirection of funds during closeout
  
- **OST Review Required Prior to Execution**
  - ALL long-term cooperative agreements
  - ALL COE grant awards



# Center of Excellence Benefits

- **Promote** academic, government & industry scientific networks prepared to enhance the safety, security & efficiency of the national airspace system
- **Augment** government resources (\$:\$) and leverage funds through flexible and responsive public/private partnerships
- **Expand** the U.S. math & science pipeline, support STEM goals, and facilitate aerospace recruitment opportunities
- **Provide** a formal strategy & trusted structure to coordinate a national research agenda and related education, and training
- **Advance** U.S. technology and expertise while satisfying Congressional mandates



*Congressman Oberstar meets with COE Students & Faculty at TRB Council of University Transportation Centers Awards Ceremony celebrating the Outstanding Students of the Year*

*“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

# Q&A



*Administrator, Jane Garvey, with  
Congressman John Mica,  
COE GA Dedication, Washington DC*

# COE University Members



*Stanford Student Rachel Tompa,  
COE for Commercial Space  
Transportation  
Sec. Mineta and Dorothy Reimold, AST*

*John Porcari  
Deputy Sec. of Transportation  
Chelsea He, MIT  
COE for Noise & Emissions*



COE Overview

- Auburn University
- Boise State University
- Boston University
- Drexel University
- Edmonds Community College
- Embry-Riddle Aeronautical University
- Florida Institute of Technology
- Florida International University
- Florida State University
- Georgia Institute of Technology
- Harvard University
- Inter American University
- Iowa State University
- Kansas State University
- Mississippi State University
- Massachusetts Institute of Technology
- Mississippi State University
- Montana State University
- New Mexico Inst. of Mining & Tech
- New Mexico State University
- North Carolina State University
- Northwestern University
- Oklahoma State University
- Oregon State University
- Pennsylvania State University
- Purdue University
- Rensselaer Polytechnic Institute
- Stanford University
- Tennessee State University
- Texas A&M University
- The Ohio State University



Federal Aviation  
Administration

# **COE University Members (continued)**



**Phillip Donovan, UIUC**  
COE for Airport Technology  
DOT / FAA COE  
Outstanding Student of the Yr

**Gregory D. Winfree**  
Deputy Administrator, RITA w/  
Bradley Cheetham, Un. of Colorado at  
Boulder  
COE for Commercial Space Transportation



- Tulsa Community College
- Tuskegee University
- University of Akron
- University of Alabama at Huntsville
- University of Alaska at Anchorage
- University of Alaska at Fairbanks
- University of California at Los Angeles
- University of California at Davis
- University of Central Florida
- University of Colorado at Boulder
- University of Delaware
- University of Florida
- University of Illinois at Urbana Champaign
- Un. of Medicine & Dentistry of NJ
- University of Missouri at Rolla
- University of Nebraska-Omaha
- University of North Dakota
- University of North Carolina at Chapel Hill
- University of Oklahoma
- University of Pennsylvania
- University of Texas Medical Branch
- University of Utah
- University of Washington
- University of Wisconsin
- Washington State University
- Western Michigan
- Wichita State University



# COE Non-Federal Co-Sponsors (1 of 2)

AAS Corp  
Adacel  
Adaptive Aerospace Group, Inc.  
Advanced Transportation R&E  
Laboratory (ATREL)  
Aegis Technologies  
Aero Shell  
AeroClave  
Aerodyne Research Inc.  
Aeroenvironment, Inc.  
Ag TechInventure  
Air Force Research Laboratory  
Air Tran Airways  
Air Transport Association of America  
(ATA)  
Airborne Express  
Airbus Industries  
Aircraft Owners & Pilots Association  
(AOPA)  
Airline Pilots Association (APA)  
Airports Council International –  
North America  
Alaska Airmen's Association  
Alaska Airways

Alaska Science and Technology  
Alcoa Technical Center  
AlliedSignal  
Allison Engine Company  
Aloha Airlines  
Altavian  
American Airlines  
American Eagle Airlines, Inc.  
American Institute of Aeronautics  
and Astronautics (AIAA)  
ARINC Dayton  
Aurora Flight Sciences  
Ausley Associations, Inc.  
Avion Solutions, Inc.  
Battelle  
Bell Helicopter TEXTRON  
BF Goodrich R&D Center  
Boeing Company  
Bombardier Aerospace-Learjet  
Brock Technologies  
Brookhaven National Lab  
California DOT  
Cape Air  
Cessna Aircraft  
Chicago O'Hare International  
Airport  
Cirrus Aviation

Comair, Inc.  
Continental Airlines  
Collinear Group  
Corsair Engineering  
Delta Airlines  
Donaldson Company, Inc.  
Draper Laboratory  
Ecole de technologie superieure  
Elite Air Center  
Embraer Aircraft Holdings  
Emergency Service Unmanned  
Support, Inc  
Executive Jet Aviation  
Excelis  
Experimental Aircraft Assoc. (EAA)  
FedEx Corporation  
Frasca International  
Freewave  
Futron Corporation  
General Atomics Aeronautical  
General Dynamics Info Tech  
General Electric Company  
General Aviation Mfg. Assn. (GAMA)  
Goodrich  
Gulfstream Aerospace Corporation  
Harris Corporation

Honeywell  
Illinois Department of Aeronautics  
Indiana Department of  
Transportation  
International Centre for Indoor  
Environment & Energy, Technical  
University of Denmark  
ISR Group  
JENTEK Sensors, Inc.  
K2Share, LLC  
KSI Data Sciences  
KUTTA Technologies  
L3 Unmanned Systems  
Livermore Software Technology  
Corp.  
Lockheed Martin Aeronautics Co.  
Lone Star UAS  
Los Angeles World Airports  
Lufthansa  
Marinvent Corporation  
Maryland Aviation Administration  
Massachusetts Port Authority  
McDonnell Douglas Aerospace  
Metron Aviation, Inc.  
Metropolitan Washington Airport  
Authority  
Mid-Atlantic Aviation Partnership  
Momentum Aviation Group  
Mosaic ATM, Inc.



# **COE Non-Federal Co-Sponsors (2 of 2)**

MTSI  
NASA  
National Business Aviation Assn.  
(NBAA)  
Navy Meteorology and  
Oceanographic Command  
Navmar Applied Sciences Corp  
Navy Research Labs  
NMS Bio-Defense  
NOAA  
Northern Plains UAS Test Site  
Northrop Grumman Corporation  
Northwest Airlines  
Northwest Composites  
O'Hare Modernization Program  
(OMP)  
O'Hare Noise Compatibility  
Commission  
Ohio Department of Development  
Ohio Department of Transportation  
Pentagon Performance, Inc.  
Pratt & Whitney  
Precision Hawk  
Prioria  
Professional Flight Attendants  
Association  
Raytheon Aircraft Company

Regional Airport Authority of  
Louisville and Jefferson County  
Rockwell International  
Rolls Royce  
RT Collins  
RT Logic  
RTCA, Inc.  
SAE International  
San Francisco Inter.  
Airport/Community Roundtable  
Sandia National Laboratories  
Scitor Corporation  
Sebring Airport Authority  
Seagull Technology  
Selex Galileo  
Sierra Nevada Corporation  
Sikorsky Aircraft  
Simulzye  
Southern Air Transport  
Southern California Association of  
Governments  
Southwest Innovation Cluster  
Southwest Research Institute  
Spirit Aerosystems  
Spitfire Aviation Partners  
SRI International  
Stark Aerospace  
STERIS Corporation

Sun Microsystems  
Textron Aviation  
The Aerospace Corporation  
The Northeast UAS Airspace  
Integration Research Alliance  
The Pan Pacific UAS Test Range  
Complex  
TKDA  
Torch Technology  
Transport Canada  
Trimble  
United Airlines  
United Parcel Service  
University of San Francisco De  
Quito  
Unmanned Experts  
URS  
US Airways  
US DOT Volpe National Trans.  
Systems Center  
US EPA  
US Geological Survey  
VectorCSP  
Virginia Department of  
Transportation  
Wyle Laboratories





# FAA Air Transportation Centers of Excellence



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**Website: <http://www.faa.gov/go/coe>**



*Secretary of Transportation Norman Mineta,  
Chris Seher and Patricia Watts (FAA).*



*Scott Pipkins, George Donohue, Bruce Singer,  
Virginia Shamy, Satya Atluri, Patricia Watts, Chris Seher*



*Secretary of Transportation Rodney Slater  
and University of Illinois student Bill Vavrik,  
DOT COE Outstanding Student of the Year*

