

FAA Air Transportation Center of Excellence (COEs)

FAA COE Overview

**Government/Academic/Industry
Strategic Partnerships**

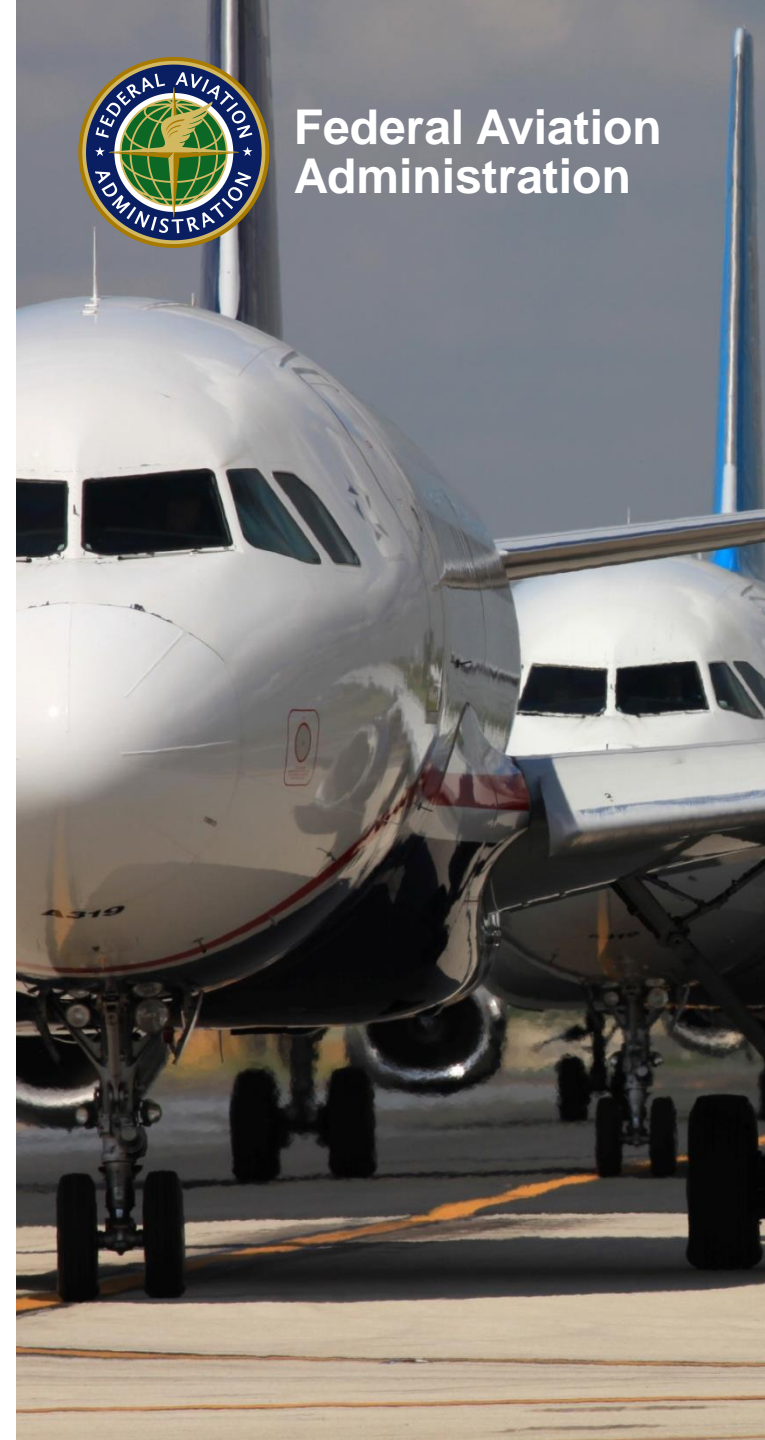
Presented to: REDAC Subcommittee

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).`.

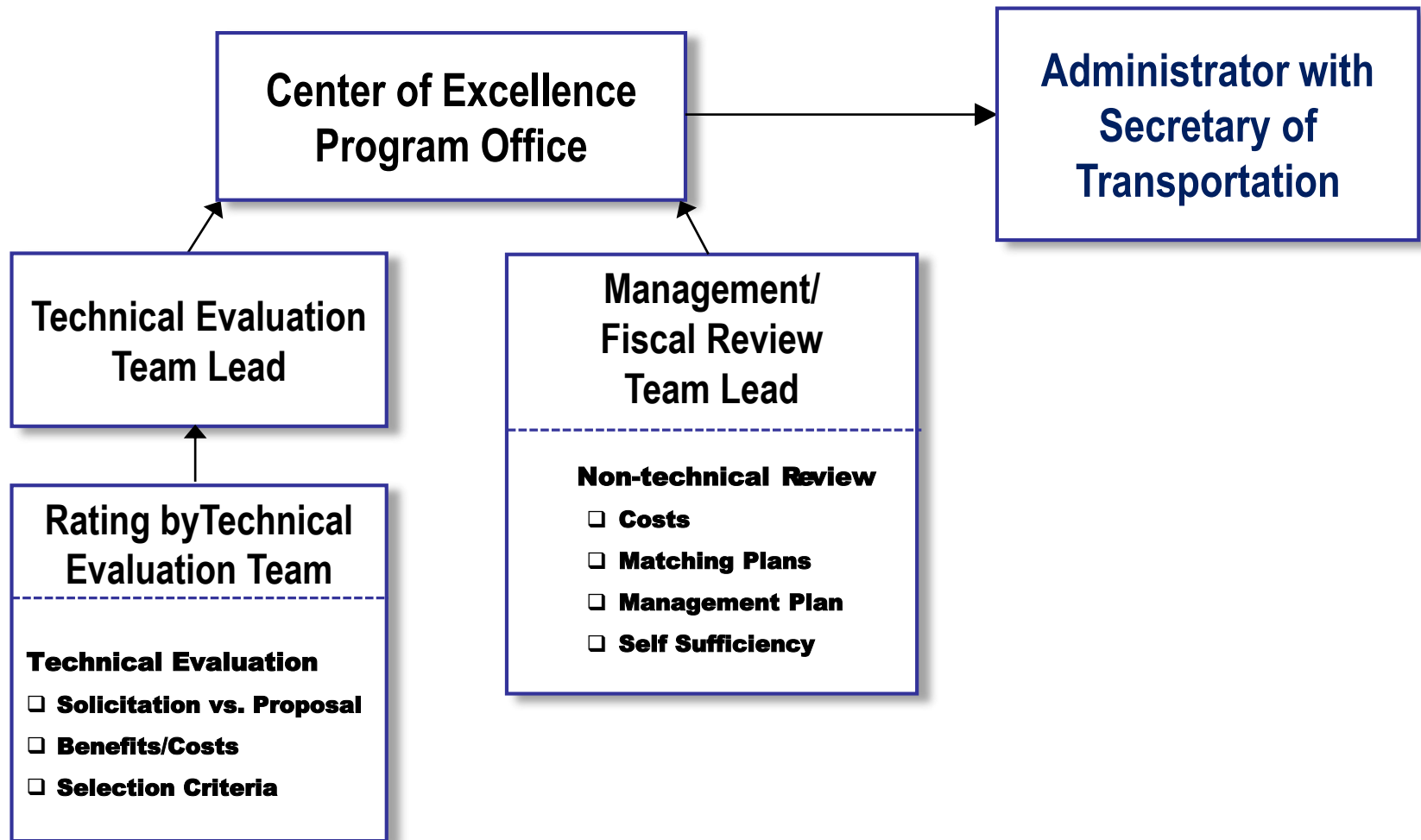
(2) Section 312(f)(3) of the Federal Aviation Act of 1958 (49 App. U.S.C. 1353(f)(3)) is amended--

(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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*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*

