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
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
FAA Funding Vehicle Options

- Contracts and Other Agreements – for Federal Purpose
  - Individual Contracts
  - Interagency Agreements
  - Other Agreements / OTAs

- 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
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.
“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....”
• 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

Center of Excellence Program Office

- Technical Evaluation Team Lead
- Rating by Technical Evaluation Team
- Technical Evaluation
  - Solicitation vs. Proposal
  - Benefits/Costs
  - Selection Criteria

Management/ Fiscal Review Team Lead

Non-technical Review
- Costs
- Matching Plans
- Management Plan
- Self Sufficiency

Administrator with Secretary of Transportation

COE Overview
COE Core Teams - Geographic Distribution

**Technical Training & Human Performance**
(TTTHP)
**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.
Emby 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

CoE Overview
# FAA COE Sponsors - Funding Levels

<table>
<thead>
<tr>
<th>Year</th>
<th>Center of Excellence (Topic Areas)</th>
<th>Sponsor</th>
<th>LOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 - 2021</td>
<td>Technical Training and Human Performance – Aug 12, 2016</td>
<td>ATO</td>
<td>$13 M</td>
</tr>
<tr>
<td>2013 - 2023</td>
<td>Alternative Jet Fuels &amp; Environment (AJF&amp;E) – Phase I</td>
<td>AEE / HQ</td>
<td>$78 M</td>
</tr>
<tr>
<td>2012 - 2022</td>
<td>General Aviation Safety (PEGASAS) – Phase I</td>
<td>ANG / TC</td>
<td>$30 M</td>
</tr>
<tr>
<td>2010 - 2020</td>
<td>Commercial Space Transportation (CST) &gt; Phase II</td>
<td>AST / HQ</td>
<td>$20 M</td>
</tr>
<tr>
<td>2004 - present</td>
<td>Research in the Intermodal Transport Environment (ACERite)</td>
<td>AAM / HQ</td>
<td>$49 M</td>
</tr>
<tr>
<td>2004 - present</td>
<td>Joint COE Advanced Materials (JAMS)</td>
<td>ANG / TC</td>
<td>$70 M</td>
</tr>
<tr>
<td>2003 - present</td>
<td>Aircraft Noise and Emissions Mitigation * (PARTNER)</td>
<td>AEE / HQ</td>
<td>$112 M</td>
</tr>
<tr>
<td>2001 - 2014</td>
<td>General Aviation * (CGAR)</td>
<td>ANG / TC</td>
<td>$39 M</td>
</tr>
<tr>
<td>1997 - 2007</td>
<td>Airworthiness Assurance * (AACE)</td>
<td>AAR/ANG / TC</td>
<td>$124 M</td>
</tr>
<tr>
<td>1995 - (2013)</td>
<td>Airport Technology (CEAT)</td>
<td>AAR/AIP / TC</td>
<td>$42 M</td>
</tr>
<tr>
<td>1992 - 1996</td>
<td>Computational Modeling of Aircraft Structures (CMAS)</td>
<td>AAR / TC</td>
<td>$10 M</td>
</tr>
</tbody>
</table>

**NOTE:** Figures includes Grants & Matching Contributions; Interagency Agreements and * Contracts

Total $647 M
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

“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
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

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
COE University Members (continued)

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

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
<table>
<thead>
<tr>
<th>AAS Corp</th>
<th>Alaska Science and Technology</th>
<th>Comair, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adacel</td>
<td>Alcoa Technical Center</td>
<td>Continental Airlines</td>
</tr>
<tr>
<td>Adaptive Aerospace Group, Inc.</td>
<td>Allison Engine Company</td>
<td>Collinear Group</td>
</tr>
<tr>
<td>Advanced Transportation R&amp;E Laboratory (ATREL)</td>
<td>Aloha Airlines</td>
<td>Corsair Engineering</td>
</tr>
<tr>
<td>Aegis Technologies</td>
<td>Altavian</td>
<td>Delta Airlines</td>
</tr>
<tr>
<td>AeroShell</td>
<td>American Airlines</td>
<td>Donaldson Company, Inc.</td>
</tr>
<tr>
<td>AeroClave</td>
<td>American Eagle Airlines, Inc.</td>
<td>Draper Laboratory</td>
</tr>
<tr>
<td>Aerodyne Research Inc.</td>
<td>American Institute of Aeronautics and Astronautics (AIAA)</td>
<td>Ecole de technologie superieure</td>
</tr>
<tr>
<td>Aeroenvironment, Inc.</td>
<td>ARINC Dayton</td>
<td>Elite Air Center</td>
</tr>
<tr>
<td>Ag TechInventure</td>
<td>Aurora Flight Sciences</td>
<td>Embraer Aircraft Holdings</td>
</tr>
<tr>
<td>Air Force Research Laboratory</td>
<td>Austraia Associations, Inc.</td>
<td>Emergency Service Unmanned Support, Inc</td>
</tr>
<tr>
<td>Air Tran Airways</td>
<td>Avion Solutions, Inc.</td>
<td>Executive Jet Aviation</td>
</tr>
<tr>
<td>Air Transport Association of America (ATA)</td>
<td>Battelle</td>
<td>Excelis</td>
</tr>
<tr>
<td>Airline Pilots Association (APA)</td>
<td>Bell Helicopter TTXTRON</td>
<td>Experimental Aircraft Assoc. (EAA)</td>
</tr>
<tr>
<td>Aircraft Owners &amp; Pilots Association (AOPA)</td>
<td>BF Goodrich R&amp;D Center</td>
<td>FedEx Corporation</td>
</tr>
<tr>
<td>Airports Council International – North America</td>
<td>Boeing Company</td>
<td>Frasca International</td>
</tr>
<tr>
<td>Alaska Airmen’s Association</td>
<td>Bombardier Aerospace Learjet</td>
<td>Freewave</td>
</tr>
<tr>
<td>Alaska Airways</td>
<td>Brock Technologies</td>
<td>Futron Corporation</td>
</tr>
<tr>
<td></td>
<td>Brookhaven National Lab</td>
<td>General Atomics Aeronautical</td>
</tr>
<tr>
<td></td>
<td>California DOT</td>
<td>General Dynamics Info Tech</td>
</tr>
<tr>
<td></td>
<td>Cape Air</td>
<td>General Electric Company</td>
</tr>
<tr>
<td></td>
<td>Cessna Aircraft</td>
<td>General Aviation Mfg. Assn. (GAMA)</td>
</tr>
<tr>
<td></td>
<td>Chicago O’Hare International Airport</td>
<td>Goodrich</td>
</tr>
<tr>
<td></td>
<td>Cirrus Aviation</td>
<td>Gulfstream Aerospace Corporation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harris Corporation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honeywell</td>
<td>Illinois Department of Aeronautics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indiana Department of Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>International Centre for Indoor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environment &amp; Energy, Technical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University of Denmark</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISR Group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JENITEK Sensors, Inc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K2Share, LLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KSI Data Sciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KUTTA Technologies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L3 Unmanned Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Livermore Software Technology Corp.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lockheed Martin Aeronautics Co.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lone Star UAS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Los Angeles World Airports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lufthansa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marinvent Corporation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maryland Aviation Administration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Massachusetts Port Authority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>McDonnell Douglas Aerospace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metron Aviation, Inc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metropolitan Washington Airport Authority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mid-Atlantic Aviation Partnership</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Momentum Aviation Group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mosaic ATM, Inc.</td>
<td></td>
</tr>
</tbody>
</table>
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
Simulize
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

Contact:

Patricia Watts, Ph.D.
National Program Director
FAA William J. Hughes Technical Center, ANG-A12
Atlantic City International Airport, NJ 08405
Phone: (609) 485-5043
Email: patricia.watts@faa.gov
Website: http://www.faa.gov/go/coe

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

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

Federal Aviation Administration