

# **COE CST Third Annual Technical Meeting: COE CST Overview & Status**

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COE CST ATM3 in Washington, DC  
Tuesday, October 29, 2013***



**Center of Excellence for  
Commercial Space Transportation**

# Agenda

- Overview
- Team Members
- Organizational Highlights
- Funding Status
- Summary - Metrics At-A-Glance

# Center of Excellence for Commercial Space Transportation

*Created by the Omnibus Budget Reconciliation Act of 1990, Public Law 101-508, Title IX, Aviation Safety and Capacity Expansion Act.*

- **What:** A 10-year partnership of academia, industry, and government to create a world-class consortium.
  - August 2010 - August 2020
- **3 Goals:** Research, Training, Outreach/STEM
- **Purpose: Improve National Competitiveness...**  
... through the development of advanced, specialized human, physical, and knowledge resources to address commercial space industry challenges.
- **Origins:** Openly-competed and selected by the FAA Administrator.
- **Matching Requirement:** 1:1 for All USG Funds

# COE CST Research Areas & Tasks

## 1. Space Traffic Management & Operations

- 1.1 Orbital
- 1.2 Suborbital
- 1.3 NAS Integration
- 1.4 Spaceport Operations
- 1.5 Integrated Air/Space Traffic Management

## 3. Human Spaceflight

- 3.1 Aerospace Physiology & Medicine
- 3.2 Personnel Training
- 3.3 ECLSS
- 3.4 Habitability & Human Factors
- 3.5 Human Rating



## 2. Space Transportation Ops, Technologies & Payloads

- 2.1 Ground System & Ops Safety Techs
- 2.2 Vehicle Safety Analyses
- 2.3 Vehicle Safety Systems & Techs
- 2.4 Payload Safety
- 2.5 Vehicle Ops Safety

## 4. Space Transportation Industry Viability

- 4.1 Markets
- 4.2 Policy
- 4.3 Law
- 4.4 Regulation
- 4.5 Cross-Cutting Topics

**All FAA AST R&D Tasks (as of 3 Dec 2012)**

Task #	Name / PI Name (Univ)	Task #	Name / PI Name (Univ) - AST TM	Status
185	Unified 4-Dimensional Trajectory	186	Space Environment MMOD Mission Close(SU), Fuller-Rowell	END
186	Space Environment MMOD Mission Close(SU), Fuller-Rowell	187	Space Situational Awareness Scheeres (CU) - Earle	
187	Space Situational Awareness Scheeres (CU) - Earle	220	Space Operational Framework Hynes (NMSU) - Rey	
220	Space Operational Framework Hynes (NMSU) - Rey	247	Air and Space Traffic Consider Villare (FIT) - Murray	
247	Air and Space Traffic Consider Villare (FIT) - Murray	257	Master's Launch and On-Orbit Laboratory Born (CU) - Rey	
257	Master's Launch and On-Orbit Laboratory Born (CU) - Rey	228	Magneto-Elastic Sensing for Space Monitoring Zagari, Ostergren (NMSU)	
228	Magneto-Elastic Sensing for Space Monitoring Zagari, Ostergren (NMSU)	241	High Temperature Pressure Test Sheplak (UF), Oats (FSU) - Demidovich	
241	High Temperature Pressure Test Sheplak (UF), Oats (FSU) - Demidovich	244	Autonomous Rendezvous and Docking Collins (FSU), Rock (SU), Alonso (SU) - Wilde	
244	Autonomous Rendezvous and Docking Collins (FSU), Rock (SU), Alonso (SU) - Wilde	253	Ultra High Temperature Composite Gou & Kapat (UCF) - Demidovich	
253	Ultra High Temperature Composite Gou & Kapat (UCF) - Demidovich	258	Multi-Disciplinary Analysis of Spacecraft Alonso (SU) - Wilde	
258	Multi-Disciplinary Analysis of Spacecraft Alonso (SU) - Wilde	259	Flight Software Validation and Verification Safety Alonso (SU) - Wilde	
259	Flight Software Validation and Verification Safety Alonso (SU) - Wilde	293	Reduced Order Non-Linear Structural Modeling Miller (NMT) - Demidovich	
293	Reduced Order Non-Linear Structural Modeling Miller (NMT) - Demidovich	298	Integration Evaluation of ADS Hynes (NMSU) - Demidovich	
298	Integration Evaluation of ADS Hynes (NMSU) - Demidovich	299	Nitrous Oxide Composite Tank Testing Ostergren (NMT) - Tran	NEW
299	Nitrous Oxide Composite Tank Testing Ostergren (NMT) - Tran	300	Collaborative Activities Fiedler (FIT) - Davidian	NEW

**Note:** Among the 43 COE CST tasks active in Year 2, 9 are new (NEW), 24 are in process (IP) and 10 ended (END).  
**Abbreviations:** CU-University of Colorado Boulder, FIT-Florida Tech, FSU-Florida State University, NMSU-New Mexico State University, NMT-New Mexico Tech, SU-Stanford University, UCF-University of Central Florida, UF-University of Florida, UTMB-University of Texas Medical Branch at Galveston

# COE CST “Team” Members

- Principal Investigators
- Students
- University Support Personnel
- Industry/CESTAC Members\*
- Affiliate Members (Universities, Industry)
- Associate Members (Fed and State Gov’t Orgs)
- FAA AST Technical Monitors
- FAA Management (COE, Tech Ctr, AST)

# Organizational Highlights

- **Previous Affiliate Member:** McGill University
- **New Affiliate, Associate Members!**
  - **Affiliate Members:**  
BCM, ERAU, NASTAR, Satwest, UN Lincoln
  - **Associate Members:** DLR, NASA ARC\*
- **Third Annual Administrative Meeting (AAM3)**  
at FAA Tech Center on June 11-13, 2013
- **Transition of Administration Duties**  
to the Coordinating Committee Lead (FL TECH)



# FAA Center of Excellence for Commercial Space Transportation



COE CST Third Annual Technical Meeting (ATM3)  
October 28-30, 2013



# COE CST @ NSRC



COE CST Third Annual Technical Meeting (ATM3)  
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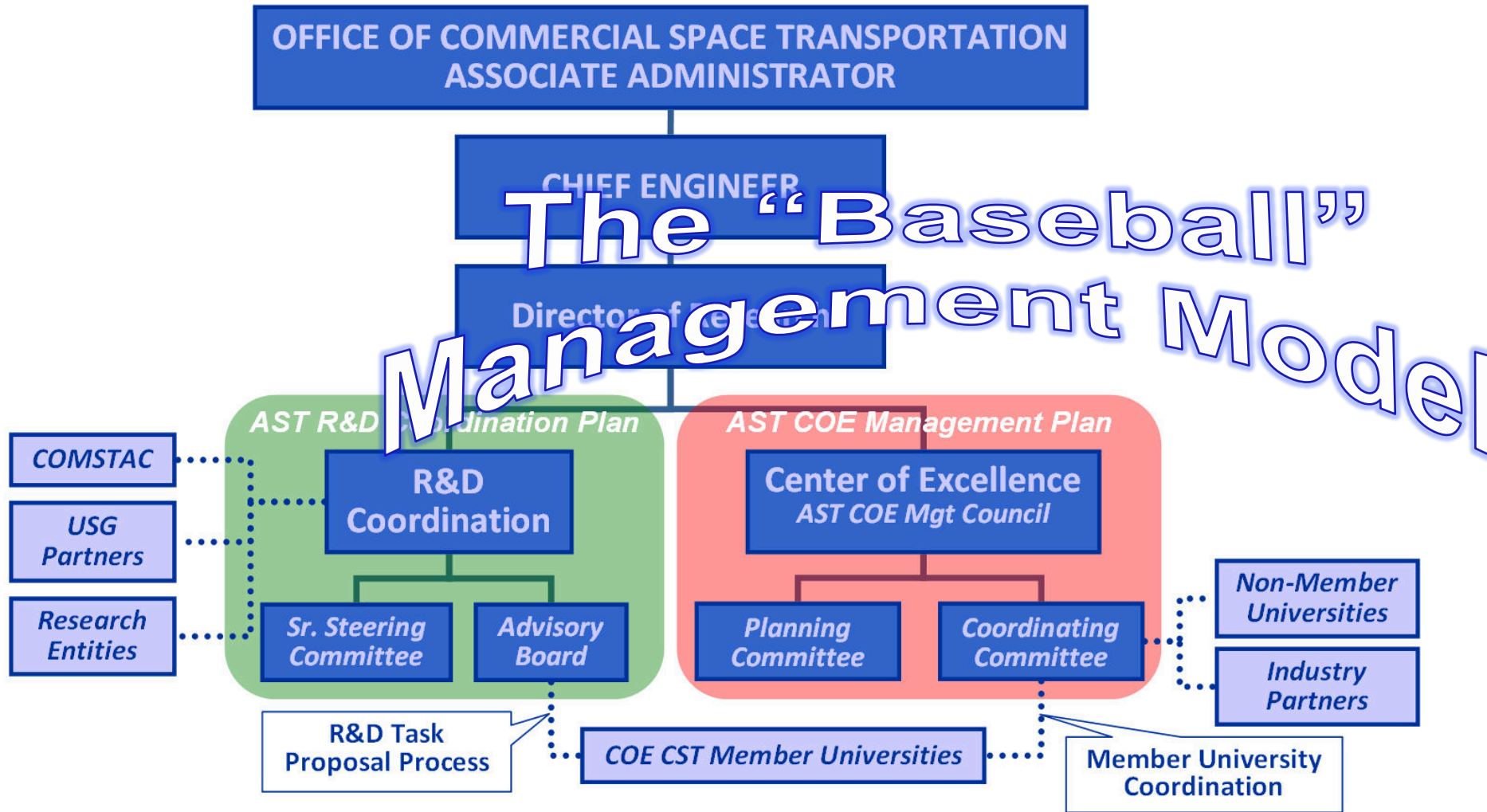
# COE CST Milestones Since ATM2

- June 11-13, AAM3, Egg Harbor Twp, NJ  
(not far from the FAA Tech Center)

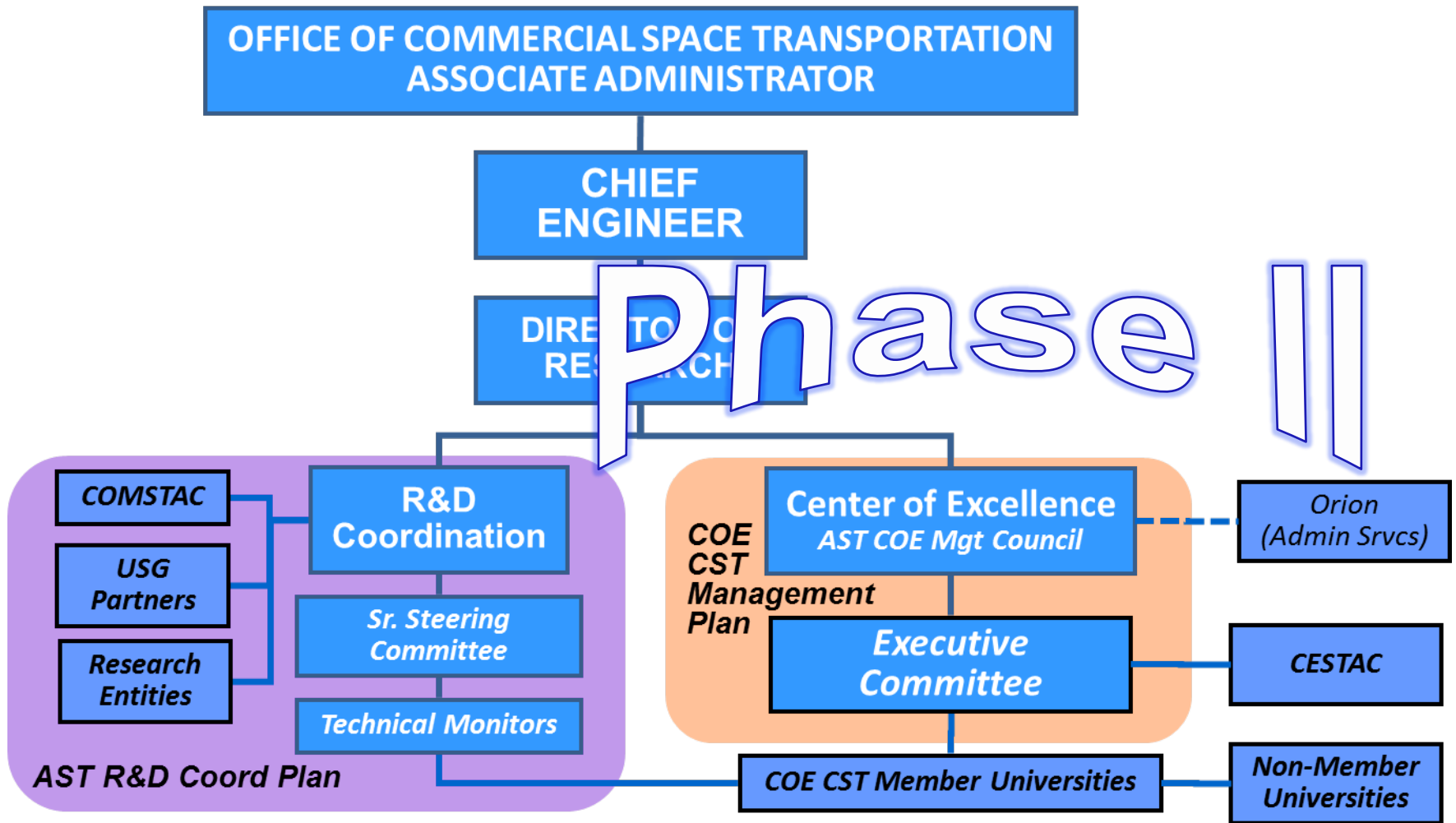


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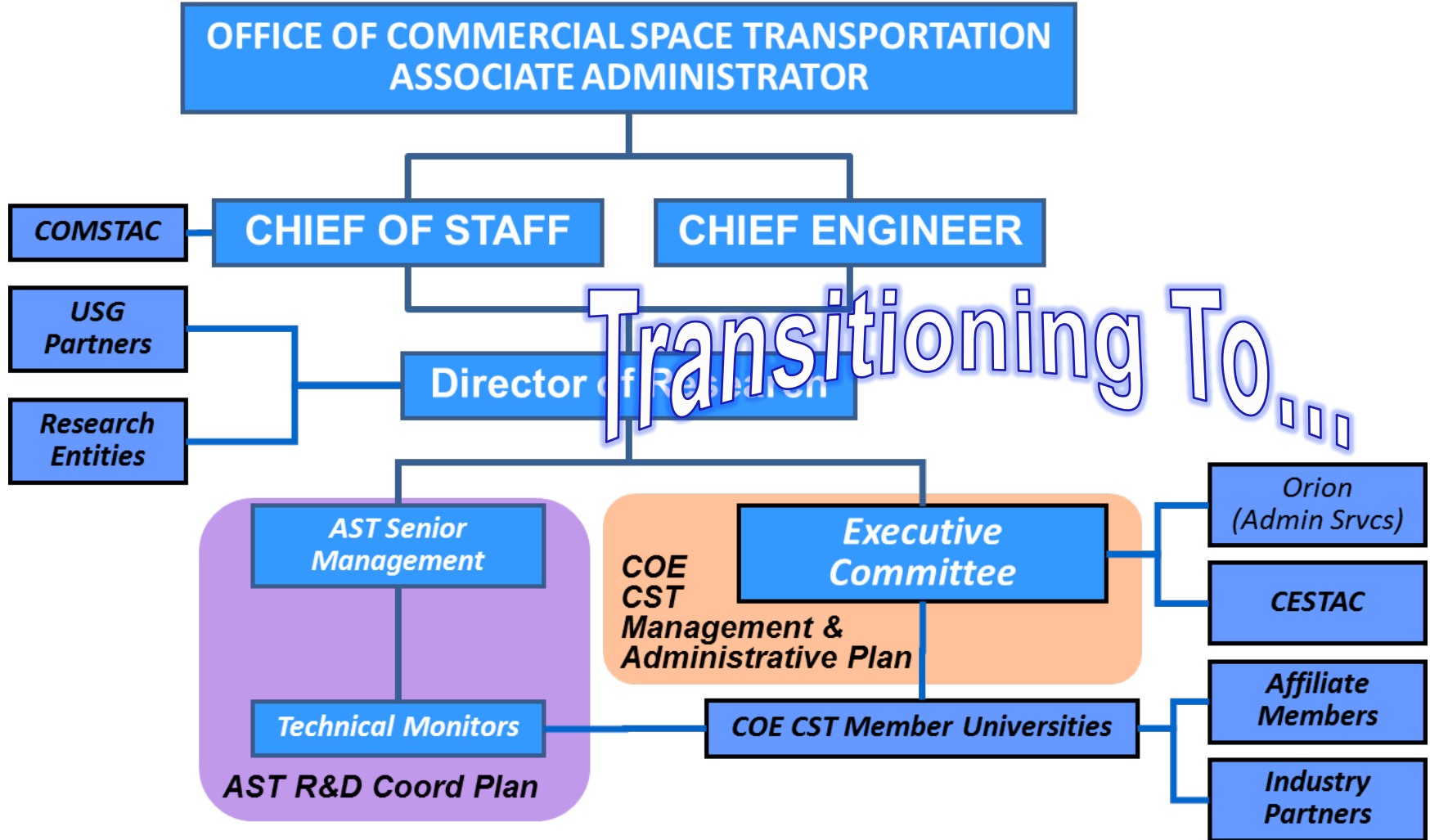
# COE CST Org Chart - Year 1



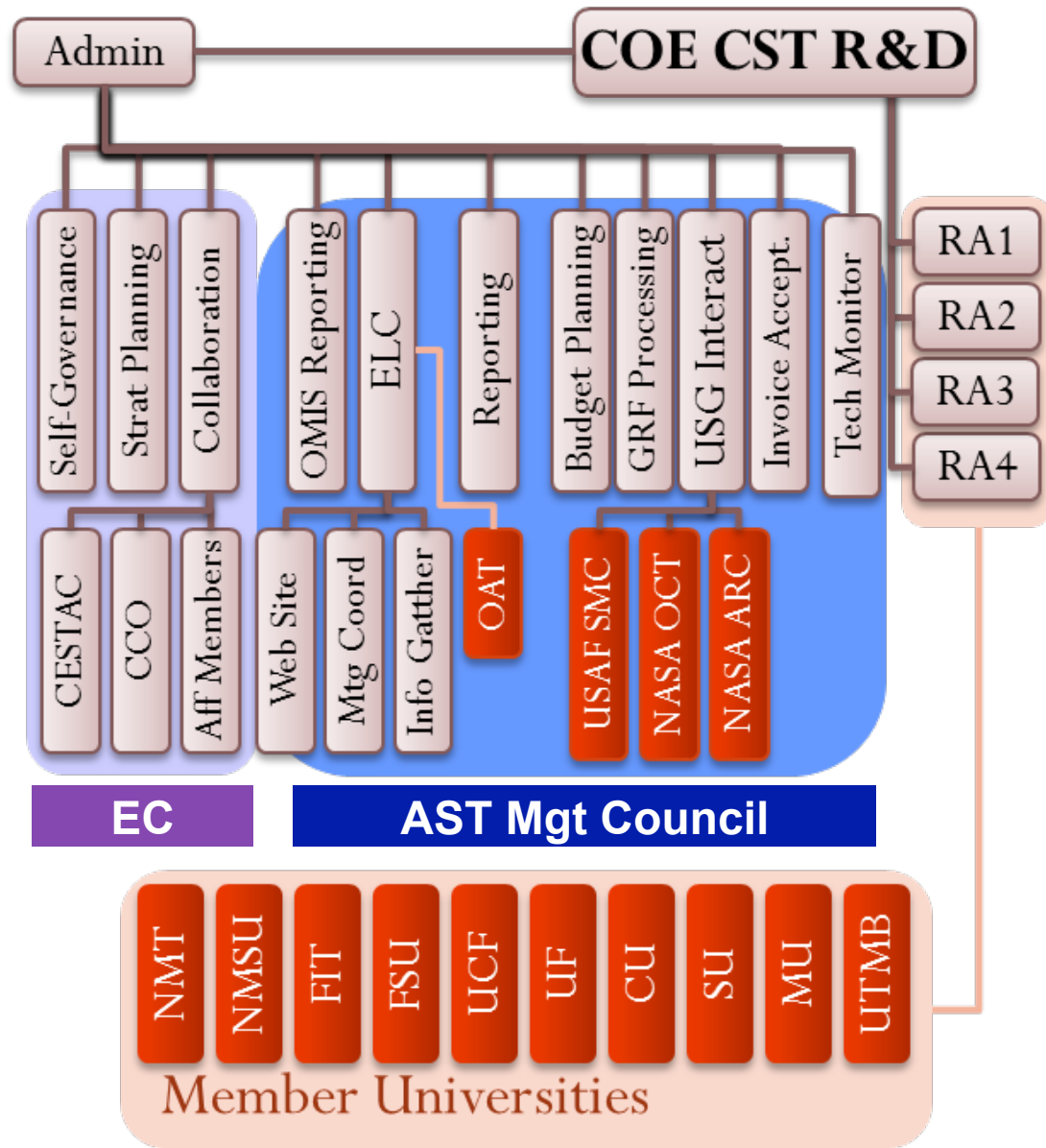
# COE CST Org Chart - Year 2



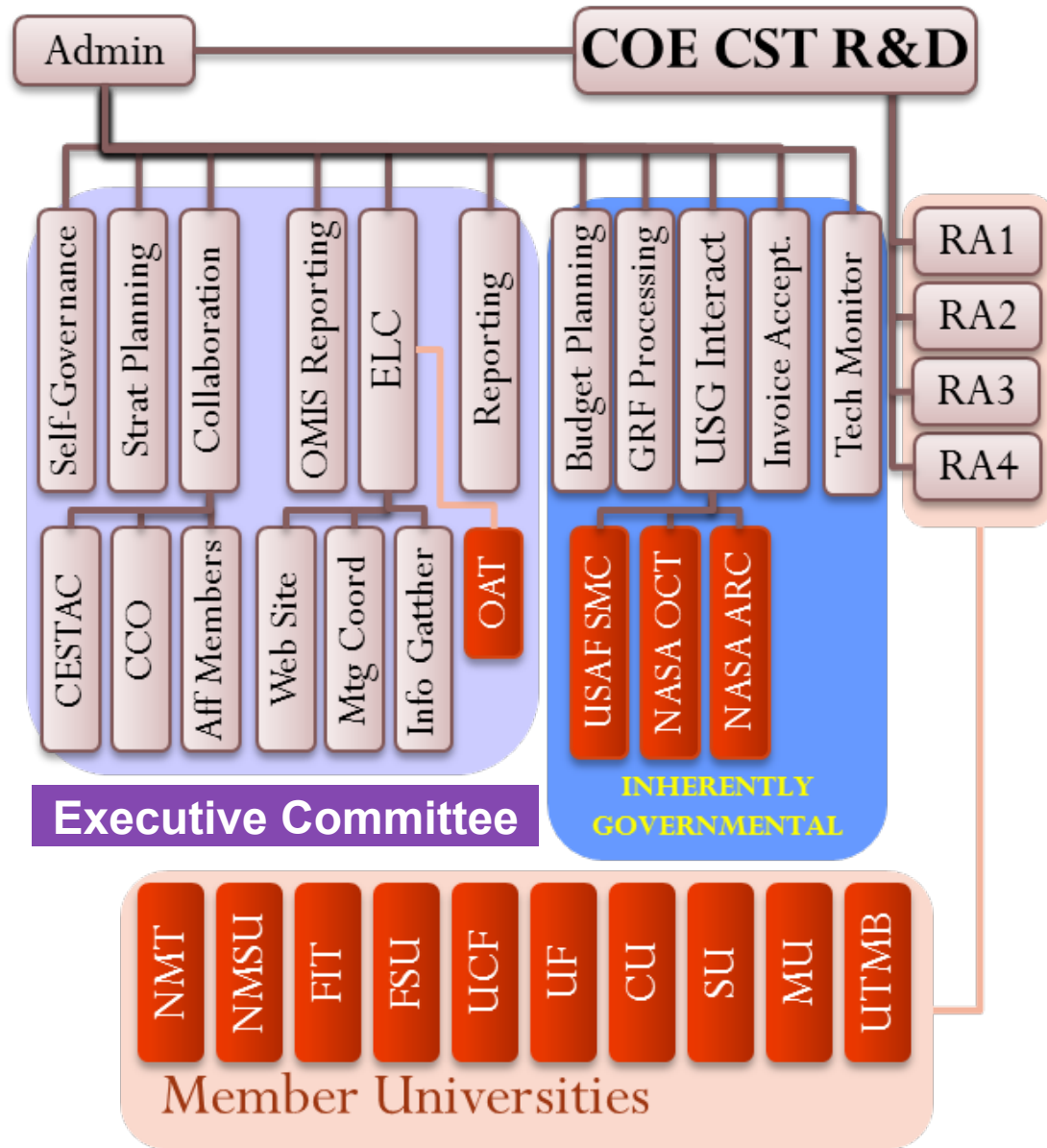
# COE CST Org Chart - Year 3



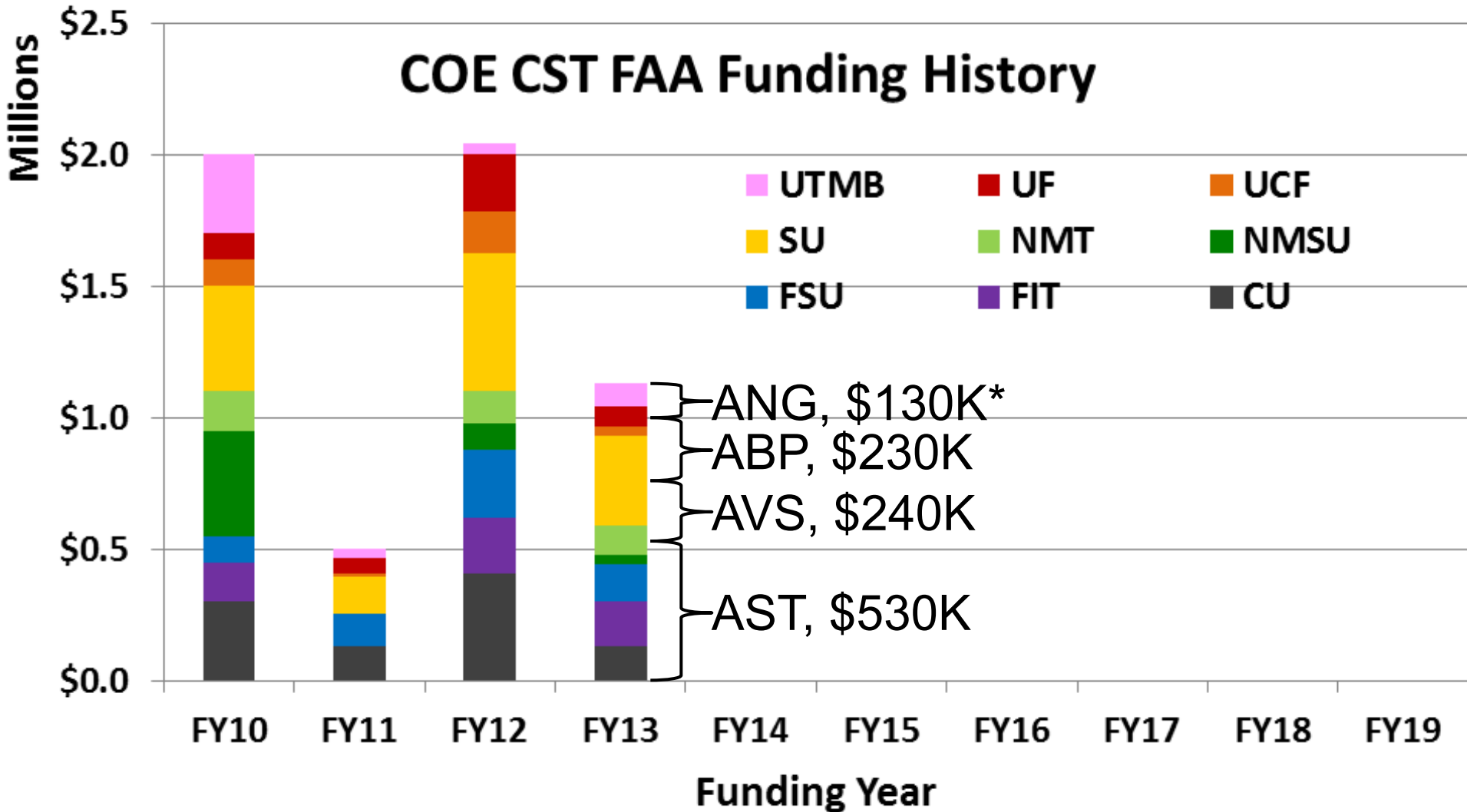
# Year 2 COE CST Admin. Functional Diagram (with Orgs)



# Year 3 COE CST Admin. Functional Diagram (with Orgs)



# COE CST Funding Story, FY10-13



# COE CST Metrics At-A-Glance

	Year 1	Year 2	Year 3
<b># Tasks</b>	<b>25</b>	<b>33</b>	<b>26</b>
<b># PIs</b>	<b>27</b>	<b>24</b>	<b>24</b>
<b># Students</b>	<b>31</b>	<b>~29</b>	<b>~29</b>
<b># Reports</b>	<b>0</b>	<b>~9</b>	<b>TBD</b>
<b># Affil/Assoc Members</b>	<b>0/0</b>	<b>1/0</b>	<b>6/1*</b>
<b>Funding</b>	<b>\$2M (FY10)</b>	<b>\$0.5M (FY11) \$1.9M (FY12)</b>	<b>\$1.13M (FY13)</b>



# Conclusions - First the Bad News...

- Funding Situation Unchanged
  - Unstable, Last Minute Allocations Leads to Loss of Students, Stress on System/People
  - Funding Goal: Sustained, Adequate Levels

# ... Now the Good News!

- Funding Situation Unchanged
  - Unstable, Last Minute Allocations Leads to Loss of Students, Stress on System/People
  - Funding Goal: Sustained, Adequate Levels
- R&D Activities and Results In Full Stride.
- Affiliate/Associate Membership Growing.
- Administrative Management In Transition from FAA Control to Center Control.