

**Federal Aviation Administration  
Office of Commercial Space Transportation  
Center of Excellence for  
Commercial Space Transportation  
Third Annual Administrative Meeting  
(FAA AST COE CST AAM3)  
Final Report  
August 12, 2013**



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## EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) Center of Excellence (COE) for Commercial Space Transportation (CST) Third Annual Administrative Meeting (AAM3) was conducted at the Residence Inn of Somers Point, New Jersey (approximately 13 miles away from the FAA William J. Hughes Technical Center in Egg Harbor Township, NJ) over a two-day period, on June 12-13, 2013.

Attendees included 10 Principal Investigators (PIs) from 8 of the nine member universities, one student (who performs the duties of a PI), one visiting professor and five administrative personnel for all of the two-day meeting.

Presentations were made for 10 different agenda items and generated 14 action items. The agenda items that generated the most discussion or had substantial impacts on the COE CST administration are discussed below.

- **COE CST MANAGEMENT & ADMINISTRATION PLAN:** A majority of COE CST administrative functions will be transitioning from AST to FIT as a tangible step toward COE CST independent operation. Only inherently governmental administrative functions that will be retained by FAA AST.
- **NEXT COE CST MEETING:** It was decided that the Third Annual Technical Meeting (ATM3) would be held in Washington, DC so FAA AST Technical Monitors would be able to attend. Other invitees to the meeting would include the FAA Administrator, high-ranking officials from other related government agencies, and appropriate Congressional representatives and staffers. The ATM3 is intended to be very well attended by the COE CST academic community.
- **AFFILIATE MEMBERSHIP:** Eleven Affiliate Member candidates were reviewed and five passed the first hurdle toward membership. UTMB plans to host the Baylor College of Medicine and the NASTAR Center and NMSU plans to host the University of Nebraska-Lincoln, Embry-Riddle and a company called SatWest.
- **BUDGET & FUNDING TOPICS:** The current funding situation under Sequester was discussed and a topic of great concern by the AAM3 attendees. They were all made aware that, no matter what, the end of calendar year 2013 would be a major milestone in the future of the COE CST.

Of all the topics highlighted above, the highest priority issue facing the center was identified as a lack of funding for the second consecutive year. and attention was focused on achieving an annual budget more typical of a government grant program (identified as \$10M).

In summary, the meeting was very productive and demonstrated the great progress that has been made by the FAA COE CST in the past year.

## ABBREVIATIONS AND ACRONYMS

Below are the abbreviations and acronyms used in this report.

AAM	Annual Administrative Meeting	OAT	Orion America Technologies
AST	Office of Commercial Space Transportation	OMIS	Orion Management Information System
ATM	Annual Technical Meeting	NJ	New Jersey
CESTAC	COE CST Advisory Committee	NM	New Mexico
COE	Center of Excellence	NMSU	New Mexico State University
CST	Commercial Space Transportation	NMT	New Mexico Tech
CU	University of Colorado at Boulder	PI	Principal Investigator
DC	District of Columbia	PM	Program Manager
EC	Executive Committee	R&D	Research and Development
ELC	Executive Leadership Contract	SOW	Statement of Work
ERAU	Embry-Riddle Aeronautical University	SU	Stanford University
FAA	Federal Aviation Administration	UCF	University of Central Florida
FIT	Florida Institute of Technology	UF	University of Florida
FSU	Florida State University	URL	Universal Resource Locator
FY13	Fiscal Year 2013	USG	United States Government
MOA	Memorandum of Agreement	UTMB	University of Texas Medical Branch at Galveston

## INTRODUCTION

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) Center of Excellence (COE) for Commercial Space Transportation (CST) Third Annual Administrative Meeting (AAM3) was conducted at the Residence Inn of Somers Point, New Jersey (approximately 13 miles away from the FAA William J. Hughes Technical Center in Egg Harbor Township, NJ) over a two-day period, on June 12-13, 2013.

The FAA requires that each COE conduct two meetings, one administrative and one technical, every year (after the initial year). The purpose of the COE CST AAM3 was to convene the COE CST Executive Committee, members of the COE CST Advisory Committee (CESTAC), interested Principal Investigators, FAA Technical Monitors and other individuals (e.g. students), to discuss administrative topics of the COE CST

Attendees included 10 Principal Investigators (PIs) from 8 of the nine member universities, one student (who performs the duties of a PI), one visiting professor and five administrative personnel for the entire two-day meeting. Appendices B and C list all the AAM3 attendees.

The AAM3 meeting agenda is shown in Appendix A.

The agenda of the AAM3 followed the structure of previously held monthly Executive Committee teleconferences. The major topic areas included:

- Welcome & Introduction
- COE CST Management & Administration Plan
- COE CST Reporting Requirements
- COE CST Web site
- Next COE CST Meeting
- Affiliate Membership

- Budget & Funding Topics
- Self-Governance Subcommittee Presentation
- Collaboration Subcommittee Discussion
- Strategic Planning Subcommittee Presentation

The following sections give an overview of the AAM3 presentation and provide details about any discussions and conclusions conducted by the group for each presentation topic.

Action items are denoted in the text with stars (★) preceding the action statement. These items will be compiled into a single list at the very end of the report's main body before the Appendices.

## **1. WELCOME & INTRODUCTION**

The Welcome and Introduction presentation was given by Ken Davidian. During this portion of the meeting, basic site logistics and the overall agenda of the meeting was presented.

A chart showing all the COE CST industry supporters was presented and some discussion followed about some companies that were included that could be removed and vice versa, some companies that were not included that could be added.

Finally, logistics of the meals that would be conducted as part of the meeting were identified and discussed.

## **2. COE CST MANAGEMENT & ADMINISTRATION PLAN**

The second presentation given by Ken Davidian presented the way the COE CST was being managed and administered. This information is documented in the COE CST Management and Administration Plan. This plan, previously referred to as the COE CST Management Plan, is updated during each year to accurately represent the management structure of the COE CST and its relationship to external entities, including the FAA AST. This year, administrative processes were also documented in the plan. This new addition is the reason the name of the plan was changed for this year.

The agenda items for this presentation include:

- Continuity of Operations
- Management Structure Evolution
- Evolution of Functional Assignments
- Administrative Processes

Each of these is discussed briefly below.

### **2.1 Continuity of Operations**

In response to the question of how to maintain continuity of COE CST operations with no FY13 funding, the response was to ensure mission critical administrative functions by using unspent FY12 funding residing at the different universities.

Two mission critical administrative functions were identified: the OMIS database (required to collect data and generate Congressionally-mandated reports) and the functions performed under the Executive Leadership Coordination (ELC) contract held by Orion America Technologies (OAT).

The OMIS database (the licensing rights for which is held by OAT) costs the COE CST approximately \$50K per year. NMT had a task with over \$120K of FY12 funding that had not been drawn against, so it was on this task that the OMIS database license fee was drawn.

The ELC contract cost was approximately \$80K per year and Tristan Fiedler had a Coordination Collaboration task with \$120K allocated to it but none of it had been spent. It is from this task that the OAT contract will be funded by FIT to execute the same administrative functions as they had in the previous calendar year.

The intent with both these tasks is not to rescind these funds for the new tasks but to “borrow” the necessary funding. When additional funding becomes available, both these tasks shall be “topped off” to their original funding levels.

## **2.2 Management Structure Evolution**

The management structure of the COE CST has evolved every year since its inception in August of 2010. The changes this year include this transformation from AST-control of administrative functions to COE CST control of administrative functions (as described in the subsection above).

Appendix B, Section 2, slides 5-7 show the changes in COE CST management structure over the past three years.

## **2.3 Evolution of Functional Assignments**

Changes can also be described from a functional perspective. Appendix B, Section 2, slides 8-9 show these changes graphically. It can be seen that many functions that were formerly performed by AST (falling within the blue background rectangle) have been transferred to COE CST control (as depicted by the light purple background rectangle). The only administrative functions retained by AST are those that are “inherently governmental”, including budget planning, the processing of grant request forms, interaction with other U.S. Government entities, invoice acceptance and task monitoring.

## **2.4 Administrative Processes**

The new addition to the COE CST Management and Administrative Plan was the inclusion of specific administrative processes necessary for the smooth functioning of the center. The following processes were included in the document’s latest release:

- How to Submit a Research Grant Proposal
- How to Request a No Cost Extension
- How to Document Cost Share Contributions
- How to Do Quarterly Reporting
- How to Close-Out a Research Task
- How to Initiate an Affiliate Membership

## **3. COE CST REPORTING REQUIREMENTS**

This was a brief presentation given by Ken Davidian and Carol Gregorek. The different types of reporting that COE CST PIs are expected to provide include:

- Quarterly
- Annual
- Reports, Articles
- Task Close-Out

The quarterly reporting is performed in the OMIS on-line database and the discussion of the group was based on the level of detail required in the quarterly reports. Samples of the appropriate level of detail for the technical quarterly reports were requested by some of the PIs present.

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- ★ Carol Gregorek should provide samples of technical quarterly reports to the COE CST PIs with an appropriate level of detail so PIs can provide text in a more uniform fashion.

A presentation slide of the COE CST Year 2 Annual Report, Volumes 0-3, were shown to the group and URLs were given.

A request was made to the PIs to provide, to the greatest extent possible and without violating any copyright laws, electronic versions of conference papers and/or journal articles, or links to these papers. These papers or links are very important to be able to show the real deliverables from the COE CST member universities.

- ★ COE CST PIs should provide, to the greatest extent possible and without violating any copyright laws, electronic versions of conference papers and/or journal articles, or links to these papers.

Finally, a description of all the work being conducted to finalize COE CST tasks was given. Carol Gregorek estimated that compilation of the necessary information for each task was requiring approximately 12 hours of her time.

#### **4. COE CST WEB SITE**

Fred Bowen discussed the current status of the COE CST web site and his plans for increasing its functionality. The site was migrated from the original server (hosted by a company named “Digital Solutions”) to a new, much less expensive service. Besides some minor upgrades to the current web site, there is no real difference in the look and feel of the current site as compared to the original site.

His future plans for the COE CST web site include increasing ease-of-use including the ability to query the research tasks in multiple ways. He also discussed plans to develop a new page architecture for dynamic updating of information.

- ★ All COE CST members (staff, PIs and students) are requested to provide input of ways to improve the COE CST web site.

#### **5. NEXT COE CST MEETING**

Ken Davidian led the discussion of the next meeting required by the COE CST Cooperative Agreement of all the member universities, the third Annual Technical Meeting (ATM3). ATM1 was held on November 8-9, 2010 in Boulder, CO (at UC) and ATM2 was held on October 31-November 1, 2011 in Socorro, NM (at NMT).

After some discussion, it was agreed that the next meeting should be held in Washington DC to allow full participation of the FAA AST Technical Monitors of COE CST tasks. Other attendees to be invited to participate will include AST management, FAA management, the leaders of other federal agencies involved with space research, and representatives and staff members of the legislative branch of government.

ATM3 will be held near the end of calendar year 2013 so it was determined that schedule coordination of the nine member universities would begin immediately. Venue identification would also begin as soon as practicable. These activities would be led by Tristan Fiedler of FIT as the new Collaboration Coordinator in cooperation with OAT contract support.

- ★ Based on the future budget and funding situation (described in the next section), a very strong emphasis was given to the near-requirement that **ALL PRINCIPAL INVESTIGATORS AND STUDENTS FROM ALL MEMBER UNIVERSITIES SHOULD PLAN ON ATTENDING THE ATM3.** (I cannot emphasize this point enough, hence the all-caps.)
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## 6. AFFILIATE MEMBERSHIP

Tristan Fiedler led the discussion of Affiliate Membership, covering first the overall process and definitions of candidacy and terms of the basic agreement. This discussion was followed by a thorough review of all the candidate Affiliate Member candidates by the COE CST Executive Committee membership (phase one of the candidate review process).

The following Affiliate Member candidates were presented, reviewed and the status of this review is given:

- Czech Tech University
- Embry-Riddle Aeronautical University (with UCF as the host)
- Embry-Riddle Aeronautical University (with NMSU as the host)
- Final Frontier
- Baylor College of Medicine
- NASTAR Center
- Near Space Corporation
- Penn State University
- Prevailance
- SatWest
- SYSENEXT
- University of Nebraska, Lincoln

In summary, the following two host universities will now begin phase two activities with their associated Affiliate member candidates:

- UTMB: Baylor College of Medicine, NASTAR
- NMSU: ERAU, SatWest, University of Nebraska at Lincoln

These five candidates that passed the first phase of the review process will now engage with their university hosts and the FAA AST to develop the accepted research task statement of work and will conclude with an executed MOA between the host and the new Affiliate Member.

The following actions remain for the other Affiliate Member candidates that did not yet pass the first phase of the review process:

- ★ Czech Tech University - ask if they have received funded research in space activity; Do they have resources available to apply to contributed research to the COE CST. CU may be interested.
  - ★ ERAU w/ UCF - ERAU must provide SOW -- NOT PASSING PHASE 1
  - ★ Final Frontier - CU & UTMB to explore Host roles
  - ★ NEAR SPACE CORP -- Tentative Approval pending SOW & P.I.
  - ★ PENN STATE UNIV - a. GLXP not consistent with COE CST research; b. Original application contained areas that appear to be of interest to COE CST; c. To be reconsidered, please provide SOW consistent with original application along with PI
  - ★ PREVAILANCE - To be reconsidered, please provide SOW consistent with research goals of COE CST
  - ★ SYSENEXT - a. Create SOW addressing state of the art questions in risk management with specific research consistent with COE CST
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## **7. BUDGET & FUNDING TOPICS**

This presentation was given by Ken Davidian and discussed budget and funding topics of the past (“pre-Sequester”), present (“Sequester, Year 1”), and future (“Sequester, Years 2-10”).

The past funding situation was shown and it was noted that the total funding of over \$4.5M over three years of COE CST operation averages to \$1.5M/year, a value in excess of the minimum FAA commitment of \$1M.

However, in discussing the current funding situation, the volatility of the funding situation was described and the specific example was given that over a three day period of time, the funding allocation for COE CST changed four times!

Finally, when it came to discussion of the future funding situation, a philosophy of maintaining the health of all COE CST member universities, PIs and students, at least for the next six months (imprecisely referred to as “the end of the calendar year” since the first six month period of funding would include the period of time beginning of June through the end of November).

Because of the near-requirement that all PIs and students participate in the ATM3, any FY13 funds that become available will be allocated first to ensure full participation by covering travel costs of the ATM3. The next priority for any FY13 funds that become available will be to ensure the continuity of student funding involved with COE CST research tasks.

This portion of the meeting stimulated a lot of discussion to clarify points that had not been presented or were unclear in their original presentation.

## **8. SELF-GOVERNANCE SUBCOMMITTEE PRESENTATION**

As chair of the Self-Governance Subcommittee, Nat Villaire made a presentation of the current status of his subcommittee’s activities. He reviewed the origins of the COE and its mission and initial governance structure. The current governance structure was reviewed before he presented a proposal for a future governance model.

In order to achieve a self-governance structure, Dr. Villaire developed a set of Bylaws designed specifically for the COE. The COE Membership is defined, administrative offices are defined, duties of all officers are listed and officer selection processes are outlined. Those Bylaws are ready for evaluation by the current COE members and the FAA CST

His presentation highlighted the major content of his proposed COE CST Bylaws and the entire set of documents carefully define the details of the proposed governance structure, and he requested input and editorial comment from all the COE CST PIs.

Nat Villaire has provided the current version of the proposed COE CST Bylaws to Ken Davidian. The document can be downloaded by all COE CST PIs from the following URL: <http://db.tt/56f1sx9f>

- ★ COE CST PIs should download and review the draft COE CST Bylaws (<http://db.tt/56f1sx9f>) to provide comment to Nat Villaire as soon as practicable.

## **9. COLLABORATION SUBCOMMITTEE DISCUSSION**

Tristan Fiedler, as head of the COE CST Collaboration Subcommittee, led a discussion of the CESTAC report that was issued following the industry group’s review of the COE CST research tasks as presented at the ATM2 in Socorro, NM in October and November, 2012. Ken Davidian then gave a task-by-task review of the report’s findings and remarks. It was determined that a follow-up discussion with CESTAC lead, Joe Rothenberg, would be appropriate. The purpose of this discussion would be to gain clarity of the group’s findings as well as to prepare the CESTAC for their review at the upcoming ATM3 in November 2013.

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From the CESTAC report, key areas of research that were of immediate relevance to the commercial space industry as represented in CESTAC were presented. Principal Investigators were informed that CESTAC assessed the strategic relevance of the tasks currently in the COE CST Research Portfolio. In summary, CESTAC found that almost all of the current COE CST Research Tasks have the potential to help enable the growth of the Commercial Space Industry and to meet the FAA Regulatory and AST goals from the program. CESTAC also noted considerable variance however in the level of potential near-term impact of various tasks to both the Industry and FAA needs. As a conclusion, CESTAC reported that given current funding constraints, both Industry and FAA may be better served by deferring some of the current Research activities, where the potential payoff is in the far-term, in order to accelerate those areas that have higher potential of nearer-term payoff. Complete details are provided in the "CESTAC Assessment of the 2012 FAA COE CST Research Portfolio" report.

- ★ Tristan should coordinate a telecom with CESTAC leadership and FAA AST to discuss the report findings. -- Requested by TJF on 26 June 2013

## **10. STRATEGIC PLANNING SUBCOMMITTEE PRESENTATION**

Dave Klaus presented a status report on the COE CST activity he is heading for the Strategic Planning Subcommittee. Taking a systems engineering approach, Dave started this process by decomposing the original COE CST Request for Proposals and identifying 48 unique requirements that were specified in the RFP (see his presentation in Appendix B). In order to ensure that the COE is fulfilling its obligations to the FAA as well as meeting the high priority needs of the commercial space industry, draft Mission and Vision statements were proposed in this summary presentation, along with a set of goals that were culled directly from the RFP text. This initial strategic overview is intended to serve as a framework for further discussion by the COE members as we define a long-range vision for the Center beyond meeting these initial expectations of the FAA. The process of Strategic Planning is used to identify priorities, allocate resources, and ensure that participants (e.g., COE PI's, students and affiliates) and stakeholders (FAA and commercial space industry) are working toward common goals. Once the expectations are articulated and agreed upon as our mission, vision and goals, the strategic plan can be used to direct operations as well as assess success in achieving the stated goals.

- ★ All COE CST PIs should review and provide comments on this initial framework of strategic goals to Dave Klaus as soon as practical.

The Strategic Planning Subcommittee members will combine these inputs and assemble a baseline plan for final comment. The Strategic Plan should then be used to direct the Governance of the COE, monitor progress toward meeting the stated goals, and help to ensure that the COE remains a productive, cohesive entity that will continue to provide valuable research and programmatic support to the FAA and commercial space industry for years to come. Taking a systems engineering approach, Dave has identified 48 separate requirements as originally specified in the COE CST Request for Proposals (see his presentation in Appendix B).

## **SUMMARY OF ACTION ITEMS**

1. Carol Gregorek should provide samples of technical quarterly reports to the COE CST PIs with an appropriate level of detail so PIs can provide text in a more uniform fashion.
2. COE CST PIs should provide, to the greatest extent possible and without violating any copyright laws, electronic versions of conference papers and/or journal articles, or links to these papers.
3. All COE CST members (staff, PIs and students) are requested to provide input of ways to improve the COE CST web site.

4. ALL PRINCIPAL INVESTIGATORS AND STUDENTS FROM ALL MEMBER UNIVERSITIES SHOULD PLAN ON ATTENDING THE ATM3
5. Czech Tech University - ask if they have received funded research in space activity; Do they have resources available to apply to contributed research to the COE CST. CU may be interested.
6. ERAU w/ UCF - ERAU must provide SOW -- NOT PASSING PHASE 1
7. Final Frontier - CU & UTMB to explore Host roles
8. NEAR SPACE CORP -- Tentative Approval pending SOW & P.I.
9. PENN STATE UNIV - a. GLXP not consistent with COE CST research; b. Original application contained areas that appear to be of interest to COE CST; c. To be reconsidered, please provide SOW consistent with original application along with PI
10. PREVAILANCE - To be reconsidered, please provide SOW consistent with research goals of COE CST
11. SYSENEX - a. Create SOW addressing state of the art questions in risk management with specific research consistent with COE CST
12. COE CST PIs should download and review the draft COE CST Bylaws (<http://db.tt/56f1sx9f>) to provide comment to Nat Villaire as soon as practicable.
13. Tristan should coordinate a telecom with CESTAC leadership and FAA AST to discuss the report findings.
14. All COE CST PIs should review and provide comment on the requirements presented to Dave Klaus as soon as practicable.

**APPENDIX A. FAA COE CST AAM3 AGENDA**

Wednesday, June 12, 2013		Thursday, June 13, 2013	
9:00	1. Welcome & Introduction <i>Ken Davidian, Pat Watts</i>	9:00	9. Collaboration Subcommittee <i>Tristan Fiedler</i>
9:30	2. COE CST Mgt & Admin Plan <i>Ken Davidian, Tristan Fiedler</i>	9:30	10. Strategic Planning Subcommittee <i>Dave Klaus</i>
10:00	3. Reporting Requirements <i>Ken Davidian, Carol Gregorek</i>	10:00	
10:30	<b>Break</b>	10:30	<b>Break</b>
11:00	4. COE CST Website Update <i>Fred Bowen</i>	11:00	General Discussion <i>Entire Group</i>
11:30	5. Future Meetings <i>Ken Davidian</i>	11:30	11. Man-Rating of Comm'l Space Vehicles <i>Jim Duffy, FAA AST</i>
12:00	<b>Lunch</b> <i>(Anchorage Restaurant)</i>	12:00	<b>Lunch</b> <i>White House Subs (brought in)</i>
12:30		12:30	
13:00		13:00	
13:30	6. Affiliate Membership <i>Tristan Fiedler</i>	13:30	12. Conclusion & Adjournment <i>Ken Davidian, Tristan Fiedler, Pat Watts</i>
14:00	<b>Break</b>	14:00	Discussions with AST Tech Monitors <i>Until their departure at 3:00pm</i>
14:30		14:30	
15:00	7. Budget and Funding Topics <i>Ken Davidian</i>	15:00	<b>Break</b>
15:30	Closed Executive Committee Session <i>Tristan Fiedler</i>	15:30	
16:00		16:00	
16:30	<b>Break</b>	16:30	
17:00	8. Self-Governance Subcommittee <i>Nat Villave</i>	17:00	
17:30		17:30	
18:00	<b>Group Dinner</b> <i>(Ventura's Restaurant)</i>	18:00	<b>Group Dinner</b> <i>(Crab Trap)</i>
18:30		18:30	
19:00		19:00	
19:30		19:30	
20:00		20:00	
20:30		20:30	

**APPENDIX B. PRESENTATION SLIDES**

**1. Welcome & Introduction**

**AAM3 Logistics: When, Why, Who, How**

- **WHEN:** On June 11-13, 2013
- **WHY:** To discuss COE CST administrative topics.
- **HOW:** On-Site, In-Person only
- **WHO:** Multiple Target Participants

Required	Desirable	Optional
<ul style="list-style-type: none"> <li>• COE CST Executive Committee members</li> <li>• CESTAC leadership</li> <li>• FAA AST PM</li> <li>• Support Contractors</li> </ul>	<ul style="list-style-type: none"> <li>• Other interested PIs</li> <li>• CESTAC members</li> <li>• FAA AST Technical Monitors &amp; Staff</li> </ul>	<ul style="list-style-type: none"> <li>• Students</li> <li>• Other USG Organizations</li> </ul>

**AAM3 Agenda Topics**

**ADMINISTRVIA**

- Mgt & Acmin Plan
- Reporting Requirements
  - Quarterly, Annual
  - Papers & Articles
  - Task Clse-out
- Web Site
- Future Meetings
- Affiliate Members, Associate Members
- Budget & Funding

**COMMITTEE TOPICS**

- Self-Governance
- Collaboration
- Strategic Planning

**WRAP UP**

- Any Other Business
- Summary of Action Items

**OTHER STUFF**

- Group Photo
- AST Tech Monitors (Thursday 9:30am-2:30pm)

**AAM3 AGENDA**

Time	Tuesday, June 11, 2013	Wednesday, June 12, 2013	Thursday, June 13, 2013
8:00		1. Welcome & Registration	4. Collaborative Information Forum (PM)
8:30		COE CST 1st Annual Meeting	5. Strategic Planning (Continued)
9:00		2. Reporting Requirements (PM)	6. Lunch
9:30		Break	Break
10:00		3. COE CST Mission Update	7. General Overview (PM)
10:30		4. Late Arrivals (PM)	8. Mission Update (PM)
11:00		Group Photo	9. Group Photo
11:30		Group Photo	10. Group Photo
12:00		Group Photo	11. Group Photo
12:30		Group Photo	12. Group Photo
13:00		13. Lunch	13. Lunch
13:30		14. AST Tech Monitors (PM)	14. AST Tech Monitors (PM)
14:00		15. AST Tech Monitors (PM)	15. AST Tech Monitors (PM)
14:30		16. AST Tech Monitors (PM)	16. AST Tech Monitors (PM)
15:00		17. AST Tech Monitors (PM)	17. AST Tech Monitors (PM)
15:30		18. AST Tech Monitors (PM)	18. AST Tech Monitors (PM)
16:00		19. AST Tech Monitors (PM)	19. AST Tech Monitors (PM)
16:30		20. AST Tech Monitors (PM)	20. AST Tech Monitors (PM)
17:00		21. AST Tech Monitors (PM)	21. AST Tech Monitors (PM)
17:30		22. AST Tech Monitors (PM)	22. AST Tech Monitors (PM)
18:00		23. AST Tech Monitors (PM)	23. AST Tech Monitors (PM)
18:30		24. AST Tech Monitors (PM)	24. AST Tech Monitors (PM)
19:00		25. AST Tech Monitors (PM)	25. AST Tech Monitors (PM)
19:30		26. AST Tech Monitors (PM)	26. AST Tech Monitors (PM)
20:00		27. AST Tech Monitors (PM)	27. AST Tech Monitors (PM)
20:30		28. AST Tech Monitors (PM)	28. AST Tech Monitors (PM)
21:00		29. AST Tech Monitors (PM)	29. AST Tech Monitors (PM)
21:30		30. AST Tech Monitors (PM)	30. AST Tech Monitors (PM)
22:00		31. AST Tech Monitors (PM)	31. AST Tech Monitors (PM)
22:30		32. AST Tech Monitors (PM)	32. AST Tech Monitors (PM)
23:00		33. AST Tech Monitors (PM)	33. AST Tech Monitors (PM)
23:30		34. AST Tech Monitors (PM)	34. AST Tech Monitors (PM)
00:00		35. AST Tech Monitors (PM)	35. AST Tech Monitors (PM)

**AAM3 Logistics: Where**

- Meeting Location
  - Marriott Residence Inn, 900 Mays Landing Rd, Somers Point, NJ
- Meal Information

Meal	Tuesday	Wednesday	Thursday
Breakfast		Provided by Hotel	Provided by Hotel
Lunch		Anchorage Restaurant	White House Subs Brought In
Dinner	Food & Drink at Reception	Ventura's Restaurant	Crab Trap Restaurant

Please Note: All lunch and dinners paid for by COE CST.

2. COE CST Management & Administration Plan



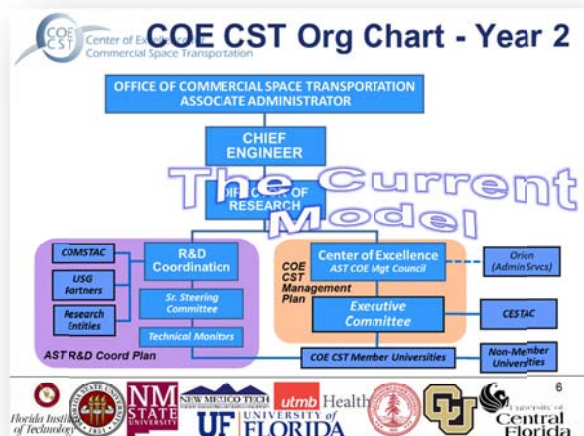
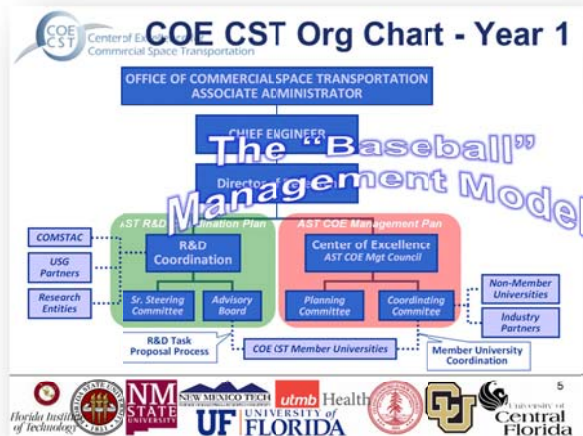
**Agenda**

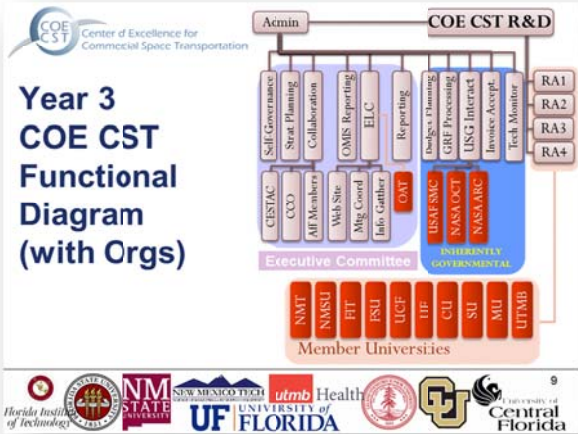
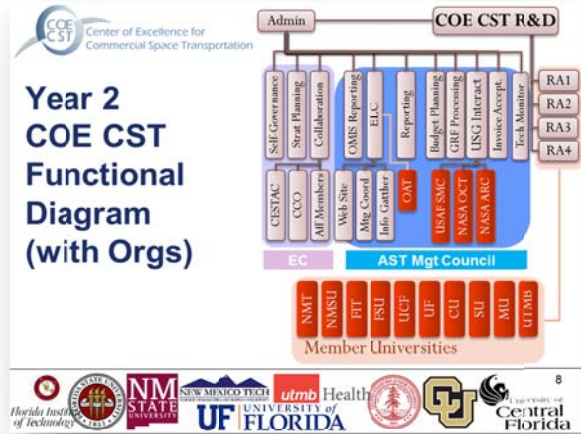
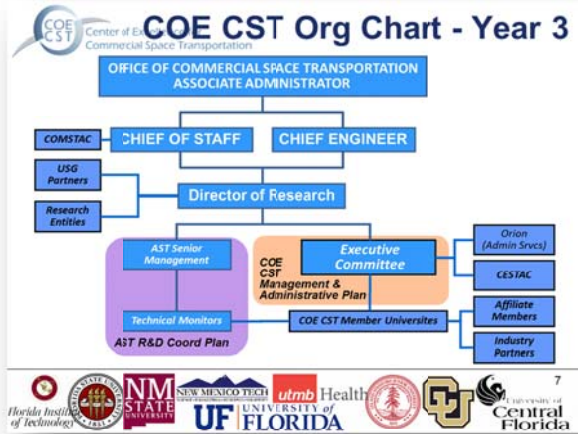
*How has the lack of FY13 funding affected the COE CST Management Plan?*

- Continuity of Operations
- Management Structure Evolution
- Evolution of Functional Assignments
- Administrative Processes
  - Current
  - Planned

**Continuity of Operations**

- What: Continuation of mission critical functions.
- Why: \$0 in FY13. "Borrowing" unspent FY12 \$.
- When: Now (June 1, 2013 - May 31, 2014)
- What, Who, How Much:
  - OMIS: \$50K from \$122K in Task 299-NMT
    - Rotating among member universities
  - OAT: \$80K from \$120K in Task 300-FIT
    - Tristan Fiedler, Chair of Collaboration Committee, will coordinate admin functions





- COE CST Admin Processes**  
 Center of Excellence for Commercial Space Transportation
- Current
    - How to Submit a Research Grant Proposal
    - How to Request a No Cost Extension
    - How to Document Cost Share Contributions
    - How to Do Quarterly Reporting
    - How to Close-Out a Research Task
    - How to Initiate an Affiliate Membership
  - In Process
    - How to Conduct an Exec Committee Telecon
    - How to Produce an Annual Report
- 10

3. COE CST Reporting Requirements

**FAA COE CST Reporting Requirements**

Center of Excellence for Commercial Space Transportation

Ken Davidian  
 FAA Office of Commercial Space Transportation  
 and  
 Carol Gregorel  
 Orion America Technologies  
 June 11-13, 2013

- Agenda**  
 Center of Excellence for Commercial Space Transportation
- Quarterly
  - Annual
  - Reports, Articles
  - Task Close-Out
- 2

# Third Annual Administrative Meeting Final Report

COE CST Center of Excellence for Commercial Space Transportation Quarterly OMIS Report Status FY2013 Q2 6/4/2013

Project	Status	Action	Delinquent	Anomaly	Project	Status	Action	Delinquent	Anomaly
184CU	C	TM	FY13 Q1		297FSU	C	TM	FY13 Q2	
185SU	D		FY12 Q3, FY13 Q2		298NMSU	C	TM	Q1,2	FY12 Q4
186SU	D		FY13 Q2		299NMTU	P - No E		FY13 Q1	FY13 Q1
186CU	C	TM	FY13 Q2	F112 Q2	300FIT	P - No E		FY 13	
187CU	C				301FIT	P - No E	TM	FY13 Q2	
193CU	C				302FIT	P - No E	TM		0
193SU	P - No E		FY13 Q2						
220NMSU	C	TM	FY13 Q2,3						
228NMTU	C	TM	FY13 Q1,2						
241UF	E - No P	TM	FY13 Q1,2	F112 Q4					
241FSU	C	TM	FY13 Q1,2						
244CU	C								
244SU	E - No P		FY13 Q2						
244FSU	C								
244UF	E - No P		FY13 Q2						
247FIT	C		FY13 Q4						
253UCF	E - No P		FY13 Q2, 1						
255UTMB	C	TM	FY13 Q1						
256UTMB	C	TM	FY13 Q1						
257CU	C	TM							
258SU	E - No P		FY13 Q2						
253NMTU	C	TM	FY13 Q1,2						
294UTMB	C	TM	FY13 Q1						
295UTMB	C	TM	FY13 Q1						
296FIT	P - No E	TM	FY13 Q2						

C = Complete  
 S = Submitted  
 D = Delinquent  
 E - No P = Expense report, N Progress report  
 P - No E = Progress report, N Expense report  
 TM = Tech Manager action required

6-May 9-May 16-May 23-May  
 1 0 16 18  
 14 12 0 9  
 9 8 0 1  
 4 4 0 1  
 3 3 3 5  
 15 12 19 17

Florida Institute of Technology, STATE UNIVERSITY, UNIVERSITY of FLORIDA, Health, UNIVERSITY of Central Florida

COE CST Center of Excellence for Commercial Space Transportation **Annual Reports**

- Year 2 Exec Summary: [bit.ly/CCECSTYr2ExecSumm](http://bit.ly/CCECSTYr2ExecSumm)
- Year 2 Annual Report Vol 1: [db.tt/eOb3bC4L](http://db.tt/eOb3bC4L)
- Year 2 Annual Report Vol 2: [db.tt/ppMQZfZS](http://db.tt/ppMQZfZS)
- Year 2 Annual Report Vol 3: [db.tt/BG4H7Hb0](http://db.tt/BG4H7Hb0)

Florida Institute of Technology, STATE UNIVERSITY, UNIVERSITY of FLORIDA, utmb Health, UNIVERSITY of Central Florida

## 4. COE CST Website

ORION America Technologies AAM3 Website and OMIS Review & Integration

**How can we improve OMIS?**

- Functions
- Ease of Use

ORION America Technologies AAM3 Website and OMIS Review & Integration

**Integration of Research Tasks to the COE-CST Website**

- Automatically load Research Tasks
- Sort by Research Thrust Area
- Sort by University
- Sort by PI
- Project-At-A-Glance
- Executive Summary
- Publications

ORION America Technologies AAM3 Website and OMIS Review & Integration

**Building the architecture for CMS (content management system)**

- CSS
- Theme Development
- Social Media

5. Next COE CST Meeting

Center of Excellence for Commercial Space Transportation

**FAA COE CST Future Meetings**

Tristan Fiedler  
Florida Institute of Technology  
June 11-13, 2013

Center of Excellence for Commercial Space Transportation

**Agenda**

Third Annual Technical Meeting (ATM3)		
<b>When &amp; Where:</b> • Nov 2013 • Loc: FIT or DC	<b>Who:</b> • <b>Required</b> - All PIs, Students, FAA, OAT, CESTAC • <b>Desirable</b> - Affiliate Members, Associate Members • <b>Optional</b> - Students, Other USG Orgs	<b>Why:</b> • Presentation of research plans and results from all COE CST projects. • Provide a forum for developing relationships between professors and students for future collaborative work. • CESTAC meeting and discussions.
Fourth Annual Administrative Meeting (AAM4)		
<b>When &amp; Where:</b> • May 2014 • Loc: TBD	<b>Who:</b> • <b>Required</b> - EC Members (1 <sup>st</sup> , 2 <sup>nd</sup> ), FAA, OAT • <b>Desirable</b> - Other PIs, CESTAC • <b>Optional</b> - Students, Other USG Orgs	<b>Why:</b> • To discuss administrative topics. • Provide a forum for face-to-face meeting opportunities. • Conduct subcommittee activities.

Logos for Florida Institute of Technology, NM STATE UNIVERSITY, NEW MEXICO TECH UNIVERSITY, utmb Health, UF FLORIDA, and University of Central Florida.

6. Budget & Funding Topics

Center of Excellence for Commercial Space Transportation

**7. FAA COE CST Budget & Funding Topics**

Ken Davidian  
FAA Office of Commercial Space Transportation  
June 11-13, 2013

Center of Excellence for Commercial Space Transportation

**Agenda**

- The Past (aka, "Pre-Sequester")
- The Present (aka, "Sequester, Year 1")
- The Future (aka, "Sequester, Years 2-10")

Logos for Florida Institute of Technology, NM STATE UNIVERSITY, NEW MEXICO TECH UNIVERSITY, utmb Health, UF FLORIDA, and University of Central Florida.

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**The Present**

- Multiple FY13 Funding Scenarios
  - \$0 (March 27 - June 8)
  - \$450K (June 9)
  - \$1M (June 10, 9am)
  - \$200K now, \$320K later (June 10, 3pm)

Logos for Florida Institute of Technology, NM STATE UNIVERSITY, NEW MEXICO TECH UNIVERSITY, utmb Health, UF FLORIDA, and University of Central Florida.

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**The Past - Budget**

COE CST FAA Funding History

Millions

Funding Year	UTMB	SU	FSU	UF	NMT	FIT	NMSU	CU	UCF
FY10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY14	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY16	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY17	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FY19	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

• 4.5M\$ / 3FYs = 1.5M\$/FY

Logos for Florida Institute of Technology, NM STATE UNIVERSITY, NEW MEXICO TECH UNIVERSITY, utmb Health, UF FLORIDA, and University of Central Florida.

### The Past - Funding

### Future Considerations

- Types and Areas of Research
- Intellectual Property Considerations
- ITAR Restrictions
- Collaborative Research Tasks

\$ Source	Initial Client Set	Research Types & Areas	Development Areas	Priorities	Goal Client Set
Fed Govt	• FAA as Sole Govt Customer	Background, Applied • Safety • Industry Viability	• Safety Purposes	• Technical and Programmatic Criteria	• Multiple Govt Customers
IP PROTECTION (BAYH-DOLE), RELEASE RESTRICTIONS (ITAR)					
PUBLIC DOMAIN					
P PROTECTION (PATENT, COPYRIGHT), RELEASE RESTRICTIONS (ITAR)					
Industry	• No Industry Customers	Applied • Safety • New Products	• Product Development	• CESTAC review helps identify industry needs.	• Multiple Industry Customers

## 8. Self-Governance Subcommittee Presentation

### How We Got Here


- FAA Identifies the Need for Commercial Space Vehicle Research
- FAA-CST Designated as Research Coordination Body
- FAA-CST Issues RFP for the Academic Community
- FAA-CST Identifies Specific Areas of Research
- Academic Community Responds to the RFP
- FAA-CST Selects Specific Proposals for Study

### Selection of Research Topics

- FAA-CST Reviews Proposals for Commercial Space Vehicle Research
- FAA-CST Selects Appropriate Research Topics
- FAA-CST Selects the Academic Institution to Conduct the Research.
- FAA-CST and Academic Institutions Collaborate on Selecting the Appropriate PI to Conduct the Investigations.
- The Selected PIs Submit Detailed Research Plans.







### GOVERNANCE

- Initial Governance and Overall Management by FAA-CST
- FAA-CST Proposes that the COE Membership Begin Assuming Some Administrative Tasks
- The FAA-CST Proposes that the COE Begin Organizing to Become Self Governing.
- The FAA-CST is to Remain in an Oversight Role of a Self Governing COE.
- The COE Members form Appropriate Committees that will Study COE Self Governance
- A self Governance Committee is Established


 Center of Excellence for Commercial Space Transportation

## Self Governance Documents PROPOSED

### CENTER OF EXCELLENCE STRUCTURE & OPERATIONAL BYLAWS







     

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 Center of Excellence for Commercial Space Transportation

## COE Membership

- This document provides for the structure and orderly operation of **THE FAA CENTER OF EXCELLENCE (COE) FOR COMMERCIAL SPACE TRANSPORTATION.**
- 
- This document lists membership requirements, structure and privileges granted by the FAA CST and the core Universities, and they are described herein. This organizational document is established to provide a formal mechanism by which the COE can conduct research into commercial space development and operations.




     

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 Center of Excellence for Commercial Space Transportation

## PRIVILEGES of MEMBERSHIP

- Membership in the COE is achieved at ratification of this document by the original core universities or upon the receipt of a simple majority vote by all COE member representatives in an application for membership from a qualifying organization.
- All COE members will have immediate and unmodified privileges of the COE regardless of method of obtaining membership.
- All memberships will have access to, and publication of research in, all COE sponsored Publications and Research Capability Listings subject to peer review.
- All COE members and COE Affiliate members will be listed on official COE Web Sites and general announcements.
- In regard to Internet web pages, each member institution will be responsible for entering accurate descriptions and data regarding the institutions commercial space research capabilities.
- Organizational publications. Each COE member and Affiliate member may list the COA in appropriate professional publications concerning the capabilities, accreditations and associations with other organizations associated with that institution.
- Business Cards Business cards with the notation that the represented institution is a COE member are allowed.

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 Center of Excellence for Commercial Space Transportation

## OFFICERS and COMMITTEES


- PRESIDENT
- PRESIDENT-ELECT
- SECRETARY/TREASURER

- Governance Committee
- Development Committee







     

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 Center of Excellence for Commercial Space Transportation

## CONCLUSIONS

- Coherent set of governing documents
- Self Governing
- Deficiency – Funding
- Deficiency – Long Range Research Plan
- Deficiency – Clear Definition of FAA's Role in a Self Governing COE





     

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 Center of Excellence for Commercial Space Transportation

## Questions?

- Copies of Proposed Self Governance Documents
- For further discussion and submission of ideas and constructive criticism contact:
- Dr. Nathaniel E. Villaire at [nvillaire@fit.edu](mailto:nvillaire@fit.edu) or phone: 321-777-8010

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9. Strategic Planning Subcommittee Presentation

AIAA Daily Launch June 13, 2013

Effectiveness of Commercial Spaceflight Regulation Debated.

In an article for *Space Safety Magazine* (6/12), Carolynne Campbell-Knight wrote that while it is "very exciting" that commercial companies are embracing space, there is currently "no regulator" to operate in space as "once you're above the atmosphere there are no rules, certainly no laws." Campbell-Knight believes anyone commercially flying into space needs to know the risks. Instead of waiting for an accident that would result in lawsuits, "a wise industry would regulate itself, set published standards, and be open about the risks involved." Campbell-Knight warns that asking the public to trust everything is as safe as flying "has never ended well" in the past.

Meanwhile, David Livingston at *The Space Show* (6/11) podcast interviewed space historian Robert Zimmerman, who said the focus in commercial spaceflight now is too much on safety and "it should be on risk taking, innovation, and experimental flight."

Clark Lindsey at *New Space Watch* (6/13) examines Zimmerman's and Campbell-Knight's positions, saying they "both miss the mark." Lindsey states the Commercial Space Launch Amendments Act has "worked well so far. It is far from an oppressive weight upon the industry and it doesn't threaten to expose spaceflight participants to exorbitant risks beyond what one would expect from riding on a rocket."

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Too little  
Too much  
Just right



COE CST Center of Excellence for Commercial Space Transportation

**FAA COE CST  
3rd Annual Administrative Meeting (AAM3)  
near the  
FAA William J. Hughes  
Technical Center**

**Strategic Planning**

David Klaus  
University of Colorado Boulder  
June 11-13, 2013

COE CST Center of Excellence for Commercial Space Transportation

**COE CST Strategic Planning Framework**

Subcommittee members

- Dave Klaus - chair (CU), Dan Kirk (FIT), Sigrid Close (SU), Juan Alonso (SU), Andrei Zagrei (NMT), Scott Hubbard (SU) and Billie Oates (FSU)

COE CST Center of Excellence for Commercial Space Transportation

**OVERVIEW**

- Review of Technology Areas, Evaluation Criteria, Center Operations, Annual Research Review, Assumptions and Reassessment as stated in the **FAA COE CST solicitation**
- A first draft of this was circulated to the subcommittee for review on May 21, 2013 (*red font throughout = my suggestions for discussion*)
- **Proposed Mission, Vision and Goals for the COE CST**
- **Proposed Actions / Discussion**

COE CST Center of Excellence for Commercial Space Transportation

**1. BACKGROUND**

Per the FAA COE CST Solicitation dated April 30, 2010...

- The goal of this endeavor is to create a cost sharing partnership of academia, industry and government that will focus on research areas of primary interest to the FAA and US commercial space transportation industry as a whole.
- Our purpose is to forge a union of public sector (FAA, space port authorities, state/local governments, etc.), private sector, and academic institutions to create a world-class consortium that will identify solutions for existing and anticipate commercial space transportation problems. The FAA expects the COE-CST to perform basic and applied research through a variety of analyses, development, and prototyping activities.



## 1. BACKGROUND

- The FAA COEs are required by Congress to match grant funds, thus solidifying a significant partnership between the COE members and the FAA.
- Researchers may be drawn from the academic institution's faculty and students, industry, the FAA, and other government agencies. They may work at an academic institution, an FAA location, or an industry location.



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## 2. TECHNOLOGY AREAS

The 5 initial technology areas to be addressed by the Center and grouped hierarchically and include:

- 2.1 Space Launch Operations and Traffic Management
- 2.2 Launch Vehicle Systems, Payloads, Technologies, and Operations
- 2.3 Commercial Human Space Flight
- 2.4 Space Commerce
- 2.5 Cross-Cutting Research Areas



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## 3. EVALUATION CRITERIA

**3.1 CRITERION 1:** THE EXTENT TO WHICH THE NEEDS OF THE STATE IN WHICH THE APPLICANT IS LOCATED ARE REPRESENTATIVE OF THE NEEDS OF THE REGION FOR IMPROVED AIR (*sic*) TRANSPORTATION SERVICES AND FACILITIES.

**3.2 CRITERION 2:** THE DEMONSTRATED RESEARCH AND EXTENSION RESOURCES AVAILABLE TO THE APPLICANT TO CARRY OUT THIS SECTION. [RELATING TO Public Law 101-508]

**3.3 CRITERION 3:** THE ABILITY OF THE APPLICANT TO PROVIDE LEADERSHIP IN MAKING NATIONAL AND REGIONAL CONTRIBUTIONS TO THE SOLUTION OF LONG-RANGE AND IMMEDIATE AIR (*sic*) TRANSPORTATION PROBLEMS.



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## 3. EVALUATION CRITERIA

**3.4 CRITERION 4:** THE EXTENT TO WHICH THE APPLICANT HAS AN ESTABLISHED AIR (*sic*) TRANSPORTATION PROGRAM.

**3.5 CRITERION 5:** THE DEMONSTRATED ABILITY OF THE APPLICANT TO DISSEMINATE RESULTS OF THE AIR TRANSPORTATION RESEARCH AND EDUCATIONAL PROGRAMS THROUGH A STATEWIDE OR REGIONWIDE CONTINUING EDUCATION PROGRAM.

**3.6 CRITERION 6:** THE PROJECTS THE APPLICANT PROPOSES TO CARRY OUT UNDER THE GRANT.

*For details, see backup slides*



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## 4. CENTER OPERATIONS

- The COE must maintain close working relationships with the FAA COE Program Office and the sponsoring research program offices. This relationship extends to participation in conferences, meetings, joint research efforts, and submission of significant activity reports to the FAA on a routine basis. The COE is required to prepare and submit semiannual reports and a fully inclusive annual report on research projects, other accomplishments, matching contributions and fiscal expenditures. During the first year, the COE is required to conduct on-site reviews and submit these reports quarterly.
- The FAA will require the COE to hold an annual meeting with agency representatives on topics relating to the status and results of the designated research. The COE members will host a major symposium before the end of the initial five-year phase and thereafter as agreed upon. The Center is also required to actively participate in FAA Joint COE Meetings as scheduled.



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## 4. CENTER OPERATIONS

- In keeping with the Congressional requirement to disseminate information and the interest expressed by the agency to disseminate and utilize new knowledge, the COE will report on, and participate in, numerous informational activities. These activities may include, but are not limited to:
  - Site visits for representatives of key professional, industrial, academic, state or local associations or organizations, members of the media, etc.
  - Preparation of COE related publications, articles, pamphlets, manuals, books prepared or published, and papers delivered at conferences.
  - Local, state, or regional meetings.
  - Demonstrations of new or proposed technology.
  - Development and presentation of courses, seminars, etc.



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# Third Annual Administrative Meeting Final Report

## 5. ANNUAL RESEARCH REVIEW

- The COE shall host an annual review of the research completed and in progress.
- The COE shall prepare and deliver to the FAA Centers of Excellence Program Director an annual report by project area. The report shall include research results, benefits, and information dissemination efforts; the name and national origin of all research personnel; significant events that were sponsored or attended; journal articles and conference proceedings published throughout the past year; and a brief description of the research intended to be conducted during the following year. Use of graphics, photographs, in addition to the narrative descriptions is highly encouraged.



## ASSUMPTIONS (from the COE solicitation)

- the FAA intends to invest \$1,000,000 per year for the next ten years to support the COE-CST
- the FAA intends to fully support the COE for a period up to ten years, however this support is subject to the availability of funding
- other government organizations, such as NASA, and private companies have an interest in working with the FAA and COE team and will contribute funds and participate as co-sponsors
- researchers may be drawn from the academic institution's faculty and students, industry, the FAA, and other government agencies and may work at an academic institution, an FAA location, or an industry location
- each selected educational institution enters into a long-term cooperative agreement to conduct critical research in specific areas of interest to the commercial space transportation industry that are critical to the FAA's mission and long-term vision
- the hierarchy of (original) research areas described above may be reorganized, expanded, and/or contracted as deemed necessary by the FAA and the Office of Primary Interest (OPI)
- the FAA plans to award Indefinite Quantity Indefinite Delivery (IDIQ) Contracts to the COE team members and thereafter possibly fund delivery order tasks, on a cost reimbursement, cost sharing, and/or fixed price basis



## REASSESSMENT

The needs of the agency are reviewed annually and the Center is reassessed within the first five years. Under usual circumstances, COE members are provided adequate time to respond to changes or to assure orderly shut-down of the COE CST at the time of its termination.

The reassessment process focuses on the progress and results of research efforts conducted within the COE during the initial five-year period in relation to the original proposal and the requirements of the agency. A reassessment team indicates FAA needs and expectations for continuing research and determines the appropriate funding necessary to continue, expand, or change direction of research projects or COE scope. The reassessment process includes an audit of the matching contributions. The initial reassessment concludes with a recommendation for continuation, suspension, or termination.



## REASSESSMENT

A recommendation for continuation means:

- The reassessment team has found that the COE is advancing the state-of-the-art technological areas specified in this solicitation.
- The FAA continues to have a need for ongoing research that can be satisfied by this COE
- The FAA is reasonably sure funding will be available to support the next five-year phase.

The reassessment team then recommends that the partnership should continue to be funded for another five-year period. Each cooperative agreement is closed out at the end of the initial five-year period. When all members have satisfied matching requirements, a new cooperative agreement is negotiated with each core university member. Core members are then able to continue to receive direct grant funding from the FAA.



## STRATEGIC PLANNING

*"Planning is as natural to the process of success as its absence is to the process of failure."* -Robin Sieger

- **Strategic Planning – the process of getting from where you are to where you want to be by determining long-term vision and goals for an enterprise and a method for achieving them**
- **Need to define a strategic plan from the preceding recap of the FAA COE CST solicitation and assumptions, adding any additional goals determined by the team**



## MISSION

- *The purpose of the organization, what we do and who we do it for, catch phrase*

**Encourage, facilitate and promote a viable commercial space transportation industry.**

- This statement needs to be decomposed to define what it means to 'encourage, facilitate and promote' and what 'viable' implies. This provides the basis for developing the supporting vision, goals and implementation plan.
- Some initial thoughts...





**MISSION**

**Encourage, facilitate and promote a viable commercial space transportation industry.**

- How do we 'encourage'? outreach, publicity, education
- How do we 'facilitate'? forge industry/government/academia partnerships, conduct research, graduate placement, support appropriate regulatory decision making process
- How do we 'promote'? roadmapping exercises, technical meetings, research task prioritization, dissemination of results via publication and presentation, policy
- How do we assess 'viability'? public safety, sustainable business models



**VISION**

*Where you want to be in 5 years – idealistic, overarching and encompassing sense of collective identity*

- The FAA COE for CST conducts research in collaboration with government and industry partners that supports an informed decision making process by the FAA as an appropriate regulatory environment for commercial spaceflight operations is defined and implemented.
- The research outcomes are widely disseminated through technical publications and presentation forums in order to benefit the industry at large.
- The COE CST helps meet the needs of local, regional and national industry members in establishing safe and effective commercial space transportation infrastructure and operations.



**VISION**

*Where you want to be in 5 years – idealistic, overarching and encompassing sense of collective identity*

- Our graduating students are well-versed in the goals and challenges of commercial spaceflight and will become future leaders and policy makers of this burgeoning industry.
- The COE for CST will maintain its leadership in research and education to continue supporting commercial space transportation as the industry is established and grows.
- Funding for the COE is expected to become self-sustaining from industry support after the initial FAA 10 year award period.



**GOALS**

- *Specific, measurable, achievable, reaching and time-bound*
- *Need to be prioritized by importance, but are constrained by limitations*
- *Include technical, managerial, financial, and cultural strategies*

The following criteria are summarized from the solicitation from the above recap. They are organized as a framework that can be used to define specific COE goals that address the stated expectations, which may be modified as decided through further discussion. Goals include numerous programmatic and technical aspects.



**GOALS**

**A. from introductory sections – general criteria**

1. (meet) the needs of the State in which the applicant is located are representative of the needs of the region for improved air (sic) transportation services and facilities
2. (ensure necessary) research and extension resources are available
3. provide leadership in making national and regional contributions to the solution of both long-range and immediate air (sic) transportation problems
4. (disseminate) results of air (sic) transportation research and educational programs through a statewide or region wide continuing education program
5. (identify, prioritize, select and fund) projects to carry out under the grant
6. create (and track) a cost sharing partnership of academia, industry and government



**GOALS**

**A. from introductory sections – general criteria (continued)**

7. focus on research areas of primary interest to the FAA and US commercial space transportation industry
8. forge a union of public sector, private sector, and academic institutions
9. create a world-class consortium that will identify solutions for existing and anticipate commercial space transportation problems
10. (conduct) basic and applied research through a variety of analyses, development, and prototyping activities
11. (secure matching) grant funds, thus solidifying a significant partnership between the COE members and the FAA





**GOALS**

**B. from Criterion 1 – regional needs and involvement**

1. **(build on)** state and region’s commercial space transportation capabilities, resources, and commitment to commercial space launch development, services and facilities, including relevance to next generation transportation planning, as well as environmental concerns

**C. from Criterion 2 – research and collaboration capabilities**

1. **(establish)** relevant partnerships with members of the commercial space transportation industry
2. **(build on)** grants and contracts awarded to the applicant focusing on commercial space transportation topics of research
3. **(provide)** availability of laboratory, test, and evaluation facilities, located on-campus or off-campus



**GOALS**

**D. from Criterion 3 – leadership and meaningful contributions**

1. **(draw on)** significant experience with industry and/or government agencies related to commercial space transportation
2. **(develop a)** plan might include the establishment of an advisory board comprised of leaders in the field and written commitments from their organizations to be actively engaged in the COE.
3. **(provide evidence of)** high standing within the national and international arena of commercial space transportation research as evidenced by presentations at national and international conferences, publications in popular and peer-reviewed periodicals, etc.
4. **(obtain and track)** matching funds...
5. **(develop)** a comprehensive strategic management plan that articulates management and oversight of fiscal and technical activities, and details how the universities will coordinate research efforts, how research teams will be selected and evaluated, and how the costs of administering the Center will be apportioned and funded



**GOALS**

**E. from Criterion 4 – personnel training and graduate career placement**

1. **(build on)** history of training personnel in relevant and related academic fields (e.g., scientists, engineers, planners, economists, etc.) for commercial space transportation
2. **(expand on)** research experience related to commercial space transportation issues
3. **(maintain and/or develop)** curricula in academic fields relevant and related to the hierarchy of technology areas listed in section 2. STATEMENT OF WORK above.
4. **(demonstrate)** significant number of graduates and placement of students in industry, academia, and government jobs related to commercial space transportation, and methods used to collect data on placement of graduates
5. **(uphold)** credible academic standards



**GOALS**

**F. from Criterion 5 – dissemination of results**

1. **(develop and offer)** academic programs, such as continuing education, distance learning, etc., that address commercial space transportation needs
2. **(host)** seminars, symposia, and workshops related to commercial space transportation topics.
3. **(expand)** experience using the Internet to disseminate results of research and enhance educational programs
4. **(establish/maintain)** facilities and resources available to provide for information dissemination activities



**GOALS**

**G. from Criterion 6 – administrative plan**

1. **(establish and implement an)** administrative plan for the COE-CST
2. **(define process to)** approach, conduct, evaluate and manage the research initiatives within the COE
3. **(establish teaming)** with relevant state and local commercial space transportation-related organizations and industry affiliates
4. **(minimize)** overhead and other management/business costs
5. **(develop and maintain a)** disciplined strategic COE management plan
6. **(develop and implement)** a plan that emphasizes outreach efforts and collaboration with underrepresented groups



**GOALS**

**H. from operational and research review sections – performance expectations and deliverables**

1. **(maintain)** close working relationships with the FAA COE Program Office and the sponsoring research program offices
2. **(prepare and submit)** semiannual reports and a fully inclusive annual report on research projects, other accomplishments, matching contributions and fiscal expenditures.
3. **(conduct/support)** on-site reviews during year 1 and submit these reports quarterly
4. **(hold)** an annual meeting with agency representatives on topics relating to the status and results of the designated research
5. **(host)** a major symposium before the end of the initial five-year phase and thereafter as agreed upon
6. **(actively participate)** in FAA Joint COE meetings as scheduled





**GOALS**

**H. from operational and research review sections – performance expectations and deliverables (continued)**

7. Report on, and participate in, informational activities including, but not limited to:
- a. **(host)** site visits for representatives of key professional, industrial, academic, state or local associations or organizations, members of the media, etc.
  - b. **(document)** COE related publications, articles, pamphlets, manuals, books prepared or published, and papers delivered at conferences
  - c. **(participate in COE-related)** local, state, or regional meetings
  - d. **(demonstrate)** new or proposed technology
  - e. **(develop and present)** courses, seminars, etc.
  - f. **(organize and host)** an annual review of the research completed and in progress
  - g. **(prepare and deliver)** to the FAA Centers of Excellence Program Director an annual report by project area **(as specified)**



**MY TAKE...**

*"In order to serve its purpose, a vision has to be a shared vision." -Warren Bennis*

- There are a lot (48) of specific goals mandated in the solicitation
- There are a lot of schools (9), PI's (28), students (37) and partners of various categories (46) involved in the COE CST
- Currently feels a bit like every man/woman for him/herself on a task-by-task proposal basis
- Do we want to be more like a coordinated, passing and scoring baseball team or an individualistic, match point-based wrestling team?
- What are we strategically trying to accomplish with our COE?



**ACTIONS**

- **Review / Revise this baseline Mission and Vision**
- **Define specific Goals from solicitation and/or new ideas**
- **Solicit feedback / obtain consensus from COE team**
- **Align Strategic Goals to the Organizational Structure**
  - Derive Goals from the Vision and Mission (*top down validation*)
    - *What do we want to do?*
  - Tie Goals to Research Tasks and Exec Governance (*implementation*)
    - *How do we do it?*
  - Monitor progress toward meeting the Goals that will in turn fulfill the Vision and accomplish the Mission (*bottom up verification*)
    - *How do we know we did it?*
- **Discussion, questions, comments?**



**BACKUPS**

**The 5 initial technology areas to be addressed by the Center and grouped hierarchically and include:**

- 2.1 Space Launch Operations and Traffic Management**  
This category of research encompasses all the engineering, operations, management, and safety areas of study related to the overall commercial space traffic management systems and its interactions with the civil aviation traffic management systems.
- 2.2 Launch Vehicle Systems, Payloads, Technologies, and Operations**  
This category of research encompasses all the engineering, operations, management, and safety areas of study related to launch vehicle, its systems, and its payloads.



**BACKUPS**

- 2.3 Commercial Human Space Flight**  
This category will provide opportunities for research in the areas of Aerospace Physiology and Medicine, ECLSS and Habitability, Human Factors, Human Rating of Commercial Spacecraft, and Personnel Training.
- 2.4 Space Commerce**  
This category of research encompasses the subcategories of space business and economics, space law, space insurance, space policy, and space regulation.
- 2.5 Cross-Cutting Research Areas**  
There are three research topics that cross-cut most (if not all) of the four primary research areas mentioned above. These cross-cutting research topics are:
  - Safety, Testing, Training



**BACKUPS**

- 3.1 CRITERION 1: THE EXTENT TO WHICH THE NEEDS OF THE STATE IN WHICH THE APPLICANT IS LOCATED ARE REPRESENTATIVE OF THE NEEDS OF THE REGION FOR IMPROVED AIR TRANSPORTATION SERVICES AND FACILITIES.**
  - state and region's commercial space transportation capabilities, resources, and commitment to commercial space launch development, services and facilities, including relevance to next generation transportation planning, as well as environmental concerns.





**BACKUPS**

**3.2 CRITERION 2: THE DEMONSTRATED RESEARCH AND EXTENSION RESOURCES AVAILABLE TO THE APPLICANT TO CARRY OUT THIS SECTION. [RELATING TO Public Law 101-508]**

- relevant partnerships with members of the commercial space transportation industry
- recent grants and contracts awarded to the applicant focusing on commercial space transportation topics of research.
- availability of laboratory, test, and evaluation facilities, located on-campus or off-campus



**BACKUPS**

**3.3 CRITERION 3: THE ABILITY OF THE APPLICANT TO PROVIDE LEADERSHIP IN MAKING NATIONAL AND REGIONAL CONTRIBUTIONS TO THE SOLUTION OF LONG-RANGE AND IMMEDIATE AIR TRANSPORTATION PROBLEMS.**

- significant experience with industry and/or government agencies related to commercial space transportation
- proposed plan might include the establishment of an advisory board comprised of leaders in the field and written commitments from their organizations to be actively engaged in the COE.
- high standing within the national and international arena of commercial space transportation research as evidenced by presentations at national and international conferences, publications in popular and peer-reviewed periodicals, etc.
- evidence of ability to obtain matching funds and potential sources, i.e. letters of commitment.
- if the applicant proposes as a member of a team of universities, it must provide a comprehensive strategic management plan. This plan should articulate proposed management and oversight of fiscal and technical activities, and detail how the universities will coordinate research efforts, how research teams will be selected and evaluated, and how the costs of administering the Center will be apportioned and funded.



**BACKUPS**

**3.4 CRITERION 4: THE EXTENT TO WHICH THE APPLICANT HAS AN ESTABLISHED AIR TRANSPORTATION PROGRAM.**

- history of training personnel in relevant and related academic fields (e.g., scientists, engineers, planners, economists, etc.) for commercial space transportation.
- research experience related to commercial space transportation issues.
- curricula in academic fields relevant and related to the hierarchy of technology areas listed in section 2. STATEMENT OF WORK above.
- significant number of graduates and placement of students in industry, academia, and government in jobs related to commercial space transportation, and methods used to collect data on placement of graduates.
- credible academic standards.



**BACKUPS**

**3.5 CRITERION 5: THE DEMONSTRATED ABILITY OF THE APPLICANT TO DISSEMINATE RESULTS OF THE AIR TRANSPORTATION RESEARCH AND EDUCATIONAL PROGRAMS THROUGH A STATEWIDE OR REGIONWIDE CONTINUING EDUCATION PROGRAM.**

- academic programs, such as continuing education, distance learning, etc., that address commercial space transportation needs.
- experience conducting seminars, symposia, and workshops related to commercial space transportation topics.
- experience using the Internet to disseminate results of research and enhance educational programs.
- facilities and resources available to provide for information dissemination activities.



**BACKUPS**

**3.6 CRITERION 6: THE PROJECTS THE APPLICANT PROPOSES TO CARRY OUT UNDER THE GRANT.**

- administrative plan for the COE-CST (e.g., how the applicant will organize and manage the core team members within the COE).
- how the applicant will approach, conduct, evaluate and manage the research initiatives within the COE.
- ability to team with relevant state and local commercial space transportation-related organizations and industry affiliates.
- overhead and other management/business cost minimization.
- a disciplined strategic COE management plan.
- a plan to implement special emphasis outreach efforts and collaborate with underrepresented groups.



**DISCLAIMER**

*NOTE: the Grantee will not make any presentations, issue news releases, grant interviews, or engage in any other public interface or written publication that implies FAA involvement or support or attribute conclusions to the FAA without prior written permission of the FAA COE-CST Technical Program Manager and the FAA COE Program Director.*



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## APPENDIX C. COE CST AAM3 GROUP PHOTO – DAY 1

Below is the photo of the FAA COE CST AAM3 attendees at the beginning of Day 1.

- |                          |                            |
|--------------------------|----------------------------|
| 1. Carol Gregorek (OAT)  | 9. Fred Bowen (OAT)        |
| 2. Pat Hynes (NMSU)      | 10. Warren Ostergren (NMT) |
| 3. Brad Cheetham (CU)    | 11. Pat Watts (FAA)        |
| 4. Scott Hubbard (SU)    | 12. Jim Vanderploeg (UTMB) |
| 5. Dave Klaus (CU)       | 13. Emmanuel Collins (FSU) |
| 6. Tristan Fiedler (FIT) | 14. Nat Villaire (FIT)     |
| 7. Norm Fitz-Coy (UF)    | 15. Charles Mathers (UTMB) |
| 8. Dennis Wilt (FIT)     | 16. Ken Davidian (FAA AST) |



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## APPENDIX D. COE CST AAM3 GROUP PHOTO – DAY 2

Below is the photo of the FAA COE CST AAM3 attendees at the end of Day 2.

**Back Row (Left to Right)**

- Brad Cheetham (CU)
- Warren Ostergren (NMT)
- Tristan Fiedler (FIT)
- Dave Klaus (CU)
- Ken Davidian (FAA AST)
- Norm Fitz-Coy (UF)
- Jim Vanderploeg (UTMB)
- Charles Mathers (UTMB)

**Front Row (Left to Right)**

- Pat Hynes (NMSU)
- Emmanuel Collins (FSU)
- Fred Bowen (OAT)
- Pat Watts (FAA)
- Carol Gregorek (OAT)
- Dennis Wilt (FIT)
- Nat Villaire (FIT)
- Scott Hubbard (SU)

