

# THE FAA CENTER OF EXCELLENCE FOR COMMERCIAL SPACE TRANSPORTATION ANNUAL TECHNICAL MEETING | OCTOBER 10, 2017

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

**Federal Aviation Administration  
Center of Excellence for  
Commercial Space Transportation**

**Year 6 Annual Report  
Executive Summary**

**December 31, 2016**

Florida Institute of Technology  
FLORIDA STATE UNIVERSITY  
NM STATE UNIVERSITY  
NEW MEXICO TECH  
SCIENCE • ENGINEERING • RESEARCH • UNIVERSITY  
SOUTHERN METHODIST UNIVERSITY  
GT  
University of Central Florida  
UNIVERSITY of FLORIDA  
utmb Health  
www.coe-cst.org

**James Vanderploeg, MD, MPH**  
Executive Director, COE-CST

ATM7 – Las Cruces October 10, 2017



# WELCOME AND LOGISTICS

- Safety Briefing
- Restrooms
- ISPCS on Wednesday & Thursday
- Tour of SPA on Friday morning (closed)
- COE-CST Organization
  - FAA Office of Commercial Space Transportation
  - Ten Core Universities
  - Growing number of Affiliate Universities and Organizations

# INTRODUCTION

## COE FOR COMMERCIAL SPACE TRANSPORTATION

- Established in August 2010
- Nine Core Universities
- Main goals include
  - research
  - training and education
  - outreach
- Self-sustaining by August 2020



# Map of Core Member Universities and Affiliate Members



ATM7 – Las Cruces October 10, 2017

# AGENDA MORNING

<i>Start</i>	<i>Agenda Item</i>				
7:30 AM	<b>Meeting Registration and Breakfast</b> <i>Hotel Encanto de Las Cruces, San Rafael Ballroom</i> <i>(Group Photo #1 at 8:15 AM)</i>				
8:30 AM	<b>ATM7 OPENING</b> <ul style="list-style-type: none"> <li>• Dr. James M. Vanderploeg, COE CST Executive Director</li> </ul> <b>NEW CORE MEMBER &amp; AFFILIATES OVERVIEW</b> <ul style="list-style-type: none"> <li>• Dr. Jeff Sutton, Baylor College of Medicine</li> <li>• Mr. David Zuniga, Danish Aerospace Company</li> <li>• Dr. Moriba Jah, University of Texas-Austin</li> <li>• Dr. Tristan Fiedler, FIT, Additional Members</li> </ul> <b>COE CST YEAR 7 STATUS</b> <ul style="list-style-type: none"> <li>• Ms. Evelina Bern and Mr. Ken Davidian, FAA AST</li> </ul>				
9:30 AM	<b>Comments on INDUSTRY VIABILITY Research</b> <ul style="list-style-type: none"> <li>• Mr. Ken Davidian, FAA AST</li> </ul>				
9:45 AM	<b>HUMAN SPACEFLIGHT RESEARCH PANEL – Part 1</b>				
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10:30 AM	<b>Sponsored Break</b>				
11:00 AM	<b>HUMAN SPACEFLIGHT RESEARCH PANEL – Part 2</b>				
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12:00 PM	<b>Sponsored Lunch</b> <i>(Group Photo #2 at 12:45 PM)</i>				

# AGENDA AFTERNOON

<i>Start</i>	<i>Agenda Item</i>
1:00PM	<p><b>SPACE TRAFFIC MANAGEMENT PANEL</b></p> <p><u><i>Moderator</i></u></p> <ul style="list-style-type: none"> <li>• Dr. Mykel Kochenderfer, Stanford</li> </ul> <p><u><i>Panelists</i></u></p> <ul style="list-style-type: none"> <li>• Dr. Sigrid Close (186-SU, Probabilistic Debris Model Development)</li> <li>• Ms. Marielle Pellegrino for Dr. Dan Scheeres (187-CU, Space Situational Awareness)</li> <li>• Dr. Mykel Kochenderfer and Rachel Tompa (331-SU, Advanced 4D Special Use Airspace)</li> <li>• Dr. Joe Kleespies (319-UF, DebrisSat)</li> <li>• Dr. Bill Lash (MITRE Associate Task)</li> <li>• Mr. Sven Kaltenhaeuser (Associate DLR-Interoperable Air and Space Traffic Management)</li> </ul> <p><u><i>Future Work</i></u></p> <ul style="list-style-type: none"> <li>• Dr. Moriba Jah (371-NMSU/UT Austin Space Object Database)</li> <li>• Dr. Tim Fuller-Rowell (186-CU, Whole Atmosphere Model Development)</li> <li>• Dr. Penina Axelrad, (367-CU, CubeSat Deployment Tracking)</li> </ul>
3:00PM	<i>Sponsored Break</i>
3:30PM	<p><b>TECHNOLOGY PANEL</b></p> <p><u><i>Moderator</i></u></p> <ul style="list-style-type: none"> <li>• Dr. Andrei Zagrai, NMT</li> </ul> <p><u><i>Panelists</i></u></p> <ul style="list-style-type: none"> <li>• Dr. Rajan Kumar (325-FSU, Optical Measurements of Rocket Thrust)</li> <li>• Dr. Bin Lim (299-NMT, Nitrous Oxide Composite Tank Testing)</li> <li>• Dr. Andrei Zagrai (323-NMT, Structural Health Monitoring Framework)</li> <li>• Dr. Subith Vasu (311-UCF, LED Absorption Sensor)</li> <li>• Drs. Jan Gou &amp; Jay Kapat (253-UCF, Composite TPS Material)</li> <li>• Mr. Brian Barnett (Affiliate 307-SSC/NMSU COTS Satellite Comms)</li> </ul> <p><u><i>Future Work</i></u></p> <ul style="list-style-type: none"> <li>• Dr. Billy Oates (241-FSU, High Temperature, Optical Sapphire Pressure Sensors)</li> </ul>
5:30PM	<p><b>CLOSING REMARKS</b></p> <ul style="list-style-type: none"> <li>• Dr. Jim Vanderploeg, et al.</li> </ul>
5:45PM	<i>Adjourn</i>

# OUTPUT OVER THE FIRST SIX YEARS

<b>COE CST Year-by-Year Metrics</b>	<b>Year 1 (FY10)</b>	<b>Year 2 (FY11-12)</b>	<b>Year 3 (FY13)</b>	<b>Year 4 (FY14)</b>	<b>Year 5 (FY15)</b>	<b>Year 6 (FY16)</b>
<b>Active Tasks</b>	34	24	28	28	36	22
<b>Unfunded Tasks</b>	34	22	22	11	6	5
<b>Principal Investigators</b>	27	28	29	25	31	22
<b>Students</b>	31	37	55	47	61	28
<b>Publications</b>	0	38	28	22	29	19
<b>Research Partners</b>	-	17	20	27	27	11
<b>Industry Partners</b>	-	29	44	55	57	11
<b>Affiliate Members</b>	0	1	6	6	6	6
<b>Associate Members</b>	-	-	-	3	6	3
<b>Funding Profile</b>	\$2M	\$2.4M	\$1.1M	\$1.1M	\$1M	\$1M
<b>Administrative Overhead</b>	13.6%	20.0%	9.9%	27.0%	19.7%	16.4%

# WHERE WE ARE GOING

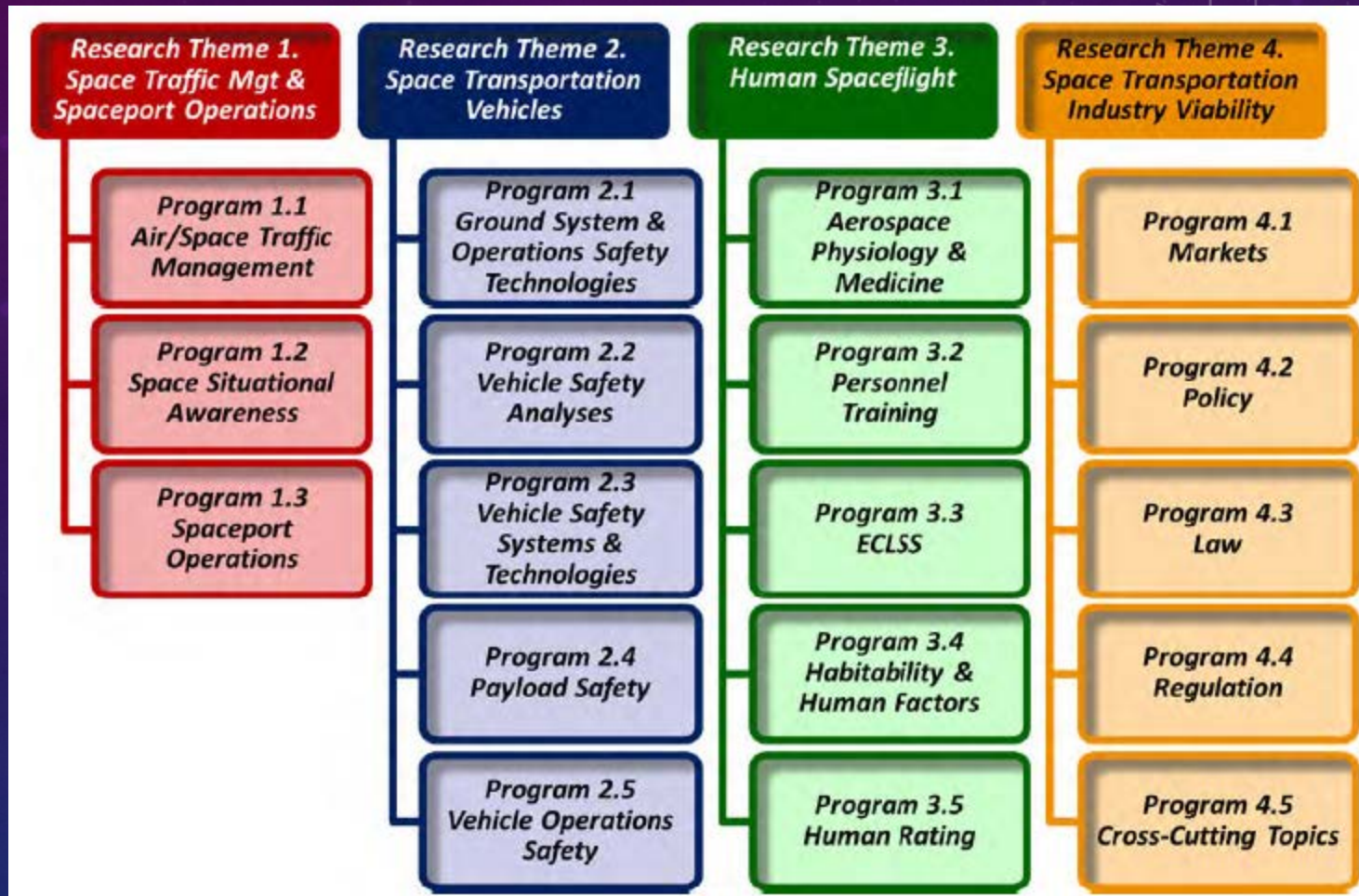


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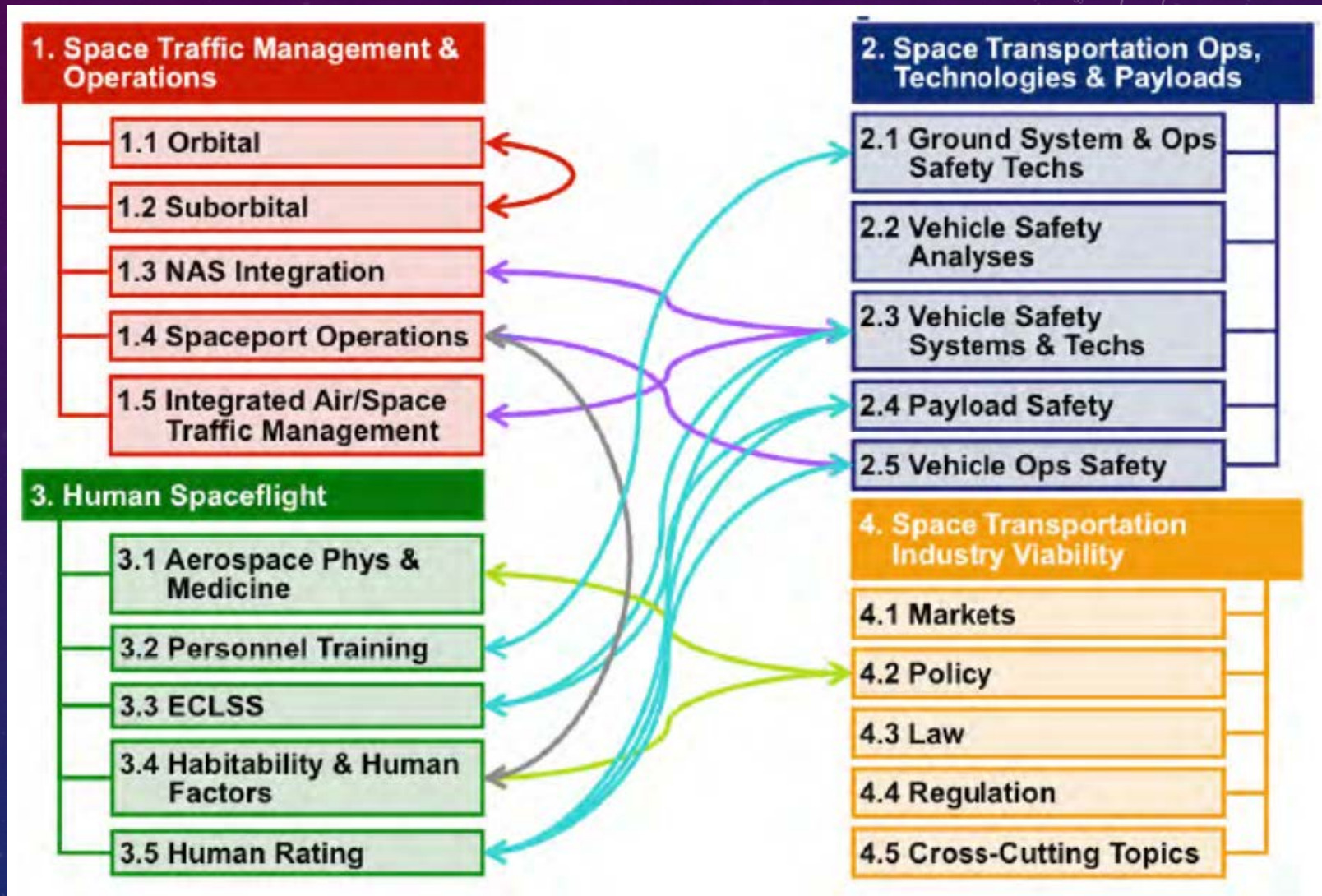




# RESEARCH THEMES



# RESEARCH AREA DEPENDENCIES



# WEBSITE

- <http://www.coe-cst.org>
- Commercial Space Transportation Research Roadmap
- COE-CST Year-Six Annual Report