

**Overview of the CESTAC  
Assessment  
of the  
2012 FAA COE CST Research  
Portfolio**

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# Assessment Criteria

- Relevance of current Research Areas and Tasks to the FAA goals and/or Industry needs
- Timeliness of potential research results versus FAA and Industry needs
- Funding consistency between levels and relative importance

# Findings

- Over the next 5 years we can expect to see the emergence of an active Commercial Human Spaceflight suborbital and orbital market
- Assessed the strategic relevance and timeliness of the Research Tasks to meet this emerging market and concluded:
  - Almost all of the current Research Tasks have the potential to help the Space Industry and/or meet the FAA needs
  - There is a notable variance in the level of potential near-term impact of the Tasks to meet both the Industry and FAA needs
  - Given the funding constraints Industry and FAA needs 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 for near-term payoff

# Relevance and Timeliness

## 1. Highly relevant and timely research with clear near-term needs

- *Medical research (medical conditions, database of physiological effects, EMI effects on devices)*
- *Spaceport operations but contingency operations need to be addressed*
- *Policy and Legal*
- *Space traffic control and 4D modeling*
- *Orbital debris characterization*

## 2. Important and timely research with a potential for high ROI for FAA and/or Industry:

- *Flight System Technology Research included an objective to simplify design certification or to eliminate the need for Certification*
- *Market Research emphasized Policy & Regulatory research that are not typically funded or easily performed by Industry but will be of direct benefit to industry*

## 3. Research areas which given limited funding may not be the best investment of COE research dollars at the current time:

- *Studies on student leadership and training. (The CESTAC, however strongly believes that student involvement in all of the other Research Areas is absolutely critical!)*
- *CESTAC believes debris mitigation is an International problem and does not appear to be an FAA technology development responsibility*

# Recommendations

## 4.1 Space Traffic Management and Operations

- *Traffic Management, Characterizing Orbital Debris, Atmospheric Modeling, and work on the Integrated Framework for Spaceports are all relevant and important activities*
- *The identification of the processes, responsibilities and training to deal with off-nominal operations is a very important area that needs to be funded*
- *The Situational Awareness Task output was defined in terms of research products and thus of lessor importance than activities with specific near-term applications potential*
- *The CESTAC recommends that the Space Traffic Management and Operations Research Theme Task priorities and products versus funding allocations be reassessed and, if warranted be realigned better meet emerging needs*

# Recommendations

## 4.2 Space Transportation Operations, Technologies and Payloads

- *CESTAC concluded that the Research Tasks in this Theme **with one exception** were important and relevant to both Industry and the FAA.*
  - *CESTAC questions the role of the FAA in mitigation of space debris*

## 4.3 Human Spaceflight

- *The CESTAC found the Human Spaceflight Research Tasks are both important and relevant*
- *Research Task for Human Rating of Commercial Operated Spacecraft is lagging behind a real need and CESTAC recommends the FAA reexamine the schedule and expected output of this Task for consistency with FAA and Industry needs*

# Recommendations

## 4.4 Space Transportation Industry Viability

Industry viability is an important topic and the Role that Policy, Law and Regulation play in either constraining or enabling the commercial space transportation is important to understand and highly relative to Industry and FAA needs

- Policy and Regulations
  - *International Policy Research activities that were presented appeared to be very relevant and the CESTAC recommends that these areas be pursued vigorously.*
  - *Given the potential for a fairly rapid increase in all commercial space activities in the next 5 years, the CESTAC would advise the FAA to invest ASAP in any additional research required to identify **areas** they may need to regulate*
- Market
  - *The conclusions from work to date to identify programmatic issues as the biggest challenge to the hosted and shared payload market development is on target*
  - *However, the resolution of programmatic challenges is in practice a business “risks versus rewards” based decision and thus the next phase of the Research “to understand what it takes to mitigate programmatic barriers” may be more appropriate to be funded by Industry*
  - *Pursing the understanding of current policies/regulations that constrain the commercial market and identifying changes and/or new policies/regulations that would enhance, the Commercial market would be a great value to Industry*

# Recommendations

## Funding Priorities

- *The CESTAC assessment also intended to look at the Research Areas funding levels and balance versus potential value to the FAA and Industry needs, but the data provided by the Teams was of insufficient consistency to develop an opinion*
- *CESTAC will work with the COE CST Leadership to try to improve the cost and schedule information provided at the 2013 Review.*