



**COE SOAR**

Solutions for Operational Aviation Research

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*Enhancing COE Proposal Submissions:  
Economic Impact/Business Case for Importance  
of Proposed Research and Innovation.*

***“Answering the WHY”***

*Jeff Tyrcha, Adacel*

*Seth Young, The Ohio State University*

*FAA SOAR EOC/CORE LEAD Meeting*

*Wichita State University*

*November 8, 2017*



Why? As in, “Why are we delivering this presentation?”

*The FAA has indicated we need a new session at the upcoming COE meeting at WSU. The topic requested is **Enhancing COE Proposal Submissions: Economic Impact/Business Case for Importance of Proposed Research and Innovation.***

*The session should be focused on **strengthening** the current **justification and application to practice sections** of the COE proposal submissions. In addition, description of tasks, impact, and milestones could use assistance.*

***They need to be stronger***

*- April Williams, Oct. 12, 2017*



Why? Why aren't proposals generally strong enough?

- Proposals aren't explicitly describing why the research is needed.
- Proposals aren't explicitly describing why this research may be valuable.
- Proposals aren't aligning with the AII-2 mission and problem issues.
- Proposals aren't specific in describing tasks, milestones, and deliverables.
- Proposal budgets aren't aligned with sponsor budgets.

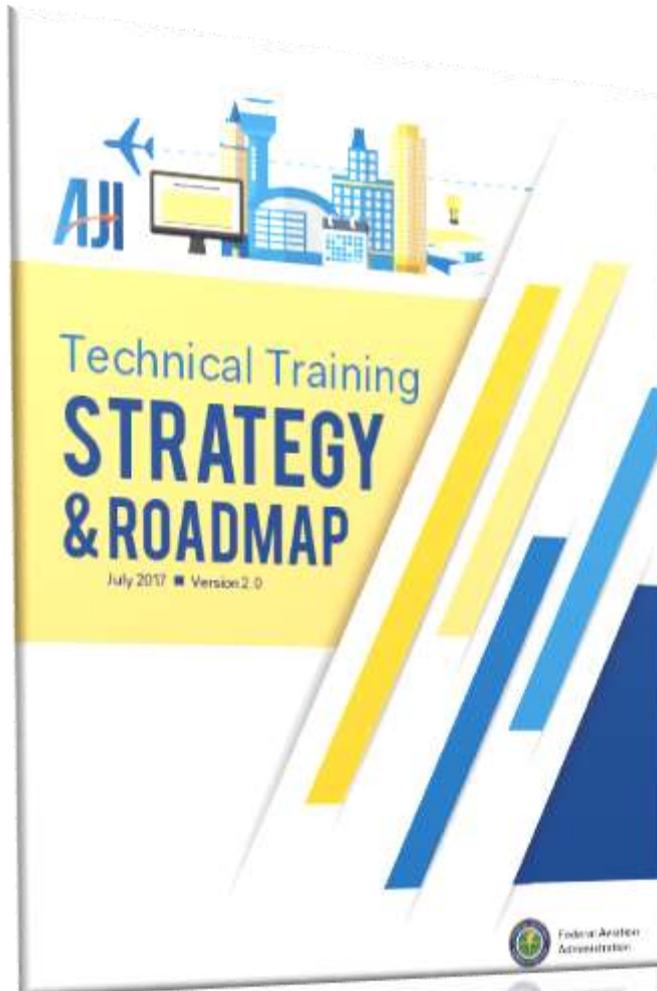
**So, what guidance (or lack thereof) have we given researchers to create strong proposals?**



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The AJI Technical Training Strategy and Roadmap has been distributed.



Proposals should directly address the AJI-2 Technical Training Strategy & Roadmap.



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**Topic Areas (derived from the FAA COE TTHP Solicitation) have been provided:**

- Enhancing Curriculum Architecture
- Modernizing Content Management and Delivery
- Increasing use of Simulation and Part & Task Training
- Understanding Human Factors Issues
- Applying data analytics strategies
- Improving safety



## A proposal template has been offered:



**9. STATEMENT OF WORK:**

[This section contains the statement of objective from item 7. This should include expected outcomes, and benefits to aviation be presented in a clear and logical fashion.]

**10. SCHEDULE & MILESTONES:**

**10.1. PERIOD OF PERFORMANCE:**  
Start Date: [Enter Date]  
End Date: [Enter Date]

**10.2. MILESTONES**

Please list five expected major milestones that are measurable, achievable, realistic, time-bound, and specific to list the SMART technical milestones.

Milestone

**10.3. REPORTING (TO FAA)**

The Principal Investigator(s) (PI), and the FAA as indicated in this section. The reporting schedule is summarized in the table below. The reporting schedule includes the Performance Report (RPPR), the Federal Aviation Report (SF-428), the Final Project Report, and the Final Performance Report identified in this document; the institution will be responsible for the report, while the PI will be responsible for the schedule for the research reviews. All research activities must meet the requirements, and to be managed through the PI.



**GRANT PROPOSAL NARRATIVE**

**CENTER OF EXCELLENCE FOR TECHNICAL TRAINING AND HUMAN PERFORMANCE**

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**1. NOTICE OF FUNDING OPPORTUNITY NUMBER & TITLE**

[Type Information Here]

**2. RESEARCH FOCUS AREA:**

[Type Information Here; refer to Appendix A for list]

**3. TITLE:**

[Type Information Here]

**4. BRIEF PROJECT DESCRIPTION:**

[Type Information Here in 250 words or less]

**5. INVESTIGATION TEAM:**

**5.1. UNIVERSITY TEAM:**

[Type name and role of the university team members; a list of the roles are identified in Appendix B]

**6. INDUSTRY PARTNER:**

[Type company name, point of contact, and explain how the industry partner will support this project]

**7. OBJECTIVE & GOALS:**

[Type Information about Goals and Objectives Here]

**8. BACKGROUND AND PREVIOUS ACCOMPLISHMENTS:**

[This section should provide a brief, general description of the current state of the art (including relevant literature). This section can include what the team has done in the past to lead up to this project (including relevant publications from the research team).]



## Nowhere in these resources do we explicitly address the “why”:

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**9. STATEMENT OF WORK:**  
[This section contains the statement of objective from item 7. This should include expected outcomes, and benefits to be presented in a clear and logical fashion.]

**10. SCHEDULE & MILESTONES:**

**10.1. PERIOD OF PERFORMANCE:**  
Start Date: [Enter Date]  
End Date: [Enter Date]

**10.2. MILESTONES:**  
Please list five expected major milestones measurable, achievable, realistic, timely to list the SMART technical milestones.

Milestone

**10.3. REPORTING (TO FAA):**  
The Principal Investigator(s) (PI), and FAA as indicated in this section. The summary is summarized in the table below. The report is the Performance Report (RPPR), the Federal Report (SF-428), the Final Project Report identified in this document; the institution report, while the PI will be responsible for the schedule for the research reviews. All research activities are to be managed through the PI.

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GRANT PROPOSAL  
CENTER OF EXCELLENCE FOR TECHNICAL TRAINING

**1. NOTICE OF FUNDING OPPORTUNITY NUMBER:**  
[Type Information Here]

**2. RESEARCH FOCUS AREA:**  
[Type Information Here; refer to Appendix A for list]

**3. TITLE:**  
[Type Information Here]

**4. BRIEF PROJECT DESCRIPTION:**  
[Type Information Here in 250 words or less]

**5. INVESTIGATION TEAM:**

**5.1. UNIVERSITY TEAM:**  
[Type name and role of the university team members;]

**6. INDUSTRY PARTNER:**  
[Type company name, point of contact, and explain how they are involved in the project.]

**7. OBJECTIVE & GOALS:**  
[Type Information about Goals and Objectives Here]

**8. BACKGROUND AND PREVIOUS ACCOMPLISHMENTS:**  
[This section should provide a brief, general description of the research team's previous work (including relevant literature). This section can include what the team has done in the past (including relevant publications from the research team).]

**Technical Training STRATEGY & ROADMAP**  
July 2017 ■ Version 2.0

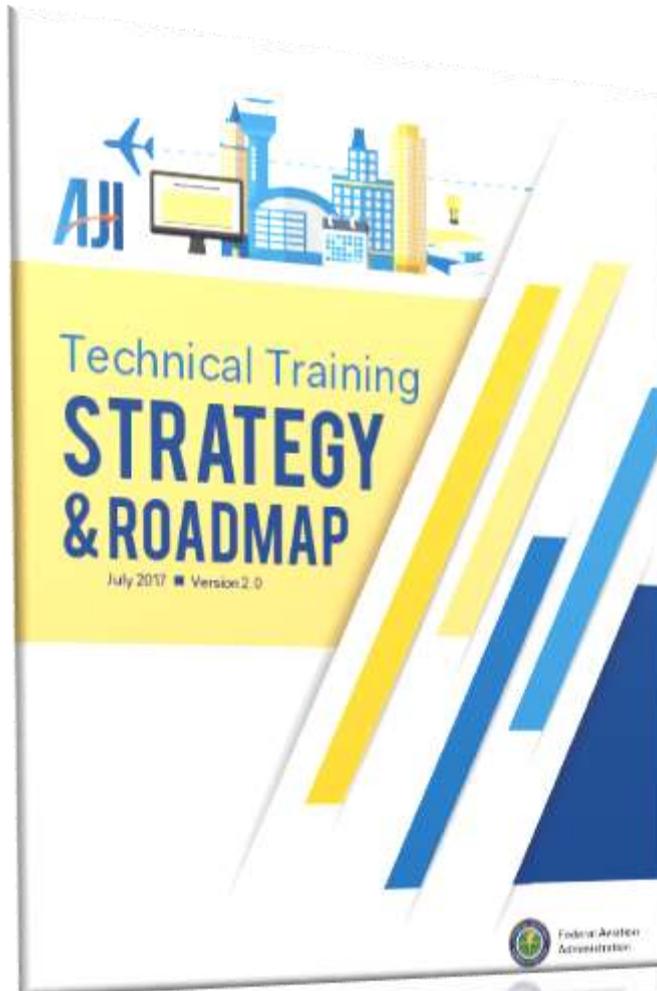
Federal Aviation Administration



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But the “Why” does indeed exist. We just need to pull it out.



Proposals should directly address the AJI-2 Technical Training Strategy & Roadmap.



## Finding the “why” in SOAR Core topic Areas

1. **Curriculum Architecture**: The FAA requires the development and maintenance of curriculum architecture to provide organization and structure for Agency training efforts. Curriculum architecture is to form the basis for Agency initiatives for the modernization of training, and a well-designed curriculum architecture will allow the Agency to tie all course development and modernization efforts to defined learner job tasks.
2. **Content Management and Delivery**: In order to enable the efficient development and delivery of training courses, the FAA requires implementation of an integrated strategy for managing course content objects and delivering training. The Center can assist in the development and implementation of this content management and delivery strategy, and support research into new content management processes as Agency needs evolve over time.
3. **Simulation and Part Task Training**: The use of simulation and part task training present an opportunity to train in ways that enable more rapid acquisition of proficiency among learners. The Agency requires research into best practices for implementation and evaluation of processes and systems for both simulation and part task training, across the entire aviation technical training learner base.



## Finding the “why” in SOAR Core topic Areas

4. **Human Factors Research**: Human Factors is a discipline that has shown clear applicability to technical training. The FAA stands to benefit from research into the application of human factors concepts to the aviation community technical training curriculum and the implementation of remedial and skill-enhancement training programs based upon lessons learned in applied human factors research.
5. **Analytics**: The FAA requires research into strategies for implementation of learning analytics that can inform recommendations on the best processes and systems for training. Beyond simple training completion records, analytics can provide the Agency with insights into the relative merits of different training environments, instructional strategies, and overall learner progress in training initiatives.
6. **Safety**: The FAA requires research into the relationships between safety and the areas of technical training and human performance. This research can inform and integrate efforts to improve safety by incorporating safety aspects within training outcomes for multiple groups to include but not be limited to inspectors, air traffic controllers and field technicians.



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But most importantly, the “why” came to light in yesterday’s discussion...

Why are we tasked with performing research through SOAR?

“To facilitate the development of **mission ready professionals** with **high knowledge retention** through **enhanced technical training strategies** and **greater understanding of human performance**”.

Why? Because there is a need for:

- Enhanced teaching and learning experience
- Reduced time to certification
- Reduced cost
- Increased resiliency and retention
- Enhanced worker performance
- Reduced Washout Rates
- Enhanced measures of training effectiveness
- Increased consistency
- Enhanced flexibility and customization of training



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In other words...:

- Employees aren't as mission ready as they should be.
- Employees aren't retaining or have current knowledge required for task.
- Training Practices are antiquated, inefficient, costly, etc.
- How employees perform in & as a result of learning environments is not well understood

And our research should directly address these issues.



How do we specifically address these issues?  
Through the mutual development of problem statements.  
Starting with listening to the Sponsor.

Specific Case examples:

- “Cobbled training program resulting in trainees ill-prepared to handle the dynamic complexities of NY TRACON”
- Apparent inefficiencies with FAA performing training in non-core areas (HVAC, basic electrical, fiber optics, etc. – “We’re teaching HVAC? Really???”
- “Conversion to tablet devices, while expected to have significant cost savings, is not fully meeting potential savings due to reluctance to adapt. How do we get staff to embrace the new technology?”



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## The “Pre-Proposal-Process” Identifying Problem Statements

Creating a proposal to address issues, which includes the “why”:

- “Cobbled training program resulting in trainees ill-prepared to handle the dynamic complexities of NY TRACON”

Proposal:

“We propose to investigate the current state of training that exists at NY TRACON, identify challenge areas, and develop strategic guidance towards revising curriculum architecture for enhancing training **that will result in enhanced controller performance, measured by potential reduction in time to certification and reduced washout rates** in this highly dynamic and complex environment...”



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## The “Pre-Proposal-Process” Identifying Problem Statements

Specific Case examples:

- Apparent inefficiencies with FAA performing training in non-core areas (HVAC, basic electrical, fiber optics, etc. – “We’re teaching HVAC? Really???”

Proposal:

“In an effort to reduce the overall costs of technical training, we propose to:

- investigate the portfolio of Technical Training curricula,
- identify those that are core to the FAA’s mission vs. those that are more general in nature,
- Identify outsourcing strategies to cover non-core topics
- **Quantify potential cost savings of outsourcing strategy**



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## The “Pre-Proposal-Process” Identifying Problem Statements

Specific Case examples:

- “Conversion to tablet devices, while expected to have significant cost savings, is not fully meeting potential savings due to reluctance to adapt. How do we get staff to embrace the new technology?”

Proposal:

“We propose to investigate the current issues associated with the reluctance to adapt to new tablet technologies, and address issues based on knowledge of successful technology adaptation and change management strategies from other sectors that may **lead to an overall improvement in both the teaching and learning experience.**”



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What should be in a **stronger** proposal:

What is the problem that you are addressing in this research?

What is your proposed methodology for addressing this problem?

What are your expected outcomes of this research?

**How will these expected outcomes potentially benefit the FAA?**



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What should be in a **stronger** proposal:

Who is your team? What are the qualifications of your team?

Who is your industry partner? What resources does your partner bring to the team?

Who is your tech monitor and your program sponsor?

What is your budget and schedule?



## Industry Perspective on Proposals

- Value Proposition and Solution Driven Approaches
- Lean, Time Critical Process
- Key Messages & Themes – Callouts & Formats
- Typical disciplined proposal process with formal team reviews
- Key Areas where industry can help in idea/proposal development:
  - Different Perspective on Solution Implementation
  - Big Picture – Value Proposition
  - Alternative solutions (learned from other experiences)
  - Business Case & Returns



## **Industry Involvement in Proposal Process**

- Key Areas where industry can help in idea & proposal development:
- Different Perspective on Solution Implementation
- Big Picture – Value Proposition
- Alternative solutions (learned from other experiences)
- Business Case Elements & Returns to the Customer
- Technology



# COE SOAR

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High Level Problem  
Statement Development

Get Program Sponsors On-Board –  
Promote Virtues of COE SOAR

Program Sponsors develop list of Problem Statements

Research Team Level  
Proposal Development

Problem Statements introduced by Program Sponsor and  
discussed with interested SOAR Researchers

One or more SOAR teams develop Proposals based on  
iterative discussions with FAA and industry partner(s)

Program Sponsor Selects Preferred Proposal

Proposal Refined, Package Completed for submission to  
Grants.gov