

**Request for Research Funding for FY 2022-2023**

**SPR Subpart B Project: TEO-23-01**

<b>Requesting Office</b>	State Traffic Engineering and Operations	<b>Priority</b>	1 of 22
<b>Proposed Title</b>	I-4 Florida’s Regional Advanced Mobility Elements (FRAME) After-Studies		
<b>Justification</b>	<p>The I-4 FRAME project is being deployed to address the safety and mobility issues along I-4 from Orlando to Tampa. The project will utilize advanced technologies available in the traffic signal, intelligent transportation systems (ITS), and connected vehicle (CV) applications to improve the mobility and safety along I-4 corridor and adjacent arterial roadways. The United States Department of Transportation selected the I-4 FRAME project for its Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grant. As part of the grant obligations, FDOT is conducting the before-and-after analyses with the University of Central Florida, University of Florida, University of South Florida, and Florida Polytechnical University.</p> <p>Each university scope will accomplish a part of the overall project evaluation. UCF will identify safety challenges on the project corridors and document how the I-4 FRAME project will address the challenges. USF-CUTR will identify the mobility challenges on the project corridor and document how the I-4 FRAME project is addressing the following goals set out by the FDOT. Florida Poly will focus on simulation studies to study potential benefits of the project regarding safety and comparative analysis of communication technologies.</p> <p>The goal of this research project is to develop the evaluation plan for the after conditions of the I-4 FRAME project. The evaluation metrics for the before-and-after conditions will be compared to identify the effectiveness of ITS and CV applications deployed in I-4 FRAME. To conduct the task, the research team will perform the following activities.</p> <ul style="list-style-type: none"> <li>• Determine the evaluation criteria tailored to the I-4 FRAME project objectives;</li> <li>• Describe the data collection procedures tailored to these criteria for achieving the project objectives;</li> <li>• Document how the I-4 FRAME project addressed the safety and mobility challenges on the project corridors compared with before-study evaluation.</li> <li>• Conduct a benefit-cost analysis to assess the overall safety benefits of the technologies deployed</li> <li>• Share data with the USDOT and other interested parties</li> <li>• Coordinate among the universities to ensure consistency within their evaluation plans and data management</li> </ul> <p>The after study may include testing cooperative driving automation (CDA) from the Cooperative Automation Research Mobility Applications (CARMA) platform.</p>		
<b>Impact</b>	The study will analyze the effectiveness of the ITS and CV technologies and applications deployed in I-4 FRAME. The data can be used by other Districts and local agencies interested in or deploying these technologies. The data will be shared with USDOT for the advancement of emerging technologies for safety and mobility.		
<b>Affected Offices</b>	Traffic Engineering and Operations Office – Districts 1, 5, 7 and Florida’s Turnpike Enterprise		
<b>Existing Work</b>	This is a continuation of the existing evaluation of the advanced technologies being deployed for the I-4 FRAME ATCMTD grant.		
<b>Keywords Used In Existing Work Search</b>	Intelligent Transportation Systems, Connected Vehicles, Traffic Simulation		
<b>Related Contracts</b>	I-4 Before Studies: BDV24 TWO 977-38 (UCF), BDV25 TWO 977-77 (USF-CUTR), BDV31 TWO 977-139 (UF), and BEA91(Florida Poly)		
<b>Funding Request</b>	\$1,200,000.00 UCF-\$340,000 UF-\$391,000	<b>Anticipated Duration</b>	24 months

	USF-\$275,000 Florida Poly-\$105,000		
<b>Project Manager</b>	Raj Ponnaluri	<b>Contracting Method</b>	Direct contract with University of Central Florida, University of Florida, University of South Florida, and Florida Polytechnical University  Project with each university (total of 4 projects)
<b>Equipment</b>	Estimated equipment cost (or N/A)	Not Applicable	
<b>Urgency</b>	1	This is a continuation of existing work for the I-4 FRAME project and is tied to the ATCMTD grant award. The FDOT has executed a cooperative agreement with the Federal Highway Administration for I-4 FRAME.	
<b>Implementability</b>	1	The research results will be readily implementable. The recommended strategies and the near-term and long-term implementation action items will be readily available for adoption.	
<b>Project Benefits (Succinct, complete explanation)</b>			
<ul style="list-style-type: none"> <li>✓ Measurable safety and mobility benefits for ITS and CV applications</li> <li>✓ Performance measurement methodologies that can be used by other Districts and local agencies</li> <li>✓ Near-term and long-term implementation plan to address head-on crashes</li> </ul>			
<b>Project Benefits (Select all that apply and explain)</b>	<b>Quantifiable Benefits (units, dollars, etc...if applicable)</b>	<b>Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits</b>	
<input type="radio"/> Materials Enhancement			
<input type="radio"/> Materials Savings			
<input type="radio"/> Time Savings	ITS and CV technologies could be used to reduce travel time	The research team will measure travel time savings such as planning time index.	
<input type="radio"/> Lives Saved/Injuries Prevented	ITS and CV technologies could be used to reduce crashes and severity	The research team will perform the benefit cost analysis (BCA) to assess the overall safety benefits from this project.	
<input type="radio"/> Other (Explain)			

\*Comments should explain and support urgency, financial benefit, and implementability scores