

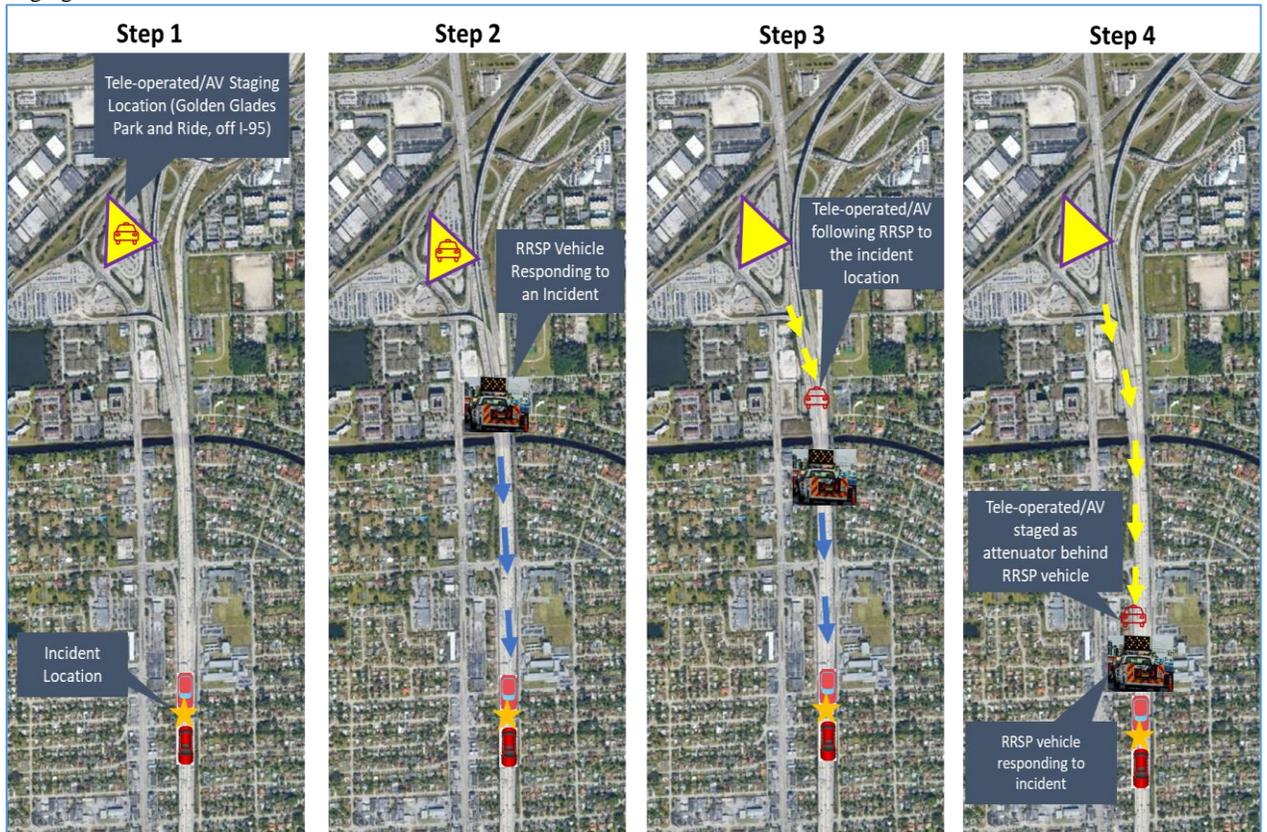
Request for Research Funding for FY 2022-2023

SPR Subpart B Project: TEO-23-21

Requesting Office	State Traffic Engineering and Operations Office	Priority	21 of 23
Proposed Title	Explore the Use of Tele-operated/Autonomous Vehicle (AV) to Assist Road Ranger Service Patrol (RRSP) in Responding to Incidents		

The Road Ranger Service Patrol (RRSP) provides traffic incident management response services to assist motoring public. There is always the risk of an errant driver colliding with the RRSP. FDOT is interested in exploring the use of tele-operated/autonomous vehicle (AV) to assist Road Ranger Service Patrol (RRSP) in responding to incidents. RRSP personnel is often the first responders to incidents and set up maintenance of traffic plans on high-speed roadways. This exposes the RRSP responders to high-speed traffic and the potential danger of being struck by an errant driver (i.e., non-compliant to move over law). The AV can be staged at a pre-determined location (e.g., at Golden Glades Park and Ride facility, off I-95 in Miami, Florida) and include an attenuator device to minimize the impact from an errant vehicle collision. This AV will drive itself to the location of the incident and follow the tracks of responding RRSP vehicles. The vehicle should also have the capability to drive on the shoulder if needed. The project tasks will be performed in partnership between Kratos and the research group. FDOT will provide the recommended staging location of the AV.

Justification



Proposed Tasks:

The research team including the AV provider will perform the following activities:

1. Proof of Concept
 - a. Determine size and weight of vehicle.
 - b. Determine technical telematics/autonomy/remote control challenges to be overcome.
 - c. Determine communications, remote computer hardware/software needs and technologies (e.g., AV activated by RTMC).
2. AV Prototype and Demonstrate in a Controlled Environment
 - a. Build AV and demonstrate
 - b. Test at SunTrax or another preferred location by the Department

	3. Live Testing and Operation <ol style="list-style-type: none"> a. Test on live road (i.e., I-95 Golden Glades Park & Ride to I-95) b. Upon successful controlled environment testing, if FDOT implements the project in real-world environment, the research group will coordinate with the FDOT to understand the timeline of operation, develop a performance measure plan, and complete evaluation of the project 		
Impact	The new technology has the potential to improve safety of the Road Ranger Service Patrol personnel. The study results will help FDOT District 1, District 2, District 3, District 4, District 5, District 6, District 7 and Florida's Turnpike Enterprise (FTE) to assess impacts of the deployed technologies and expand their implementation to similar locations statewide.		
Affected Offices	State Traffic Engineering and Operations Office and District Traffic Operations Offices		
Existing Work	Currently there is no Florida-specific published study focusing on the AV assisted incident response topic.		
Keywords Used In Existing Work Search	Connected vehicle, technology, Autonomous vehicle, Florida, Safety, Mobility		
Related Contracts	NA		
Funding Request	\$400,000	Anticipated Duration	1 year
Project Manager	PM: Edith Wong Co-PM: Shawn Kinney	Contracting Method	Direct contract with the University of Florida (Dr. Agarwal)
Equipment	TBD	This detail is yet to be determined. The research group will coordinate with the Department and AV manufacturer to determine the required details.	
Urgency	1	This topic has been assessed an urgent innovation need as several emergency responders have been fatally injured by the errant driver while they were performing their duties. This innovative use case of AVs has potential to save lives of first responders.	
Implementability	1	This project is going to be an implementation focused project. The project will test the use of AVs in responding to incidents. Upon successful testing at the SunTrax or another FDOT controlled environment facility, the project will be implemented at a real-world environment. The project will also evaluate the project.	
Project Benefits (Succinct, complete explanation)			
<p>The research project will evaluate an innovative idea to improve safety of the RRSP vehicles when they respond to an incident. The project will investigate the use of tele-operated/autonomous vehicle (AV) to assist Road Ranger Service Patrol (RRSP) while responding to an incident.</p> <ul style="list-style-type: none"> • Feasibility of using AV for incident response • Assist incident responders to operate safely in live road environments • Improve safety of incident responders 			
Project Benefits (Select all that apply and explain)	Quantifiable Benefits (units, dollars, etc...if applicable)	Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits	
<input type="radio"/> Materials Enhancement			
<input type="radio"/> Materials Savings			
<input type="radio"/> Time Savings	Indirect impact		

○ Lives Saved/Injuries Prevented	Indirect impact	This Project will potentially reduce number of injuries/fatalities suffered by the RRSP while performing cleanup during an incident or assistance during an unexpected stop by a vehicle on the roadside/shoulder.
○ Other (Explain)		

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