

Submission Date (<i>select from calendar</i>): 5/1/26	
Lead Recipient/Grant Number: University of Arkansas / 69A3552348331	
Principal Investigator Institution (<i>select drop down</i>): Jackson State University	
Center Name: Maritime Transportation Research and Education Center	
Research Priority: Preserving the Existing Transportation System	
Principal Investigator(s) with ORCID(s) and Contact Information: Dr. Jessica L. Murphy, ORCID #: 0000-0001-8340-4163, jessica.l.murphy@jsums.edu (601-979-1145; telephone).	
Project Partners: Drs. April Tanner, Professor Don Spann, Dr. Yalanda Barner—Jackson State; Dr. Laura Myers (University of AL-Cen. for Risk & Insurance Research); National Weather Service-Jackson, MS; Public Safety; MS Emergency Man. Agency; Jackson Fire Dept.; MS Dept. of Transportation-Emergency Manager	
Project Type (<i>select drop down</i>): Education and Workforce Development	
Project Research Topic Type (<i>select drop down</i>): Disaster Response and Transportation Planning for Coastal and River Valley Communities	
Transportation Modes Involved (<i>check all that apply</i>): ☒ Waterway ☒ Road ☐ Rail ☐ Pipeline ☒ Other	
Total Funding Requested (\$): \$82,547	Federal Funding Requested (\$): \$55,000
% of Total for Tech Transfer (%): 0%	Non-Federal Match Requested (\$): \$27,547
Project Start and End Dates (<i>month/day/year to month/day/year</i>): 07/01/2026-06/30/2027	
Project Title: Community Response Enhanced Education on Disasters (CREED): Virtual Reality Training to Enhance Transportation	
Project Abstract (Brief Description): AI/VR simulation activities enhance critical emergency management functions—planning, forecasting, threat detection, security, and information sharing—ultimately improving the preservation of life and property. These tools create a safe, immersive environment where participants build problem-solving skills, decision-making ability, and confidence in disaster response. This project will deliver education, professional development, and continuous improvement in emergency preparedness for both aspiring and current professionals. We will invite high school and community college students to participate alongside university students and practitioners. Participants will engage in hands-on training and live demonstrations using advanced technologies such as virtual reality (VR) and artificial intelligence (AI)-driven simulations. The program fosters multidisciplinary collaboration among disciplines: Emergency Management Technology, Meteorology, Computer Science/Engineering, Health Science, and Journalism, and Media Studies. Through classroom instruction, workshops, and interactive training demos, students will work directly with emergency management professionals, strengthening real-world skills, supporting school-to-work transitions, and enhancing career readiness.	
USDOT Priorities: Section left blank until USDOT's new priorities and RD&T strategic goals are available in Spring 2026	
Outputs (results of the work performed): Using the Advanced Disaster Management System (ADMS) at Jackson State, an unscripted, AI-driven virtual reality simulator, participants engage in real-time, physics-based scenarios where outcomes directly reflect their decisions. The platform generates performance outputs at the conclusion of each exercise, capturing the effectiveness of response strategies, traffic	

flow management, and mobility decisions under adverse weather conditions; thus, promoting decision-making, training effectiveness, and transportation planning under disastrous conditions. Results demonstrate enhanced participant capability to evaluate and adapt emergency responses across roadways, waterways, and airways, particularly in managing evacuation routes, shelter access, and alternate transportation pathways. Pre- and post-assessments show measurable gains in perceived preparedness and response effectiveness among emergency management professionals, students, and community participants. Building on the 2025–2026 Mar-TREC project, outcomes include the development of student learning outcomes (SLOs), integration of AI/VR simulation modules into academic courses, and delivery of student-led simulation workshops. Participants identified critical transportation challenges during weather events and confirmed that AI/VR simulations significantly enhance traditional live training. Demand for expanded multi-modal disaster scenarios further validates the platform’s impact. From the proposed Mar-TREC Project 7030 will extend these results by scaling training to high school and community college populations and deepening the analysis of transportation systems under weather stressors. Ongoing and future publications will emphasize data-driven insights into mobility, safety, and emergency response optimization enabled by AI/VR simulation technologies.

Outcomes/Impacts: As previously stated about the ADMS Simulator, the user will make dynamic decisions as they would in real-life incidents, providing them with an interactive and immersive atmosphere. This project’s result will help further improve emergency transportation for both professionals and the community, is projected to encourage continuous improvement of EM professionals and lead to tentative policy updates. Overall, the safety and reliability of AI/VR simulation emergency preparedness and response training will result in impactful feedback from participants that will lead to mitigating negative impacts. The application of results attained from this project will further promote transportation safety with weather considerations for EM professionals and the community. With student involvement (e.g., JSU students, community college and high school), this will help produce the next generation of EM professionals with high technological proficiency from varying degree disciplines.

Technology Transfer Activities: This project's primary tech transfer contribution is workforce training. The project will host at least two hands-on ADMS (Advanced Disaster Management Simulator) training sessions for community members and Emergency Management professionals. These sessions will provide participants with higher-level, hands-on experience using ADMS as an effective tool for planning, rehearsing, assessing, and enhancing the skills of individuals, teams, and organizations involved in incident preparedness and response.

The training is expected to reach approximately 20+ students and 20+ Emergency Management professionals from related Emergency Management state, local, federal agencies, transportation entities, and corporate and volunteer organizations, including [e.g., local emergency management offices, first responders, transportation agencies]. Success will be measured by participant feedback surveys, pre/post skills assessments, and indication of interest in the adoption of ADMS by participating agencies in future exercises to ensure the training translates into measurable improvements in regional preparedness and response capacity.

Final Research Report: Upon completion of the project, provide a URL link to final report will be provided

Project Deliverables: ☒ PI agrees to submit all deliverables within 4 weeks of the project end date.

Data Management Plan (DMP): ☒ PI has reviewed and agrees to adhere to MarTREC DMP. Proposed project DMP must be submitted with this form.

USDOT Approval Date: 7.21.26