



COMMONWEALTH of VIRGINIA

Commonwealth Transportation Board

W. Sheppard Miller, III
Chairperson

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Agenda item # 4

RESOLUTION OF THE COMMONWEALTH TRANSPORTATION BOARD

September 20, 2023

MOTION

Made By: Ms. Hynes, **Seconded By:** Mr. Kasprowicz

Action: Motion Carried, Unanimously

Artificial Intelligence-Based Decision Support System (AI-DSS) for Enhancing Transportation Incident Management Contract Award

WHEREAS, due to a lack data-driven, real-time analytical and prediction capabilities, current transportation incident coordination/response is reactive, responding to incidents that have already taken place, rather than being proactive with a focus on predicting and preventing incidents; and

WHEREAS, coordination and collaboration among agencies and across different highway and transit modes in responding to transportation incidents occurs only on an ad-hoc basis or manually, giving rise to a gap in multi-modal and multi-agency incident response plan coordination; and

WHEREAS, in order to transform how agencies manage dynamic transportation systems effectively through a data-driven technology solution, the Virginia Department of Transportation (VDOT) has proposed deploying AI-DSS to recommend effective response plans to operating agencies for the management of congestion, incidents, and events across different highway and transit modes; and

WHEREAS, integrating AI-DSS and demand management results in more balanced and cohesive transportation systems management and operations; and

WHEREAS, Offerors prequalified through the Request for Qualification were invited to respond to the Request for Proposal for this contract. Offerors provided details on software experience and qualifications, functional and technical capabilities, project plan and implementation, and small business subcontracting plan. Through consensus scoring and negotiations, the VDOT Selection Committee selected one (1) recommended Offeror; and

WHEREAS, VDOT has determined that Arup US, Inc., 77 Water Street, New York, NY 10005 (hereinafter “Arup”) is considered the best suited and lowest cost Offeror of eight (8) initial Offerors; and

WHEREAS, the Virginia Information Technologies Agency and the Office of Attorney General approved the AI-DSS contract package on July 12, 2023; and

WHEREAS, VDOT recommends award of the Contract for the Artificial Intelligence-Based Decision Support System (AI-DSS) for Enhancing Transportation Incident Management to Arup; and

WHEREAS, Commonwealth Transportation Board (CTB) approval of this contract is required by § 33.2-209 of the *Code of Virginia* as a contract for “... construction, maintenance, and improvement of the highways comprising systems of state highways ... in excess of \$5 million.”

NOW, THEREFORE, BE IT RESOLVED, that the CTB hereby concurs with VDOT’s recommendation and hereby agrees to award the Contract for this Project to Arup.

BE IT FURTHER RESOLVED, that the Commissioner of Highways, or his designee, is granted the authority to execute the Contract and all other documents necessary to effectuate the award of this Contract to Arup.

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Commonwealth Transportation Board (CTB) Decision Brief

Artificial Intelligence-Based Decision Support System (AI-DSS) for Enhancing Transportation Incident Management Contract Award

Issue: The Virginia Department of Transportation (VDOT) solicited proposals from qualified firms to contract for an AI-DSS with real-time analytical and prediction capabilities that provides responding agencies with the capability to proactively manage and prevent transportation incidents across highway and transit modes. CTB approval of this contract is required by Va. Code § 33.2-209 as a contract for “. . . construction, maintenance, and improvement of the highways comprising systems of state highways . . . in excess of \$5 million.”

Facts: Chief Deputy Commissioner Cathy McGhee delivered a workshop presentation to the CTB regarding AI-DSS and the Regional Multi-Modal Mobility Program (RM3P) on July 19, 2022. Currently, transportation incident coordination and collaboration amongst agencies (such as VDOT and emergency responders), and across highway and transit modes (i.e. bus bridges), is reactive and implemented manually on an ad-hoc basis. AI-DSS offers instead a proactive, multimodal approach to incident management by utilizing several types of data, both static and dynamic, provided by the RM3P Data-Exchange Platform and other vendor sources to enrich analytical power and recommend effective response plans for managing congestion, incidents, and events.

- VDOT first issued a Request for Information from industry and agency stakeholders, for input relating to an AI-DSS for enhancing transportation incident management, which led to the high-level scope development for such a system. VDOT then issued a Request for Qualification and all Offerors’ who were pre-qualified were invited to respond to the Request for Proposal (RFP) for this contract. Offerors provided details on software experience and qualifications, functional and technical capabilities, project plan and implementation, and small business subcontracting plan.
- Throughout the AI-DSS project scoping process, there has been multi-agency participation to include VDOT, the Northern Virginia Transportation Authority, Department of Rail & Public Transportation (DRPT), Fredericksburg Area Metropolitan Planning Organization, Virginia State Police, Washington Metropolitan Area Transit Authority, tolling partners, and local transit operators, etc.
- The AI-DSS delivered pursuant to the contract will provide a scalable solution to:
 - Generate, analyze, and recommend response plans that improve the efficiency of various agency responses to travel disruptions achieving a collective regional incident clearance outcome greater than a single agency’s solo outcome;
 - Predict non-recurring congestion and incidents thus enabling agencies to improve our transportation system's overall reliability;
 - Predict availability for selected commuter parking lots to enable multi-modal trip choices; and
 - Take into consideration prompts for managing demand on the transportation system via incentive strategies.
- The Virginia Information Technologies Agency’s Chief Information Officer approved the Request for Proposal (RFP) for the AI-Based Decision Support System (AI-DSS) Procurement on January 31, 2022, allowing the project to move forward with procurement.

Decision Brief

Artificial Intelligence-Based Decision Support System (AI-DSS) for Enhancing Transportation Incident Management

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The RFP for the AI-DSS was posted on February 2, 2022, in eVA with a closing date of April 4, 2022. In response to the RFP, VDOT received proposals from eight (8) Offerors.

- Through consensus scoring and negotiations, the VDOT Selection Committee selected one (1) recommended Offeror from the eight (8) Offerors. Virginia Information Technologies Agency and the Office of Attorney General approved the AI-DSS contract package on July 12, 2023. In keeping with the Notice of Intent to Award issued July 31, 2023, VDOT recommends awarding this contract to Arup US, Inc.
- The awarded Offeror will provide a “Software-as-a-Service” solution that will have the functionality to review and evaluate current conditions, as well as to predict conditions of the Northern Virginia and Metropolitan Fredericksburg transportation network. The AI-DSS will help agency operators make informed decisions in managing both recurring and non-recurring congestion conditions and recommend optimal responses.
- The AI-DSS Contract initial term is three (3) years with five (5) 1-year optional renewal periods. The contract cost is estimated at \$9.72 M for the initial 3-year period [\$8.58 M for the base period (1st and 2nd years) and \$1.14 M for base operations and support (3rd year)]. 1-Year Optional renewal periods are approximately \$1 M.

Recommendations: VDOT recommends that the CTB approve and authorize the Commissioner of Highways to execute the contract with Arup US, Inc., to provide the AI-DSS for enhancing transportation incident management.

Action Required by CTB: CTB approval of this contract is required by § 33.2-209 of the *Code of Virginia* as a contract for “...construction, maintenance, and improvement of the highways comprising systems of state highways ... in excess of \$5 million.” The CTB will be presented with a resolution for a formal vote to authorize the Commissioner to execute the contract with the recommended Offeror.

Result, if Approved: If the resolution is approved, the Commissioner will be authorized to execute the contract once signed by the Offeror. The contract will be effective upon execution by the Commissioner, enabling development of the AI-DSS for enhancing transportation incident management.

Options: Approve, Deny, or Defer

Public Comments/ Reaction: Although no public comment was required on this contract, the solicitation was publicly advertised.