

City of Memphis
Traffic Engineering Department

Request for Information (RFI) #2021-001

City of Memphis Advanced Traffic Management System (ATMS) Software

Issue Date: February 8, 2021

Response Due: March 5, 2021 2:00 PM

This Request for Information (RFI) is issued for information and planning purposes only and does not constitute a solicitation. Responses to the RFI will not be returned. Responses to this RFI are not an offer and cannot be accepted by the City to form a binding contract. The City of Memphis is not liable for any cost incurred by the vendor in response to this RFI. Response to this RFI is NOT mandatory to be considered for future awards from future solicitations for related products or services.

Overview

Purpose of the Request for Information (RFI)

The City of Memphis (City) is exploring potential next generation Advanced Traffic Management System (ATMS) software to integrate the City's intelligent transportation system (ITS) devices through a single interface. The ATMS utilizes new traffic management technology to better manage the traffic needs within the City of Memphis.

The purpose of this Request for Information (RFI) is to gather information, evaluate prospective solutions to meet business needs, and review a wide range of ATMS options. The knowledge of these options will aid in the procurement and deployment of a next generation ATMS. Responses to this RFI may be used to develop a request for proposal (RFP) to acquire a product and/or service that meets business needs and requirements of the City. Selection for those services is not contingent on responding to this RFI.

A Request for Proposal (RFP) will likely be issued by the City of Memphis in Fall 2021 to implement a next generation ATMS solution in the City's Traffic Management Center (TMC). The target deployment date is 2023.

Responders are encouraged to provide as much or as little comment or information on any of the items within this RFI as appropriate. Responders also are encouraged to provide additional functionalities their software provides that may be relevant to the City.

Project Background

The City of Memphis operates a system of more than 1000 traffic control devices plus ITS devices in an area of approximately 330 square miles. Currently, approximately 400 of the signalized intersections are interconnected. However, the City continues to expand the communications system with the goal of eventually being connected to all of the traffic control devices. The City desires to utilize a single application to provide the ability to confirm, monitor, and control devices in real-time to manage the City's roadways and intersections. Information would be collected and disseminated to motorists about traffic conditions to support incident management, special events, and weather events.

It is expected the ATMS software would allow for the management and operations of all ITS devices, including roadside infrastructure and signals along the corridor. The City continues to explore emerging solutions to support real-time management of arterial congestion. **This RFI has four objectives:**

1. Obtain information directly from the vendors to aid in determining what is available in today's market
2. Identify baseline functionality common among the offered systems
3. Provide an opportunity for vendors to begin dialog with the City prior to a procurement process
4. Gather budget information associated with development, installation, and maintenance costs

The City of Memphis intends to *invite selected interested vendors to participate in demonstrations of their available software solutions* so the City can become more familiar with potential solutions and capabilities. Tentative dates are noted below.

Vendor Input

The City is looking to procure software that most closely meets the needs of the City for daily operations. The City understands the ATMS software may need some configuration changes to integrate with the local TMC and field devices. If required, it is expected that this work will be minor.

The City is not requesting a technical proposal or detailed plans in response to this RFI. The City recognizes that some of the information contained in the submitted responses may be confidential. Portions of the RFI responses marked as confidential by the Respondent should be provided in a separate section of the response or in a separate document and those sections will not be made publicly available except as required by law. The City will not honor requests to keep an entire response confidential. Entire responses that are marked confidential will be made publicly available.

Terms, Conditions, and Disclaimers

1. This RFI is not a solicitation for quotations, bids or proposals. Responses will not be considered legal offers nor will a contract award result from this RFI.
2. Costs of preparing a response to this RFI are the sole responsibility of the Respondent. The City shall not provide reimbursement for such costs and shall not be liable for any costs incurred.
3. The City reserves the right to copy any information provided by Respondents for the purposes of facilitating City's review or use of the information.
4. The City reserves the right to contact a Respondent for additional information at its sole discretion, and to issue additional RFIs.
5. Response to this RFI is NOT mandatory to be considered for future awards from future solicitations for related products or services.
6. It is entirely the Respondent's responsibility to keep informed of the City's issuance of any future solicitation(s) for related products or services. City assumes no liability for failure of Respondent's to obtain and respond to any such solicitation.

Submitting a Response

Responders should provide an overview of their system and express their interest in providing a demonstration. **The responses should be a maximum of 40 pages**; including an explanation on how the software can address the items in the Vendor Solution Questionnaire.

Submit one hard copy and one electronic PDF version to:

125 North Main, Room 668, Memphis TN, 38103

Randall.Tatum@memphistn.gov

All responses are due by **March 5, 2021 2:00 PM**.

For additional information concerning this RFI please contact:

Mr. Randall Tatum, P.E., PTOE

Administrator, City Traffic Engineer

Randall.Tatum@memphistn.gov

(901) 636-6710

Demonstrations

At its discretion, the City will issue invitations for vendors to provide demonstrations of the software described within the response.

Demonstrations are intended for the City to become familiar with the solutions and capabilities. Vendors invited to participate in demonstrations of their ATMS software will be given a short scenario representing a typical response along a corridor. The scenario will be generic and not specific to the City. Therefore, demonstrations of an operational ATMS may consist of solutions already in use elsewhere.

Demonstrations will be limited to two (2) hours in length, including a question and answer time. Demonstrations will be scheduled during the weeks of April 12, 2021 and April 19, 2021.

It is anticipated at this time that demonstrations will be completed remotely. Vendors will be contacted directly by the City to schedule demonstrations during the scheduled dates. Schedules are subject to change to best meet the needs of the City of Memphis.

Vendor Solution Questionnaire

Responders shall provide information regarding how your solution specifically addresses each of the following requirements, providing sufficient detail to explain the capabilities of your solution. If your response speaks to only a subset of the requirements, please indicate how your product could integrate with other systems or make use of another product to form a complete solution. If you have other information you would like to share that pertains to your proposed solution that is not mentioned in this document, provide it in your response. When describing how your solution meets the requirements, please include the information below.

General Information

1. Company name and primary point of contact including contact information
2. Briefly summarize the scope of relevant products and services your company provides.
3. Describe your previous and current experience with government clients of similar size and complexity. Please indicate the types of products those clients use and how they relate to the project proposed here.
4. Where have you been successful with this system or similar implementation in the past? Can you share the costs and final timeline of the project? What information can you provide on lessons learned from less-successful implementation.

Technical Information

1. List installation requirements for the software (hardware, software, field equipment, etc.)
2. Please provide a list of potential challenges and risks the City of Memphis might encounter if it adopts your system. Suggest mitigation for these risks. Describe the standard warranty and post implementation support provided for your system and how you provide support.
3. Briefly describe the ways your product/solution is scalable and flexibly configurable. Briefly describe how you verified that scalability by test or real-world experience.

Functional Requirements

Provide an overview of how the software provides the following functionality.

1. Traffic Monitoring and Travel Times
 - *How seamlessly does your ATMS integrate traditional and emerging methods for monitoring traffic flow such as fixed traffic detectors, Bluetooth devices, GPS, and third-party data? What are the key challenges in that integration?*
 - *How are these different sources used by your ATMS to generate travel times?*
 - *What is the process in your ATMS for assigning new travel time segments?*
 - *How do you verify the accuracy of your travel times?*
 - *Can the system provide continuous monitoring of current traffic conditions? How? Is this commonly implemented with your other clients?*
2. Signal System
 - *Do you offer a centralized system software?*
 - *Does your system interact with the signal system to extend or provide early green for transit vehicles (Transit Signal Priority) or other specifically identified vehicles?*

3. GIS and Mapping
 - *What mapping product(s) does your ATMS use? How often do you update your base map and what is the level of effort to do so? Do you keep a record of changes to the road network?*
 - *Does your ATMS incorporate and/or align with your State DOT's linear referencing system and enterprise GIS roadway network?*
 - *Does your ATMS incorporate and/or align with other external roadway network representations such as traffic message channel (TMC) locations?*
4. Inventory Integration
 - *What is the process for integrating, adding and removing new devices to your ATMS?*
 - *Do you keep a record of changes to your device network over time?*
5. Interoperability
 - *What technologies or standard means of communication does the system rely on to connect with the infrastructure along the corridor? What communication capabilities does the system have?*
 - *What is the latency of the communication system?*
 - *What other methods do you use to share, import / export data from your system?*
 - *How does your ATMS incorporate real-time event data from external systems such as AVL?*
 - *Does your ATMS implement data flows between other agency systems for purposes such as Bus Rapid Transit?*
6. Performance, maintenance, data mining, and decision support
 - *Do you generate performance measures from your ATMS data?*
 - *Does your ATMS collect and analyze automated traffic signal performance metrics (ATSPM)?*
 - *Does your ATMS include or integrate with an Archived Data Management System (ADMS)? How is the archived data used?*
 - *Does your ATMS implement automated / pre-programmed event plans? How extensively are they used in practice?*
 - *How will the system provide 24/7 operational availability?*
 - *How do you identify device outages and other issues on your network?*
 - *How do you provide notifications in the event of outages or issues identified in the network?*
 - *How will maintenance issues be resolved within 48 hours in the event of a technological issue with your ATMS?*
7. Additional capabilities
 - *Describe the pedestrian detection system, if applicable.*
 - *Does the system include traveler information messaging? If so, in what way?*
 - *Does your system provide any Disaster Recovery and Continuity of Operations solutions?*
8. For each device type below, list the device manufacturers integrated with the software and the functionality offered within the software.
 - a) Closed Circuit Television (CCTV) cameras
 - b) Dynamic Message Signs
 - c) Vehicle Detection
 - d) CV2X Technology (both LTE and DSRC)

Business Models

1. What is your preferred contract method?
2. Under typical circumstances, who retains the rights to the source code? In what circumstances does that not apply?
3. Do you require clients to enter into any software or server licensing agreements?

Implementation

1. How long would it take to implement the new software?
2. Would you propose a phased approach for implementation?
3. How often do you plan for system upgrades? How do you address bugs in the system?
4. How do you minimize risks and system outage?

Architecture/Hardware

1. How can you provide redundancy in your system to ensure function during potential outages?
2. Can the system be accessed remotely? For which functions? What devices are supported?
3. What security models are in place to prevent intrusion or data breaches?
4. Where is data stored? How can you ensure there is enough storage space?
5. Where is the server located and who manages it?

System Costs

1. What is the initial investment cost of implementing your solution and what is the ongoing operations and maintenance cost? An estimate is sufficient.
2. How many staff person hours are required to maintain the system on an annual basis?

Other Emerging Issues or Technologies

1. Please provide additional functions or information here as desired.
2. What are some technologies you expect to see in the future?
3. Are there any key factors or components we are overlooking and should consider in our evaluation of your solution?

Additional Information – List additional information that is unique to the software or that is not explicitly requested in the questions above.

COMPANY/ORGANIZATION NAME _____

Name the person to contact for questions concerning this proposal.

Name _____ Title _____
Phone () _____ Toll Free Phone () _____
FAX () _____ Email Address _____
Address _____
City _____ State _____ Zip + 4 _____

DESIGNATION OF CONFIDENTIAL AND PROPRIETARY INFORMATION

List below any of the sections of the response deemed to be confidential or proprietary.

Section #	Page #	Topic

Appendix A – Memphis Current Environment

The City of Memphis currently operates three generations of NEMA-based traffic controllers: Siemens ITS m34, m52, and m60 series. The m34 and m52 controllers are legacy controllers, no longer manufactured by Siemens but still operational on many Memphis corridors. The m60 controller is the new standard for the City. This includes new versions of the SEPAC firmware. The firmware runs on the Linux Operating System (OS) and is being tested now for TSP functionality.

The City currently uses Siemens ITS TACTICS central system software. The servers and central switches are located at the City Hall, Traffic Management Center (TMC) and managed by the City's Information Services Division and the Traffic Engineering Department. An additional TMC is located off site at the Traffic Signal Maintenance Department. There are approximately 400 signal controllers currently connected to and monitored by the TACTICS central software.

The City's traffic signal communication network consists of fiber optic cable backbone and distribution networks. The backbone network has hub cabinets placed at strategic locations that are interconnected with the TMC through Layer 3 gigabit Ethernet switches using single mode fiber optic cables. The distribution network branches from the hub cabinets and connects with field devices using single mode fiber, multi-mode fiber, or wireless broadband radios. Only the legacy downtown signal system, approximately 140 signals, still uses multi-mode fiber. The downtown signal system is interconnected via serial communication using proprietary fiber modems in the m34 and m52 controllers.

The City has approximately 30 CCTV cameras at strategic locations for traffic monitoring. The City has 77 BlueToad™ Bluetooth roadside devices for passive continuous travel time and speed data collection. There are 150 radar detection units for traffic counts and spot speed data collection.

Currently the City utilizes video cameras as their standard for vehicle detection at signalized intersections. However, many locations still use in-pavement loop detectors. For railroad and emergency vehicle preemption, Global Traffic Technologies, LLC (GTT) Opticom infrared sensors are used. Some intersections have been upgraded to include models that are GPS enabled.