Request for Statement of Interest (SOI)
Advanced Traffic Management System (ATMS)
Software Development and Integration

The Kane County Division of Transportation (KDOT) is in need of professional services from a qualified traffic system engineering firm. These services are required for the development of an Advanced Traffic Management System (ATMS) and integration to an existing county ATMS field communication network and future Arterial Operations Center.

The attached Preliminary Scope of Services provides in detail the anticipated items that are necessary as part of the requested traffic system engineering services.

The duration of these services will begin in mid May of 2012 and continue concurrently with the construction of the AOC addition, which is anticipated to begin in late 2012 and be completed approximately within eight months.

The Statement of Interest shall be submitted VIA EMAIL no later than 4:00 P.M. on March 9, 2012 and should be addressed to

Thomas F. Szabo, TOPS, TSOS
Traffic Section Manager

Mr. Szabo’s email address is: szabotom@co.kane.il.us.

Statements of Interest received will be used by County engineering staff to develop a short-list of three (3) firms. The County will then submit a Request for Proposal (RFP) and schedule interviews with the short-listed firms.

For more information regarding the SOI, such as content and format of these items, please reference our QBS document found at www.co.kane.il.us/dot/qbs/csp.pdf. Also, the SOI shall be submitted in PDF format viewable with the latest version of Adobe reader. The County will provide you with an e-mail receipt/response verifying that your submittal was received. If you do not receive this verification please contact Mr. Thomas Szabo, Traffic Manager at (630) 208-3139.

If you plan to enter into a joint venture with another firm for this project please note this on your Statement of Interest, including the name of the firm you are entering into a joint venture with.

Short-listed firms will be posted on our website at www.co.kane.il.us/dot. Click on the link labeled “Request for Consultant Services”, then click on the link labeled “Summary Table”.

A Statement of Interest (SOI) received after the above noted deadline will not be used as part of our consultant selection process.
1. PROJECT DESCRIPTION

In response to continued regional growth and the need to optimize the County’s transportation resources, the Kane County Division of Transportation developed an ITS Strategic Plan. This plan defined the following vision statement for the County’s use of ITS technologies and systems: “Deploy advanced transportation technology and operational strategies to maximize the safety and efficiency of the countywide transportation system through enhanced traveler information, interagency cooperation and regional coordination.”

That plan identified four focus areas for the ITS projects within the County:

- Arterial Operations
- Traffic Incident Management
- Maintenance and Construction Management
- Rural Operations

It was determined that these four focus areas could best be supported with the development of an Arterial Operations Center (AOC). Since the initial plan, the County continues to expand the ITS infrastructure and has developed a Concept of Operations. Architectural plans for the AOC are currently being finalized.

The scope of services for this project includes ITS system integration support and a centralized Arterial Traffic Management System (ATMS) to be operated from the County’s future AOC. The selected consultant will provide a complete fully functional ATMS meeting the requirements as described herein. The Consultant shall provide all integration support, hardware and software required to deliver a fully functional ATMS.

2. PROJECT SUMMARY

2.1.1. Project Functionality

From the AOC it is envisioned that the ATMS will be used to support the following activities. The **bolded** below items will be integrated through this project. The other (**italicized**) items listed will become a part of future enhancements.

2.1.2. Traffic Condition Monitoring

- Weather – Through RWIS and/or National Weather Service
- Incidents through Dispatch integration – with Kane County Department of Emergency Communication (KaneComm) & others
- Construction
- Planned events
- Congestion and Events on neighboring routes that impact KDOT roadways
- Recurring/Capacity driven Congestion

2.1.3. Traffic Condition Response

- Use and sharing of CCTV
- Traffic Signal timing updates and responses (manual)
- Use and sharing of Weather (atmospheric and pavement) Information
- Dynamic Message Sign responses – Portable and permanent
- Notifications within KDOT
- Notifications to Stakeholders
2.1.4. System Monitoring and Maintenance

- CCTV performance
- Dynamic Message Signs (DMS)
- Connections to external systems
- Traffic Signal Controller Performance
- ATMS Network
- Detector Performance

2.1.5. County Staff Coordination

- Division of Transportation
  - Maintenance
  - Construction
  - Traffic
  - Information Technologies (IT)
- Department of Emergency Communication (KaneComm)
- Department of Information Technologies (IT)

2. Devices and Quantities

Through this project the selected consultant will be required to provide ATMS application software, hardware and integration/configuration services needed to support the highlighted items above, as described in more detail below. The hardware must be sized to meet all the goals listed above, and the software must be readily expandable to meet the un-highlighted goals in future phases.

Over the next 5 years the county anticipates the following ITS infrastructure and data integration components as the basis of the system design.

<table>
<thead>
<tr>
<th>DEVICES</th>
<th>EXISTING</th>
<th>PLANNED/5 YEAR ANTICIPATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCTV</td>
<td>45</td>
<td>100</td>
</tr>
<tr>
<td>DMS</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Congestion/Travel Times collection devices</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>VDS Types</td>
<td>5</td>
<td>(loops, microwave, video-optical, video thermal, magnetic point detection) 8</td>
</tr>
<tr>
<td>RWIS</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Rail Crossings</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>INTERFACES</td>
<td>EXISTING</td>
<td>PLANNED/5 YEAR ANTICIPATED</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Gateway</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>National Weather Service</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Computer Aided Dispatch</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Kane County Traffic Signals System</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(112 intersections)</td>
<td>(125 intersections)</td>
</tr>
<tr>
<td>CMAP</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>AVL (Vehicles)</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Other Traffic Management Devices including (i.e. Flashing Warning Beacons, Driver Feedback Signs, etc.)</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>Municipal Signal Systems</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>GIS Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historical and static data and maps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. CONSULTANT QUALIFICATION

Interested consultants must be able to demonstrate the following:

- Have designed and deployed arterial based traffic management systems that integrate with a broad range of ITS devices and systems.
- Have extensive system integration and deployment experience including all of the identified areas listed herein.
- Demonstrate sufficient local staff to support this project and future enhancements
- The Project Manager must be located within a 2 hour drive from the Kane County AOC for the life of the project. Key integration technical support must be local of the AOC throughout the deployment, integration, testing and acceptance phase.
- During the maintenance period, the provider must be able to provide on-site support within 4 hours during business hours 7 am to 5 pm, Monday through Friday excluding holidays.
- Shall be able to demonstrate an existing system that already provides and supports the majority of the items listed in bold above and describe as follows.

  Demonstrated capabilities shall be defined as the combination of:
  - System Demonstration (at KDOT discretion)
  - Listing of deployments utilizing the desired and demonstrated functions
  - Client references

The following bullets describe the high level functionality that that County would like the ATMS to provide. Proposals should clearly respond to each item listed below. Your response should describe how your system meets the need, where it is currently deployed, and provide screen captures of your system as appropriate to help describe your solution. Your response should clearly indicate if your proposed solution has been implemented in a live system, or if software development is needed to meet the requirement. Respondents must include client references that can verify the functionality of each live system that is referenced. If any screen shots are “mocked up” to show how the system will function once
the system is modified to meet the requirement, the screen shot must be clearly identified as a ‘Mockup’ versus a live system screen capture.

4. SYSTEM CAPABILITIES

The County desires to deploy an ATMS solution that is based on an existing (in current operation) system that meets the majority of the required functionality without substantial software modifications.

4.1.1. Traffic and Roadway Condition Monitoring

- **Weather – Through RWIS and National Weather Service (NWS)** – The phase 1 deployment will include the integration of RWIS station data into the ATMS. The ATMS shall use the data to color code icons on the system map based on the data collected from the RWIS station. Please provide examples of how you have used RWIS data in your proposed ATMS. Phase 1 deployment will also include the integration of NWS data into the ATMS. Please describe how you have used NWS service within your proposed ATMS. RWIS Connectivity will be over IP cellular or KDOT network. NWS will be obtained over internet.

- **Incidents through Dispatch integration – with KaneComm - Monitoring**, managing and distributing incidents that affect the arterial traffic is an important part of the proposed ATMS. The first phase ATMS deployment will include an interface to the Kane County (KaneComm) Computer Aided Dispatch (CAD) System. Through this interface the ATMS must collect incident detail and automatically create corresponding incidents within the ATMS. The interface will include the two-way sharing of event notes between KaneComm and the AOC. The information collected from the CAD system will include basic incident details such as type and location, and CAD notes. Please describe how and where you have developed CAD interfaces to an arterial based traffic management system. Please describe the functional characteristics of the planned interface. The Connectivity will occur over KDOT network. KaneComm utilizes CAD from New World, version 9.0.

- **Construction** – The Phase 1 deployment will allow the County to enter, monitor and manage maintenance and construction events and traffic operations through the ATMS. Please describe how your ATMS supports the monitoring and management of construction events. Connectivity most likely through manual user entry.

- **Planned events** - Phase 1 deployment must also allow the County to enter, monitor and manage planned events such as the Kane County Fair, Flea Market, and Kane County Cougars games, various large churches, etc. Please describe how your ATMS supports the monitoring and management of planned events. Connectivity most likely through manual user entry.

- **Congestion and Events on routes that impact KDOT roadways** – The Phase 1 deployment will include an interface to the Gateway system managed by IDOT. Through this interface the ATMS will receive event data (incident, construction, maintenance and special events). The ATMS must automatically create corresponding ATMS events for Gateway events that are relevant to Kane County. Please indicate if you have ever deployed an ATMS that interfaces with the Gateway. Also describe how this type of interface works within your proposed system. Connectivity through Gateway over internet.
Recurring/Capacity driven Congestion - Phase 2 deployment of the ATMS will include an interface to the County’s traffic signal system Siemens Tactics to collect system detector data. The ATMS will use the system detector data to derive the approximate level of congestion. The ATMS will use this data to color code segments on the internal ATMS Map and the County’s public web page. In addition, other traffic data sources may be used to supplement the traffic data provide by the signal system detectors. Other detection types may include traditional loop detection, video detection, radar detection, Bluetooth technology, and external third party probe based data. Respondents should demonstrate that they have used signal system detector data to derive levels of congestion on an arterial. Please describe how the data was used. Also demonstrate your ability to use the other data sources listed above to provide congestion levels on an arterial.

4.1.2. Traffic Condition Response

Use and sharing of CCTV - For the initial phase 1 deployment the ATMS must include an integrated CCTV control, viewing and sharing solution. The ATMS must allow both users in the AOC and remote users to control and view CCTV images. The system must support the sharing of video with partnering agencies, including IDOT Gateway, Illinois Tollway, and municipal partners. Please provide an operational and technical description of your ATMS CCTV functionality, features, specifications and licensing terms. Connectivity via KDOT fiber network.

Use and sharing of Weather (atmospheric and pavement) Information – The Phase 1 deployment will include the integration with RWIS stations. The ATMS must be able to generate ATMS events based on the output of RWIS sensors or input from the NWS. ATMS event must include the ability to automatically generate a response based on the characteristics of the weather event. For example, if an RWIS station reports parameters outside of user settable threshold, the ATMS should automatically create an event and a response to that event that utilizes the appropriate devices and outputs that are available.

Dynamic Message Sign (DMS) responses - The Phase 1 deployment must support the control of NTCIP based portable and permanent mounted DMS. The ATMS must support message queuing, spell checking, banned word restrictions, and automated DMS response based on event characteristics. Please describe how your system supports this DMS functionality. Communication with Signs will be accomplished via IP Cellular modem over internet and/or fiber optic communication through the existing ATMS network.

Notifications within KDOT – The Phase 1 ATMS must provide automated notifications to selected KDOT staff. The system must automatically generate email and SMS messages based on device failures, device parameters and event details or severity. Please describe how your system meets this functionality.

Notifications to Stakeholders - The Phase 1 ATMS must also provide automated notifications to external stakeholders through email, SMS, a standards based C2C interface, and a direct feed to the Gateway. The Gateway and C2C interface must provide event details to C2C subscribers in near real time. The ATMS must also automatically generate email and/or SMS messages to selected external entities based on user settable event parameters such as type or severity. Notification capabilities shall include event status, device status and device thresholds (ex VDS speed, travel times,
RWIS pavement temperatures, surface conditions, and wind speed). Please describe how your system meets this requirement.

- **Traffic Signal Timing Updates and Responses** – The Phase 2 deployment will include a two way interface with the County’s centralized traffic signal system. Through this interface, the county would like the ATMS to be able to suggest and implement signal timing changes based on major incidents, events or severe traffic conditions. Responses shall indicate examples of implementations ATMS that interfaces to an external traffic signal systems to monitor performance and implement changes to the signal timing plans.

- **Public Web Pages** – The Phase 2 deployment activities can be expected to provide data and potentially a web site service

### 4.1.3. Systems Monitoring and Maintenance

- **Device Monitoring** - Phase 1 deployment will include the integration of DMS, VDS and CCTV. The ATMS must monitor the status of these devices and indicate the status of the device on the system map based on the color of the icon. Please describe how your system meets this need.

- **Interface Monitoring** - The Phase 1 ATMS deployment must also monitor connections to external systems and provide alarms when the connections are down. Please describe where and how you have implemented this feature on previous ATMS deployments.

- **ATMS Network Monitoring** – Phase 2 deployment may include monitoring of communications system devices such as switches and communications band with monitoring. Please describe where and how you have implemented this feature on previous ATMS deployments.

- **Traffic Signal Controller Performance** – The Phase 2 ATMS deployment will include an interface to the County’s central traffic signal system. Through this interface the ATMS will collect and then display the status if each connected intersection. Please indicate if you have deployed an ATMS that includes an interface to an external signal system and collects signal status information. If so please describe the functionality and provide screen shots that show the signal status in the ATMS.

- **Detector Performance** – Phase 2 ATMS deployment will include the integration of external traffic detection. The ATMS should include failure management strategies that help assess data quality. Please indicate how your proposed ATMS solution has implemented any failure management strategies.

### 4.1.4. KDOT Coordination

For Phase 1, the ATMS must be designed to support the coordination with KDOT maintenance, construction, traffic and (KDOT and Kane County) IT staff. It is important that the ATMS architecture makes it easy to support and manage many remote users. As a result, KDOT would prefer a browser-based thin client ATMS solution. Java, or other thick client based platforms may also be acceptable if the respondent can demonstrate how the end user workstations can be automatically updated and easily managed remotely. Please describe how your system meets the need for easy support for need user clients. Also provide any other details or features of your system that support the desire for coordination with Maintenance, Construction, Traffic and IT staff.
4.1.5. Other General Requirements

Respondents must respond (in their proposal) to each item, acknowledge conformance and provide appropriate detail related to your proposed system.

- Please provide a detailed technical description of your proposed solution, including architecture, software language(s) used, database platform and required hardware.

- The consultant shall provide a complete, integrated, fully functional ATMS that meets all the functional and technical requirements listed in this RFP.

- The County is looking for a complete integrated solution. The use of multiple separate software packages to meet the requirements is not acceptable, unless the Consultant can demonstrate complete integration between the packages.

- The ATMS must include a map interface that supports the display of County ITS assets with status, traffic condition data, and events as well as incorporating map pan, zoom and preset viewing features, focused on Kane County, but including at least Northern Illinois with I-80 as the southern border and state line to the West, North, and East as the constraints.

- With limitations in AOC staffing and given other staffing considerations, it is important that the ATMS provides a level of automation that ensures consistent and timely responses. As such, the ATMS must be capable of generating automated DMS, and ATIS responses based on event details. Responses must be based on templates that can be configured and modified by KDOT.

- The provided solution must include all appropriate licensing for the ATMS and any included COTS packages. Licensing must include support for an open number of users and devices within the County of each device type as well as shared device control with partner agencies. For example, if the license includes DMS control, there shall not be specific constraint to the number of DMS that the County can add to the system within the terms of the license, and the County shall be able to add access to other users such as IDOT, local municipalities and neighboring counties, and other stakeholders. Representative licensing agreement language and costing models shall be provided with the response.

- The Consultants proposal shall include the full deployment of the ATMS and 1 year of post-deployment support and maintenance. During the 1 year post deployment support and maintenance period, the consultant shall be required to maintain the system functionality as deployed at the time of acceptance.

- The Consultant shall provide all required integration with existing ITS systems and devices, system software, hardware, documentation and training. Documentation shall include an Administrators Manual, Users Manual, and a System Configuration document provided at acceptance and update throughout the first year of support.

- The consultant shall provide two four-hour training sessions prior to acceptance of the system.

- The ATMS shall utilize a common off the shelf database for data archiving. The ATMS hardware, software and database shall be sized to support the collection and on-line
archiving supporting 2 years of event data, and up to one month of snapshot CCTV image storage for up to 400 camera images collected at 5-minute intervals.

- The ATMS client shall operate on a PC running Windows 7 and provide for secure access by administrator approved users.

5. PROJECT SCHEDULE AND DURATION

Upon completion of the review of all proposals, KDOT may request select consultants to demonstrate their proposed system. If demonstrations are requested, the consultants will be expected to demonstrate a fully functional system that meets most of the high level requirements identified herein.

Contract duration shall begin upon the receipt of the notice to proceed from the County to the Consultant, which is anticipated to be within the next two months. KDOT’s goal is to have the Phase 1 ATMS fully operational prior to the completion of the AOC. The AOC is expected to be complete in late 2012/early 2013. Respondents should provide a project schedule showing how they will implement the system in a manner that best supports day 1 operations from the AOC.

The initial contract duration is expected to be 36 months and include the deployment of phase 1 and 2 within the first 24 months and one year of support and maintenance. It is anticipated that the agreement will likely include two one-year options, for the County to retain the Consultant for ongoing system support, maintenance or further enhancements as needed.
Acronyms

AOC – Arterial Operations Center
ATMS – Advanced Traffic Management System
AVL – Automated Vehicle Location
CCTV - Closed Circuit Television
CMAP – Chicago Metropolitan Agency for Planning
IDOT – Illinois Department of Transportation
ITS – Intelligent Transportation Systems
DMS – Dynamic Message Sign
RWIS – Roadway Weather Information System
VDS – Vehicle Detection Station
KDOL – Kane County Division of Transportation
PC – Personal Computer
SMS – Short Message Service