Investigating the Potential Benefits of Broadcasted Signal Phase and Timing (SPAT) Data under IntelliDrive\textsuperscript{SM}

December 4, 2009

Issued by
Procurement Services
Charlottesville, Virginia

A VASCUPP Member Institution
I. GENERAL INFORMATION

Request for Proposal (RFP) Name: Investigating the Potential Benefits of Broadcasted Signal Phase and Timing (SPAT) Data under IntelliDriveSM

RFP Number: MW120409A

Issue Date: December 4, 2009

Preproposal Questions: Any questions or necessary additional information concerning this RFP must be sent to the buyer listed below no later than 3:00 p.m. EST on Wednesday, December 16, 2009 in order to guarantee a timely response prior to the proposal due date.

Proposal Due Date: 3:00 p.m. EST on Friday, January 8, 2010. Proposals must be sent to the buyer via email (Word document preferred) using the contact information in the box below. The University of Virginia (the “University”) reserves the right to reject proposals received after the stated due date and time.

Expected Award Date: Wednesday, February 3, 2010

Term of Agreement: The term of any resulting Agreement is expected to be for twelve months.

REFER ALL QUESTIONS TO THE ISSUING OFFICE:

UNIVERSITY OF VIRGINIA
Department of Procurement Services
Attention: Michael Warlick
Phone: 434-924-8918
Fax: 434-982-2690
Email: warlick@virginia.edu

NOTE: During the RFP process, all communication must be directed to the buyer listed above, with the exception of issues directly related to SWAM business and SWAM subcontracting opportunities. Such SWAM issues may be alternately directed to Bill Cooper, the University’s Director of Supplier Diversity, at (434) 924-7174 or SWAM@virginia.edu. Any failure to adhere to this requirement may result in the rejection of the firm’s proposal or cancellation of the RFP.
This Request for Proposal (RFP) has been posted on Procurement Services web site for your convenience. Addenda and attachments are posted if issued. The RFP can be downloaded at this web site: http://www.procurement.virginia.edu/pagerfp. It is the firm’s responsibility to ensure that the latest version of the entire RFP and related links are reviewed prior to submission of a proposal. We encourage you to check the web site frequently for any changes prior to the due date. Call (434) 924-1346 if you have trouble accessing the RFP from the web. For questions about the content of the RFP, contact the buyer listed above. Additional information can be found on Procurement Services web site: http://www.procurement.virginia.edu.

For ease of reference, each firm or individual receiving this RFP is referred to as a “firm” and the firm or individual selected to provide services for the University is referred to as the “Selected Firm”. This RFP states the instructions for submitting proposals and the procedure and criteria by which a firm may be selected.

II. BACKGROUND INFORMATION

IntelliDrive℠ Pooled Fund Study
The project detailed in this RFP is intended to investigate the potential benefits of broadcasted Signal Phase and Timing (SPAT) data, one of the infrastructure-oriented IntelliDrive℠ applications as part of the Pooled Fund Study entitled “Program to Support the Development and Deployment of Infrastructure IntelliDrive℠ Applications.” This pooled fund study was created by a group of state transportation agencies and the Federal Highway Administration (FHWA), with the Virginia Department of Transportation (VDOT) serving as the lead agency. The University of Virginia Center for Transportation Studies is supporting VDOT on the pooled fund study, serving as the technical and administrative lead for the effort. For more information about IntelliDrive, please see http://www.intellidriveusa.org/. For more information about the pooled fund study, please see http://www.pooledfund.org/projectdetails.asp?id=431&status=4.

The objectives of the pooled fund study are:
- To support states in preparing for the deployment of IntelliDrive℠ infrastructure, and
- To provide support for the IntelliDrive℠ Deployment Planning being led by the American Association of State Highway and Transportation Officials (AASHTO).

As such, the focus of this program is on prototyping and testing practical infrastructure oriented applications that are readily deployable, rather than developing theoretical applications. Supporting deployment is the central focus of the entire program. Of particular importance is the estimation of benefits that the applications will provide.
**Background**

The experience of a traveler on an arterial is highly variable due to signalized intersections. For example, if a traveler encounters consecutive green phases on a given route, travel time will be minimized. On the other hand, a given vehicle that continuously encounters red phases at the intersections will experience significantly higher travel time. Moreover, the latter vehicle will have to make frequent stops and, as a result, uses more fuel and produces more emissions.

There exists potential to improve the transportation system efficiency, safety, and effectiveness on urban arterials by providing Signal Phase and Timing (SPAT) data. With SPAT data, a driver would be able to adjust (and maintain) his/her speed – possibly with the help from an in-vehicle application – so that he/she can progress through intersections rather than having to change his speed frequently, i.e. accelerating in the middle of links, decelerating before the intersection, and accelerating again after the intersection. This may result in “eco-drive” type benefits such as less acceleration/deceleration which will culminate into less fuel consumption as well as less vehicle emissions. There are also likely safety benefits that travelers may realize given the availability of SPAT data.

Considerable interest is growing in beginning the deployment of the infrastructure component of IntelliDrive℠ by integrating Dedicated Short Range Communications (DSRC) in traffic controllers (http://www.intellidriveusa.org/library/rept-dsrc-poc.php). This would provide the capability to quickly begin to broadcast SPAT data for use by IntelliDrive℠ equipped vehicles. Hence an important need is to develop a concept of operations and to conduct high-level benefits assessment of applications that make use of SPAT data.

**III. SCOPE OF SERVICES**

The University seeks a qualified organization (the “Selected Firm”) to investigate the potential benefits of broadcasted Signal Phase and Timing (SPAT) data under IntelliDrive℠ (the “Services”).

**A. Goal and Objectives**

The goal of this project is to investigate the potential benefits of using broadcasted SPAT data under an IntelliDrive℠ environment.

In order to accomplish the goal, several objectives identified are:

- To identify the use cases of SPAT data,
- To develop concepts of operations for each of the identified use cases, and
- To conduct high level benefits assessment
B. Tasks

Basic tasks to be conducted in this project include, but are not limited to, the following:

1. Review of SPAT data
   • In this task, an extensive review of SPAT data shall be conducted. Detailed items to be addressed include, but are not limited to, what kinds of SPAT data are available in each time step, how often this data is updated, and if any restrictions exist in broadcasting this data.
   • Also, the various modes of signal operations, i.e. pre-timed, actuated, adaptive, shall be considered.

2. Identification of use cases of SPAT data
   • A list of possible applications utilizing SPAT data shall be prepared in this task.
   • Various types of vehicles to be considered for this purpose include, but are not limited to, light passenger vehicles, commercial vehicles, emergency vehicles, transit and other heavy vehicles. However, focus should be given to heavy vehicles that are likely to receive more benefits by utilizing SPAT data compared to light passenger vehicles.

3. Development of concepts of operations for the identified applications
   • In this task, concepts of operations for each of the identified applications shall be developed. Critical elements to be included are scope, system overview, operational environment, supporting environment, and operational scenarios.

4. High-level benefits assessment
   • Based on the concepts of operations developed in the previous task, this task shall conduct high-level benefits assessment for each use case. A list of benefit items shall be identified first. Then high-level benefits for each item shall be quantified.

5. Preparation of recommendations on developing/modifying signal controllers
   • Finally, in order to facilitate the deployment of SPAT data applications, recommendations on the development of new signal controllers and/or necessary modifications for the existing signal controllers shall be provided.

C. Project Coordination

The Selected Firm must coordinate this work with the team from the University of Virginia Center for Transportation Studies conducting the project entitled “IntelliDriveSM Traffic Signal Control Algorithms”, given that both projects relate directly to IntelliDriveSM and traffic signal control.
IV. CONTENTS OF THE PROPOSAL

Proposals are to provide a concise description of the organization’s research plan and capabilities to satisfy the requirements of the RFP. Emphasis will be on completeness and clarity of content. The proposal should be kept to 20 pages or less not including a title page and qualifications of project participants. Firms will provide the following information:

A. A detailed description and the full plan to accomplish the Services proposed.

B. A brief history of the firm and its experience, qualifications and success in providing the type of service requested.

C. The firm’s proposed price / fee for providing the Services.

D. The firm’s Small, Woman-owned and Minority-owned (SWAM) businesses status and/or how the firm intends to utilize SWAM firms in regards to this particular procurement.

NOTE: Virginia Freedom of Information Act
Except as provided below, once an award is announced, all proposals submitted in response to this RFP will be open to the inspection of any citizen, or any interested person, firm or corporation, in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by a firm as part of its proposal will not be subject to public disclosure under the Virginia Freedom of Information Act; however, the firm must invoke the protections of this section prior to or upon submission of its proposal, and must identify the specific data or other materials to be protected and state the reasons why protection is necessary. A firm may not request that its entire proposal be treated as a trade secret or proprietary information; nor may a firm request that its pricing be treated as a trade secret or proprietary information, or otherwise be deemed confidential.
V. BASIS OF SELECTION

Proposals will be evaluated based upon the overall merits/value of the proposal including, but not limited to, price. The University will evaluate proposals, and if a firm is to be selected, select the firm on the basis of:

A. The firm’s technical plan to provide the University with the products as described in the Scope of Services section;

B. The firm’s experience in providing Services similar to those described in this RFP;

C. The firm’s price/fee for providing the Services; and

D. The firm’s Small, Woman-owned and Minority-owned (SWAM) businesses status and/or the firm’s plan for utilization of SWAM businesses. For more information about SWAM and the University’s SWAM plan, please see the letter at Attachment 1 and refer to the following site: www.procurement.virginia.edu/main/publicpostings/rfp/SWAMplan.pdf.

Note 1: A 10% minimum weight will be given to this criterion in evaluating proposals.

Note 2: Any questions related to SWAM business and SWAM subcontracting opportunities can be directed to Bill Cooper, the University’s Director of Supplier Diversity, at (434) 924-7174 or SWAM@virginia.edu.

VI. TERMS AND CONDITIONS

This solicitation and any subsequent award is subject to:

A. The Selected Firm registering as a vendor with the University of Virginia: https://www.procurement.virginia.edu/forms/USVendorRegForm.html

B. The Selected Firm registering and accepting eVA Terms and Conditions prior to award: http://www.eva.virginia.gov/


**Note:** Unless a firm expressly and specifically states its exception to any of the Preferred Provisions in its written proposal, then the proposal from the firm will automatically be deemed to include those Provisions.

E. The University's Procedure for Resolution of Contractual Claims:
Greetings:

The quality of service the University of Virginia is able to deliver to its customers is directly related to the excellent support we receive from you and many other outstanding suppliers of goods and services. Without you, we would not be able to fulfill our educational, health care and research missions. An important part of our procurement program involves our commitment to doing business with small, women-and minority-owned (SWAM) businesses. As one of our most important vendors, we look to you to help us achieve this objective.

We conduct substantial business with small firms. We have been less effective in securing long-term business relationships with minority-and women-owned businesses. We are determined to improve our record.

I seek your assistance in two areas. First, to the extent practical, I ask that you involve small, women-and minority-owned businesses in the delivery of services you provide to UVa. Second, I seek your help in reporting your results through our quarterly subcontracting reports. The terms and conditions previously provided to your organization outlined this process.

This effort is important to us. We depend on you in so many ways – this is another way that we can partner with your company to make things better.

Sincerely,

Leonard W. Sandridge
Executive Vice President and Chief Operating Officer

LWS:dr

Madison Hall · Post Office Box 400228 · Charlottesville, Virginia 22904-4228