Multi-Modal Intelligent Traffic Signal System

Development of Concept of Operations, System Requirements, System Design and a Test Plan

November 10, 2011

Issued by
The University of Virginia
Procurement and Supplier Diversity Services
Charlottesville, Virginia

A VASCUPP Member Institution
I. GENERAL INFORMATION

Request for Proposal (RFP) Name: Multi-Modal Intelligent Traffic Signal System

RFP Number: #MW111011

Issue Date: November 10, 2011


Preproposal Questions: Any questions or necessary additional information concerning this RFP must be sent to the buyer listed below no later than 11:00 a.m. EST on Wednesday, November 16, 2011 in order to guarantee a timely response prior to the proposal due date.

Proposal Due Date: December 7, 2011 (Wednesday) by 3:00 p.m. EST. Proposals must be sent to the buyer via email using the contact information in the box below. The proposal should be formatted as a Microsoft Word document. The University of Virginia (the “University”) may, at its discretion, accept late proposals if it is determined to be in the best interest of the University.

Any trade secrets or proprietary information submitted with a proposal for which the firm seeks protection from public disclosure must be clearly identified by the specific page and section number in the proposal and accompanied by a suitable justification requesting non-disclosure. The Virginia Freedom of Information Act applies.

Negotiations: Negotiations, if needed, are tentatively scheduled for the week of January 16, 2012.

Expected Award Date: January 31, 2012

This RFP is part of a competitive procurement process which helps to serve the University's best interests. It also provides firms with a fair opportunity for their services to be considered. The process of competitive negotiation being used in this case should not be confused with the different process of competitive sealed bidding. The latter process is usually used where the goods or services being procured can be described precisely and price is generally the determinative factor. With competitive negotiation, however, price is not required to be the determinative factor, although it may be, and the University has the flexibility it needs to negotiate with firms to arrive at a mutually agreeable relationship.

The RFP has been posted on Procurement and Supplier Diversity Services web site and can be downloaded at [http://www.procurement.virginia.edu/pagerfp](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. Addenda and attachments are posted if issued. 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 below. Additional information can be found on Procurement and Supplier Diversity Services web site at [http://www.procurement.virginia.edu](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.

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**REFER ALL QUESTIONS TO THE ISSUING OFFICE:**

UNIVERSITY OF VIRGINIA  
Department of Procurement and Supplier Diversity Services  
1001 North Emmet St, Carruthers Hall  
P.O. Box 400202  
Charlottesville, VA 22904-4202  
Buyer: Michael Warlick  
Phone: 434-924-8918  
Fax: 434-982-2690  
Email: warlick@virginia.edu

NOTE 1: Please provide a copy of your proposal to Becky Sims at rgs2t@virginia.edu

NOTE 2: 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 Shannon Wampler, the University’s Senior Supplier Diversity Coordinator, at (434) 924-3173 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.

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**II. BACKGROUND INFORMATION**

A. Cooperative Transportation System Pooled Fund Study

The project detailed in this RFP is to be conducted as part of the Cooperative Transportation System Pooled Fund Study (CTS PFS) entitled “Program to Support the Development and Deployment of Cooperative Transportation System Applications.” The CTS PFS was created by a group of state and local transportation agencies and the Federal Highway Administration (FHWA), with the Virginia Department of Transportation (VDOT) serving as the lead agency. The University’s Center for Transportation Studies is supporting VDOT on the pooled fund study, serving as the technical and administrative lead for the effort. The focus of the CTS PFS is on prototyping and testing practical infrastructure oriented applications that lead to deployment rather than developing theoretical applications. For more information about the CTS PFS and the scope of the project detailed in this RFP, please see [http://cts.virginia.edu/CTSPFS_1.html](http://cts.virginia.edu/CTSPFS_1.html).
The United States Department of Transportation (US DOT) has recently identified ten high-priority mobility applications under the Dynamic Mobility Applications (DMA) program for the connected vehicle environment where high-fidelity data from vehicles, infrastructure, pedestrians, etc. can be shared through wireless communications (Further information is available at [http://www.its.dot.gov/dma/index.htm](http://www.its.dot.gov/dma/index.htm)). Among the ten identified high-priority applications, three applications (Intelligent Traffic Signal System, Transit Signal Priority, and Mobile Accessible Pedestrian Signal System) are related to transformative traffic signal operations. Since one of the major focus of the CTS PFS members – who are the actual owners and operators of transportation infrastructure – lies in traffic signal related applications, the CTS PFS team is leading the project described in this RFP, entitled “Multi-Modal Intelligent Traffic Signal System” in cooperation with US DOT’s Dynamic Mobility Applications Program.

B. Multi-Modal Intelligent Traffic Signal System
This project aims to conduct the foundational analysis and design necessary to prepare for the development and field testing/demonstration of a Multi-Modal Intelligent Traffic Signal System, which is defined as a comprehensive traffic signal system taking advantage of the connected vehicle environment for multiple transportation modes, including general passenger vehicles, transit, emergency vehicles, freight vehicles, and pedestrians. The Multi-Modal Intelligent Traffic Signal System incorporates, at a minimum, the arterial traffic signal applications identified through the DMA template process of US DOT. Brief descriptions of these applications, modified from the DMA applications description document, are provided below:

1. Intelligent Traffic Signal System (ISIG):
   This application will make use of high-fidelity data collected from vehicles through wireless communications to accurately predict lane-specific platoon flow, platoon size, and other driving characteristics. The proposed application with high-fidelity data, in real-time has the potential to transform how traffic signal systems are designed, implemented and monitored. Developing new systems that use data via V2V and V2I wireless communications to control signals in order to maximize flows in real-time can significantly improve traffic conditions. The ISIG application also plays the role of an over-arching system optimization application, accommodating transit or freight signal priority, preemption, and pedestrian movements to maximize overall arterial network performance. In addition, the interface (or data flow) between arterial signals and ramp meters (essentially traffic signals installed on freeway on-ramps) must also be considered (note, however, that the development of ramp metering algorithms — the metering rates to optimize freeway flow — is not included in the scope of this application).

2. Transit Signal Priority (TSP):
   Transit Signal Priority strategy is suggested to allow transit agencies to manage bus service better by adding the capability to grant buses priority based on a number of different factors. The proposed application provides a mechanism by which transit vehicles equipped with on-board equipment can communicate information such as passenger count data, service type, scheduled and actual arrival time and heading information to roadside equipment via DSRC.
3. Mobile Accessible Pedestrian Signal System (PED-SIG):
This application will integrate information from roadside or intersection sensors
and new forms of data from wirelessly connected pedestrian-carried mobile
devices, and then wirelessly communicate with the traffic signal controller to
obtain real-time Signal Phase and Timing (SPAT) information, which will then be
used to inform the visually impaired pedestrian as to when to cross and how to
remain aligned with the crosswalk. The application will allow an “automated
pedestrian call” to be sent to the traffic controller from the smart phone of
registered blind users after confirming the direction and orientation of the
roadway that the pedestrian is intending to cross. To the extent that these new
data are useful, this application may also support the accommodation of safe and
efficient pedestrian movement of a more general nature.

The proposed application will be functionally similar to current signal preemption
systems but may be viewed as a replacement of optical, 900 MHz, and other
technologies used for signal preemption with integrated V2V and V2I
communication systems. The application would adjust preemption and signal
recovery cycles to account for non-linear effects of multiple emergency responses
through the same traffic network.

5. Freight Signal Priority (FSP):
Freight Signal Priority concept provides signal priority along an arterial corridor
near a freight facility based upon current and projected freight movements into
and out of the freight facility. The goal of freight signal priority application is to
reduce delays and increase travel time reliability for freight traffic, and enhance
safety at intersections around the freight facility.

Given that the final goal of the CTS PFS team is to field-test/demonstrate a Multi-Modal
Intelligent Traffic Signal System, this project, as a first step, will develop a concept of
operations and system requirements in general and include a conceptual system design
and a test plan for the selected locations. Any potential follow-on project is anticipated to
require the actual design-build of a Multi-Modal Intelligent Traffic Signal System which
may be procured through a separate RFP process.

III. SCOPE OF SERVICES

The University seeks a qualified organization (the “Selected Firm”) to conduct foundational
analysis and design to prepare for a field deployment of the Multi-Modal Intelligent Traffic
Signal System (the “Services”).

A. Objectives
The objectives of this project are:

• To develop a concept of operations, systems requirements and system design for a
  comprehensive traffic signal system that services multiple modes of
  transportation, including general vehicles, transit, emergency vehicles, freight
  fleets and pedestrians; and
• To prepare for field testing/demonstration of the developed Multi-Modal Intelligent Traffic Signal System.

The deliverables created in this project will support the full development of a deployable Multi-Modal Intelligent Traffic Signal System. The University expects the Selected Firm to apply sound systems engineering principles in conducting this work.

B. Deployment Sites

The Pooled Fund Study members have selected the following two locations for system deployment and field testing of the Multi-Modal Intelligent Traffic Signal System:

• California Connected Vehicle Integrated Test Bed; and
• Maricopa County (in Arizona) Connected Vehicle Integrated Test Bed.

This system deployment and field testing is not part of this project scope of work. The purpose of identifying the deployment sites is to assist the Selected Firm in preparing the System Design and Deployment and Field Test as part of Tasks 4 and 5.

The test bed in California has one corridor with ten Dedicated Short Range Communications (DSRC) equipped locations instrumented in compliance with the latest national standards (Kapsch MCNU units). The test bed in Maricopa County, AZ is a corridor with six locations instrumented with open source architecture and applications/hardware using the latest national standards (NTCIP 1202, 1211, IEEE 802.11p, 1609 and SAE J2735, NEMA TS2). This pair of corridors would enable interoperable corridor-type applications to be tested in different environmental settings and using different traffic control features. In addition, California Department of Transportation (Caltrans) and Maricopa County Department of Transportation (MCDOT) will provide vehicles including passenger cars, emergency response vehicles, transit buses, and commercial trucks.

A brief description of these locations is provided in Attachment 4, Deployment Sites for Multi-Modal Intelligent Traffic Signal System. More detailed information (e.g. a detailed geometry, an inventory of existing field equipment, current operations conditions, etc.) will be available to the Selected Firm while the project is actually being conducted. Finally, the Selected Firm will also have access to agency personnel responsible for maintaining and operating the signal system at the location.

C. Tasks

This project will consist of the following tasks:

Task 1: Project and Systems Engineering Management
Task 2: Develop Concept of Operations
Task 3: Develop System Requirements
Task 4: Conduct System Design
Task 5: Prepare a Deployment and Field Test Plan
1. Task 1 – Project and Systems Engineering Management

The purpose of this task is for the Selected Firm to provide project management support for all tasks described in this scope of services. The followings are the specific task items to be conducted:

a. Participate in a project kick-off meeting within two weeks of contract award.

b. Based on discussions at the kick-off meeting, develop a Project Management Plan (PMP) that guides the execution of Work Task Activities identified in this scope of services. The PMP will include plans for: Scope Management, Cost Management, Quality Management, Human Resources Management, Communications Management, and Risk Management.

c. Prepare a detailed project schedule that lists all planned tasks and milestones for the project and submit an electronic project file in the format of Microsoft Project 2007.

d. Once the PMP and project schedule are ready, schedule a coordination meeting with the Pooled Fund Study members to review each document and ensure consensus on the overall approach for project execution. The Pooled Fund Study team will issue an authorization to proceed with the activities described in the approved PMP and project schedule.

e. Participate in a quarterly conference call at the end of each quarter from the contract award. Also submit a meeting minute for these calls.

f. Submit a monthly progress report by the 15th of each month.

g. Attend team meetings or teleconferences as requested; prepare a report on progress, schedule, scope issues, budget, and results of tasks at team meetings; and prepare team meeting summaries, which will, at a minimum, track the status of action items.

h. Attend a project closeout meeting in the last week of the project. At this meeting, present a summary of work performed under each task, the status of each deliverable, and identify pending or incomplete deliverables, and the total funds expended.

Deliverables:
- Briefing Materials, Kick-Off Meeting
- Draft PMP, Final PMP
- Draft Project Schedule, Final Project Schedule (Microsoft Project 2007 Format)
- Quarterly Update Conference Calls and Minutes
- Monthly Progress Reports
- Team Meetings Summaries
- Briefing Materials, Closeout Meeting
2. Task 2 – Develop Concept of Operations (ConOps)
   
   a. The purpose of this task is for the Selected Firm to develop a concept for the Multi-Modal Intelligent Traffic Signal System and produce a Concept of Operations (ConOps) document that follows the guidance in IEEE Standard 1362-1998, *IEEE Guide for Information Technology – System Definition – Concept of Operations (ConOps) Document*. The recommended approach to developing the concept is outlined below; however, the firms may propose a deviation from this approach and provide justification for the deviation in their proposal.

   The Selected Firm will apply sound Systems Engineering principles in conducting this project. This requires that the Selected Firm have the ability to fully understand and foresee the impact of wireless connectivity in surface transportation on the Multi-Modal Intelligent Traffic Signal System, and convey the concept to stakeholders who will develop and refine the applications or implement operational systems based on the concept. The ConOps will define what transformative goals might be realized with the Multi-Modal Intelligent Traffic Signal System, and the corresponding qualitative and quantitative measures for estimating the performance of the application in achieving these transformative goals. The ConOps will specifically consider operational scenarios that allow for the logical evolution from current practice to the end-state condition proposed for the Multi-Modal Intelligent Traffic Signal System.

   b. Subtask 2.1 – Assessment of Relevant Prior and Ongoing Research

   The purpose of this subtask is for the Selected Firm to gain a clear understanding of relevant research in the area of Multi-Modal Intelligent Traffic Signal Systems to determine how these might impact the development and eventual deployment of a Multi-Modal Intelligent Traffic Signal System. The Selected Firm will review existing documentation on prior and ongoing research in the area of Multi-Modal Intelligent Traffic Signal Systems, with special focus on innovative research that proposes the use of wireless connectivity between vehicles, roadside/wayside infrastructure, and travelers’ communication devices. In particular, the CTS PFS expects that the Selected Firm will fully utilize the results from two Year One projects of the PFS, i.e. “IntelliDrive Traffic Signal Algorithms” and “Investigating the Potential Benefits of Broadcasted Signal Phase and Timing Data under IntelliDrive” to reduce the level of effort necessary on this task. Final reports of these projects are available from the CTS PFS website at [http://cts.virginia.edu/CTSPFS_1.html](http://cts.virginia.edu/CTSPFS_1.html).

   **Deliverables:**
   
   - Outline of Draft Report on Assessment of Relevant Prior and Ongoing Research
• Draft Report on Assessment of Relevant Prior and Ongoing Research
• Briefing on Assessment of Relevant Prior and Ongoing Research
• Final Report on Assessment of Relevant Prior and Ongoing Research

c. Subtask 2.2 – Solicit Stakeholder Input on Transformative Goals, Performance Measures and User Needs

The purpose of this subtask is for the Selected Firm to solicit stakeholder input in identifying transformative benefits or goals for the application, corresponding performance measures, and user needs for the application, which will be used in the development of the Multi-Modal Intelligent Traffic Signal System ConOps and System Requirements. The Selected Firm will schedule and conduct one or more meetings for key stakeholders from academia, and public and private sectors. Note that the Selected Firm is expected to work especially closely with PFS representatives to ensure full input from system operators. Stakeholder input will be solicited from a broad set of modes and system users, including but not limited to state and local departments of transportation, transit agencies, freight stakeholders, and organizations representing pedestrian and non-motorized forms of travel. Also the stakeholders will represent the: the Multi-Modal Intelligent Traffic Signal System experts in the research and developer community; the Multi-Modal Intelligent Traffic Signal System operators, managers, and users; original equipment manufacturers (OEMs); suppliers; and other relevant users.

Deliverables:
• Presentation Materials for Stakeholder Meetings.
• Technical Memorandum from Each Meeting.

d. Subtask 2.3 – Develop Concept of Operations (ConOps)

The purpose of this subtask is for the Selected Firm to develop a ConOps document that incorporates the findings from assessment of relevant prior and ongoing research (Task 2.1) as well as stakeholder input received on transformative goals, performance measures and user needs for the Multi-Modal Intelligent Traffic Signal System (Task 2.2). The Selected Firm will follow the guidelines for format and content in IEEE Standard 1362-1998 to develop a ConOps that describes the Multi-Modal Intelligent Traffic Signal System characteristics from the operators’ perspective. The ConOps will provide system concepts, operational scenarios, and the rationale for key concept decisions. The ConOps will identify primary
and secondary impacts of the application, and provide qualitative and quantitative targets for transformative impacts that researchers might use as guidance when developing/refining the application.

The Selected Firm will deliver a draft version of the ConOps for review. The Selected Firm will revise the draft ConOps based on comments from the CTS PFS members within two weeks after receipt of comments. The Selected Firm will schedule and conduct, within two weeks after revising the draft, a face-to-face review (“walkthrough” – see IEEE Std. 1028 for this and all subsequent reviews) of the revised ConOps with the Pooled Fund Study members and key stakeholders to obtain comments on the ConOps from a functional, technical, management, and implementation perspective. This face-to-face review may be replaced with a teleconference upon approval from the Pooled Fund Study team. The Selected Firm will revise the updated ConOps based on comments received at the walkthrough, and provide a final version two weeks after the walkthrough. The Selected Firm will also provide a walkthrough comment resolution report containing a description of the Selected Firm’s resolution of all comments received. The Pooled Fund Study team must accept and approve all comment resolutions before the revised report is considered final.

**Deliverables:**
- Draft Concept of Operations (ConOps) for the Multi-Modal Intelligent Traffic Signal System.
- Revised Concept of Operations (ConOps) for the Multi-Modal Intelligent Traffic Signal System.
- Walkthrough Workbooks for Walkthrough Review with Stakeholders.
- Walkthrough Comment Resolution Report.
- Final Concept of Operations (ConOps) for Multi-Modal Intelligent Traffic Signal System.

3. **Task 3 – Develop System Requirements (SyRS)**
   a. The purpose of this task is for the Selected Firm to develop system requirements (SyRS) for the Multi-Modal Intelligent Traffic Signal System. The SyRS document will also include the qualitative and quantitative performance targets for each requirement that must be accomplished to achieve the transformative goals identified in the ConOps.
   b. The Selected Firm will develop the SyRS document based on the PFS-approved ConOps (Task 2.3), following the guidance in IEEE Standard 1233-1998, *IEEE Guide for Developing System Requirements Specifications*. The system requirements will meet the test of being “well-formed requirements,” and will have a “Needs to Requirements” matrix, tracing requirements back to needs defined in the ConOps.
c. The Selected Firm will deliver a draft version of the systems requirements for review. The Selected Firm will revise the system requirements based on comments from the Pooled Fund Study team within two weeks after receipt of comments. The Selected Firm will schedule and conduct, within two weeks after revising the draft, a face-to-face review (“walkthrough” – see IEEE Std. 1028) of the revised system requirements with the Pooled Fund Study members and key stakeholders to obtain comments. This face-to-face review may be replaced with a teleconference upon approval from the Pooled Fund Study team. The Selected Firm will ensure that all resolutions to walkthrough comments have been approved by the Pooled Fund Study team prior to producing final system requirements.

Deliverables:
- Draft System Requirements for the Multi-Modal Intelligent Traffic Signal System.
- Revised System Requirements for the Multi-Modal Intelligent Traffic Signal System.
- Walkthrough Workbooks for Walkthrough Review with Stakeholders
- Walkthrough Comment Resolution Report.
- Final System Requirements for the Multi-Modal Intelligent Traffic Signal System.

4. Task 4 – Conduct System Design

The purpose of this task is to create the Multi-Modal Intelligent Traffic Signal System design for the selected location (i.e. test beds in California and Maricopa County, Arizona) based on the ConOps and the selected subset of functions detailed in the system requirements. In the design, subsystems of the system are identified and decomposed further into components. Requirements are allocated to the system components, and interfaces are specified in detail. Detailed specifications are created for the hardware and software components to be developed. In addition, requirements in terms of geometry, e.g. the location of a Road Side Equipment (RSE), will be addressed in system design. Some of the key activities carried out are:

a. Determine key applications and/or subsystems to be included in the System Design.
b. Develop and evaluate alternative designs.
c. Analyze and allocate requirements.
d. Document interfaces and identify security issues and standards.

Deliverables:
5. **Task 5 – Prepare a Deployment and Field Test Plan**

The purpose of this task is to prepare a plan for the deployment and field testing of the Multi-Modal Intelligent Traffic Signal System for the selected locations, i.e. test beds in California and Maricopa County, Arizona). This plan should include, at a minimum:

- a. A proposed deployment schedule with major action items relative to an unknown start date,
- b. A planning level cost estimate for the field test, and
- c. Evaluation goals.

**Deliverables:**
- Draft Deployment and Field Test Plan
- Final Deployment and Field Test Plan

**D. Schedule for Deliverables**

The Selected Firm will submit a proposed schedule with major milestones for deliverables. The University’s proposed timeframe is outlined in the table below:

<table>
<thead>
<tr>
<th>TASK NAME AND DELIVERABLE</th>
<th>DUE DATE</th>
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</thead>
<tbody>
<tr>
<td><strong>Task 1 – Project Management and Systems Engineering Management</strong></td>
<td></td>
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<tr>
<td>Briefing Materials, Kick-Off Meeting</td>
<td>Two weeks from Contract Award</td>
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<tr>
<td>Draft PMP, Final PMP</td>
<td>Four weeks from Contract Award</td>
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<tr>
<td>Draft Project Schedule, Final Project Schedule</td>
<td>Four weeks from Contract Award</td>
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<tr>
<td>Quarterly Update Conference Calls and Minutes</td>
<td>Every quarter from Contract Award</td>
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<tr>
<td>Monthly Progress Reports</td>
<td>Every month from Contract Award</td>
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<tr>
<td>Team Meetings Summaries</td>
<td>Within 1 week after each meeting</td>
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<tr>
<td>Briefing Materials, Closeout Meeting</td>
<td>52 weeks from Contract Award</td>
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<tr>
<td><strong>Subtask 2.1 – Assessment of Relevant Prior and Ongoing Research</strong></td>
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<tr>
<td>Outline of Draft Report on Assessment of Relevant Research</td>
<td>Four weeks from Contract Award</td>
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<td>Draft Report on Assessment of Relevant Research</td>
<td>Six weeks from Contract Award</td>
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<tr>
<td>Briefing on Assessment of Relevant Research</td>
<td>Six weeks from Contract Award</td>
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<tr>
<td>Final Report on Assessment of Relevant Research</td>
<td>Eight weeks from Contract Award</td>
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<td><strong>Subtask 2.2 – Solicit Stakeholder Input</strong></td>
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<tr>
<td>Presentation Materials for Stakeholder Meetings</td>
<td>Eight weeks from Contract Award</td>
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<td>Technical Memorandum from Each Meeting</td>
<td>10 weeks from Contract Award</td>
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<tr>
<td>Draft Report on Stakeholder Input</td>
<td>12 weeks from Contract Award</td>
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<tr>
<td>Final Report on Stakeholder Input</td>
<td>14 weeks from Contract Award</td>
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<td><strong>Subtask 2.3 – Develop Concept of Operations (ConOps)</strong></td>
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<tr>
<td>Draft Concept of Operations (ConOps)</td>
<td>16 weeks from Contract Award</td>
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<tr>
<td>Revised Concept of Operations (ConOps)</td>
<td>18 weeks from Contract Award</td>
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<tr>
<td>Walkthrough Workbooks for Walkthrough Review</td>
<td>19 weeks from Contract Award</td>
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<td>Walkthrough Comment Resolution Report</td>
<td>22 weeks from Contract Award</td>
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<tr>
<td>Final Concept of Operations (ConOps)</td>
<td>24 weeks from Contract Award</td>
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<tr>
<td><strong>Task 3 – Develop System Requirements</strong></td>
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<tr>
<td>Draft System Requirements</td>
<td>28 weeks from Contract Award</td>
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<tr>
<td>Revised System Requirements</td>
<td>32 weeks from Contract Award</td>
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</table>
Walkthrough Workbooks for Walkthrough Review | 34 weeks from Contract Award  
Walkthrough Comment Resolution Report | 38 weeks from Contract Award  
Final System Requirements | 40 weeks from Contract Award

### Task 4 – Conduct System Design

- Draft System Design | 44 weeks from Contract Award  
- Final System Design | 46 weeks from Contract Award

### Task 5 – Prepare a Deployment and Field Test Plan

- Draft Deployment and Field Test Plan | 50 weeks from Contract Award  
- Final Deployment and Field Test Plan | 52 weeks from Contract Award

## IV. CONTENTS OF PROPOSAL

Proposals will be prepared simply and economically, providing a straightforward, concise description of capabilities to satisfy the requirements of the RFP. Emphasis will be on completeness and clarity of content, and will be organized in the order in which the requirements are presented in the RFP.

Unnecessarily elaborate brochures and other presentations beyond that sufficient to present a complete and effective proposal are not desired and may be construed as an indication of the firms’ lack of cost consciousness. Elaborate artwork, expensive paper and bindings, and expensive visual and other presentation aids are neither necessary nor desired.

Firms will provide the following information:

A. A detailed description of the respondent’s project understanding and the full work plan, including a technical approach and a project schedule, 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. In particular, the firm will provide a description of each key role and person proposed for the project, along with a resume. Include the name of the firm’s primary contact during the RFP process, to include phone numbers and email address.

C. The firm’s proposed price / fee for providing the Services. Provide separate pricing for specific components (Tasks) of the project. Describe how the University will be charged and include any additional discounts available for early payment of invoices.

State the firm’s agreement to receive payments electronically via Bank of America’s (“BoA”) ePayables® method of electronic payment or BoA’s PayMode® method of electronic payment. For more information about these payment methods, click here: [http://www.procurement.virginia.edu/pagepaymentmethods](http://www.procurement.virginia.edu/pagepaymentmethods). Prior to contract award, the Selected Firm will be required to contact University Procurement and Supplier Diversity Services’ Payment Processor Specialist group to set up its preferred method of receiving electronic payments [Phone: (434) 924-4212 and E-mail: uva-prs-boa@virginia.edu].
D. Contractual Arrangements:
   a. State the firm’s acceptance of Attachment 1, Mandatory Contractual Provisions
   b. State the firm’s acceptance, with any proposed modifications, of Attachment 2, Preferred Contractual Provisions.
   c. Provide a list of clients with which the firm has signed a term contract that allows for cooperative procurement and/or if the firm has a General Service Accounting (GSA) schedule contract.

E. 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. For more information about SWAM and the University’s SWAM plan, please refer to Attachment 3 and this site: [www.procurement.virginia.edu/main/publicpostings/rfp/SWAMplan.pdf](http://www.procurement.virginia.edu/main/publicpostings/rfp/SWAMplan.pdf). Any questions related to SWAM business and SWAM subcontracting opportunities can be directed to Les Haughton, Director, Supplier Diversity, at (434) 924-7174 or lh7sn@virginia.edu.

**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

The University will evaluate proposals, and if a firm(s) 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;

D. The contractual terms that would govern the relationship between the University and the Selected Firm; and
E. The firm’s Small, Woman-owned and Minority-owned (SWAM) businesses status and/or the firm’s plan for utilization of SWAM businesses. *Note*: A 10% minimum weight will be given to this criterion in evaluating proposals.

Proposals will be evaluated based upon the overall merits/value of the proposal including, but not limited to, price. All proposals received will be carefully evaluated by the University. The University then intends to conduct negotiations with two or more firms. After negotiations have been conducted, if the University chooses to make award, the University will select the firm which, in its opinion, best meets the needs of the University. Alternately, if the University determines in writing and in its sole discretion that only one firm is fully qualified, or that one firm is clearly more highly qualified than the others under consideration, it may decide to negotiate and award an agreement to that single firm. In either event, the University intends to execute a mutually satisfactory written agreement which will reflect and largely incorporate this RFP as reconciled with any pertinent documents, such as the proposal submitted and relevant negotiation correspondence.

Because the University may choose to negotiate and award to a single firm as discussed above, each firm must include in its written proposal all requirements, terms or conditions it may have, and should not assume that an opportunity will exist to add such matters after the proposal is submitted.

Any firm(s) invited to negotiations should note that the University reserves the right to begin negotiations by combining the best aspects of submitted proposals from all responding firms as the basis for subsequent formation of any Agreement resulting from this RFP.

Firms should also note that, as described within, certain matters will automatically be deemed part of the proposal.

**VI. TERMS AND CONDITIONS**

This solicitation and any subsequent award are subject to:

1. The University’s Mandatory Contractual Provisions, Attachment 1. Each proposal received by the University in response to this RFP will automatically be deemed to include the firm's agreement to these provisions. Although such provisions will govern the firm's proposals as submitted, the University and one or more firms may later mutually agree to amend such provisions, such as when additional time is needed to consider proposals, or when contractual negotiations or performance indicate that such amendments are appropriate.

2. The University’s Preferred Contractual Provisions, Attachment 2. Unless a firm expressly and specifically states its exception to any of the Preferred Provisions in its written proposal, then the

4. The Selected Firm registering as a vendor with the University of Virginia.  
   https://www.procurement.virginia.edu/pagevendorregistrationform

5. The Selected Firm(s) will enroll in one of the University approved methods for receipt of 
   electronic payments. Accordingly, the Selected Firm agrees to accept Bank of America’s 
   (“BoA”) ePayables® method of electronic payment or BoA’s PayMode® method of 
   electronic payment. Prior to contract award, the Selected Firm will be required to contact 
   University Procurement and Supplier Diversity Services’ Payment Processor Specialist 
   group to set up its preferred method of receiving electronic payments [Phone: 
   (434) 924-4212 and E-mail: uva-prs-boa@virginia.edu].

6. The Selected Firm registering and accepting eVA Terms and Conditions prior to award.  
   http://www.eva.virginia.gov/
Attachment 1
Mandatory Contractual Provisions

A. **Nondiscrimination**
   During the performance of this Agreement, the Selected Firm will comply with the contract provisions contained in Section 2.2-4311 (1) & (2) of the Code of Virginia or any successor provisions which may be applicable to this Agreement. Also, in accordance with Section 2.2-4343.1, the University does not discriminate against faith-based organizations.

B. **Conflict of Interests**
   The Selected Firm represents to the University that its entering into this Agreement with the University and its performance through its agents, officers and employees does not and will not involve, contribute to nor create a conflict of interest prohibited by the Virginia State and Local Government Conflict of Interests Act (Va. Code 2.2-3100 et seq), the Virginia Ethics In Public Contracting Act (Va. Code 2.2-4367 et seq), the Virginia Governmental Frauds Act (Va. Code 18.2-498.1 et seq) or any other applicable law or regulation.

C. **Assignment**
   Neither party to this Agreement will have the right to assign this Agreement in whole or in part without the prior written consent of the other.

D. **Amendments**
   No amendment of this Agreement will be effective unless it is reduced to writing and executed by the University's Director of Procurement and Supplier Diversity Services and by the individual signing the Selected Firm's proposal or by other individuals named by either party as specified in Section E, Notices below. If the Selected Firm deviates from the terms of this Agreement without a written amendment, it does so at its own risk.

E. **Notices**
   Any notice required or permitted to be given under this Agreement will be in writing and will be deemed duly given: (1) if delivered personally, when received; (2) if sent by recognized overnight courier service, on the date of the receipt provided by such courier service; (3) if sent by registered mail, postage prepaid, return receipt requested, on the date shown on the signed receipt: or (4) if sent by facsimile, when received (as verified by sender’s machine) if delivered no later than 4:00 p.m. (receiver’s time) on a business day or on the next business day if delivered (as verified by sender’s machine) after 4:00 p.m. (receiver’s time) on a business day or on a non-business day. All such notices will be addressed to a party at such party’s address or facsimile number as shown below.

If to the University:
   Eric N. Denby
   Director of Procurement and Supplier Diversity Services
   Carruthers Hall
If to the Selected Firm:

The person signing the Selected Firm's proposal in response to the University's RFP, at the Selected Firm's address indicated in such proposal; or to such other person or address as either may designate for itself in writing and provide to the other.

F. **Independent Selected Firm**

The Selected Firm is not an employee of the University, but is engaged as an independent Selected Firm. The Selected Firm will indemnify and hold harmless the Commonwealth of Virginia, the University, and its employees and agents, with respect to all withholding, Social Security, unemployment compensation and all other taxes or amounts of any kind relating to the Selected Firm's performance of this Agreement. Nothing in this Agreement will be construed as authority for the Selected Firm to make commitments which will bind the University, or to otherwise act on behalf of the University, except as the University may expressly authorize in writing.

G. **Workers' Compensation and Employers' Liability**

The Selected Firm will (i) maintain Employers Liability coverage of at least $100,000 and (ii) comply with all federal or state laws and regulations pertaining to Workers' Compensation Requirements for insured or self-insured programs.

H. **Drug-Free Workplace**

The Selected Firm, its agents and employees are prohibited, under the terms of this Agreement, Code of Virginia Section 2.2-4312, and the Commonwealth of Virginia, Department of Human Relations Management Policy Number 1.05, from manufacturing, distributing, dispensing, possessing, or using any unlawful or unauthorized drugs or alcohol while on University property.

During the performance of this Agreement, the Selected Firm agrees to 1) provide a drug-free workplace for the Selected Firm's employees; 2) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Selected Firm's workplace and specifying the actions that will be taken against employees for violations of such prohibition; 3) state in all solicitations or advertisements for employees placed by or on behalf of the Selected Firm that it maintains a drug-free workplace; and 4) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each Selected Firm or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific agreement awarded to a Selected Firm, the
employees of whom are prohibited from engaging in the unlawful manufacturing, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the agreement.

I. Information Technology Access Act

In accordance with § 2.2-3504 of the Code of Virginia, the following will apply to all information technology Agreements:

NON-VISUAL ACCESS TO TECHNOLOGY: All information technology (the "Technology") which is purchased or upgraded by the University will comply with the following non-visual access standards from the date of purchase or upgrade until the expiration of the Agreement:

• Effective, interactive control and use of the Technology will be readily achievable by non-visual means;
• Technology equipped for non-visual access will be compatible with information technology used by other individuals with whom any blind or visually impaired user of the Technology interacts;
• Non-visual access technology will be integrated into any networks used to share communications among employees, program participants or the public; and
• Technology for non-visual access will have the capability of providing equivalent access by non-visual means to telecommunications or other interconnected network services used by persons who are not blind or visually impaired.

Compliance with the foregoing non-visual access standards will not be required if the Director of Procurement and Supplier Diversity Services, University of Virginia determines that 1) the Technology is not available with non-visual access because the essential elements of the Technology are visual and 2) non-visual equivalence is not available.

Installation of hardware, software, or peripheral devices used for non-visual access is not required when the Technology is being used exclusively by individuals who are not blind or visually impaired, but applications programs and underlying operating systems (including the format of the data) used for the manipulation and presentation of information will permit the installation and effective use of non-visual access software and peripheral devices.

If requested, the Agreement must provide a detailed explanation of how compliance with the foregoing non-visual access standards is achieved and a validation of concept demonstration.

J. eVA Business to Government Registration

The eVA Internet electronic procurement solution, web site portal [www.eva.virginia.gov](http://www.eva.virginia.gov), is the Commonwealth of Virginia's comprehensive electronic procurement system. The portal is the gateway for firms to conduct business with state agencies and public bodies. All agencies and public bodies are expected to utilize eVA. All firms desiring to provide goods and/or services in the Commonwealth are encouraged to participate in the eVA
Internet e-procurement solution. The Selected Firm is required to register in the eVA Internet e-procurement solution prior to an award being made.

K. eVA Transaction Fee
The Selected Firm agrees, by accepting an award as a result of this RFP, that it is a registered eVA vendor and will be subject to an eVA transaction fee, for which the Selected Firm will be invoiced by Commonwealth of Virginia, Department of General Services. Additional information is available at [www.eva.virginia.gov](http://www.eva.virginia.gov).

L. Selected Firm License Requirements
State statutes and regulatory agencies require that some firms be properly registered and licensed, or hold a permit, prior to performing specific types of services. If firms provide removal, repair, improvement, renovation or construction-type services they, or a qualified individual employed by the firm, must possess and maintain an appropriate State of Virginia Class A, B, or C Selected Firm License (as required by applicable regulations and value of services to be performed) for the duration of the Agreement. It is the firm’s responsibility to comply with the rules and regulations issued by the appropriate State regulatory agencies.

M. Unauthorized Alien Use
The Selected Firm warrants that it does not knowingly employ an “unauthorized alien,” as such term is defined in the federal Immigration Reform and Control Act of 1986. The Selected Firm furthermore agrees that, during the term of the Agreement, it will not knowingly employ an unauthorized alien.

N. Intellectual Property Rights/Disclosure
Unless expressly agreed to the contrary in writing, all goods, products, materials, documents, reports, writings, video images, photographs or papers of any nature including software or computer images prepared or provided by Selected Vendor (or its subcontractors) for the University will not be disclosed to any other person or entity without the written permission of the University. Selected Vendor warrants to the University that the University will own all rights, title and interest in any and all intellectual property rights created in the performance or otherwise arising from this Agreement and will have full ownership and beneficial use thereof, free and clear of claims of any nature by any third party including, without limitation, copyright or patent infringement claims. Selected Vendor will execute any assignments or other documents needed for the University to perfect such rights.

Notwithstanding the foregoing, for research collaboration pursuant to subcontracts under sponsored research agreements administered by the University's Office of Sponsored Programs, intellectual property rights will be governed by the terms of the grant or contract to the University to the extent such grant or contract requires intellectual property terms to apply to subcontractor Firms.
Attachment 2
Preferred Contractual Provisions

A. Goods and Services
During the term of this Agreement, the Selected Firm will provide for the University the goods and services offered to the University by the firm in its proposal and/or any addenda to its proposal which has been approved in writing by the University and as may be further specified by the University in writing when it selected the firm.

B. Term of Agreement
The expected term of this Agreement will be for two years, with the ability to renew on the same or similar terms and conditions, for three additional one-year periods, if mutually agreeable to the University and the Selected Firm. The Selected Firm and the University will mutually agree at least 180 days prior to each renewal period whether to renew the terms of the Agreement.

C. Contract Administrator
The University will identify a Contract Administrator for any Agreement which results from this RFP. The individual will be the point of contact at the University for day-to-day operations but cannot approve amendments to the Agreement or price changes.

D. Waiver
No waiver of any right will be deemed a continuing waiver, and no failure on the part of either party to exercise wholly or in part any right will prevent a later exercise of such or any other right.

E. Indemnification
The Selected Firm will indemnify and hold harmless The Commonwealth of Virginia, The Rector and Visitors of the University of Virginia, and their agents, employees and officials from any and all costs, damage or loss, claims, liability, damages, expenses (including, without limitation, attorneys' fees and expenses) caused by or arising out of the performance or non performance of the Agreement by the Selected Firm or its agents or Selected Firms, including the provision of any services or products. The Selected Firm warrants that the products, goods and services provided the University may be used by the University without being in violation of any copyright, patent or similar property right or claim by others and will defend, indemnify and save the University (its employees and agents) from and against any such claim.

F. Governing Law
This Agreement will be governed in all respects by the laws of the Commonwealth of Virginia.

G. Termination
If the Selected Firm fails to provide quality goods or services in a professional manner, solely as determined by the University, and, upon receipt of notice from the University,
does not correct the deficiency, to the University's satisfaction within a reasonable period of time, not to exceed five calendar days unless otherwise agreed to by both parties in writing, the University reserves the right to terminate this Agreement upon written notice to the Selected Firm.

H. **Non-Appropriation**
Funding for any Agreement between the University and a Selected Firm is dependent at all times upon the appropriation of funds by the Virginia General Assembly and/or any other organization of the Commonwealth authorized to appropriate such funds. In the event that funding to support this Agreement is not appropriated, whether in whole or in part, then the Agreement may be terminated by the University effective the last day for which appropriated funding is available.

I. **Right of Audit**
The University reserves the right to audit or cause to be audited the Selected Firm's books and accounts regarding the University's account at any time during the term of this Agreement and for three years thereafter. The Selected Firm will make available to the University all books and records relating to performance of this Agreement as may be requested during said period. This specifically includes, but is not limited to, the right of the University to require that the Selected Firm perform self-audits within reasonable parameters established by the University.

J. **Insurance**
Listed below is the insurance the Selected Firm must maintain under any Agreement resulting from this RFP. In no event should the Selected Firm construe these minimum required limits to be their limit of liability to the University. The Selected Firm will maintain insurance which meets or exceeds the requirements of the University with insurance companies that hold at least an A- financial rating with A.M. Best Company. No Agreement will be executed by the University until the Selected Firm satisfies the insurance requirements of the University. The Selected Firm may be required to provide the University with a valid Certificate of Insurance before providing any goods or services to the University. The University reserves the right to approve any insurance proposed by the Selected Firm.

*Commercial General Liability:*
The Selected Firm and any Subcontractor Firm will maintain a minimum combined single Limit of Liability for bodily injury and property damage of $1,000,000 per occurrence, with coverage for: premises/operations and products/completed operations.

*Automobile Insurance:*
The Selected Firm and any Subcontractor Firm will provide a minimum combined single Limit of Liability for bodily injury and property damage of $500,000 per accident, with coverage for: owned, hired, and non-owned automobiles operated by their employees.
Additional Insured:
The University will be named as an Additional Insured on the Cyber Risk Insurance, and the proper name is: "The Commonwealth of Virginia and the Rector and Visitors of the University of Virginia, its officers, employees and agents.

K. Use of Agreement by Third Parties
It is the intent of this RFP and any resulting Agreement to allow for cooperative procurement. Accordingly, any public body, public or private health or educational institution, or any University related foundation may access the Agreement if authorized by the Selected Firm.

Participation in this cooperative procurement is strictly voluntary. If authorized by the Selected Firm, the Agreement may be extended to the entities indicated above to purchase at fees in accordance with the Agreement. The Selected Firm will notify the University in writing of any such entities accessing the Agreement. No modification of this Agreement or execution of a separate agreement is required to participate. The Selected Firm will provide semi-annual usage reports for all entities accessing the Agreement. Participating entities will place their own orders directly with the Selected Firm and will fully and independently administer their use of the Agreement to include contractual disputes, invoicing and payments without direct administration from the University. The University will not be held liable for any costs or damages incurred by any other participating entity as a result of any authorization by the Selected Firm to extend the Agreement. It is understood and agreed that the University is not responsible for the acts or omissions of any entity, and will not be considered in default of the Agreement no matter the circumstances.

Use of this Agreement does not preclude any participating entity from using other agreements or competitive processes as the need may be.

L. Favored Nations
The Selected Firm represents that the prices, terms, warranties, and benefits specified in its proposal are comparable to or better than the equivalent terms being offered by the firm to any present customer.

M. The University's Authorized Representatives
The only persons who are or will be authorized to speak or act for the University in any way with respect to this Agreement are those whose positions or names have been specifically designated in writing to the Selected Firm by the University's Director of Procurement and Supplier Diversity Services.

N. Purchasing Manual
This Agreement is subject to the provisions of the Commonwealth of Virginia "Purchasing Manual for Institutions of Higher Education and Their Vendors" and any subsequent revisions, which is available at this web site: [https://vascupp.org/hem.pdf](https://vascupp.org/hem.pdf)
O. Small, Women-owned and Minority-owned (SWAM) Business Reporting
The Selected Firm will identify and fairly consider SWAM firms for subcontracting opportunities when qualified SWAM firms are available to perform a given task in performing for the University under the resulting Agreement. The Selected Firm will submit a quarterly SWAM business report to the University by the 8th of the month following each calendar quarter, specifically the months of April, July, October, and January. The Selected Firm will submit the quarterly SWAM business reports to:

Lorie Strother
SWAM Contract Administrator
Procurement and Supplier Diversity Services
E-mail: ljs8n@virginia.edu

The quarterly SWAM business reports will contain this information:

- SWAM firm’s name, address and phone number with which the Selected Firm has contracted over the specified quarterly period.
- Contact person at the SWAM firm who has knowledge of the specified information.
- Type of goods and/or services provided over the specified period of time.
- Total amount paid to the SWAM firm as it relates to the University’s account.

The Selected Firm’s failure to provide SWAM reports on a quarterly basis which contain the information required by this section and/or the Selected Firm’s failure to comply with the plan for utilizing SWAM businesses submitted by the Selected Firm as part of its proposal and/or negotiation response may be grounds for debarment pursuant to Section 9. G. 4 of the “Purchasing Manual for Institutions of Higher Education and their Vendors.”

P. Payment Terms
The Selected Firm may indicate payment terms of less than 30 days so long as those terms also contain a cash discount for early payment. For example: “5% 15/Net 30” would correspond to a 5% discount if paid in 15 days, otherwise net 30. The University will compute discounts from the date of delivery of goods at destination, after final inspection, and acceptance, from the date of completion of services, or from the date the correct invoice is received in the Accounts Payable Division, whichever is later. The University will take the cash discount if payment is made within the specified time frame.

Unless alternate payment terms, with cash discounts, are proposed by the Selected Firm, invoices submitted to the University by the Selected Firm for the Goods and Services described in this RFP will be paid on a Net 30 days after receipt of the Goods and Services and University receipt and approval of the corresponding invoice.

The Selected Firm agrees to receive payments electronically and provide any additional discounts that may result from paying electronically. The firm will contact the University’s Payment Processor Specialist group in Procurement and Supplier Diversity Services to set up its preferred method of receiving electronic payments [Phone: (434) 924-4212 or email: uva-prs-boa@virginia.edu]. Accordingly, the Selected Firm agrees to
accept Bank of America’s (“BoA”) ePayables® method of electronic payment or BoA’s PayMode® method of electronic payment.

Q. Marketing
The University encourages the Selected Firm to appropriately and specifically market itself to applicable end-using University departments that may be interested in the Selected Firm’s Goods and Services. However, the Selected Firm will not use non-specific mass marketing formats; such as, but not limited to, spam, emails and junk mail. In the event that the Selected Firm engages in non-specific mass marketing formats, the University, in its sole discretion, may choose to terminate this Agreement.

R. Future Goods and Services
The University reserves the right to have the Selected Firm provide additional goods and/or services under the same pricing, terms, and conditions to make modifications or enhancements. Such additional Goods and Services may include other products, components, accessories, subsystems or related services that are newly introduced during the term of this Agreement. Such newly introduced additional Goods and Services will be provided to the University at favored nations pricing, terms, and conditions.

S. Ordering Procedures
The University does not place verbal orders for the Goods and Services. The University may only place orders for the Goods and Services by issuing a formal written Purchase Order in advance of Selected Firm’s provision of the Goods and Services. Accordingly, at the University’s request, the Selected Firm will issue a proposal/quotation listing the Goods and Services desired by the University and the corresponding fees and/or fee estimates. After any necessary discussions and/or revisions, the University will issue a corresponding Purchase Order for a specified fee amount. This specified fee amount cannot be exceeded by the Selected Firm unless a new formal written Purchase Order or Purchase Order revision is issued by the University authorizing a specific additional fee amount. Under no circumstances does the University authorize the Selected Firm to provide the Goods and Services before receipt of a formal written Purchase Order corresponding to its proposal/quotation. If the Selected Firm provides Goods and Services prior to receipt of a formal written Purchase Order, or incurs costs in excess of authorized purchase order fee amounts, it does so at its own risk.

T. Agreement Signature
Any resulting agreement may be executed in counterparts, each of which will be deemed an original, and both of which taken together will constitute one and the same document. Electronically transmitted signatures will be deemed originals for all purposes relating to the agreement.
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 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 a particular institutional focus on developing long-term business relationships with minority-and women-owned businesses. We count on our majority firms to help us achieve our goal.

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. The office of Procurement and Supplier Diversity Services is ready to assist you in identifying qualified diverse business partners. 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,

Colette Sheehy
Vice President for Management and Budget

Madison Hall · Post Office Box 400228 · Charlottesville, Virginia 22904-4228
Deployment Sites for Multi-Modal Intelligent Traffic Signal System

California Connected Vehicle Test Bed

- Located in the heart of Silicon Valley, State Route 82 (El Camino Real)
- Ten consecutive instrumented signalized intersections
- Ideal for Corridor-type application testing
- Compliance with national standards, equipped with Kapsch MCNU radios
California Connected Vehicle Test Bed

- All intersections are equipped with 2070 controllers
- Caltrans-Controlled software allows for easy changes in software implemented for Connected Vehicle applications
- Availability of test vehicles, including Passenger cars, emergency response vehicles, transit buses, and commercial trucks

California Connected Vehicle Test Bed

- Multi faceted partners makes it a perfect experimentation platform
Maricopa County Connected Vehicle Test Bed
(Daisy Mountain Drive, Anthem)

Equipped with the following:
- TS2 controllers & Cabinet
- DSRC and integrated WiFi Bluetooth connections
- Waypoints, MAP developed CCTV cameras
- System, Presence and Passage Detection
- TOMAR Pre-emption
- Fiber Optic Connection
- Signal System
- Backhaul Communications to TMC

Anthem, AZ

Maricopa County Connected Vehicle Test Bed
Anthem Field Test Activities

- Equipment Installation complete
- Site Test and Verification completed
- Application Testing in progress
  - Emergency Vehicle Priority
  - Transit Vehicle Priority
  - Travel Time Data Collection
  - Arterial System Performance Assessment