

# RoadX Program Support Request for Proposals 2016-2018

## OVERVIEW:

The purpose of this Request for Proposal (RFP) is to identify qualified firms interested in providing support for CDOT's RoadX program.

CDOT intends to select up to three firms to provide the RoadX program support services. CDOT intends to select proposals based on their specific strengths, qualifications, willingness to work in a collaborative environment, and ability to invite and bring creative ideas forward. Under no circumstance will one firm be awarded all work solicited in this RFP, regardless of final ranking.

CDOT will accept proposals presented by a team of firms. In such cases, the submitted proposal must specify which firm is lead and will act as the contractor and which firms are the subcontractors for whose performance the contractor will take responsibility.. Therefore, for the remainder of this document this potential grouping is collectively referenced as Consultants.

The selected Consultants will identify a (one) individual to serve on a RoadX Champion Team and be the spokesperson for their Consultant Team.

Teaming is not required as the master contract will be established so that collectively the RoadX Champion Team can identify and recommend key resources be added to the contract on an as needed basis.

In addition to programmatic support, the selected Consultants will assist RoadX in the development of innovative projects which will harness connected vehicle, autonomous vehicle, and Intelligent Transportation Solutions technology, aiming to address Colorado's need for increased urban mobility, rural safety, freight efficiency and sustainable energy consumption.

All services will be performed on a Task Order basis under this agreement.

This RFP aims to provide prospective proposers (Consultants) with sufficient information to enable them to prepare and submit proposals for consideration by CDOT to serve on the RoadX Champion Team to satisfy the needs as outlined herein.

This RFP and many aspects of the RoadX program do not fit the standard CDOT mold. Consultants are encouraged to think innovatively about how they respond to this RFP and attend a pre-proposal meeting that is schedule for March 29, 2016 at 11:00 a.m. in the CDOT HQ Auditorium to ask any questions about this RFP.

## BACKGROUND/GOALS

### The Colorado Department of Transportation

The vision of the Department is to enhance the quality of life and the environment of the citizens of Colorado by embracing technology to its fullest possible extent and use it to shape our future achievements in transportation – to further create an integrated transportation system that focuses on safely moving people, goods and information and by offering convenient linkages among modal choices. It accomplishes this by relying on its core values of safety, people, respect, integrity, customer service, and excellence.

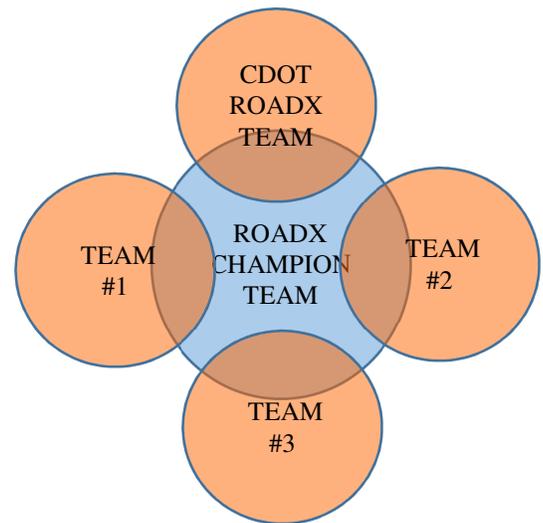
CDOT's mission is to provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods, and information. The Department endeavors to accomplish this mission through customer focus, leadership, partnership, integrated regional and statewide priorities, financial responsibilities, balanced quality of life, environment, accessible connectivity and modal choices, and social responsibility.

## SCOPE OF WORK / ENGAGEMENT

The RoadX program fits into CDOT's mission by seeking to implement the integration of technology and transportation solutions as expeditiously as possible. In accord with this intent, an aggressive implementation schedule, close coordination and expertise in program implementation of multiple projects across multiple corridors is preferred. This significant undertaking requires expert consultant assistance to serve as advisors, managers and extensions of CDOT technical and management staff. The goal is to leverage the use of the consultants working under this contract for programmatic support of all RoadX Program activities and, as needed, to move specific projects from conception to procurement for construction.

As the Department already has a number of RoadX Projects in varying degrees of development, the selected Consultants will have differing roles on a case by case basis in project development for those projects with the following expectations:

- Joint RoadX Program Management Planning and Progress Meetings – participate in all (or at minimum primary lead).
- Weekly Meetings for individual projects (selected champions).
- Be assigned an individual project and carry out implementation steps (Consultants will receive “first dibs” on RoadX concepts that they propose and are pursued); or
- Team with other Consultant teams to jointly execute key project, dividing tasks and assignment based on strengths of team (i.e. Capstone project may have a role for each team, rather than just assigning the project to one team).
- CDOT will assign champions to each project.



While Colorado has the ability to fund and begin individual technology-related pilot projects, it is important to recognize the importance of ensuring that 1) each project has industry input, and 2) these projects all provide an interconnected foundation that builds toward the ultimate vision – the transformation of our transportation system through:

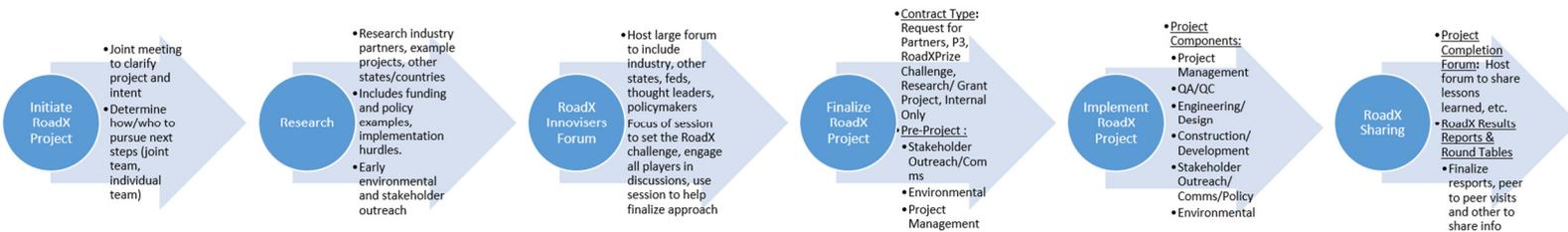
- **CONNECTION:** Transform Colorado into the most data-connected transportation system in the nation.
- **TRANSPORT:** Transform Colorado into the safest and most efficient freight transport system in the nation.
- **COMMUTING:** Transform Colorado into the most reliable transportation system for commuting in the nation.
- **SAFETY:** Make a dramatic leap towards zero deaths on Colorado roadways.
- **INTEGRATION:** Transform the state and its communities into the most technologically advanced in the nation by integrating a technology culture into our processes, workforce and systems.

The Consultants will help CDOT partner with the technology industry to:

- Make RoadX come to life as soon as possible by identifying the organizational structure, regulatory and policy changes, funding needs, an accelerated schedule, etc., necessary for CDOT to establish an environment that will successfully attract private sector partners to help Colorado achieve its RoadX Capstone Project(s) (Appendix A)

- Offer specific ideas for implementation of 2016 - 2017 Foundational RoadX Technology Projects (Appendix B). Initial project concepts include but are not limited to the following:
  - I-25 Managed Motorways
  - I-70 Connected Vehicles
  - Big Data Platform, Data Management, Data Security and Integration with Colorado Traffic Management Center
  - Freight/Industry Corridor
  - AV/CV Pilot Corridor/Managed Lanes on a Corridor
  - Rural Road Safety
  - Self-Driving Vehicle Pilots
  - Planning and Identification of Expected and Non-Traditional Funding Sources
  - Identification of RoadX Partners
  - Grant application preparation
  - Unsolicited/Other Technology
  - CDOT Fleet
  - Private partner fleet adaption to CDOT Technology
  - Electric Vehicle Charging Stations
  - Adaptive Signal Timing/Adaptive Travel Lane Speed Harmonization
  - Smart Traffic Key Corridor
  - Predictive Analytics for Travel Forecasting for Public Consumption
- Identify the baseline requirements for successfully merging technology and transportation

In general the Consultants will support CDOT as it implements the overall RoadX process to implement projects.



### **Collaborative and Solution Orientated Process**

The RoadX Champion Team must be able to work in a collaborative and solution orientated manner. Success for the RoadX Program relies on industry (consultants, entrepreneurs, venture capitalists and the like) knowing that they can bring forth their solutions to our urban mobility, rural safety, freight efficiency and sustainable energy consumption problems and have a venue where those ideas are evaluated on their merits.

The process is envisioned to be straight forward. Any consultant, entrepreneurs, venture capitalists or the like can submit an idea to the RoadX Program and the RoadX Champion Team will evaluate it on its merits. If the idea is deemed “implementation ready and appropriate” the submitter of the idea will have first-right-of-refusals to further develop the idea via their own resources and/or by teaming with one of the RoadX Champion Teams.

The process described above is simplistic and CDOT understands the details (intellectual property, contracting, compensation, metrics to define implementation ready and appropriate, the metrics by what ideas will be evaluated and other items) that support the process need to be defined and agreed upon by all interested parties.

Therefore, the first take, via Task Order, for the RoadX Champion Teams will be to develop these processes. Said processes will be posted on the RoadX website for which non-RoadX Consultants may review and provide comment. Once finalized these processes will be integrated in the RoadX work-plan, which will also be a public document.

### **The Ideal Candidate:**

The ideal consultant and member of the RoadX Champion Team will be an organization and/or individual with the following skills and qualifications:

- A creative thinker that brings new ideas forward to solve existing problems and future challenges, while keeping the RoadX goals and future in-mind;
- A demonstrated team player that will collaborate with the other RoadX Champion Team Members to optimize the ideas presented to the RoadX program;
- A firm or individual with the ability to facilitate involvement of other firms, organizations, and individuals that contribute innovative ideas, critically evaluate ideas and information, and create and implement strategic approaches to implementing RoadX projects;
- A firm or individual with a commitment to innovation as demonstrated by experience of employees and owners or resources dedicated to innovation relevant to transportation, and
- A firm and/or individual that is committed to improving the safety, reliability, optimization of our roadway systems, and sustainable energy consumption as we prepare our roadways for the more widespread use of connected, automated and ultimately autonomous vehicles.

### **Consultants Responsibilities**

CDOT will select up to three Consultants that can best advance the objectives of the RoadX program and support CDOT's underlying mission. The selected proposers will be expected to appoint a qualified, experienced staff person to coordinate and oversee tasks assigned to that consultant and/or to a particular CDOT project/program. This assigned staff person must be approved by the CDOT project manager prior to initiating the assigned work and CDOT and the Consultants must agree to not remove the approved assigned staff person from a CDOT project/program for work on other, non-CDOT related, projects unless and until also approved by the CDOT project manager. In appointing a staff coordinator, the proposer is advised that in and out-of-state travel may be required.

The contract issued as a result of this RFP solicitation will be a "non-project specific" (Task Order based) agreement for the selected Consultants to provide CDOT with required specialized services. The task order request for services will be independent of all other such requests and in adherence to all parameters set forth in this RFP scope of work. One individual from CDOT will act as the primary liaison between CDOT and the selected Consultant, and all work assignments from CDOT will be submitted by the selected Consultant to the CDOT project manager to ensure acceptance of such requested tasks does not jeopardize the timely completion of other CDOT projects. No work can begin prior to notification by CDOT of an approved task order. Nor can any commitments or purchases be made with subcontractors or vendors without an approved task order.

This scope of work describes *a few* tasks and is intended to give interested proposers an idea of the anticipated work in order to develop responsive RFP proposals. This list is *not* intended to be exhaustive, and dependent upon future events, many more similar tasks could be later identified and incorporated into the scope of work.

CDOT will not pay for items initiated by the consultants unless CDOT specifically makes requests for such services as part of an issued task order. The consultants will also not be allowed to charge CDOT for brainstorming on potential ideas or projects absent a task order authorizing such work or when CDOT did not initiate such a request. Consultants are expected to stay informed on transportation technology issues and cannot bill for education or research unless specifically requested and included in the task order.

The contract will stipulate that the Consultants must be able to respond quickly due to the very nature of RoadX activities. And is often due to last-minute funding that sometimes occurs. Consultants will also be required to submit reports and results of activities on a quarterly basis, and be responsible stewards of federal and state funding by abiding by state and federal rules and guidelines. At least once per year, all original design publishing files must be delivered to CDOT, in addition to a viewable file that is compatible with a Windows operating system.

The nature of the services mandates an office in the Denver metro area. The contract will stipulate that mileage cannot be charged for meetings and activities that occur within the Denver metro area, unless previously approved by CDOT in writing. When travel is approved, it will be paid at the established state rate for mileage and per diem.

### **Incentive & Contract Terms**

Understanding that consultants, entrepreneurs, venture capitalists and the like need not be a RoadX Champion members to submit an idea and possibly be contracted with to develop that idea – what are the incentives to become a RoadX Champion? CDOT believes the incentives can be divided into three groups:

- Access,
- Compensation, and
- Exposure

Access – it is CDOT's hope that the up to three selected Consultants will have a network of resources that will allow them to bring ideas forward as areas of focus are identified. However, it is very likely that Requests for Information (RFI's) will be submitted to a larger audience on key initiatives. It is anticipated that the three selected Consultants will receive advance notification of any pending RFI's so they can use their network of resources to bring forth the best idea(s).

Compensation - Up to three selected Consultants will be offered an initial three (3) year contract ending March 31, 2019 with the possibility a renewing the contract for an additional three annual terms. Hourly rate increases are subject to the consultants Master Pricing Agreement with CDOT.

Each contract will be established with a \$5 million cap. It is the desire to provide equitable distribution of work so each consultant is equally engaged.

Exposure – CDOT and the RoadX program desire to find innovative solutions to our urban mobility, rural safety or freight efficiency problems. These three problems are not unique to Colorado and organizations that can find innovative solutions to these problems can market those solutions to other DOTs and municipalities through the nation. Consultants will be linked to CDOT RoadX Team and accomplishments will be marketed nationally.

### **Small Business Involvement**

Many small businesses and sole proprietors have ideas and resources that can contribute to the success of the RoadX program. Describe your approach to ensuring that such businesses and individuals will know of the potential opportunities with RoadX, are given opportunities to present their information and ideas, and may be able to contribute their expertise to the RoadX program. Please describe an existing partnerships or relationships with small businesses or sole

proprietors that you intend to bring to the RoadX program to optimize the work of the RoadX Champion Team.

## **PROPOSAL REQUIREMENTS:**

Proposals should be submitted in a Statement of Qualifications (SOQ) format – providing the information required in an organized manner. This format will allow for more efficient evaluation by the committee and provide consultants with an opportunity to showcase their area(s) of expertise, ability to collaborate and provide innovative solutions as part of the submitted documentation.

To be considered responsive, proposers must include, the following when preparing their proposal:

### **COVER LETTER & ADMINISTRATIVE INFORMATION – 2 Single Sided (8.5X11) PAGE LIMIT**

#### **1. ADMINISTRATIVE INFORMATION:**

Include a brief statement of the proposer's understanding and compliance with the Administrative terms and conditions set forth in this RFP.

#### **2. CONFLICT IDENTIFICATION:**

Identify all current and former contract activity with any existing State agency or transportation authority, reasonably related to the work described in this RFP. Indicate when involvement occurred and length such involvement, the specific type of activity with identified agency and/or transportation authority, and indicate the extent of involvement with such entities.

### **THE ROADX CHAMPION & YOUR TEAM – 5 Single Sided (8.5X11) PAGE LIMIT**

#### **1. WHO IS THE ROADX CHAMPION AND WHAT IS THEIR EXPERIENCE?:**

The RoadX Champion for each selected consultant will be the primary point of contact for all activities under this contract and will be required to interact with other RoadX Champions in a collaborative manner. Proposer need to identify this individual, discuss their experience and why they were selected for this role.

#### **2. WHAT CONSTITUTES YOUR TEAM:**

All-encompassing teams are not required, as expertise will be added as the needs arise, but Teams are not discouraged.

Discuss what resources your organization and/or team bring to CDOT and the RoadX Program and why you think this composition is appropriate for the RoadX Program.

#### **3. WHAT WOULD YOU CLASSIFY AS YOUR AREA(S) OF EXPERTISE?**

It is unrealistic to expect that any give organization could be an expert in all aspects of the Foundational RoadX Technology Projects listed above.

Discuss what your organization feels are its strengths and how you will capitalize on those strengths to bring value to CDOT and the RoadX program.

#### **4. HOW HAVE YOU WORKED IN A COLLABORATIVE ENVIRONMENT?**

Expecting that we'll have RoadX Champions with different areas of expertise, discuss how your organization, and preferably RoadX Champion, has worked in an environment that requires collaboration.

### **INNOVATION & YOUR IDEA – 1 Single Sided (11X17) PAGE LIMIT**

The Colorado Department of Transportation is proficient at developing traditional ideas to improve urban mobility, rural safety, freight efficiency and energy consumption sustainability problems. The RoadX program looks to take these traditional ideas and integrate 21st century technologies into them and prepare our systems for the safety, reliability and economic benefits that are anticipated with more widespread use of connected, automated and ultimately autonomous vehicles.

Developing and bringing forth innovative ideas and solutions will be an important part of the RoadX Champions' responsibilities. This one, single sided, 11x17 page is an opportunity to share your idea with CDOT.

The use of this page should be built around the statement and question – "If CDOT had \$2 million to invest tomorrow to improve urban mobility, rural safety or freight efficiency problems, where should CDOT invest?".

### **PRE-PROPOSAL MEETING**

As stated in the overview many aspects of the RoadX Program do not fit the standard CDOT mold and the unique nature of this RFP and the proposal we are asking you to submit is testament to that. While this RFP attempts to outline how the RoadX program will operate and utilize consultants there is often a benefit to hearing the information directly and being about to ask clarifying questions.

To facilitate this, a pre-proposal meeting will be held on March 29, 2016 at 11:00a.m. in the CDOT HQ auditorium located at 4201 East Arkansas Avenue, 2<sup>nd</sup> floor, Denver, CO 80220. The agenda for this non-mandatory meeting is:

- 15-min overview of the RoadX Program and the Vision
- 10-min discussion on this RFP and SOQ submission
- 35-min Q&A.

### **EVALUATION**

During the evaluation phase, the committee will independently review each proposal and assign a total maximum score within each category, determined solely through the proposer's response.

The evaluation factors that will be considered are as follows:

**50 POINTS: THE ROADX CHAMPION & YOUR TEAM**

**40 POINTS: INNOVATION & YOUR IDEA**

**5 POINTS STRUCTURE, STYLE AND MARKETABILITY**

**5 POINTS SMALL BUSINESS INVOLVEMENT**

At the conclusion of the evaluation and discussion of the written proposals, CDOT may (at the committee's sole discretion) conduct oral interviews.

The 5-page proposals of the three selected consultants may be posted on the RoadX website after the selection is made. Any proprietary, intellectual property, or confidential information within the 5-page proposal needs to be clearly marked.



## APPENDIX A

Capstone Project Vision: Crash-free, injury-free and delay-free travel by maximizing the efficient use of infrastructure.

Technology has the potential to dramatically influence innovative roadway utilization, such as narrowing lanes and shoulders to accommodate more travel lanes. While many believe this will take several decades to accomplish, CDOT aims to accelerate this process by partnering with industry – our lives and our economy depend on it. In 2016, CDOT will begin to explore partnership opportunities to implement its first RoadX Corridor, to be explicitly used by vehicles with automated freeway driving capabilities. This will be accomplished through the conversion of an existing managed lane, building new lanes or conversion of shoulders for passenger vehicle use and/or commercial vehicle use.

The RoadX Capstone Project could result in the following benefits:

- Reduce crashes.
- Improved throughput and reliability.
- Incentivize the use of automated vehicles and accelerate their market penetration.
- Provide safety and mobility benefits on roads other than the RoadX Corridor.
- Vividly showcase the potential of a highly technologically advanced vehicle fleet. And transportation infrastructure to improve safety, reliability and efficiency.

Other RoadX Capstone Projects could include:

- Reconfiguring freeway and/or arterial facilities to maximize efficiency of all travel and yield benefits of advanced technology vehicles.
- Connected vehicle technologies.
- Electric vehicle supporting technology.
- Use of advanced data collection and predictive analytics.
- Demand management strategies.
- Transportation systems management strategies.
- Weather management technologies and communication strategies.

CDOT commits to providing an environment where private industry innovation has the opportunity to grow commercially while providing benefits in transportation performance. The RoadX Capstone Projects are not focused on achieving slow and incremental benefits, but rather solutions that are comprehensive and holistic in their nature that work toward exponential improvements in the travel experience and performance of the system. CDOT's intent is not to prescribe solutions, but to foster the environment where partnerships can flourish, true innovation can occur and solutions can be rapidly deployed.

## **APPENDIX B**

### CONNECTION

Description: Engage industry to develop solutions to transform data into actionable intelligence and deliver to drivers, cellular/mobile applications and connected and autonomous vehicles.

Project #1: Interoperable Data Platform: Deploy a web-based, open source safety, traffic and transportation system data platform capable of communicating with a diverse collection of drivers, cellular/mobile applications, and connected and autonomous vehicles to deliver critical real-time, actionable information and safety voice alerts such as multi-vehicle pileups, rock falls, avalanche slides, white-out/fog-out low visibility, wrong-way drivers, runaway trucks, stopped vehicles, incident advisory, icy roads, emergency vehicles, curve speed warnings, intersection hazards, work zone warnings, sun glare warnings.

Project #2: I-70 Connected Vehicle Pilot Deployment: Maximize safety and mobility on the I-70 mountainous corridor through probe data collection, vehicle-to-infrastructure (V2I) communication, and related decision support analysis to enable real time traffic management and traveler information and safety applications.

### TRANSPORT

Description: Deploy emerging in-vehicle technology and supporting infrastructure to improve the safety and efficiency of transporting freight.

Project #1: Industry Focused Pilot: Partner with a key industry in Colorado, with the goal of reducing the cost of transporting goods, improving the bottom line and impact to local roads by outfitting selected commercial vehicle fleet vehicles with vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) technologies and deploy supporting infrastructure and systems to support truck platooning, frontal collision avoidance, etc.

### COMMUTING

Description: Deploy technology systems and infrastructure systems to improve the reliability of travel times and offer optimized routing and movement of commuters.

Project #1: I-25 Total Managed Motorways Pilot: Implement advanced ramp meters and traffic management systems to facilitate mainline interstate and arterial roadway traffic management.

### SAFETY

Description: Deploy advanced technology systems and infrastructure systems to improve the safety of Colorado roadways.

Project #1: Rural Road Safety Pilot: Transform a rural State Highway into the safest corridor in the state with goal of zero deaths using technologies such as connected vehicles, smart infrastructure (virtual guardrails, smart lane markings, etc.)

Project #2: Striping Improvements: The reflectivity and durability of roadway pavement markings will allow vehicles that use these marking for guidance and lane designations to be utilized on more roads in Colorado. Additionally, an immediate benefit can be realized for the traveling public today.

## INTEGRATION

Description (Planning): Enable a planning framework that ensures technology and operational innovations are embedded into the overall transportation planning framework.

Project #1: Technology Planning Process: Develop NEPA/environmental evaluation process that effectively includes technology and operation innovations as a significant part of the alternatives analysis. For projects already past the environmental evaluation process, develop a "RoadX" clearance process to ensure all alternatives are incorporated as a project moved into design.

Description (People): Ensure that CDOT has the human capital and resources to understand and effectively integrate innovative technologies while transforming how the department "does business."

Project #1: Workforce of the Future Analysis: Conduct scenario planning and human resource loading needs to prepare for the types of employees and skills that will be necessary to implement RoadX in addition to other future roles.

Project #2: Engineering Training Program: Develop a nation-leading, comprehensive Engineering in Training program that includes a two-year rotation in several necessary skill sets including: technology/operations, planning, communications, economic development, engineering (materials, bridges, roads, assets), design/construction, system operations, data management, maintenance, project management, cash management, contracts. Goal is to recruit nation-wide to train the best and brightest.