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| Sponsor | Nominations must be submitted by an AASHTO member DOT willing to help promote the technology | 1. Sponsoring DOT (State): Ohio | | | | | |
| 1. Name and Title: Gary Angles, Administrator, Office of Construction Administration | | | | | |
| Organization: Ohio Department of Transportation | | | | | |
| Street Address: 1980 West Broad Street | | | | | |
| City: Columbus | | State: Ohio | | | Zipcode: 43223 |
| E-mail: Gary.Angles@dot.ohio.gov | | Phone: 614-466-7057 | | | Fax: |
| 3. Is the sponsoring State DOT willing to promote this technology to other states by participating on a Lead States Team supported by the AASHTO Innovation Initiative? Yes or No: **Yes** | | | | | |
| **Technology Description (10 points)** | The term “technology” may include processes, products, techniques, procedures, and practices. | 4. Name of Technology:  Risk Based Construction Inspection | | | | | |
| 1. Please describe the technology.   The Risk Based Construction Inspection using data capture software provides inspection guidance for the Quality of Construction similar to the Quality of Materials. It allows ODOT to focus inspection activities on areas of importance using “quality attributes”. The quality attributes inspected are the portions of the work that represent quality of construction. The Web application is used to gather the inspection data in an electronic format using mobile devices which allows the Department of perform analysis of the data collected. An Inspection Priority Table based on risk factors was also created. Typical inspection priorities and documentation frequencies have been established to provide a consistent approach that project construction staff can use to identify critical attributes and establish frequencies for electronic documentation of the quality of work in progress. The goal is to provide enough project oversight along with accurate and timely documentation while utilizing engineering and inspection staff in the most efficient manner and have a process that can respond to changes in priorities and risks as they change. This new process will result in a re-focusing of inspection efforts to assure construction activities receive adequate inspection. The expected benefits are preventing high risk consequences combined with appropriate least amount inspector staffing to ensure a safe and successful project. | | | | | |
| If appropriate, please attach photographs, diagrams, or other images illustrating the appearance or functionality of the technology. (If electronic, please provide a separate file.) Please list your attachments here.   * Business Rules for Construction Project Documentation using SharePoint * ODOT Inspection Priority and Form Selection List | | | | | |
| **State of Development**  **(30 points)** | Technologies must be successfully deployed in at least one State DOT. The AII selection process will favor technologies that have advanced beyond the research stage, at least to the pilot deployment stage, and preferably into routine use. | 1. Briefly describe the history of its development.   In 2015, The Ohio Department of Transportation (ODOT) reviewed its construction inspection process and determined that if strict interpretation of FHWA guidance and the ODOT Construction Administration Manual of Procedures (MOP) was applied, ODOT would be found out of compliance. The MOP and associated guidance implied that 100% levels of field inspection with specific quality control points for all pay items was being conducted; however, the actual practice and documentation did not meet this standard.  In July of 2017, after much benchmarking and research, ODOT initiated the pilot phase of a risk based construction inspection process utilizing a data capture software that is to be used in the field. | | | | | |
| 1. For how long and in approximately how many applications has your State DOT used this technology?   Risk Based Construction Inspection was implemented in July 2017 and is still in the pilot phase. This process is the first of its kind at ODOT. Currently ODOT has about 24 construction projects using the new process. | | | | | |
| 1. What additional development is necessary to enable routine deployment of the technology?   The Web application is being trial tested currently, and further modifications are expected as feedback is received. | | | | | |
| 1. Have other organizations used this technology? Yes or No: **No** If so, please list organization names and contacts. | | | | | |
| Organization | Name | | Phone | E-mail | |
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| **Potential Payoff**  **(30 points)** | Payoff is defined as the combination of broad applicability and significant benefit or advantage over other currently available technologies. | 1. How does the technology meet customer or stakeholder needs in your State DOT or other organizations that have used it?   The Risk Based Construction Inspection using the Web application leverages current technology to facilitate quality management on all elements of the project while serving as a tool to document and report findings. This allows for improved and consistent documentation of quality attributes using risk-based considerations and statistical analysis. The resources of the Department are optimized by providing cost saving guidance and a workforce focused on the priority attributes of the construction activities underway. | | | | | |
| 1. What type and scale of benefits has your DOT realized from using this technology? Include cost savings, safety improvements, transportation efficiency or effectiveness, environmental benefits, or any other advantages over other existing technologies.   The expected benefits are preventing high risk consequences combined with appropriate least amount inspector staffing to ensure a safe and successful project. | | | | | |
| 1. Please describe the potential extent of implementation in terms of geography, organization type (including other branches of government and private industry) and size, or other relevant factors. How broadly might the technology be deployed?   Risk based inspection processes are used in other large scale inspection organizations, including the Military and large commercial operations. The process used here focuses inspection on attributes that are key to the projects performance. This type of review and process could be used in many government processes. Broader deployment by other state DOTs would necessitate development of a risk-based inspection protocol which would identify the risk consequences associated with reduced inspection for different transportation construction activities. | | | | | |
| **Market Readiness (30 points)** | The AII selection process will favor technologies that can be adopted with a reasonable amount of effort and cost, commensurate with the payoff potential. | 1. What actions would another organization need to take to adopt this technology?  * Develop an implementation plan which includes funding availability, program support and quality assurance. * Develop a protocol based on risk impacts calculated from a risk analysis to prioritize construction activities for inspection. * Provide field staff with mobile devices capable of capturing field data via mobile forms and documents. | | | | | |
| 1. What is the estimated cost, effort, and length of time required to deploy the technology in another organization?   ODOT has spent approximately $700,000 over a period of one year to generate the priority inspection lists, the quality attribute requirements, conduct training and acquire the necessary hardware and software. | | | | | |
| 1. What resources—such as technical specifications, training materials, and user guides—are already available to assist deployment?   [Construction Documentation Business Rules](http://construction.dot.state.oh.us/GoFormz/Shared%20Documents/Construction%20Documentation%20Business%20Rules.docx) (contains the Documentation Expectations,  ODOT Inspection Priority and Form Selection List, mobile data entry instructions, the SharePoint electronic document storage instructions and Project Finalization documentation checks instructions).  2017 ODOT Manual of Procedures  [REVISED 032017Web End User Training](http://construction.dot.state.oh.us/GoFormz/Shared%20Documents/REVISED%20032017GoFormz%20End%20User%20Training.docx) | | | | | |
| 1. What organizations currently supply and provide technical support for the technology?   Through the FHWA Every Day Counts initiative, funding has been provided to ODOT for the purchase of mobile devices for its field staff.  ODOT entered into a personal service contract with the Web interface to enhance and customize the Web database. | | | | | |
| 1. Please describe any legal, environmental, social, intellectual property, or other barriers that might affect ease of implementation.  * Building and implementing a risk based inspection process using electronic data capturing and mobile devices * IT limitations * Legal questions and concerns regarding the acceptability of electronic signatures/stamps and document retention * Personnel issues including the reluctance to change, training needs * Buy-in from the various stakeholders. | | | | | |
| ***Submit Completed form to*** | | [***http://web.transportation.org/tig\_solicitation/Submit.aspx***](http://transportation1.org/tig_solicitation/Submit.aspx) | | | | | |