

**AASHTO Technology Implementation Group
Nomination of Technology Ready for Implementation**

A Sponsor	Nominations must be submitted by an AASHTO member DOT willing to help promote the technology	1. Sponsoring DOT (State): Michigan			
		2. Name and Title: Mark Van Port Fleet			
		Organization: Michigan Department of Transportation (MDOT)			
		Street Address: 425 W. Ottawa			
		City: Lansing	State: MI	Zip code: 48909	
		E-mail: vanportfleetm@michigan.gov	Phone: 517-241-3998	Fax: 517-241-4619	
		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 Technology Implementation Group? Yes or No: Yes			
Technology Description (10 points)	The term "technology" may include processes, products, techniques, procedures, and practices.	4. Name of Technology: e-Construction the Documentation Management, Workflow, and eSignature for Construction Projects			
		5. Please describe the technology. Michigan Department of Transportation (MDOT) will soon be mandating e-Construction. Contractors and other stakeholders have been given access to the department's document management system for submitting documentation during a construction project. Necessary workflows are used to step documents through approvals using digital signatures. The system features an audit trail that makes all transactions in the system transparent to users. This has eliminated traditional arguments over when documents were put in the mail and received. The department and contractors have saved time and money with the use of e-construction. MDOT expects to fully implement all projects in the 2015 construction season.			
		6. 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. Video link www.youtube.com/watch?v=JbwlvmOTUrf			
State of Development (30 points)	Technologies must be successfully deployed in at least one State DOT. The TIG selection process will favor technologies that have advanced beyond the research stage, at least to the pilot deployment stage, and preferably into routine use.	7. Briefly describe the history of its development. The department's document management system has been in use for over 10 years. In the fall of 2012, the contractors' association asked MDOT to develop a method of transferring documents electronically other than email. MDOT construction and design personnel worked together to develop a process to use the department's document management system. Within 6 months we were piloting the process on 4 high profile construction projects. The pilots were an overwhelming success saving both time and money, as well as speeding up contractor payments.			
		8. For how long and in approximately how many applications has your State DOT used this technology? The technology has been successfully piloted for a year on 4 high profile construction projects. We are currently working on statewide implementation. An additional 22 projects will be implemented this summer, with full implementation in the 2015 construction season.			
		9. What additional development is necessary to enable routine deployment of the technology? The DOT must have a document management system with workflow and audit trail capabilities. The software must be accessible outside the state firewall. It works with laptops or tablets in the field.			
		10. Have other organizations used this technology? Yes or No: No If so, please list organization names and contacts.			
		Organization	Name	Phone	E-mail
Not aware of any other DOT construction divisions currently using full paperless construction.					

AASHTO Technology Implementation Group
Nomination of Technology Ready for Implementation

Potential Payoff (30 points)	Payoff is defined as the combination of broad applicability and significant benefit or advantage over other currently available technologies.	11. How does the technology meet customer or stakeholder needs in your State DOT or other organizations that have used it?	Digitally encrypted electronic signatures and electronic document storage in one location provides dozens of users/agencies access to thousands of documents in seconds rather than detaching email attachments or waiting 2 days for each hardcopy mailing. It creates secure storage, intelligent document workflows, audit trails that produce transparency, and is portable to gain ready access from any location via the internet.		
		12. 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.	MDOT estimates that electronic document storage creates some \$12 million in added efficiencies and saves some 6,000,000 pieces of paper annually for our \$1 billion construction program. On one project, MDOT estimates \$300k savings from paper, printing, postage, and other fixed costs; \$180k for MDOT and \$120k for contractors. The process eliminated over 170k pieces of paper and 150k mailing days. The average contract modification processing time has been reduced from 30 days to 3.		
		13. 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?	This technology can be deployed anywhere that electronic documents are submitted and/or in need of workflow approvals. The system is also being used for collaboration with design consultants working on DOT projects. The FHWA and Michigan Department of Environmental Quality are also being brought into the system.		
Market Readiness (30 points)	The TIG selection process will favor technologies that can be adopted with a reasonable amount of effort and cost, commensurate with the payoff potential.	14. What actions would another organization need to take to adopt this technology?	Other organizations would need to adopt a document management system that is capable of workflows and audit trails. The system would need to be accessible by those outside the firewall. Adopting some form of digital signatures is also a requirement.		
		15. What is the estimated cost, effort, and length of time required to deploy the technology in another organization?	This is all dependent on the organization's use of document management and legalities of using digital signatures. To implement a document management system from scratch is a large effort that takes time to mature and grow. This could be an expensive proposition that may exceed six figures. If a department is already using a document management system, the implementation cost would be minimal to set up security, workflows, and folder structures to allow contractors to submit documents through the system. For MDOT the main cost amounts to 2 equivalent full time employees over the year of the pilot activities. Digital signatures are currently performed using Adobe Acrobat, which the department already licensed.		

**AASHTO Technology Implementation Group
Nomination of Technology Ready for Implementation**

		<p>16. What resources—such as technical specifications, training materials, and user guides—are already available to assist deployment?</p> <p>All document management folders, workflows and security are documented. Training materials and user guides are being developed.</p> <hr/> <p>17. What organizations currently supply and provide technical support for the technology?</p> <p>MDOT's Engineering Support Unit within our Design Division provides technical support for the document management system. One centralized IT staff assists with server and network operations. MDOT's Construction Field Services Division provides support for digital signatures.</p> <hr/> <p>18. Please describe any legal, environmental, social, intellectual property, or other barriers that might affect ease of implementation.</p> <p>There are 3 major hurdles:</p> <ol style="list-style-type: none"> 1. Legality in individual states of digital signatures 2. IT security for allowing external access to a department's document management system 3. Network availability in the field to allow for electronic submission of documents.
	<p>Submit Completed form to</p>	<p align="center">http://transportation1.org/tig_solicitation/Submit.aspx</p>