AASHTO Technology Implementation Group
Nomination of Technology Ready for Implementation
2005 NOMINATIONS DUE BY FRIDAY, SEPTEMBER 9, 2005

<table>
<tr><td>Sponsoring DOT</td><td colspan="4">1. Sponsoring DOT (State): Utah</td></tr>
<tr><td rowspan="5">Primary Technical Contact</td><td colspan="4">2. Name: Doug Anderson</td></tr>
<tr><td colspan="4">Organization: Utah Department of Transportation</td></tr>
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<tr><td rowspan="3">Technology Description</td><td colspan="4">3. Name of Technology:
User Impacts of Fast Track Construction
(Supports Current T&I Priority)</td></tr>
<tr><td colspan="4">4. Briefly describe the technology.
Highway construction can result in congestion and increase travel time for commuters and travelers. Innovative construction techniques like the design/build method, also called fast track, can reduce the time of construction activity when compared to traditional build methods, thus resulting in reduced network delay. UDOT has implemented a basic software package that uses two traffic models for evaluating user impacts of fast track construction. This software allows the project manager to predict the user impacts of various contracting methods.</td></tr>
<tr><td colspan="4">5. Briefly describe the history of its development.
The Olympics kick started this effort here in Utah. In the past, Michael Kaczorowski in UDOT Systems Planning and Programming would run a planning model on individual projects as requested. He would use the model to determine completion dates. This work was a very time consuming, detailed effort. In addition to running a model for a project, incentives/disincentives for user impacts were used. These included A+B bidding as well as A+B+C (Project Cost + Contract Time + Lane Rental). As part of UDOT's Research & Development efforts a series of projects were selected to further identify user impacts in Utah and especially as part of fast track construction. A traffic model developed by the University of Utah was used on a series of projects beginning with the I-15 reconstruction in Salt Lake County. The model estimated that using design/build on the project saved 60 million hours of delay. The end product was a software package deliverable to all project managers (and others as identified) within UDOT. It is now used to estimate user impacts on major STIP projects.</td></tr>
<tr><td rowspan="4">State of Development</td><td colspan="4">6. For how long and in approximately how many applications has your organization used this technology?
Concentrated efforts began nearly seven years ago to move UDOT towards reduced network delay. Over the course of the last five years several projects have been identified and evaluated prior to advertising using this technology. (See attached list for specific projects, including the actual time it took to complete the project as a percent of the estimated time of a traditional project. On average it took nearly 73% of the traditional time for a timesavings of 27%.)
Recently, the software was presented to all region project managers to assist them in the prediction of user impacts as well as cost/benefit analysis; culminating the full implementation effort.</td></tr>
<tr><td colspan="4">7. What additional development is necessary to enable routine deployment of the technology?
An accurate traffic model is required for urban areas to estimate user impacts for various scenarios and contracting methods. Maintenance of software applications and existing models is required.</td></tr>
<tr><td colspan="4">8. Have other organizations used this technology? If so, please list organization names and contacts.</td></tr>
<tr><td colspan="4"><table>
<tr><th>Organization</th><th>Name</th><th>Phone</th><th>E-mail</th></tr>
<tr><td>FHWA</td><td>Martin Knopp</td><td></td><td></td></tr>
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Potential for Payoff	9. What benefits has your organization realized from using this technology? Include cost savings, safety improvements, transportation efficiency or effectiveness, environmental benefits, or other advantages over other existing technologies. UDOT has benefited from the development of a cost/benefit tool as well as a prediction tool for roadway modeling. User costs have been reduced. This effort has also improved constructability and efficiency by addressing potential traffic control issues prior to advertisement of a project.
Implementation Potential	10. Please describe what actions another transportation agency would need to take to adopt this technology. 1) Develop state gathered data into a traffic model. 2) Identify urban areas; develop characteristics. 3) Identify rural areas; develop characteristics. 4) Know the user costs – Use demographics (latest census data). User costs are based on time delay evaluations only. UDOT has not set values for additional environmental factors as of yet.
	11. What is the estimated cost, effort, and length of time required for procurement or adoption by another transportation agency? Model development- $60,000 to $100,000. Implementation & Development Hours & Training of Staff Annual analysis of scenarios- $30,000 to $60,000.
	12. What organization(s) currently supply and provide technical support for this technology? Martin Knopp, FHWA (Martin works on user impact costs separate from his duties with FHWA.) Dr. Peter Martin of the University of Utah and Dr. Mitsuru Saito of Brigham Young University.
	13. Please describe any legal, regulatory, social, intellectual property, or other issues that could affect ease of implementation. This technology actually alleviates any of the above issues and supports federal highway regulations. In addition, this effort is pursuant to the requirements of Section 1051 of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) recently updated with the final rule on Work Zone Safety and Mobility and published in the Federal Register (69 FR 54562) on September 9, 2004 with an effective date of October 12, 2007.
Willingness to Champion	14. Is the sponsoring DOT willing to promote this technology to other states, if partially supported by the AASHTO Task Force on Technology Implementation? ☒ Yes ☐ No
Date Submitted	15. Date: September 8, 2005

16. Please include image(s) of sketches or photographs, if available ☒Image(s) are attached.*

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Recent UDOT Projects w/ Measures to Reduce User Impacts of Fast Track Construction:

Project:	(%Time savings)	Description:
*IM-15-2(45)82	(61.79%)	I-15 Paragonah to SR-20-Off Ramp (MP 82.65 to 98.30) – Restoration and Rehabilitation
*IM-NH-15-3(26)121	(47.32%)	I-15 Wildcat Interchange to JCT I-70 (MP 119.31.9) – Asphalt Pavement Rehabilitation
*Nh-BHF-215-9(112)14	(47.62%)	I-215 Redwood Road to 4700 South West (MP 13.32 to 17.01 – Grade, Drain, STR, Noise Wall
CM-209(12)11	(50.00%)	9400 South at 1300 East (MP 10.049 to 10.299) – Intersection Improvement
IM-15-8(103)379	(77.39%)	I-15 Elwood to West Tremonton, Interchange & Resurfacing (MP 78.44 to 40.23) – Bituminous Pavement, Rotomilling
NH-0091(14)10	(55.56%)	SR-91, Box Elder County line to SR-23 (MP 10 to 17.2) – Restoration Rehabilitation
NH-0091(15)3	(50.00%)	SR-91 From SR 90 to Cache County line (MP 3.3 to 10) – Bituminous Pavement Open Graded
SP-0020(1)0	(56.51%)	SR-20, I-15 to SR-89 (MP 0.120-20.455) – Passing Lane, Grading, Drainage, Surfacing Passing Lanes
SP-0039(9)14	(50.00%)	SR-39 Junction with SR-158 (MP 13.811-14.075) – Correction of Deficient Vertical Curve on SR-39
SP-0193((3)1	(100.00%)	SR-193 From I-15 to SR-89 (MP 0.7 to 5.7) – Open Graded Surface Course
SP-0273(5)2	(66.67%)	SR-273 from 100 South to I-15 (MP 2 to 3) – Rotomill, HMA Overlay OGSL
SP-15-7(167)288	(88.04%)	I-15 Utah County Line to 10600 South (MP 288.74 to 297.416) – Widen, Drainage STR, & Retaining ATMS
SP-15-7(174)331	(200.00%)	Bridge Preservation, Clearfield and Layton (MP 334.44 to 336.71) – Structures 708 & F-63
STP-0010(25)66	(100.00%)	SR-10 South of Price Spot Improvement (MP 66.958 to 66.835) – Improve Sight Distance
STP-2164(1)1	(78.57%)	3600 West, 4700 South to 4100 South – Pavement Reconstruction
STP-2290(2)10	(87.75%)	1300 south 1700 East to Foothill Blvd – Roadway Reconstruction