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e-CONSTRUCTION AS A DISRUPTIVE TECHNOLOGY

LEVERAGING TECHNOLOGY IN DOT EVERYDAY BUSINESS

MARCH 30 & 31, 2016 | DEARBORN, MICHIGAN

PARTICIPANT'S WORKBOOK



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e-CONSTRUCTION AS A DISRUPTIVE TECHNOLOGY

LEVERAGING TECHNOLOGY IN DOT EVERYDAY BUSINESS

WEDNESDAY, MARCH 30, 2016

Tuesday																													
6:00-8:00 PM	Pre-Conference Evening Ice Breaker at the Dearborn Inn Ten Eyke Tavern Optional event with cash bar and individual pay menu items available for order.																												
Wednesday																													
7:15-7:45 AM	Transportation from Dearborn Inn Lobby to Automotive Hall of Fame																												
7:30 AM	Registration and Continental Breakfast																												
8:00 AM	Welcome, Conference Overview, and Objectives Cliff Farr Engineer Manager of Construction Technology and Training Michigan DOT																												
8:10 AM	Host State Welcome Brad Wieferich, PE Director, Bureau of Development Michigan DOT																												
8:25-8:45 AM	Overview of E-Construction Kathryn Weisner, PE Construction & Contract Admin. Eng. FHWA Resource Center																												
8:45-9:05 AM	The Culture of Innovation William Vavrik, PE, PhD Vice-President ARA, Inc.																												
9:05-9:30 AM	Introductions Cliff Farr Michigan DOT																												
9:30 AM	BREAK																												
	<table border="1"> <thead> <tr> <th>MANAGEMENT TRACK</th> <th>TECHNICAL TRACK</th> </tr> </thead> <tbody> <tr> <td>10:00 AM Creating a Business Plan Amy Tootle, PE Florida DOT Jim Foringer, PE Pennsylvania DOT</td> <td>Electronic Contracts, Bidding, & Signatures Paul Wheeler, PE Utah DOT</td> </tr> <tr> <td>10:45 AM Moderated Panel Discussion Panelists: Amy Tootle, Jim Foringer</td> <td>PS&E Submittal and Digital Plan Rooms Richard Beckes, PE Minnesota DOT Sarah Kleinschmit, PE Missouri DOT</td> </tr> <tr> <td>11:15 AM Working with Partners Cliff Farr Michigan DOT Rachelle VanDeventer, PE MI-ITA</td> <td>Table Discussions</td> </tr> <tr> <td>12:00 PM</td> <td>LUNCH</td> </tr> <tr> <td>1:00 PM Creating Policy to Facilitate eConstruction Jim Foringer, PE Pennsylvania DOT</td> <td>Construction Administration and Management Tools Lori Miles, PE Pennsylvania DOT</td> </tr> <tr> <td>1:45 PM Moderated Panel Discussion Jim Foringer, Cliff Farr, Rachelle VanDeventer</td> <td>Document Management & Collaboration Stuart Laakso Michigan DOT Lori Miles, M.Ed. Pennsylvania DOT</td> </tr> <tr> <td>2:30 PM</td> <td>BREAK</td> </tr> <tr> <td>3:15 PM</td> <td>Table Discussions</td> </tr> <tr> <td>4:15 PM</td> <td>Closing Remarks and Instructions for Day 2 Cliff Farr Michigan DOT</td> </tr> <tr> <td>4:30 PM</td> <td>Adjourn</td> </tr> <tr> <td>4:30-4:45 PM</td> <td>Transportation from Automotive Hall of Fame to Dearborn Inn for those not attending the evening event</td> </tr> <tr> <td>5:00-7:00 PM</td> <td>Evening Event at the Automotive Hall of Fame (Optional) Dinner served at 5:30 p.m. Reservations required for this event and the cost is \$25.00.</td> </tr> <tr> <td>6:45-7:15 PM</td> <td>Transportation from Automotive Hall of Fame to Dearborn Inn</td> </tr> </tbody> </table>	MANAGEMENT TRACK	TECHNICAL TRACK	10:00 AM Creating a Business Plan Amy Tootle, PE Florida DOT Jim Foringer, PE Pennsylvania DOT	Electronic Contracts, Bidding, & Signatures Paul Wheeler, PE Utah DOT	10:45 AM Moderated Panel Discussion Panelists: Amy Tootle, Jim Foringer	PS&E Submittal and Digital Plan Rooms Richard Beckes, PE Minnesota DOT Sarah Kleinschmit, PE Missouri DOT	11:15 AM Working with Partners Cliff Farr Michigan DOT Rachelle VanDeventer, PE MI-ITA	Table Discussions	12:00 PM	LUNCH	1:00 PM Creating Policy to Facilitate eConstruction Jim Foringer, PE Pennsylvania DOT	Construction Administration and Management Tools Lori Miles, PE Pennsylvania DOT	1:45 PM Moderated Panel Discussion Jim Foringer, Cliff Farr, Rachelle VanDeventer	Document Management & Collaboration Stuart Laakso Michigan DOT Lori Miles, M.Ed. Pennsylvania DOT	2:30 PM	BREAK	3:15 PM	Table Discussions	4:15 PM	Closing Remarks and Instructions for Day 2 Cliff Farr Michigan DOT	4:30 PM	Adjourn	4:30-4:45 PM	Transportation from Automotive Hall of Fame to Dearborn Inn for those not attending the evening event	5:00-7:00 PM	Evening Event at the Automotive Hall of Fame (Optional) Dinner served at 5:30 p.m. Reservations required for this event and the cost is \$25.00.	6:45-7:15 PM	Transportation from Automotive Hall of Fame to Dearborn Inn
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e-CONSTRUCTION AS A DISRUPTIVE TECHNOLOGY LEVERAGING TECHNOLOGY IN DOT EVERYDAY BUSINESS THURSDAY, MARCH 31, 2016

Thursday	
7:15-7:45 AM	Transportation from Dearborn Inn Lobby to Automotive Hall of Fame
7:30 AM	Registration and Continental Breakfast
8:00 AM	Welcome Cliff Farr Engineer Manager of Construction Technology and Training Michigan DOT
8:05 AM	The Culture of Diversity Alexa Mitchell, PE CIM Consultant WSP PB
8:15 AM	Mobile Technology for Field Inspection Rick McGowan Michigan DOT Roxi Garcia, PE Advance Transportation Planning Director Texas DOT Tom Feliz Strategic Sales Executive Pavia Systems
9:15 AM	Technology Demonstrations: Attendees Visit Vendor Exhibit Hall
10:00 AM	BREAK
10:30 AM	The Future Project Acceptance and Close-out Rob Wight, PE Director of Construction Utah DOT
11:15 AM	IT Support and User Training Daniel Belcher, PE Design Services Manager Michigan DOT Stuart Laakso ProjectWise Construction Analyst Michigan DOT
12:00 PM	LUNCH
1:00 PM	Table Discussions Led By All Presenters
1:45 PM	Panel Q&A Session With All Presenters
2:45 PM	Closing Remarks: Next Steps (CIM) Daniel Belcher, PE Design Services Manager Michigan DOT
3:00 PM	Adjourn
3:00-3:30 PM	Transportation from Automotive Hall of Fame to Hotel or Airport

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e-Construction as a Disruptive Technology Conference Participant's Workbook

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LINKS TO PRESENTATIONS AND OTHER RESOURCES

Information materials used for this conference will be posted on this website. Participant workbook, agenda, and presentations can be downloaded by visiting:

<http://www.econstructiontoday.com/conference.html>

Other Resources:

- <http://www.econstructiontoday.com/>
- <http://www.fhwa.dot.gov/innovation/everydaycounts/edc-3/econstruction.cfm>
- <http://www.fhwa.dot.gov/construction/econstruction/>
- <http://www.fhwa.dot.gov/innovation/stic/>
- <http://aiaa.transportation.org/Pages/e-Construction.aspx>

PANEL DISCUSSION QUESTIONS AND ACTIVE NOTETAKING PAGES

MANAGEMENT TRACK: CREATING A BUSINESS PLAN

1. How was your leadership involved in setting the vision for the organization?
2. Did you have a formal business plan or project charter? If so, what did it include? Who were the team members and what role did they play throughout the implementation?
3. How did you assess your baseline capabilities and incremental goals for implementation?
4. How much of your plan was based on leveraging existing resources? Which resources did you leverage?

MANAGEMENT TRACK: WORKING WITH PARTNERS

1. How did you engage your legal staff to support the e-Construction initiative? Were digital signatures already allowed by state law when you started implementation? If no, explain what actions you had to take to change the law.
2. How did you go about communicating your e-Construction goals with your business partners and contracting community?
3. How did MI-ITA receive MDOT's e-Construction initiative? Was there any resistance? What did MI-ITA do to provide support to MDOT's e-Construction initiative?
4. How did you go about providing support for to contractors and suppliers?

MANAGEMENT TRACK: CREATING POLICY TO FACILITATE E-CONSTRUCTION

1. Which project delivery processes did you identify as potential e-Construction initiatives?
2. What specific policies did you have to change to support e-Construction?
3. How did you prioritize which policies to implement first?
4. How long did it take to switch to the new policies? Was there a transition or grace period? How did you make the transition?

TECHNICAL TRACK: ELECTRONIC CONTRACTS, BIDDING, AND SIGNATURES

1. What was the status of digital signatures in your state prior to implementation of e-Construction? What's the difference between electronic and digital signatures?
2. How did you go about determining which tools to select for supporting a paperless environment for this stage of your implementation? What were the business requirements and procurement process for each of them?
3. What IT infrastructure did you have to set up or enhance for making the contract development and bidding paperless environment possible?
4. How long did it take to transition to 100% mandatory electronic bidding?

TECHNICAL TRACK: PS&E SUBMITTAL AND DIGITAL PLAN ROOMS

1. Electronic plans can be vector PDFs, TIFF images, or CADD drawings. What was the logic behind determining the file format you chose as your standard for electronic plans?
2. What process or technology did you select for digitally signing and sealing the plan sheets? Did you include 3D data to supplement your electronic plans?
3. What processes did you set in place for production design staff to submit PS&E to the bidding and contract group? How did you manage version control?
4. How did you disseminate the contract plans and proposals to the contracting community? What were the systems requirements? What was the transition period to make it 100% electronic?

TECHNICAL TRACK: CONSTRUCTION ADMINISTRATION AND MANAGEMENT

1. What is your agency's enterprise strategy for construction management and administration?
2. How do you use project management tools in your construction management administration?
What projects use project management tools to monitor schedules?
3. What would you consider the minimum set of business requirements for construction management administration? How do you incorporate those business requirements in your specifications for procurement of software?
4. What strategy do you recommend for evaluating systems currently in place versus procuring completely new ones?

TECHNICAL TRACK: DOCUMENT MANAGEMENT SYSTEMS & COLLABORATION

1. What would you consider as "must have" features in a document management system solution? What are some common products in the market for document management and collaboration?
2. What strategy did you use for selecting custom collaboration and DMS tools versus commercial off the shelf (COTS) applications? What was your process for procuring a DMS solution?
3. How do you integrate your collaboration tools with other systems (i.e. construction management system, financial system, etc.)?
4. How did you transition from paper-based document management to a digital process?

TECHNICAL TRACK: MOBILE TECHNOLOGY AND FIELD INSPECTION

1. What are the advantages and disadvantages of the different mobile devices available in the market? What accessories do you recommend for mobile devices used in the field?
2. What role do mobile devices play in the enterprise e-Construction initiative? How is the information you collect using mobile devices incorporated to your construction management systems, document management systems, and project acceptance databases?
3. How are you using your mobile devices for 3D inspection and review of 3D models? What are the limitations of today's technology for full adoption of 3D mobile inspection?
4. Is there a need for having desktop and laptop computers in addition to mobile devices, and why?

TECHNICAL TRACK: FUTURE OF PROJECT ACCEPTANCE AND CLOSE-OUT

1. What is the difference between electronic as-builts and 3D as-builts? Why should we invest in 3D as-builts?
2. What is your state vision for the future of project acceptance and close-out?
3. What skill sets should construction staff have for performing real-time verification of 3D as-builts? How important will surveying and geospatial basic knowledge be in the future of project acceptance?
4. How do you plan on moving forward with establishing specifications that enable full implementation of 3D as-builts?
5. What role do 3D as-builts have in the enterprise asset inventory and management practices?

TECHNICAL TRACK: IT SUPPORT AND USER TRAINING

1. What is your agency's enterprise strategy to IT deployment? Who prioritizes the funding for IT projects? Is there a governing board for prioritizing technology deployment?
2. Who develops the technical specifications for technology deployment and vendor support?
3. How do you see the role of an enterprise engineering automation group benefiting technology deployment? What are your recommendations for establishing an engineering automation group at the enterprise level?
4. What benefits and challenges have you experienced with deploying just-in-time training for technology deployment?
5. For the first time in history, our workforce ranges from baby boomers to millennials. What is your strategy for providing training that is diverse and effective?

GENERAL Q&A PANEL SESSION

1. What was your definition of e-Construction prior to the conference? How has that definition change in the last couple of days?
2. Does your agency have a digital data governance plan? Or are you in the process of developing one? And what does it include?
3. Are digital signatures still a big issue in your state?
4. What e-Construction initiatives have you implemented, are you implementing, or plan to implement in the next 12 months?
5. What is your agency percent of digital workflows in the entire project delivery process (from PS&E submittal to close out), and how do you plan on closing the gap?

TABLE DISCUSSION WORKSHEETS

MANAGEMENT TOPICS

Management Topics	Define your desired outcomes from this discussion.
Creating a Business Plan	
Working with Partners	
Creating Policy to Facilitate e-Construction	
Discussion Items	Personal Notes
Building your DOT network. What other agencies has experience in this area of e-Construction? Who can you call for help on this topic?	
Building support/buy-in from executive management, internal staff, and industry/local contractors association Do you already have a champion? Who is it? What funding sources are available for implementation?	

TABLE DISCUSSION WORKSHEET FOR MANAGEMENT TOPICS CONTINUED

<p>Building support/buy-in from executive management, internal staff, and industry/local contractors association</p> <p>Do you already have a champion? Who is it?</p> <p>What funding sources are available for implementation?</p>	
<p>Mapping your processes</p> <p>What business processes are clearly documented?</p> <p>Are you already using some automation that can help you advance your initiative?</p>	
<p>Gathering your resources</p> <p>Sample language, cost/benefit data, list of requirements needed for implementation.</p> <p>What staff commitments and involvement do you have? Can consultants help you?</p>	

TABLE DISCUSSION WORKSHEET FOR TECHNICAL TOPICS

Technical Topic (Write in your topic of interest):	Define your desired outcomes from this discussion.
Suggested Discussion Items	Personal Notes
<p>Building your DOT network. What other agencies has experience in this area of e-Construction? Who can you call for help on this topic?</p>	
<p>Digital signatures Is this an issue? If so, what are the next steps for a solution?</p>	
<p>Leveraging existing resources What existing software/subscriptions do you already have available you can use for minimizing e-Construction cost? Are there any synergies that can be developed between existing systems? Are parts of this process already automated? Which documents can be easily converted to an electronic format to facilitate process automation?</p>	
<p>Magnitude of need (Simplicity/complexity of existing processes) What percent of the process is paper-based? How much time is staff spending on printing, scanning, and distributing paper? How much would the process change if automated? Would staff be better utilized for more important tasks?</p>	

TABLE DISCUSSION WORKSHEET FOR TECHNICAL TOPICS CONTINUED

<p>Cost and commercial technical support</p> <p>What is the cost for implementation/integration (large, medium, or small) for this process? How can you fund the cost of implementation?</p> <p>What is the cost of on-going software maintenance and how is that different from what you have now?</p> <p>How much software development will be needed? Is there a COTS solution that can perform the function?</p> <p>Has this process been piloted in the agency or any other agency? What can you learn from that experience?</p> <p>What are some of the business requirements you want to dictate your technical requirements? Can you write specs based on your needs and not the capability of any one software package?</p>	
<p>Agency IT support and training</p> <p>What challenges do you have with IT support, how can you circumvent those challenges?</p> <p>Is there an engineering automation group that can help you with writing technical specs, technology deployment and training?</p> <p>What is the level of effort for developing and conducting training for this process?</p>	

RESOURCES

AASHTO Innovation Initiative:
aia.transportation.org/Pages/e-Construction.aspx

FHWA EDC-3 e-Construction:
www.fhwa.dot.gov/construction/econstruction

WWW.ECONSTRUCTIONTODAY.COM

