

e-Construction & Partnering: A Vision for the Future

FHWA Virtual Summits
September 27 & 29, 2016



Photo Sources: FHWA unless noted

Source: Michigan DOT

every day counts
An Innovation Partnership with States



U.S. Department of Transportation
Federal Highway Administration

every day counts 



Welcome and Introductions

Agenda

Topic	Presenter/Facilitator
Welcome and Introductions	Tom Zagorski, Michael Baker International
Introduction to e-Construction and Partnering: A Vision for the Future	Kathryn Weisner, FHWA
State DOT e-Construction and Partnering	Rob Wight, Utah DOT
State DOT e-Construction and Partnering	Jim Foringer, Pennsylvania DOT
Q & A	Rob Wight, Utah DOT Jim Foringer, Pennsylvania DOT
e-Construction and Partnering Maturity Matrix	Tom Zagorski, Michael Baker International
Roundtable Discussion on Implementation Activities	Tom Zagorski, Michael Baker International

every day counts 



Introduction to e-Construction and Partnering: A Vision for the Future

What is *Every Day Counts* (EDC)?

State-based model to identify and rapidly deploy proven but underutilized innovations to:



shorten the project delivery process



enhance roadway safety



reduce congestion



improve environmental sustainability

EDC Rounds:
2-year cycles

To date:
3 rounds, 35 innovations

Initiating 4th Round
(2017-2018)
11 innovations

Where We've Been: e-Construction



Source: Florida DOT



Status Update on EDC-3 Activities



e-Construction
Efficiency through technology and collaboration



Implementation Plan
Every Day Counts 3 | Innovation Initiative
January 2015







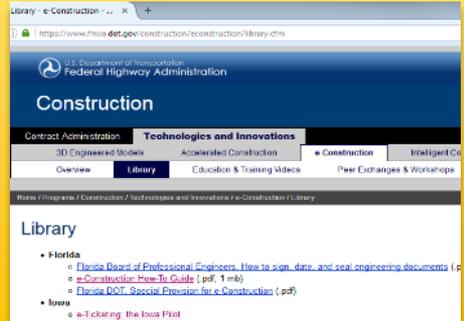
Peer Exchanges



FHWA Tablet Device Pilot (iPad/Surface Pro)



Regional Workshops



e-Construction Website

EDC-4 Funding Opportunities:



Accelerated Innovation Deployment (AID) Demonstration

- *New* Notice of Funding Opportunity (NOFO) under FAST Act > GOAL: \$10million per year [23 U.S.C. 503(c)(2)(B)]



State Transportation Innovation Council (STIC) Incentive

- Up to \$100,000 per STIC per year [*under AID*]



Increased Federal-share for Project-level Innovation

- Increase federal share up to 5 percent of the total project cost [23 U.S.C. 120(c)(3)]

Challenges for e-Construction

One size
doesn't fit all

Integration of
and use of
legacy systems

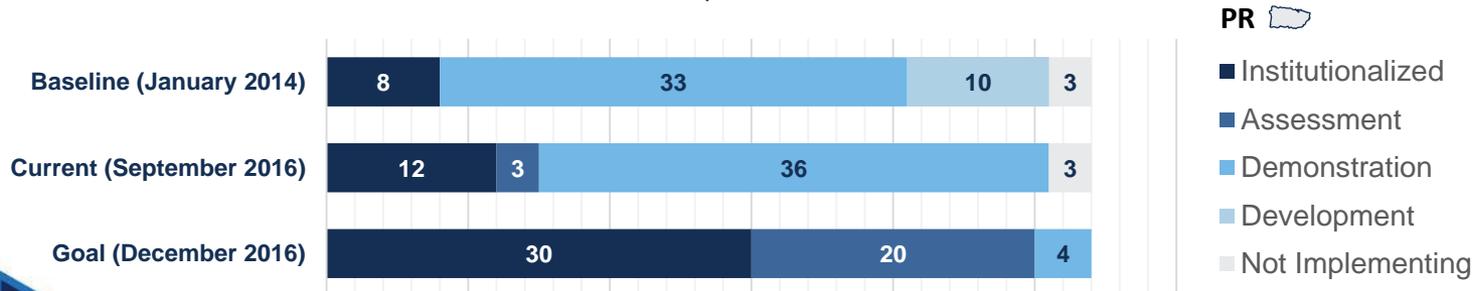
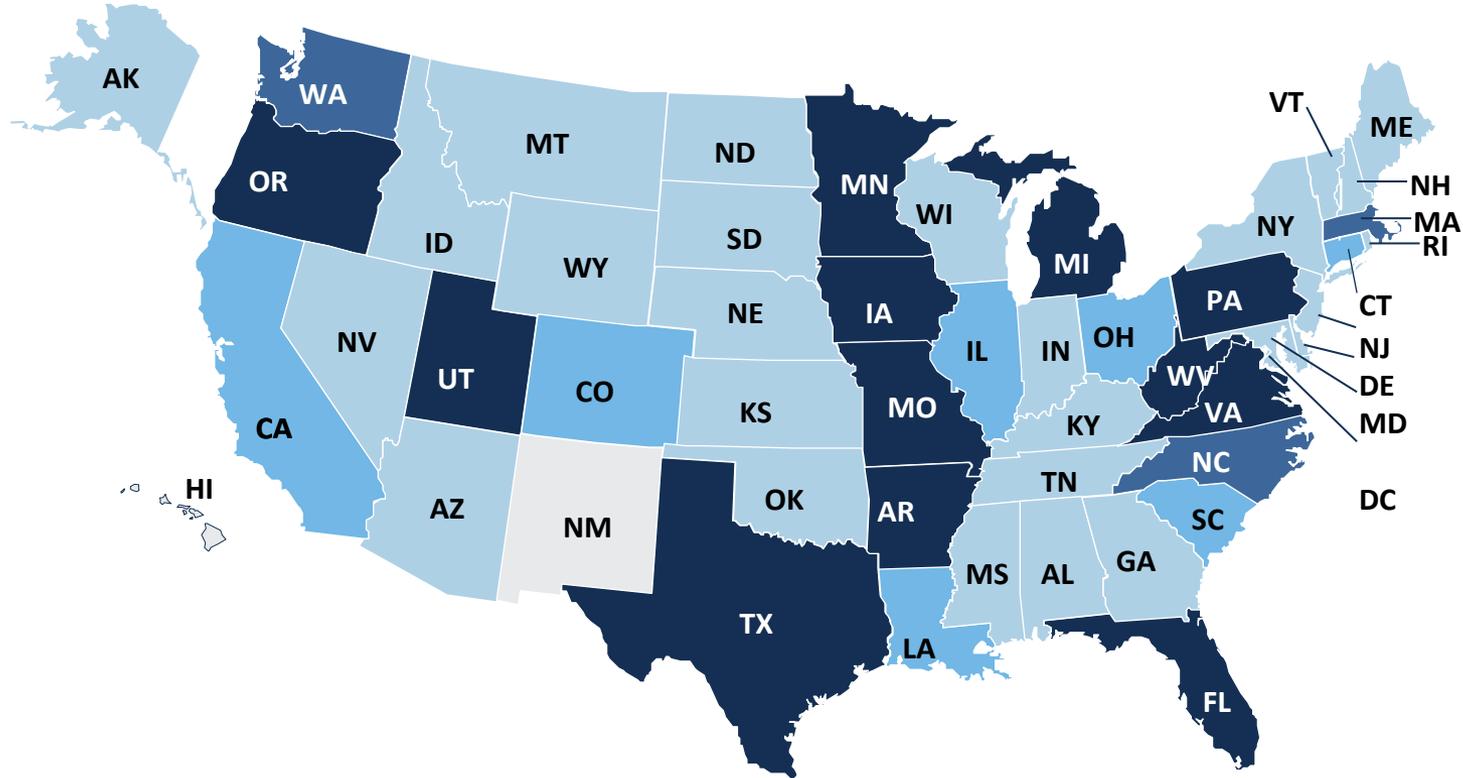
Management
buy-in

Measuring
Return on
Investment

Goals for EDC-4

-  Continue EDC-3 successes
-  Gather feedback on how much the States value EDC-3 activities and solicit new ideas for EDC-4
-  Share new State perspectives on e-Construction and Partnering
-  New definition of maturity levels and lead State status

e-Construction Lead States – Current Status (09/2016)



e-Construction – What's Next?

Holistic
approach

Data vs
Documents

Local &
Industry
partnering

Alternate
Delivery
Methods

ROI

e-Construction and Partnering: A Vision for the Future

e-Construction

- Paperless construction administration
- Digital project management (coordination, collaboration, & transparency)
- Secure & expedited document distribution to project stakeholders
- Single source of truth

Improve efficiency & project performance through enhanced communication, transparency, coordination & collaboration among stakeholders

Partnering

- Build a relationship of mutual trust
- Achieve mutually beneficial goals
- Communicate openly
- Resolve issues and minimize disputes

Partnering – Renewed Interest

Reduce claims

Alternate delivery methods

Outdated policy and procedures

A changing workforce

Partnering & e-Construction

Transparency

- Open access & sharing of records

Project Team Identification

- Early alignment & integration
- Mutual trust, respect, & understanding of mutual goals

Streamlined Process/Procedures

- Efficiency & Accountability

Early issue resolution & Dispute Detection

- Proactive instead of reactive
- Open & honest communication

every day counts 



Rob Wight, Utah DOT

Outline

About UDOT

e-Construction
History and
current practice

Future of e-
Construction at
UDOT

Partnering
Culture at
UDOT

Future of e-
Construction
and Partnering

Overview of UDOT

4 Regions

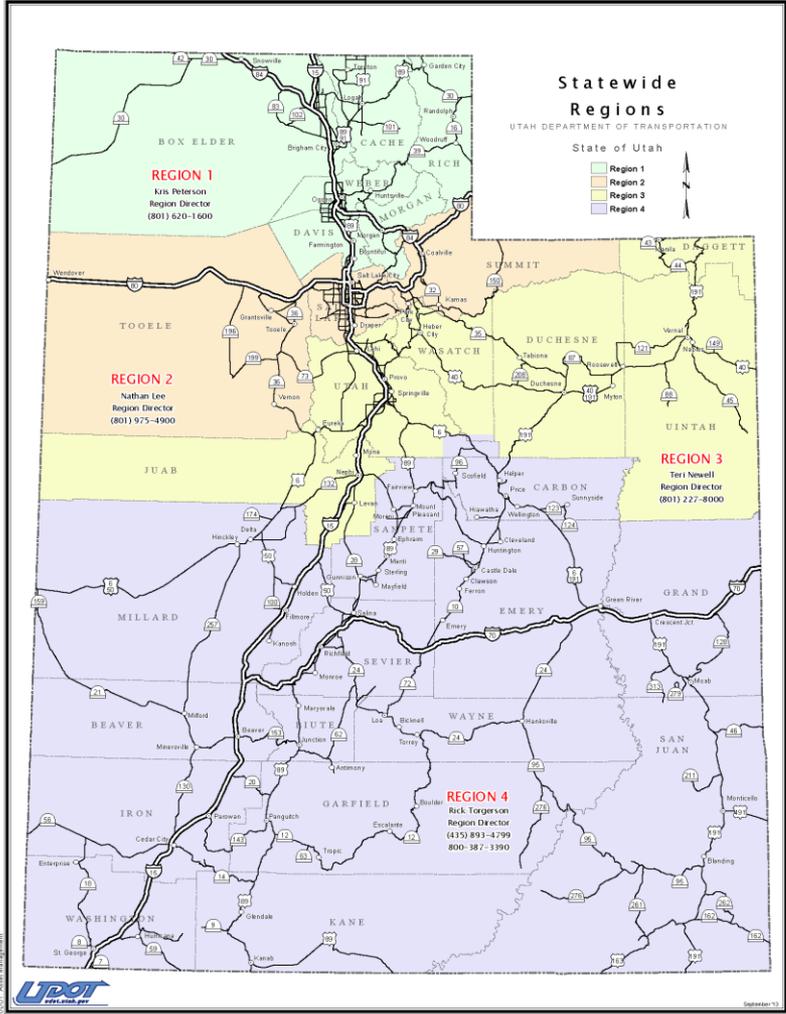
17 Construction Crews

30 Full Time Inspectors

500 Cross Trained Transportation Technician Inspectors

Approx 170 projects / yr

\$700M to 800M program per year
70% state funding



e-Construction – How did UDOT get here?

5 year process, Created Business Case

Funding Model Determined

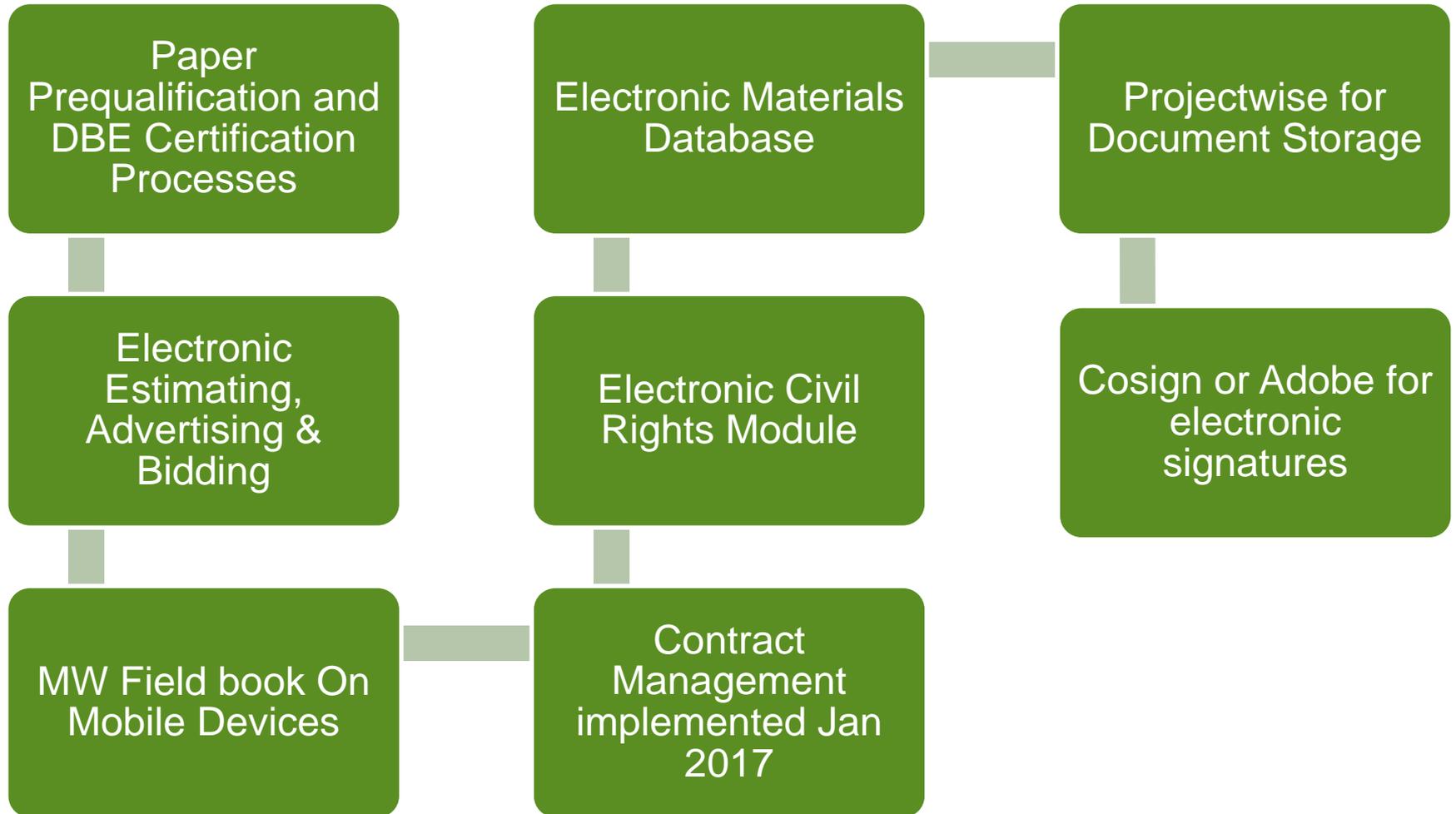
Buy in from Senior management, Legislature

Show Return on Investment – Key to Acquiring Funding

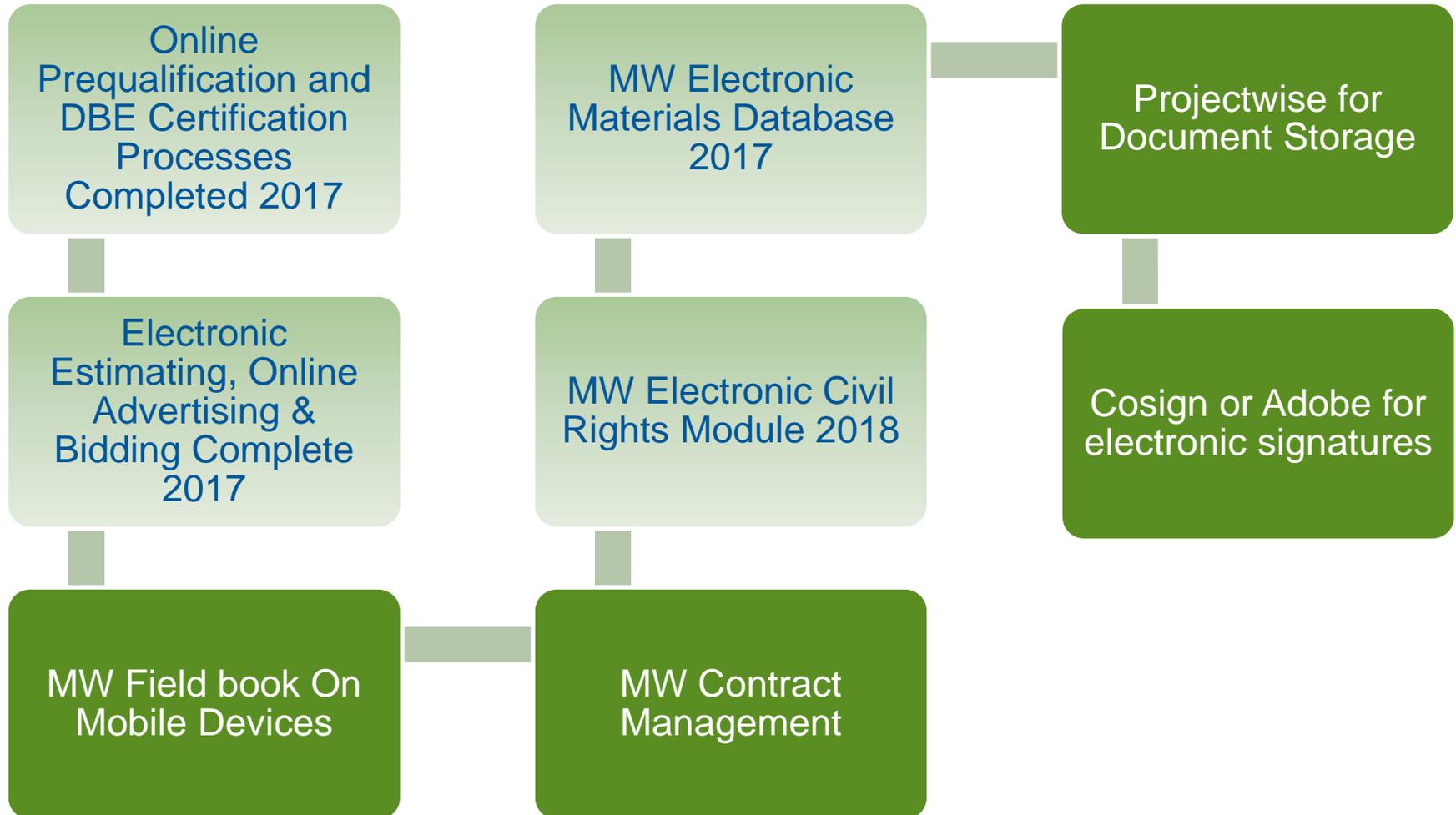
Determine Internal vs External software development

Does the System Make the employee and process more efficient?

Current State of e-Construction at UDOT



Future of e-Construction at UDOT



e-Construction/IDC Pilots at UDOT

Electronic Plan Viewer – Currently exploring several different applications

Exploring use of UAVs – bridge inspection, quantity calculation

Exploring/implementing remote camera inspection

Delivering the Model as the Contract Document

Continuing funding stream identified by Legislation

UDOT Partnering Culture

Partnering is a culture, not a process

- Good Processes can lead to culture change
- Needs to be championed all levels of the organization(s)

UDOT partnering values – Our way of doing business

- Fairness
- Cooperative Behaviors
- Teamwork
- Open and Honest Communication
- Joint Problem Solving
- Rapid Dispute Resolution at the Field Level

UDOT Partnering Culture

All projects are partnered in one of the following ways:

- Formal = Hired outside Facilitator
- Informal = Resident and Contractor PM facilitate
- Semi-Formal = Trained internal facilitator
- Costs are shared between contractor and UDOT
- Initial partnering session
- Executive level follow ups monthly on some projects
- Issue escalation process

Risk Based Partnering meetings

- Not a hug fest, but working meetings
- Identify challenges/risks on project and discuss framework to deal with them

Partnering Results

Claims performance

In past 5 years 2 claims have elevated to Claims Review Board (Highest Administrative Level)

2 additional projects have gone to litigation in this time period

Project Close out

Projects went from average of 160 days close out in 2011 from substantial completion to 80 days in 2016

Program Level Partnering



Program Level Partnering – Key to success in e-Construction

- Monthly meeting AGC
- Task groups formed to address certain challenges from a program perspective
- AGC representative on UDOT standards committee, selection committees for CMGC contracts

e-Construction & Partnering Synergies



Including Contractor partners in development.

- e-bid system development example
- UAV example
- IDC (3D) and AMG
- Understanding contractor's processes and designing processes/software for efficiencies
- Document submittal and processing/tracking

e-Construction & Partnering Synergies



How can e-Construction systems help amplify the partnering on projects and lead to more trust?



Partnering value: Open and Honest Communication, Fairness

- Document Control/Collaboration systems can communicate submittal requirements
- Pay estimates can be routed through electronic systems to make sure timely payments are made

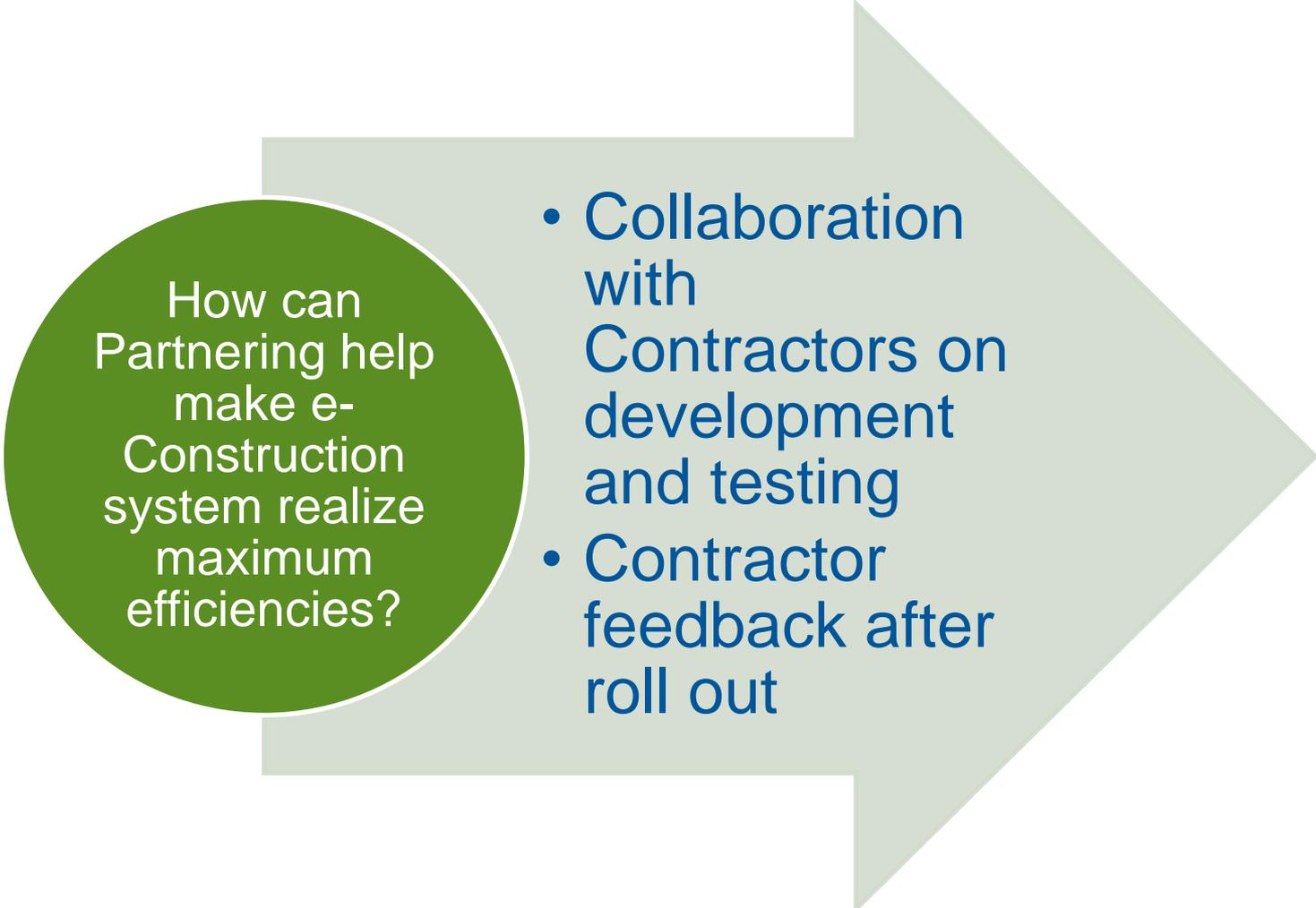
e-Construction & Partnering Synergies

How can e-Construction systems help amplify the partnering on projects and lead to more trust?

Partnering value:
Problem Solving at
the field level

- Better access to search capabilities in inspector's reports can lead to better understanding of issues and lead to better resolution
- Access to information in the field can lead to quicker resolution

e-Construction & Partnering Synergies



How can Partnering help make e-Construction system realize maximum efficiencies?

- Collaboration with Contractors on development and testing
- Contractor feedback after roll out

every day counts 

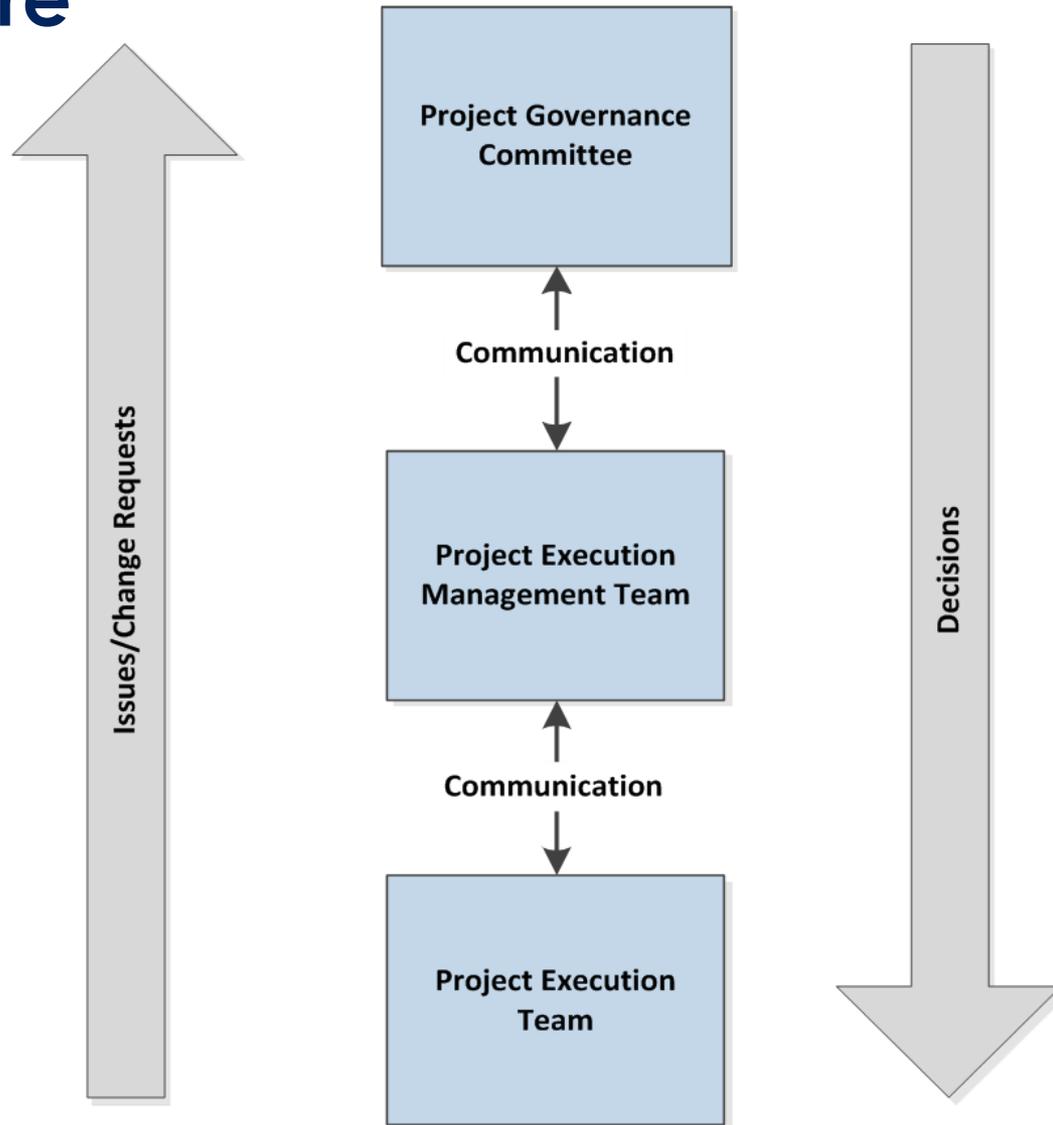


Jim Foringer, Pennsylvania DOT

PennDOT's Construction Projects

District	# of Overall Projects	Overall \$ Value	# of State Projects	State Project \$ Value	# of Local Projects	Local Project \$ Value
1	89	\$247,707,272.41	81	\$236,314,530.01	8	\$11,392,742.40
2	103	\$335,177,242.44	95	\$329,567,133.72	8	\$5,610,108.72
3	79	\$280,980,528.83	74	\$276,973,222.25	5	\$4,007,306.58
4	124	\$753,252,308.06	113	\$741,646,356.81	11	\$11,605,951.25
5	110	\$685,882,879.17	100	\$599,720,541.27	10	\$86,162,337.90
6	168	\$2,443,470,495.89	125	\$2,172,265,240.90	43	\$271,205,254.99
8	163	\$540,816,217.50	150	\$514,666,982.86	13	\$26,149,234.64
9	68	\$362,344,906.60	62	\$358,984,482.74	6	\$3,360,423.86
10	65	\$226,867,718.66	63	\$225,663,098.97	2	\$1,204,619.69
11	110	\$886,011,429.68	94	\$797,298,755.87	16	\$88,712,673.81
12	83	\$579,571,888.19	74	\$572,470,522.12	9	\$7,101,366.07
Totals	1162	\$7,342,082,887.43	1031	\$6,825,570,867.52	131	\$516,512,019.91

PennDOT's Standard IT Project Governance Structure



PennDOT's Existing e-Construction

Engineering and Construction Management System (ECMS)

- e-Bidding
- Signatures
- Estimates
- Work Orders (FHWA part of approval)
- Time Extensions (FHWA part of approval)
- Punch List
- Project Closeout (include Notice of Final Quantities)
- Consultant Agreement
- Consultant Mileage & Hour – Phase 1
- Source of Supply – Phase 1

PennDOT's Existing e-Construction

Mobile applications

- MC Docs Application
- MC PSA Application
- MC Punchlist Application



PennDOT Project Collaboration Center (PPCC)

- Submittals with automated workflow
- Shared/Project Files/Photos

eCAMMS

- Electronic Plant Books, mix designs, sampling test results, approved source bulletins, District Letter of Materials Certification (T-4238A)

PennDOT's Future e-Construction Initiatives

- Automated Force Account
- Automated PennDOT Mileage and Hour
- Consultant Mileage and Hour – Phase 2
- Source of Supply – Phase 2
- Mobile Applications
 - Concrete Inspection Diary
 - Force Account
 - Environmental and Sediment Checklist
 - Traffic Control Review Automatic
 - Americans with Disability Act Ramp Inspection
- Archiving of Records
- Roll all applications into 1 stop shop
- Explore e-ticketing

PennDOT's Inspection Man Hours

PennDOT	1 Q Sum	2 Q Sum	3 Q Sum	4 Q Sum	Total
Quarterly Sum	71,053.00	284,212.50	284,212.50	213,159.00	852,637.00
	8.33%	33.33%	33.33%	25.00%	
Consultant	1 Q Sum	2 Q Sum	3 Q Sum	4 Q Sum	Total
Quarterly Sum	73,404.00	428,203.25	563,484.75	382,421.00	1,447,513.00
	5.07%	29.58%	38.93%	26.42%	
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Overall
Projected Savings per Quarter	6.70%	31.46%	36.13%	25.71%	
	\$1,172,882.03	\$5,505,093.10	\$6,322,849.57	\$4,499,175.29	\$17,500,000.00

PennDOT's Return On Investment

Project	Initiation Dates	Development Cost	Overall Savings
CDSv3	August 2012	\$ 2.74 million	\$5 million/year
Release 1 implemented 8-18-14			
Release 3.0 implemented 7-18-16			
Mobile Construction	July 2012	\$1.67 million	\$28 million
Sprint 1 implemented 9-6-13			
Sprint 40 implemented 8-23-16			
PPCC	October 2011	\$5.2 million	\$29.1 million
Release 1 implemented 9-13-13			
Release 5.1 implemented 8-15-16			
eCAMMS	January 2012	\$6.9 million	Being assessed
Implemented January 2012			

PennDOT's Partnering with e-Construction

PPCC

Automated Force Account

User Acceptance Testing

Local Sponsors – utilizing PennDOT's systems

Consultant Mileage and Hour Application

Estimate tracking

Work Order turn around

PennDOT's Partnering Current Process

Formal Partnering

- High profile/critical projects

- Outside facilitation

- Shared Costs

- 1-Day Duration

- Executive Partnering Follow-Up Sessions

PennDOT's Partnering Future Process

3-Tiered Approach : Based on Value of Project

- < \$5 million – no formal session
- \$5-\$25 million – ½ day facilitated session
- > \$25 million – full day facilitated session

Complexity of project may change the type of session

PennDOT's Transportation Quality Initiative (TQI)



PennDOT's TQI's Framework

- Culture of Quality
- Shared Vision & Values
- Trust & Collaboration
- Partnership



- Leadership
- Training
- Recruitment

- Pre-Construction
- Contractual
- Issue Resolution

- QA/QC
- Materials
- Durability/Quality

Presentation Q&A

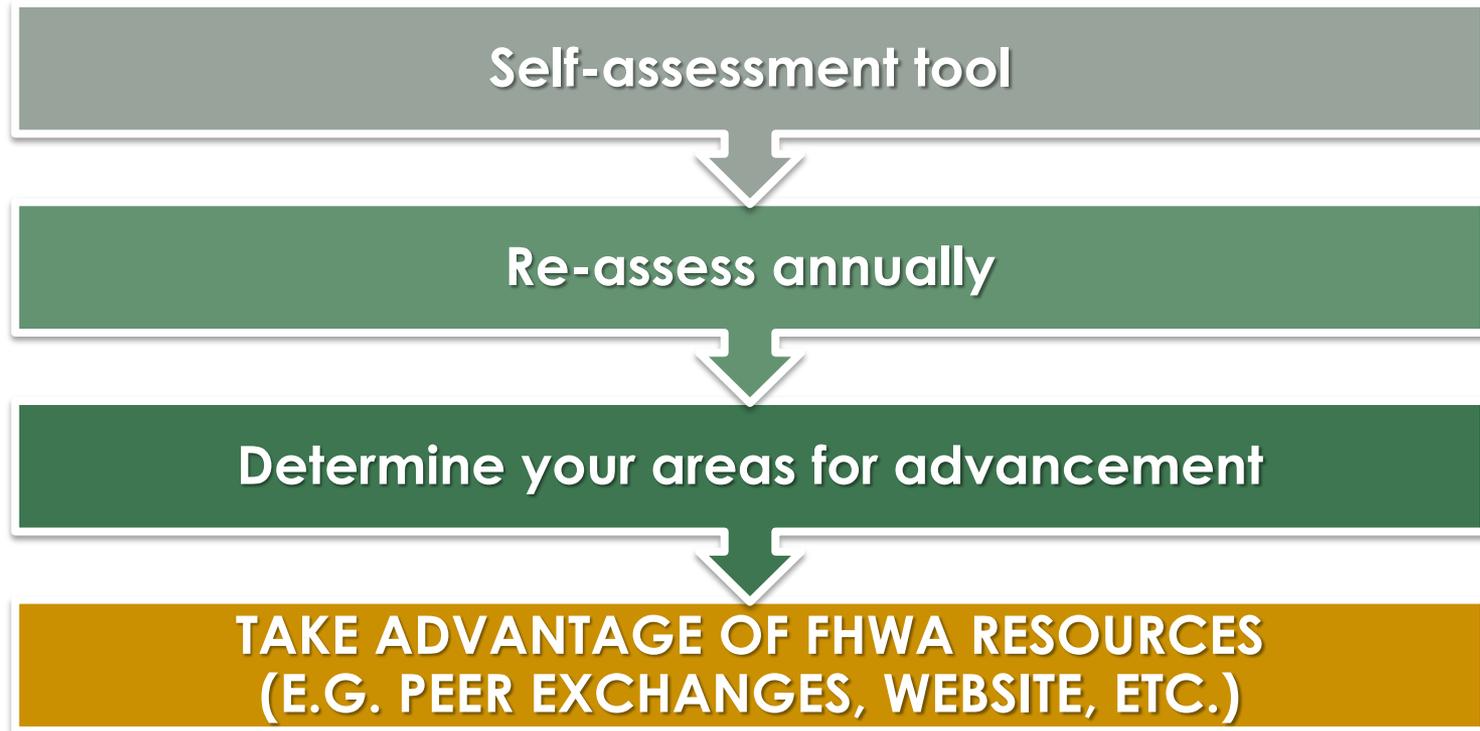
Questions?

every day counts 



e-Construction and Partnering Maturity Matrix

e-Construction and Partnering Maturity Matrix



- ✔ Share the workbook matrix with your agency colleagues and consider completing it and revisiting annually

every day counts 



Roundtable Discussion

Roundtable Discussion: e-Construction

What are your observations/suggestions regarding EDC-3 activities?

What barriers exist to your agency's implementation?

FHWA implementation plan:

What can we do to further advance the deployment of e-Construction?

Roundtable Discussion: Partnering

How does your agency use/view Partnering and what benefits have you experienced ?

What are some of the barriers?

FHWA implementation plan:

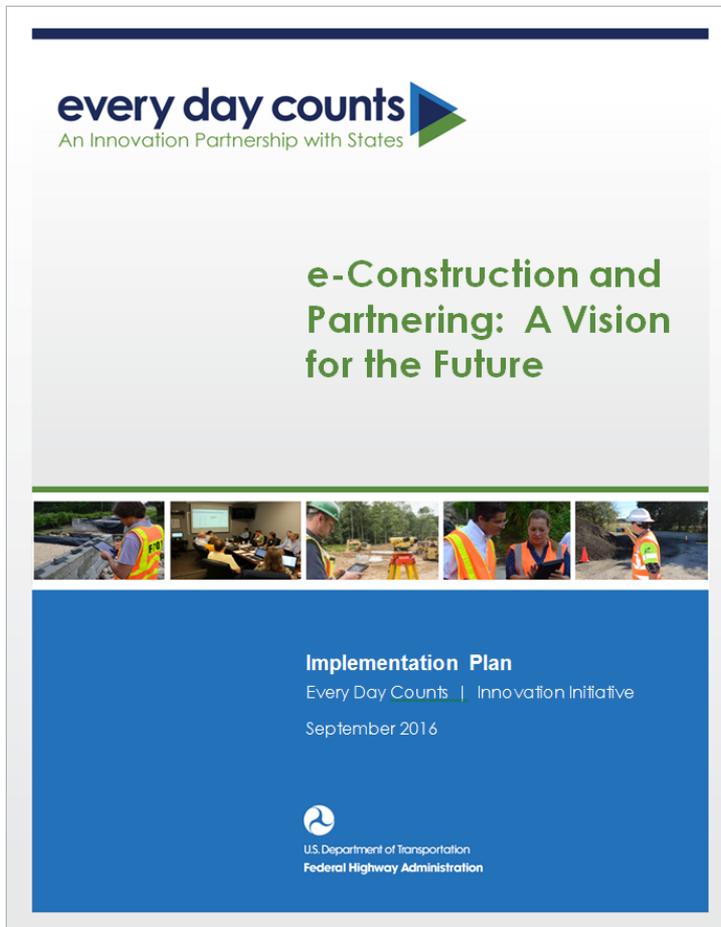
What can we do to further advance the renewal of Partnering?

Roundtable Discussion: Synergies

What are the synergies that you see in the implementation of the e-construction and partnering principles presented?

How might your current partnering practices accelerate or enhance the implementation and benefits derived from e-construction?

Implementation Plan



FHWA VISION

Advance the state of the construction administration technology and project collaboration.

MISSION STATEMENT

Optimize construction field system processes; minimize questions, claims, and disputes; and reduce overall project costs.

FHWA Contacts

e-Construction

Kat Weisner

FHWA – Resource Center
202-823-2267
Kathryn.Weisner@dot.gov

Bernie Kuta

FHWA – Resource Center
720-963-3204
Bernie.Kuta@dot.gov

Robert Fijol

FHWA – Michigan Division Office
517-702-1841
Robert.Fijol@dot.gov

Partnering

Chris Schneider

FHWA – Office of Infrastructure
202-493-0551
Christopher.Schneider@dot.gov

John Haynes

FHWA – Utah Division Office
801-955-3526
John.Haynes@dot.gov

Matthew DiGiovanni

FHWA – Vermont Division Office
802-224-1368
Matthew.DiGiovanni@dot.gov

