

e-Construction



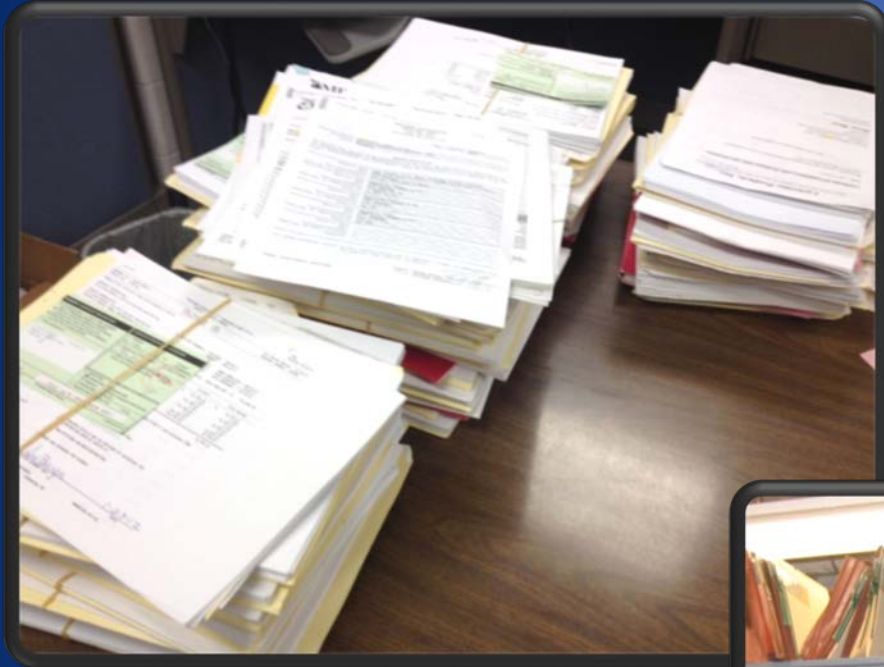
102nd Annual Illinois Transportation & Highway Engineering (T.H.E.) Conference

February 23, 2016

Cliff Farr

Michigan Department of Transportation

A Reminder – Why?



A Reminder – Why?



A Reminder – Why?



MDOT Initial Motivation Lost Documents!



Inspector Burdens



Construction & Design



How Did We Get There?

Basic Essential Starting Components

FieldManager

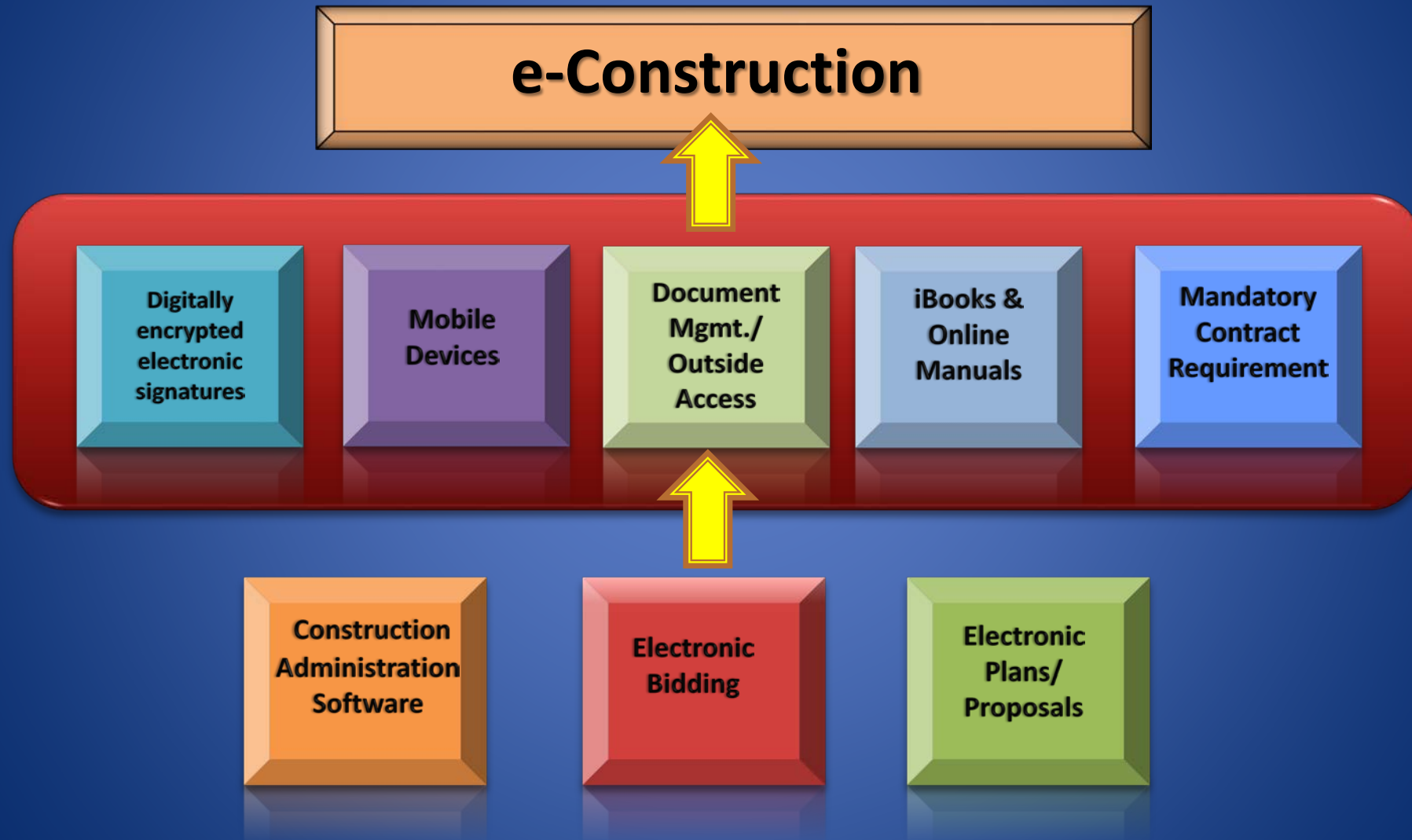
**Electronic
Bidding**

**Electronic
Plans/Proposals**

While these improvements clearly helped make us more efficient, why was there still so much paper on our projects?



Final Steps to Reach “Paperless” Goal



e-Construction

The culmination of several automated processes resulting in paperless construction.

e-Construction Pilot Projects

- **Pilots projects started construction in October 2012**
 - I-96 Latson Road (\$25M)
 - M-231 Little Robinson Creek (\$68M)
 - M-231 over the Grand River (\$9M)
 - I-75 Zilwaukee Bridge (\$35M)

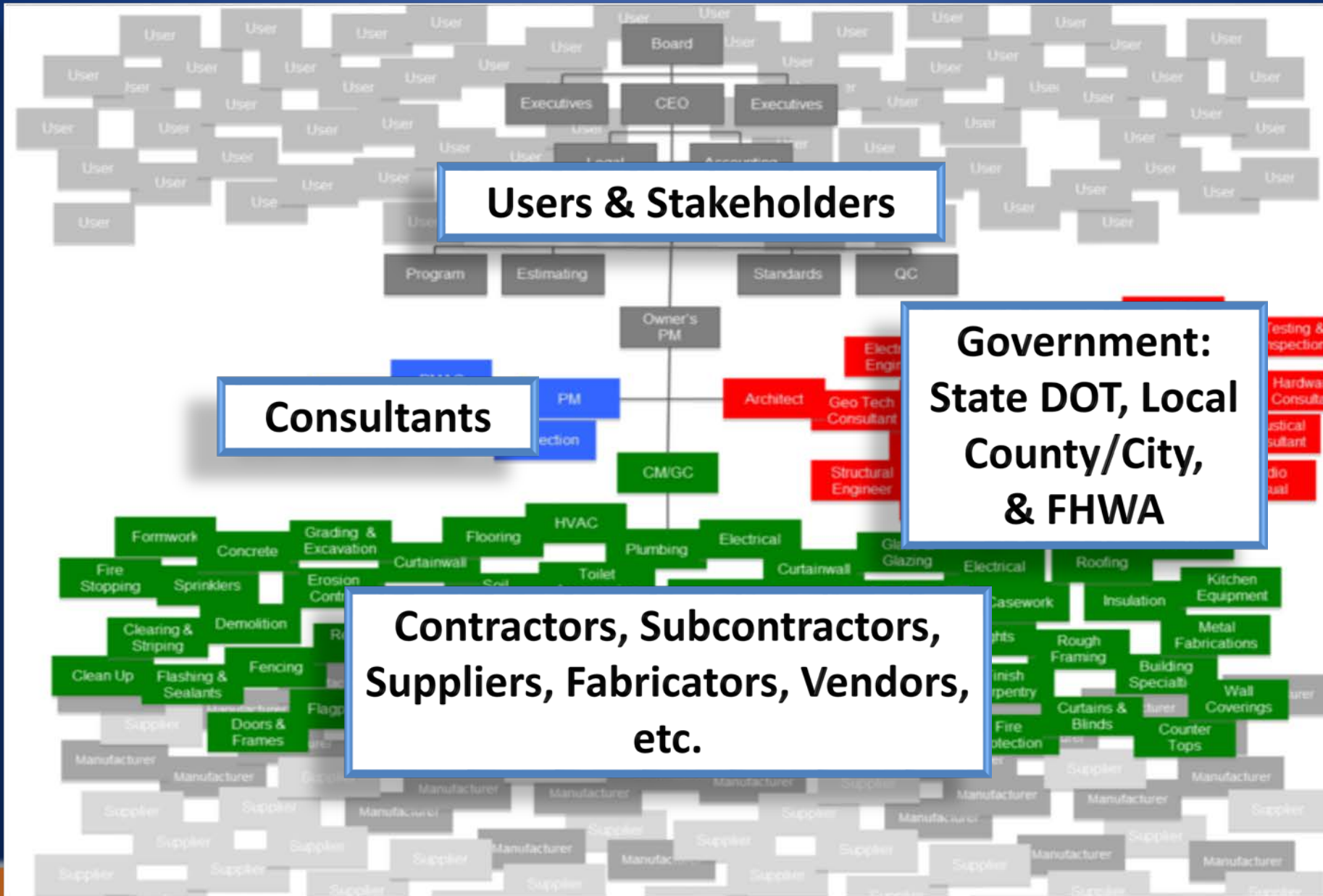


Pilot Tasks

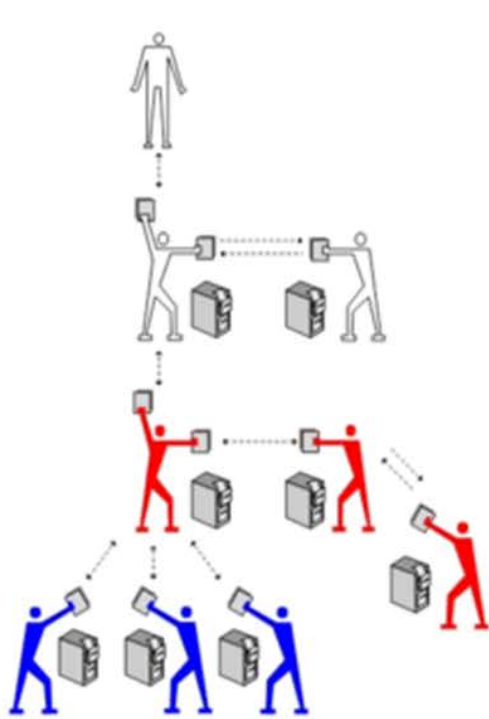
- Developing Standards
 - Electronic system file names
 - Document naming conventions
 - MDOT documentation
 - Contractor documentation
- Firewall
- Construction Managing Office
 - Network latency/throughput
- Getting all business areas on board
- Develop Pilot Special Provision



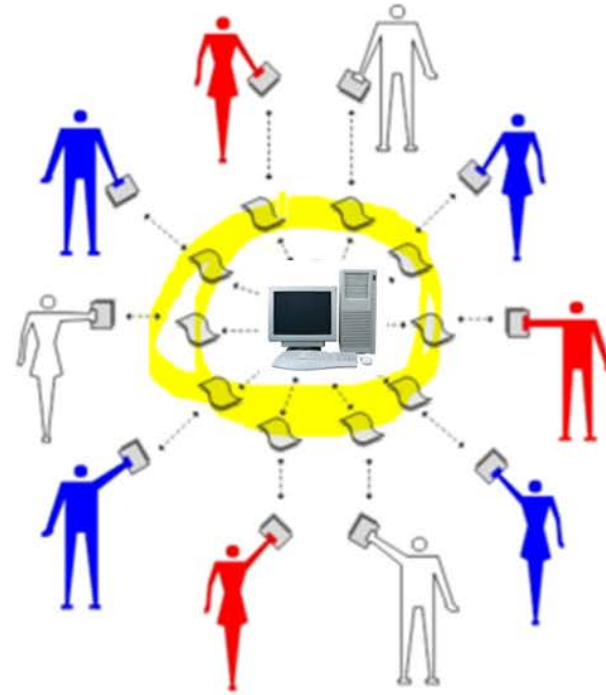
Number of People Involved in a Construction Project



A Centralized Sharing Model



Traditional



Collaborative

Auditability, Accountability, Transparency

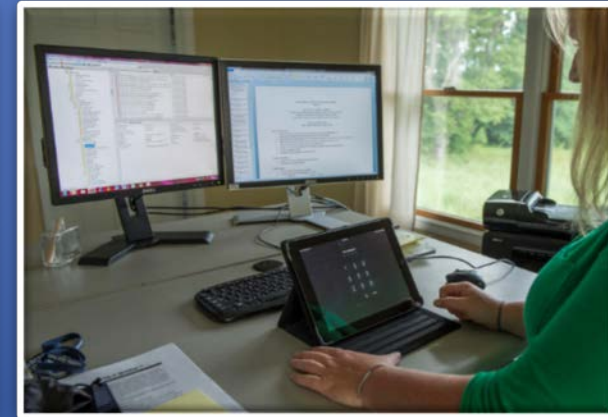
Other Key Contract Administration Issues for Implementation

- FHWA Michigan Office formal approval of paperless contract administration process
- Compliance with FHWA Contract Administration Core Curriculum Manual & other applicable regulations
- Compliance with CFR 23 & CFR 49 DBE regulations
- Compliance with Federal Davis Bacon Prevailing Wage requirements/payrolls
- Insuring process is accessible for all parties & does not create artificial barriers



Michigan e-Construction Team (1)

- Stuart Laakso – ProjectWise Construction Analyst
- Heather VerHage – ProjectWise Administrator
- Rachelle VanDeventer – Design Engineer Support
- Cliff Farr – MDOT e-Construction Coordinator
 - 517-897-3672, farrc@michigan.gov



Michigan e-Construction Team (2)

- Construction Contractors

- Glenn Bukoski – VP of Engineering Services
- Michigan Infrastructure & Transportation Association

- MDOT

- Andy Esch – Information Security Officer
- Steve Hawker – Materials Supervisor
- Rick McGowan – Construction Inspector



Where Is MDOT Today?

The following stakeholders are in production, including:

- All MDOT construction & materials offices
- 303 contracting firms
 - 860 contractor users
- 58 consultant firms
 - 1017 consultant users
- 22 FHWA users
- 4 Cities; 9 users
- 9 counties; 31 users
- 252 active or finalized contracts
 - ~ \$1.5 billion as-let contracts





Polishing e-Construction for 2016

- Statewide enhancements
 - Too many folders?
 - Document naming standard
 - Truncated names
 - Document originator
 - ProjectWise:
 - Search tools
 - Work flow enhancement



Next Steps

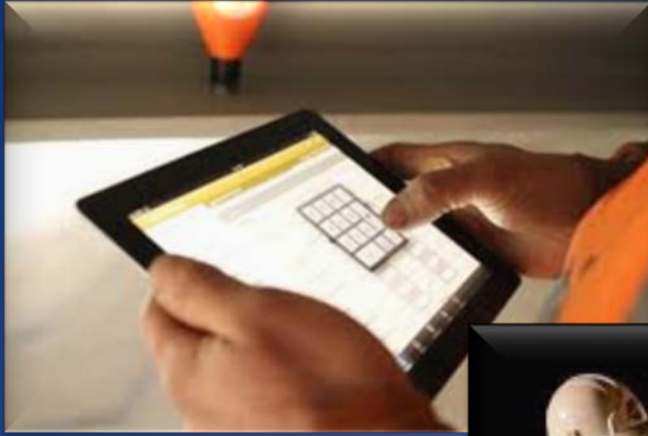
- Delivery Tickets
- Local Agency e-Construction Implementation

Other 2016 e-Construction Priorities

- Digitally encrypted electronic signatures
 - iPad
 - Enterprise
- Remote connectivity
 - Boosters
 - Satellite
- Tablets
- Network efficiency



Conclusion



Mobility is Key!

<http://mdotwiki.state.mi.us/construction/index.php/E-Construction>



Fillable Forms & Online Manuals

- Fillable Forms
 - Templates
 - Voice Recognition
- MDOT WIKI Construction Manuals
 - Instructions & Training
 - Always up-to-date
 - Mobile Access
- YouTube Training
- Contract Plans
- Online Standard Plans



That was then...



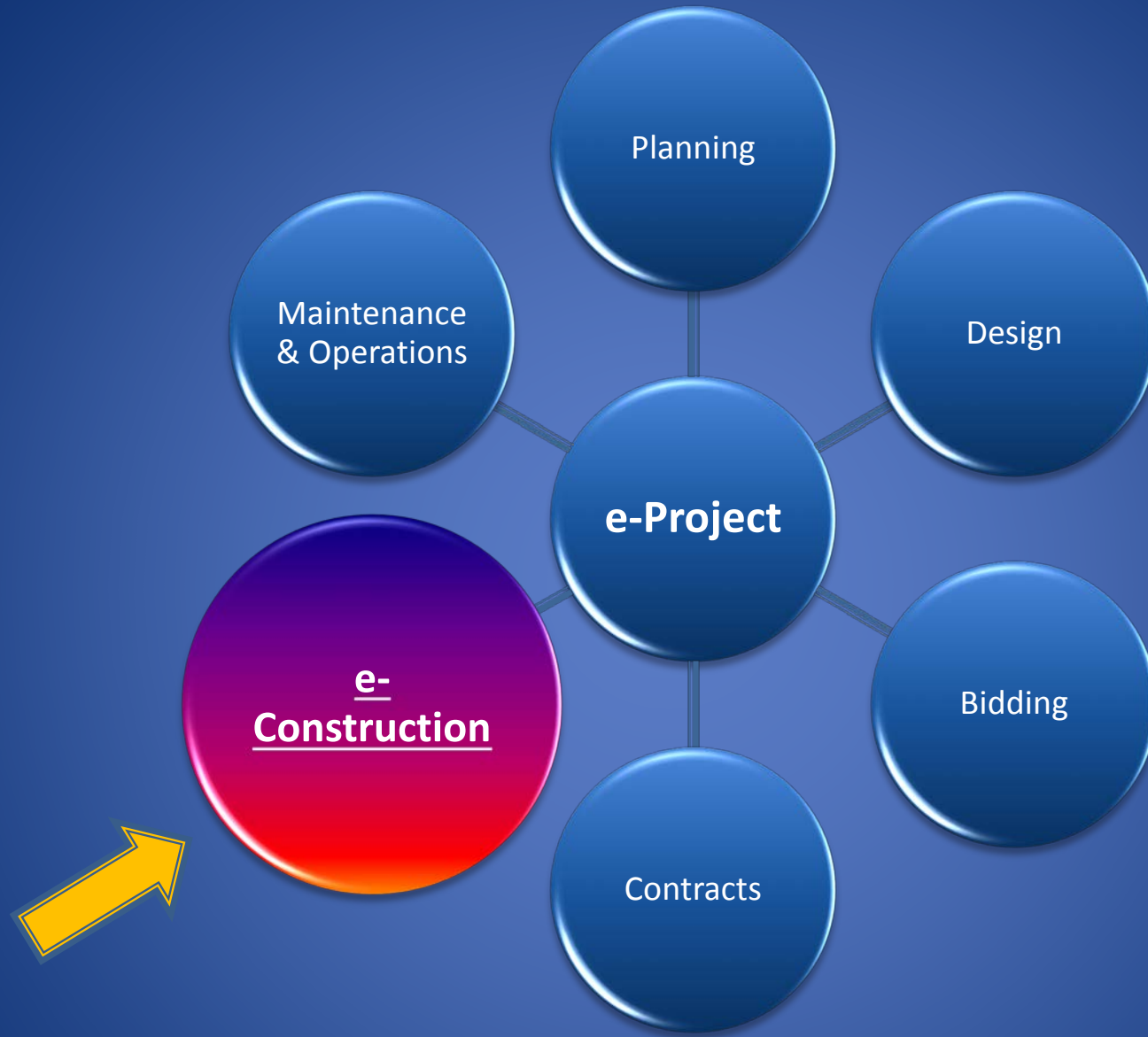
This is NOW.

e-Construction Results

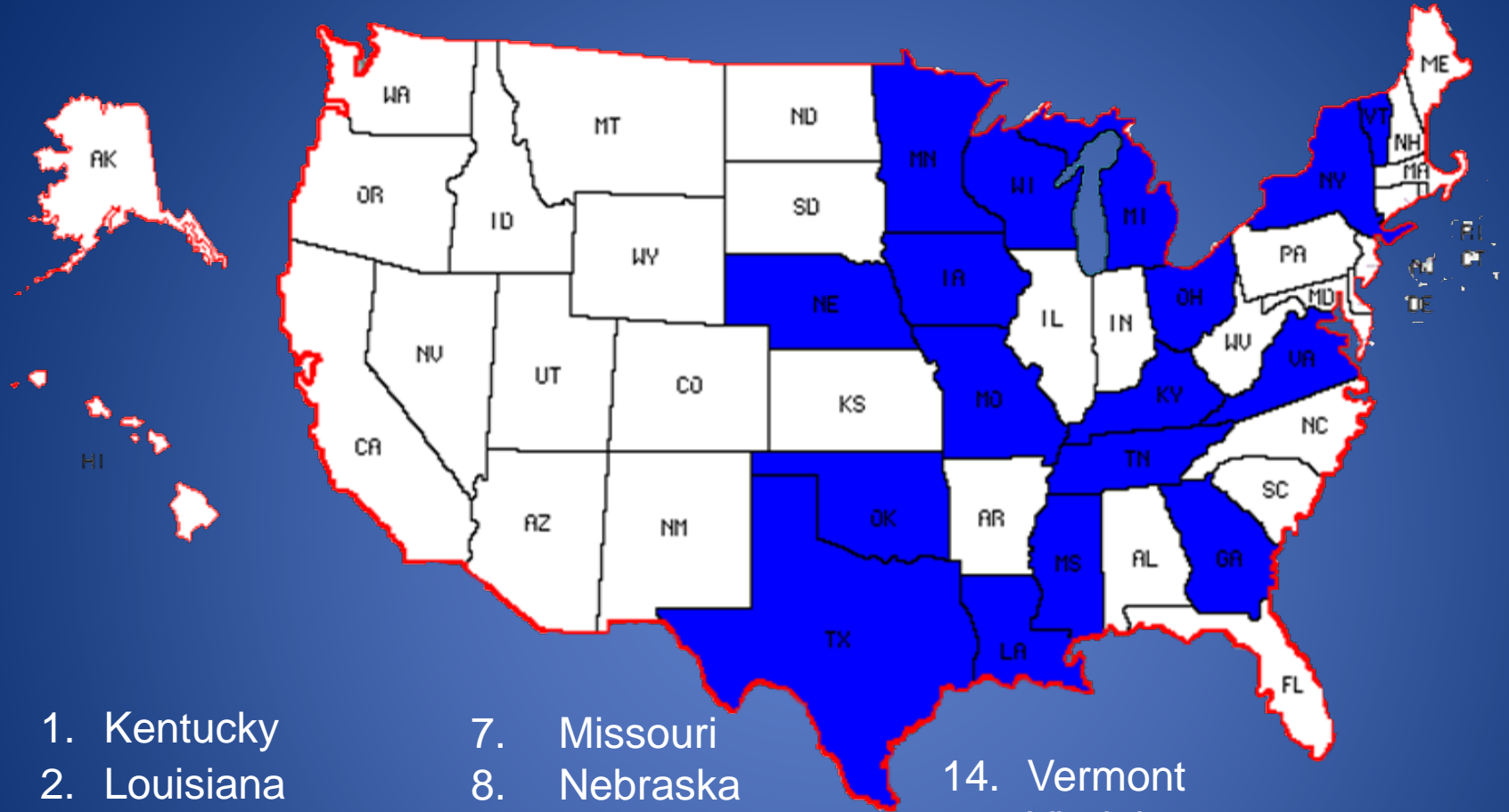
Improved Construction Documentation Efficiency:

- All contract documentation in one location
- Accessible from anywhere at anytime
- Secure Storage
- Intelligent Workflows (Automated Document Routing)
- Full Audit Trail
- Transparency





AASHTO Project Construction/Materials Project States



1. Kentucky
2. Louisiana
3. Georgia
4. Iowa
5. Michigan
6. Minnesota

7. Missouri
8. Nebraska
9. New York
10. Ohio
11. Oklahoma
12. Tennessee
13. Texas

14. Vermont
15. Virginia
16. Wisconsin

Deployment Efforts

- Michigan is participating with the combined FHWA & AASHTO effort to share e-Construction innovations through:
 - Every Day Counts-3 Initiative
 - AASHTO Innovation Initiative (formerly Technology Implementation Group - TIG)
- MITA participation also:
 - Home office: Glenn Bukoski, Rachelle VanDeventer
 - Contractor: K&R, Inc.: Dan Ringnalda



Want to Learn More?



- The e-Construction Process at MDOT:

<https://www.youtube.com/watch?v=HAbYgggnyB8>



- Mobile Devices in the Field:

https://www.youtube.com/watch?v=y_9XCy2IQ2w



- e-Construction on the 96 Fix:

<https://www.youtube.com/watch?v=ScB1b3fqjQo>

- Cliff Farr, FarrC@michigan.gov, (517) 897-3672

- Stuart Laakso, LaaksoS@michigan.gov, (517) 897-3789



Questions?