



Every Day Counts - 3

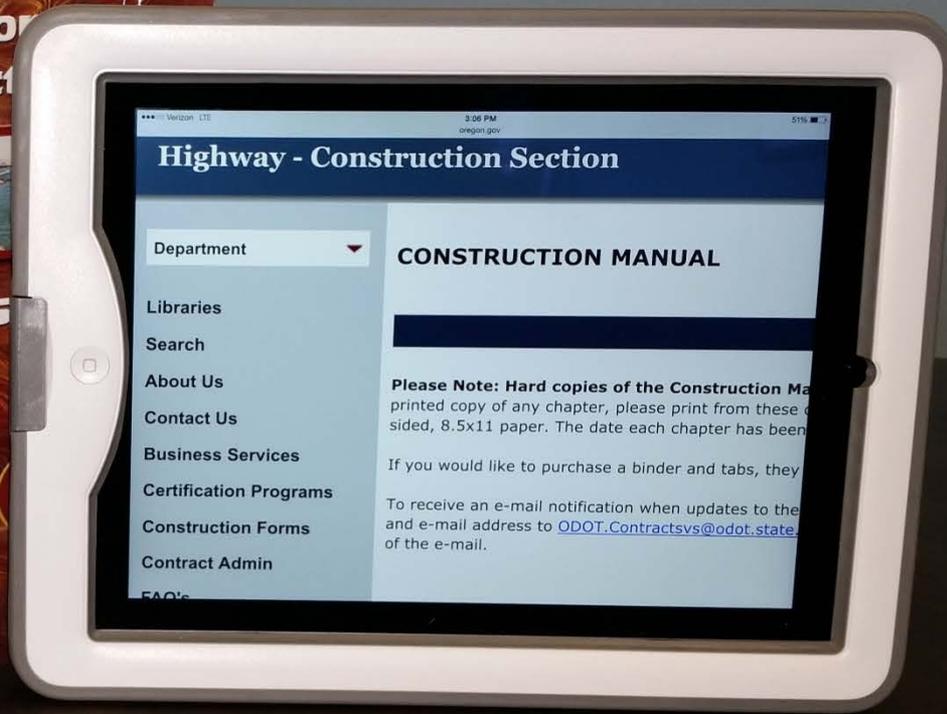
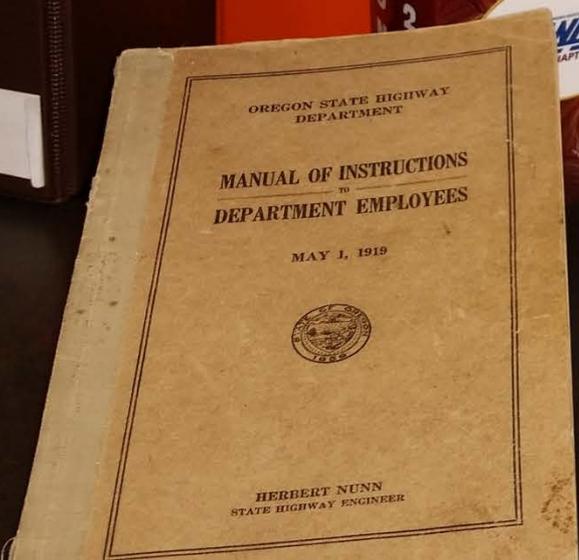
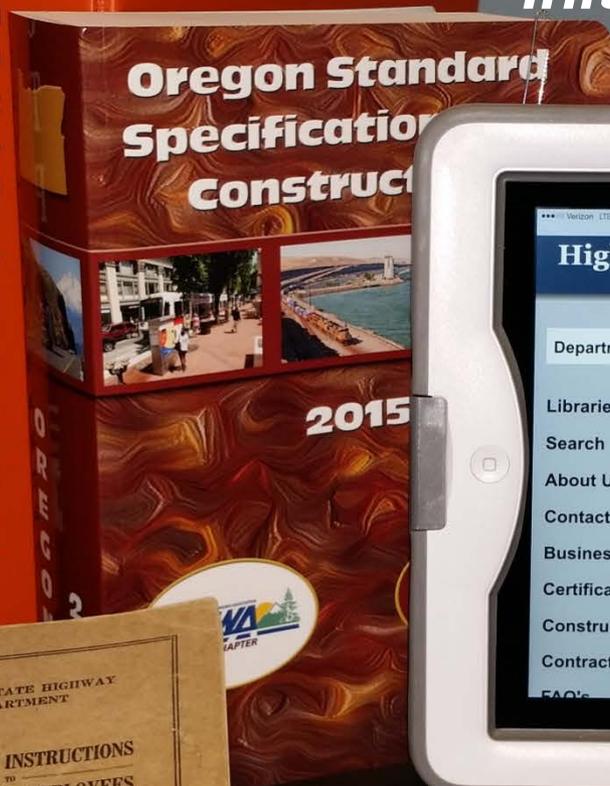
1. [Locally Administered Federal-Aid Projects: Stakeholder Partnering](#)
2. [**e-Construction**](#)
3. [**3D Engineered Models: Schedule, Cost, and Post-Construction**](#)
4. [Smarter Work Zones](#)
5. [Data-Driven Safety Analysis](#)
6. [Ultra-High Performance Concrete Connections for Prefabricated Bridge Elements](#)
7. [Road Diets \(Roadway Reconfiguration\)](#)
8. [Geosynthetic Reinforced Soil – Integrated Bridge System](#)
9. [Improving Collaboration and Quality Environmental Documentation \(eNEPA and IOED\)](#)
10. [Regional Models of Cooperation](#)
11. [Improving DOT and Railroad Coordination \(SHRP2 R16\)](#)



Construction Streamlining Initiative Transformation to e-Construction

FIELD TEST PROCEDURES
2013

CONSTRUCTION MANUAL



2015 Transportation Engineering Conference April 29, 2015

Joe Squire, PE
ODOT State Construction and Materials Engineer



What is the issue?

- Paperwork volumes and costs are growing
- Industry and PM's share similar concerns
- ODOT and Industry agreed - find a better way
- Internal team identified to work the issues





Identifying the What?

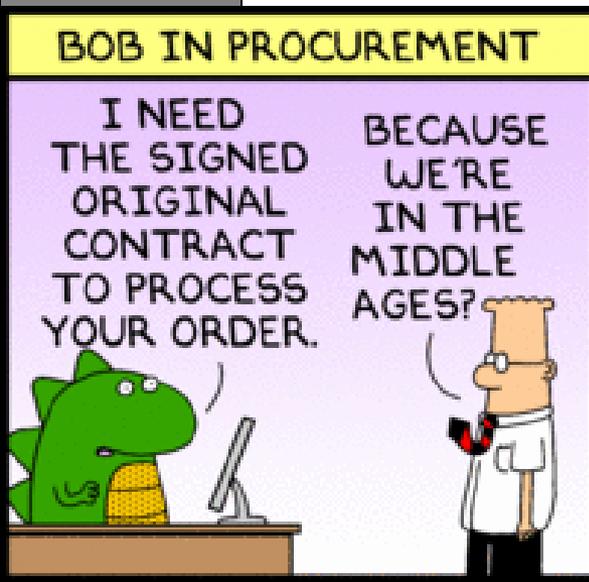
- **Contract required Documents & Submittals**
 - Labor Reports, Q&Q, Pay note
 - FHWA Requirements
 - Environmental
 - Technical Specification Requirements & Submittals
- **Email communication**
 - General information, transmittal letters, communication letters, responses, etc...
- **Value? If none then delete**





Identifying issues - example

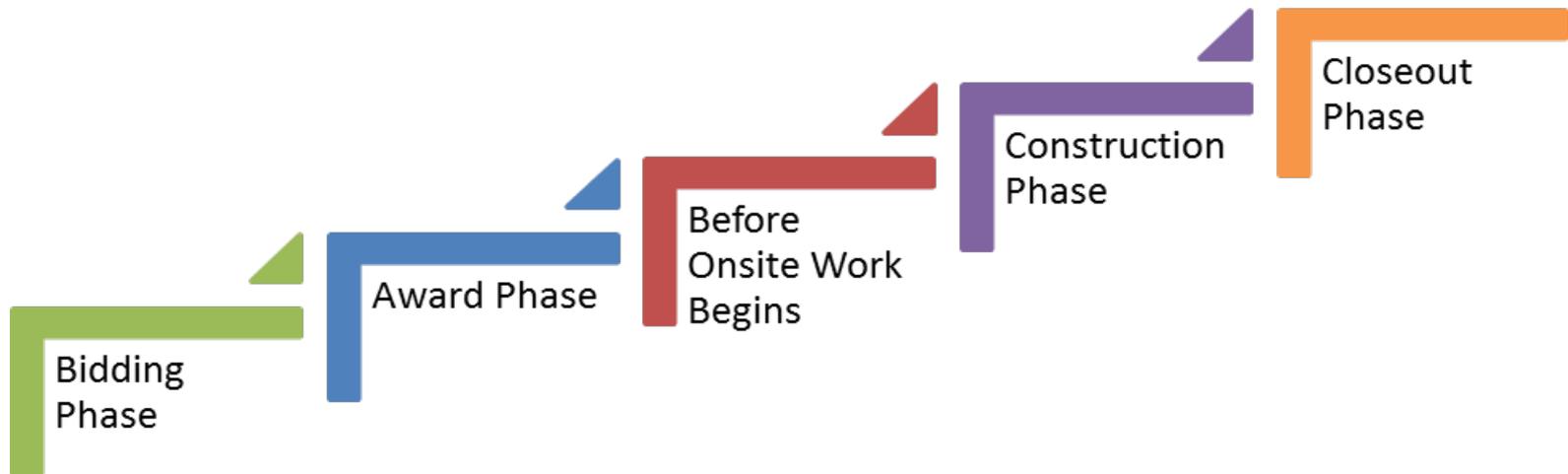
- **FHWA Requirements**
 - Buy America
 - Labor Compliance
 - Civil Rights





Process Mapping – high level

ODOT Construction Process comprised of 5 phases



- **Map each phase to identify:**
 - Steps & hand-offs within ODOT
 - Requirements for each step and workflow
 - Partner issues and value of each process



Voice of Industry

- **Extensive information gathered from Industry Partners through AGC collaboration**
 - Discussions between Industry and a significant ODOT business line roles cross section via open forums
 - Information has been analyzed and mapped in the context of the 5 phases of the Construction Process





Whiteboard Process Mapping

Where is the
VALUE?

- Is the document required?
- Why is the document required?
- What is really required?
- Who requires the document?
- Is this information duplicated elsewhere?

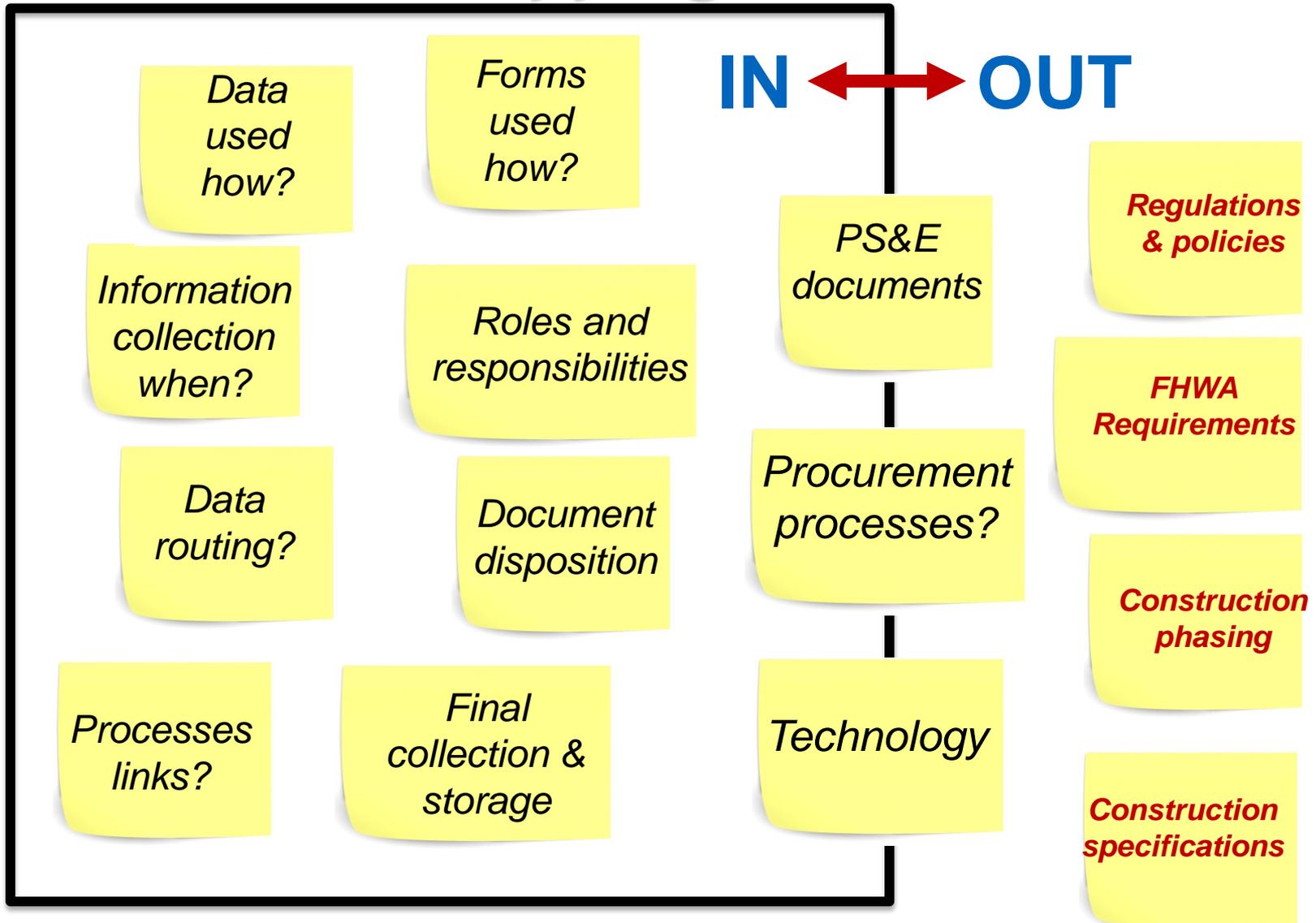




Process Mapping Themes

102
years

305+
forms





Time to Pivot – nagging thoughts

*“Create it; print it, sign it, scan it, email it, print it, sign it, scan it, email it, **repeat again, and again, and again!**”*



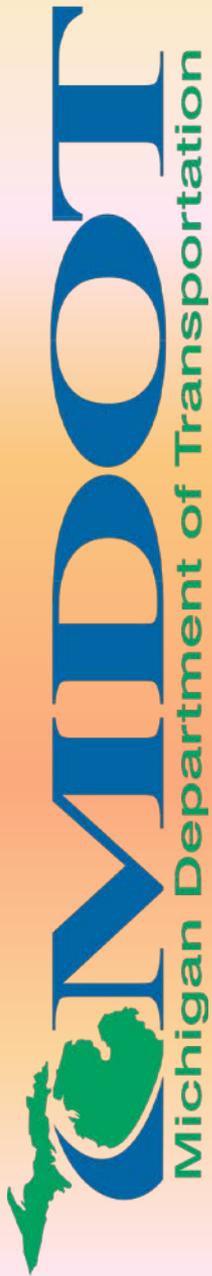
- **Value? If none then delete**
- **Re-thinking long-held paper systems**
- **Fractional efficiency gain vs. digital**
- **And then there is Michigan DOT**





And then there's Michigan DOT

- **MDOT, e-Construction National Leader**
 - *Avoiding technology is not going to make it go away; avoiding technology just puts you behind*
 - *If it is created on a computer, it stays on a computer*
 - *One source of truth*

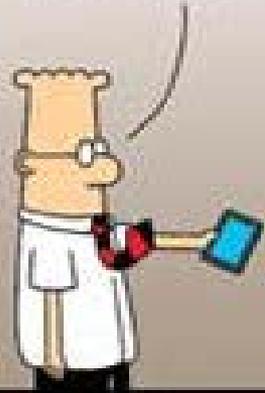




Time to Pivot – Now!

- Pivot = Change in Strategy not Vision
- Industry keeps most records digitally
- PM's ↔ Industry interaction via email
- *It's about the data, not the paper*

MORDAC, I NEED TO ACCESS COMPANY DATA FROM MY IPAD.



IF I HELP YOU, EVERY EMPLOYEE IN THE COMPANY WILL WANT THE SAME THING!



THEY'LL WANT TO DO THEIR JOBS MORE EFFICIENTLY?

I CAN'T ENCOURAGE THAT SORT OF THING.

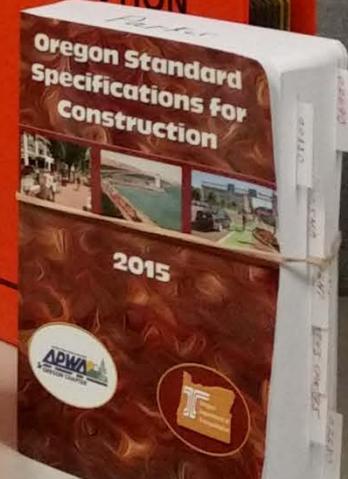
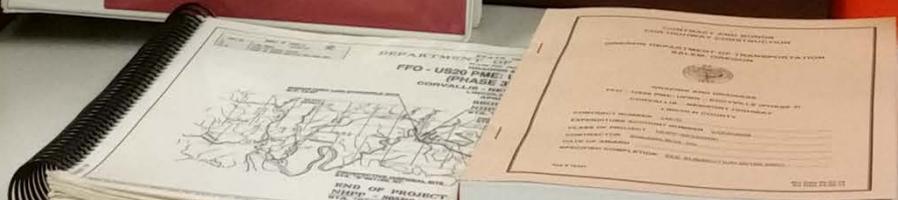
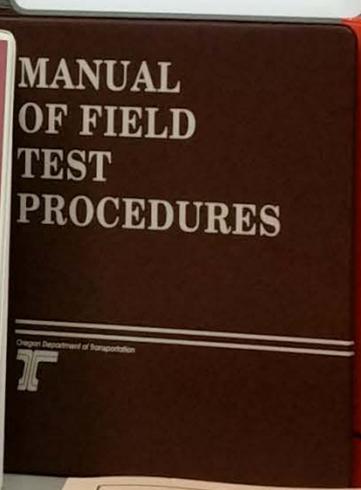
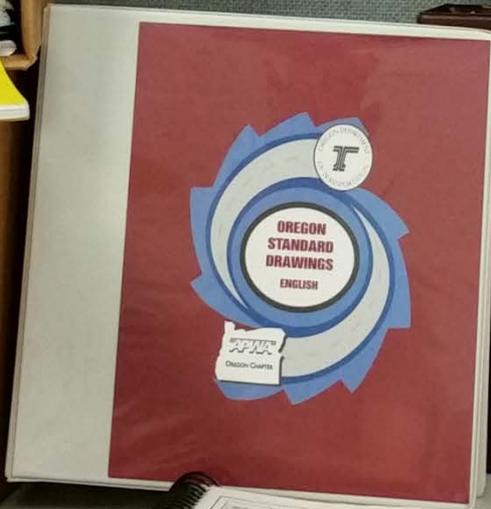
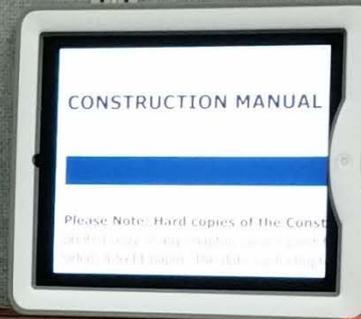
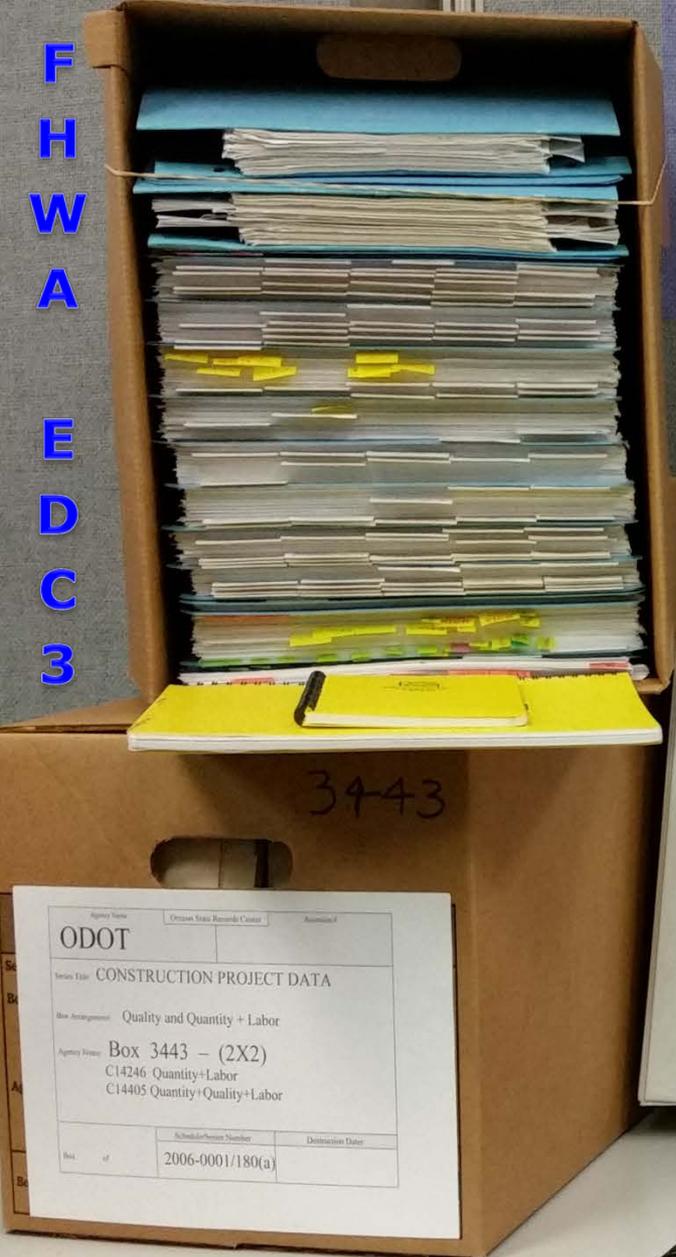




F
H
W
A

E
D
C
3

e-Construction is the collection, review, approval, and distribution of highway construction contract documents in a paperless environment





Digital Specifications

- **Pilot Digital Signature Specification**
 - SP00170.08 Digital Signatures and Digital Electronic Document Management
 - Provides Digital Signature requirement and format
- **Long-term considerations:**
 - Contractor access to the Agency's Electronic Document Management System
 - Document Format and naming conventions
 - Document Workflows
 - File/Document Retention

Modeled
after
MDOT's
success

MDOT
piloted
on 5
projects
with a
value
>\$160M



ProjectWise

- Electronic Data Management System
- Allows use of **existing** internal and external digital technologies
- Works for design & construction



ProjectWise[®]





ProjectWise Technical Overview



2015 Transportation Engineering Conference
April 29, 2015

Kelly McGee
ProjectWise Administrator



What is ProjectWise?

- Highly configurable
- Collaboration software
- Integrates with engineering programs such as MicroStation
- Single file location with check out capabilities





- Widely used by other DOTs and well known corporations





User Interface

- Looks like Windows explorer with added functionality of check out, versions & workflows
- Can configure additional functionality and metadata



ProjectWise Explorer V8i (SELECTseries 4)

Datasource Folder Document View Tools Window Help

Address: pw:\WPDOTQVM036.odot.state.or.us:PW_ODOT\Documents\STIP_Projects\Statewide - currently testing & p

View: Train (Personal)

Name	Description	Out to	Project Number	Designed By
Again.docx	Document3.docx	Kelly McDesign		
Again.pdf	PDF example			
Default User Settings.docx	Settings for ODOT defau...	hwyc53h	123456	
Default User Settings.docx	Default User Settings		123456	
EDM Policies and procedures.docx	Policies and procedures			
EDM TrainingDevelopment.docx	Training documentation...		987654	Kelly McGee
Englishtest.dgn	MicroStation test file		987654	Gary Hole...
EnglishTestBase.dgn	MicroStation Test Refere...			
NamingConvention.docx	Document3.docx			
Projectwise_User_Comment_Log.xlsx	Projectwise_User_Com...		19110	
Signer.png	Photo			
Training Documents	Link to Training Material			
trainingAGAIN.docx	Document2.docx			
WordTemplatetoCreateTemplates.do...	Contains the project & ...			

10
11

1 object(s) selected

3:42 PM

Document Properties Project Properties Folder Properties Photo Preview Dependency Viewer Access Control Components

Properties (Project Type - ODOT)

ODOT Federal ID Number	123456
ODOT Contract Number	
ODOT Project Number	987654
ODOT Project Name	Admin Meeting
ODOT Project Description	syz
ODOT Project Manager	Holeman
ODOT Project Leader	McGee
ODOT Area Manager	
ODOT Local Agency Liaison	
ODOT Region Number	1



- Separate permissions for folder vs documents

Object Type	Action Name	Date/Time	User Name	Comme
Folder	Modified	4/14/2015 3:32:29 PM	hwyc53h	
Document Set	Set formed	4/14/2015 3:25:22 PM	hwyc53h	
Document Set	Member added	4/14/2015 3:25:22 PM	hwyc53h	
Document Set	Member added	4/14/2015 3:25:22 PM	hwyc53h	
Document Set	Member added	4/14/2015 3:25:22 PM	hwyc53h	
Document Set	Member added	4/14/2015 3:25:22 PM	hwyc53h	

Buttons: Customize..., Save..., Print...

Inherited from: folder 'STIP_Projects'

Name	Dom
PWadmin	
PWDesignRW	
PWPowerUsers	
PWUsers	

- Full control
- Change permissions
- Create subfolders
- Delete
- Read
- Write
- No access

Buttons: Add, Remove

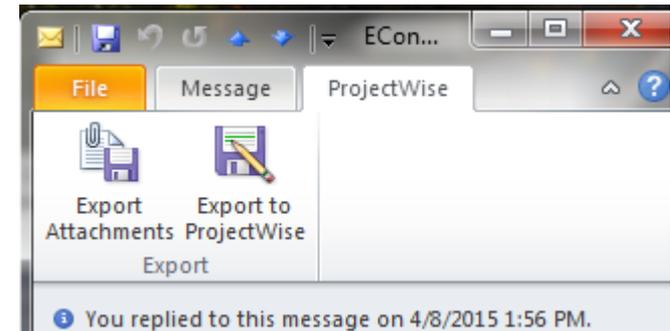
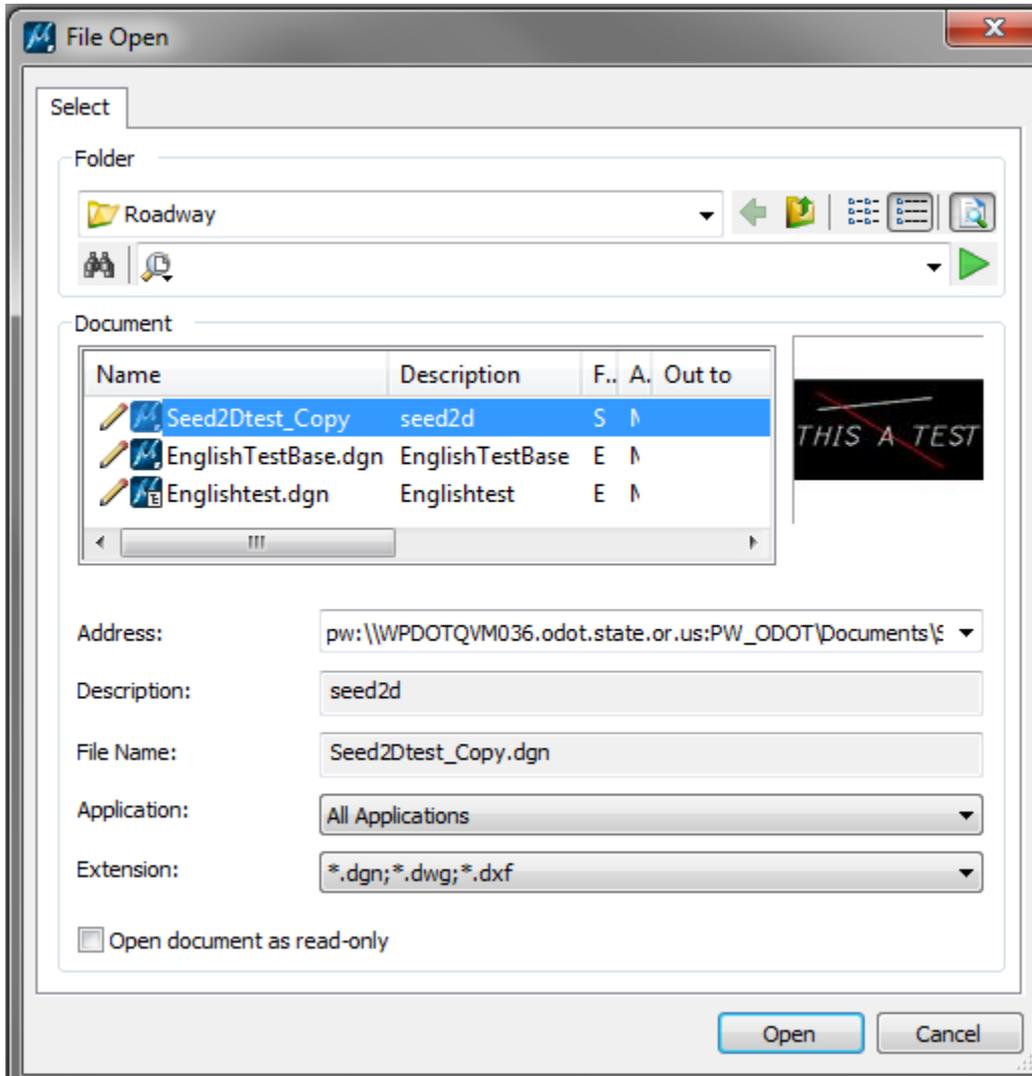
- Audit Trail available to see what happens to a file



- Integrated with Microsoft Word, Excel, Outlook, PowerPoint, Bentley MicroStation & InRoads

The screenshot displays three overlapping application windows demonstrating the ProjectWise integration:

- Microsoft PowerPoint:** The ribbon includes a 'ProjectWise' tab with buttons for 'Properties', 'Picture Object', and 'Disable'. The slide content reads:
STIP_Projects/Statewide - currently testing
playground/TrainingMarch/0_Temp
Default User Settings – test3
123456
- Microsoft Word:** The ribbon includes a 'ProjectWise' tab with buttons for 'Properties', 'Picture Object', 'Disable', 'Update ProjectWise Attribute Exchange', and 'Update Document'. The document content is identical to the PowerPoint slide.
- Microsoft Excel:** The ribbon includes a 'ProjectWise' tab with buttons for 'Properties', 'Picture Object', 'Disable', 'Update ProjectWise Attribute Exchange', and 'Update Document'. The spreadsheet shows 'TSSU ID' in cell A19 and 'Microsoft MicroStatio' in cells C and D.

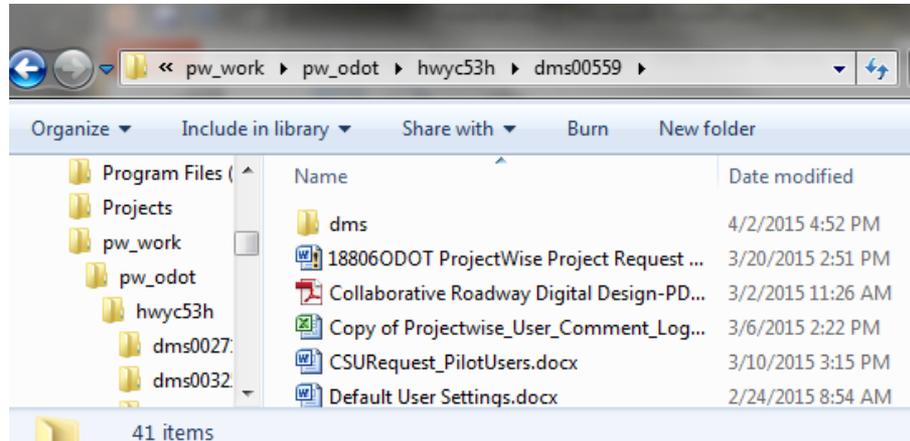


[Back to 19](#)

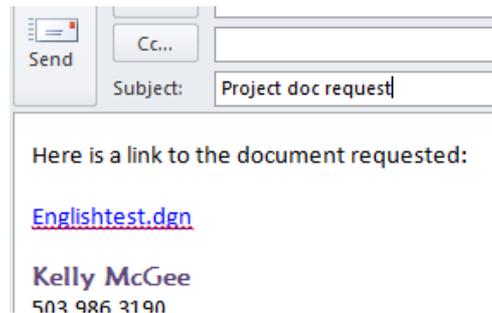


How it Works

- Checked out files are saved to a local drive allowing folder & file renaming with out breaking previous links



- Links to files are sent instead of actual files





- Highly configurable folder properties as well as document properties

Project Properties	
ODOT Federal ID Number	123456
ODOT Contract Number	
ODOT Project Number	987654
ODOT Project Name	Admin Meeting
ODOT Project Description	syz
ODOT Project Manager	Holeman
ODOT Project Leader	McGee
ODOT Area Manager	
ODOT Local Agency Liaison	
ODOT Region Number	1

EDM TrainingDevelopment.docx

General Security Attributes More Attributes File Properties Audit Trail Workspace Components

Sheet Title 01

Sheet Title 02

Designed By

Drafted By

Reviewed By

Structure Number

Bridge Drawing

Save Undo Close < < 6/14 > >



- Giving advance search & filtering capabilities

The screenshot shows a 'Search by Form - PW_ODOT' dialog box with several sections and options:

- General** tab is selected.
- Document** section: Name, Description, Version, Sequence, Application, Status, Status set by, Created By, Updated By, Workflow, State, Department, Out to, On.
- File** section: File Name, File Size, File Updated By, Storage, On, Conflicts.
- Folder** section: Look in (STIP_Projects\Statewide - currently testing & playground\T), Include subfolders (checked), Name, Description, Environment Name (ODOT), Find in this Environment only (checked).
- Buttons**: Look For, Add OR Group, Clear, Saved Search, OK, Cancel, Apply, Show results in new window.

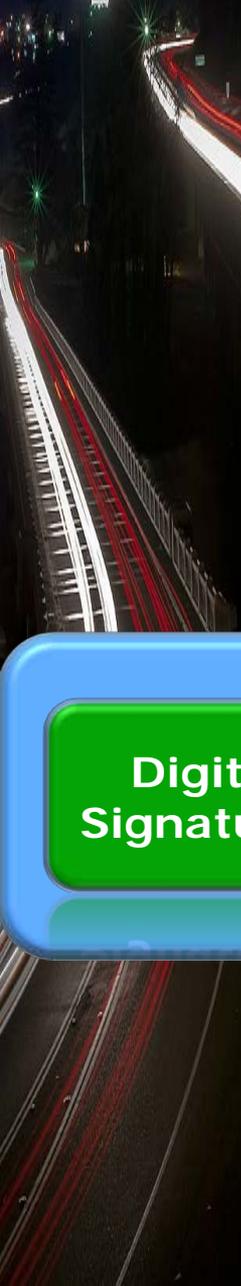
Red arrows point to the following elements:

- The 'Attributes' tab.
- The 'Full Text' tab.
- The 'Out to' dropdown menu.
- The 'Look For' button.
- The 'Saved Search' dropdown menu.



What is ^{possible} *in the future?*

- Automated folder & document properties
- Many more document properties
- Workflows that will change permissions and properties depending on state
- More global saved searches and global views
- Better training
- Integrated templates for multiple applications
- Digital signatures
- GIS capabilities



e-Construction Roll out 2016?

Expanded Pilot
Summer 2015

Final Steps to
Achieve Digital
Documentation

Digital
Signatures

Mobile
Field
Devices

Digital
Docs w/Ex.
Access

Policy and
Training

Contract &
Specs

3D Digital
Plans

Electronic
Bidding
eBids

Construction
Software



Expanded Pilot

BEFORE the iPad, THERE WAS the iWheel....

MINE'S GOT WI-FI.





Expanded Pilot – Technology

• **Hardware**



- iPad2 Air, features i.e. Wi-Fi, Cell, dual camera, smart Pen
- Firewall through GOOD app
- Spec, standards & forms
- State Archivist archiving requirements

• **Software**

- e-Plans in PDF format, loaded and on-line
- e-Standards and e-Specifications on-line
- ODOT e-forms, PDF fillable format, digital signature ready
- Facetime or Skype
- Other apps TBD





Closing thoughts

- This presentation and several e-Construction references will be made available on CS's website, share with your crews
- Let's seize the fantastic game-changing opportunity before us!
- Engage your Design Team, CS and CLT members
- We are one ODOT, engage with the team
- Thank you, Questions, Comments?





I LOVE THIS THING!