



# Automating LaDOTD Design Publishing

( Updated 2/27/2013 - HW )

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# Automated PDF Publishing Project Goals

- ❖ Automate PDF Plans Publishing
- ❖ Automate Digital Signature Workflow
- ❖ Empower Design Consultants to Publish/Sign Plans
- ❖ Automate PDF Transfer to Bidder Plans Room



# Project Tasks

- PDF Creation Service:
  - Provide the functionality within ProjectWise for users to select MicroStation Design Files and click a command that will generate PDF copies of the drawings.
  - Use the name and attributes of each document to establish the name and attributes of each PDF and to create the folder in which to place the PDF documents.
  - Determine the ProjectWise InterPlot Settings to use.
  - Provide connectivity for client systems, outside the LADOTD network, to submit PDF plan requests the same way as LADOTD staff.

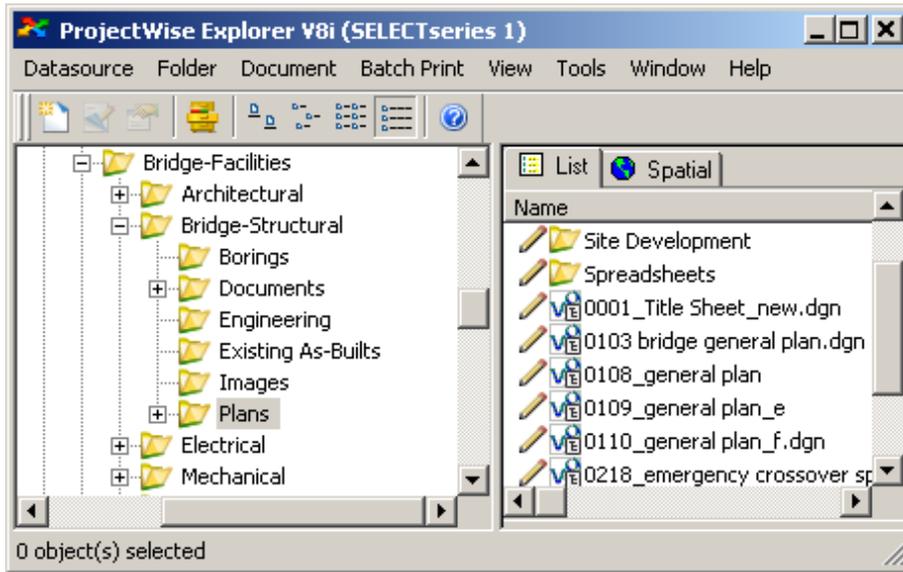


# Project Goals

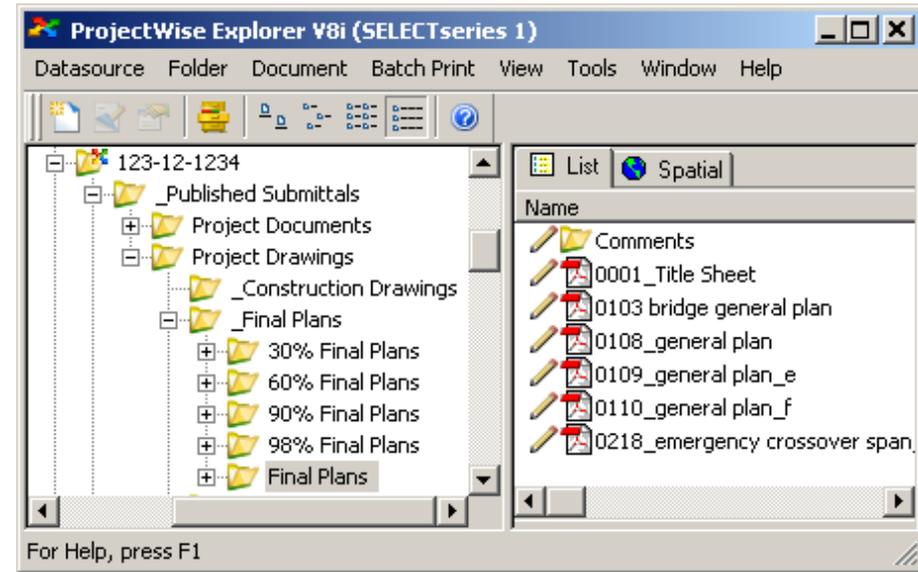
- Export/Import Signed Documents:
  - Provide the functionality to control and manage the Export and Import process of PDF documents in and out of ProjectWise for digital signature using standard digital signature software adopted by LADOTD.
- Export to Plans Room:
  - Provide the functionality to export PDF documents and companion XML files containing the ProjectWise attributes to a predetermined Windows folder. This “watched folder” is monitored by the bidder “Plans Room” system, which will import the files and populate the attribute values for each document.



# Publishing with “Publish to PDF”

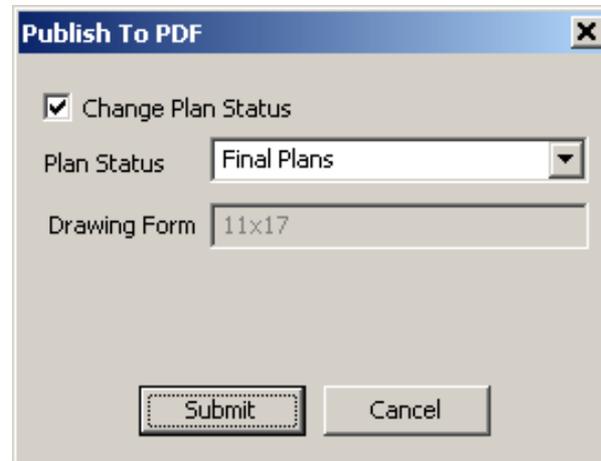


Input CAD DGNs



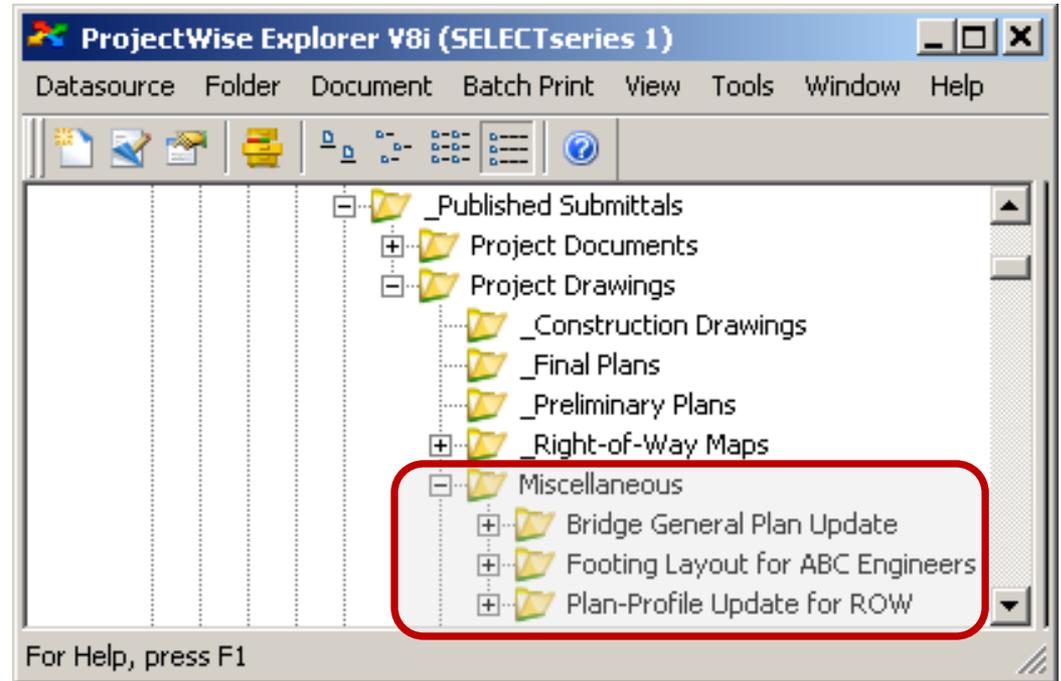
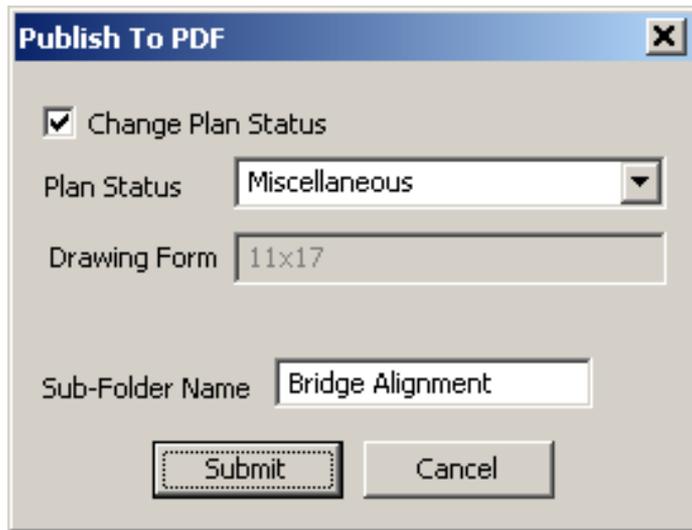
Output PDFs

Select DGNs to Publish  
Select “Publish to PDF”



Select Plan Status  
Click “Submit”

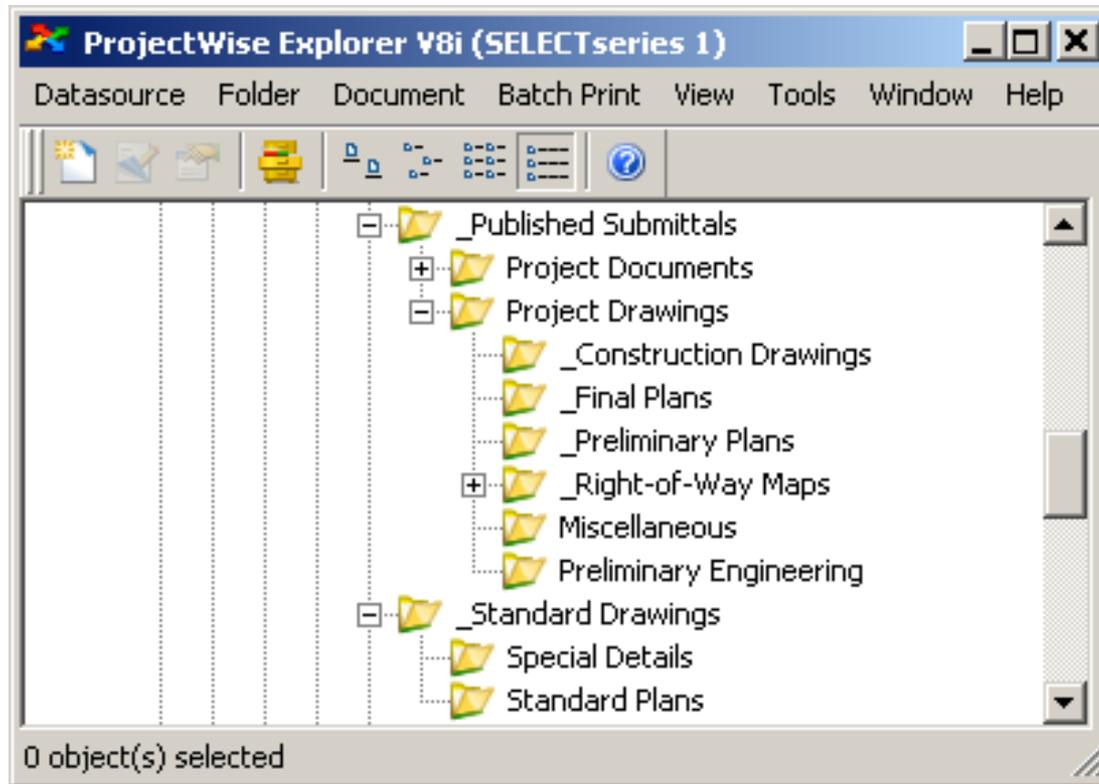
# Ad-Hoc Drawing Submittals



- Publish To PDF” can create ad-hoc submittals (“Miscellaneous” Submittals)  
Used for important updates between benchmarks



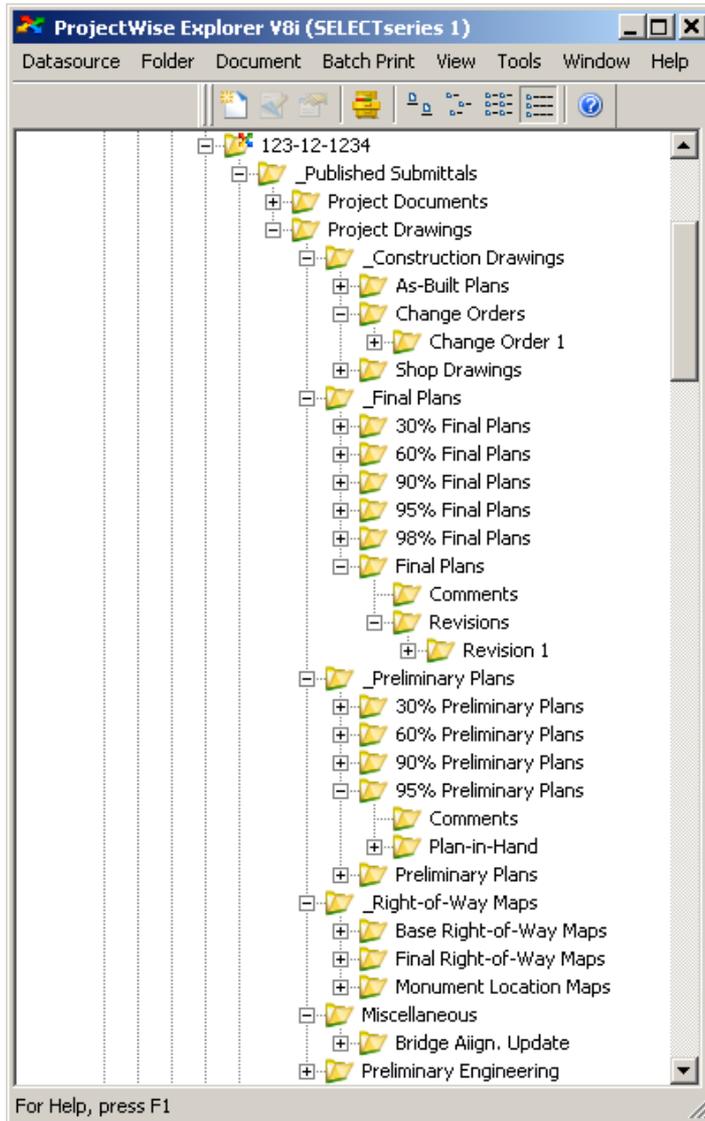
# Published Submittals Template



- Submittal category root folders start empty (e.g., '\_Final Plans')
  - 'Publish to PDF' creates each plan submittal subfolder when needed (e.g., '95% Final Plans').



# Submittals at Project Completion

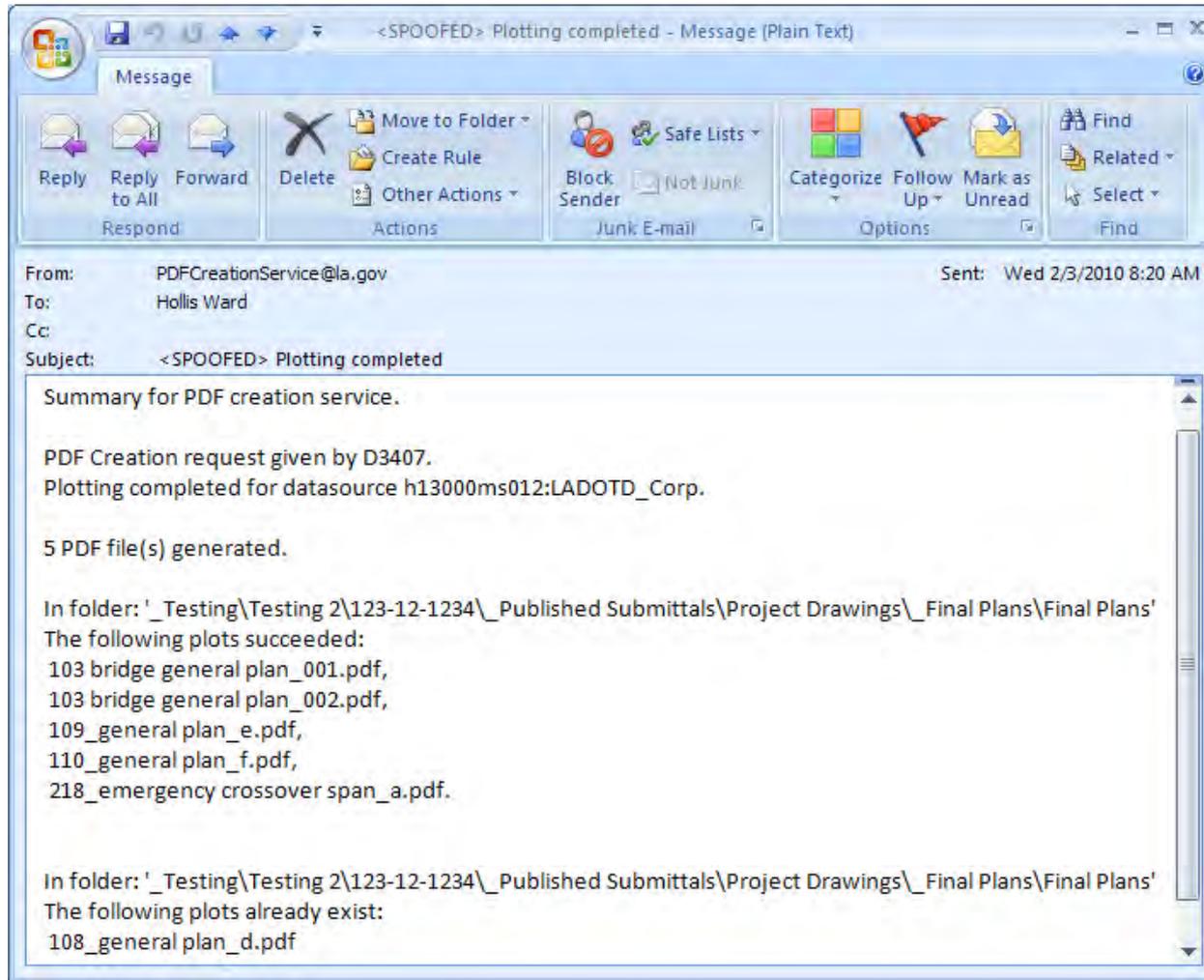


## Example Project with Completed Submittals

- Submittal folders (e.g., '95% Final Plans') are created when PDFs are published
- Plus signs on folders indicate that one or more PDF files exist. Press Function key F5 to see latest status



# PDF Creation Service Email



## ❖ Information about PDF Creation Success/Failure



# Project Wise Attributes Page

218\_emergency crossover span\_a.dgn \*

General Security Attributes More Attributes Audit Trail Geospatial Workspace

Lead Project Number: 450-17-0025 Project Name: I-10 BRIDGE OVER LAKE PONTCHARTRAIN

District/Section: 62 Parish: 52 Route: I-10 Submittal Plan Status: 90% Final Plans

Design Dist/Sect: 25 Discipline: Bridge Sys. of Measure: English Revision Date: 3/8/2009 12:00:00 AM

Drawing Title: EMERGENCY CROSSOVER SPAN\_A

Design Specifications:

Document Class: Project Drawings Sheet Number: 225 Series Number: 1 of 4

Drawing Category: Bridge Superstructure Drawing Type: Span Subtype:

Misc. Design Criteria: Special Feature 1, Special Feature 2 Design Criteria Value: N/A, N/A

Bent Type: Span Type: Girder Span Clear Roadway: Other Span Length: 135' Geometry: Straight

Bent Detail Type: Girder Type: PPC Type BT Skew Angle: 90° Deck Thickness: 8" Spans Per Unit: 1

Support Type: Girder Spacing: Other

Save Undo Close K < 12/12 > >|

“Publish To PDF” passes attribute values from DGN to PDF  
(Used for Document Searches in ProjectWise and Plans Room)

# Plot Information Transfer

## DOTD Network

ProjectWise Integration Server  
ProjectWise Plot Server  
Custom Publishing Solution



DOTD User

## DMZ Firewall

ProjectWise Gateway Server  
FTP Server



External User

<Animated>  
Turned off by default.  
It may be helpful to  
turn it on for this this  
type of slide



# Digital Signature Workflow and Audit



ProjectWise Integration Server



DOTD User

<Animated>

1. PDFs are Exported from ProjectWise to Windows
  - ✓ Logs Date, Time, User, Folder, “Exported for Digital Signature”, etc.
2. Silanis Digital Signature Process is Executed
3. PDFs are Imported Back to ProjectWise
  - ✓ Verifies documents are signed (otherwise, will not import), and then imports
  - ✓ Deletes signed PDF files in Windows folder
  - ✓ Logs Date, Time, User, “Imported Digitally Signed Document”, etc.
  - ✓ Updates “Signature Status” attribute value to “Signed”
  - ✓ Updates PDF document status to “Final Status” (Locked)



# Bentley Custom PDF Signature Workflow from the Driver's Seat

- ❖ Export PDF/ Import Signed Document
  1. Highlight PDF drawings to sign in ProjectWise
  2. Right-Click and select “Export for Signature”
    - ✓ Exports drawings to C:\PW\_SignatureDir
  3. Sign drawings using Silanis ApproveIt
  4. Right-click and select “Import Signed Document”
    - ✓ Checks to make sure drawings are signed.
    - ✓ Imports drawings and sets “Final Status”
    - ✓ Sets “Signature Status” attribute to “Signed”
    - ✓ Records audit trail of signing ceremony



# Export to Plans Room

ProjectWise Integration Server



Electronic Plans Room Server



DOTD User

<Animated>

- ✓ DOTD User selects “Export to Plans Room” Command
- ✓ Document Attributes are written to an XML file
- ✓ The PDF and XML files are copied from ProjectWise to a predetermined Folder
- ✓ The Electronic Plans Room runs a service that watches this folder
- ✓ The PDF and XML are imported as a new, “indexed” document



# Bentley ProjectWise Custom PDF Publishing Extension

## “Publish To PDF” Makes Publishing Easy

- ✓ Creates PDFs without user plotting setup
- ✓ Creates output folder for PDFs (e.g., Final Plans)
- ✓ Copies attribute values from DGN to PDF
- ✓ Sends email documenting PDF creation status
- ✓ Manages PDF Digital Signing Ceremony
- ✓ Exports PDF and XML index to Falcon “Plans Room”
- ❖ **Publishes Deliverables for DOTD and Consultant partners**



# Consultant Plan Delivery Before New Process

## Publishing Plan On Hold Before Automated PDF Publishing

- Consultants must create PDF plans on their site using InterPlot
- Consultants must index plans using ControlCAD 'Indexer' on their site
- Plan delivery required Consultants to package all DGNs, PDFs & XML Index Files
- DOTD must process Consultant packages
- CAD design plan QA/QC practical for 'Final Plans' only
- This system was considered a great improvement at the time, but staffing to process the submittals was not provided.
- DOTD focus on meeting 'Plan Delivery Dates' was more important than enforcing workflow and data standards. Conforming to standards was essentially on the honor system.
- Compliance depended on Project Manager, Task Manager and Consultant priorities. PDF publishing was therefore ad-hoc and not for formal submittals.



# Project Impact on DOTD Plan Delivery

- ✓ PDF plans published using automated Bentley PDF Creation Service
- ✓ PDF plan production using this “EZ Publish” system is far faster and more efficient than paper for all submittal milestones.
- ✓ PDF Creation Service requires CAD DGNs to reside in ProjectWise
- ✓ Consultants must upload CAD designs and participate in DOTD ProjectWise plan delivery process.
- ✓ CAD DGNs in ProjectWise enable ControlCAD Reports in ProjectWise
- ✓ ControlCAD Reports provide feedback at each submittal milestone
- ✓ Ultimate Result: Both publishing and QA/QC is very efficient



# Typical Transmittal Email

*Transmitted herewith is a link to the Final Plans for the referenced project in ProjectWise. These Plans are submitted for the your review and approval via Title Sheet signature.*

*S.P. No. H.009101  
Interchange Lighting  
I-55 @ LA 16 (Amite)  
Route I-55  
Tangipahoa Parish*

*Link to Final plans: [Final Plans](#)*

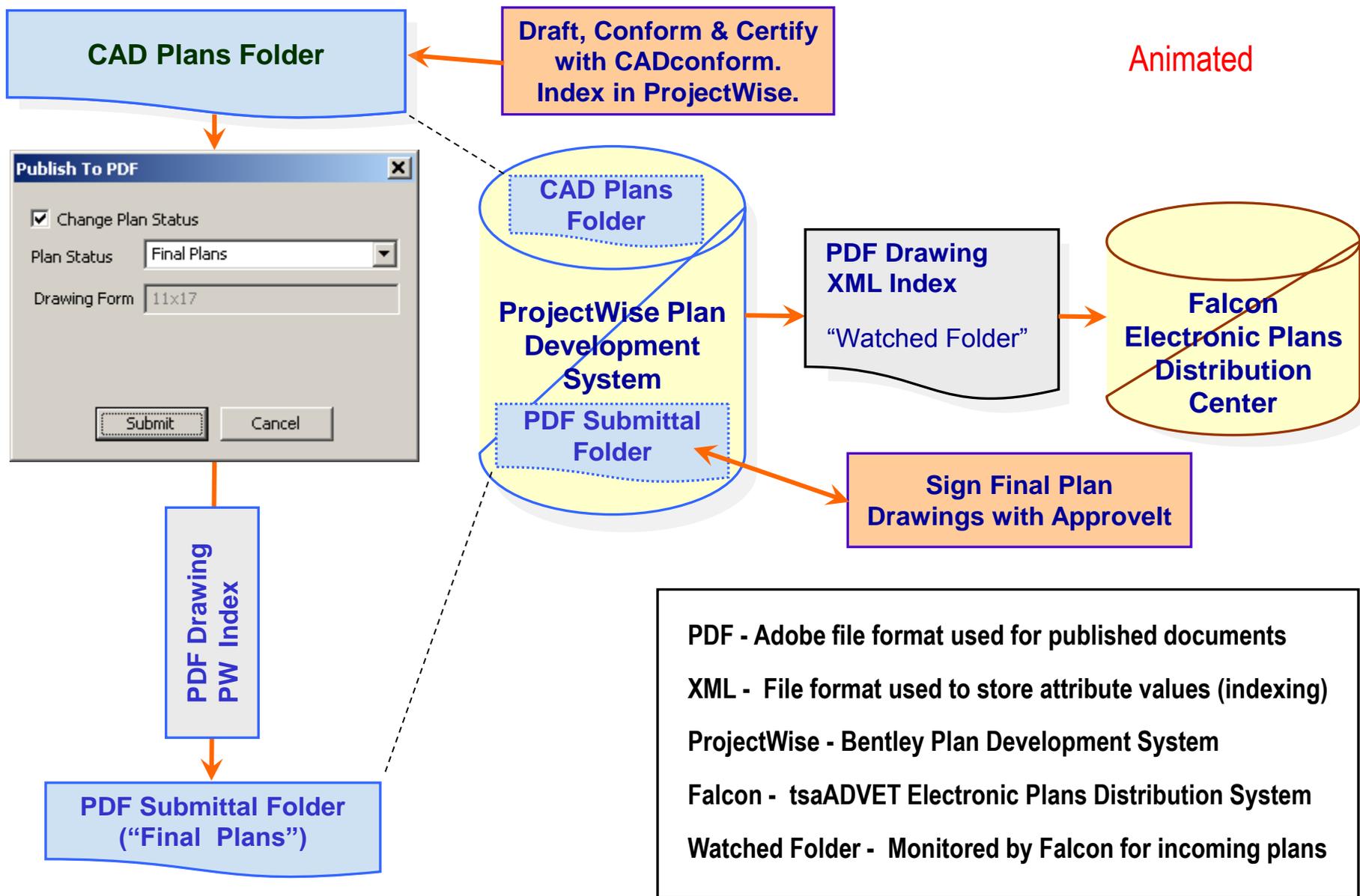
- ❖ *Transmittal verbiage varies depending on plan delivery milestone and related directives.*

# LaDOTDAutomated Plan Delivery

## Another Way to Look at it

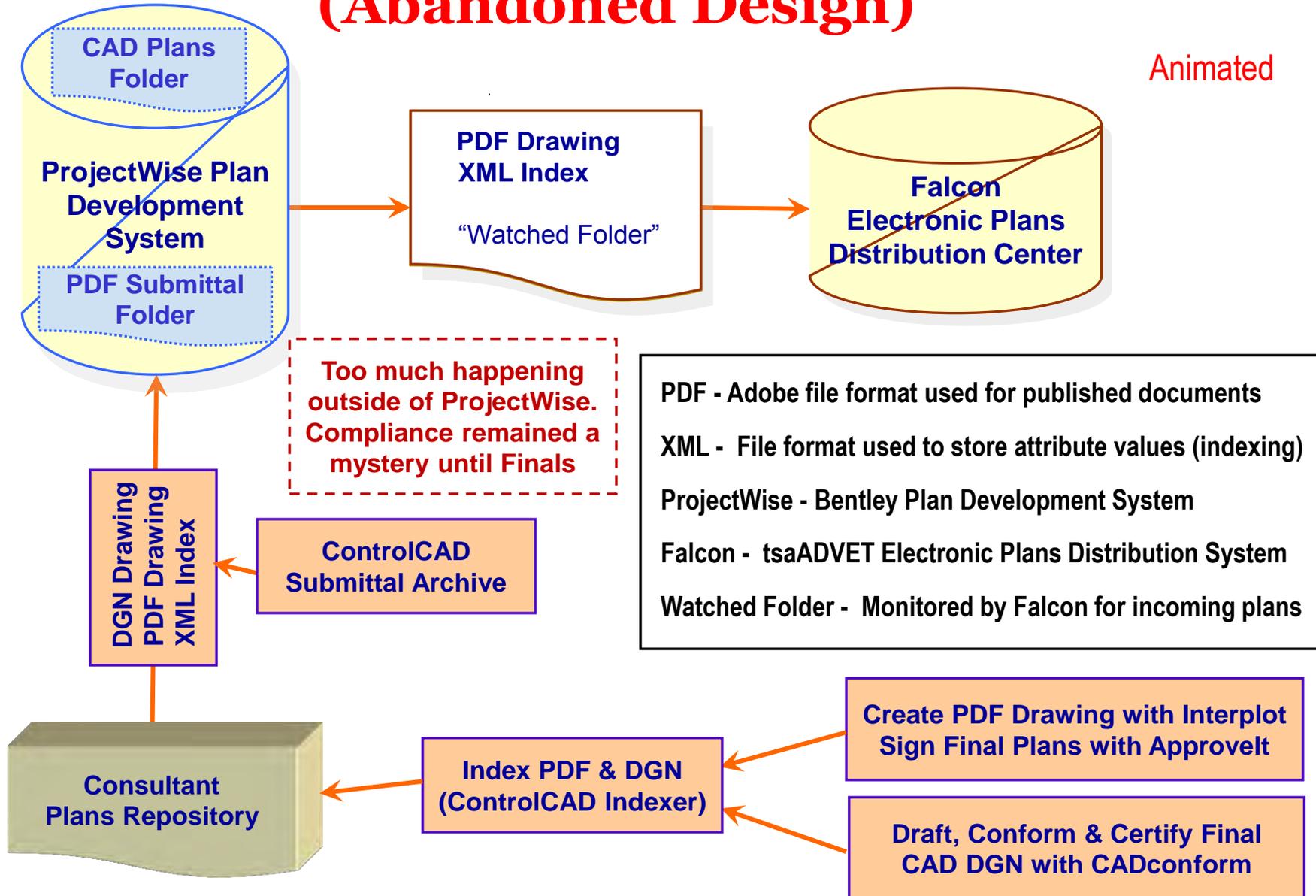


# DOTD Internal Plan Delivery Workflow



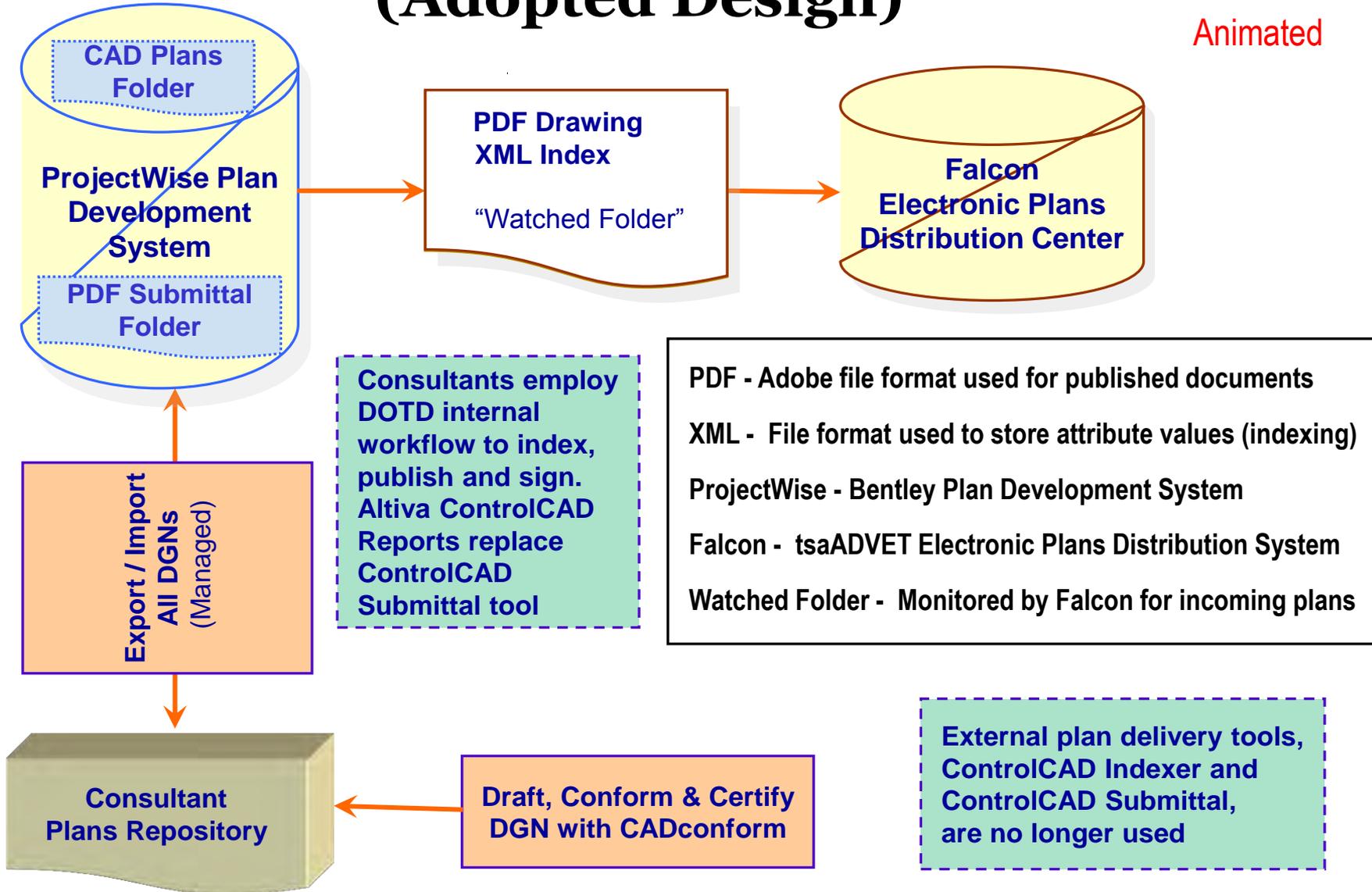
# Consultant Plan Delivery to DOTD System (Abandoned Design)

Animated

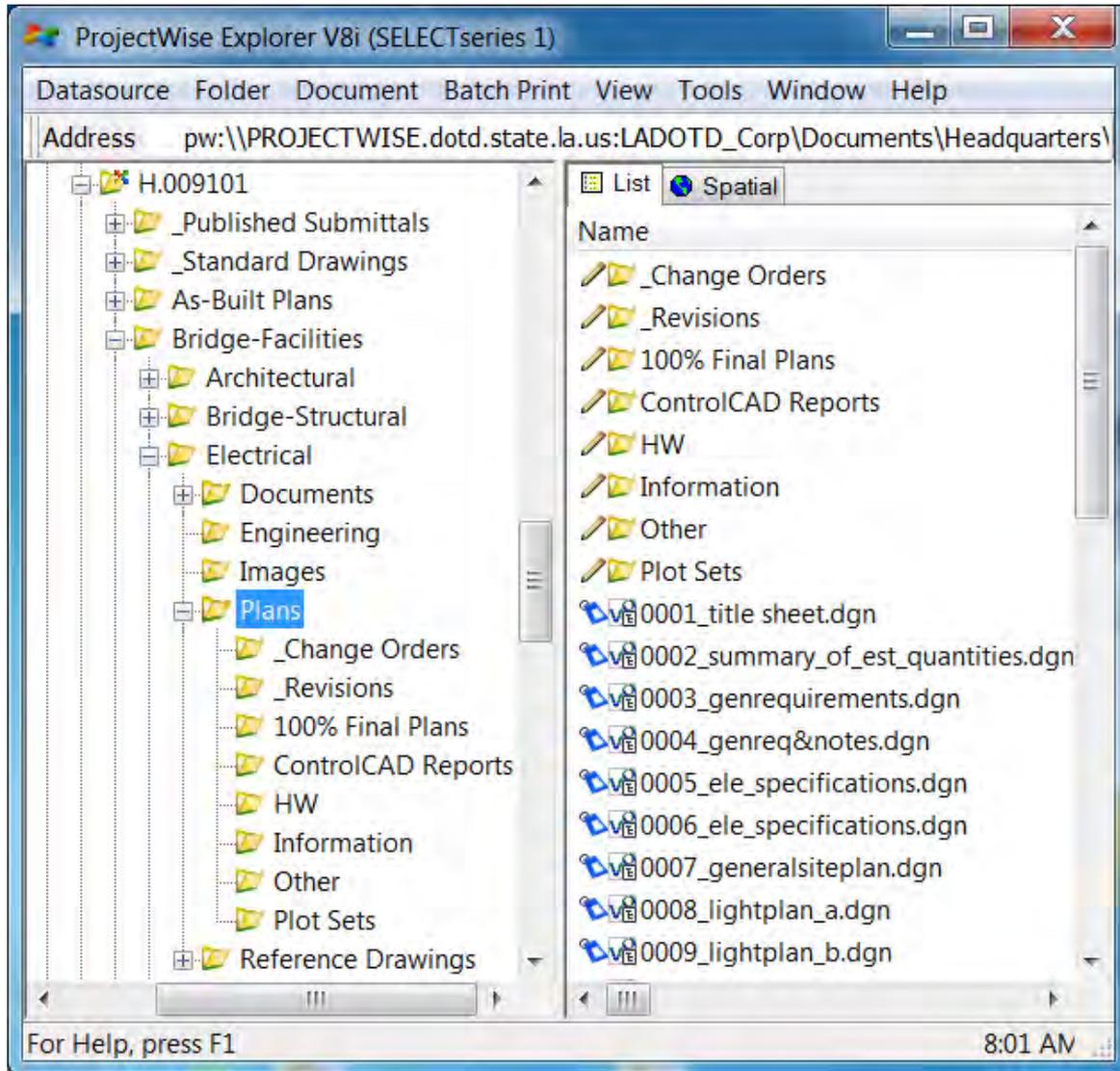


# Consultant Plan Delivery Workflow (Adopted Design)

Animated



# Drawing Management for PDF Publishing



1. Create DGN plans in, or drop plans into, the *Plans* Folder (Consultants always drop\* )
2. Scan or Attach Ref. Files
3. Move Reference Files into *Reference Drawings*
4. Publish Plan submittals to PDF format
5. Repeat Process as needed at Plan Delivery Milestones

\* Drop plans into folder first submittal. Then “drop” or managed Export/Import.

DOTD Software Support:  
IT “Service Request”

Consultant Support  
hollis.ward@la.gov or Task Manager

# Digital Signature Technology

## (Finding the Right Solution)



# DOTD Digital Signature Solution

## ❖ Digital Signature Implementation Hurdles

- ✓ State Law
- ✓ State Office of Information Technology
- ✓ Technology Selection
- ✓ LAPELS Review > Approval
- ✓ User Resistance > Buy-in
- ✓ Integration with ProjectWise

# Louisiana Professional Engineering and Land Surveying Board (LAPELS) - Digital Signature Rules -

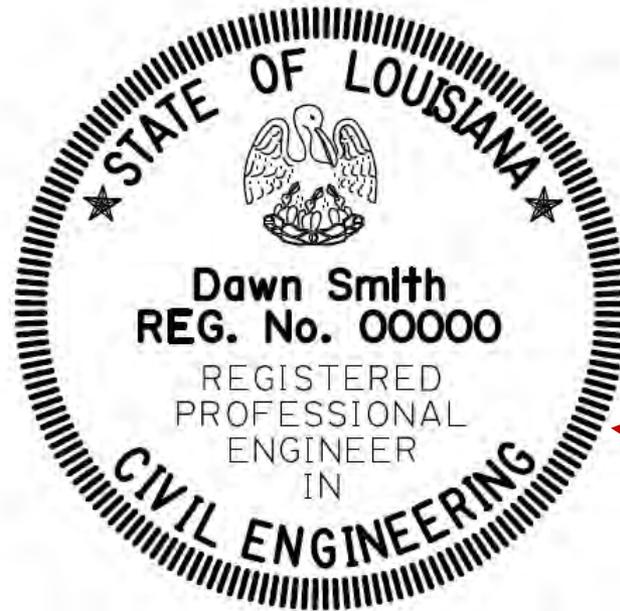
❖ Chapter 1, 105 Definitions; page 3:

*Signature* – handwritten or digital as follows:

b. a digital signature which is an electronic authentication process attached to or logically associated with an electronic document. The digital signature must be:

- i. unique to the person using it
- ii. capable of verification
- iii. under the sole control of the person using it
- iv. linked to a document in such a manner that the digital signature is invalidated if any data in the document is changed .

# CAD Seal and Digital Signature



CAD Seal

Published 25-SEP-2009  
E-Signed by Dawn Smith  
Verify Using ApproveIt



*Dawn Smith*

Electronic Rendition  
of Digital Signature

Dawn Smith's Seal and Digital Signature

# ApproveIt Certificate Information

ApproveIt - Certificate Information

Owner: Dawn Smith  
Issued by: ApproveIt

Certificate Validity

At signing time (02/01/2009)  Today

✓ Certificate is valid from 06/03/1999 to 06/03/2009.  
✓ Certificate's issuer is trusted.  
✓ Certificate has not been revoked.

Method: n/a  
URL: n/a

Certificate is valid.

Certificate Information

Field	Value
Version	v1
Serial number	F00EDD9760002E8711D319E817140EC0
Issuer	CN=ApproveIt
Valid from	1999-06-03T19:11:14Z
Valid to	2009-06-03T19:11:14Z
Subject	CN=Dawn Smith

Close Help

## Details of Dawn's Certificate

- Individual X.509 v3 identification certificate information from the embedded audit trail of the signed PDF (Industry Standard)
- Each identification certificate generated by the ePersona creation process is unique.
- Choice of Certificate Authorities: VeriSign (\$); ApproveIt CA (no cost!) Internal trusted person's ePersona (no cost!)

# Signature Authentication Info

ApproveIt - Audit Trail

Document has not been modified.

Date & Time	Signed by	User Name	Revalidated by
✓ Sunday, February 1, ...	Dawn Smith	Dawn Smith	

Replaced Fields | Advanced | On Page | Doc Info

Signing Information | Authentication

Serial number: tdc428-000000

Signature input: ePersona File

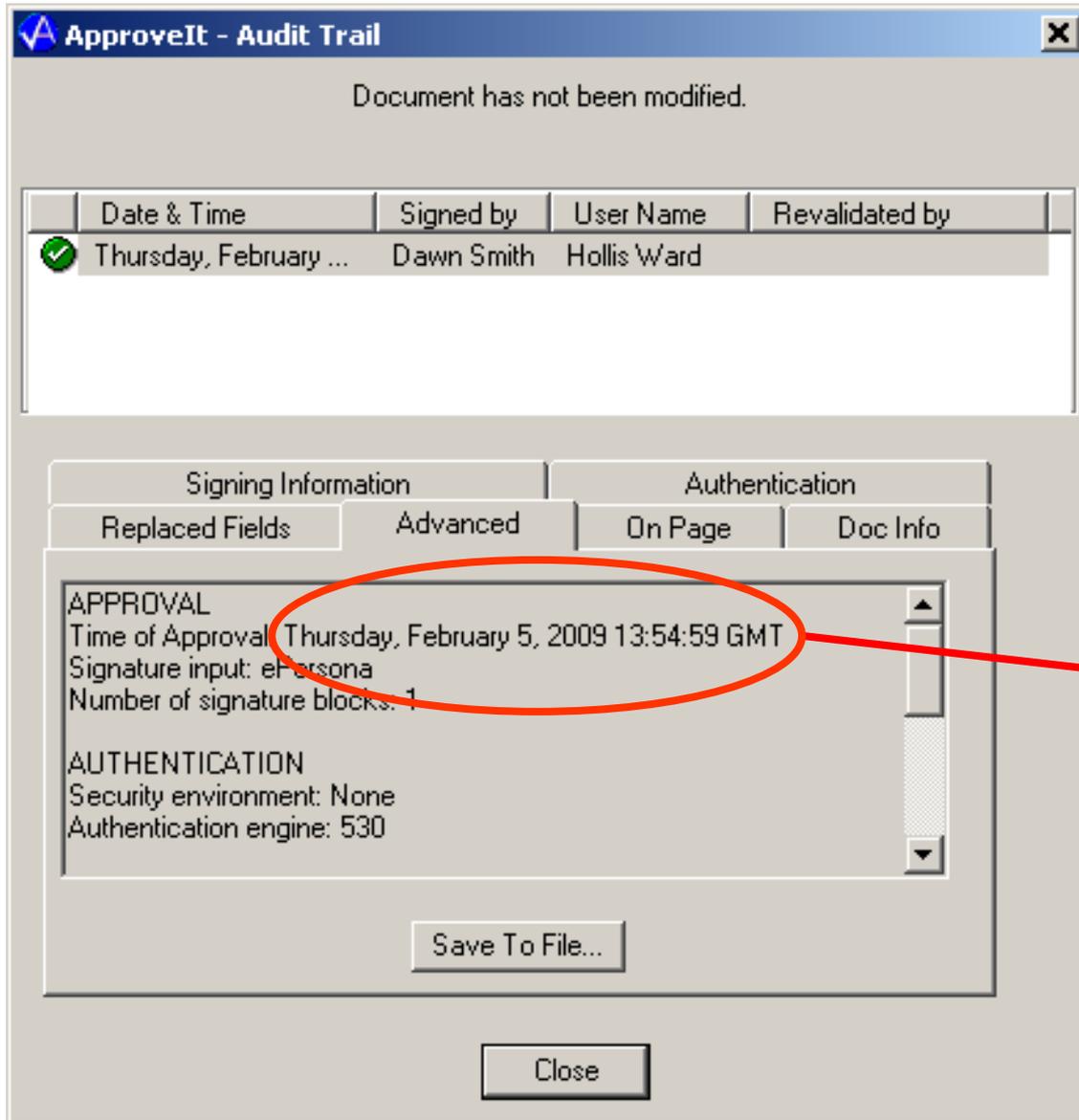
Close

Name of user profile signed on to system

Serial number of ApproveIt® plug-in installed on system used to e-Sign

Method used to e-Sign

# Signature Date/Time



Date / Time

# DOTD Digital Publishing Technology Forward Looking !

