Introduction

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Louisiana DOTD
Company History

- Founded in 1998
- California based company
- Focused on DOT and Utility industry clients:
  - LADOTD - Louisiana
  - MDOT – Mississippi
  - ADOT / UDOT / KDOT / ODOT…
  - Luminant Energy - Texas
  - Palo Verde Nuclear Generating Station - Arizona
  - Pacific Gas & Electric - California
Company Offerings

- **Methodology:**
  - **Analysis** = Feasibility studies, ROI, Assessments
  - **Development** = SDK Programming, CADD standards, etc.
  - **Implementation** = ProjectWise, AutoCAD and MicroStation deployment and upgrades
  - **Documentation** = Training manuals, CADD Standards manuals, Workflow documentation
  - **Training** = ProjectWise, MicroStation, AutoCAD
  - **Support** = on-site & remote support, deployment coaching
Company Offerings

➢ New Focus:
  ➢ GEOPAK to PowerGEOPAK Planning
  ➢ Transition Roadmap development
  ➢ GEOPAK to PowerGEOPAK Development
  ➢ 3PC to VBA Conversion, CADD standards, etc.
  ➢ GEOPAK to PowerGEOPAK Documentation
  ➢ Training manuals, CADD Standards, Workflow documentation
  ➢ GEOPAK to PowerGEOPAK Custom Training
  ➢ Customized organizational workflow training

➢ Support
  ➢ on-site & remote support, development support
Company Products

- Training Material/Software Development:
  - ProjectWise V8i User
  - ProjectWise V8i Administrator
  - MicroStation SS3 Update
  - MicroStation CADD Administrator
  - StandardsMenu software
KnowledgeBase & LADOTD

- KnowledgeBase exclusive trainer for LADOTD digital plans workflow
- Over 8 years of partnering with LADOTD
- ProjectWise and MicroStation consultant
- ProjectWise Managed Workspace piloting
Presentation Goals

- Discuss the approved process for digital plans delivery workflows accepted by LADOTD
- Communicate LADOTD technology partnerships and their importance
Reason for Workflows?

CAD Standards Compliance Tools (LaDOTD and Consultants)

Plan Delivery in the Old Days
Reason for Workflows?

- Standards were not uniform
- There were too many unmanaged copies of documents
- There were multiple methods being used to produce digital plans, thus non-uniformity
LADOTD Defined it’s workflow

- In order to create a uniform workflow, LADOTD first must define it.
- Simplified workflows first vs. too difficult.
- Workflows can always be expanded.
- Harder to restrict and pull back workflows than expand.
- Decide on a workflow first. Don’t wait for perfection.
What did LADOTD define?

- CADD Standards
- CADD Standards drafting tools
- CADD Standards compliance verification
- Document management software tool
- Automated PDF publishing
- Digital signature for PDF plans
- Final PDF publishing to external site
Synopsis of LADOTD CADD Standards

- Determine CADD products
- Define folder structures
- Develop CADD Standards
  - Levels, linestyles, colors, symbology
- Develop CADD Standards digital files
  - .cel, .rsc, .dgnlib, etc.
- Develop CADD Standards manual
Creating CADD Standards is just the beginning

- CADD standards are great but if not used are of little use
- Following standards can be challenging
  - Designer/drafters reading a book to see what the CADD Standard is and how to apply to drawings
  - If there is little to no training users often do not produce CADD standard compliant drawings
Creating CADD Standards is just the beginning

- Manually maintaining and disseminating “last known good” CADD standards is challenging
  - Internal LADOTD and external Consultant
- Without a cop, policing CADD standards is left to the individual
  - Individuals in this case include internal LADOTD staff and consultants
LADOTD CADD Standards
Now that LADOTD has CADD Standards

- LADOTD defined CADD Standard drafting tools
- LADOTD defined CAD Standards compliance tools
Synopsis of LADOTD CADD drafting and compliance tools

- Tool needs to enable users to easily draft and design using the correct CADD standards
- Software must be scalable and enable integration with LADOTD CADD environment
- Tool must validate that the CADD standards have been used on the drawing
- CADconform was chosen for this solution
LADOTD CADD standards drafting tool
Synopsis of LADOTD CADD drafting and compliance tools

- Tool needs to provide a method of checking the drawing for CADD standards compliance
- Software must be scalable and enable integration with LADOTD CADD environment
- Tool must produce an easily readable form capturing the results of the scanned drawings
- ControlCAD was chosen for this solution
LADOTD CADD standards compliance tool

![Excel spreadsheet showing LADOTD CAD Standards Report](image)

### LaDoTD CAD Standards Report

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100% of drawings with certification stamp.
Now that LADOTD has CADD Standard tools what about managing files?

- CADD Standards, drafting tools, and compliance checking is a step forward. What about managing design plan sheet digital files?
- Are we still working on our C:\ drive?
- What data do we have or know about our CADD design plans?
- Is it important to associate data with our design sheets and elements?
Now that LADOTD has CADD Standard tools what about managing files?

- System needed to be able to handle MicroStation reference files attachments
- System needs to be Integrated with standardized CADD products (MicroStation and InRoads)
- System needed to be scalable and customizable
Synopsis of LADOTD EDM System

- LADOTD defined an engineering document management system to manage CADD drawings and project data
- LADOTD developed an environment with searchable attributes
- LADOTD developed a workflow within the EDMS environment
- ProjectWise software had been utilized by LADOTD for over 10 years and was the chosen solution
LADOTD EDM system
LADOTD now has an EDM system. What's next?

- LADOTD defined a digital plans delivery workflow
LADOTD needed to automate the delivery of digital plans
- defined a digital plans delivery workflow
- Automate the process for simplicity
- Make the software interaction intuitive to the users
- Must be integrated into the EDM system
- Must be scalable
Synopsis of LADOTD digital plans delivery

- Define final plans digital format
- PDF format most widely used
- File format .pdf agreed by the courts of Louisiana
- Adobe pdf files were chosen as the document of record for digital plans delivery
- Adobe Reader was chosen as the application for this solution
LADOTD develops a complete digital workflow

- Are digital signature considered legal and acceptable forms of engineering plans deliverables?
  - YES
- LADOTD defined a digital signature process for signing PDF documents
Synopsis of LADOTD digital signature process

- LADOTD defined a process to digitally sign PDF documents
- Defining a workflow from utilizing the EDM system and the CADD products
- Silanis ApproveIT was the chosen solution for digital signing documents
LADOTD Digital signature

Summary of the Export for Digital Sign:
Total Documents Selected: 1
Documents Successfully Exported: 1
Digital Signature Folder: C:\PW_SignatureDir

E-Signed by Dawn Smith
Verify Using ApproveIt
The final step in distributing digital plans

- Developing internal workflows are great but making them easily available to the public are critical.
- A system that automatically enabled staff to distribute final plans for letting was required.
- Standardizing this process ensured conformance and accuracy.
Synopsis of LADOTD Digital Plans Room

- Software need to incorporate metadata from the ProjectWise environment
- Final Plans need to be automatically distributed to this system with searchable attributes
- Falcon was the chosen solution
Developed for both internal LADOTD staff as well as Consultant staff

Comprehensive document lifecycle workflow involving multi technology partners

Digital start to finish intending to reduce or eliminate manual paper process
LADOTD plans delivery workflow process

DOTD Consultant Plan Delivery Workflow (Adopted Design)

- CAD Plans Folder
- ProjectWise Plan Development System
- PDF Submittal Folder
- Managed Export/Import, Export Designs and Reference Files
- Consultant Plans Repository
- Draft, Conform & Certify DGN with CADconform
- PDF Drawing XML Index
- Watched Folder
- Falcon Electronic Plans Distribution Center
- Consultants employ DOTD internal workflow to index, publish and sign.
  - Altiva ControlCAD Reports replace ControlCAD Submittal tool
- PDF - Adobe file format used for published documents
- XML - File format used to store attribute values (indexing)
- ProjectWise - Bentley Plan Development System
- Falcon - tsaADVET Electronic Plans Distribution System
- Watched Folder - Monitored by Falcon for incoming plans
- External plan delivery tools; ControlCAD Indexer and ControlCAD Submittal, are no longer used
LADOTD plans delivery website
LADOTD technology partners and importance

- LADOTD leveraged technology that accomplished goals to fulfill the workflow
- Technology partners providing solutions in their niche market
- All partners working together to fulfill LADOTD’s goals
- Not 1 solution to “fit all”
LADOTD technology partners and importance

- CADD compliance and verification tools – Altiva software
- Engineering document management - Bentley Systems
- Digital Signature solution - Silanis
- PDF publishing - tsaADVET
- Training and Consulting – KnowledgeBase Consulting Group
Lessons Learned

- Get high level management buy-in early in the process
- Build technical requirements and roadmap
- Test workflow in real world scenario
- Get user staff to “own” the workflow
Lessons Learned

- Get everyone on the same page
- Pulling together technology partners
- Taking advantage of momentum
  - Political
  - Technology
- Final step to train all consultants
Questions