BIM for Infrastructure
FHWA Peer Exchange

Montana Department of Transportation Status Update

June 2019

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Engineering Operations Bureau
Montana Department of Transportation
Agenda

- CIM - Phase I
- Resetting Perspective
- BIM – Phase II
- Managing the Way We Change
- Project Strategy Examples
- Stay Tuned
CIM – Phase I

• Jan. 2016
  – 3D Study & Implementation Plan completed by Bentley Systems
• Sept. 2016
  – Hosted IHEEP 2016 Helena, MT
• Oct. 2016
  – FHWA Every Day Counts (EDC) 3D Engineered Model Workshop
• Apr. 2017
  – CIM Implementation Plan
• May 2017
  – Developed CIM Structure & Guiding Teams
CIM – Phase I

• Dec. 2017
  – Completed CIM As-Is & To-Be

• Dec. 2018
  – CIM Phase I Close-out

• MDT CIM - Phase I Structure
  – Steering Committee
    • 12 Members – Decision Makers
    • Upper & middle management
  – Guiding Teams
    • Internal MDT Staff - SMEs
    • 9 Teams, 5 to 10 Members each
Resetting Perspective

Custom CADD Training

SS4/OR Power User, Development Team

Photos courtesy of John Ascheman, MDT Visualization Section
Resetting Perspective
Peer Outreach – Kimley-Horne

Photos courtesy of John Ascheman, MDT Visualization Section
BIM – Phase II

• MDT BIM – Phase II Structure
  – Steering Committee
    • 1 Business Project Owner
    • 3 Business Stakeholders
    • BIM Lead – Project Manager

• Guiding Team
  • 8 core team members
  • Supplement with auxiliary SME
  • Internal MDT SMEs
  • Defined workplan
BIM – Phase II

• Workplan
  – New stakeholders identified
  – Begin with the end in mind
    • Phase I recommendations
    • External partners
    • Electronic files
  – Effectuating change
    • Leverage soft skills
    • BA foundational principles
Managing the **Way** We Change

- **Business Owner vs Product Owner**
  - Engineering Business Analyst
    - Herdin’ Squirrels
    - Pushing Boundaries not Buttons

- **Implementation Strategy Examples**
  - Maintenance Management System
  - Bridge Bureau Pilot Project

Photo by [Demi-Felicia Vares](https://unsplash.com) on Unsplash
Maintenance Management System

• Maintenance Bureau
  – Communications
  – Facilities
  – Equipment

• Maintenance Activities Software
  – Replace 30-year-old system
  – Agile Assets® Maintenance Manager™
# Maintenance Management System

**ROI Office Staff Only**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Hours saved (Increased Productivity)</th>
<th>Cost Savings/Year (Increased Productivity)</th>
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</thead>
<tbody>
<tr>
<td>Double Entry Reduction</td>
<td>3840 hours</td>
<td>$93,200</td>
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<tr>
<td>EVMS→MMS: Biweekly Usage</td>
<td>1920 hours</td>
<td>$46,800</td>
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<tr>
<td>EVM→ MMS: Commercial Repair Order</td>
<td>204 hours</td>
<td>$12,000</td>
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<tr>
<td>MMS→ETS</td>
<td>720 hours</td>
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<td>MMS→ Inventory</td>
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<td><strong>Total</strong></td>
<td>10,024 hours</td>
<td><strong>$286,000</strong></td>
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*Slide courtesy of Doug McBroom, MDT Maintenance Bureau*
Maintenance Management System

LED Project ROI

- Assets are inventoried
- Programmed project to convert high-pressure sodium to LED
- ROI = 4 years on utility costs alone

<table>
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<tr>
<th>DISTRICT</th>
<th>FED TOTAL</th>
<th>FED COST</th>
<th>STATE TOTAL</th>
<th>STATE COST</th>
<th>TOTAL LUMINAIRE</th>
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<td>$200,373.52</td>
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</table>

Slide courtesy of Doug McBroom, MDT Maintenance Bureau
Bridge Bureau Pilot Project

Software Pilot Project Work Plan

Software: Autodesk AEC Collection and Inventor

MDT Project: N/A
Proof of Concept! – The Flow Chart!!!

AUTODESK 3D BRIDGE WORKFLOW

AUTODESK PRODUCT KNOWLEDGE
Proof of Concept – Interoperable Workflow
Proof of Concept – Infraworks

- Importing OpenRoads Corridors and Geometry
- Market Ready Tools
Stay Tuned

• Additional, rapidly advancing MDT projects focused on data sharing
  – LRS / ESRI
  – PPMS
  – CDMS
  – UPAS / ULDR
  – AASHTOWare
  – MMS Upgrade
  – Bentley CONNECT Edition
  – Civil 3D Autodesk State Kit
  – Civil 3D Autodesk Pilot – Multi-discipline
  – BIM360 Pilot – Plan Review (PS&E)
  – BIM360 Pilot – Document Management
Thank You

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