MDOT Transportation Asset Management System (TAMS)

No Boundaries Roadway Maintenance

Practices Pooled Fund Meeting

August 30th, 2017

Columbus, Ohio

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MDOT Operations Field Services

MDOT Transportation Asset Management System (TAMS)

What are the initial goals?

2015

- Electronic work order system

- Asset Management Data

- Sign Inventory

"TAM Systems are the *vendor tools* that will be utilized by combining *spatial information* (across multiple linear referencing systems (LRS) with *business intelligence* to achieve the objectives of Enterprise Asset Management. TAM Systems also *integrate information from other MDOT data systems and applications*"

Enterprise Asset Management

- Awarded Contract to Data Transfer Solutions, LLC July 13, 2015

- Contract is for 7 years with options for 5 additional years.

- Key Components:
    - Road Network Management (linear referencing)
    - Asset Inventory Management
    - Maintenance Management
    - Future Integration Capability

Contract Overview

- **Project Managemen**t: Department Technology Management and Budget (DTMB) *(Michigan IT agency)*
- **MDOT Business Owners:**
  - [Bureau of Field Services]
  - Bureau of Development
  - Bureau of Transportation Planning
- **Subject Matter Experts:**
  - Asset experts
  - Data system experts
- **End Users**
  - Central Office *(statewide)*
  - Regions/TSCs *(Maintenance, Design, Construction)*
  - MDOT Garages
  - Contract Agencies & private contractors

DTMB

MDOT Business Owners

TAMS Vendors

SMEs
End Users

Project Execution
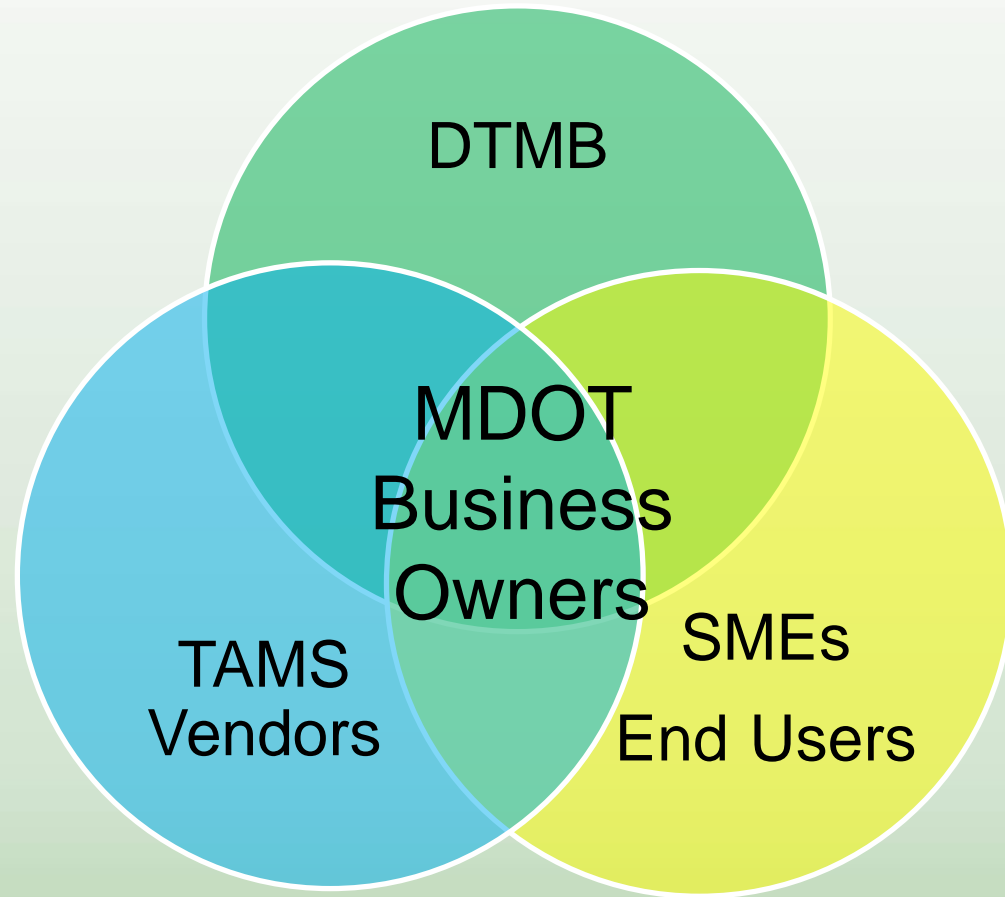
- **Maintenance Management System (MMS)**

❖Asset functions (Road Asset Inventory, Signs, Culverts, Guardrail)

❖Linear referencing functionality
  – ESRI Roads & Highways
  – Straight Line Diagram tool

- Data Interfaces (1-way communication)
  – Global, MIDB, PDRP, M5, Stores, MIBridge, SDE

- **Support <u>P</u>erformance <u>B</u>ased <u>M</u>aintenance functions.**

❖*GIS Centered Functions*

Phase 1 Priorities

- Service Request & Work Order Functions
  - Plan/track/report activities
    - Locations
    - Costs
    - Quantities
- Supervisors can schedule work and resources
- Reporting capability
- Integrate w/ existing MDOT systems
- Budget planning and Asset Association

Vendor Tools

- Vueworks
- Mobilevue
- Road Analyzer
- ESRI Roads and Highways tools
- Transcend Productivity tools

Spatial Asset Info

- Culverts (1-10')
- Guardrail
- Cable Barrier
- Signs (5 classes)
- Road Asset inventory (8 classes)
- Bridges
- *Pump Stations (in the works)*

Data/System Integrations

- MiBridge (bridge system)
- MIDB (employee data)
- PDRP (insurance claims)
- M5 Fleet Focus (fleet)
- FIN MSTAR (materials)
- GIS SDE (asset data)
- Global (address info)
- MiLogin (single sign on)

Current Project Components:

Guardrail Attribute Data

Route	Location	PR Begin	PR BMP	Guardrail Run	Guardrail Type	Post Type	Approach	Departure	Guardrail
M-46	Right	1205603	16.874	0.069	Type B	Steel		Transition	
M-46	Right	3290034	2.016	0.027	Type B				
M-46	Right	1015404	1.963	0.011	Type B	Steel		Anchored Terminal	
M-46	Right	0497604	7.173	0.019	Type B				
M-46	Right	0445005	1.805	0.014	Type B	Steel		Anchored Terminal	
M-46	Right	1015404	5.342	0.028	Type B	Steel			
M-46	Right	0270208	23.912	0.022	Type B	Steel			
M-46	Right	0857803	19.444	0.038	Type B				
M-46	Right	1014806	12.787	0.015	Type B	Steel	Curved	Transition	
M-46	Right	0857803	11.228	0.009	Type T	Steel	Other	Transition	

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MobileVu e

Back to Work Order List

Back to Work Order List

081116

0337310-0.

Details

Head

Back to Work

081116003-Gu

0337310-0.7, 0337310-1

Details   Assets

Add Asset

Guardrail-{8966

0337310-0.7, 033731

Back to W

081116003

0337310-0.7, 033

Details   Ass

Add

Back to

081116003

0337310-0.7, 03

Details   As

N

MATTHE

Date: 8/11/2
Rate: OVT1
Notes
test

CROUCH

Date: 5/5/20
Rate: CBP2
Additional F
– Phase: 33
– :
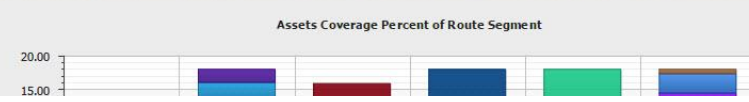
Mobil

081

03373

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2

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1

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MobileVUE   Home   Settings   Logout   About

Map   Directions

Back to Work Order List

081116003-Guardrail Repair: Steel Beam

0337310-0.7, 0337310-1

Details   Assets   Photos   Documents   Tasks   Labor   Equipment   **Inventory**

+ Add Inventory

⚙ Aggregate, Surfacing, 23A   2 Tons

Date: 5/5/2017
Rate: Unit Charge

⚙ POST,DELINEATOR,STEEL, 7' 100 PER BUNDLE   2 EA

Date: 5/5/2017
Rate: Unit Charge

⚙ Block, Wood, Offset   23 Each

Date: 5/5/2017
Rate: Unit Charge

As

+
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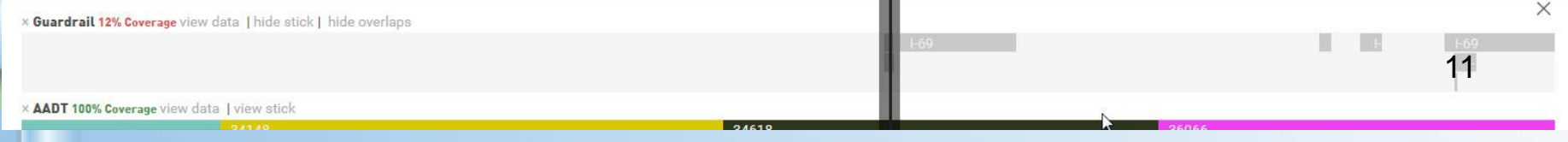
- Other than Roads and Bridges, our GIS asset inventories are sporadic or not current.
- **Each Asset type requires a Data Collection and Condition Assessment guide**.
- Current large scale collection efforts/plans:
  - Extraction of Guardrail and Sign data from photolog imagry
  - Contractor "Boots on the Ground" collection of Culvert (1'-10') data (5 counties)
 - Looking into mobile LiDAR technology

ASSET COLLECTION & CONDITION
ASSESSMENT GUIDE
FOR
1'- <10' SPAN CULVERTS

September, 2016
Revised:
4-25-17

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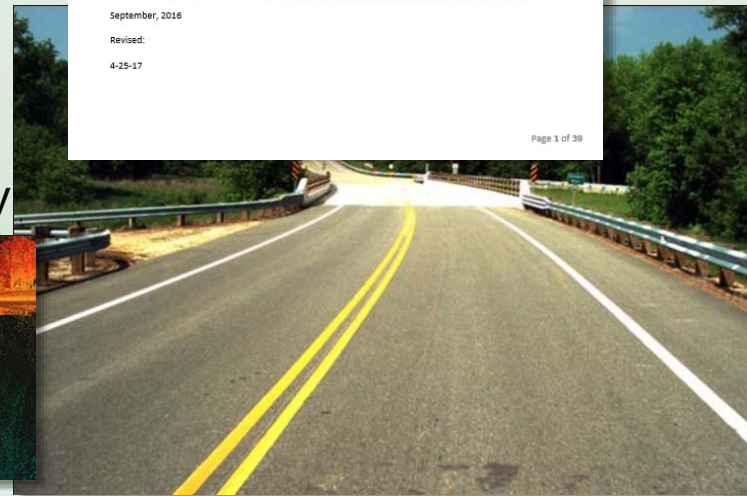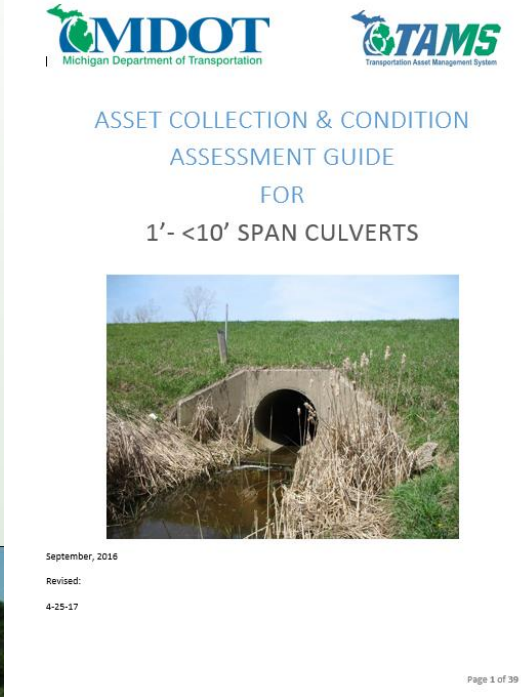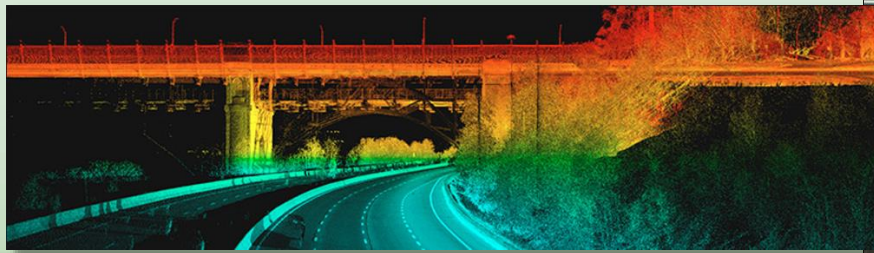
Asset Collection Efforts

Transportation Asset Management System (TAMS)
Implementation Plan for Maintenance

TAMS — Transportation Asset Management System

Direct Force Pilot:
- Since August 2016
- Four Direct Garages
- Approx 350 Work Orders
- Working off DTMB test environment (DEV)
- Limited use of Mobilvue, SR, and reports so far.

- Service Requests
- Work Orders
- MobileVue
- Maintenance Reporting
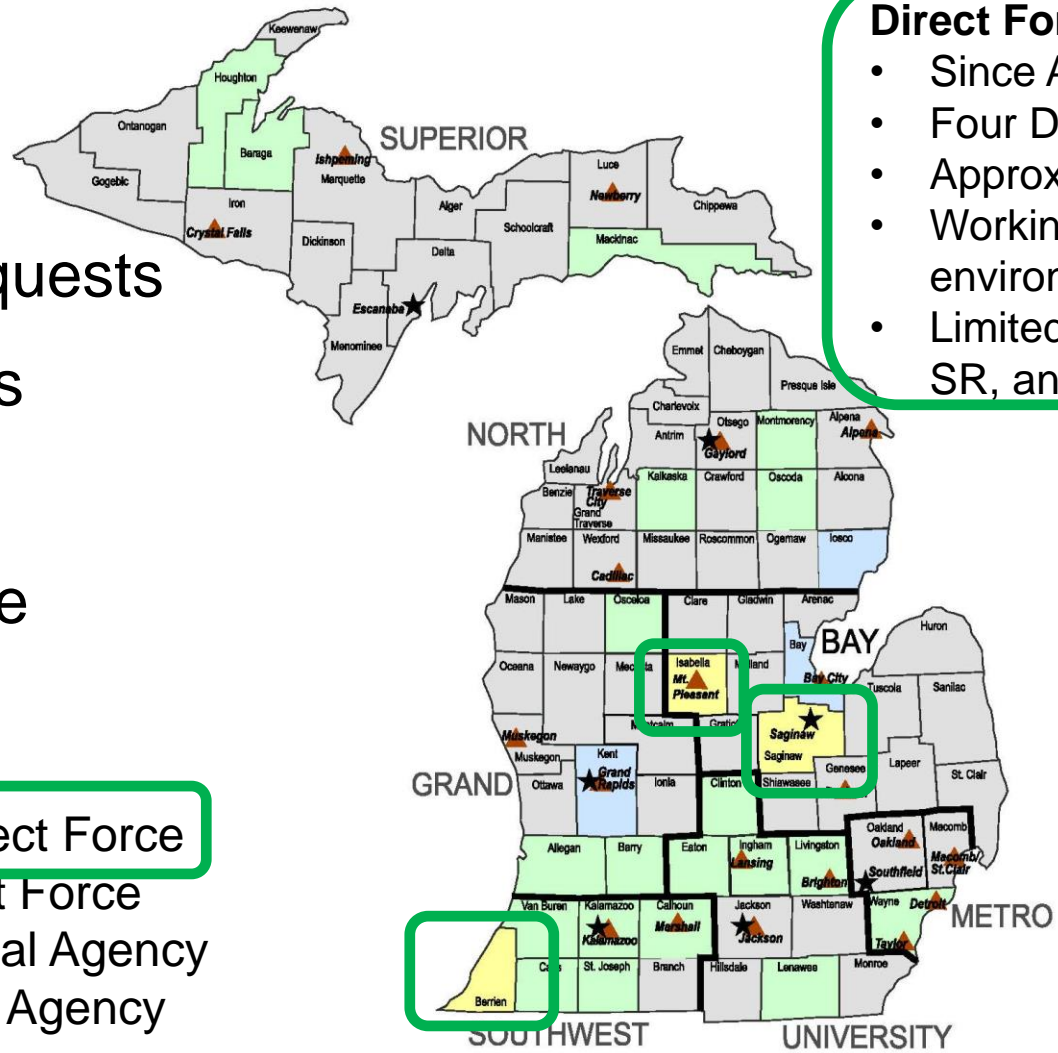
Phase 1: Pilot Direct Force
Phase 2: All Direct Force
Phase 3: Pilot Local Agency
Phase 4: All Local Agency

MMS Schedule

MDOT

Near Term items for TAMS project:

- "Go live" (production server) roll out November 2017 *(target)*
- Ipads for maintenance users *(outside of project)*
- Final load of existing asset data
- Configuration of signs inventory/project module
- Configuration of pump Station module

Long Term:

- Add additional asset types, data systems, and asset management tools
- Improve asset inventories (photolog extraction, LiDAR, etc)
- Incorporate Construction data into asset inventories
- Implement comprehensive Data Governance, global asset management, and new business practices to MDOT *(cultural Change)*

Forecasted Schedule

- Enterprise Asset Management is a "major effort" and requires a lot of groups to implement.

- It is important to have your IT Area involved, but their pace might not match yours.

- **With numerous stakeholders, communication is key, along with managing expectations.**

- **Data Governance is imperative**

- Cultural Changes to how we do business.

Advice/Lessons Learned

THANKS!

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