MDOT’s Roads & Highways Implementation

A Journey

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Michigan’s Road Network

• MDOT has 120,000 route miles of public road, with 9700 route miles under state jurisdiction
• MDOT’s LRS includes three LRM:
  • PR network – seven random digits (unique) for relative small road segments for all roads in the state
    • No concurrencies, no gaps, no non-zero starts
    • Includes some private roads
    • Includes most rails and some trails
    • All data registered to this LRM
  • CS Network
    • Legacy network for the State Trunkline, limited to the trunkline
    • County based
  • Route network
    • Signed state trunkline routes
    • Only LRM with concurrencies
Where We Were

- Michigan was using a LRS editing solution that was custom developed for the State of Michigan
- The technology was old and the tool was not user friendly
- Output was a large denormalized flat file with a mix of LRS and data
  - Delivered as an E00 output processed using AML’s and FoxPro
- Opportunity arose to bring in Esri Roads & Highways technology under a larger MDOT asset management project (TAMS)
  - VueWorks – DTS
  - Roads & Highways implementation – TSS
  - Esri was brought in to model HPMS data items not in original project, and then later to help us with other implementation issues
• We normalized all of our LRM’s and most of our data.
• We created over 100 events.
• We chose to use workflow manager to manage our editing environment.
• We started with 3 event editor instances (HPMS, Act 51, LRS).
• Since implementation we have created an additional event editor for our traffic data collection where they manage their segmentation in conjunction with TDMS by MS2.
• We started the project in Arc 10.3.1 and completed the project in 10.5.1.
• Recently moving into 10.6.1.
• Conflict prevention was chosen due to our decentralized editing business model.
The “Finish” Line

• We conducted a gap analysis halfway through the project and found that we had additional needs. Our solution was the Esri Enterprise Advantage Program (EEAP) to obtain needed support.

• We created an AGOL tool to capture all of our backlog edits.
  • This tool allowed us and our partners to submit summary data, and attachments with an AOI so when we went live we could add the necessary edits to the system.

• We brought in a new LRS specialist
Lessons Learned

R&H Implementation can and will most likely take longer than you think. Based on our experience, here are a few things to consider for your implementation:

- Spend a lot of time on your requirements, but be ready for them to change.
- Really focus on the necessary server architecture and security issues up front.
- Having a well thought out data model in place early is important.
- Be ready to manage a backlog of needed edits while in transition.
- There will be inevitable personnel turnover (owner and consultant sides) – documentation is important.
- Have a plan on how to handle integration with legacy applications that will not be directly tied into R&H.
- If possible, do the R&H implementation as a project itself without it being part of a larger project.
The Continuing Journey

• Implementation of MS2 traffic software, which integrates with our R&H system.
• Working with other business areas such as pavement, bridge, rail, project management, etc. to leverage R&H data and functionality.
• Integrating MDOT LRS and event data from R&H with data from other state departments in partnership with DTMB-Center for Shared Solutions, Esri, and 1Spatial.
• Working with Esri on building a releasing a tool/widget called “PR Finder” that can be brought into AGO maps to identify a route and mile-point of all our LRS networks.
• Connecting R&H database (SQL Server) to in-house oracle IT applications and databases.