LESSONS LEARNED MAINTAINING MULTIPLE LRM’S WITH ESRI ROADS AND HIGHWAYS

GIS-T 2019
Multiple LRM\textsc{s}

- **ALL HISTORIC DATA** was associated with the LRSID\textsc{Routes}

- Control Sections – generalized corridor model
- Route – state highways model

- **NOW** LaDOTD has two linear referencing system networks

- LRSID\textsc{Routes} – Original expanded control section & local road linear referencing model
- Statewide\textsc{Routes} – New state highway & local road linear referencing model
2000 - SINGLE LINE STATE HIGHWAY CONTROL SECTIONS
2010 - Multi-LINE STATE HIGHWAY LRS_ID
2015 – Enter Roads & Highways
2017 – Multiple LRM

- Examples of LaDOTD two linear referencing networks

  - **StatewideRoutes**
    - Highway Route and Street Name based
      - 999_LA 956_1_1_010
      - 019_CALDWELL ST_1_1_010

  - **LRSID_Routes**
    - Control Section and Street Name based
      - 319-30-1-010
      - 019900431902992010
Issues with Individually Supporting Multiple Networks

• Duplication of effort
  – Route edits must be repeated for each subsequent network simultaneously

• Synchronization of Geometries
  – There is a strong potential for the different networks to become unsynchronized
  – Well intentioned editors may be required to defer edits on secondary networks to meet deadlines

• Quality Control
  – Repeating the same edit with different constraints can lead to data quality issues
Roads & Highways Multiple LRM Management Cycle

- **ALL DATA** was loaded into Roads & Highways associated with the “new” StatewideRoutes LRS Network

- StatewideRoutes is maintained as the only Route Network for Roads & Highways

- The LRSID_Routes is being maintained as a registered event in Roads and Highways called LRSID_Events

- A geo-processing tool has been set up to take the LRSID_Events and through a series of steps develop a polyline_m route feature named LRSID_Routes
Why is this so Critical?

- **ALL DATA** within LaDOTD INCLUDING Construction, Maintenance, and Financial data is still being maintained as it is associated with the LRSID_Routes.

- It is Mission Critical that we maintain both LRM’s “in sync” so that data can be translated between the two easily and efficiently.
What Have We Experienced?

• The Concept is **PERFECT** in Theory but not so great in Reality!

• We determined Geo-Processing tools were not working due to the old saying “garbage in = garbage out”

• We conducted an Extensive Review of our “centerline” data and found:
  
  • Gaps, Overlaps, “Short Segments”, Duplicate Vertices, and Non-Monotonicities in the data
What Have We Done?

• We conducted this Extensive Review on: Centerlines, Statewide Routes, LRSID_Events, and on LRSID_Routes
• We are reviewing the Geo-Processing tools to confirm the results at each step.
• Current results have over 500 “routes” that need to be flipped on the state system. No testing has been done on the non-state system yet.
• Hopefully next week we will find the solution to the questions about the geo-processing tools.
What about Future Edits?

1. Keep improving the geo-processing tool to create the routes
2. Update StatewideRoutes in accordance with Route editing rules
3. Update all registered events including the LRSID_Events and perform Quality Control checks
4. Run a batch process to export updated LRSID_Events and process them into LRSID_Routes
5. Load and replace the new and modified LRSID_Routes back into the target network