Some Challenges Using GIS for a Roadway Inventory System

March 21, 2019
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Evolution of NYSDOT’s GIS Roadway Inventory

- All roads were maintained in a database format
- Federal Aid Roads built in GIS (27,000 miles)
  - GIS ID used to link Inventory Data to Geospatial Data
- Local Roads added with ARNOLD (88,000 miles)
  - Approximately 116,000 additional roads

Challenges Maintaining the Inventory in GIS

- Creating and Updating Roads
- Temporality Within the Network
- Integrating the Network With Non-Inventory Needs
- Roads That Are Difficult to Model
- Accuracy and Precision of Data
Challenges Creating and Updating Roads

- Research other Aerial Imagery Resources
- Utilize any construction documents or official records
- Sketch road based on resolution information
- Updates tracked and re-checked annually

Creating and Updating Roads

- DOT ID 219697
  Depot Rd Realignment
- DOT ID 312719
  Creeks Edge Drive New Road Addition
- DOT ID 145502
  Hills Pond Road Extension
DOT ID 219697 Depot Rd Realignment

DOT ID 219697 Depot Rd Realignment
2015 Google Earth Imagery

DOTID 312719 Creeks Edge Drive
New Road Addition
DOTID 312719 Creeks Edge Drive
New Road Addition

DOTID 145502 Hills Pond Road
Extension
Temporality Within the Network

- External Events Tied to the Network
- History For All Edits Stored
- No “Delete” or “Undo”
- Coordination For All Edits Impacting Event Data

Wolf Road Albany – Original Event Behavior
Wolf Road Albany - Event Behavior Reloaded Geometry

Wolf Road Albany - Event Behavior Edited in Roads & Highways
Integrating the Network w/Non-Inventory Needs

WITH GREAT POWER COMES GREAT RESPONSIBILITY

...AND HEADACHES
Integrating the Network w/Non-Inventory Needs
Roads That Are Difficult to Model

• Stacked Roads

• Congested Areas & Overlapping Roads That Are Not Overlaps

• Conflicting One Way Segments

Stacked Roads
Almond St & I-81 Syracuse NY
Almond Street - I-81 Overhead

Brooklyn Queens Expressway
Laurel Hill Blvd
Congested Areas
Conflicting One Way Segments

Issues Created By Accuracy & Precision of Data

- Roadway Inventory - Accurate to Hundredth Mile
- Roads & Highways - Precise to 7th Decimal Place (0.006336 in)
- Overlap Locations - Recorded vs “Actual”
Who wants the pressure of being super ALL the time?

### Recorded Values vs. "Actual" Values

**Recorded in inventory (2 decimal places)**

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**Overlaps if we used true rounding**

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**Recorded in Roads & Highways (6 decimal places)**

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ANY QUESTIONS
DO YOU HAVE?