Roads & Highways: MnDOT's implementation

RHUG Webex – June, 2014
Esri UC – July 2014

Peter Morey, MnDOT
Office of Transportation System Management

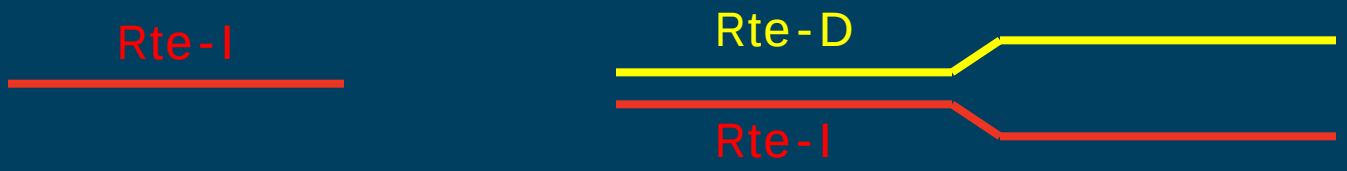
We all have a stake in A to B

Agenda

- Non-Standard implementation specifics
  - Dual routes
  - Primary event
- Data Details
- LRM Details
- External System Integration
- Shared Centerline Initiative
- Timeline & Process
- Lessons Learned

Dual Routes

- Esri Recommended a Mixed system
  - + Less maintenance of LRMs on wholly undivided roads
  - - Inconsistent methods to extract data
  - - Need to know details of the whole route to edit any portion of it



- MnDOT is implementing a Dual Route system
  - - More maintenance of LRMs on wholly undivided roads
  - + Editor only needs to know the portion of the route being edited
  - + Consistent data extraction
  - + Allows travel direction based attribution

Dual Route vs Dual Geometry

- We create a second centerline when a physical barrier prevents traffic cross-overs

- All roads excluding one way roads have dual routes
  - Increasing and decreasing mileage directions
  - On Undivided road segments both routes follow the same geometry
  - On Divided road segments each route has it's own geometry

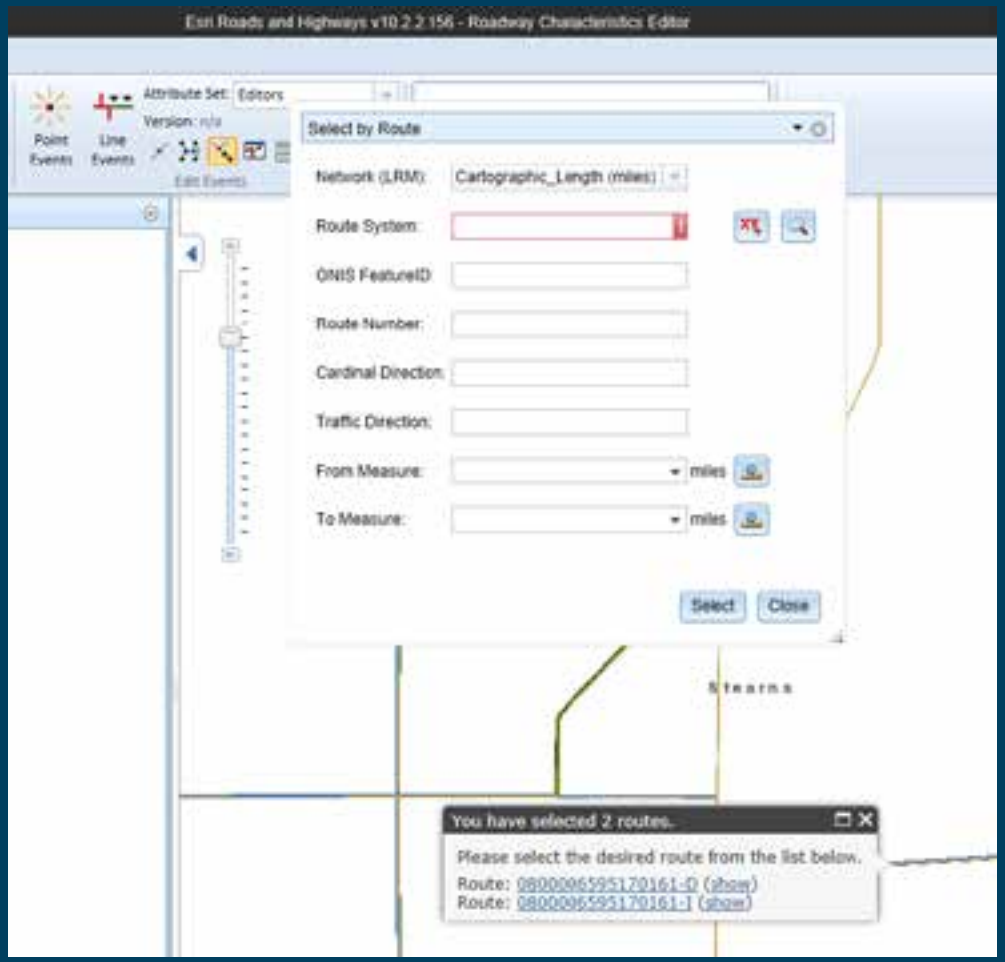
Primary Event

- Esri recommended all routes be rated equal
- MnDOT requires ability to state one route primary
  - Statewide event on all roads
  - One route pair is primary at any location
  - Event data assigned to primary routes

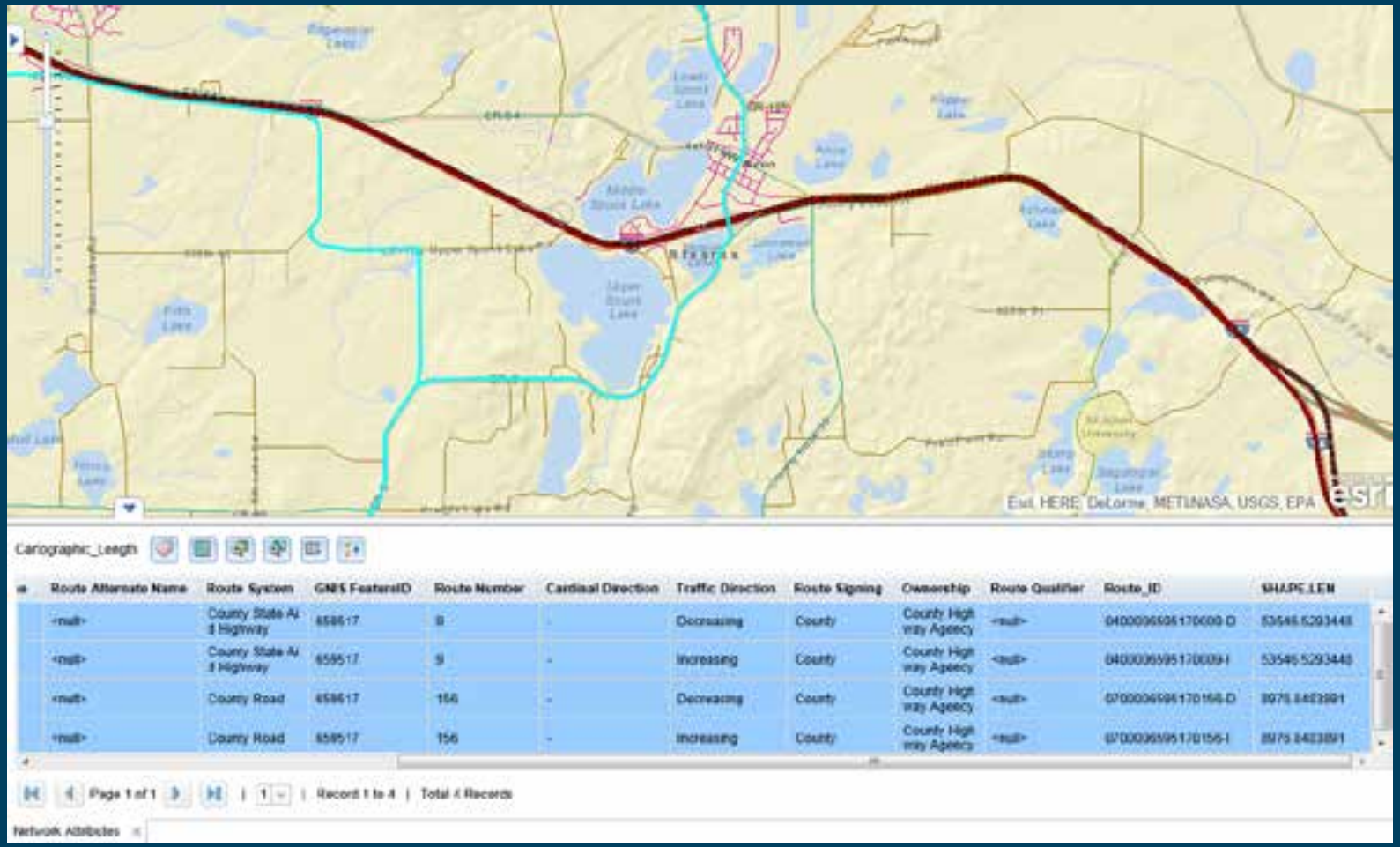
New Events

- Bike Facility
- Paved vs Unpaved shoulders
- Bus Routes
- Exit Numbers
- Speed Limit

Route Selection – Adding an Event Attribute



Increasing/Decreasing



Data Details

- Characteristics are HPMS Based
  - Facility Type;
  - AADT;
  - Functional Class;
  - Urban Code;
  - Through Lanes

Data Details

- Jurisdiction data is **GNIS** based

  (Geographic Names Information System)

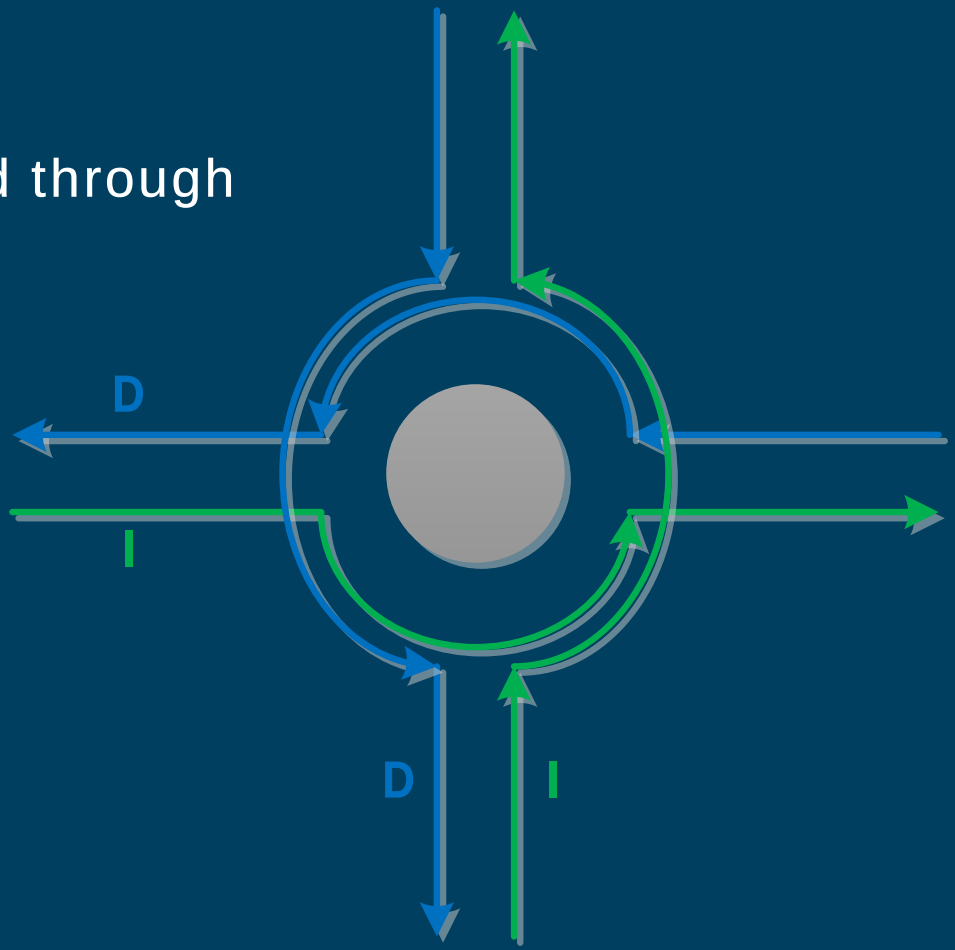
  The American National Standards Institute (ANSI) has taken over the http://www.census.gov/geo/reference/ansi.htm

- All systems maintained

  Limited Event Data on Local Systems

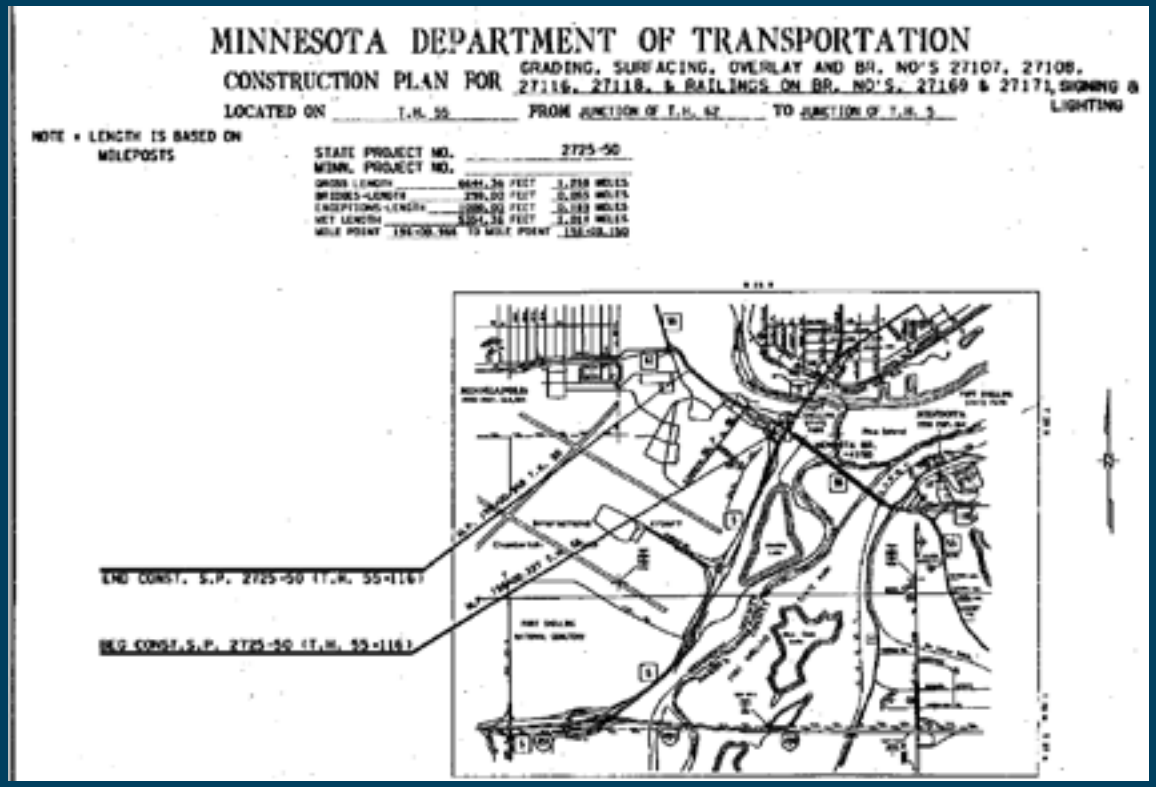
Data Details

- Roundabouts
  - All routes will be carried through
  - Routes are Co-incident



LRM Details

} Cartographic Length
} Engineering Station
} Route Reference



External System Integration

- TRADAS
- Bridge
- API

What is the Shared Centerline Initiative?

A joint effort between:

Minnesota Geospatial Information Office

Minnesota Department of Transportation

Metropolitan Council

MetroGIS

and Partners….

Purpose: *To **develop, test, refine, publish and perpetuate** a **single state-wide roadway dataset** that meets the needs of a **diverse user community;***

What is the goal of the project?

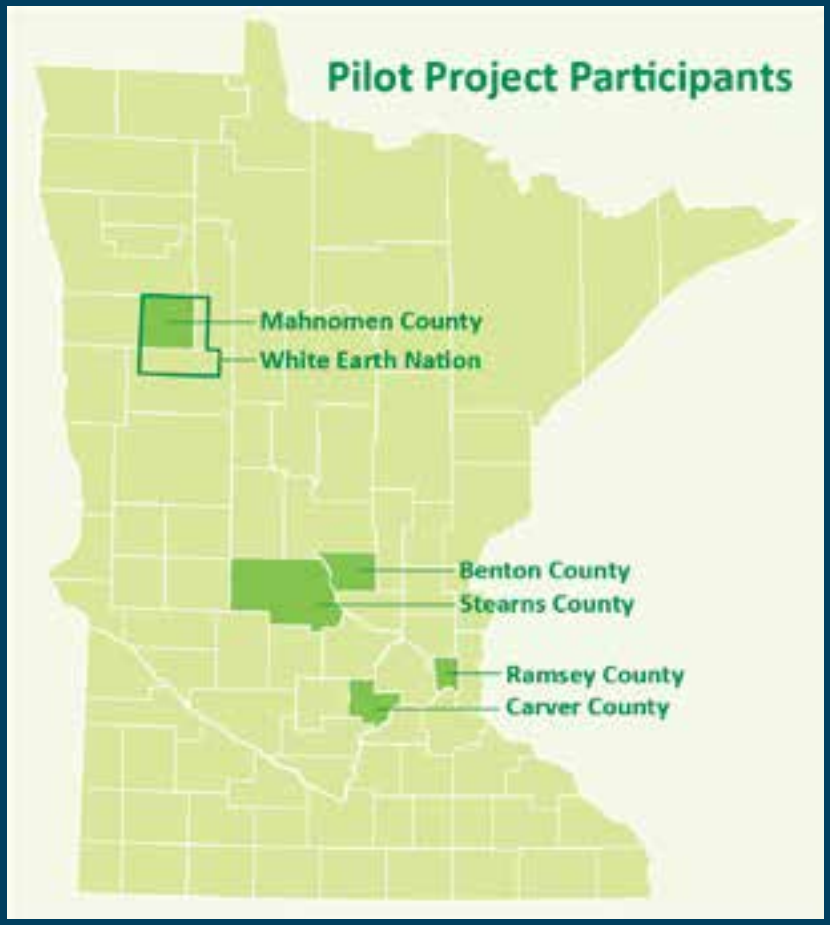
To create an **authoritative,** **multi-purpose** & **public domain** centerline spatial dataset resource for the entire state of Minnesota

Authoritative: all users and parties can rely on the data to *accurately represent the actual roadway assets of the state;*

Multi-purpose: to *reduce cost, eliminate redundant effort, facilitate better data, improve inter-agency reporting* &*fulfill a variety of needs* from road data consumers;

Public domain: a version of the data will be *freely available to non-government public data consumers*;

Partners



Free Tools

Free hosting

Authoritative Source

Routable Centerlines

Current Data

Linear Reference System (LRS) *A*

Easier Reporting

Single Source of Data

Benefits

Emergency Services Needs

Authoritative Address Ranges

Federal Reporting Requirements:

MAP-21 /All Roads Network Of Linear Referenced Data (ARNOLD)

Transportation for the Nation

HPMS

Free Data to the Public

Cost Savings

Reduce Duplication of Effort

Useful & Detailed Attribution

Timeline & Process

- Current timeline for LRS implementation is late August / early September 2014.

- MnDOT wants to strike the appropriate balance between rigorous data validation/testing and implementing quickly in order to lift the data freeze currently in place.

- MnDOT also has several other projects under way which migrate data, in order to retire our legacy mainframe system.

LRS Lessons Learned

- Scope, Scope, Scope
- Insist on testing data & functionality at each phase of the project

Shared Centerlines Lessons learned

- Working with multiple agencies and jurisdictions is challenging
  - Requires strong leadership
  - Organized approach
- Meeting everyone's needs is difficult
- Focus on priorities (Must haves vs nice to have)
- Current processes will need to change for all participants

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