Overview of Highway Data
Multiple datasets across multiple agencies

- Pavement
- Maintenance
- Traffic
- Safety
- Signs
- Freight
- Snowplowing
- Etc.
Esri Road and Highways Solution

We’re changing the way we think about highway data
Roads and Highways Data Model
Data Model

• Based on Esri Roads & Highways model
• Supports Advanced Linear Referencing
  - Multiple LRM
  - Dynamic Features
  - Location Management
  - History
• Extends to client data requirements
• Loosely coupled with business data
Roads and Highways Data Model
Introduction to Linear Referencing Systems
What is LRS?

• Method for locating assets along linear facilities
• Distinguishes *position* from *location*
  - *Position* represents an XY coordinate on a map
  - *Location* represents a distance along a linear feature
• Most highway departments’ method of choice for managing asset data
Highway data is managed using linear referencing

- A route reference and a measure value
Highway data is managed using linear referencing

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- One measure creates point events
- Two measures create line events
Highway data is managed using linear referencing

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- Allows non-spatial data to be overlaid for advanced analysis

A one-dimensional location system
Highway data is managed using linear referencing

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A one-dimensional location system
Advanced Linear Referencing Systems
Advanced Linear Referencing

- Multiple Linear Referencing Methods
- Dynamic Route Representations
- Time Aware LRS
- Rule-based Event Behavior

By making LRS more robust we make highway data more interoperable
Multiple Linear Referencing Methods
Multiple Linear Referencing Methods

- Reference Markers
- Project Stationing
- Mile Posts
- Road Inventory

LRMs are like map projections; users need to be able to translate seamlessly from one to another.
Traditional approaches to multiple LRM

- Multiple Route Geometries
- Transformed Measures in Event Tables
- Reference Datum

Our solution is closer to the Reference Datum approach
Dynamic Route Representations
Dynamic Route Representations

- Routes are defined in the data model
- Dynamic routes are real features that are managed as tabular data
- Dynamic route live in the map

Different users have different definitions of a route
Time Aware LRS
Time Aware LRS

• Present – We need to see the current state of our highways
• Past – We need to see what our highways looked like when incidents occurred
• Future – We need the ability to add planned highways to our data

By capturing time we add a whole new dimension to highway data
Location Management
Esri Roads and Highways manages location

Four possible things that happen to events.
Esri Roads and Highways manages location

1. The event moves (preserves location)
Esri Roads and Highways manages location

1. The event moves
2. The event stays put (preserves position)
Esri Roads and Highways manages location

1. The event moves
2. The event stays put
3. The event goes away (preserves both location and position)
Esri Roads and Highways manages location

1. The event moves
2. The event stays put
3. The event goes away
4. The snaps to another route (preserves proportion)
Esri Roads and Highways manages location

Events are configured based on the type of work being performed

By updating events based on maintenance activities you control the LRS rather than react to it
Configuring the ALRS
Managing Workflow
What is a Workflow?

Projects

Activities

Tasks

Desktop

Web

Mobile
Esri Roads and Highways Workflow

- Create a Project
- Add a Redline
- Update Network
- Verify Results
- Publish Data

Road Inventory User
Road Inventory User
Linear Network Maintainer
QA/QC Staff
GIS Supervisor
Editing and Validating Data
Summary
Summary

- Esri Roads and Highways is a world class highway data management solution
- Supports Advanced Linear Referencing
- Workflow driven
- Easy to use editing tools
- Incorporates data validation
- Scheduled for release Q4 2011
Questions?

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- Roads and Highways Resource Center - http://resources.arcgis.com/content/roads-highways/about