Agenda

- **Product Overview**
- **Desktop**
  - Demo: Network editing & event behaviors
- **Data Model**
  - Demo: LRS configuration
- **Web Service**
  - Demo: REST services & JavaScript developer samples
- **Roadway Inventory Editing**
  - Demo: Web based event editing
- **Release Schedule**
- **Questions**
Product Overview
Unifies existing DOT systems through a centralized LRS in the GIS, enabling data fusion and sharing across business units

- Plan, manage, and maintain roadway LRS networks
- Author maps that fuse data from different LRM systems
- Publish and share linear referenced data services
DOT Challenges

- Many business units, resulting in many different LRSs and LRM
- Data not easily shared between business units
- GIS not well integrated
Centralized LRS and Event Publication

- **Roads & Highways**
  - Centralize LRS managed in GIS
  - Support for multiple LRMSS
  - Publication of LRS, events, and measure changes as GDB and REST

- **DOT Business Systems**
  - Manage and exposes event data
  - Consume GIS LRS
  - Consume other business system events
Product Overview

• **Rods & Highways Desktop**
  - ArcMap LRS network editing toolbar
  - ArcCatalog LRS network management tools
  - ArcGIS route & event layers
  - Geodatabase LRS network dataset
  - Geoprocessing tools *(calibration management)*

• **Rods & Highways Server**
  - ArcGIS Server map service support for route and event layers
  - LRS REST services
  - JavaScript web developer samples
  - Roadway Inventory Editor *(coming SP2)*

• **Bundled with…**
  - Production Mapping, Workflow Manager, Reviewer
Desktop Functionality
Editing Activities

- Create Route
- Extend Route
- Realign Route
- Reassign Route
- Retire Route
- Calibration
Source Geometry

- Authoritative geometry for route edit

- Polyline feature(s)

- Sources:
  - CAD
  - Shapefile
  - FGDB
  - ArcMap digitized
Redlining

- Facility to communicate required LRS edits
- Polyline feature
- General roadway modification geometry
- Specifies attributes and measures
When the LRS routes are edited, measure behavior rules can be applied to events.

Events can have a different behavior for each type of LRS edit.
Temporality

- Date ranges can be applied to LRS edits
- Event measure updates reflect date ranges of LRS edits
- Historical event measures that change due to LRS edits are “retired”
- “Temporal View Date” enables data visualization and query for any moment in time
Demo
Desktop Functionality
Data Model
Dynamic routes

- Dynamic routes are generated from centerline geometry and calibration point measures

- Two routes
- 4 Calibration points
- 3 centerlines

The two routes above are derived from three centerline lines.
ALRS schema for dynamic routes

- Dynamic routes are generated from two feature classes and two tables

**Route**
Route definitions

**Centerline sequence**
Key table for M-N relationship between Centerline and Route

**Centerline**
Line feature class that stores route geometry

**Calibration points**
Point feature class that stores route measures
Bottom Line

- Roads and Highways requires data migration
  - Migration approach requires modeling and ETL

- Understand the data model

- Esri Transportation Practice Team has staff that can support (contract work)

- Trial Data Set can be used for evaluation
Web Services
Web Service Support for …

- Map Visualization & Navigation
  - Routes and Events

- Attribute and Spatial Query
  - Routes and Events

- Editing
  - Events only

- Quality Checks
  - Gaps, Overlaps, Invalid Measures (coming Aug. 15th)

- Measure Translation to Coordinates
- Coordinates Translation to Measures
- Measure Translation
Web Service Support Provided by …

- **ArcGIS Server Map Service provides** …
  - Map Visualization
  - Spatial and Attribute Query

- **Roads and Highways Server Extension provides** …
  - Event Editing (multilayer transactional w/ retire and merge)
  - Measure Translation to Coordinates
  - Coordinates Translation to Measures
  - LRM measure translation

- **Roads and Highways GP provides** …
  - Event QC (Gaps, Overlaps, Invalid Measures …)
Server Architecture

ArcGIS Server(s)

Server Architecture

Map Service(s)

Roads and Highways Geodatabase

Asset Systems
Field Data Collection
Data Analysis Apps

Event System Data Sources

Read-Only Access

Map & Feature REST Services
LRS REST Services

Dynamic Route Layer
Merged Events Layer

Roads and Highways Server Object Extension
External System Integration

- **External table registered with LRS**
  - Read-only connection information to table
  - Event ID and measure column(s)
  - To / From Dates (optional)
  - Measure behaviors defined

- **Event measure updates staged upon LRS edits**

- **REST service to acquire changes**
External System Integration

1. Network modified
2. External event measures changed, and staged
3. Measure updates acquired
4. Measure updates applied
5. Notify changes are applied

Roads and Highways Geodatabase
ArcGIS Server(s)
Map Service(s)
Roads and Highways Server Components
Merged Representation
Staging Table
Events Modified by LRS edits
External Event System
External System Database
Event Table
Authoritative Records
RDS and Highways Desktop
Roadway Inventory Editor

Coming this August, 2012
Roadway Inventory Editing
Web based event editing

- Delivered with Roads and Highways Server
- Built against Roads and Highways Web Services

- JavaScript application
  - Source code provided

Coming this August, 2012
Capabilities
Web based event editing

• Route Search
• Event Creation
  - Multilayer transactional
  - Options: Retire overlaps, merge coincident records
• Existing Event Modification
  - Grid based editing
• Event Selection
  - By Route, Spatial Geometry, Attribute, & Proximity
• Event QC
  - Detects Gaps, Overlaps, and Invalid Measures

Coming this August, 2012
Demo

Roadway Inventory Editor

Coming this August, 2012
Release Schedule

• Version 10 – *Released!*
  • Feb, 2012 – Desktop Network Editing
• Service Pack 1 – *Released!*
  • May, 2012 – LRS Web Services
• Service Pack 2
  • Aug, 2012 – Web Roadway Characteristic Editing
• Service Pack 3
  • Nov, 2012 - HPMS

• Working on 10.1 migration, slated for end of year …
Contacts and Resources

- **William Isley**, *Product Manager*
  - wisley@esri.com

- **Online Help**

- **Web Services Documentation**

- **Trial Data Set**
  - http://www.arcgis.com/home/item.html?id=9d400aea626e43e88ffb927a6dadbf448
Questions?