

# ArcGIS Pipeline Referencing An Introduction

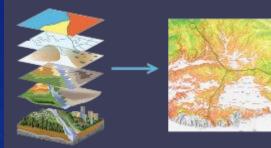
Anjali Bhangay William Isley

#### **Information Model**

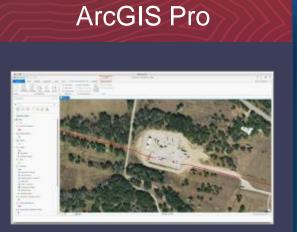


- Routes
- Events
- Intersections

#### **Information Model**

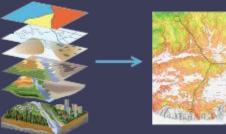


- Routes
- Events
- Intersections



- LRS network editing
- LRS management
- Geoprocessing

#### **Information Model**





- Routes
- Events
- Intersections





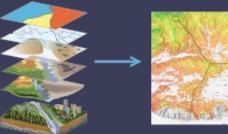
- LRS network editing
- LRS management
- Geoprocessing

#### **ArcGIS Enterprise**

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- LRS web services
- Developer API samples

#### **Information Model**





- Routes
- Events
- Intersections



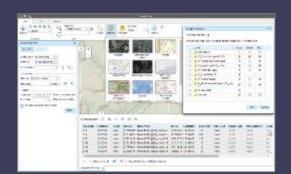


- LRS network editing
- LRS management
- Geoprocessing

#### **ArcGIS Enterprise**

Visual complete	Visiolize events
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- Developer API samples



Web

- Event editing
- Event query
- Event QC

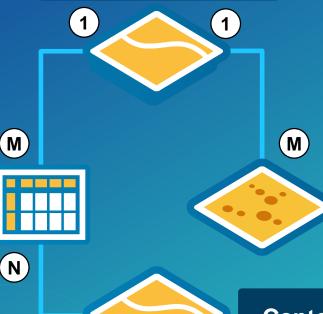
# Information Model

## **Location Model**

Schema for route centerline management

Routes (Network)

M-enabled Route polyline features



(1)

Separate feature class for each LRS Network

#### **Centerline Sequence**

Key table for M-N relationship between Centerline and Route

#### **Calibration Points**

Point feature class that stores route measures

#### Centerline

Line feature class that stores route geometry

## **Location Model**

Schema for route centerline management

**Centerline Sequence** Key table for M-N relationship between Centerline and Route Routes (Network) M-enabled Route polyline features



 $(\mathbf{N})$ 

1

Separate feature class for each LRS Network

#### **Calibration Points**

Point feature class that stores route measures

#### Centerline

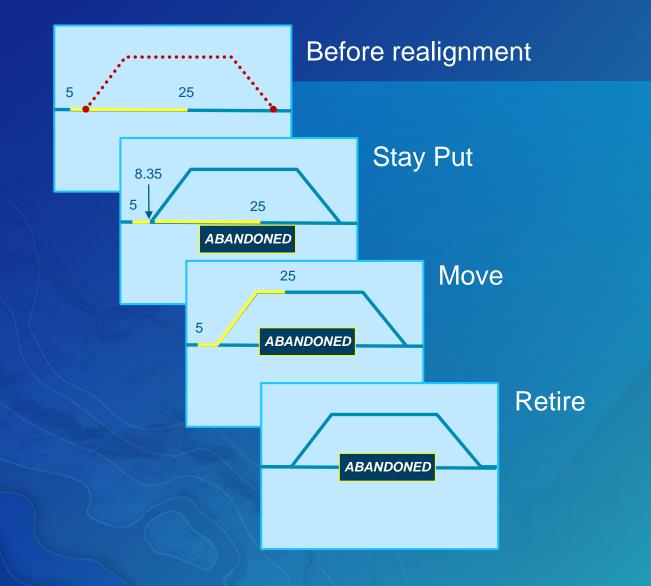
Line feature class that stores route geometry

# **Event Location Methods**

- Route and measure
- Stationing
- Referent and offset
  - Intersections
  - Events

- Features
- Event: **Calibration Point:** 1.27 miles 1 mile Event: Station Event: 456+25.00 100+00.00 Event: **Intersection Features:** 300 feet from US Highway 10 US Highway 10 crossing Event: 45 feet from cell tower Coordinates and offset **Cell tower location:** 34.0547,117.1825

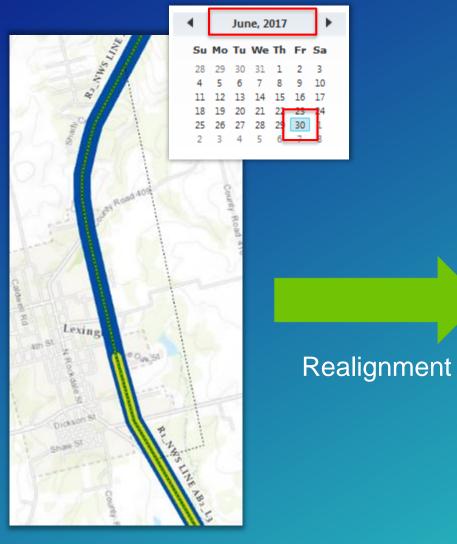
## **Event Measure Behaviors**

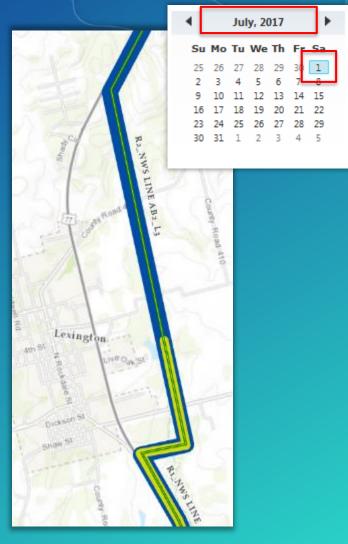


Event Behavior Rules Behaviour Rules specify ho modified	w events must be modified	when parent route is	
Activity	Rules		1
CalbrateRoute	Stay Put		
ReverseRoute	Stay Put		
RetireRoute	Stay Put		
ExtendRoute	Stay Put		
ReesignRoute	Stay Put		
RealignRoute	Stay Put		
ReelgnOverlap	Stay Put		
		< Back Pinish	Cancel

When the LRS routes are edited, measure behavior rules can be applied to events.

# Time Aware Model

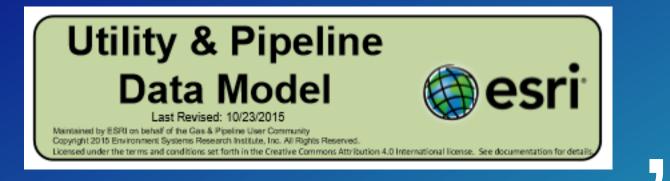




Before

After

# **Industry Data Models**

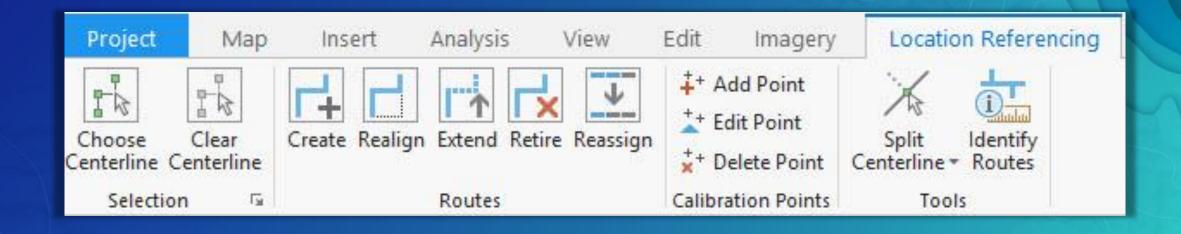




## or any schema that implements the location model.

# **Platform Components**

# ArcGIS Pro Ribbon Toolbar



Route, calibration point, and centerline editing.

## Geoprocessing Tools

Modeling

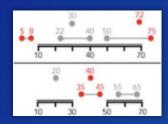
#### Loading

#### Transformations

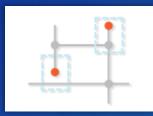
- Event Measure Behaviors
- Dynamic Segmentation
- Measure Translation

- Location Referencing Tools
  - 4 🔄 Configuration
    - 🔺 🏠 LRS
      - Create LRS
      - Create LRS From Existing Dataset
      - Modify LRS
    - 4 🔄 LRS Event
      - Create LRS Event
      - Create LRS Event From Existing Dataset
      - Sisable Referent Fields
      - Senable Referent Fields
      - Modify Event Behavior Rules
      - Modify LRS Event
    - ERS Network
      - Remove LRS Entity
    - Append Events
    - Apply Event Behaviors
    - Create UPDM Geodatabase
    - Serive Event Measures
    - Generate Events
    - Generate Routes
    - S Overlay Events
    - Translate Event Measures

## Quality Control with Data Reviewer



 Detect measure based errors
 Event measure gaps, overlaps, invalid measures, Non-monotonic or routes that aren't calibrated...



Detect spatial errors
 Dangles and overshoots (connectivity), self intersection...

FEATU	IRE CLASS		
OID	SCALE		
1	10,000	SCALE	
2	20,000	20,000	
3	10,000	30,000	
4	30,000		
2 3 4	10,000		

 Detect mismatches (SQL checks) Invalid combinations of construction materials and operation pressures, event orphans...

# Linear Referencing for ArcGIS Enterprise

#### GIS Server

- Mapping, Query, Geoprocessing, ...

#### Pipeline Referencing Server

- Event editing
- Coordinate to measures
- Measure to coordinate
- Query attribute sets
- Check events (gaps, overlaps, invalid measures)
- Measure translation

#### WMS Feature Access Schematics Mobile Data Access "Nashes Scente" KML Network Analysis WFS 🔄 Linear Referencing "control - "control" Tel: 1924 - 176s-5-22-body-selected x. : "Male Sector", : "escaledNetworkneyed toon a congress Stanblet A false, Hoblet I dalar to Read a Mediane Point and density" a really • LRS Names" : "sid", "inge" : "escilled" "sites" : "focts 220 "settede" : toss. "settede" : toss. REST Desktop **Services** Web Connected **Pipeline Referencing** Mobile

Server

Select and configure capabilities

Mapping (always enabled)

WCS

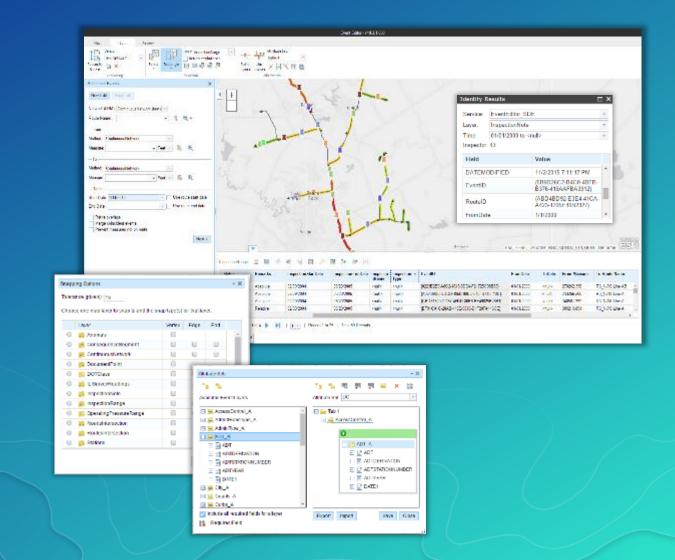
# **Event Editor**

#### Editing

- Lines and Points events
- Tabular selection results
- Attribute set results

#### Selection

- Select by route, attribute, geometry, proximity
- Single layer results or attribute sets
- **Error Checking** 
  - Gaps, overlaps, invalid measures
- Data Reviewer batch checks



# Enough slides...

Let's see some demos

### Pipeline Referencing Roadmap

Future release themes subject to change



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### Pipeline Referencing Roadmap

Future release themes subject to change

REST-based Network Editing

Utility Network Integration

Conflict Prevention

 Modeling Enhancements to ArcGIS Pro

ArcGIS Release Timeline

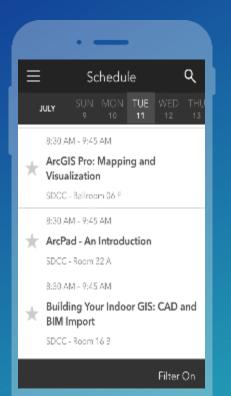


#### Please Take Our Survey on the Esri Events App!

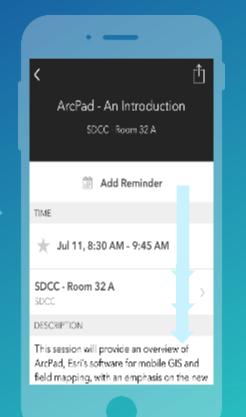
#### Download the Esri Events app and find your event



# Select the session you attended



# Scroll down to find the survey



#### Complete Answers and Select "Submit"

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FEEDBACK
Title and Description Consistent with Content
Low (1)-23-(4)-5 High
Well Organized/Clear Presentation
Low 1 2 3 4 5 High
Public Speaking Skills
Low 1 2 3 4 High
The content of the workshop was relevant
to my work
No Yes

