

# Esri Roads and Highways

Rahul Rakshit | Matthew Ziebarth

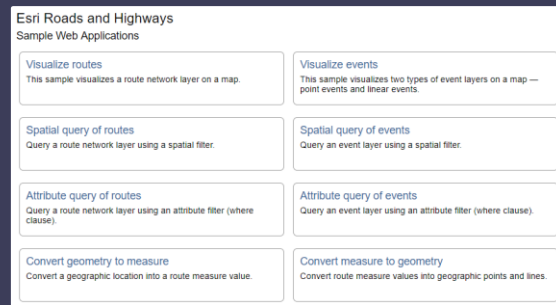
# Esri Roads and Highways Solution Overview

## Desktop



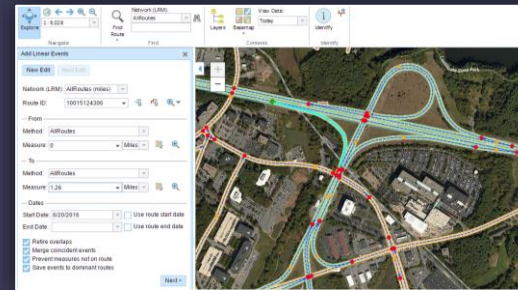
- LRS Network editing
- LRS management tools
- Geoprocessing tools
- Internationalized

## Enterprise



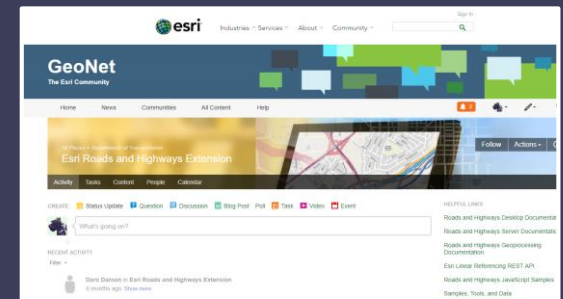
- LRS web services
- Developer API samples
- Portal security and identity

## Web Apps



- Event Editor
  - Web based Event editing
  - Address Management
- Roadway Reporter
  - Mileage reports
  - Road Log reports

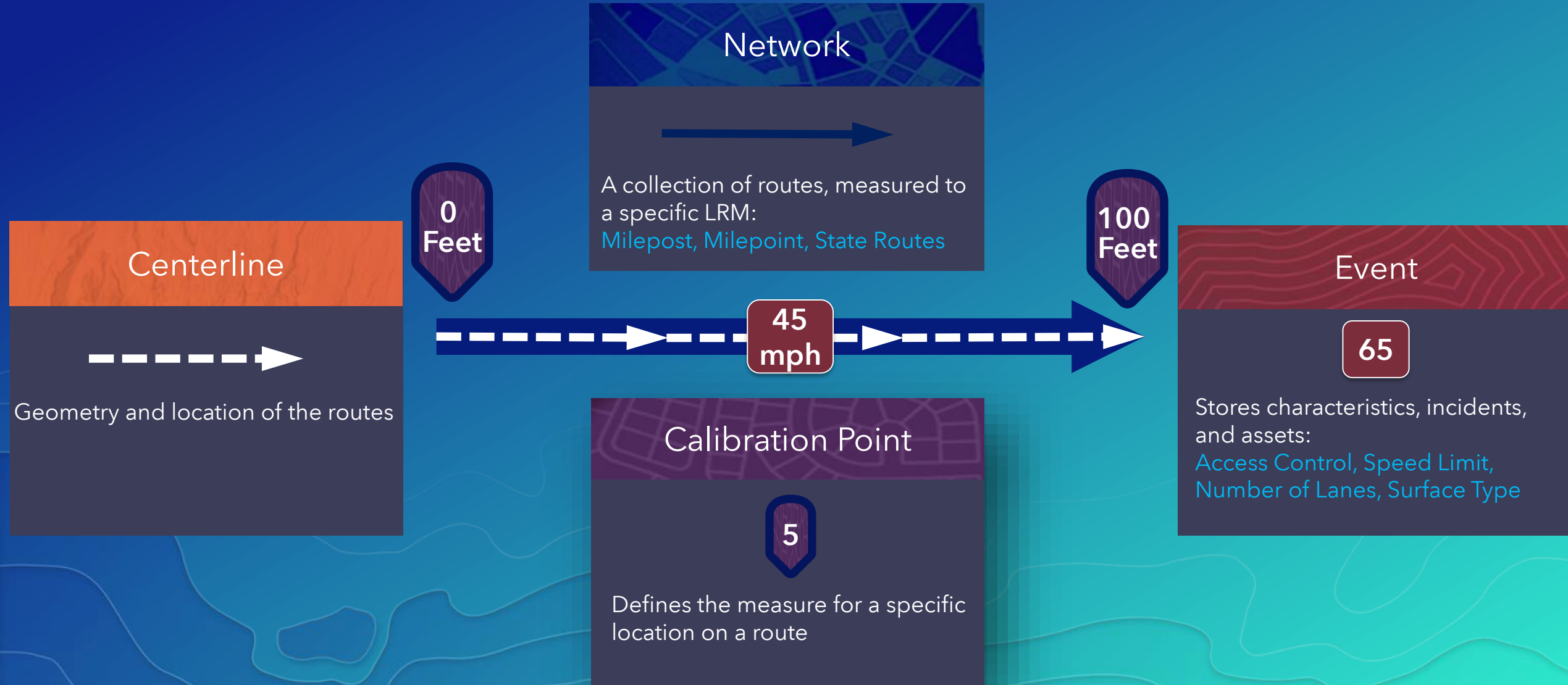
## Community



- GeoNet
- GitHub
- Esri Support Services
  - Full support for solution
  - Log a support ticket on MyEsri

- Bookmarks and saving Web Maps new in Event Editor for version 10.5.1

# Building Blocks of a Linear Referencing System (LRS)





# Roads and Highways Desktop

LRS Management and Route Editing

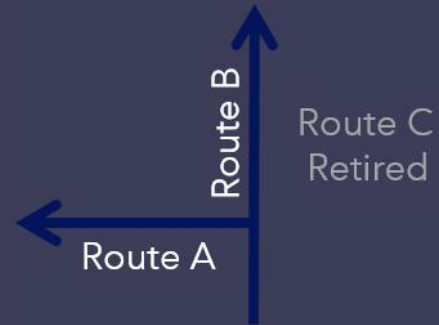


# LRS Route Editing Tools

Create



Retire



Extend



Realign



Reassign - Split



Reassign - Merge



Reverse



Cartorealign





# Event Editor

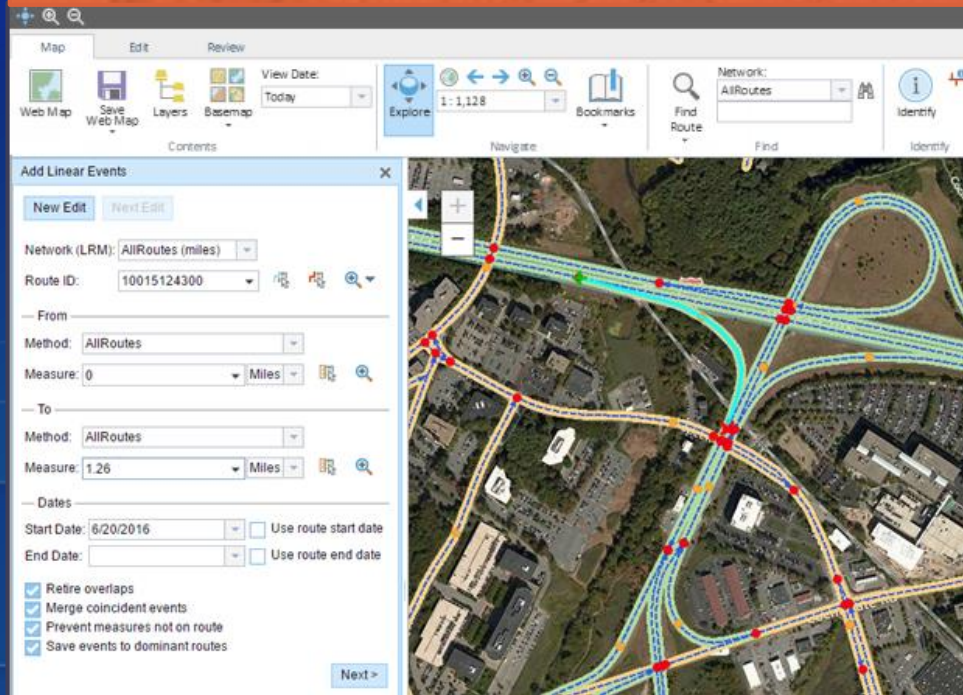
Event Editing Web Application



# Event Editor

Take advantage of enterprise geodatabase versioned editing directly in your web browser

## Browser Experience



## Selection

- Select By:
  - Route
  - Attribute
  - Geometry
  - Proximity
- View Results:
  - Single Layer
  - Attribute Sets

## Editing

- Line Events
- Point Events
- Event Attributes
- Attribute Set Results

## Quality Control

- Gaps
- Overlaps
- Invalid Measures
- Data Reviewer Batch Checks

# Event Location Model

Flexibility in event location referencing

## Route and Measure



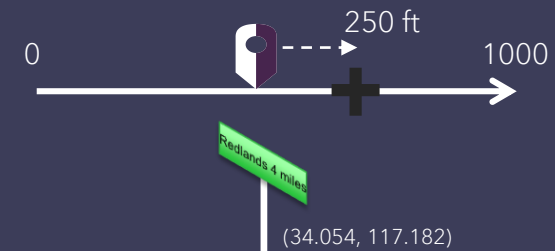
## Referent and Offset



## Stationing



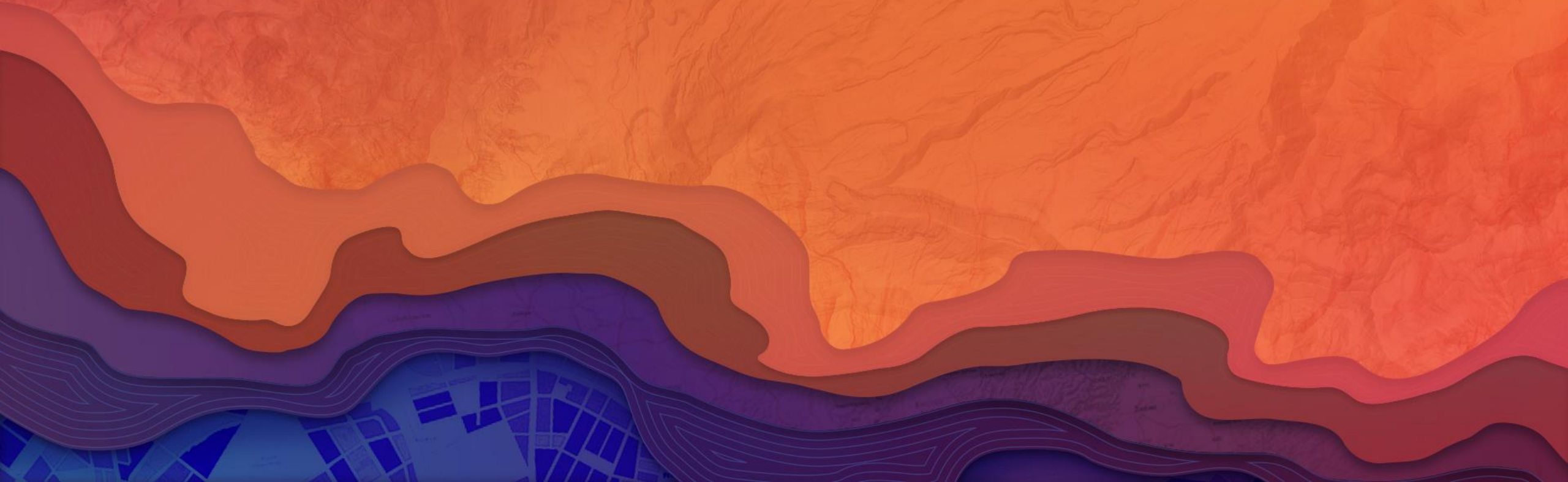
## Co-ordinates and Offset





# Roads and Highways

Demo



# Event Behaviors

After route edits, measure behavior rules can be applied to events automatically

Before Editing



From Measure	To Measure
0	10

Stay Put



Preserves the geographic location.  
Measures may change.

From Measure	To Measure
5	15

Or

Retire



Preserves the geographic location  
and measures. Event gets retired.

From Measure	To Measure
Event Retired	

Or

Move

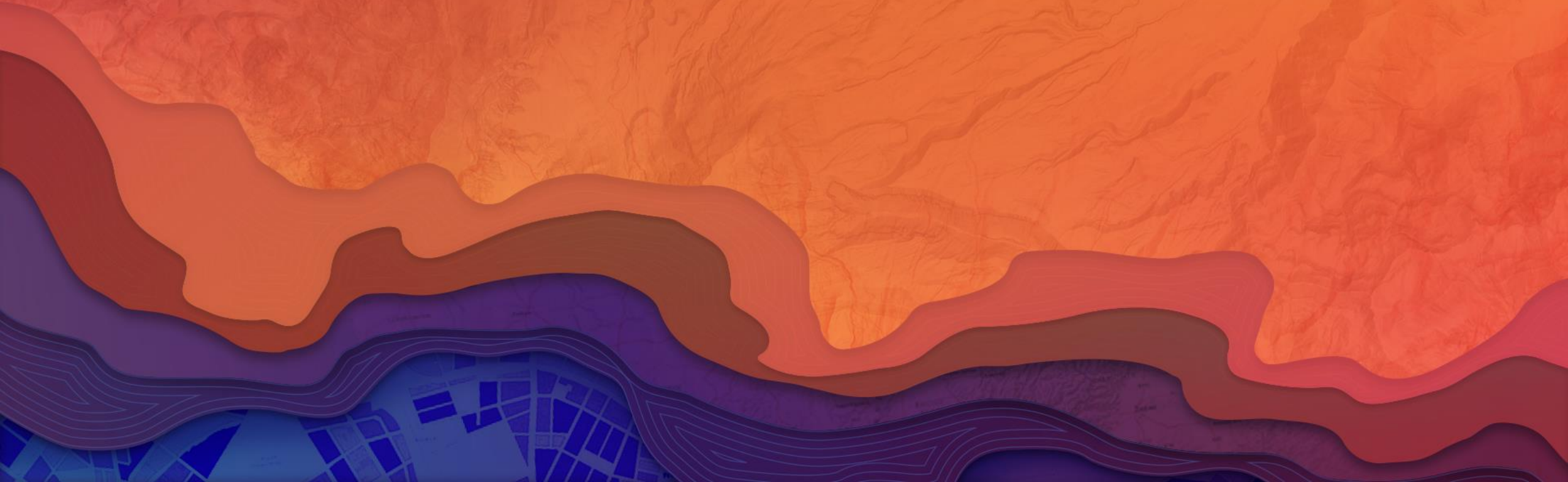


Preserves the measures.  
Geographic location may change.

From Measure	To Measure
0	10

# Roads and Highways

Demo





# Geoprocessing Tools

## Toolbox

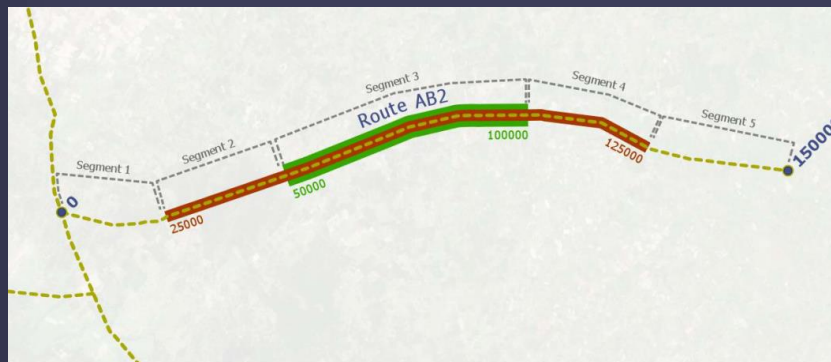
- Append Events
- Calculate Route Concurrencies
- Convert M-value Units Of Measure
- Convert Table to CSV File
- Detect Gaps For Linear Events
- Detect Measures Out Of Range
- Detect Non-monotonic Routes
- Detect Overlaps For Linear Events
- Generate Events
- Generate Routes
- **Overlay Route Events**
- Relocate Events
- Translate Events From LRM To LRM
- Update Calibration Points
- Update Intersection Points

## Usage

### Input



### Output



## Tool

Overlay Route Events

Network Layer  
StateRoutes

Network Fields (optional)

- ☐ OBJECTID
- ☒ ROUTEID
- ☒ ROUTE\_SYSTEM
- ☒ ROUTE\_NUMBER
- ☐ CREATED\_USER

Select All Unselect All Add Field

Event Layers

- SpeedLimit\_A
- FunctionalClass\_A

☒ Include Geometry (optional)

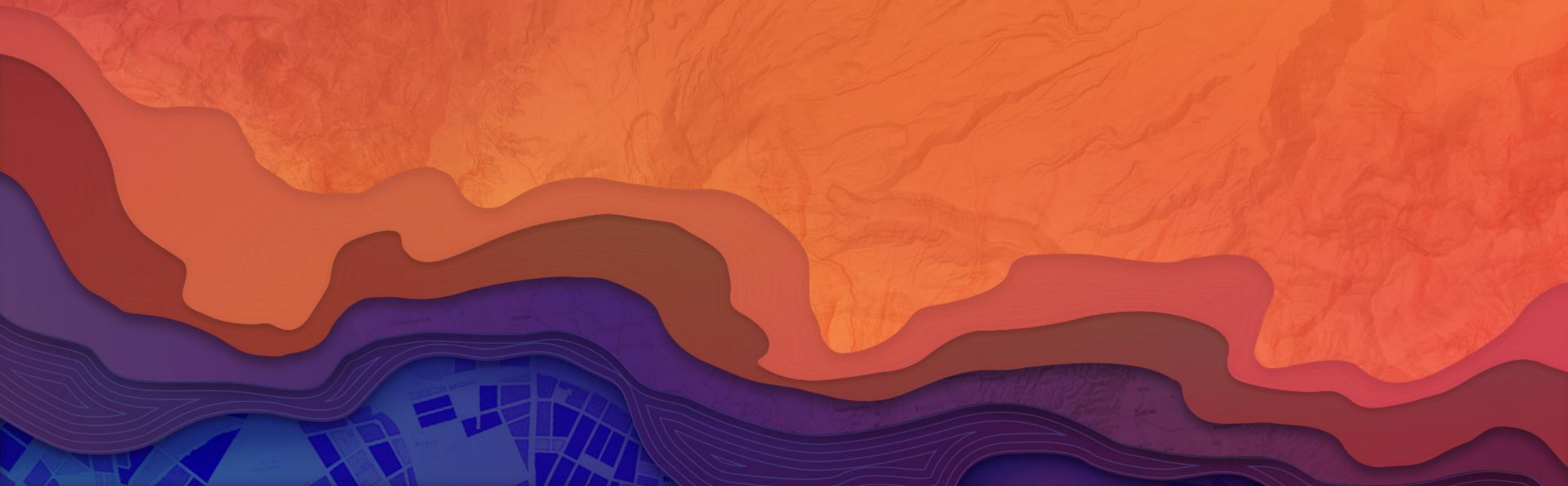
Output Table (optional)

Output Feature Class (optional)  
C:\RHDData\MA\_2017\_UC.gdb\Results

OK Cancel Environments... Show Help >>

# Event Editor

Demo



# Attribute Sets

Collection of linear event attribute fields that can be edited as a logical group

Speed Limit
Object ID
Route ID
Event ID
FromMeasure
ToMeasure
From Date
To Date
SpeedLimit
ShapeLength

Access Control
Object ID
Route ID
Event ID
FromMeasure
ToMeasure
From Date
To Date
Access Control
ShapeLength

IRI
Object ID
Route ID
Event ID
FromMeasure
ToMeasure
From Date
To Date
IRI
IRIStatus
IRIYear
ShapeLength

Attribute Set
Speed Limit
IRI
IRIStatus
IRIYear
TollRoad
FunctionalClass
AccessControl
SurfaceType

Toll Road
Object ID
Route ID
Event ID
FromMeasure
ToMeasure
From Date
To Date
TollRoad
ShapeLength

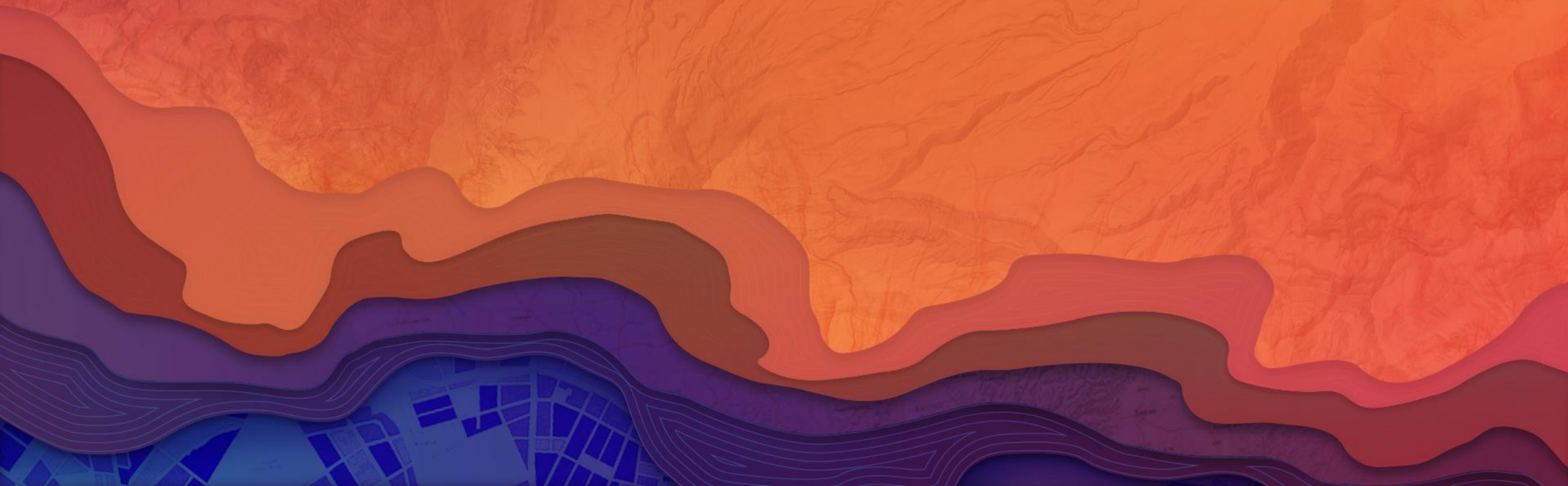
Surface Type
Object ID
Route ID
Event ID
FromMeasure
ToMeasure
From Date
To Date
Surface Type
ShapeLength

Functional Class
Object ID
Route ID
Event ID
FromMeasure
ToMeasure
From Date
To Date
Functional Class
ShapeLength



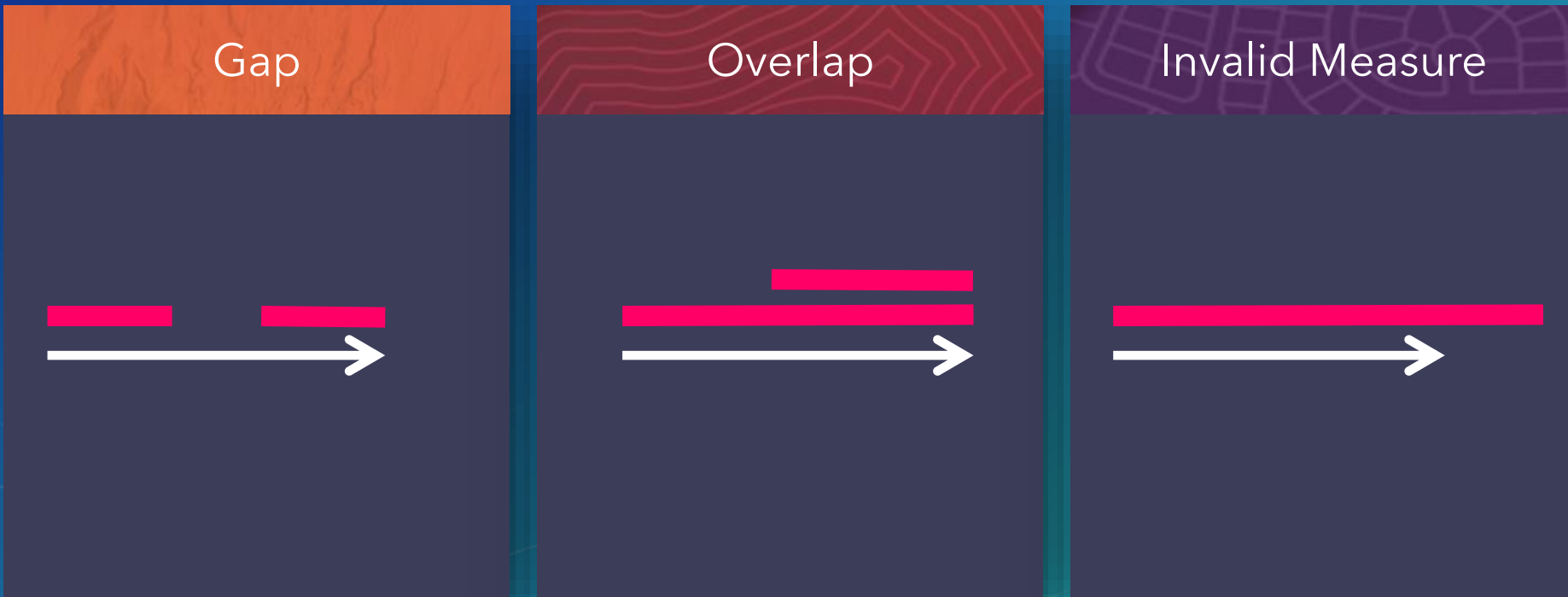
# Event Editor

Demo



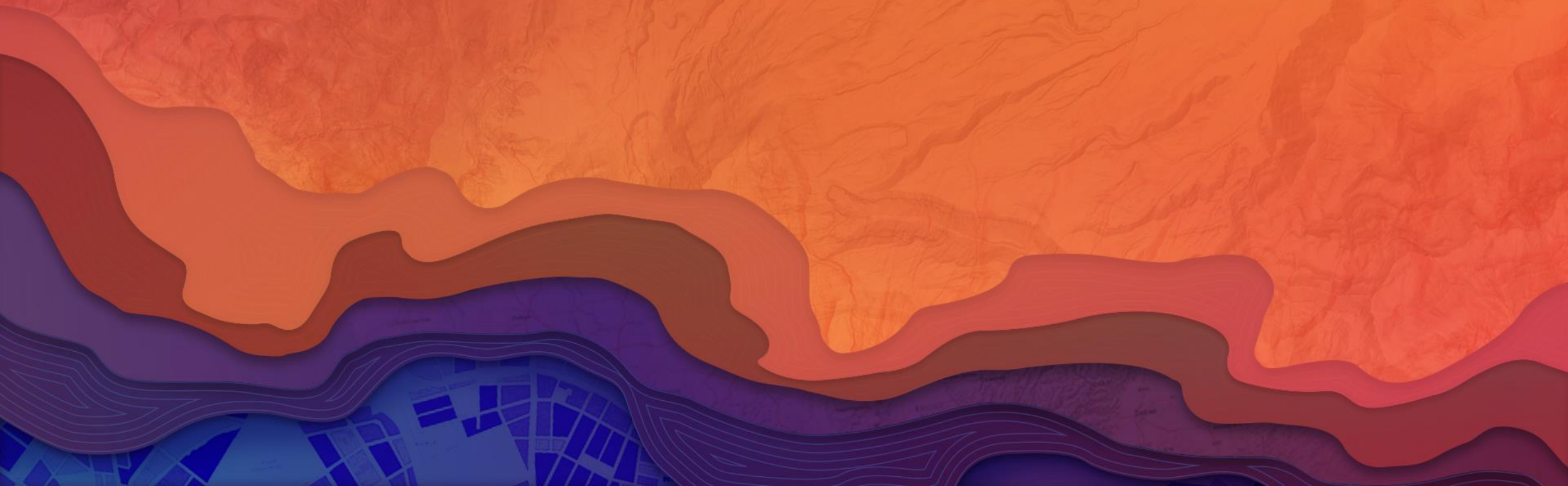
# Event Quality Checks

Checks to detect gaps, overlaps, and invalid measures within Event Editor



# Event Editor

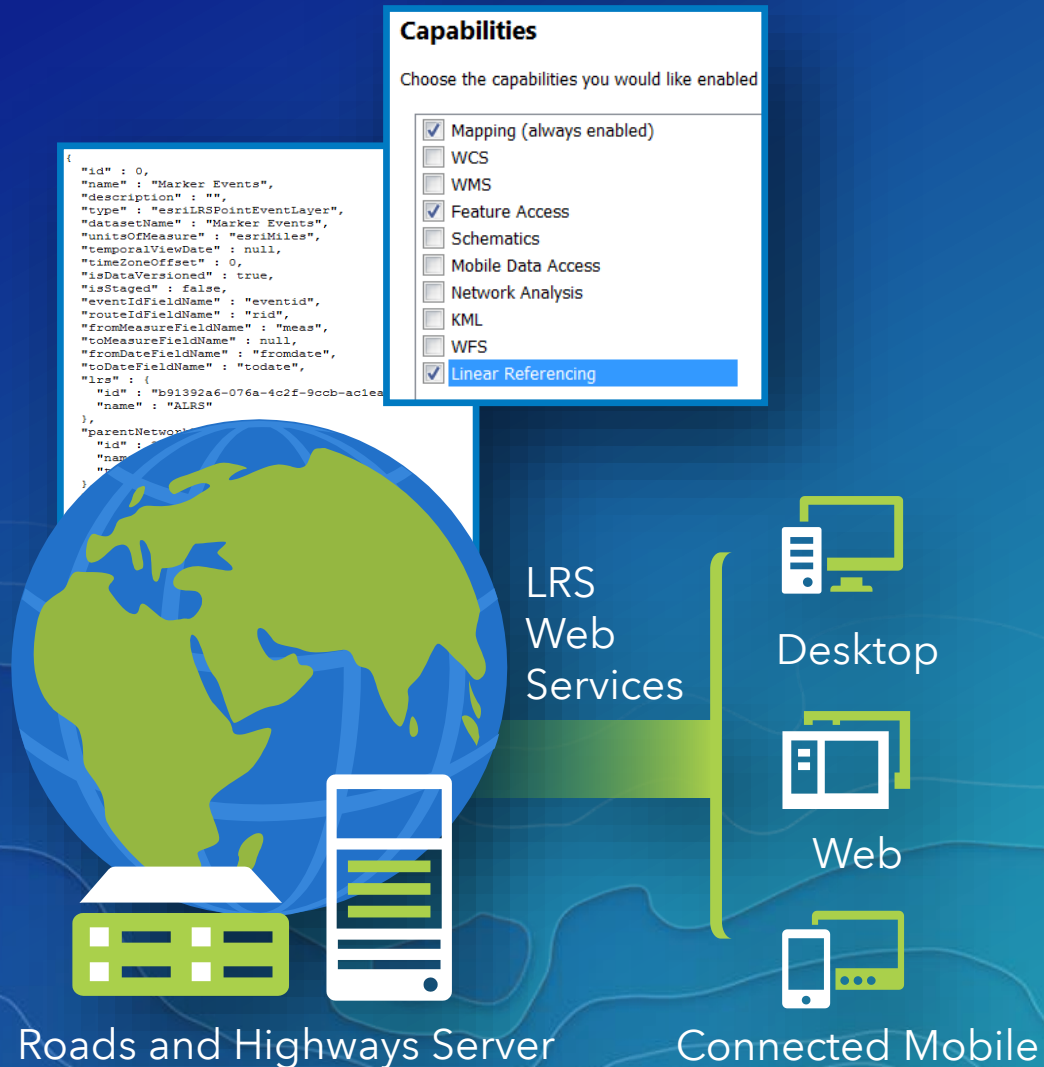
Demo





# Roads and Highways Server

## Linear Referencing capability for ArcGIS Enterprise



### Capabilities

Choose the capabilities you would like enabled

- ☒ Mapping (always enabled)
- ☐ WCS
- ☐ WMS
- ☒ Feature Access
- ☐ Schematics
- ☐ Mobile Data Access
- ☐ Network Analysis
- ☐ KML
- ☐ WFS
- ☒ Linear Referencing

```
{
  "id": 0,
  "name": "Marker Events",
  "description": "",
  "type": "esriLRSPointEventLayer",
  "datasetName": "Marker Events",
  "unitsOfMeasure": "esriMiles",
  "temporalViewDate": null,
  "timeZoneOffset": 0,
  "isDataVersioned": true,
  "isStaged": false,
  "eventIdFieldName": "eventid",
  "routeIdFieldName": "rid",
  "fromMeasureFieldName": "meas",
  "toMeasureFieldName": null,
  "fromDateFieldName": "fromdate",
  "toDateFieldName": "todate",
  "lrs": {
    "id": "b91392a6-076a-4c2f-9ccb-ac1e5",
    "name": "ALRS"
  },
  "parentNetwork": {
    "id": "b91392a6-076a-4c2f-9ccb-ac1e5",
    "name": "ALRS"
  }
}
```

## ArcGIS Enterprise

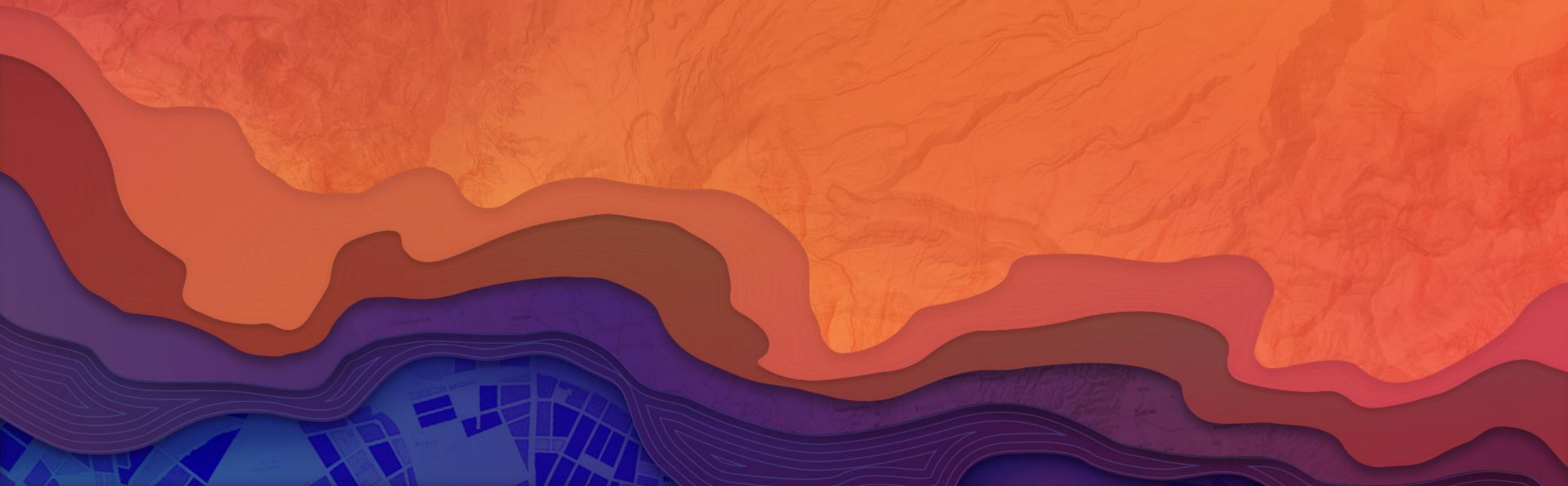
- Mapping
- Query
- Geoprocessing
- Enterprise security
- Scalability
- Identity

## Roads and Highways Server Features

- Event editing
- Coordinate to measures
- Measure to coordinate
- Query attribute sets
- Measure translation
- Measure updates for external systems
- Check events for gaps, overlaps and invalid measures
- Integrated with:
  - ArcGIS Data Reviewer
  - ArcGIS Workflow Manager

# Roads and Highways Server REST API

Developer Solutions and Demo





# Roadway Reporter

Reporting web application





# Roadway Reporter

Reporting available across the enterprise from a web application

## Mileage Report

- Mileages for routes and events

## Segment Report

- Dynamically segment event layers into one record set

## Road Log Report

- Logging events that occur in measure order when traversing a route

### Mileage Report

Summary Field: Level 2

Select the method for summary of mileage, if any.

Summarize mileage on a field? ☒ Yes

Summary layer:

AccessControl\_A

Summary field:

ACCESSCONTROL

Display value map:

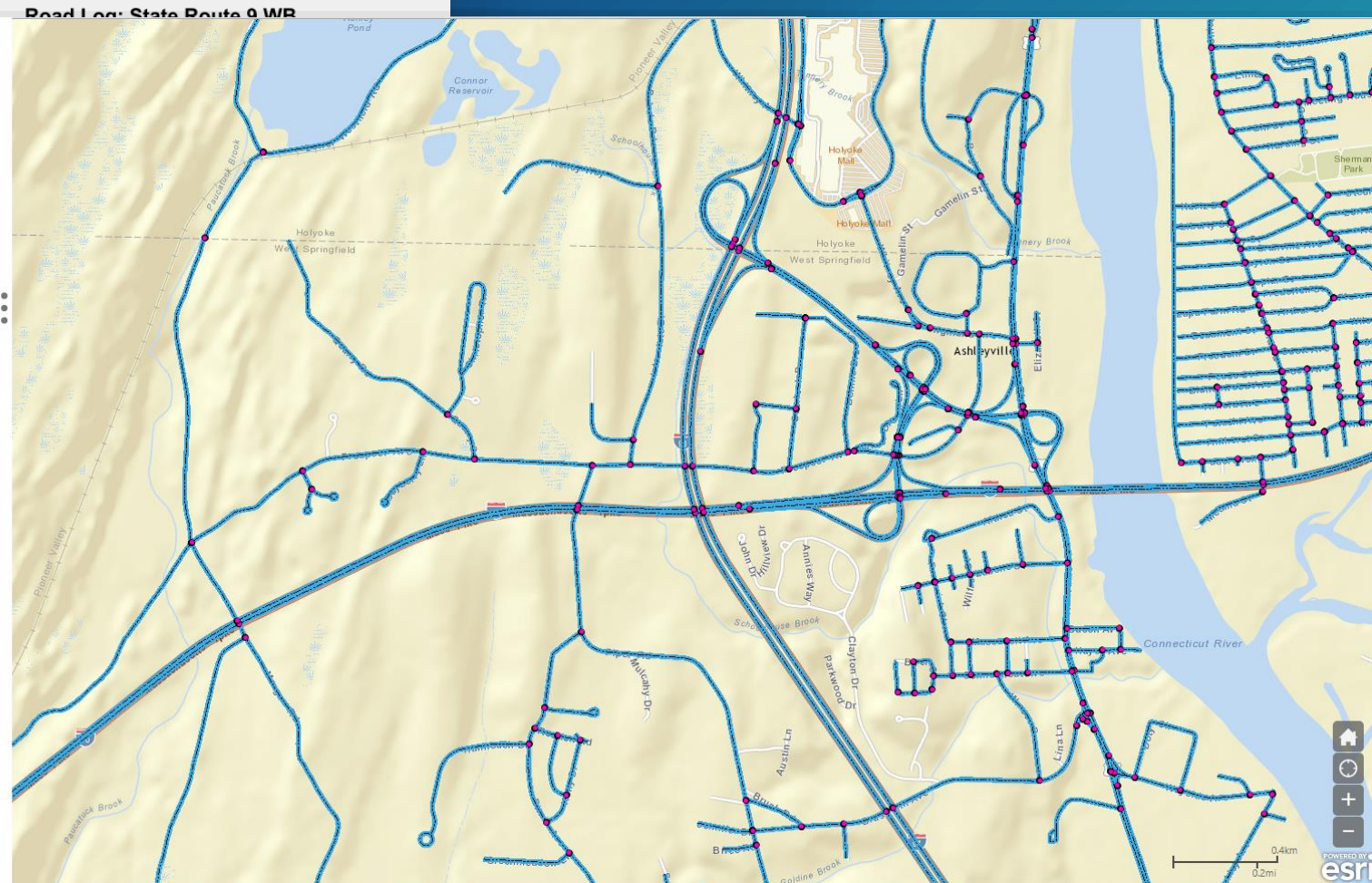
Field Value	Display Value
	No Value
0	No Control
1	Full Control
2	Partial Control

☐ Exclude null summary rows from the report

☐ Hide duplicate values for previous summary

Back

Next



SR\_9 WB 1.370 Guide Sign

# Address Management

Managing address information using Roads and Highways

## Address Management in your browser

The screenshot displays the Address Management web application interface. It features a map of a residential area with streets like Bayberry Ln and N Loomis St. A sidebar on the left contains tools for selection, editing, and reviewing. The central area shows a data entry form for a block range, with fields for ID, Route, From/To addresses, and Dates. A table at the bottom lists attributes and their values.

Attribute	Value
Left From Address	1
Left To Address	99
Right From Address	0
Right To Address	98
County Route	
One Way Indicator	
Above or Below Grade	Ground Level
In Water	No
Road Class	Local
Census MTFCC Code	
Owned By	Our Agency
Maintained By	Our Agency
Municipality on Left	Naperville
Municipality on Right	Naperville
State on Left	Illinois
State on Right	Illinois

## Editing

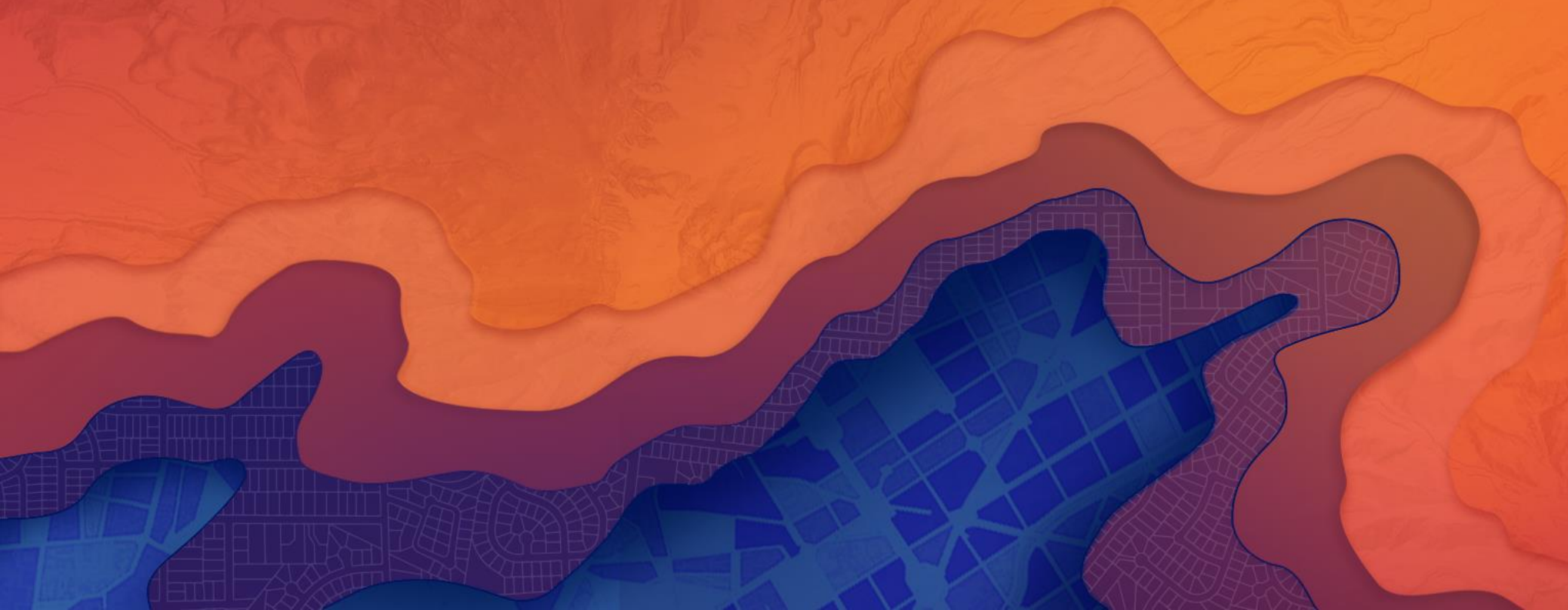
- Add/Edit Block Ranges
- Add/Edit Site Address Points
- Add Master Street Names

## Quality Control

- Fishbone Diagrams
- Data Reviewer Batch Checks



# Roads and Highways Community





# Community

## Resources

- HPMS Geoprocessing Tools  
<https://goo.gl/tVkjsB>
- Sample Web Application  
<https://goo.gl/YGXczN>
- GeoNet (transportation)  
<https://goo.gl/zDoj2f>

## Data and Data Models

- Sample Data  
<https://goo.gl/t8Dko2>
- Roadway Inventory Data Model  
<https://goo.gl/Dbb8qE>

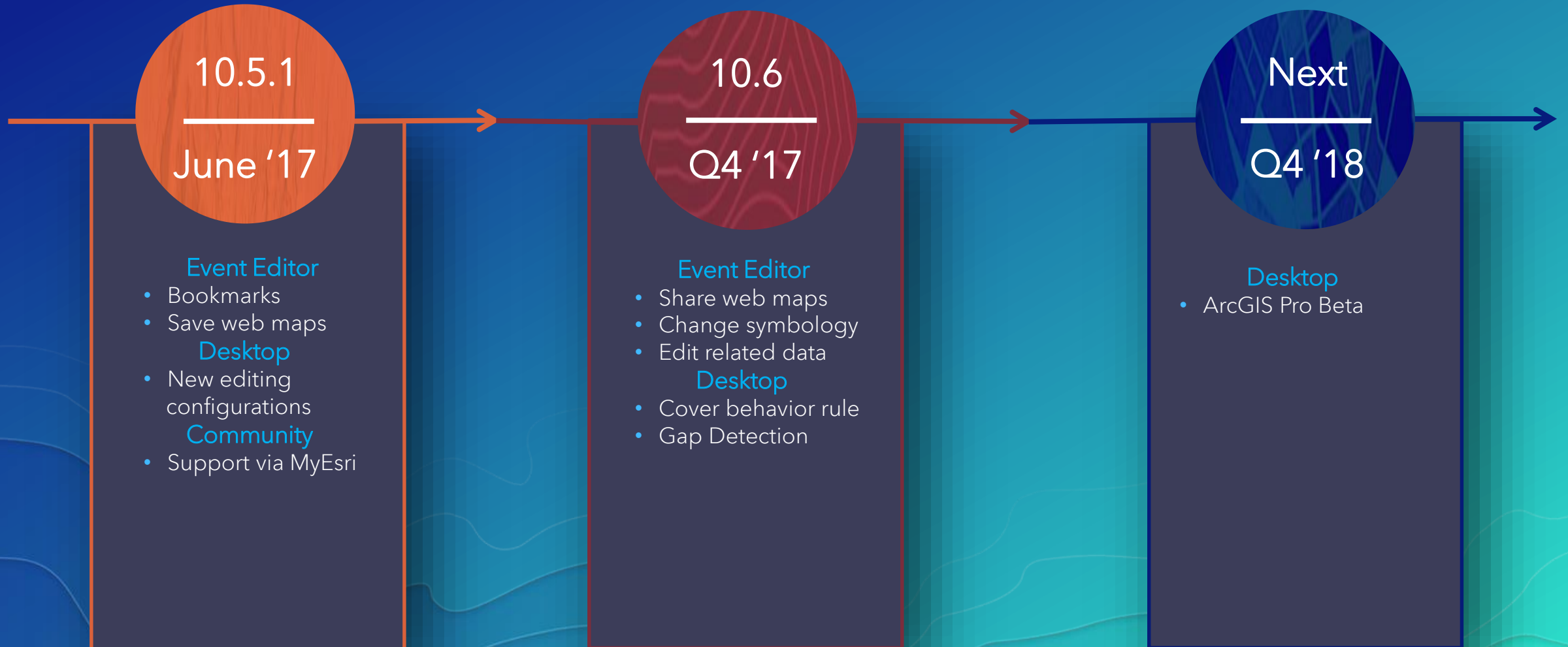
## GitHub

- Address Management  
<https://goo.gl/SMFWKT>
- Web App Builder sample widget  
<https://goo.gl/bJrRRb>

## Esri Support Services

- Fully supported solution and extension - Desktop, Enterprise Server, and Web Apps - Domestic and Premium Support

# Esri Roads and Highways Solution Roadmap\*



Product releases, dates, and availability are estimates and subject to change

# Thank you for attending

Questions?

¿Preguntas?

الأسئلة؟

有问题吗？

Vragen?

Des questions?

Fragen?

प्रश्न?

Le demande?

質問ですか？

Pytania?

Questões?

Вопросы?

Frågor?

คำถาม?

Sorular?

سوالات؟



# Please Take Our Survey on the Esri Events App!

Esri Roads and Highways: An Introduction

SDCC - Room 31 B



Rahul Rakshit

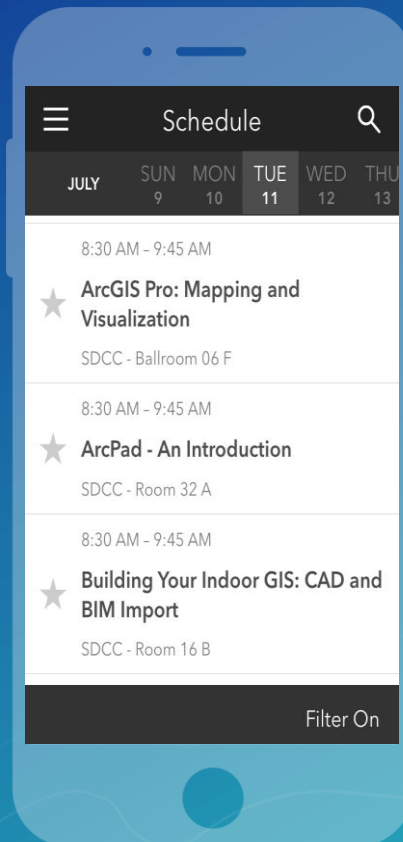


Matthew Ziebarth

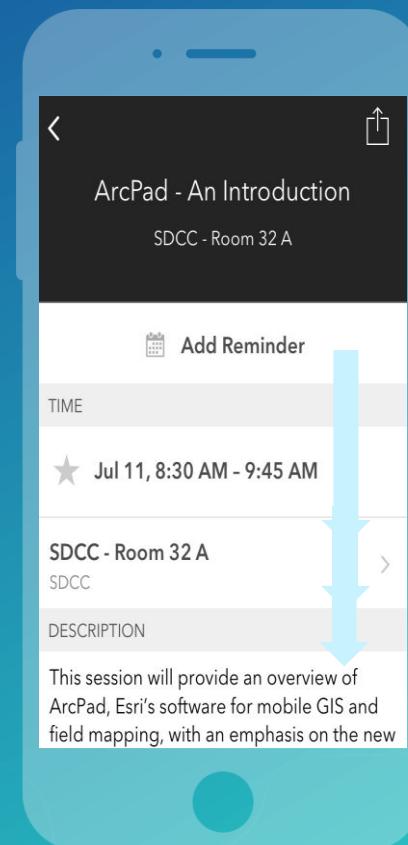
Download the Esri Events app and find your event



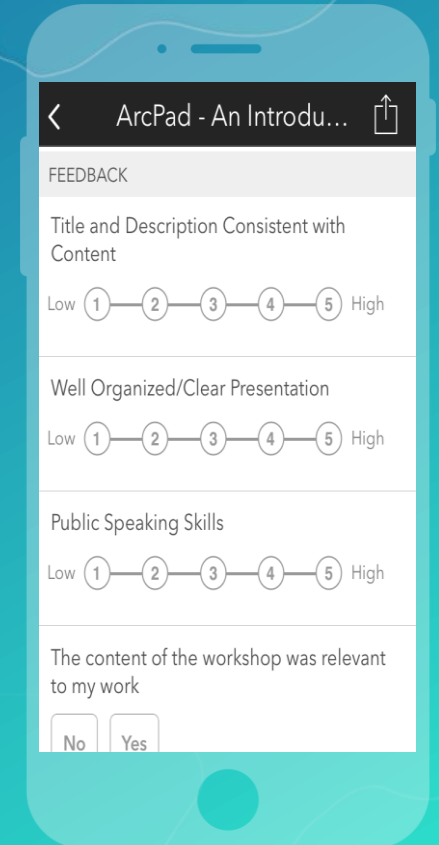
Select the session you attended



Scroll down to find the survey



Complete Answers and Select "Submit"





esri

THE  
SCIENCE  
OF  
WHERE