ArcGIS Tracking Analyst – an Introduction

Morakot Pilouk, mpilouk@esri.com
Hanoch Kalmanovich, hkalmanovich@esri.com
ArcGIS Tracking Analyst - An Introduction

Agenda

• Temporal Data Overview

• Visualizing and Analyzing Temporal Data with Tracking Analyst on the Desktop

• Serving Tracking Analyst Layers
Temporal Data Overview
Temporal Data Overview

Temporal, Time, and Tracks

- Temporal means “of or relating to time”.
- Temporal data is data which is related along the dimension of time.
  - May be correlated by a unique attribute to form a Track
  - Often ordered by how the feature’s events occurred chronologically

Time

Tracks

Allows data to be shown at a specific time

Allows grouping by track
Temporal Data Overview

Types of Temporal Data

**Dynamic**
- something that moves
  
  - Planes
  - Vehicles
  - Animals
  - Satellites
  - Storms

**Discrete**
- something that “just happens”
  
  - Crimes
  - Lightning
  - Accidents

**Stationary**
- stands still but records changes
  
  - Weather Stations
  - Traffic Sensors
  - Air Quality Sensors

**Change**
- change or growth
  
  - Population
  - Distribution
  - Fire Perimeter
Temporal Data Overview

A sample of temporal data organization

Supported geometry types:
- Point
- Polyline
- Polygon
Visualizing and Analyzing Temporal Data on the Desktop with Tracking Analyst
Visualizing and Analyzing Temporal Data on Desktop

- **ArcGIS Tracking Analyst**
  - Is an ArcGIS for Desktop Extension that extends the time-aware capabilities of ArcGIS
    - Supported on ArcMap, ArcGlobe, ArcCatalog, and ArcGIS Engine
    - GeoProcessing Tools
  - Provides advanced functions to let you Visualize and Analyze:
    - Spatial Patterns
    - Trends in the context of Time
Visualizing and Analyzing Temporal Data on Desktop

• ArcGIS Tracking Analyst

  - Allows you to
    - Playback historical/captured data while performing Exploratory Analysis
    - Visualize live streaming data
    - Apply Track Symbology – grouping, most current, track lines
    - Apply Age Symbology
    - Show Temporal Offset – layout and compare temporal data from different time periods
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

- **Playback Manager**
  - Playback historical/captured data
  - Analyze Temporal patterns in data
  - Visualize live streaming data
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

- Track Symbology
  - All Events
  - Most Current Event
  - Track Lines
  - Directional Vectors
  - Event Attributes Labeling
  - Time Window Aging
  - Layer Actions
  - Temporal Offset
Demonstration:
Rendering Events in Tracking Layer
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

- Tracking Layer Actions - client side
  - Actions
    - Filter
    - Highlight
    - Suppress
  - Conditions
    - Attribute query
    - Location query (Geo Fencing)
      - Intersects
      - Not Intersects
      - Arriving
      - Departing
      - Track Crosses
    - Combination of Attribute and Location
Demonstration: Tracking Actions
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

• Track Manager
  - Manages tracks as unique entities, like features
  - Tracks Panel
    - Highlight Track
    - Hide Other Tracks
    - Follow Track
    - Zoom to Track
    - Analyze Track
    - Hide Track
    - Show Track
    - Purge Track
    - Stop Purging Track
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

- Track Manager
  - Features Panel
    - Highlight Feature
    - Zoom to Feature
    - Analyze Features
    - Purge Features
Demonstration: Track Manager
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

• Exploratory Analysis of Temporal Data
  - Data Clock
    - Two-way interaction with the features selection on the map
Visualizing and Analyzing Temporal Data on Desktop

ArcGIS Tracking Analyst

- Exploratory Analysis of Temporal Data
  - GeoProcessing tools for Track Analysis
  - **Calculate** values on Temporal Data
    - Given successively ordered features in a track **calculate** values for distance, duration, speed, and course.
Demonstration: Tracking GeoProcessing Tools
Serving Tracking Analyst
Layers
Serving Tracking Analyst Layers

- Author a map containing Tracking Analyst Layer(s)
- Publish the Map to ArcGIS Server as a Map Service
- Map Service Clients can request Time Aware Map Images:
  - ArcMap – Map Service Layer
  - Web Clients, Apps, and Runtime SDKs – Dynamic Map Service Layer
Serving Tracking Analyst Layers

• Map Service requests can include a requested Time Extent to support a client side time slider capability

• Map Service image responds include Tracking Analyst rendering capabilities:
  - All Events, Most Current Events, Track Lines
  - Track Labeling
  - Highlight and Suppress Actions
Demonstration:
Serving Tracking Analyst Layers
Conclusion

• ArcGIS Tracking Analyst:

  - Enables ArcGIS with temporal visualization and analysis

  - Provides capabilities for Visualizing, and Analyzing real-time data.

  - Can be applied in a variety of environments including:
    - Desktop, Server, Web, and Mobile
To Learn More

- ArcGIS Tracking Analyst:  http://www.esri.com/trackinganalyst

- GeoEvent Processor on the ArcGIS for Professionals Site:  
  http://pro.arcgis.com/share/geoevent-processor

- Tracking Server on the ArcGIS 10.1 Resource Center:  
  http://resources.arcgis.com/en/communities/tracking-server/

- Discussion Lounge on Real-time GIS using GeoEvent Processor  
  - Thursday, July 11, 12:30pm-1:00pm, Hall H – GIS Discussion Lounge  
    - Come and participate with Esri professionals and your peers in a relaxed discussion on real-time GIS. This session is designed for sharing your expertise and ours and will be an open discussion on the topic of applying real-time GIS using ArcGIS GeoEvent Processor for Server
• Thank you for attending
• Have fun at UC 2013
• Open for Questions

• Please fill out the session evaluation

**Offering ID: 1381**

Online - [www.esri.com/ucsessionssurveys](http://www.esri.com/ucsessionssurveys)

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