Welcome
GeoEvent Extension

Southwest User Conference
December 2-4 | Santa Fe, New Mexico

Jay Hagen
Esri Solution Engineer
GeoEvent Extension

• Real-Time GIS Overview

• Working with Real-Time Data

• Performing Continuous Processing and Analysis
GIS Data

- GIS data typically represents state at a specific moment in time: “historic”, “current”, or “future”.

Credit: iStockphoto/chris_lemmens
Real-Time GIS Data

- Real-time GIS data is a continuous stream of events flowing from sensors, where each event represents the latest state of the sensor.
  - Emergency response
  - Utility networks
  - Warehouses
  - Environmental Features

Challenge #1

Features

- Police Car
- Police Person
- Ambulance
- Network Sensor
- Warehouse Item
- Storm
- Wind
- Temperature
- Earthquake
- Wild Fire

Applications
Real-Time Analytics

- What fishing vessels are inside designated “no fishing” zones?

**Challenge #2**

**Continuous Analysis**
- Inside Boundary

**Features**
- Vessel Alert

**Applications**
Real-Time Notifications and Alerting

- Tell a parent when their child leaves school property.

Challenge #3

Continuous Analysis

Features

Applications

Outside Boundary

Child

SMS

Challenge #3

Alert: Your child has left school property. Click [here](#) to show their current location.
ArcGIS GeoEvent Extension for Server

*Integrates and Exploits real-time data*

- Integrates real-time streaming data into ArcGIS
- Performs continuous processing and real-time analytics
- Sends updates and alerts to those who need it where they need it
ArcGIS supports real-time GIS
Working with Real-Time Data
Working with Real-Time Data

Making features come alive

- Connect an output to your feature
- Import the schema of your feature as a GeoEvent Definition
- Configure an input to receive real-time data
- Author and publish a GeoEvent Service
- Visualize your real-time feature
Demonstration
Twitter Monitoring
Receiving Real-Time Data

Input Connectors

- Easily integrate real-time streaming data with ArcGIS by using an input connector.
Sending Real-Time Data

**Output Connectors**

- Easily send updates and results to those who need it, where they need it using an output connector.

You can create your own connectors.

**Out of the Box**

- Add a feature
- Update a feature
- Send an email
- Send an instant message
- Send a text message
- Publish JSON to a Web Socket
- Push JSON to an external Web Socket
- Publish text on a TCP Socket
- Publish text on a UDP Socket
- Publish JSON to an external website
- Publish on a REST endpoint
- Write to a .csv file
- Write to a .json file

**Partners**

- Twitter
- ActiveMQ
- RabbitMQ
- Hadoop
- MongoDB
- CESIUM

**Esri Gallery**

- [Link to Esri Gallery]
Applying Real-Time Analytics
Applying real-time analytics

**GeoEvent Services**

- A **GeoEvent Service** configures the flow of GeoEvents,
  - The Filtering and GeoEvent Processing steps to perform,
  - what input(s) to apply them to,
  - and what output(s) to send the results to.
Applying real-time analytics

Filtering

- A Filter eliminates GeoEvents based on an expression.
Applying real-time analytics

GeoEvent Processing

- You can perform continuous analytics on GeoEvents as they are received using a processor.
Extending GeoEvent

Software Development Kit (SDK)

- You can create your own connectors and processors using the GeoEvent SDK.
Demonstration: GeoEvent Processing

Incident Detection
Deployment Patterns
Deployment Patterns
Using local feature services

GeoEvent Extension

Inputs

Outputs

ArcGIS Server

feature layers

Operations Dashboard for ArcGIS

ArcGIS Online / Portal for ArcGIS

Your Dashboards

Your Applications

web map

operation view

Your Applications
Deployment Patterns

Using remote feature services

Inputs
GeoEvent Services
ArcGIS Server

GeoEvent Extension

Outputs
feature layers
ArcGIS Server 10.1.x
10.2.x

Your Applications

Your Dashboards
ArcGIS Online / Portal for ArcGIS
Operations Dashboard for ArcGIS
ArcGIS Server
web map
operation view

Your Applications

web map
operations view

Dashboards
ArcGIS Online / Portal for ArcGIS
Your Dashboards
Operations Dashboard for ArcGIS
ArcGIS Server
Deployment Patterns

Using ArcGIS Online / Portal for ArcGIS feature services

GeoEvent Extension
- GeoEvent Services
  - Inputs
  - Outputs

ArcGIS Server

Operations Dashboard for ArcGIS
- ArcGIS Online / Portal for ArcGIS
  - operation view
  - web map
  - feature layers

Your Dashboards

Your Applications
- desktop
- web
- mobile

Your Applications
What’s New at 10.3

GeoEvent Extension

- **Stream Service and Stream Layer**
  - Read Only
  - Supports 2k-3k records per second
  - Currently only readable in ArcGIS Online/Portal web map—Runtimes coming soon

- **Better BigData Integration—Tools for Hadoop**

- **Support for Clustering**

- **New Spatial Operators and Geometry Processors**
  - Buffer, Union, Difference, Symmetric Difference, Convex Hull, Simplifier, Projector
  - Intersect, Disjoint, Touches, Contains, Equals, Overlaps, Within
ArcGIS GeoEvent Extension for Server

Summary

- ArcGIS is a dynamic platform that enables continuous analytics and real-time visualization for better understanding of our world.

- The GeoEvent extension allows you to:
  - to know what is happening, as it happens
  - be alerted when interesting events occur
  - react and make smarter decisions faster
Where to learn more?

Resources

• To learn more, visit the tutorial in the Esri Gallery:
  - http://links.esri.com/geoevent
    - Introduction
    - Notifications
    - RSS
    - Web Sockets
    - Working with HTTP
    - GeoEvent Caches
    - REST Admin API

• GeoEvent Forum is on GeoNet
  - https://geonet.esri.com/community/gis/enterprise-gis/geoevent