Overview

• Background

• Real-Time Data Formats

• Updating Real-Time Data
  - Products / Patterns / Architecture / Components
Help when you need it most

When disaster strikes, Esri's Disaster Response Program (DRP) is there to support you around the clock, 24 x 7. Request assistance from Esri experts, augment software, explore content, and monitor events online as part of our corporate citizenship. We're there when you need us most.

Request assistance and monitor the following event types:

- Hurricanes & Cyclones
- Wildfires
- Flooding
- Severe Weather
Winter Storm Watch

The Winter Storm Watch is effective March 10, 2014 and expires March 13, 2014.

Affected Area(s): Caledonia; Eastern Addison; Eastern Chittenden; Eastern Franklin; Eastern Rutland; Essex; Grand Isle; Lamoille; Orange; Orleans; Washington; Western Addison; Western Chittenden; Western Franklin; Western Rutland; Windsor.

More Information

Data Source is the National Weather Service provided by NOAA

Zoom to
BREAKING NEWS
SUPERMARKETS, HOMES TOPPLE
Interactive maps show most powerful videos
Real-Time Data, what do we mean?

- Frequently Changing Content!

- Real-Time Data
  - Changes moment-by-moment
  - Trickle or burst
  - No set intervals

- Near Real-Time Data
  - Periodic or Batch changes
  - Bulk updates typical
  - Timed intervals
# Typical Data Formats

## Real-Time Data
- Sensors
  - Vehicles
  - Manufacturing / Industrial
  - Field equipment
  - SCADA
- Internet Resources
  - Streaming (Twitter)
  - Wide Range of Formats
  - CSV, XML, KML, RSS, GeoRSS, ...

## Near Real-Time Data
- File based
  - Shapefile
  - CSV, XML, KML, RSS, GeoRSS, ...
  - Raster / Spatial Analysis
  - NetCDF
  - BIN
- Bulk / Batch
- Heavy Geoprocessing / Enrichment
- Data Transformation
- Data Aggregation (multiple sources)
Available Products

• GeoEvent Extension (GEE)
  - Selected Content
  - OSIsoft – PI Integrator for ArcGIS

• Aggregated Live Feed (ALF) methodology
Update Patterns
(which product do I choose?)

• SCADA System w/Alerts
  - GeoEvent Ext. / OSIsoft

• Raster Weather Data
  - ALF – ArcPy w/Spatial Analyst

• Vehicle Tracking
  - GeoEvent Ext. w/GeoFence

• Shapefile Processing
  - ALF – ArcPy

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* = Depends on format and / or architecture
ArcGIS Server GeoEvent Extension

- **Data Bridge**
- **Update / Output**
  - Feature Service
  - Expose Stream Service
  - ArcGIS Online
  - Others
- **HA w/Clusters**
GeoEvent Extension Components

- **Input Connector – Read**
  - OSIsoft – PI Integrator
- **Decision – Filter**
- **Compute – Processor**
- **Output Connector – Write**
GeoEvent Extension (cont)

• GeoFence Alerting
  - Polygon(s)
  - Spatial Filter

• Position Tracking
  - Inside / Outside
  - Enter / Exit
Aggregated Live Feed (ALF) Methodology

- Python Solution
  - GP w/ArcPy
- Update / Output
  - Read-Only File GDBs
  - Feature Services
  - Others...Analysis
- Flexible & Extensible
- HA w/Redundancy
ALF Methodology – NDFD Precipitation, Raster Processing

http://tmservices1/arcgis/rest/services/LiveFeeds/NDFD_Precipitation/MapServer
ALF Methodology – Cloud / Distributed Feed

Internet

Log Files

Feed Routine (Aggregator)

Work FileGDB

Deployment Logic

Zip File

FileGDB Archive

Common Storage
(External or Internal)

Amazon S3

Download and Deployment Logic

Published Map Service

ArcGIS Server

Internet

Published Map Service

Live FileGDB

Data Deployment
ALFdeployer.py

Work Folder

ALFprocessor.py

Feed Aggregator
ALF Feed Construction – What’s required

• Pre-requisites
  - Python
  - ArcPy
  - Others (.py, 7zip, degrib, …)

• Optional
  - IDE – PyScripter, VS, …

• Components
  - ALFlib.py
    - Function / Class Library
  - ALFprocessor.py
    - Feed Processor +
    - ‘<feed file>.cfg’ (data processing logic)
  - ALFdeployer.py
    - Archive Distribution
Questions & Comments?

- AGOL Community Page (samples, scripts)
  - http://esriurl.com/LiveFeed

- GeoEvent Extension Resources:
  - https://techsupport.osisoft.com/Products/PI-Integrators/PI-Integrator-for-Esri-ArcGIS/System-Requirements

- Live Data Feeds:
  - http://tmservices1.esri.com/arcgis/rest/services/LiveFeeds
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