Esri International User Conference
San Diego, California

Technical Workshops | July 24, 2012

The Road Ahead for Tracking

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Motivations for the road ahead

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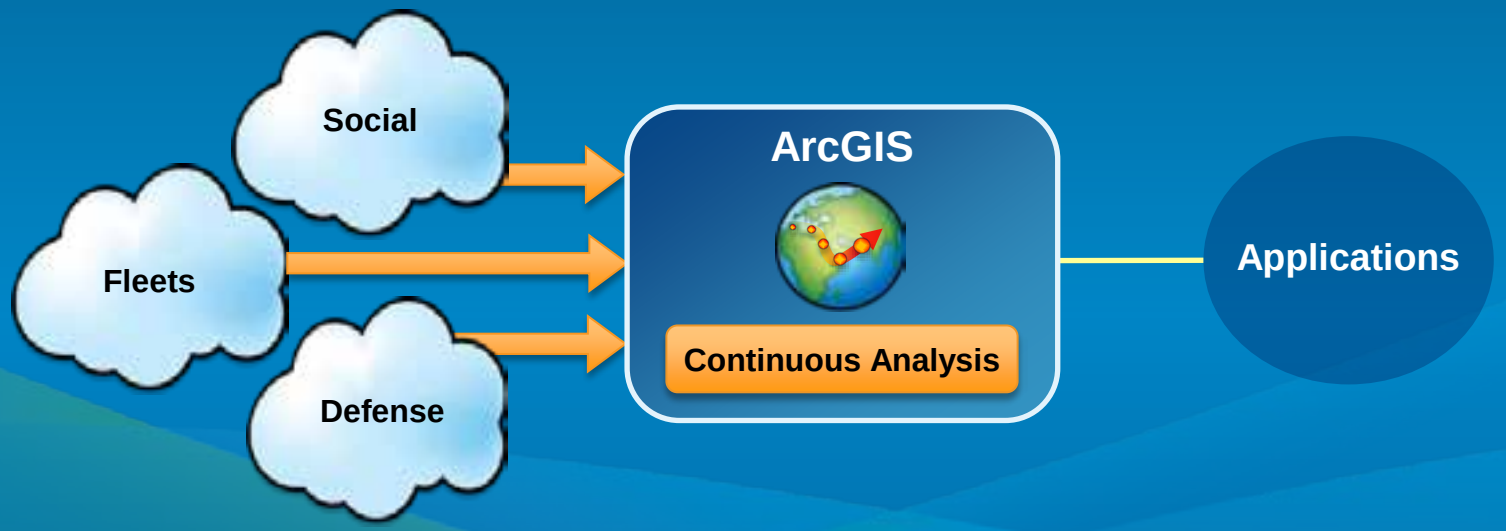
Road Ahead

Motivations

- **Make it simple for ArcGIS Users to configure and use Streaming Data.**
  - **receive Streams**
  - **perform Continuous Analysis (Stream Processing)**
  - **produce new Streams**



Road Ahead

Motivations

- **Provide a Highly Configurable product that has a Catalog of Resources that can be easily applied including:**
  - **Support a wide variety of Stream Formats**
  - **Support common types of Stream Processing**
  - **Applications and Templates for Targeted Uses**

Road Ahead

Motivations

- **Tradecraft Sharing**
  - **Allow users to share Continuous Analysis results and the Analysis artifacts with their communities of interest.**

- **Provide a Flexible Product Architecture that is**
  - **Tightly aligned with ArcGIS**
  - **Multi-Platform: Windows, Linux, Cloud**
  - **Highly Available: supports local and remote redundancy**
  - **Scales-Up: take advantage of 64-bit Architecture & multiple cores**
  - **Scales-Out: allows clustering of multiple machines/instances**

the road ahead is … ArcGIS GeoEvent Server

Adam Mollenkopf

availability: Q1 2013

ArcGIS GeoEvent Server

Enabling ArcGIS with GeoEvent Stream Processing

- **GeoEvent Stream Processing:**
  - A **GeoEvent** contains information about things that happen and where they happened.
  - A **GeoEvent Stream** is a sequence of GeoEvents ordered by time.
  - **GeoEvent Stream Processing** is the act of continuously analyzing GeoEvent Streams and creating resulting output from them.
  - A **GeoEvent Service** configures GeoEvent Stream Processing steps, what Input GeoEvent Stream(s) the processing should be applied to, and where the resulting output should be sent.

ArcGIS GeoEvent Server

Tightly aligned with the ArcGIS platform

- **Integration with ArcGIS Server:**
  - **GeoEvent Stream Processing can output results directly to Feature Services hosted on ArcGIS Server(s).**
    - **Can update Features on a Feature Service or append new Features.**
  - **GeoEvent Server can use Features from ArcGIS Server(s).**
    - **e.g. Polygons of a Feature Service on ArcGIS Server can be used as the basis for Spatial Filtering or GeoFence detection.**

ArcGIS GeoEvent Server

Application Templates

- The best way to understand what ArcGIS GeoEvent Server can do is to see how it can be applied.

- A Catalog of Resources allow customers to find and configure what they new for their implementation including:
  - Application Templates: Ready to use configurations of GeoEvent Server that enable it for a targeted use.
  - Applications: Ready to use Applications. Each application works with a corresponding Application Template.

ArcGIS GeoEvent Server

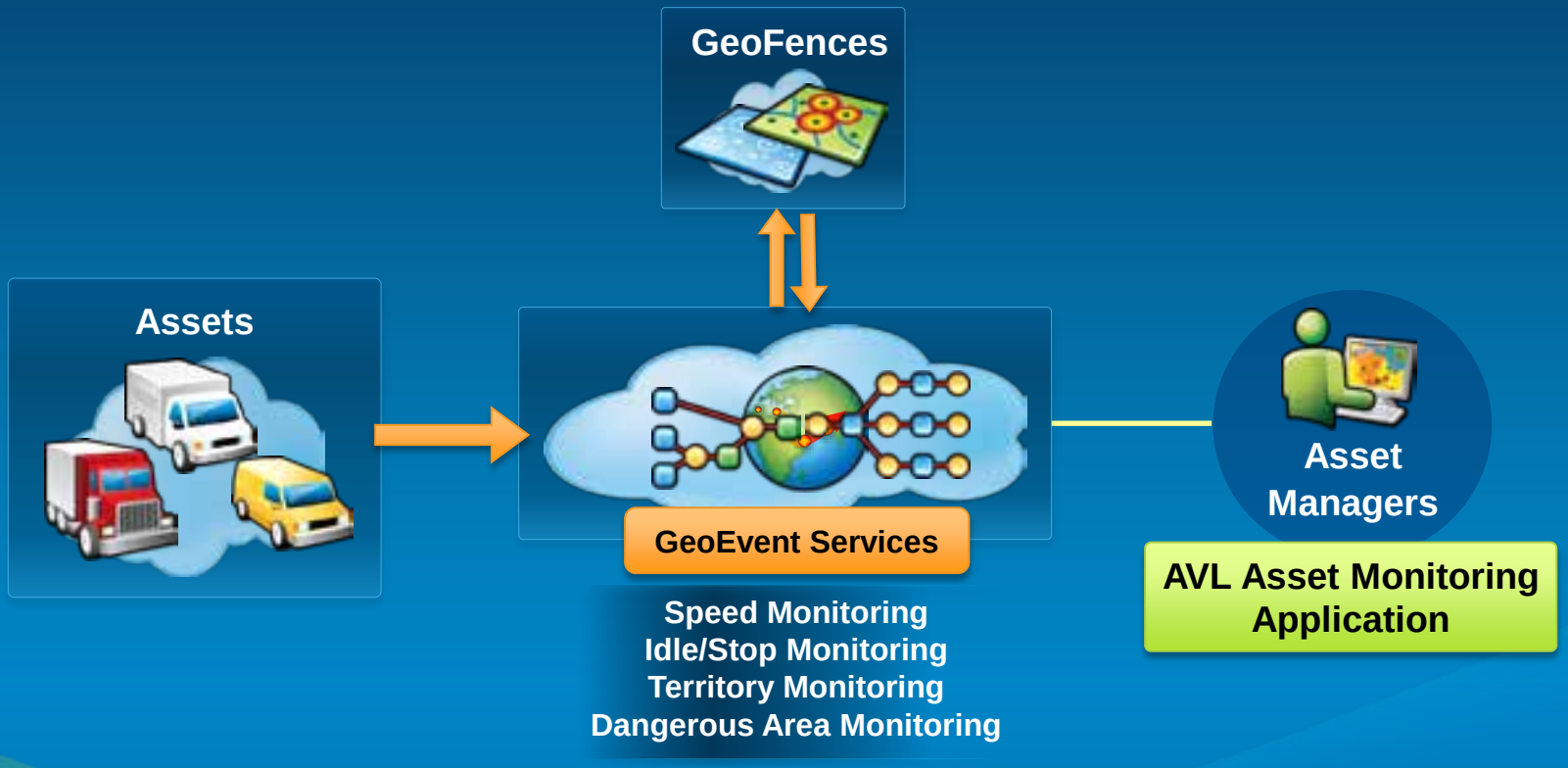
Application Templates

- The Catalog includes the following Application Templates:
  - Automatic Vehicle Location (AVL)
  - Mobile Resource Management (MRM)
  - Command and Control (C2)
  - Intelligence, Surveillance, and Reconnaissance (ISR)

- You can:
  - Adjust an Application Template to your specific needs
  - Create your own Application Template
  - Contribute your Application Template to the Catalog

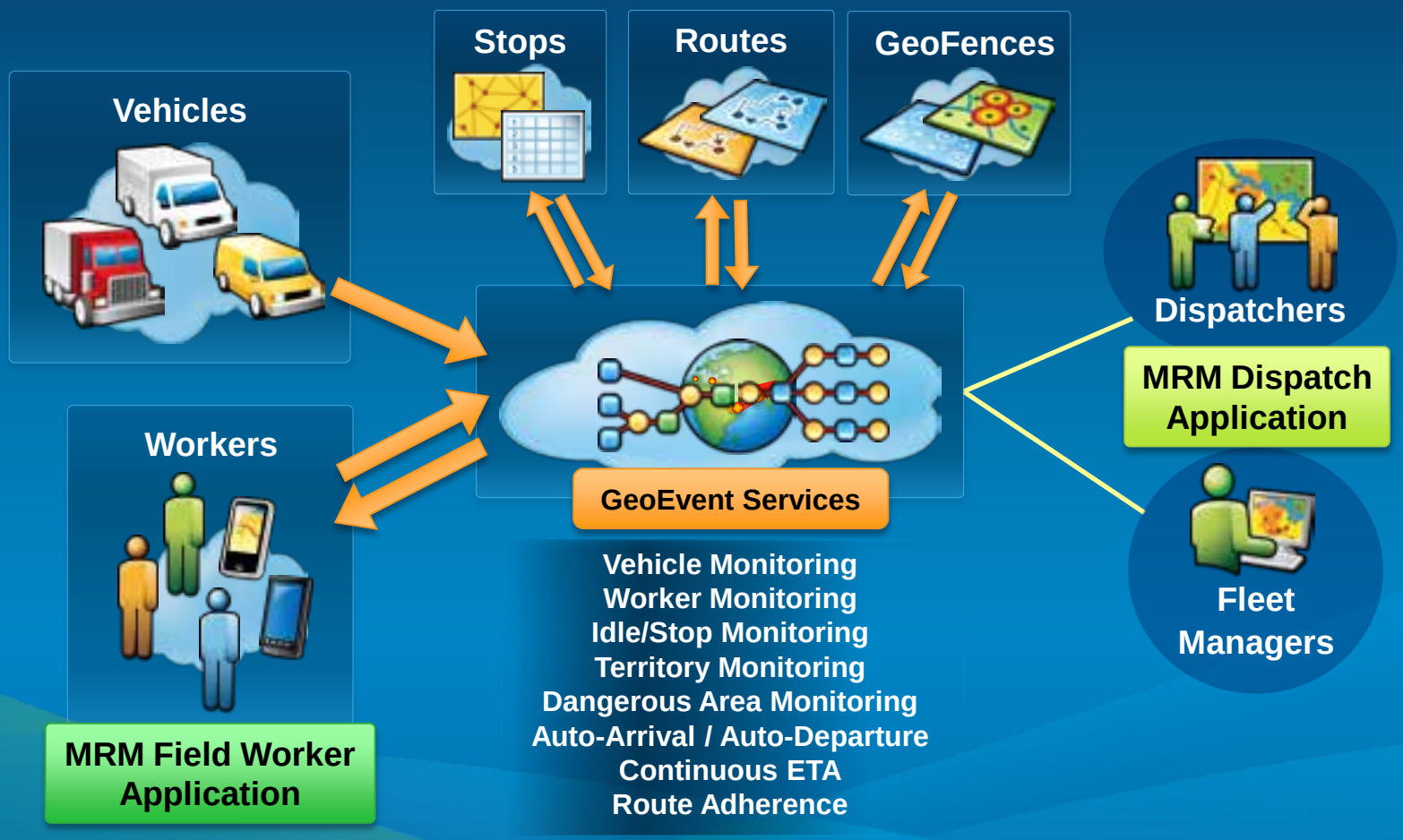
ArcGIS GeoEvent Server

Automatic Vehicle Location (AVL) Application Template



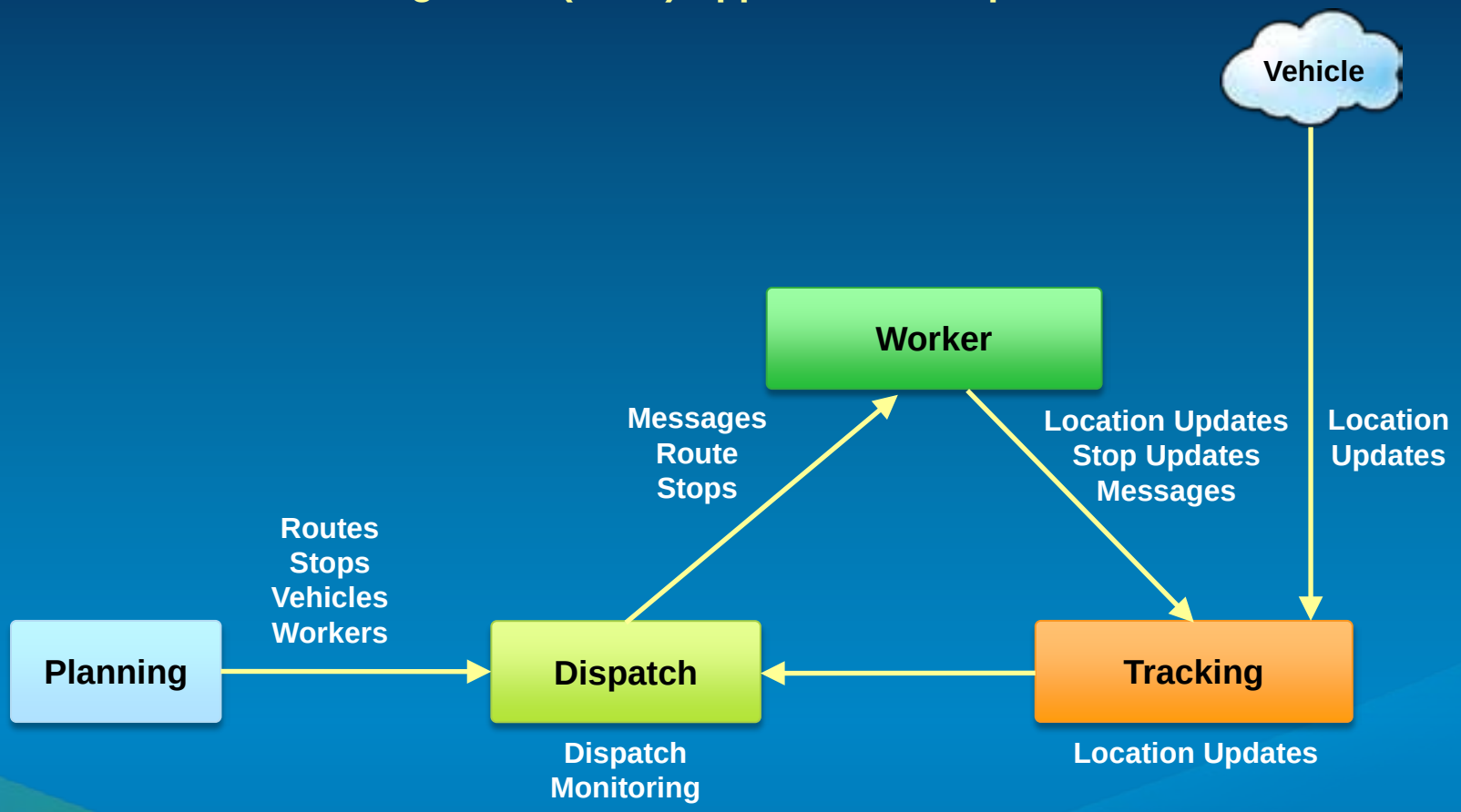
ArcGIS GeoEvent Server

Mobile Resource Management (MRM) Application Template



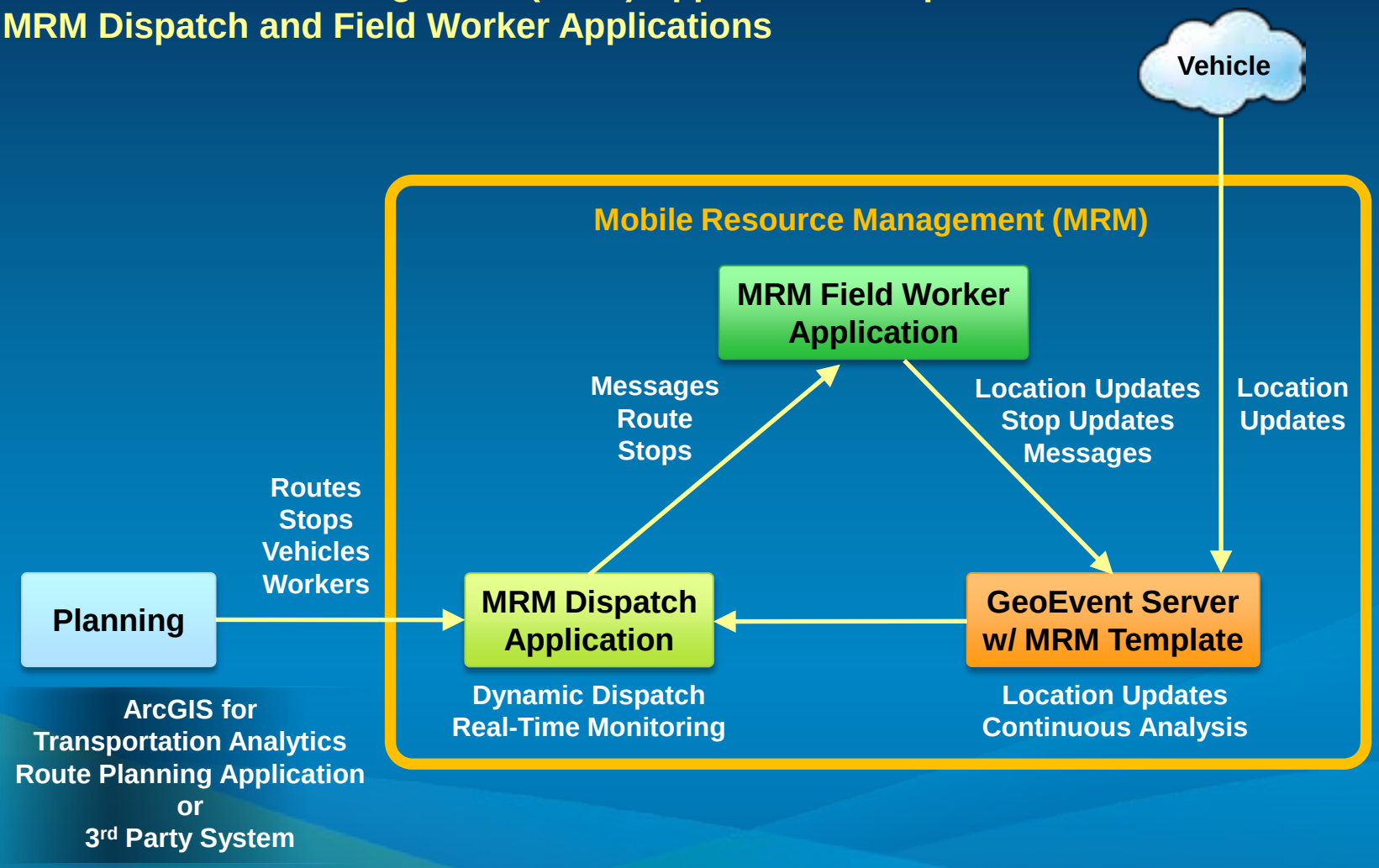
ArcGIS GeoEvent Server

Mobile Resource Management (MRM) Application Template



ArcGIS GeoEvent Server

Mobile Resource Management (MRM) Application Template
MRM Dispatch and Field Worker Applications



Demonstration:
Mobile Resource Management (MRM) Application Template

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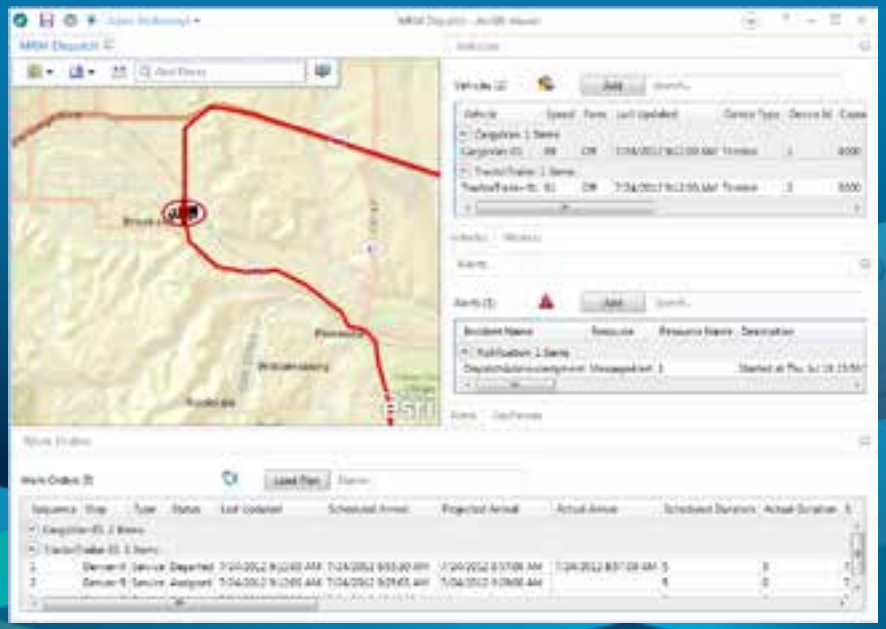
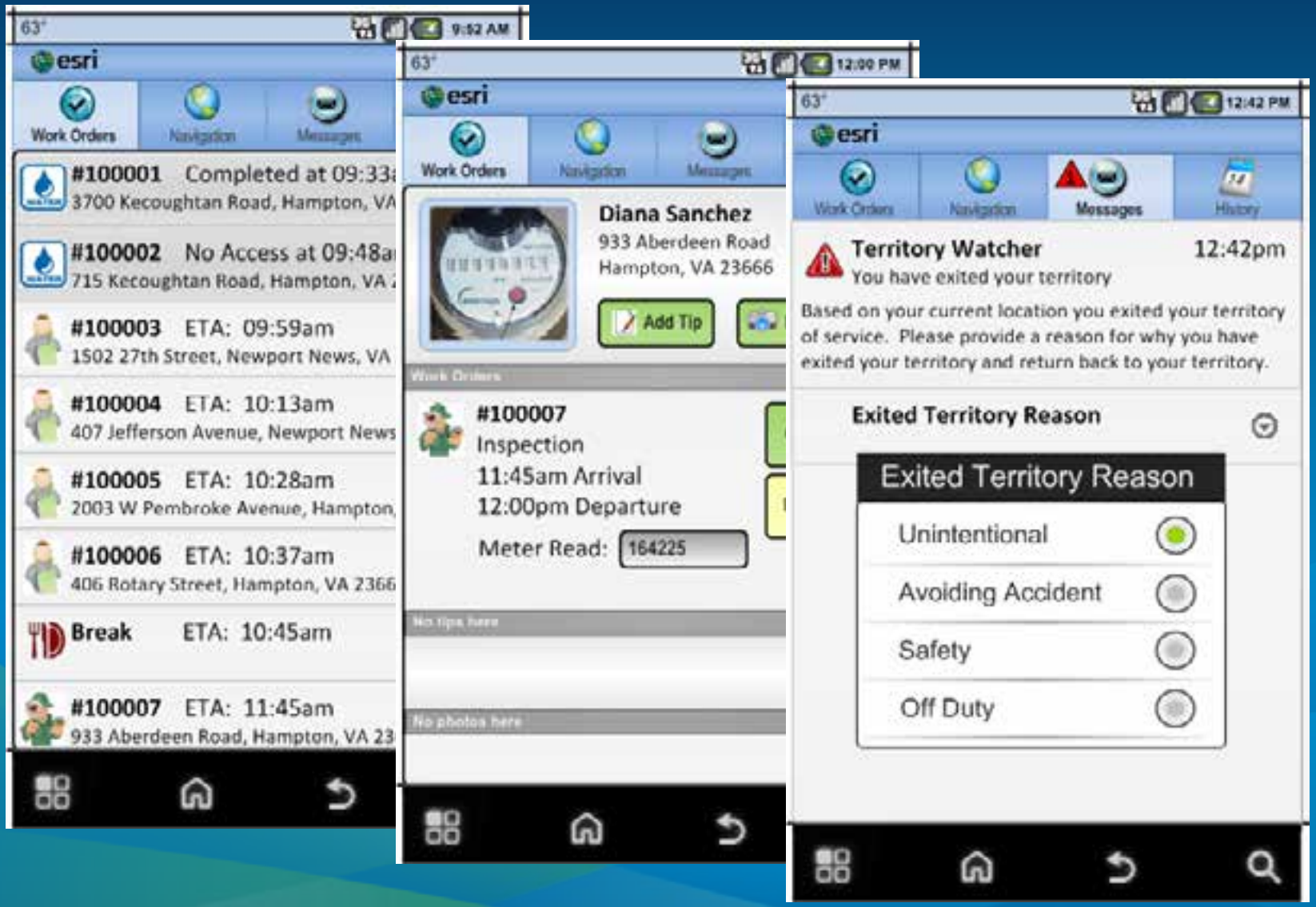


ArcGIS GeoEvent Server

Mobile Resource Management (MRM) Field Worker Application



GeoEvent Services

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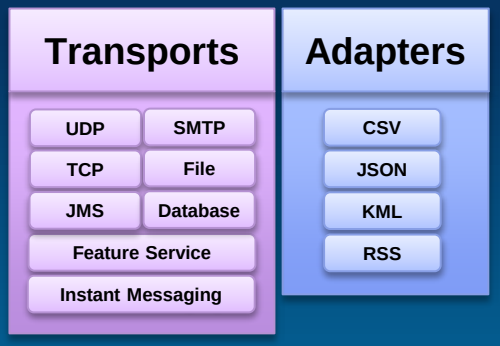
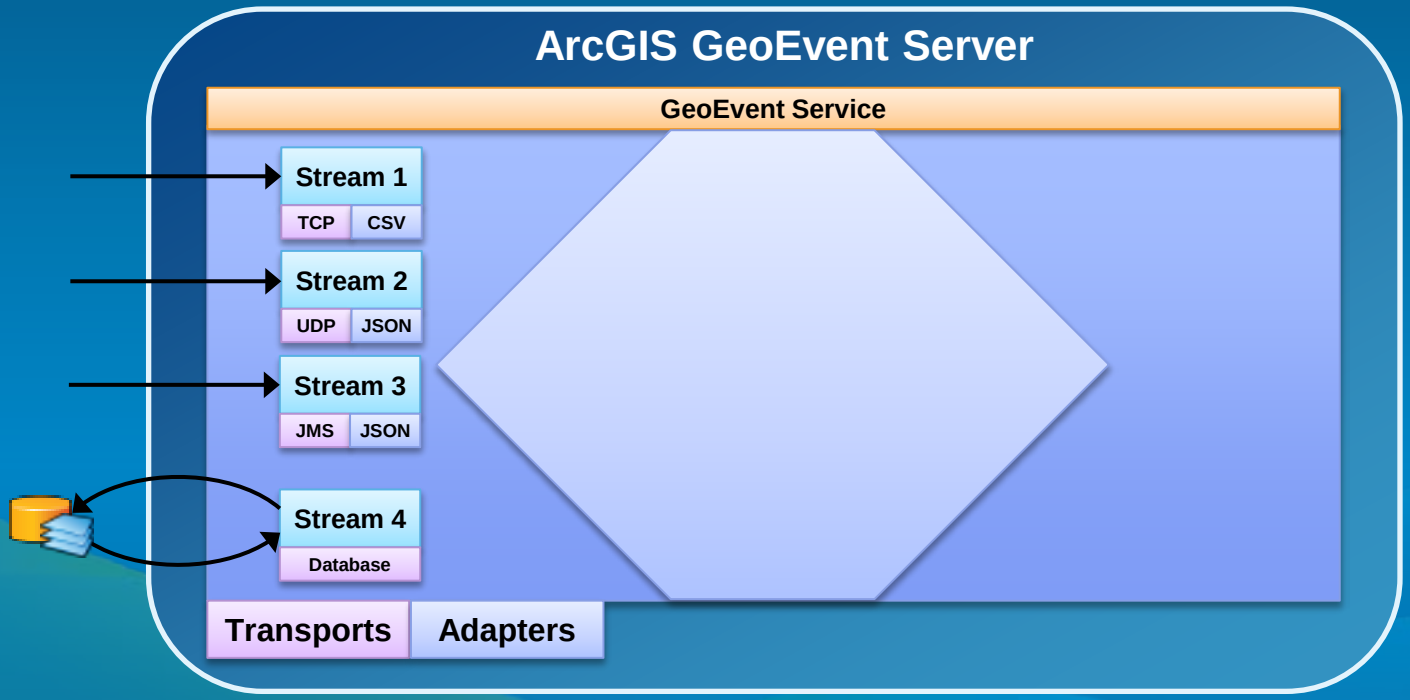
ArcGIS GeoEvent Server

Receiving GeoEvent Streams

- **Input Streams** are configured to receive GeoEvents in any format from any source
  - **Transports** perform the communication protocol
  - **Adapters** translate input format into GeoEvents

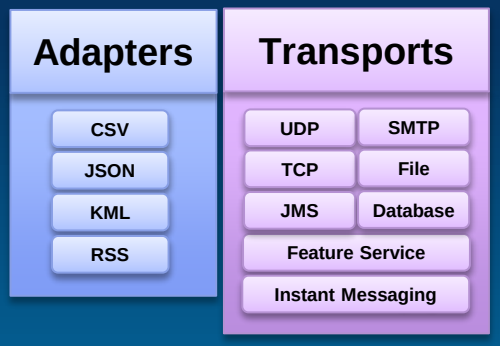


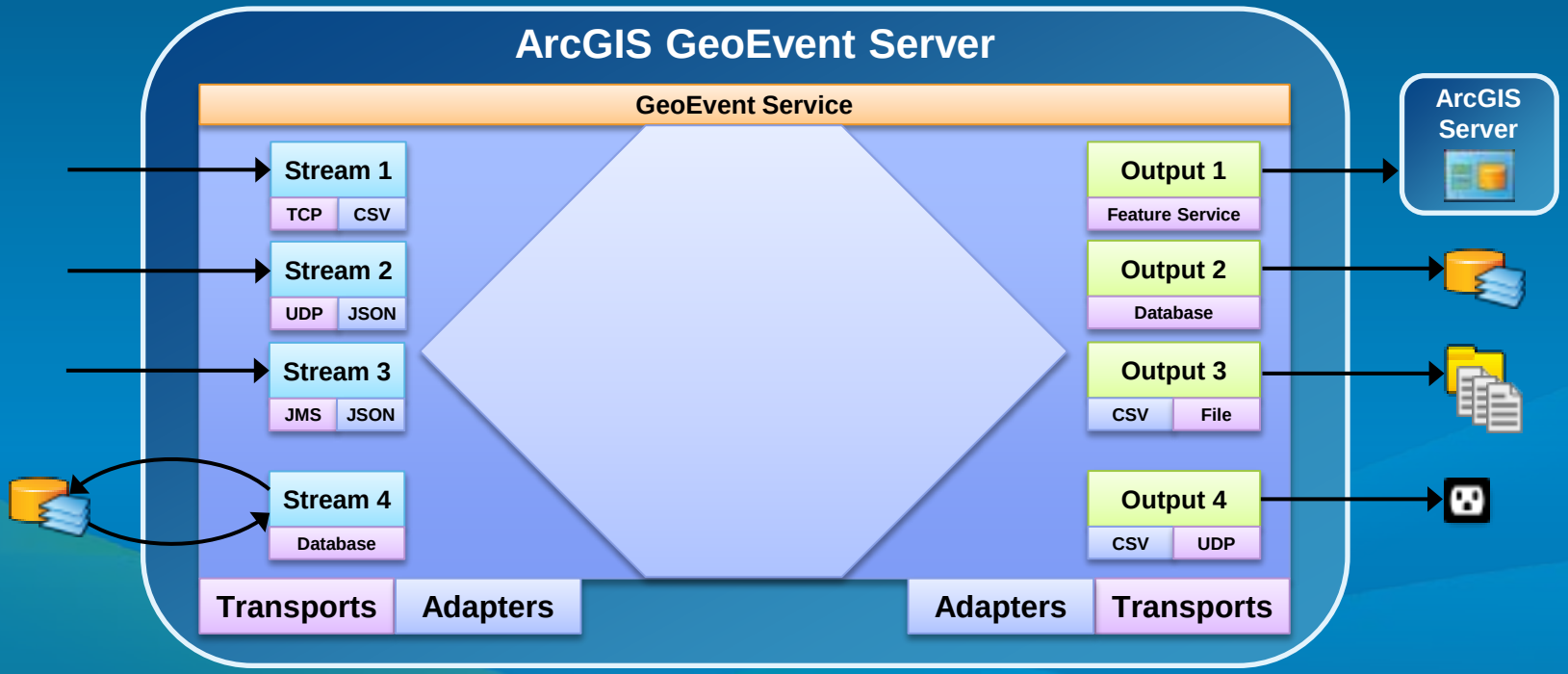


ArcGIS GeoEvent Server

Producing GeoEvent Streams

- **Output Streams** are configured to produce GeoEvents in any format to any destination
  - **Adapters** translate GeoEvents into output format
  - **Transports** perform the communication protocol





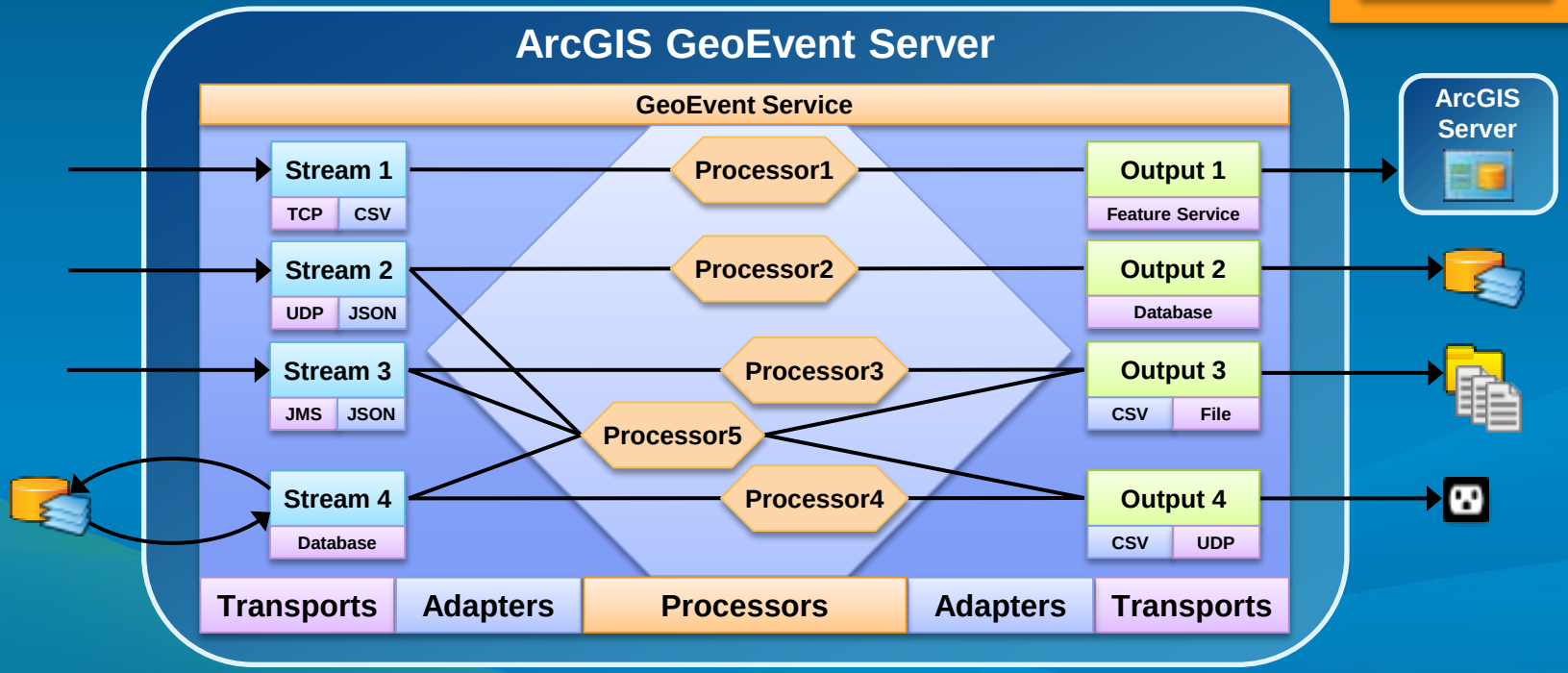
ArcGIS GeoEvent Server

Performing Continuous Analysis on GeoEvent Streams

- **GeoEvent Services** configure
  - GeoEvent Stream **Processors**
  - what Stream(s) the Processors should be applied to
  - where the resulting output should be sent

Processors

- Field Enricher
- Field Calculator
- Field Reducer
- Field Mapper
- Incident Detector
- Idle/Stop Detector
- Gap Detector
- E-Mail Notifier



ArcGIS GeoEvent Server

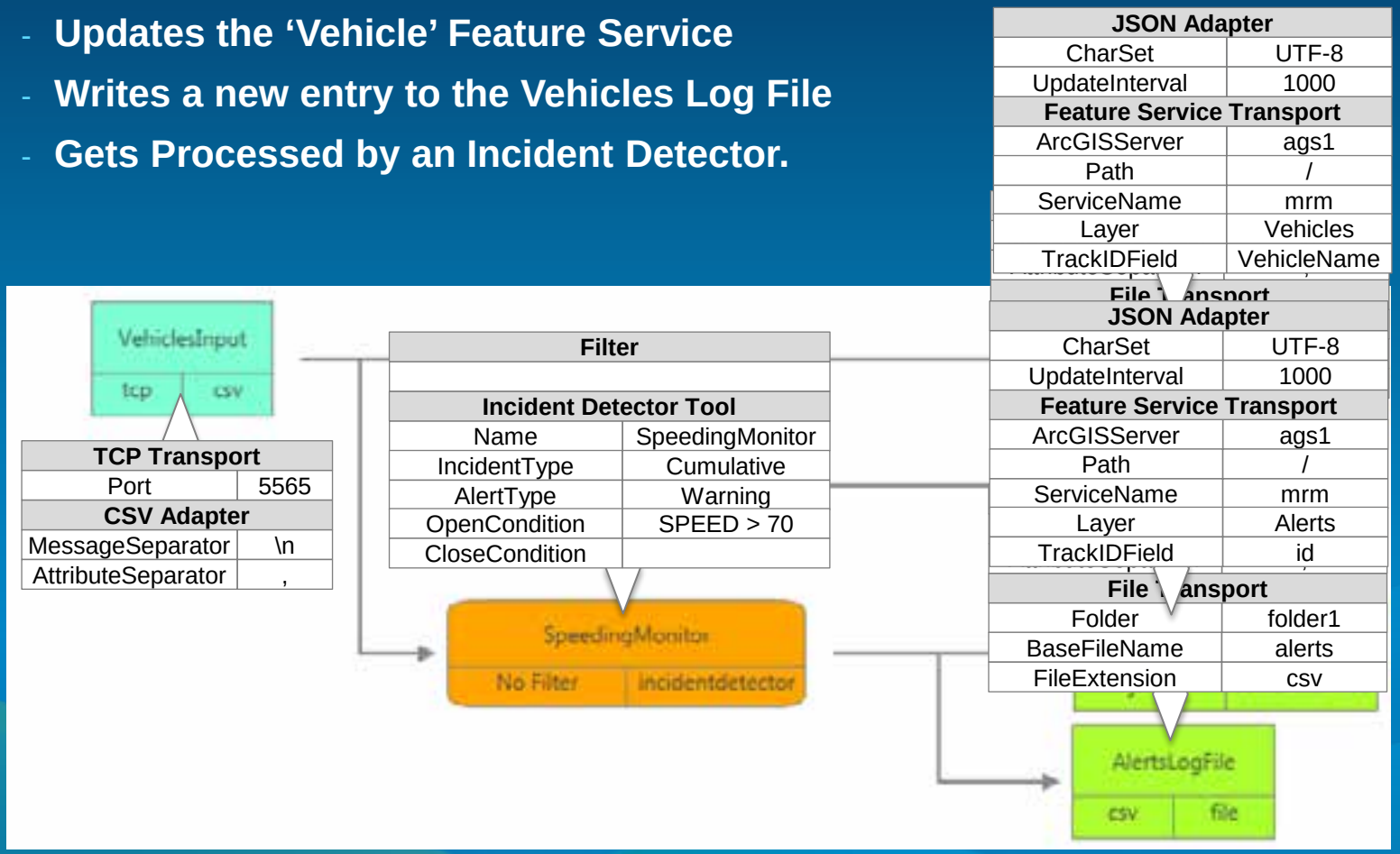
Mobile Resource Management (MRM) Application Template

- The MRM Application Template configures:
  - Two Input Streams: Vehicles, Workers
  - Multiple Outputs: Vehicles, Workers, Stops, Alerts, Messages
  - Multiple GeoEvent Services:
    - Vehicle Monitoring
    - Worker Monitoring
    - Idle/Stop Monitoring
    - Territory Monitoring
    - Dangerous Area Monitoring
    - Auto-Arrival / Auto-Departure
    - Continuous ETA
    - Route Adherence

ArcGIS GeoEvent Server

Exploring the 'MRM-VehicleMonitoring' GeoEvent Service

- **Each GeoEvent from the 'VehiclesInput' Stream:**
  - **Updates the 'Vehicle' Feature Service**
  - **Writes a new entry to the Vehicles Log File**
  - **Gets Processed by an Incident Detector.**

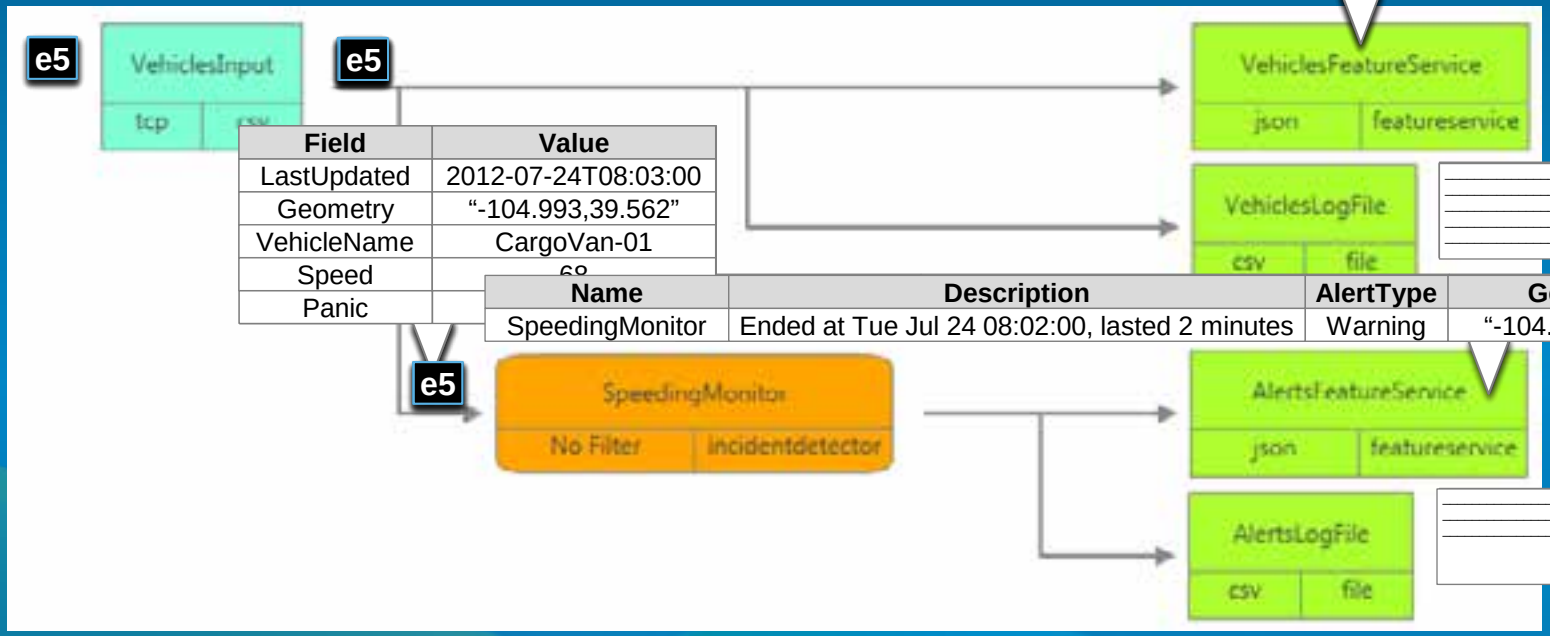


ArcGIS GeoEvent Server

Exploring the ‘MRM-VehicleMonitoring’ GeoEvent Service

- **Each GeoEvent from the ‘VehiclesInput’ Stream:**
  - **Updates the ‘Vehicle’ Feature Service**
  - **Writes a new entry to the Vehicles Log File**
  - **Gets Processed by an Incident Detector.**

VehicleName	LastUpdated	Speed	Panic	Geometry
CargoVan-01	2012-07-24T08:03:00	68	Off	“-104.993,39.562”
TractorTrailer-01	2012-07-24T08:00:00	0	Off	“-104.697,38.733”



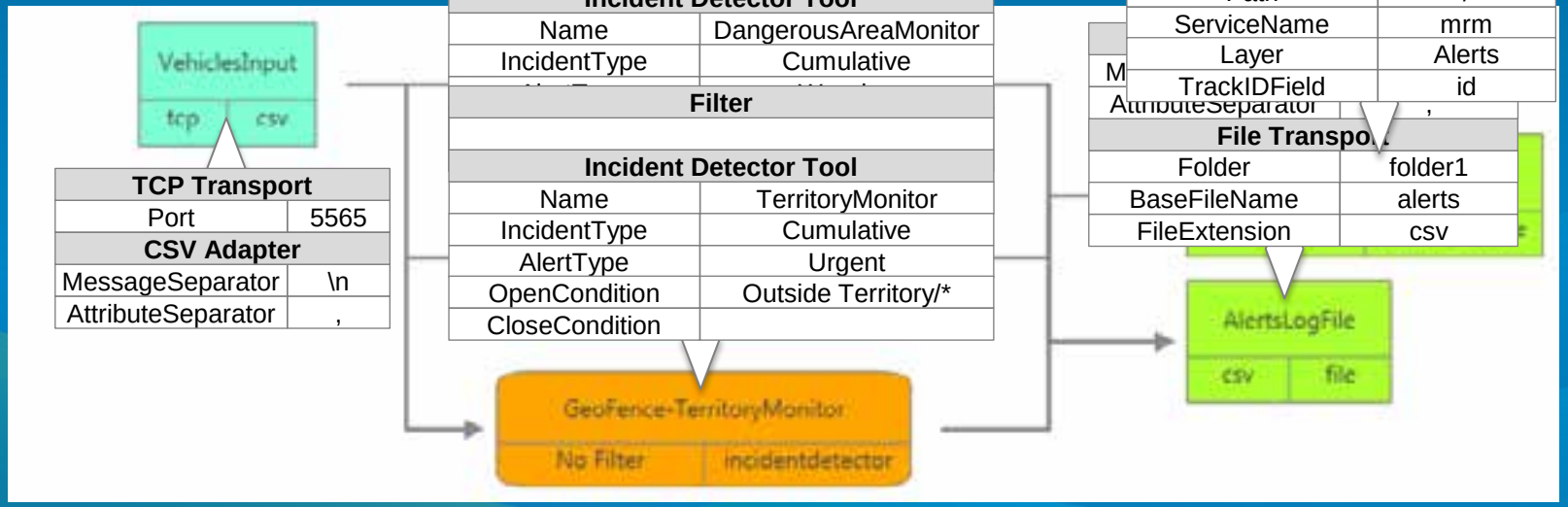
Field	Value
LastUpdated	2012-07-24T08:03:00
Geometry	“-104.993,39.562”
VehicleName	CargoVan-01
Speed	68
Panic	

Name	Description	AlertType	Geometry
SpeedingMonitor	Ended at Tue Jul 24 08:02:00, lasted 2 minutes	Warning	“-104.993,39.562”

ArcGIS GeoEvent Server

Exploring the ‘MRM-GeoFenceMonitoring’ GeoEvent Service

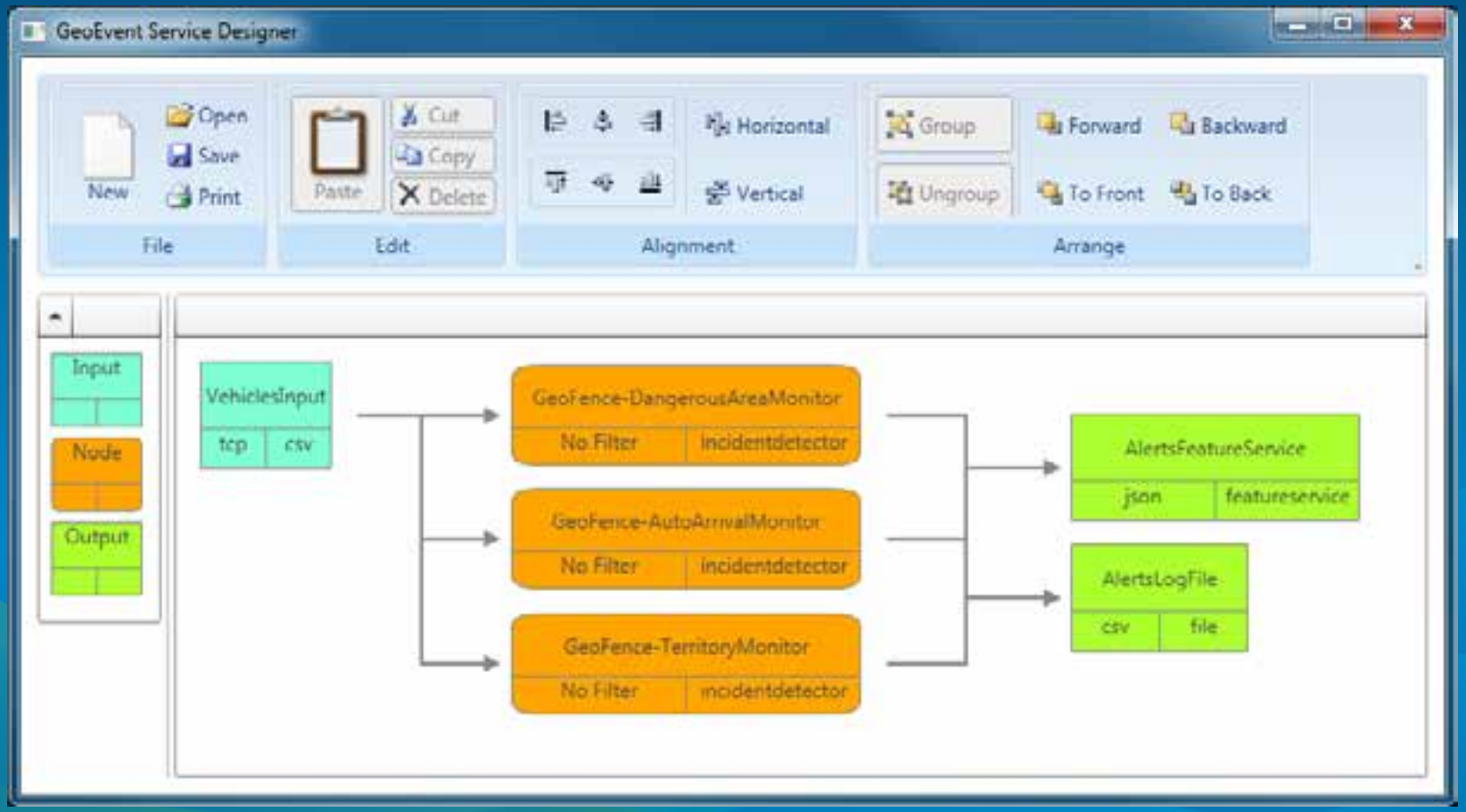
- **Each GeoEvent from the ‘VehiclesInput’ Stream:**
  - **Gets evaluated by three Incident Detectors for**
    - **is the Geometry of the GeoEvent ‘Inside’ a ‘DangerousArea/*’ GeoFence.**
    - **is the Geometry of the GeoEvent ‘Inside’ a ‘AutoArrival/*’ GeoFence.**
    - **is the Geometry of the GeoEvent ‘Outside’ a ‘Territory/*’ GeoFence.**
  - **Any Incident Detector that evaluates ‘true’**
    - **‘Starts’ a new ale or ‘Ends**



ArcGIS GeoEvent Server

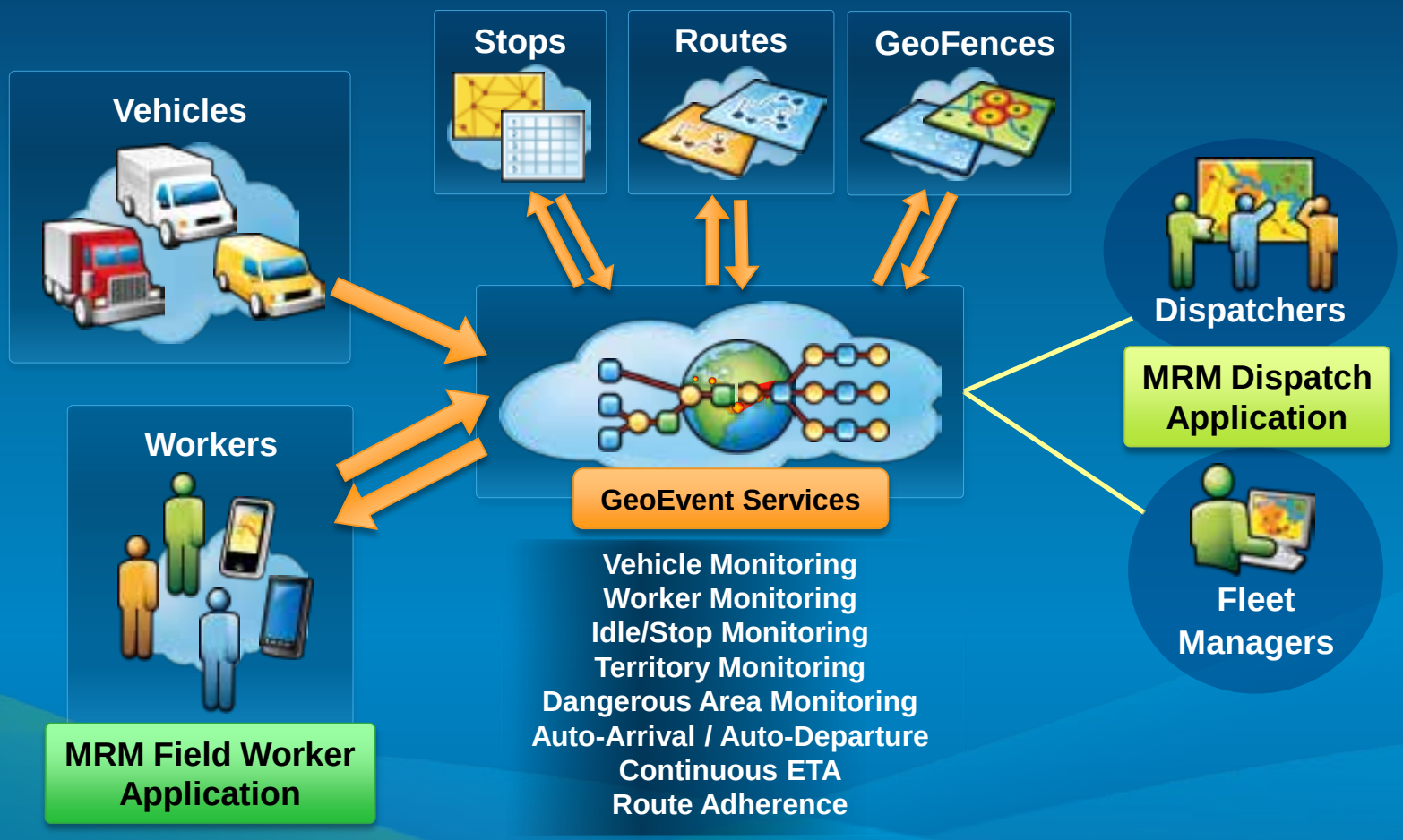
GeoEvent Service Designer

- **GeoEvent Service Designer** is an Authoring, Testing, Debugging, and Publishing Tool for GeoEvent Services.



ArcGIS GeoEvent Server

MRM Application Template Review



C2 and ISR Application Templates

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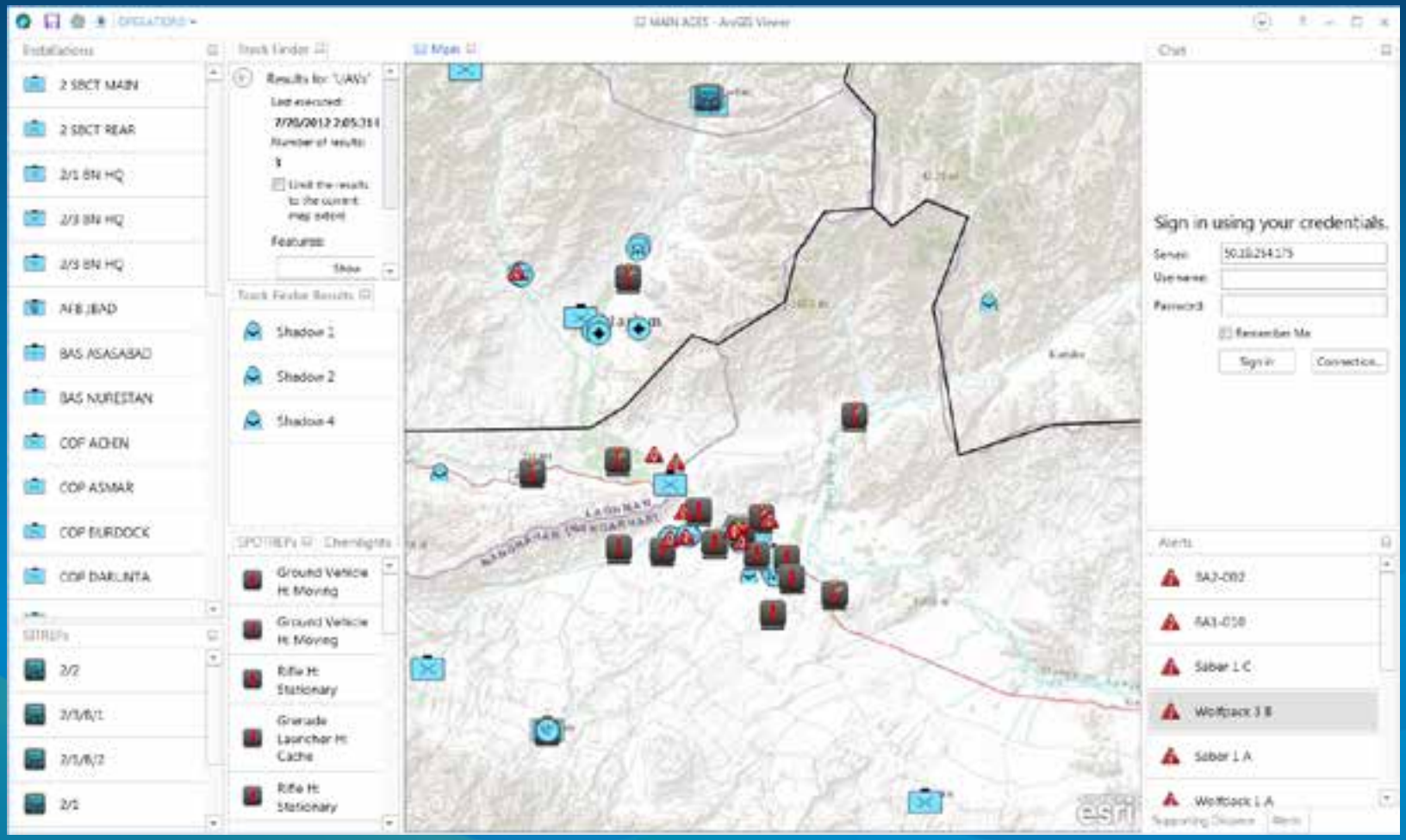
ArcGIS GeoEvent Server

Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) Application Templates

ArcGIS GeoEvent Server

Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) Application Templates



ArcGIS GeoEvent Server

Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) Application Templates

- The C2 and ISR Application Templates will be covered in more detail and demonstrated at the following session:
  - Applications of Tracking products for C2 and ISR
    - Wed, July 25, 1:30-2:00pm, Defense and Intelligence Demo Theater

- Other related sessions:
  - ArcGIS 10.1 Military Messaging, and You
    - Tue, July 24, 3:00-4:00pm, Defense and Intelligence Demo Theater
    - Wed, July 25, 3:00-4:00pm, Defense and Intelligence Demo Theater
  - Defense Logistics SIG
    - Wed, July 25, 4:30-6:00pm, Room 15 B
  - Military Planning and Operations
    - Thu, July 26, 1:30-3:00pm, Omni Ballroom A/B

ArcGIS GeoEvent Server

Summary

- ArcGIS GeoEvent Server makes it simple for ArcGIS Users to configure and use Streaming Data.

- You can quickly be up and running by utilizing the Catalog of:
  - Applications and Application Templates for AVL, MRM, C2, and ISR
  - Transports and Adapters for specific Event Stream Formats
  - GeoEvent Stream Processors

- First Release is planned for Q1 2013

ArcGIS GeoEvent Server

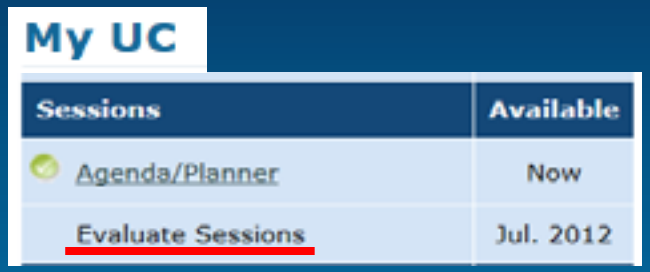
Summary

- Tracking Server 10.1 and ArcGIS Tracking Analyst 10.1 provide powerful features that you can utilize today.

- You can learn more about what's available now by attending the following sessions:
  - Leveraging Temporal Data with ArcGIS Tracking Analyst and Tracking Server
    - Wed, July 25, 10:15-11:30am, Room 28 C
  - Developing a Real-Time Web Application using the Tracking Client API for JavaScript
    - Tue, July 24, 4:30-5:00pm, Web & Server GIS Demo Theater
    - Thu, July 26, 1:00-1:30pm, Web & Server GIS Demo Theater

Steps to evaluate UC sessions

- My UC Homepage >
  "Evaluate Sessions"



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- **Thank you for attending**
- **Have fun at UC2012**
- **Open for Questions**

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