



Applying Real-Time GIS

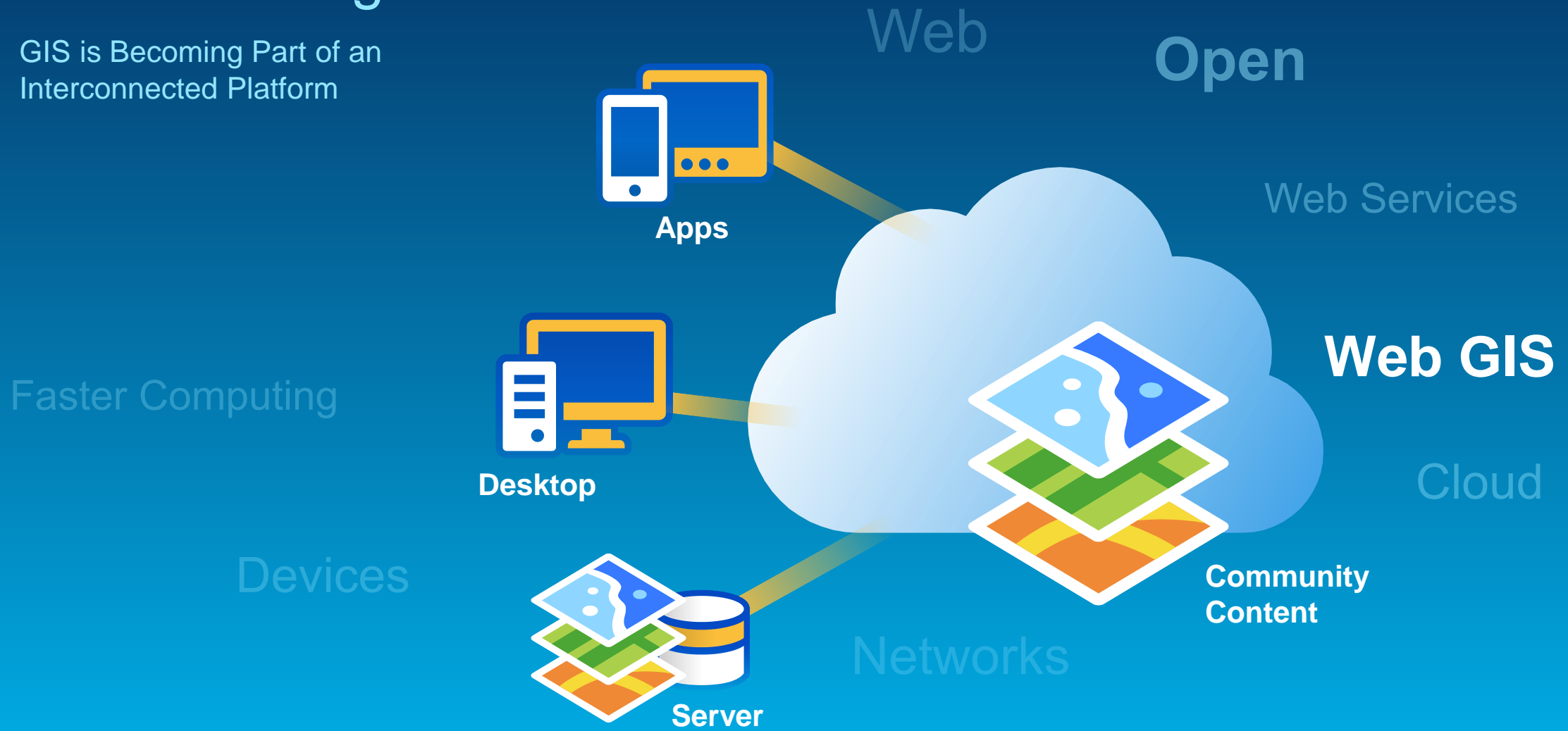
Greg Tieman
Thomas Paschke

What is GIS?

*Note: Embedded video is available at:
http://video.esri.com/watch/3623/what-is-gis_question*

GIS Is Evolving

GIS is Becoming Part of an Interconnected Platform



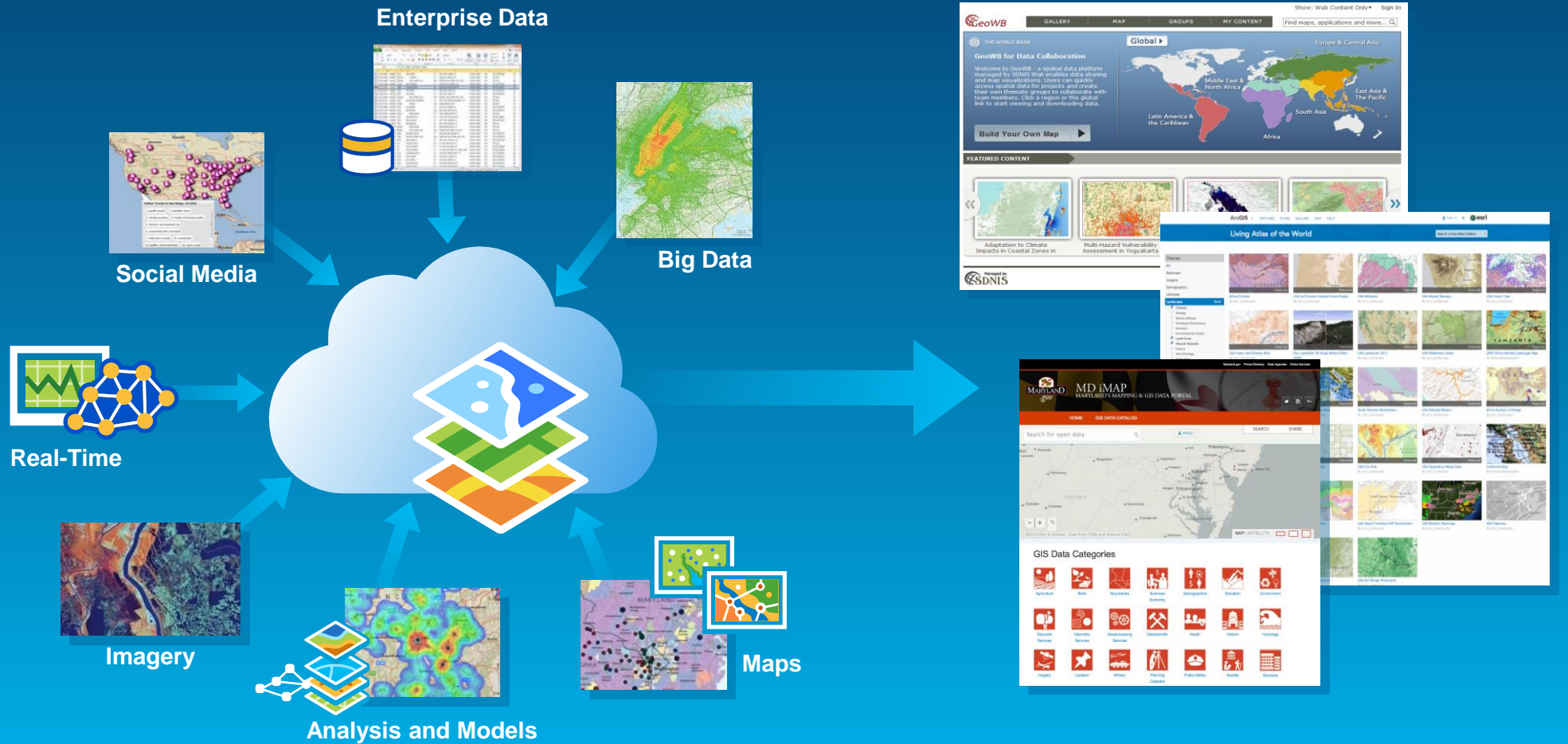
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Bringing Together Data, Technology, and People...

...Creating a Framework for Solving Complex Problems

GIS Integrates All Types of Information

Web Maps and Services



GIS Data

What has happened, what is happening, what will happen

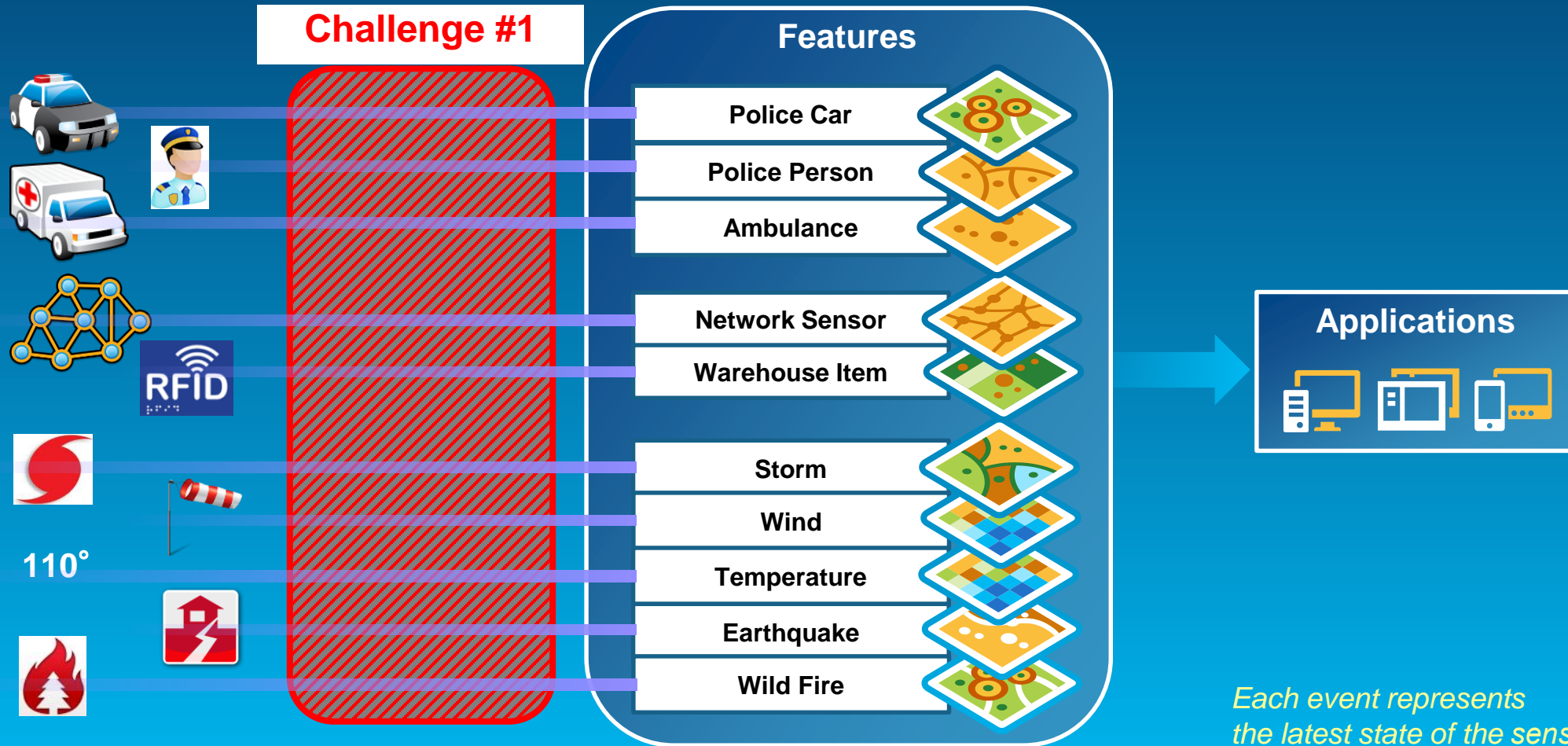


Credit: iStockphoto/chris_lemmens

The 'current' snapshot is outdated almost as soon as it's created...

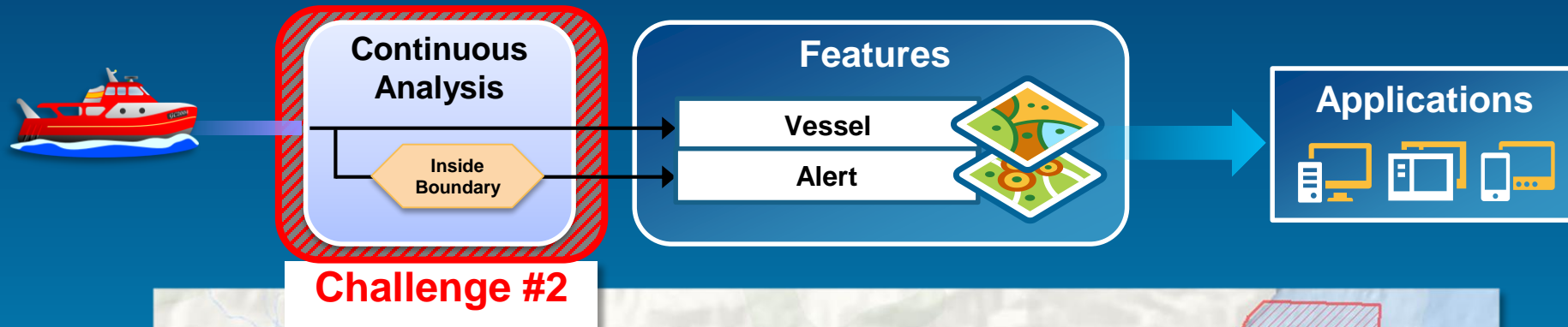
Real-Time GIS Data

Continuous stream of events flowing from sensors

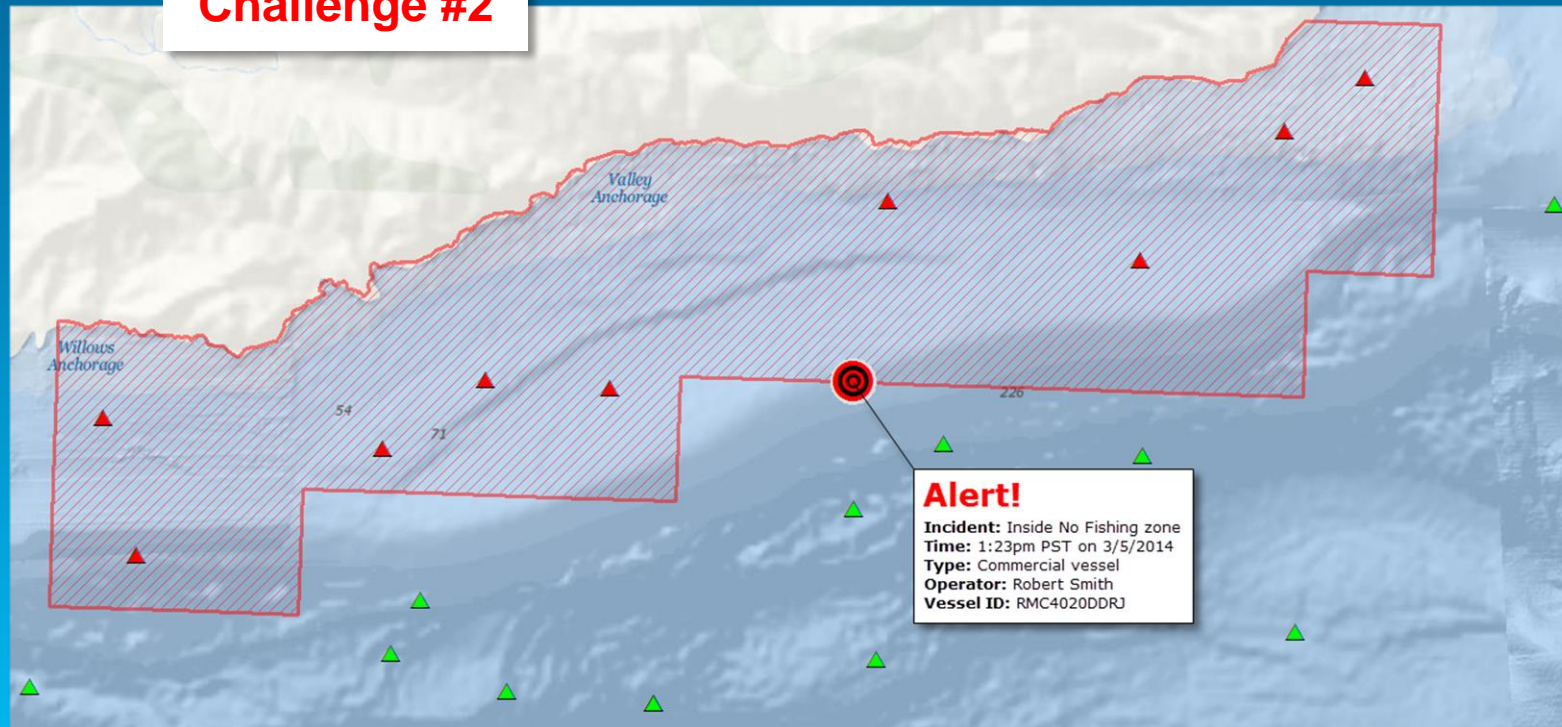


Real-Time Analytics

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

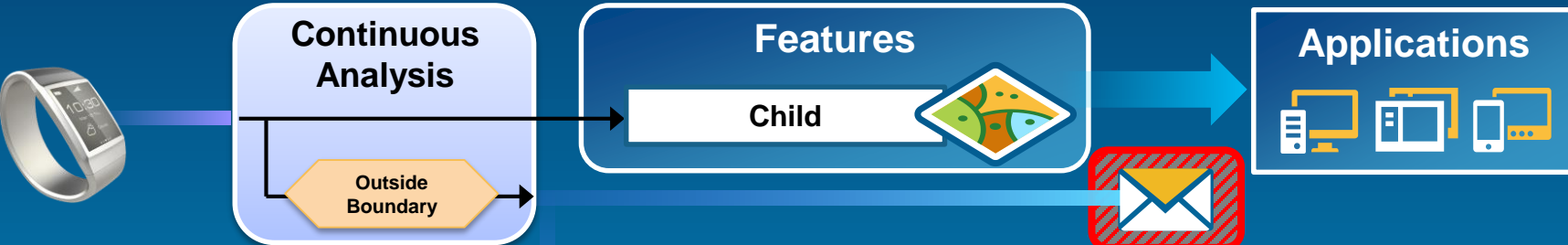


Challenge #2



Real-Time Notifications and Alerting

Tell a parent when their child leaves school property



SMS

Challenge #3

Latona Elementary School

NE 42ND ST

NE 41ST ST

NE CAMPUS PKWY

UNIVERSITY BRIDGE DR

NE 40TH ST

BURKE GILMAN TRL

NE LINCOLN WAY

NORTHLAKE FL

NORTHLAKE WAY

ADAMS LN NE

NE COWLITZ RD

COWLITZ RD NE

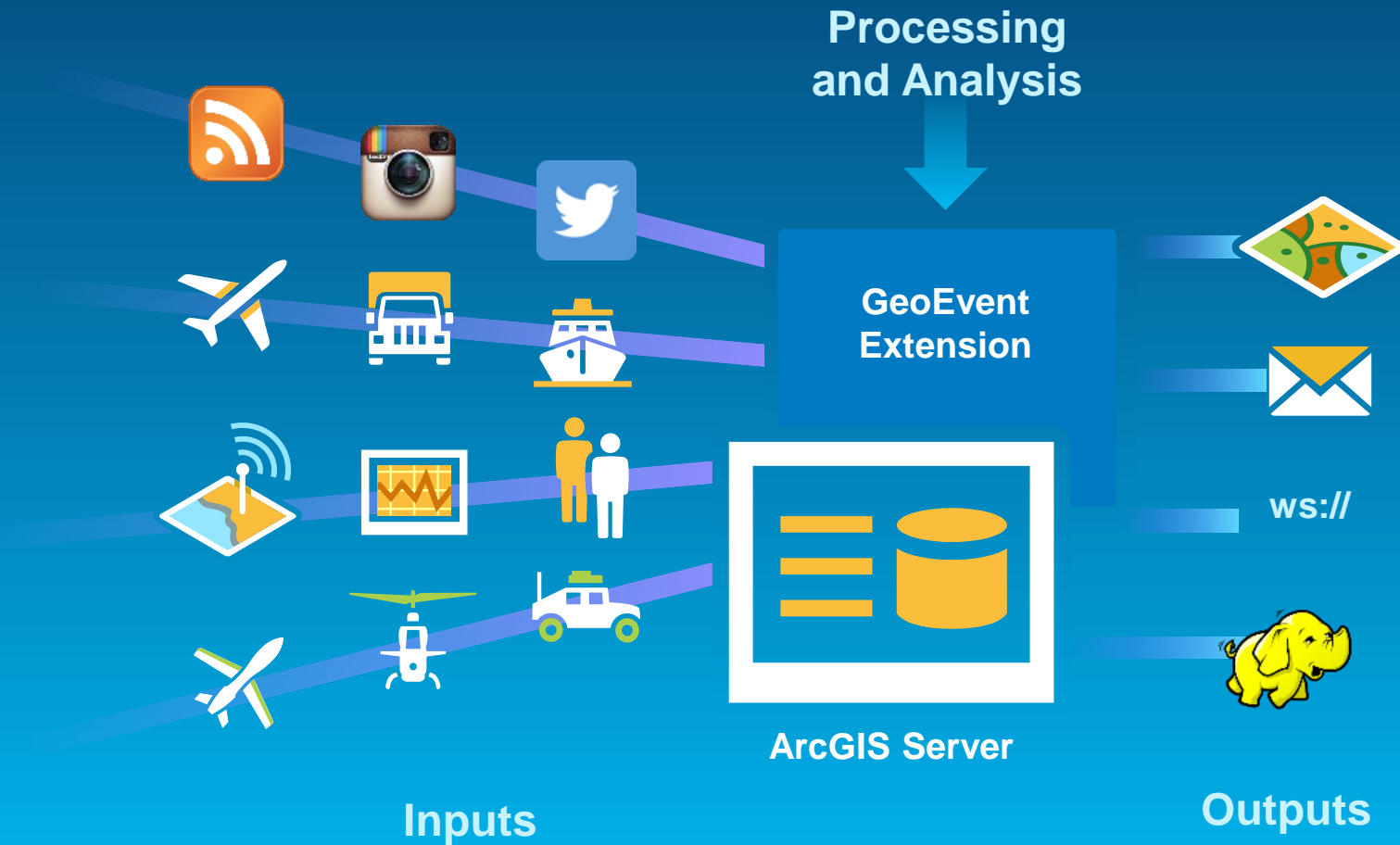
9:41 AM

Messages Alert Contact

iMessage Today 1:12 PM

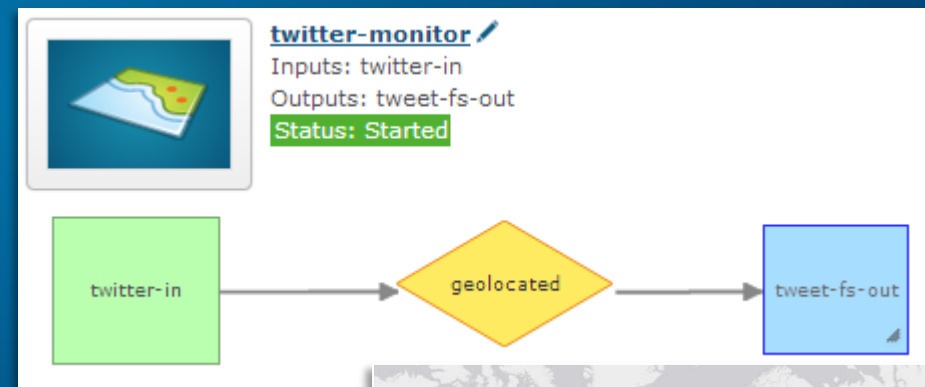
ALERT! Your child has left school property. Click [here](#) to show their current location.

Real-Time GIS with the GeoEvent Extension



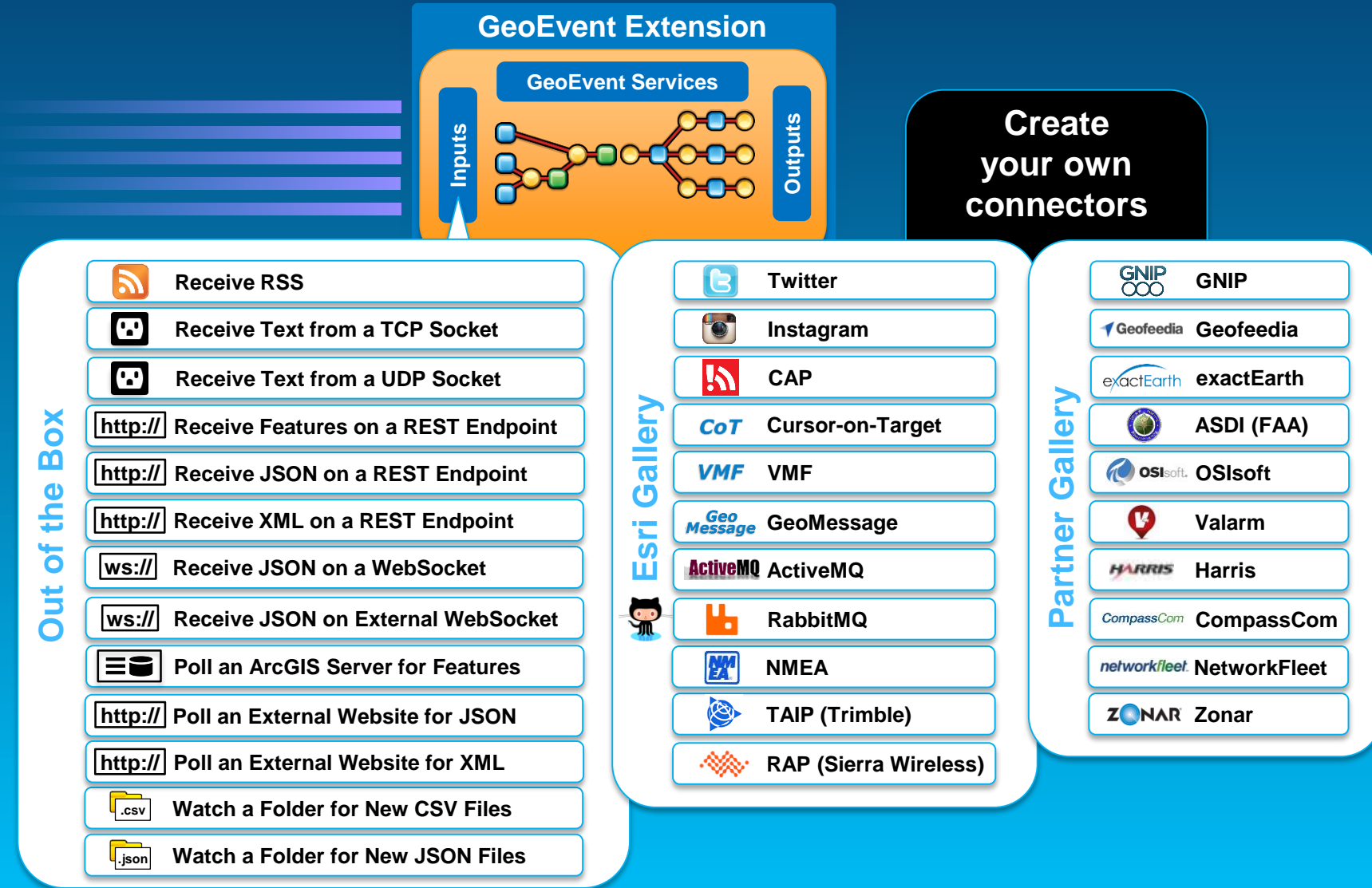
Working with Real-Time Data

Social Media Monitoring
















Receiving Real-Time Data









Input Connectors










Out of the Box

-  Receive RSS
-  Receive Text from a TCP Socket
-  Receive Text from a UDP Socket
-  Receive Features on a REST Endpoint
-  Receive JSON on a REST Endpoint
-  Receive XML on a REST Endpoint
-  Receive JSON on a WebSocket
-  Receive JSON on External WebSocket
-  Poll an ArcGIS Server for Features
-  Poll an External Website for JSON
-  Poll an External Website for XML
-  Watch a Folder for New CSV Files
-  Watch a Folder for New JSON Files

Esri Gallery

-  Twitter
-  Instagram
-  CAP
-  Cursor-on-Target
-  VMF
-  GeoMessage
-  ActiveMQ
-  RabbitMQ
-  NMEA
-  TAIP (Trimble)
-  RAP (Sierra Wireless)

Partner Gallery

-  GNIP
-  GeoFeedia
-  exactEarth
-  ASDI (FAA)
-  OSIsoft
-  Valarm
-  Harris
-  CompassCom
-  NetworkFleet
-  Zonar

Create your own connectors

Sending Real-Time Data

Output Connectors

The diagram illustrates the GeoEvent Extension architecture. At the top, a blue box labeled "GeoEvent Extension" contains an orange box labeled "GeoEvent Services". Inside this box, there are "Inputs" on the left and "Outputs" on the right, connected by a network of nodes and lines. Below this, a large white rounded rectangle lists various output connectors. To the right of this list, a black rounded rectangle says "Create your own connectors". Below that, two white rounded rectangles list connectors from the "Esri Gallery" and "Partner" categories.

GeoEvent Extension

GeoEvent Services

Inputs **Outputs**

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

Create your own connectors

Esri Gallery

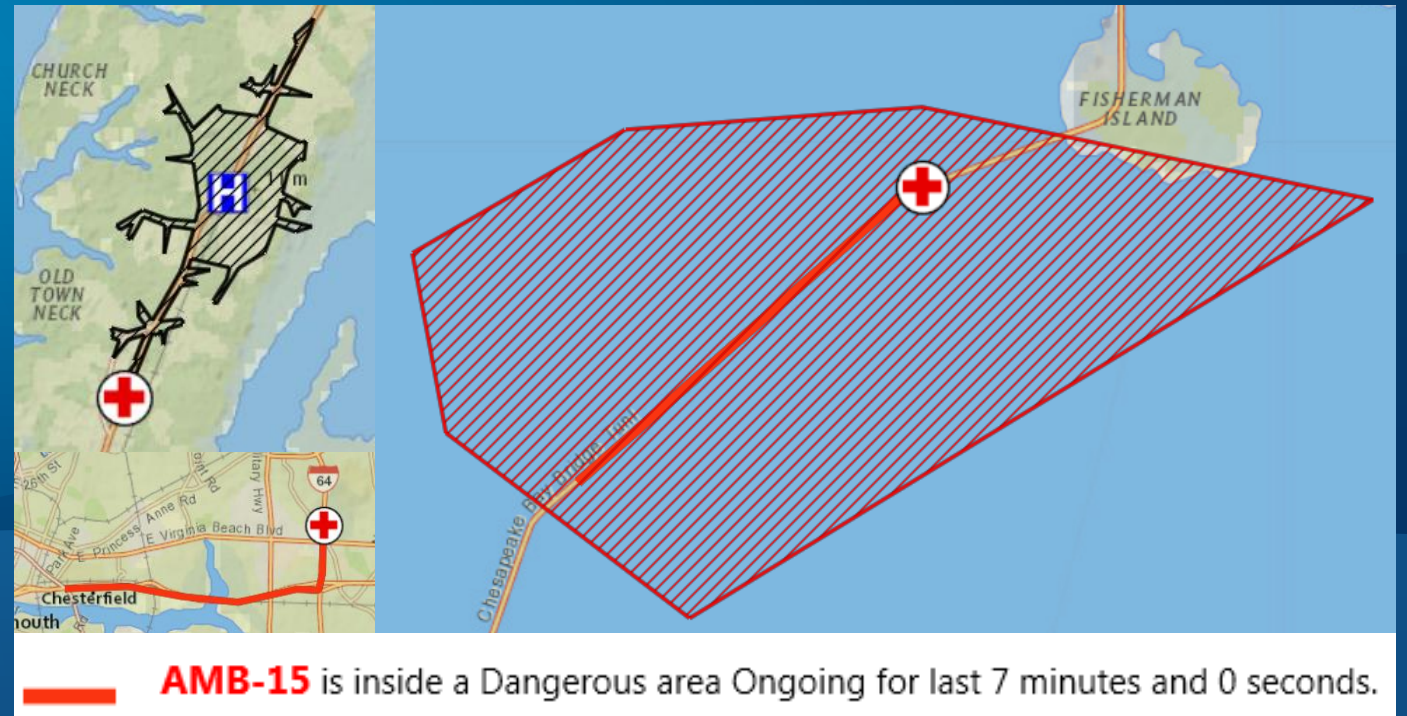
- Twitter
- ActiveMQ
- RabbitMQ
- Hadoop
- MongoDB

Partner

- agj CESIUM

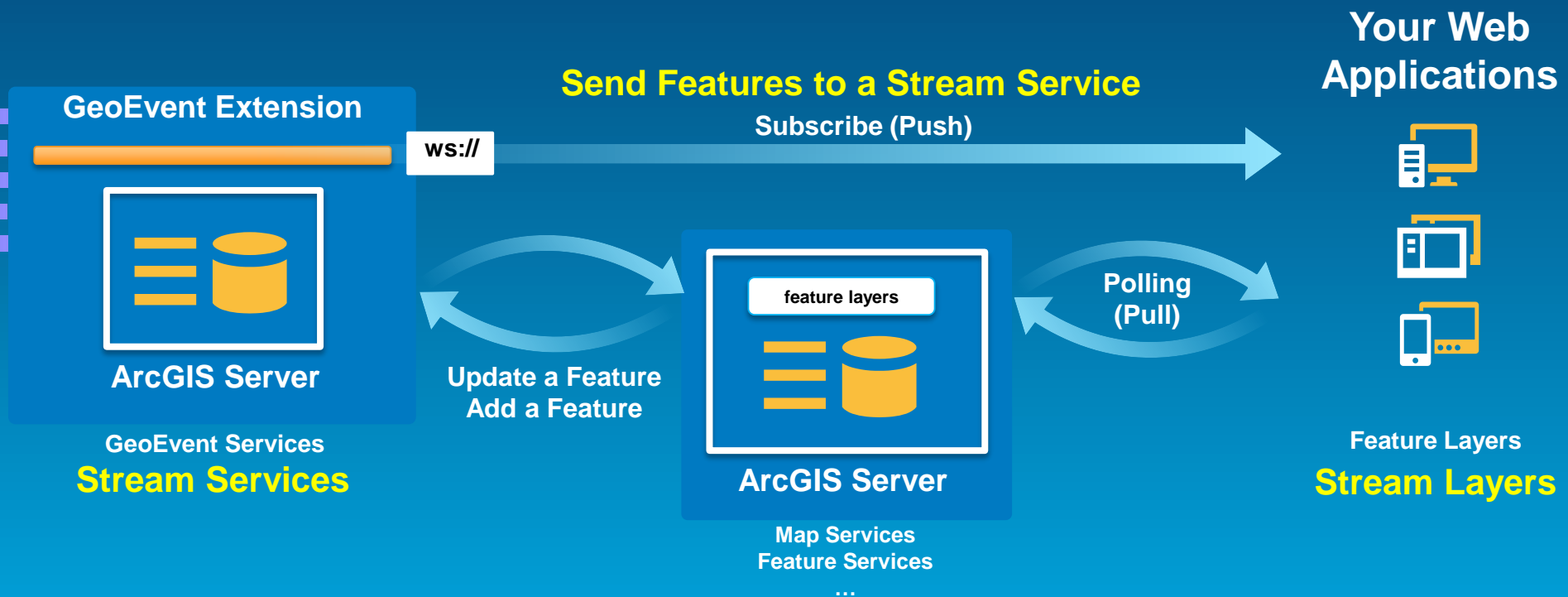
Applying Real-Time Analytics

Vehicle Monitoring



New Way to Visualize Real-Time Data in Web Apps

Stream Services



Demo

Where are you from?

Put yourself on a map

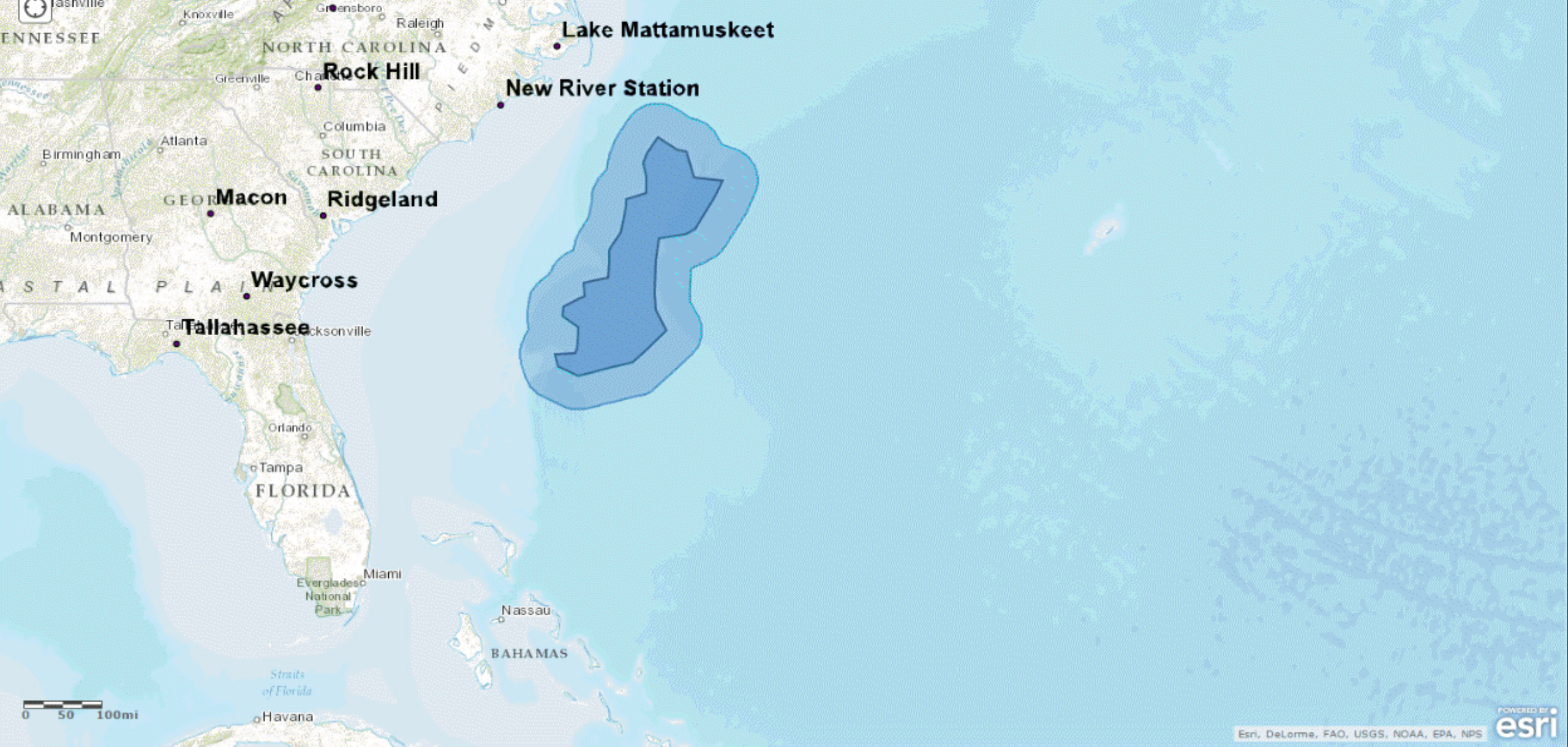
Please enter your name:

Select the US state you are from or which is your favorite

**If you want to get notified via text message,
enter your phone number (optional):**

Please use your full 10 digit number incl. the area code without dashes.

Send to GeoEvent



Real-Time GIS Example

Weather Warning



Real-Time GIS Example

Convoy Separation

Success Stories

GeoEvent Extension



Public Safety

Boston Marathon 2014



Incident Management

2014 Ironman World Championship



Local Government

Vehicle & Asset Monitoring



DONG
energy

Alternative Energy

Sensor Network Monitoring

The Internet of Things (IoT)

An emerging trend

The Internet of Things (IoT)

Everything Connected

- More things are connected to the Internet than people
- Over 16 billion devices are connected at the end of 2014 (20% more than in 2013)



Prediction: 40.9 billion devices connected by 2020

(Forbes, <http://www.forbes.com>)

Connected Vehicles

Smart Traffic



Connected Buildings

Smart Workplace



Connected Environment

Smart Agriculture



Connected People

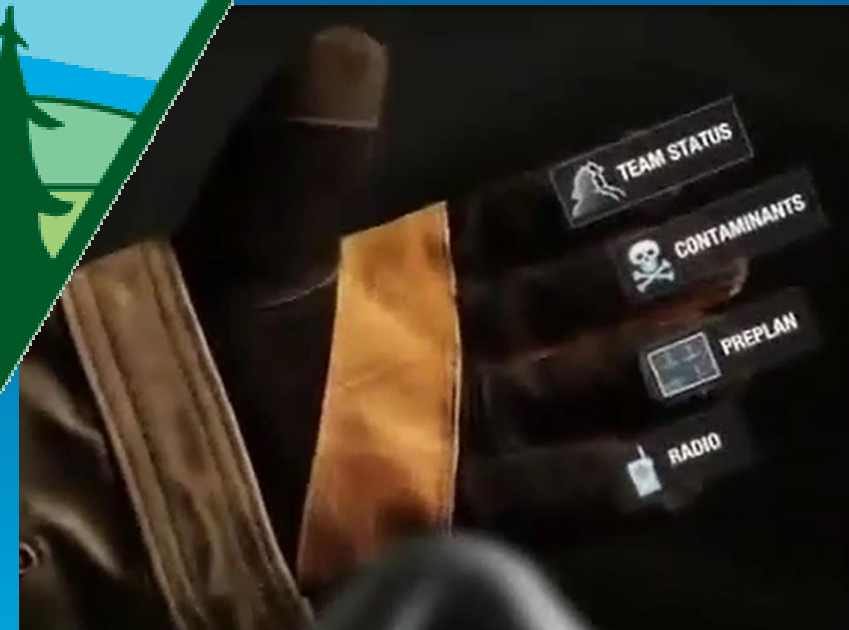
Student Proximity



A modern solution for frantic and frequent head counts...

IoT Example

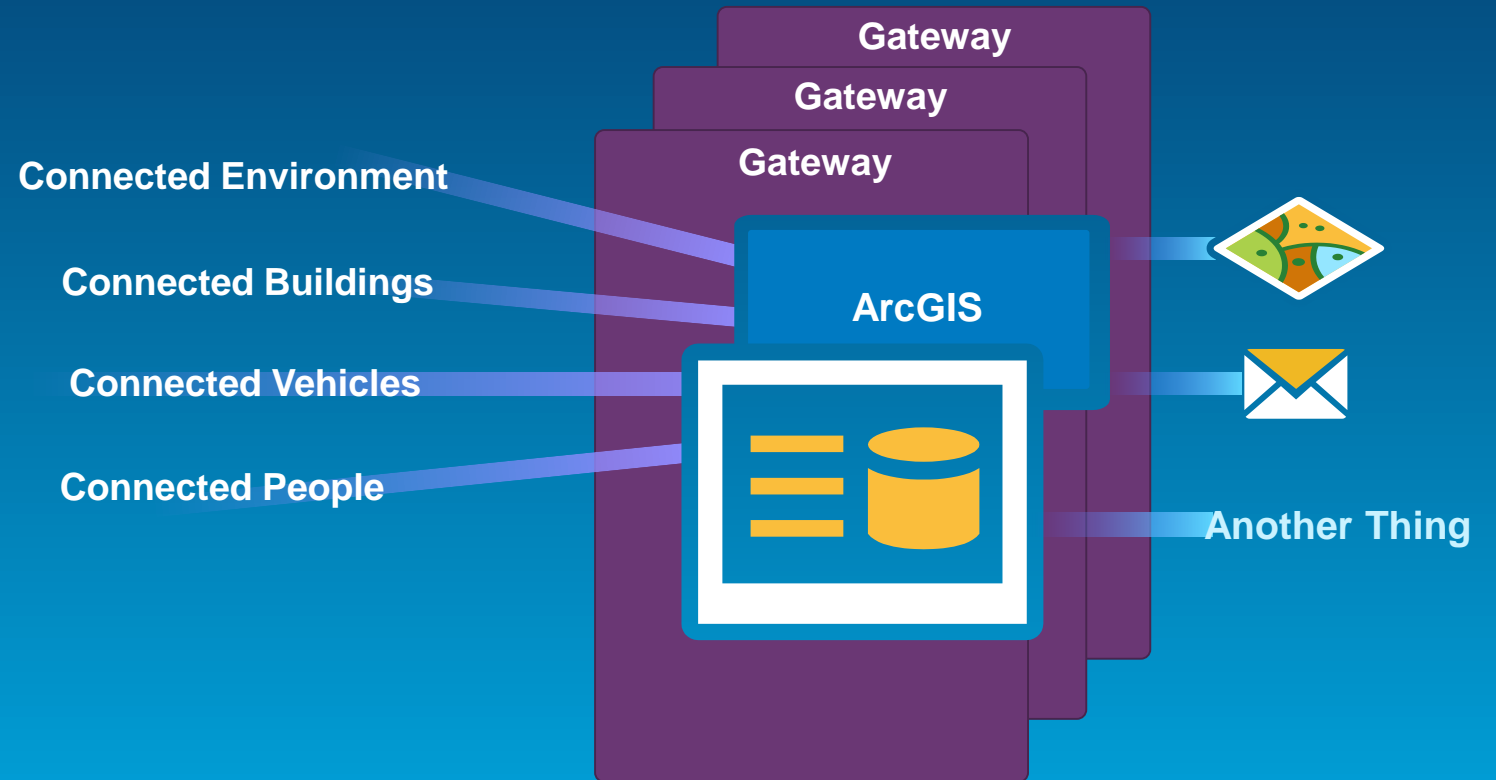
Firefighters



The Internet of Things (IoT)

Everything connected

- Geospatial reasoning is needed amongst the Internet of Things.
- Performing geospatial reasoning closer to the things can improve their ability to sense.
- When meaningful patterns are found things can notify people or even other things.



Want to learn more?

Real-Time GIS Resources

- Tutorials @ links.esri.com/geoevent

- Introduction
- Notifications
- RSS
- WebSockets
- Working with HTTP
- GeoEvent Caches
- REST Admin API

- Real-Time GIS Community @ geonet.esri.com/groups/real-time-gis

- GeoEvent Extension forum @ geonet.esri.com/community/gis/enterprise-gis/geoevent



Open ▾ Details

Tutorial - Introduction to GeoEvent Processor (ArcGIS 10.2.x)

This tutorial is the first in a series of tutorials introducing you to the capabilities of ArcGIS GeoEvent Processor for Server.

Code Sample by GeoEventTeam

Last Modified: March 22, 2014

★★★★★ (2 ratings, 0 comments, 1,311 downloads)



Open ▾ Details

Tutorial - REST Admin API in GeoEvent Processor (ArcGIS 10.2.x)

This tutorial introduces you to working with the REST Admin API and GeoEvent Processor.

Code Sample by GeoEventTeam

Last Modified: March 14, 2014

★★★★★ (1 rating, 0 comments, 372 downloads)



Open ▾ Details

Tutorial - WebSockets in GeoEvent Processor (ArcGIS 10.2.x)

This tutorial introduces you to working with WebSockets in GeoEvent Processor.

Code Sample by GeoEventTeam

Last Modified: March 27, 2014

★★★★★ (0 ratings, 0 comments, 0 downloads)



Questions/Comments?