

# GIS Deployment for Emergency Management & Special Events

Henrico County Division of Fire

Virginia Department of Emergency Management

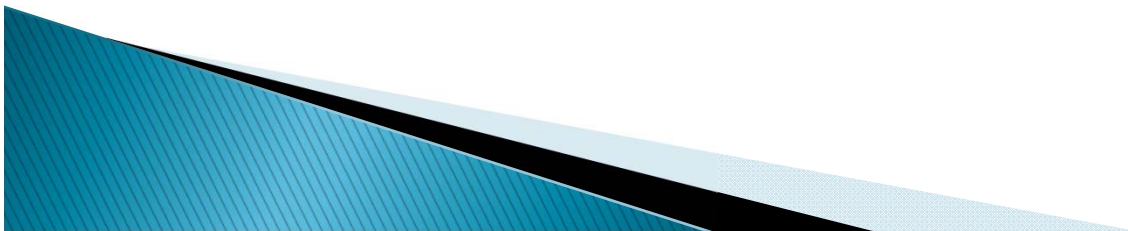


Assistant Chief Mike Cox  
Battalion Chief Jackson Baynard  
GIS Analyst Jennifer McKee, GISP



# An AGOL Case Study

- ▶ <http://videoembed.esri.com/iframe/4949/000000/width/960/1/00:00:00>



# Unified Command Goals

- ▶ Optimize resource management / response.
- ▶ Enhance event communications and information management across multiple agencies
- ▶ Provide Incident Command, Agency Management, and event personnel with a common operating picture for situational awareness and decision support.
- ▶ Manage the records of response actions at the event.



# Safety IMT Functions for Special Events

## Special Event Operations

- ▶ 3<sup>rd</sup> Leg Cycling Triple Crown
  - Tour de France
  - Giro D'Italia
  - UCI World Championships
- ▶ Large spectator capacities
- ▶ More than 50 public safety organizations involved in operations
- ▶ 7,800+ individuals report for
  - Walking teams
  - Bike teams
  - Carts
- ▶ FEMA Type 1 Incident

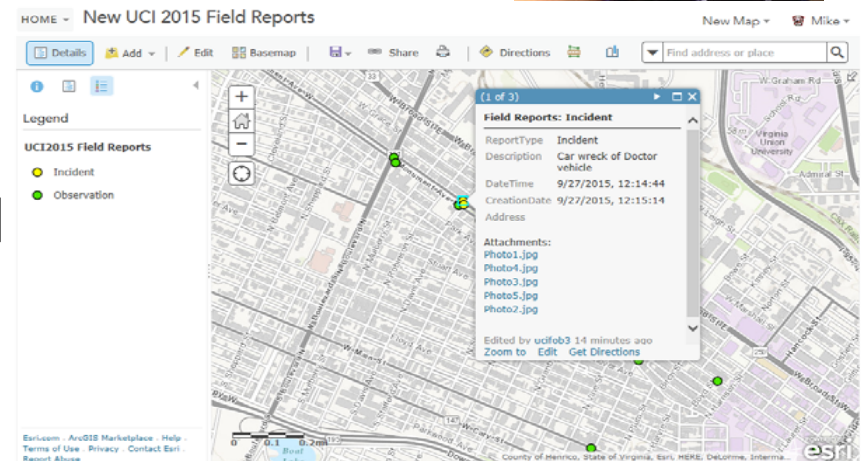
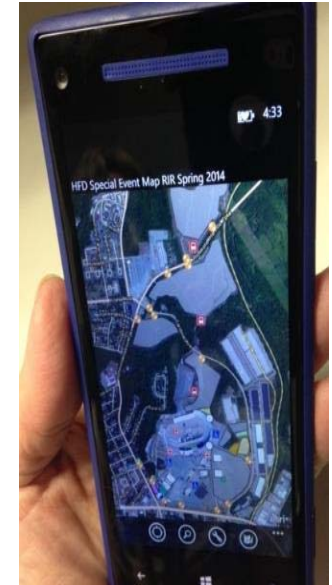


NIMS

IMT

# Incident Management Team + Technology Specialists to provide the COP

- ▶ IMT Planning – established a Technology Section Chief to address IT issues across all branches
- ▶ GIS - used symbology from Public Safety COP template
- ▶ Moved map layer datasets into the cloud via Henrico Fire AGOL Organization
- ▶ Develop component web maps and mobile apps
- ▶ Smartphone / tablets were used to communicate spatial information to/from the field





# ArcGIS Online

Basis for all mapping products

- ▶ Feature services created
  - Drag & drop ability for desktop
  - Simplified editing
- ▶ Shared data development
  - Non-GIS users participated & provided feedback
  - Engagement invested responders in product development



# Connectivity Eliminates Interoperability Problems

- ▶ Dispatch assignments consider resource type, status and location
- ▶ The Command Center is able to monitor and share dynamic views
  - Location and status of tracked teams
  - Event incident statistics
  - Information feeds from other spatial services (ex traffic and regional weather overlays)
- ▶ Scalable – CAD and Tracking for incident dispatch, Tracking for SAR, Collector for Damage Assessment





# ArcGIS Online Challenges

- ▶ Sharing across organizations
  - Feature services would not display on different orgs.' maps
  - Minor changes resulted in data disappearance
- ▶ Data Governance
  - Creating multiple versions of maps and features
  - Caused by sharing between organizations
- ▶ Non-GIS personnel use
  - AGOL organization's potential for confusion
  - Using 'map notes' for publishing
- ▶ Information Security
  - Event staff sharing without public access
  - Law Enforcement tracking limited access



# ArcGIS Online Solutions

## ▶ Creation of Super-User Accounts

- GIS Personnel upload to single account
- Multi-tiered accounts for product management

## ▶ Bulk Account Creation

- Simplified the account assignment
- Temporary
- Generic

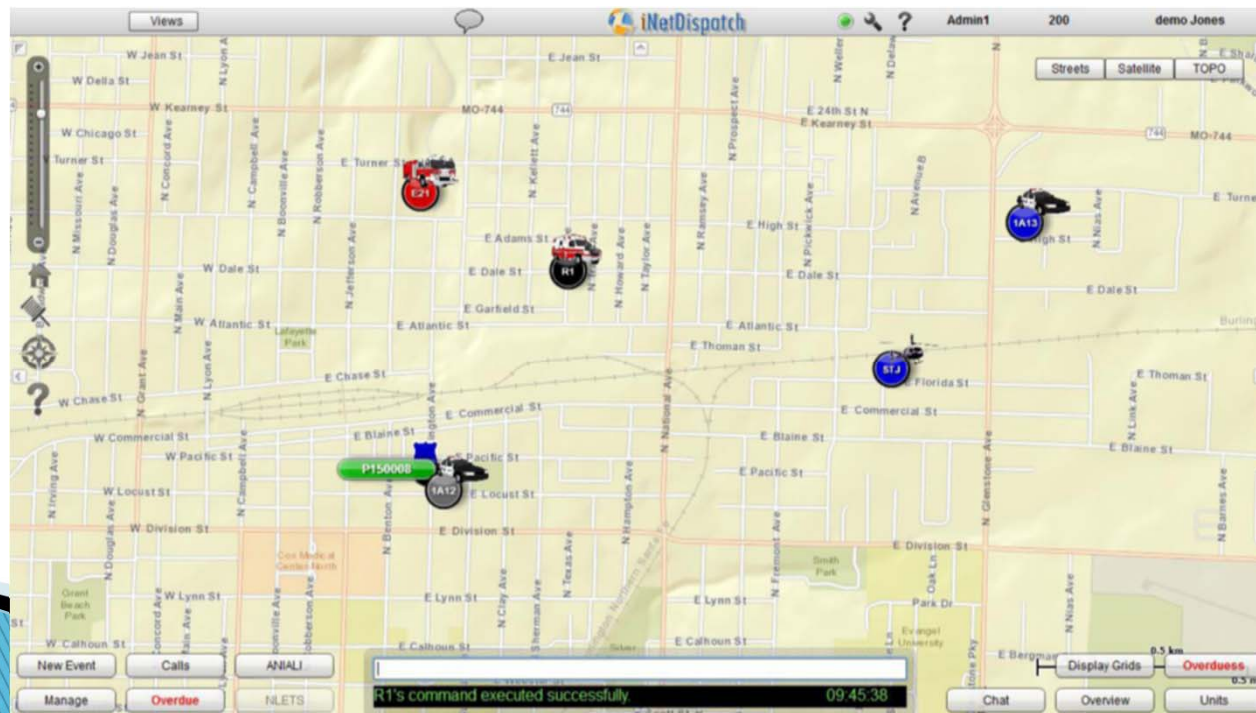
Members

Viewing:

| ▲Name                      | Username  | Last Login   | Role                                   | Action |
|----------------------------|-----------|--------------|--|--------|
| <a href="#">uci eodst9</a> | ucieodst9 | Not yet      | <input type="text" value="Read Only"/> |        |
| <a href="#">uci fob1</a>   | ucifob1   | Sep 5, 2015  | <input type="text" value="User"/>      |        |
| <a href="#">uci fob10</a>  | ucifob10  | Sep 27, 2015 | <input type="text" value="User"/>      |        |
| <a href="#">uci fob2</a>   | ucifob2   | Sep 27, 2015 | <input type="text" value="User"/>      |        |
| <a href="#">uci fob3</a>   | ucifob3   | Sep 27, 2015 | <input type="text" value="User"/>      |        |
| <a href="#">uci fob4</a>   | ucifob4   | Sep 24, 2015 | <input type="text" value="User"/>      |        |
| <a href="#">uci fob5</a>   | ucifob5   | Oct 29, 2015 | <input type="text" value="User"/>      |        |
| <a href="#">uci fob6</a>   | ucifob6   | Sep 27, 2015 | <input type="text" value="User"/>      |        |

# iNet Dispatch

- ▶ iNet Dispatch
  - Web based Computer Aided Dispatch (CAD)
  - Flexible deployment (just need an internet connection)
  - Base maps and feature services created in AGOL



# iNet Challenges

- ▶ Geofence matching of response areas between special event and normal operations dispatching
- ▶ Creating searchable common places
- ▶ Call type designations differed between jurisdictions
- ▶ Any changes to AGOL background feeds during the live event could cause the iNet feed to break



# iNet Solutions

- ▶ Including both Richmond CAD and iNet special event geofences in iNet dispatching basemap
- ▶ Export CAD common places name and import into iNet
- ▶ Used standardized (APCO) call types
- ▶ Feed secured by multi-tiered AGOL accounts preventing accidental access or changes



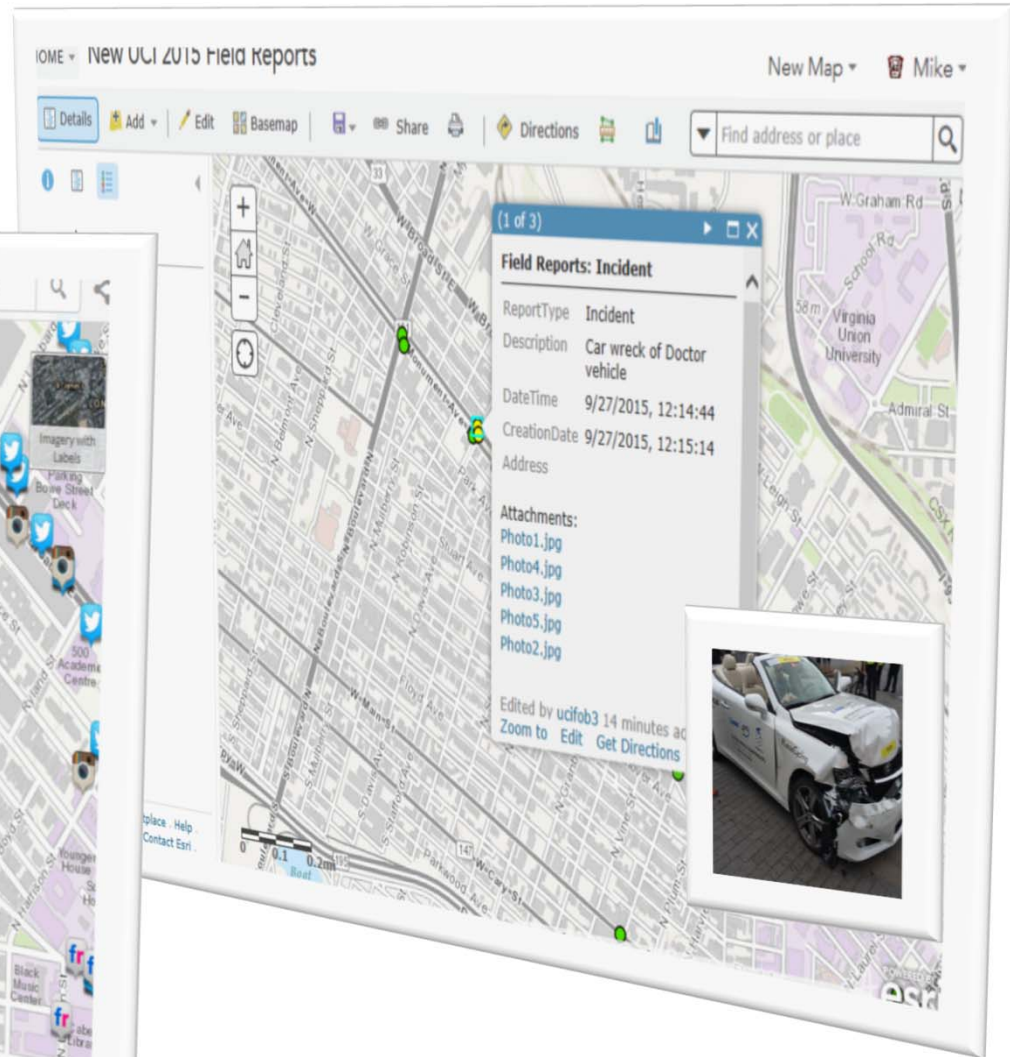
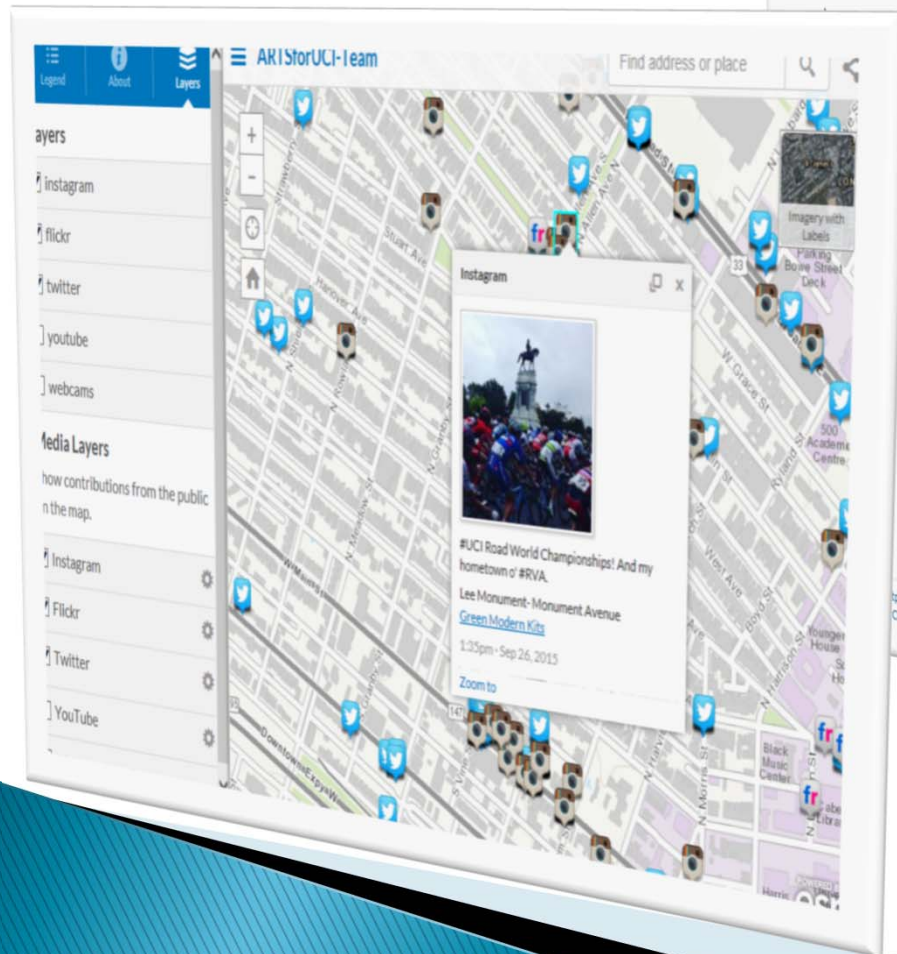
# ArcGIS Collector

- ▶ Compatible with iOS and Android
- ▶ Multimedia capable
- ▶ Populates points of interest and potential hazards
- ▶ Reporting tool for Operation Command Staff  
(e.g crowd estimates on Libby Hill)





# Common Operating Picture – Field Reports





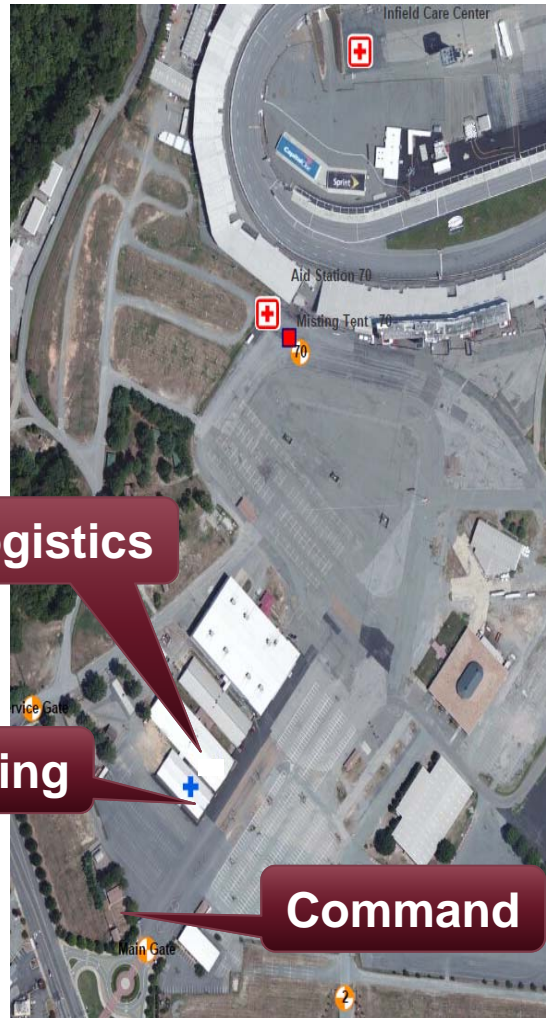
# AGOL Dashboards – Custom Views



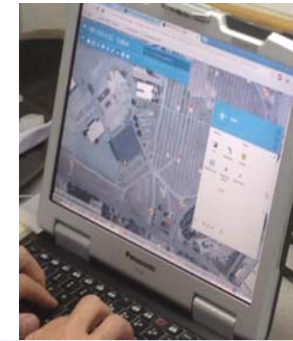
# Dashboard, Web Maps and Mobile Apps connect All Event Staff



EOC

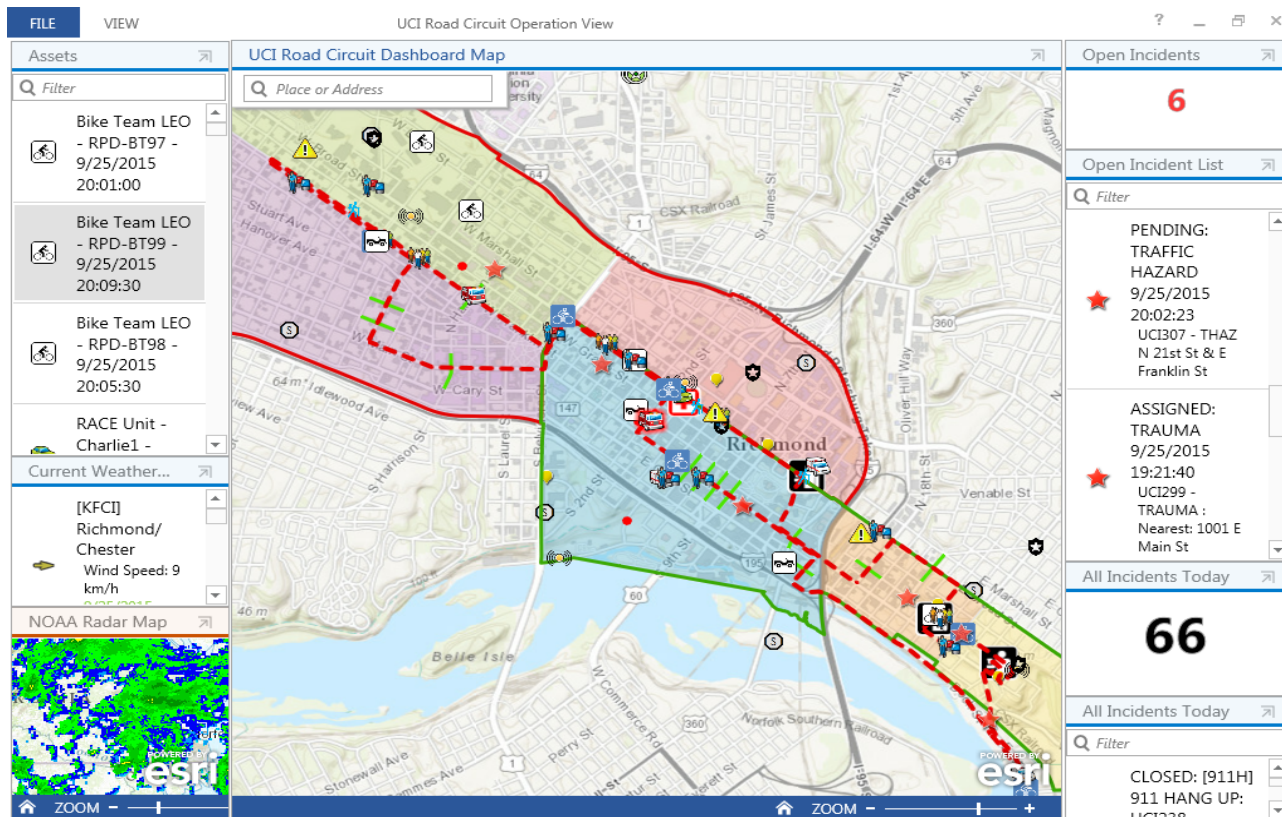


Throughout the event site



On any device!

# Successful Implementation



- ▶ Full Tracking of Response Resources Integrated with Incident Dispatch involving multiple agencies.
- ▶ Dashboards specific to Command and Dispatch
  - Ability to monitor resource demands & incident types
  - Ability to identify response team status and location

# Conclusions

- ▶ There was a successful integration of spatial technology that provided a common operating picture for all agencies and stakeholders
- ▶ The ICS structure appropriately incorporated technology professionals
- ▶ Restricting access to AGOL feature services that were consumed by iNet (if changed broke iNet feed)
- ▶ Delorme user training extremely important
- ▶ First time an event of this magnitude was hosted in our region – proven possible with lots of collaboration!





# Questions?



**Assistant Chief Mike Cox**

**cox16@henrico.us**

**Captain Jackson Baynard**

**bay08@henrico.us**

**GIS Analyst Jennifer McKee, GISP**

**jennifer.mckee@vdem.virginia.gov**