Operations Dashboard for ArcGIS: An Overview

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Mike Cox, Operations Chief, Division of Fire, Henrico County Virginia
Overview of Esri’s App Strategy
Using a Dashboard
Building and Sharing a Dashboard
Some Future Plans
Operations Dashboard in Action: Real Experience at the Richmond International Raceway
Questions
The ArcGIS Platform

Desktop
Web
Device

Portal

Server
Online Content and Services

Web GIS

Cloud

On-Premises
Foundation Apps
Integrated Within the ArcGIS Platform

• Targets everyone in the organization
• Intuitive and easy to use
• Configurable, ready to use within your ArcGIS Organization
• Release updates frequently
• Cross-platform
• Cloud and on-premises
ArcGIS comes with Apps – Running on desktops, devices, browsers

My essential mapping apps

- Collector for ArcGIS
- Operations Dashboard for ArcGIS
- Explorer for ArcGIS
- ArcGIS Viewer
- Web AppBuilder for ArcGIS
- ArcGIS Open Data
- Story Maps for ArcGIS
- Esri Maps for Office
- ArcGIS Templates

Mapping my business data

- Excel
- PowerPoint
- SharePoint
- Salesforce
- Esri Maps for
- Dynamics CRM
- MicroStrategy
- Cognos
- SAP

...Discover, make, use, and share maps across your organization
Foundation Apps
Integrated Within the ArcGIS Platform

- Decision makers
- Management

Operations Dashboard

Collector
- Field Workers

Explorer
- Executives
- Managers
- Policy makers
- Knowledge workers
- Decision makers
Using the Operations Dashboard
Operations Dashboard for ArcGIS

- Monitor day to day operations
- Manage planned and unplanned events
- Visualize key performance indicators
Operations Dashboard for ArcGIS

• Ready to use widgets anyone can configure
  - Maps, Lists
  - Bar Charts, Gauges
  - Histograms, Indicators
  - Details
• Easily shared within organization
• Extensible using WPF SDK (Windows)
Using Operation Views

- Operation Views
  - Role-based
- Widgets are dynamic and interactive
- Map provides spatial context
Creating Operation Views
Creating and Using Operations Views

Components
- Widgets
- Map Tools
- Feature Actions
- Data Sources

Dynamic, Role Based Access
- Widgets are dynamic, interactive
- Maps provide spatial context
- Create and Share Focused views...

Two Types of Views
- Single Display
- Multiple Display
The Map

• Web map plays a key role in the Operations Dashboard
  - Layers available as data sources
  - Determines frequency of data updates
  - Defines information displayed in popups
  - Offers additional capabilities

Set a refresh interval for a layer from the layer menu
Reads the layer refresh setting in your web map
Override that refresh for data sources if you want
The Map

- **Search Improvements**
  - Search against features
  - Search suggestions for geocoder
  - Search by coordinate notation
Data Sources

• Dynamic vs. static

• ArcGIS Server Services
  - Feature services
  - Map services

• Map vs. External
Working with Real-time Data

• Many sources of real-time data include:
  - Vessels (AIS), Vehicles (AVL)
  - SCADA
  - Weather
  - People
  - Social Media

• Challenges
  - How do I connect it to my apps?
  - How can I process/analyze it?
  - How do I make it available to others?
ArcGIS Server – GeoEvent Extension

- Optional Extension to ArcGIS Server 10.3 (Standard and Advanced)
- Works with Portal for ArcGIS and ArcGIS Online subscriptions
- Includes an SDK:
  - Write your own transports
  - Write your own adapters
  - Write your own processors
Operationalizing Data Flows

- Enrich non-spatial business systems
- Operationalize for non-GIS users
Roles and Publishing

- Leverage various roles within your organization
- Use ArcGIS Online/Portal to share and deploy Operation views
Sharing Operation Views
Sharing Operation Views

- **Operations Dashboard in a Browser!**
  - Single display operation view
  - All widgets, feature actions and map tools supported
  - Supported within the following browsers
    - IE 9.0+, Chrome, Firefox, Safari
    - Mobile Browsers (tablets only)
Operation Views – Best Practices

• Understand the requirements of the consumer
  - What information do they need?
  - What capabilities do they need?
  - What form factor will they use?

• Web map configuration is essential
  - Refresh interval for dynamic data only
  - Popups
  - Search
What’s Coming Next with Operations Dashboard for ArcGIS

- Stream service layers
- Time-enabled layers
- Dispatch field workers
- 3D
- More widgets…
Summary

- **Operations Dashboard excels at monitoring operations**
  - Daily or in response to specific events

- **Configurable**
  - For each role in the organization
  - Without programming!

- Easily shared with consumers

- Supports a wide variety of environments and form factors

- **Extensible**
County of Henrico, Division of Fire

Robin Patton
Applied Technology Specialist
“Applied Technology Specialist”

- **Background**
  - ArcGIS to support modeling
  - Since 1994
  - Do-it-yourself spatial data management

- **Henrico County Division of Fire**
  - Temporary GIS for Re-Accreditation
    - Census
    - Network Analyst
  - Data Driven Decisions
An Encounter with Esri Public Safety - 2/2014

- Templates!
  - Pre-Incident Planning
  - Common Operating Picture

- Richmond International Raceway
  - NASCAR Spring and Fall Events
  - Unified Command – Fire and Police
  - GIS maps proposed for COP

- ArcGIS Online

- 4/2014
Incident Management Team + Applied GIS Technology partner with Esri to provide the Richmond International Raceway COP

- IMT Planning - began working with Police to agree on the view
- Fire 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
- Smartphones could be used to communicate spatial information to/from the field
2014 Events

- Provided ‘Just In Time’ training
- Tested tracking of personal mobile devices
- Provided dashboard view of operations to Command Center
  - In-event exercise – Damage Assessment
  - Operational Briefing
Now visual georeferenced information supplements radio communications to and from the field...

- IMT Observers reporting from field
  - Incident locations and photos
  - Reporting issues – locations and photos
- COP Updates to the field
Richmond International Raceway Spring 2015 Data Plan

- **Content Management**
- **ArcGIS Online**
- **Accountability & Resource Tracking**
- **Dashboards**
- **COP and Collector**
- **COs**
- **Ambulances, carts, bike and walking teams**
Cloud Services Eliminate Interoperability Problems

- Authorized logins can access/change various operational views.
- AGOL Organizational Account Groups
  - Keep functional views discreet to functional group members
  - Allow admission of user logins from other organizational accounts
- Tracking of Fire-Rescue response resources will be fully implemented for 2015
- Dispatch assignments will consider resource status and location
- The Command Center will be 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)
County of Henrico, Division of Fire

Mike Cox
Chief of Operations
Henrico Incident Management Team

- Multi-agency team including fire, police, health, public works, utilities, rec & parks
- Deployed for any significant incident, including this FEMA “Type 2” event
- Unified Command between fire, police, and RIR
- Manages the safety, accountability, and tactical deployment of hundreds of personnel
- One Logistics section, with a check in process that covers all agencies, including the application of mobile applications and just in time training
- Requires the ability to account for and track outside resources from multiple agencies
- Utilize GIS resources during the year long planning process and during the event to maintain a common operating picture
Special Event Operations

- Spectator capacity of 98,000
- More than 50 public safety organizations involved in operations
- 1,200+ individuals report for duty on Saturday
Public Safety Service to a 48-hour city…

More than 500 sites for RV and tent camping.

Establishing a Common Operating Picture is Essential.

A midway of activities.
... with camping, tailgating, and drivers racing at nearly 200 mph.

It's not just the winners that make the news!
Dashboard View Connects Staff to dynamic data in Multiple Locations

- EOC
- Throughout the event site
- On any MDC
RIR Spring 2015 – IT Perspective

Content Management

ArcGIS Online

Accountability & Resource Tracking

Dashboards

COP and Collector

COs

Ambulances, carts, bike and walking teams
Spring 2015 Event Plans

- Full Tracking of Response Resources Integrated with Incident Dispatch

- Dashboards specific to Command and Dispatch
  - Ability to monitor resource demands
  - Ability to monitor incident types
  - Ability to identify response team status and location
Where to learn more?

Other Workshops

• **Configuring Real-Time Web Applications**
  - Mon 3:00pm-4:00pm (Hall D, Theater 3)
  - Tue 11:00am-12:00pm (Room 101)

• **ArcGIS GeoEvent Extension for Server: Best Practices**
  - Tue 1:30pm-2:30pm (Room 101)

• **ArcGIS GeoEvent Extension for Server: Applying Real-Time Analytics**
  - Tue 2:45pm-3:45pm (Room 101)

• **Web AppBuilder for ArcGIS: An Overview**
  - Mon 3:00pm-4:00pm (Room 103B)
  - Tue 5:15pm-6:15pm (Room 207B)

• **ArcGIS GeoEvent Extension for Server: Building Real-Time Web Applications**
  - Wed 1:00pm-1:45pm (Room 209A)