Geospatial Equipment Management System using ArcGIS Runtime (iOS) and ArcGIS Online

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Background

ABEL Fire Equipment

Wildfire!

Tents
Trailers
Heli-Support
Toilet/Laundry
Generators
Weed Washers
Potable Water

Background

Solution

Development

Demonstration

Summary
Challenge
Requirements

- Digital Map
- Mobile solution
- Edit attributes
- Easy data entry
- Offline Mode
- Track history
Deploy-Scan-Update

- Incident
- Resource Order
- Deployment State
Solution

Where is Trailer XYZ now?

What are the equipment currently supporting the Lake Fire?
At all times, each equipment is deployed at [where], [state of deployment], to support an incident.

Deployment

- Start Time
- End Time
- Is Current
- Location (Point)
- State of deployment
Deployment Model (temporal)

Past

- \( T_{\text{start}} \)
- Not Current
  - Start Time = \( T_{\text{start}} \)
  - End Time = \( T_1 \)

Future

- \( T_{\text{future}} \)
- Is Current
  - Start Time = \( T_1 \)
  - End Time = \( T_{\text{future}} \)

Update 1

- \( T_{\text{start}} \)
- \( T_1 \)
- Is Current
  - Start Time = \( T_1 \)
  - End Time = \( T_{\text{future}} \)

Update 2

- \( T_{\text{start}} \)
- \( T_1 \)
- \( T_2 \)
- Not Current
  - Start Time = \( T_1 \)
  - End Time = \( T_2 \)
- Is Current
  - Start Time = \( T_2 \)
  - End Time = \( T_{\text{future}} \)
Database Choice

**ArcGIS Server**
- **Enterprise Geodatabase**
  - Control over storage
  - Powerful DB Triggers
  - More functional, e.g. versioning.

**ArcGIS Online**
- **Hosted Geodatabase**
  - Existing account
  - Lower cost
  - Min. maintenance

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</table>
System Overview

Geospatial Equipment Management System

Mobile Application

Central Database

ArcGIS Online

Hosted Geodatabase

Dashboard
System Architecture

- Trailer
- Equipment ID
- Current Location
- GPS Receiver
- Mobile Application
- Central Database
- Hosted Geodatabase
- ArcGIS Online
- Dashboard

Background | Solution | Development | Demonstration | Summary
System Architecture

- **Trailer**
  - QR Code
- **GPS Receiver**
  - Current Location
- **Central Database**
  - Hosted Geodatabase
- **Mobile Application**
  - Local Geodatabase
  - Dashboard

- Equipment ID

**Background** | **Solution** | **Development** | **Demonstration** | **Summary**
System Architecture

Mobile Application

Hosted Geodatabase

Central Database

GPS Receiver

Current Location

Equipment ID

QR Code

Dashboard
Development Tools

Objective C
or
Swift

iPhone 4  iOS 7.1.2  Xcode 6

ArcGIS Runtime SDK for iOS
(Ver. 10.2.4 Oct 2014)

ArcGIS Desktop
(Ver. 10.2.2)

Operations Dashboard for ArcGIS
(Ver. 10.3)

ArcGIS Online
Organization Account

GitHub

ArcGIS iOS Samples
- Offline synchronization
- Feature Editing
- Sign in to portal
Demonstration
Synchronizes offline data
Downloads a copy of the database locally
Manual data entry
Scan for QR code
Sign out
Deletes local geodatabase
Incident

Resource Order

Description
GREY TRUCK 2K GAL

Deployment Status
Demobilized

Location
34 03 051N 117 09 043W

From
Jul 1, 2015, 1:53:35 PM

Remarks
Demonstration
Laytonville: Lodge LCA

Lake Fire

Incident A

Incident B

Incident C
Incident

Laytonville: Lodge LCA

Resource Order

Description

GREY TRUCK 2K GAL

Deployment Status

Demobilized

Location

34 03 051N 117 09 043W

From

Jul 1, 2015, 1:53:51 PM

Remarks

Demonstration
Resource Order

E123

Cancel  OK
Incident
Laytonville: Lodge LCA

Resource Order
E123

Description
GREY TRUCK 2K GAL

Deployment Status
Demobilized

Location
34 03 051N 117 09 043W

From
Jul 1, 2015, 1:53:51 PM

Remarks
Demonstration
Deployment Status

Mobilized

Demobilized

In Service

Under Maintenance

Cancel
Incident
Laytonville: Lodge LCA

Resource Order
E123

Description
GREY TRUCK 2K GAL

Deployment Status
Mobilized

Location
34 03 051N 117 09 043W

From
Jul 1, 2015, 1:53:51 PM

Remarks
Demonstration
<table>
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Pick this
Incident
Laytonville: Lodge LCA

Resource Order
E123

Description
GREY TRUCK 2K GAL

Deployment Status
Mobilized

Location
34 03 051N 117 09 043W

From
Jul 1, 2015, 2:00:56 PM

Remarks
Demonstration
Remarks

Mobilized at UoR

Cancel  OK
Incident
Laytonville: Lodge LCA

Resource Order
E123

Description
GREY TRUCK 2K GAL

Deployment Status
Mobilized

Location
34 03 051N 117 09 043W

From
Jul 1, 2015, 2:00:56 PM

Remarks
Mobilized at UoR
Every Equipment is Deployed at all times for an Incident.
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Thank you.

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