EMERGENCY HOUND MOBILE APP

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2017 Exchange Network National Meeting
Innovation and Partnership

May 15-18, 2017
Sheraton Philadelphia Society Hill Hotel
Philadelphia, Pennsylvania
#EN2017
http://www.exchangethenetwork.net/en2017
ABSTRACT

Emergency Hound is a free, open source mobile app that allows emergency responders to plan for and respond to emergencies in the field, even when disconnected from cellular networks. It is currently available for Oklahoma tribes via iTunes and the Google Play Store. This product was the result of a multi-tribal agency Exchange Network project. This presentation will provide an overview of the project and highlight some lessons learned for the development of mobile apps.
Project Background

• Exchange Network Grant awarded to Muscogee (Creek) Nation to:

1. Create a Tribal Emergency Management data standard that encompasses emergency management planning and response
2. Develop an application to allow updates in the field and back to tribal partners via EN web services
3. Include a geospatial data viewer to display available resources and incident information along with pertinent environmental data
Project Background

• Project Partners:
  o Muscogee (Creek) Nation - Lead
  o Seminole Nation
  o Citizen Potawatomi Nation
  o Kickapoo Tribe

• In coordination with:
  o Oklahoma - Office of Homeland Security
  o Inter-Tribal Emergency Management Coalition
Muscogee (Creek) Nation

• Tribal Complex in Okmulgee, OK
• Over 70,000 Tribal citizens
• Encompasses all or part of 11 counties / 4,867 sq. miles
Existing Problems

• Access to important information limited to emergency responders
• Lack of data standardization
• Need for a standards-based system to allow secure computer-to-computer interaction

How do we get information to help us answer questions and provide for better planning?
The Approach

1. Work together to develop a common tribal data standard
2. Develop an application that could:
   - Support emergency management planning and response
   - Be used in the office or in the field (even when wifi or cellular access is not available)
   - Be available on a variety of devices (laptops, tablets)
   - Make it free and open source so anyone can use it
3. Allow Muscogee Creek Nation to serve as a regional tribal “Portal” host:
   - Building on the successful model used of Open Waters for WQX data hosting
Tribal EM Data Standard

Why:

• Tribes have traditionally had little input in emergency management standards development
• Majority of the conversation has been state/federal agencies
• Tribes need a mechanism to collaborate with a system that best fits their needs
Tribal EM Data Standard

Development Approach:

• Data Standard Development covers Incident Management & Resource Management

• Used input from existing standards (e.g. EN Environmental Incidents, FEMA ICS, DHS RTLT, OK-OHS Credentialing Standard)

• Help tribes understand that their existing data management system can still be used even if tribes capture more comprehensive information

• Contains 150+ data elements
Tribal EM Data Standard

**Resources**
(CanBe equipment or teams)
- Description
- Location
- Count
- Availability
- Ownership
- Verification History

**Responders**
- Responder Identification
- Certifications Held
- Certification Dates

**Incidents**
- Description
- Key Dates / Status Updates
- Location (including impacted area, area of concern)
- Command Team (including chain of command)
- Resources (including allocation summary)
- Operational Periods
- Response Objectives
- Attachments (images, reports, etc)
Emergency Response Application

• Complete end-to-end Emergency Management Tracking solution that can be used in the field or at the office

• Provide emergency management professionals with tools to:
  o Plan for emergencies
  o Respond to emergencies
  o Communicate with emergency responders

• One solution that supports multiple tribal organizations
  o Each participating tribe has their own portal that they can administer
  o Each partner tribe manages and administers their users. Decides on which information is shared
  o Tribes have total control of their information
Offline Mobile Data Synchronization

1. Authenticate to server
2. Obtain security token, store on device
3. Download incidents and resources to mobile device
4. Enter data locally
5. Data synchronization
Mobile Application: Incident Preparation

The image shows a screenshot of a mobile application interface, specifically the Basic Resource Info section. The resource in question is a Canine Search and Rescue Team – Disaster Response. The details include:

- **Resource Type:** Canine Search and Rescue Team – Disaster Response
- **Count:** 1
- **Unit:** team
- **Description:** Member of East Oklahoma Canine Search and Rescue Dogs.
- **Status:** Available
- **Jurisdiction:** Muscogee Creek Nation
- **Data Sharing:** All Jurisdictions
- **Latitude:** 40.02459
- **Longitude:** -74.76560
- **Last Verified:** 09/29/2015 09:10 PM Doug Timms

The Detailed Info section includes:

- **Personnel - (Dog Team):**
  - 3 handlers
  - 13 dogs
  - Tailoring, Cadaver (Land and Water) and Air Scent
Mobile Application – Incident Preparation

- Develop and maintain inventory of resources
  - Integrated with FEMA web services for standardized resource types
- Maintain listing of emergency responders & updated credentials
  - In coordination with OK Department of Homeland Security NIMS Credentialing Standards
Mobile Application– Incident Response
Mobile Application – Incident Response

- Log initial incident info
- Map out incident:
  - Identify nearby environmental concerns (integration with EN web services)
  - Plot impacted & affected areas
- Organize Incident Command Team
- Notify nearby responders through app (phone / text message)
- Manage incident objectives, planned actions, operational periods, status updates
- Onsite picture/video logging
System Demo
Technology Stack

Web
- UI Layer: HTML, CSS
- Presentation Logic: Razor, ASP.NET MVC
- Data Access Layer: Custom Data Access Classes, Entity Framework 5.0
- Business Layer: Business Services (C#)
- MS SQL Server

Mobile
- UI Layer: HTML, CSS
- Presentation Logic: Jquery.js, Bootstrap.js
- Data Access Layer: Jquery.js, DataSync.js, Bootstrap.js
- Business Layer: Angular.js
- Mobile: Runs on IOS & Android (enabled by Visual Studio Tools for Apache Cordova)
Open Source Solution

- **Source code**: source code available via GitHub:
  - [https://github.com/open-environment/emergency-hound](https://github.com/open-environment/emergency-hound)

- **Free redistribution**: no restrictions for others to give away or sell the software

- **Derived works**: allowed but must remain open source

- **No discrimination**: license available to all (e.g. no restrictions for gov’t agencies or commercial vendors)
Mobile Development Challenges

• **Web development not equivalent to mobile dev effort**
  - Some features require the same effort...
  - ...BUT some require much more effort in mobile
  - It’s not always obvious which requirements your customers have will translate into
  - **Aspects to Consider:**
    - **Cross Platform Compatibility:**
      - Tools available that bridge the gap between Apple/Android, but they don’t solve 100% of compatibility issues
      - Platforms must be tested separately
      - May find yourself having to deal with device-level support issues
    - **Offline data access:**
      - Requires offline data storage (need to design/build/support both server and client storage mechanism)
      - Data synchronization complexity
    - **User Notification:**
      - In web, commonly handled with simple emailing module
      - In mobile, need to decide: email or in-app notifications. Both require additional effort and possibly 3rd party (paid) integrations plus custom coding for each platform (since Apple and Android handle notifications separately)
    - **Distribution Mechanism:**
      - Google Play Store / iTunes publishing introduces another player to the development effort
      - Ongoing Maintenance to keep compatible with standards
For More Information

• **Newsletter:**
  http://www.emergencyhound.com

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