

Environmental Information



EN2015

Tribal Emergency Response Application: Emergency Hound

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Supporting the Business of Environmental Protection

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<http://www.exchangenetwork.net/en2015>

ABSTRACT

Emergency Hound (a free, open-source mobile app) is being developed using Exchange Network technologies that allows emergency responders to plan for and respond to emergencies in the field, even when disconnected from cellular networks. This project is a result of a multi-tribal agency Exchange Network project.

Project Background

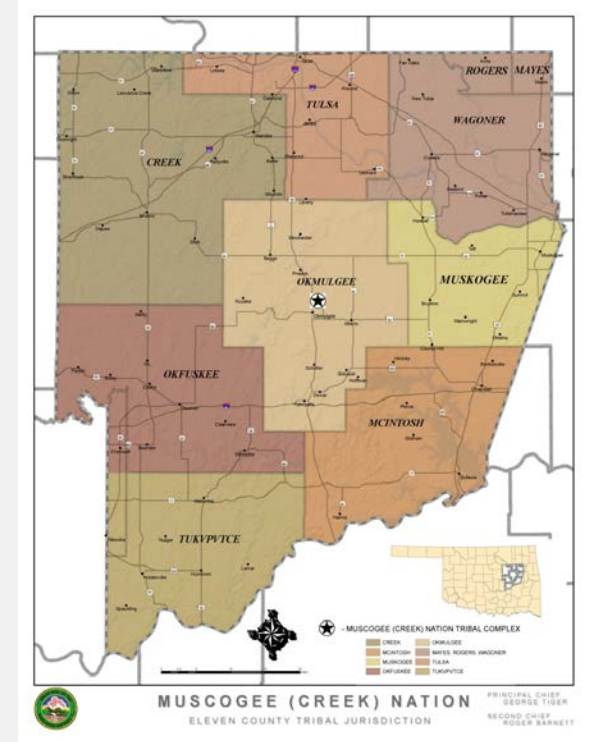
- Exchange Network Grant awarded to Muscogee (Creek) Nation to:
 1. Create a Tribal Emergency Management **data standard** that encompasses emergency management planning and response
 2. Develop an **application** to allow updates in the field and back to tribal partners via EN web services
 3. Include a **geospatial data viewer** to display available resources and incident information along with pertinent environmental data

Project Background

- Project Partners:
 - Muscogee (Creek) Nation - Lead
 - Seminole Nation
 - Citizen Potawatomi Nation
 - Kickapoo Tribe
- In coordination with:
 - Oklahoma - Office of Homeland Security
 - 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



Current Problems

- Access to important information is 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

Emergency Management Planning:

Resources

(Can be equipment or personnel)

- Description
- Location
- Count
- Availability
- Ownership
- Verification

Responders

- Responder Identification
- Certifications Held
- Certification Dates

Tribal EM Data Standard

Emergency Management Response:

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
- Actions Taken
- Communication Plan
- Medical Plan
- Safety Plan
- Damage Assessment
- Attachments (images, reports, etc)

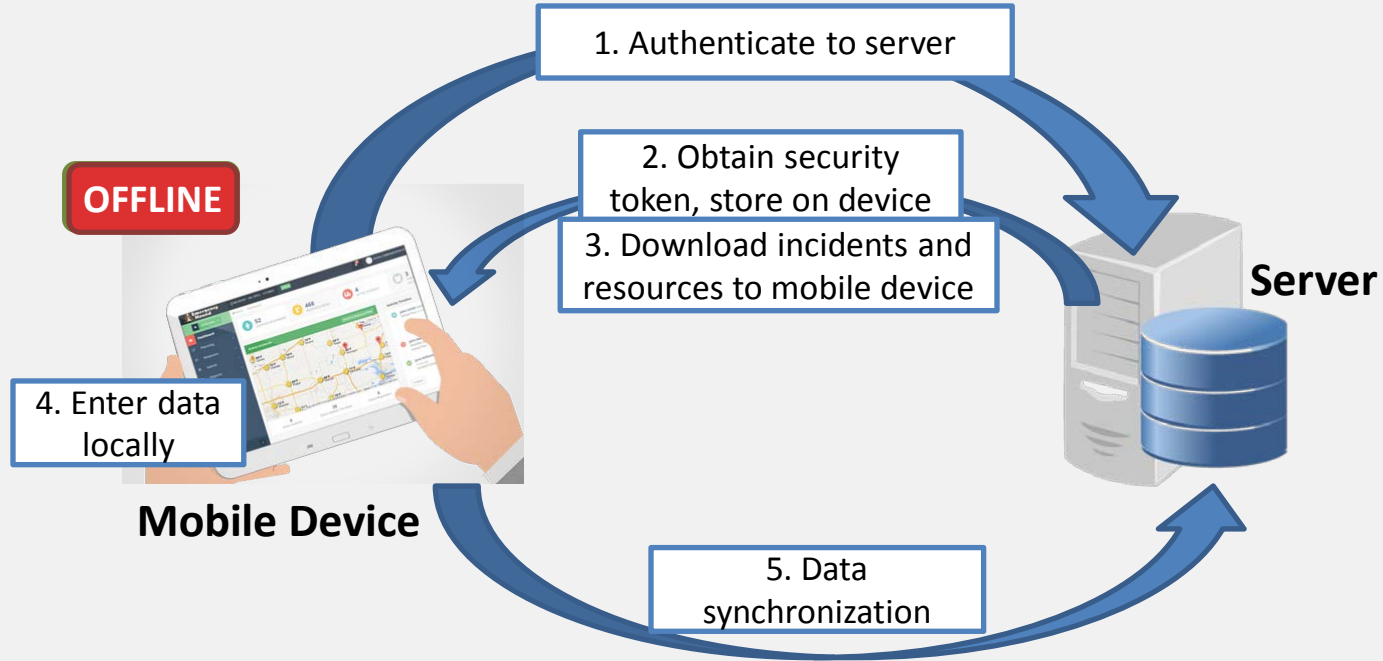
Tribal EM Data Standard

Tribal Emergency Response Data Standard																		
ID	Data Group	Data Element Name	Definition	Data Type	Lookup Values / Remarks	FEMA ICS Mapping												
						201	202	203	204	205	206	207	208	209				
1	ResourceInventory	<<section heading>>	Describes a resource that is included in a resource inventory. Root level data block															
1.1	ResourceInventory	ResourceIdentifier	Unique number assigned to the resource.	string														
1.2	ResourceInventory	ResourceType	Type of resource	string	Reference FEMA Resource Types. (https://rttc.ptaccenter.org)													
1.3	ResourceInventory	ResourceCount	Number of resources available	integer														
1.4	ResourceInventory	ResourceUnit	Unit of resource referenced in resource count.	string														
1.5	ResourceInventory	ResourceDescription	Description of resource.	string														
1.3	ResourceInventory	ResourceJurisdiction	Jurisdiction that owns or maintains possession of the resource.	string														209-20
1.6	ResourceInventory	ResourceLatitude	The latitude where the resource is located.	decimal	Provide in decimal degrees													
1.7	ResourceInventory	ResourceLongitude	The longitude where the resource is located.	decimal	Provide in decimal degrees													
1.8	ResourceInventory	ResourceSharingTier	Indicates the level that information about this resource will be shared. Used to indicate whether a jurisdiction will share information about this resource with other jurisdictions.	integer	0 = no shared outside jurisdiction 1 = shared with selected jurisdictions 2 = shared with all other jurisdictions													
1.9	ResourceInventory	FemaNimsType	Identifies the level of complexity of the resource, using FEMA NIMS standard Typing conventions.	string	• Type 1 • Type 2 • Type 3 • Type 4 • Type 5													
1.10	ResourceInventory	ResourceStatus	The current status of the resource	string	• Available • In Transit • Unavailable • Decommissioned													
1.11	ResourceInventory	LastVerifiedDate	The most recent date that the resource has been verified/audited.	datetime														
1.12	ResourceInventoryDetails	<<section heading>>	For a particular inventoried resource, provides detailed information about the attributes of the resource. The attributes that are valid will vary depending on the type of resource. Valid attributes should be based primarily on FEMA's NIMS Resource Typing standard. 0-to-many ResourceInventoryDetails block per 1 ResourceInventory block															
1.12.1	ResourceInventoryDetails	ResourceComponent	The particular attribute of a resource. For example, Fuel Capacity, Weight, Gross Power, etc)	string														
1.12.2	ResourceInventoryDetails	ResourceComponentUnit	The unit of measure that the component is measured in.	string														
1.12.3	ResourceInventoryDetails	ResourceComponentValue	Value of the resource component. (For example 166, when measuring the Fuel Capacity of a resource in units of gal/hr)	string														

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:
 - Plan for emergencies
 - Respond to emergencies
 - Communicate with emergency responders
- One solution that supports multiple tribal organizations
 - Each participating tribe will have their own portal which they will administer and maintain
 - Each partner tribe manages and administers their users. Decides on which information is shared
 - Tribes have total control of their information

Offline Mobile Data Synchronization



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 Preparation

The screenshot displays the 'Emergency Hound' mobile application interface. At the top, the header includes the logo, the text 'Okmulgee Tornado', a status indicator 'online', and a user profile for 'doug.timms@open-environment.org'. A vertical sidebar on the left contains navigation icons for Home, Resources, Edit Resource, Dashboard, Planning, Search, Settings, and Documents. The main content area is titled 'Basic Resource Info' and contains the following fields:

- Resource Type:** Canine Search and Rescue Team – Disaster Response (with a help icon)
- Count:** 1
- Unit:** team
- Description:** Member of East Oklahoma Canine Search and Rescue Dogs.
- Status:** Available (dropdown)
- Jurisdiction:** Muscogee Creek Natk (dropdown)
- Data Sharing:** All Jurisdictions (dropdown)
- Latitude:** 40.02459 (with a map icon)
- Longitude:** -74.76565
- Last Verified:** 08/26/2015 09:10 PM Doug Timms

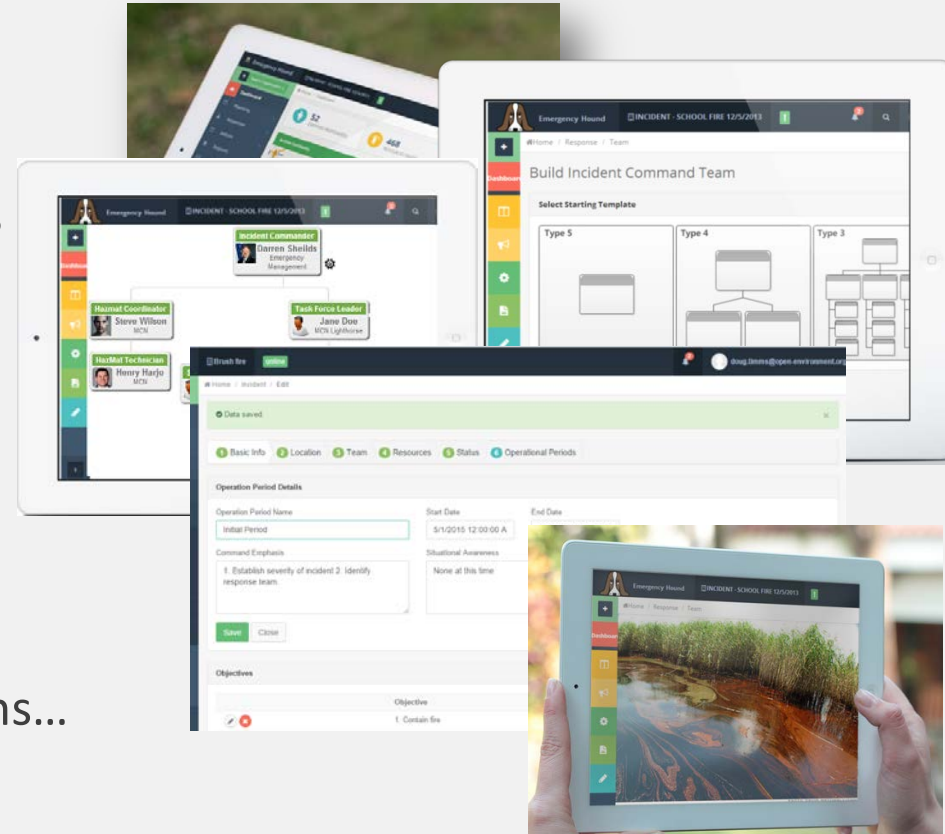
At the bottom of the 'Basic Resource Info' section, there are two buttons: 'Verify' (yellow) and 'Show Verification History' (teal). Below this is the 'Detailed Info' section with three text input fields:

- Personnel - (Dog Team):** 3 handlers
- Personnel - (-):** 13 dogs
- Team - (Knowledge and Equipment):** Tailing, Cadaver (Land and Water) and Air Scent

At the very bottom of the form, there are 'Close' and 'Save' buttons.

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:
 - Check-in / check-out
- Manage incident objectives, planned actions, operational periods, status updates, health and safety briefings, situational summaries, command emphasis, hazardous material concerns...
- Onsite picture/video logging



Mobile Application- Incident Response

The screenshot displays the 'Emergency Hound' mobile application interface. At the top, the header includes the 'Emergency Hound' logo, the incident name 'Okmulgee Tornado', and a status indicator 'online'. A navigation bar below the header shows a sequence of steps: 1 Basic Info, 2 Location, 3 Team, 4 Resources, 5 Status, and 6 Operational Periods. The 'Location' step is currently active.

The main content area is titled 'Incident Location' and features a satellite map of the incident site. A brown shaded area on the map represents the 'Impacted Area', which is outlined with a white dashed line. A red circle highlights a specific location on the map. A legend on the right side of the map provides options for editing the map, including 'Location', 'Impacted Area', and 'Threatened Area'. A 'Save Impacted Area' button is also visible.

Below the map, there is a form for 'Location Description' with the following fields:

- Location Description: Southwest of city, smoke impacting roads south of Rt. 33 and west of Rt 75.
- City: Okmulgee
- County: Okmulgee
- State: OK
- Latitude: 35.95716
- Longitude: -96.16521

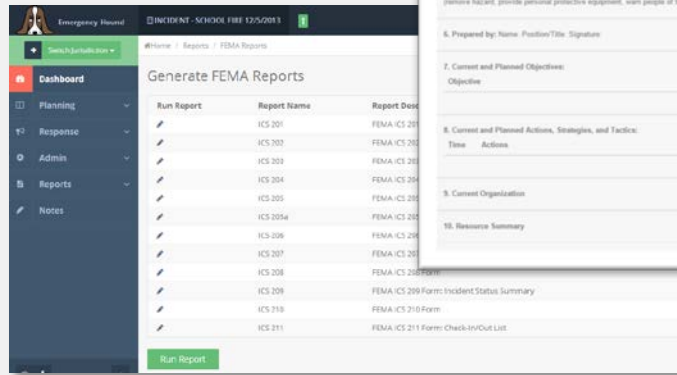
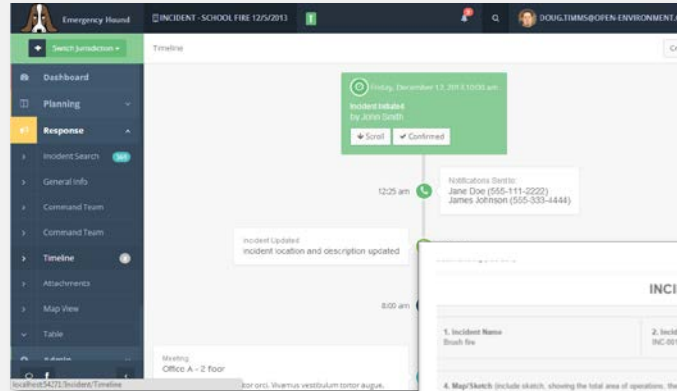
The 'Impacted Area' section shows:

- Impacted Area: Area = 1009.38 acres
- Coordinates: (lat: 35.979393295972, lng: -96.16779327392578), (lat: ...)

At the bottom of the form, there are two buttons: 'Save' and 'Save and Continue to Team'.

Mobile Application – Incident Analysis

- Review Incident Timeline
- Generate reports
 - Includes FEMA 200 series ICS forms



System Demo

The screenshot displays the Emergency Hound dashboard for a school fire incident on 12/5/2013. The interface includes a navigation sidebar, a main dashboard area with key metrics and a map, and a right-hand sidebar with notifications and a timeline.

Emergency Hound | INCIDENT - SCHOOL FIRE 12/5/2013 | DOUG.TIMMS@OPEN-ENVIR

Switch Jurisdiction | Home / Dashboard

52 CERTIFIED RESPONDERS | **468** RESOURCES READY | **3** AGENCIES SHARING DATA

Active Incidents

4 Active Incidents | **39** Status Updates This Week | **4** Active Responders

Notifications:

- Shelter #4 at full capacity (20 minutes ago)
- 4 buildings destroyed 2nd St. Beggs (3 hour ago)

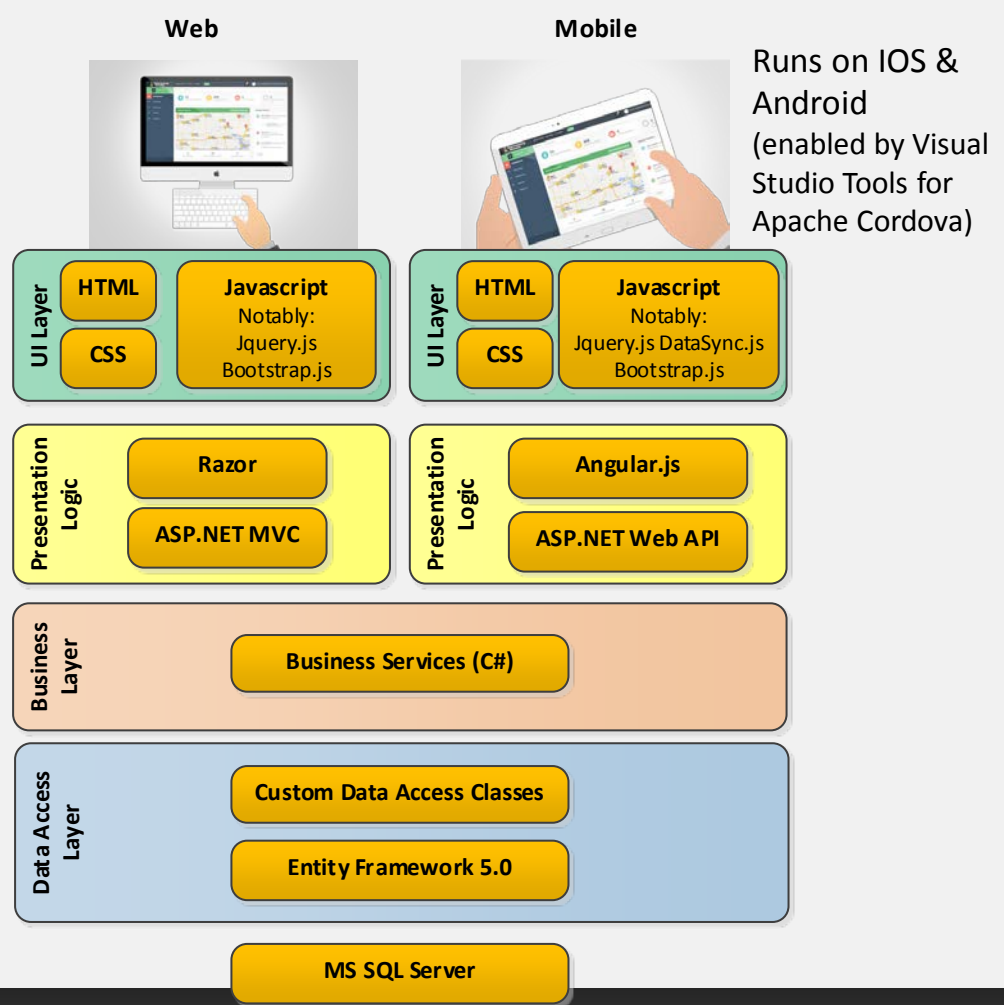
Timeline:

- John Smith started new incident: School Fire 2
- Doug Timms 22 minutes ago Responder Checks In.
- John Doe 5 minutes ago Modifies incident information: School Fire.
- Jane Williams completed a task 1 minute ago Incident Closed: School Fire.

Todos:

- Resources required
- Incidents

Technology Stack



Open Source Solution

- **Free redistribution:** no restrictions for other parties to give away or sell the software
- **Source code:** source code will be publicly available [via GitHub]
- **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)



open source

Remaining Project Schedule

- **Q4 2015:** Tribal partner review of system; incorporate feedback into Phase C
- **Q1 2016:** Phase C (Complete System)
Publishing to App Stores
- **Q1-Q2 2016:** Regional Training / Outreach Sessions

For More Information

- Newsletter:

<http://www.emergencyhound.com>

**Sign up to mailing list
for project updates**

- Contact:

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