





# **The Integrated Public Alert and Warning System (IPAWS)**

*Improving Emergency Alerts*

**APCO Emerging Technology Forum  
1 November 2018**

# Integrated Public Alert and Warning Vision

*“Timely Alert And Warning To American Citizens In  
The Preservation of Life And Property”*

- One emergency message delivered to multiple public dissemination channels
- Incorporated into mass notification systems and easier to use by alerting authorities



Alerting Authorities;  
Local, State,  
territorial, tribal,  
and Federal public  
safety official



IPAWS Alert Aggregator



Television & Radio



Mobile Services



Internet  
Services



Home Phones



Public  
Signage  
& Sirens

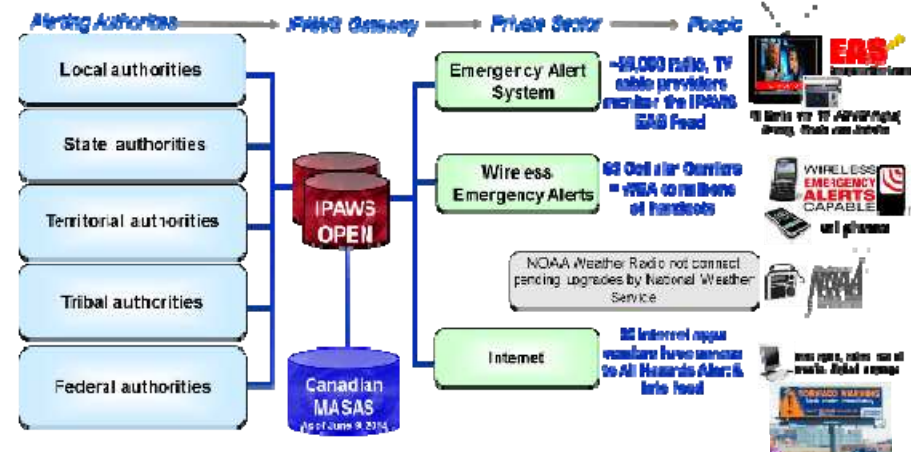
- Improves emergency alerting capability:
  - Reliability that people receive message
  - Likelihood that people take action



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# IPAWS - *a National System for Local Alerting*

- Provides local, state, territorial, tribal, and federal agencies access to geo-targeted emergency alert and warning methods:
  - *Wireless Emergency Alerts (WEA)* – broadcast to cell phones in an area
  - *Emergency Alert System (EAS)*
    - traditional radio/TV warning
  - Internet applications and websites
  - NOAA All Hazards Weather Radio\*



- FEMA\*\*:
  - Builds and operates the IPAWS-OPEN aggregator and gateway interfaces
  - Administers users of the system in coordination with applicable STTL authorities
  - Works with private sector and FCC to continuously enhance and deliver new alerting capabilities

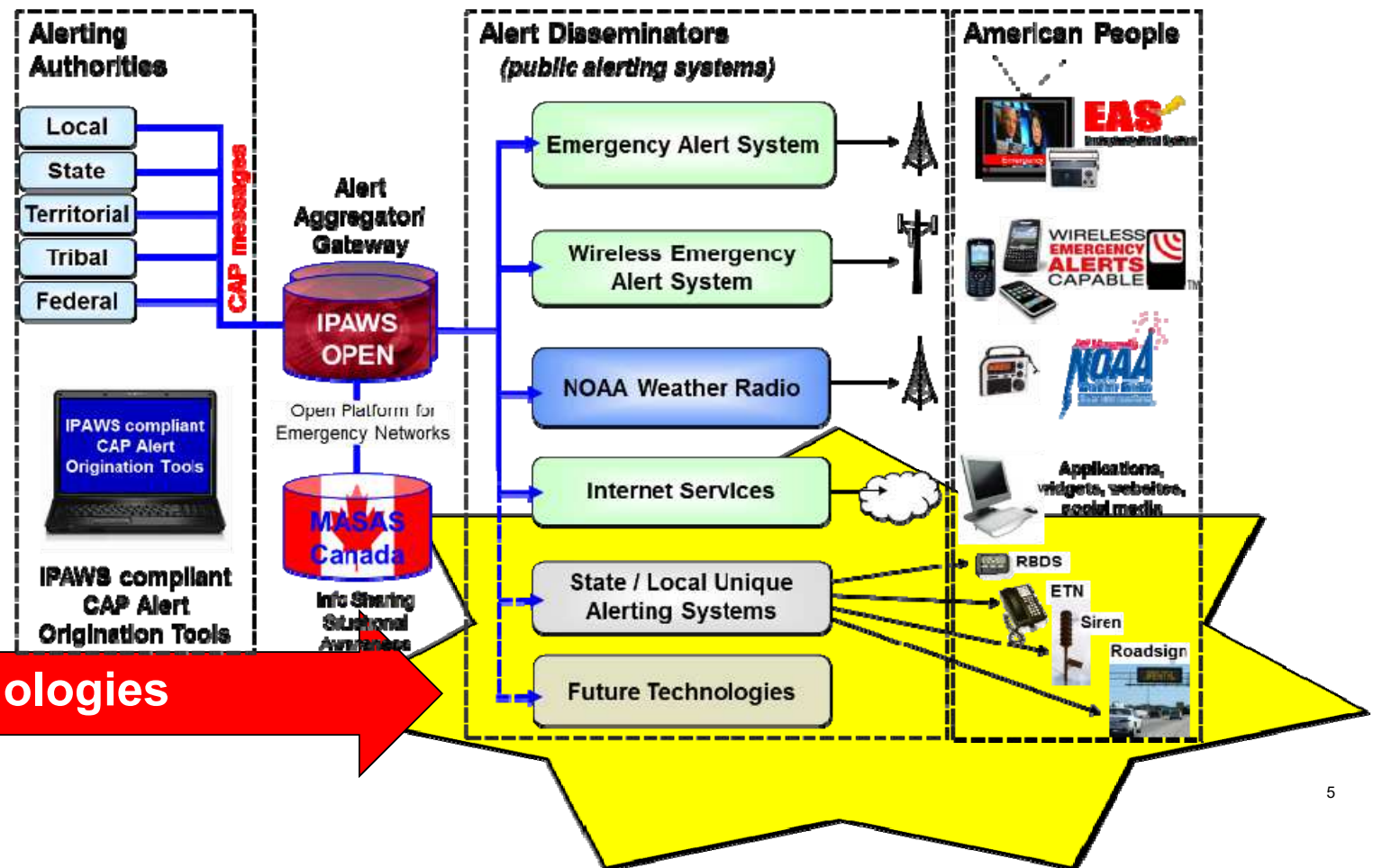


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\* IPAWS – NOAA connections for NWEM and EAS are offline

\*\*in accordance with Public Law 114-143 - The IPAWS Modernization Act of 2015; Executive Order 13407 - Public Alert and Warning System; and the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Sec. 202. Disaster Warnings

# IPAWS Current Architecture – XML standards based information exchange... *Ready for the Future*



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# Common Alerting Protocol (CAP)

- ▶ Developed by the *Organization for the Advancement of Structured Information Standards* (OASIS) at <http://www.oasis-open.org>
- ▶ IPAWS uses:
  - OASIS Common Alerting Protocol Version 1.2, July 1, 2010
  - OASIS Common Alerting Protocol Version 1.2 USA Integrated Public Alert and Warning System Profile Version 1.0, Committee Specification 01, October 13, 2009.
  - EAS-CAP Industry Group (ECIG) Recommendations for CAP EAS Implementation Guide – Version 1.0, May 17, 2010 <http://www.eas-cap.org/documents.htm>

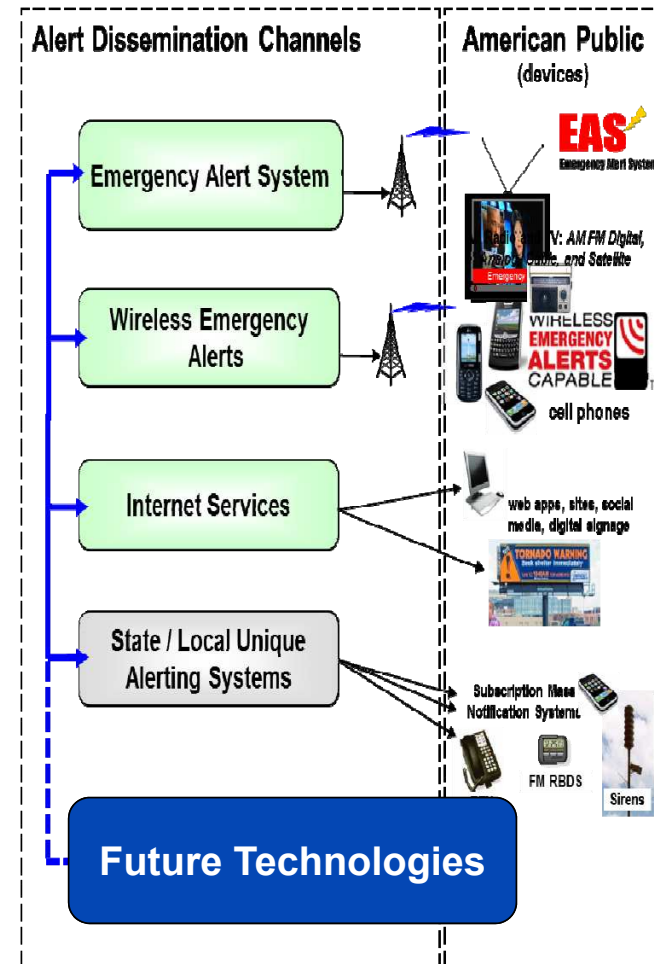


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# IPAWS Current Alert Dissemination Channels:

- Emergency Alert System
  - 20,000+ TV, Radio, Cable, Satellite stations privately owned and operated
- Wireless Emergency Alerts
  - 56 wireless carriers participating
- Internet Services
  - Internet or subscription type services/apps that monitor and retrieve alerts from IPAWS
  - Voluntary
- Future Communications Technologies using the Common Alerting Protocol XML based information exchanges standards



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# IPAWS Current *Primary* Dissemination Channels use broadcast technologies:

- EAS
  - Broadcast
  - Large footprint
  - County-based
- WEA
  - Broadcast
  - Medium footprint
  - Polygon-based
- NOAA Weather Radio \*
  - Broadcast
  - Large footprint
  - County-based



**Apple Watch**

Photo: Zach Stanford, Oklahoma Department of Emergency Management

\* IPAWS – NOAA connections for NWEM and EAS are offline



# Changes to WEA in the Works...



Participating wireless carriers must support changes to WEA regulations by 2019\*:

## **FCC adopted in September 2016:**

- Increase message length from 90 to 360 characters by May 2019
- Add new alert category, "Public Safety Messages" by May 2019
- Spanish language WEA by May 2019
- WEA test code by May 2019
- Support URLs and phone numbers
  - Text URLs and phone numbers as of Nov 2016
  - "Clickable" URLs and phone numbers as of Nov 2017

## **FCC adopted in January 2018:**

- Deliver alerts to 100% of phones in target area with no more than 0.1 mile overshoot by Nov 2019
- Preserve alerts on phone for 24 hours by Nov 2019

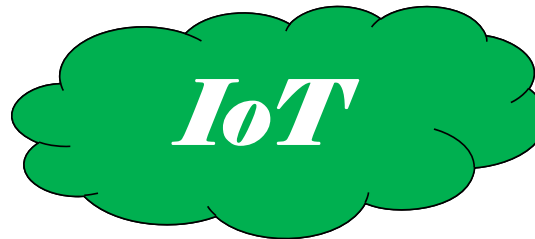
*\*Changes will be phased into network and phone upgrades. i.e. 90 character and broad geo-targeting will remain in some areas and some phones for years TBD*

A large yellow five-pointed star with a black outline is positioned on the right side of the slide, partially overlapping the FCC adopted in January 2018 section.

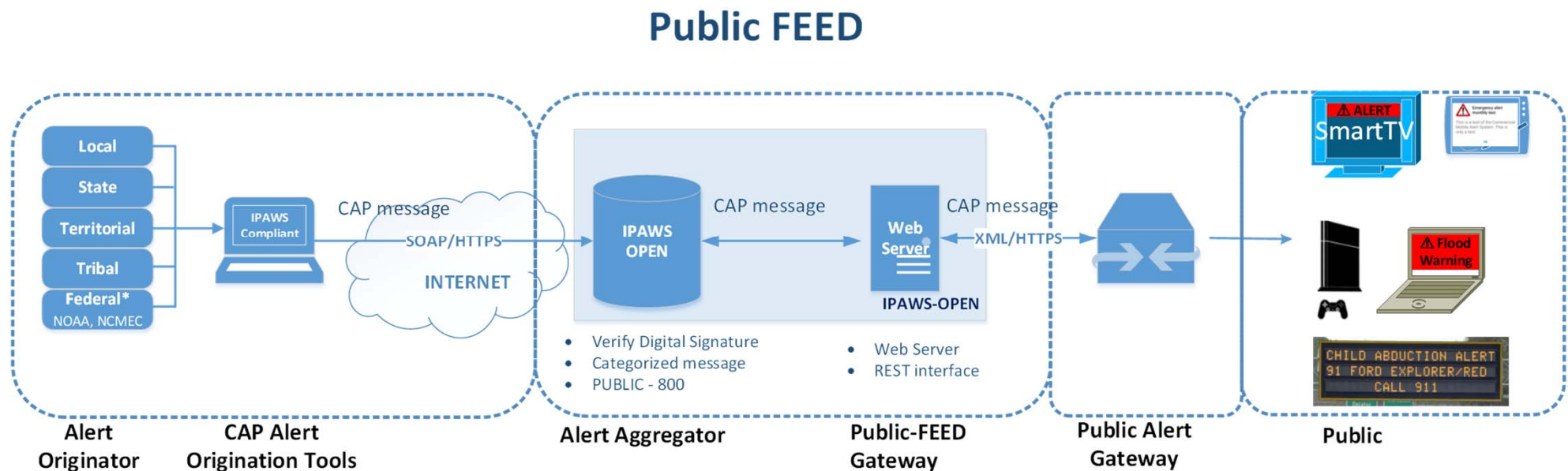
**Location  
based Geo-  
Fencing!**

# IPAWS All-Hazards Feed

- Every public alert sent to IPAWS posts to the All-Hazards Feed
  - CAP messages can contain rich multi-media content
  - Each message addressed to a geographic alert area
- Internet and Web services may consume the feed and distribute or publish alert info to apps, websites, email lists, text messaging groups, social media, road signs, siren systems, etc.
- Anything connected to the Internet has the potential to alert the public.



# IPAWS All Hazards Feed – System View



# Sampling of current consumers of IPAWS All Hazards Feed

- AlertUS
- Broadcast Television Group, LLC
- Burli Software Inc.
- Callaway Graphics
- Caryl Technologies
- Deaf Link Inc.
- Dotomi
- Facebook
- Geo-comm, Inc.
- Granite Apps
- Honeywell International
- iJet International
- Interop Solutions, LLC
- Jump2Go
- KDEE Technology LLC
- LRAD Siren System
- MAX Smart Home
- MIR3 Inc.
- Mobile PD
- Mutualink Inc.
- National Braille Press
- National Public Radio
- Omnilert, LLC
- PIER Systems LLC
- Public Alerter
- Resolute Interests LLC
- Samsung Information Systems America Inc.
- SafeT, Inc.
- Savi Technology
- Singlewire Software LLC
- Skitter Inc.
- SOCIFI
- Spectacular Media
- Swan Island Networks, Inc.
- Robotic Paradigm Systems
- Thunder Eagle
- TriStateAlerts, LLC
- University of Hawaii Pacific Disaster Center
- US Digital Designs
- The Weather Channel Companies
- Weather Message Software
- WHDT World Television Service
- WRAL-TV, Capitol Broadcasting Company, Inc.



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*IPAWS All Hazards Feed Applications Today:*

## **LRAD Corporation**

- Long range acoustic device (siren system)
- IPAWS compliant - Installed and tested at Guajataca Dam, Puerto Rico
- User interface filtered by geocode and event type
- Siren sound associated to event type
- Satellite back up, solar powered, manual activation



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*IPAWS All Hazards Feed Applications Today:*

## **National Braille Press**



- Innovative design
- Portable braille reader
- Alerts presented in audio or braille
- User configurable
- Includes mobile phone app

**national:braille**  
press



*IPAWS All Hazards Feed Applications Today:*

## AlertUS

- Desktop alerting
- Wall beacons
- Wall signage
- Tablets
- Displayed on telephone
- Wall speakers
- Mobile apps
- Capabilities continue to grow



# Emerging Alert Distribution Systems



## *IPAWS Emerging Alert Distribution Systems:*

### **US Digital Designs – Firehouse Alerting**

- Pulls IPAWS All Hazard Feed
- User configurable
- Filters by location and event
- Displays/Plays relevant alerts:
  - Station controller board
  - Station Signage
  - Station Speakers



## *IPAWS Emerging Alert Distribution Systems:*

### **XPERI**



- Vehicles with HD Radio will receive alerts based on geographic location or user preference
  - Full EAS text
  - Can include rich media
  - User notified of alert
  - Can pull up full content of alert for additional information



# XPERI



## *IPAWS Emerging Alert Distribution Systems:*

### **Kiosks and Billboards**

- “Smart board” technology
- Installed:
  - Metro areas
  - Universities
  - Public transportation
  - Conference centers
- Could display geographic relevant alerts pulled from IPAWS All-Hazards Feed

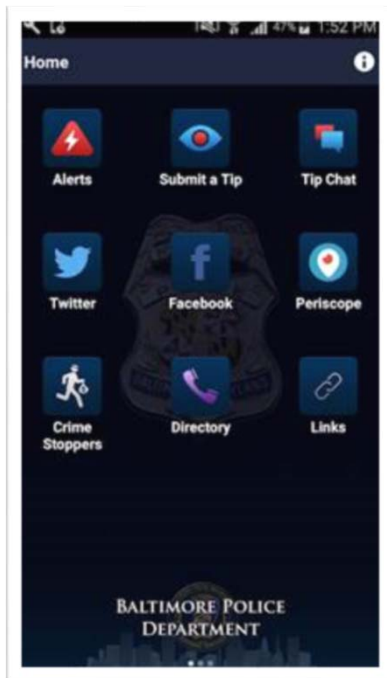


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Source: <https://www.digitalsignageconnection.com/city-of-albuquerque-selects-clear-channel-outdoors-digital-network-to-broadcast-emergency-alerts-to-citizens-and-visitors-in-the-metropolitan-area>

## *IPAWS Emerging Alert Distribution Systems:*

# Mobile PD



- Mobile App
  - Developing to originate and receive alerts
  - Pull Alerts from IPAWS All Hazards Feed
  - User configurable
    - Alert of interest
    - Alerts for geographic area in location aware app
    - Link to local public safety information



*IPAWS Emerging Alert Distribution Systems:*

## **MOJO Exchange – MOJO-X**

- Newsroom software
  - Pull alerts from the IPAWS All Hazards Feed
  - Provide user configurable alerts of interest to:
    - Desktop interface
    - Mobile app
    - Email and Text subscribers



**MOJO X**

## *IPAWS Emerging Alert Distribution Systems:*

### **Orion Labs**



- Smart Walkie-Talkies
  - “Orion Sync is a wearable, standalone, LTE-connected smart walkie-talkie with unlimited range. Access all of Orion's voice platform and talk to your coworkers around the world in real-time”
  - System could pull and distribute relevant alerts to Orion Sync devices in alerted area

# Future Emergency Alert Possibilities



## *Future Emergency Alert Possibilities:*

# Streaming Media

- Pop-up notification of alert in streaming content display
  - Click for emergency information, or
  - Interrupt stream with alert audio and video



## *Future Emergency Alert Possibilities:*

### **Gaming Systems**



- Receive alert notifications in game during play
- Click for emergency information, or pause game for alert text, audio, video

*Future Emergency Alert Possibilities:*

## Home Security and Smart Home Technologies



- Home displays/speakers
- Mobile owner apps
- Connected auxiliary devices





*Future Emergency Alert Possibilities:*

## Smart TVs, Appliances, Buildings!



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## IPAWS Program Office

*FEMA Resilience, National Continuity Programs, IPAWS Division*

*[ipaws@fema.dhs.gov](mailto:ipaws@fema.dhs.gov)*

Wade Witmer

[wade.witmer@fema.dhs.gov](mailto:wade.witmer@fema.dhs.gov)