Geo-targeted Weather Alerts Coming to Millions of Mobile Devices

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Overview

• Commercial wireless carriers and Federal Government respond to the need for mobile alerts on cell phones

• Common Alerting Protocol (CAP)
  – *New way of formatting weather (NWS) and non-weather alerts*
  – *Feeds the new mobile alerts*
  – *Enables technology innovation in public alerting*
  – *Improve decision making and public response*
Commercial Carriers and Government Respond to the Need for Mobile Alerts

WARN Act of 2006 authorized DHS and FCC to begin activities toward development of a Commercial Mobile Alert Service (CMAS)

In 2007-08, joint Commercial and Government (all levels) committee developed recommendations for mobile alerts

- Cell tower broadcast (not SMS text), so no network congestion
- 90 character maximum
- Opt-out

Rollout by all major wireless carriers

- Called Wireless Emergency Alerts (WEA)
- New York City and Washington DC in late Dec 2011
- Rest of country starting April 2012 depending on carrier
Wireless Emergency Alerts (WEA)

Alert Categories
- Presidential
- Imminent threat to life and property (e.g., severe weather, HazMat, earthquake)
- AMBER Alert/child abduction

Alert Message Content
- What is happening (e.g., Tornado)
- Area affected (“in this area”)
- Time (e.g., til 4:15PM EST)
- Recommended action (e.g. take shelter)
- Sending agency (e.g., NWS)
NWS Alerts Get to WEA Through FEMA Integrated Public Alert and Warning System (IPAWS)

- Television
- Radio
- Cell Phone (WEA via FEMA IPAWS)
- Computer
- Home Phone
- Public Signage

Alerts in Common Alerting Protocol (CAP) Format

- National Weather Service
- Other authorities

Other alerting systems, consumer electronics, and decision support tools

Commercial sector

NWS

FEMA IPAWS
CAP Message Format Encourages Technology Innovation that Improves Decision Making and Public Response

XML-based industry standard = low cost of entry for commercial developers

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<event>Flash Flood Warning</event>
<urgency>Immediate</urgency>
<severity>Severe</severity>
<certainty> Likely</certainty>
<effective>2010-06-03T14:00:00-05:00</effective><expires>2010-06-03T17:00:00-05:00</expires>
<senderName>NWS Memphis (Western Tennessee, Eastern Arkansas and Northern Mississippi)</senderName>
<headline>Flash Flood Warning issued June 03 at 2:00PM CDT valid until June 03 at 5:00PM CDT by NWS Memphis</headline>
<description>DOPPLER RADAR ESTIMATES 1 TO 3 INCHES OF RAINFALL HAS OCCURRED OVER THE PAST HOUR…

<instruction>MOST FLOOD DEATHS OCCUR IN AUTOMOBILES. NEVER DRIVE YOUR VEHICLE INTO AREAS WHERE THE ROADWAY…TURN AROUND…DON’T DROWN</instruction>

<polygon>36.20,-88.98 36.18,-88.91 36.05,-88.84 35.99,-89.17 35.99,-89.19 35.98,-89.21 35.94,-89.30 36.17,-89.31 36.21,-89.04 36.20,-88.96 36.22,-88.95 36.20,-88.93</polygon>
Communicating Impact and Improving Public Response Through CAP

**<urgency>value</urgency>**
- Immediate
- Expected
- Future
- Past

**<severity>value</severity>**
- Extreme
- Severe
- Moderate
- Minor

**<certainty>value</certainty>**
- Observed
- Likely
- Possible
- Unlikely

**Typical Event**

<table>
<thead>
<tr>
<th>2-4” Snow</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Moderate Impact)</td>
</tr>
<tr>
<td>&lt;urgency&gt;Expected&lt;/urgency&gt;</td>
</tr>
<tr>
<td>&lt;severity&gt;Moderate&lt;/severity&gt;</td>
</tr>
<tr>
<td>&lt;certainty&gt;Likely&lt;/certainty&gt;</td>
</tr>
</tbody>
</table>

Forecaster can better convey impact and generate greater public response for high impact events

<table>
<thead>
<tr>
<th>Crippling 1/2” snow squall</th>
</tr>
</thead>
<tbody>
<tr>
<td>(less snow, but greater impact)</td>
</tr>
<tr>
<td>&lt;urgency&gt;Immediate&lt;/urgency&gt;</td>
</tr>
<tr>
<td>&lt;severity&gt;Severe&lt;/severity&gt;</td>
</tr>
<tr>
<td>&lt;certainty&gt;Likely&lt;/certainty&gt;</td>
</tr>
</tbody>
</table>
NWS Uses Wiki as New Way of Doing Business
https://wiki.citizen.apps.gov/nws_developers

- Usage guide for NWS produced CAP
- Facilitates collaborative discussion around CAP
- Keeps NWS CAP users up to date with email notification of changes

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**Element Name**

*eventCode*

**Description**

A system-specific code identifying the event type of the alert message.

**Format**

```
<eventCode>
  <valueName>SAME</valueName>
  <value>XXX</value>
</eventCode>
```

Where **XXX** is the three character NOAA Weather Radio (NWR) Specific Area Message Encoding (SAME) Event Code. See [Appendix A.4 of NWS Instruction 10-1712, NWR All Hazards SAME](https://wiki.citizen.apps.gov/nws_developers) for a list of SAME Event codes.

**Example**

```
<eventCode>
  <valueName>SAME</valueName>
  <value>SVR</value>
</eventCode>
```

**Inclusion**

Included in every CAP message that originates from the NWS.

**Roadmap**

No change anticipated for NWS production of CAP v1.2.
Takeaways

- NWS produced CAP messages will
  - Enable new alerting and decision support technologies
  - Help save lives and protect property
  - Supply weather alerts for Wireless Emergency Alert service
  - Improve public response to NWS warnings

- NWS CAP messages available from
  - alerts.weather.gov
  - FEMA (see fema.gov/emergency/ipaws)
Quick Facts about WEA

- WEA service is free.
- Acronym soup – CMAS, Personal Localized Alert Network (PLAN), and WEA are all names for the same service.
- Major carriers are committed to producing WEA capable phones (Sprint - 12 phones, Verizon - 7 phones, ATT starting to produce).
- Not a privacy issue. Service does not track you. WEA is merely a radio broadcast from a nearby cell tower to the threat area.
- Service is not subscription based, so you only receive the alert if you are in the threat area.
- If you travel into an alert area after the alert was originally sent, you may still receive it. Sprint says the alert is resent every 5 minutes until the WEA has expired.
- Each WEA is only displayed once, so you don’t receive duplicates.
- If you are in a voice or data session when the alert is released, you will not receive the alert until you are off and the alert is resent.
- WEA has a distinct vibration cadence and audio tone.
Questions?

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