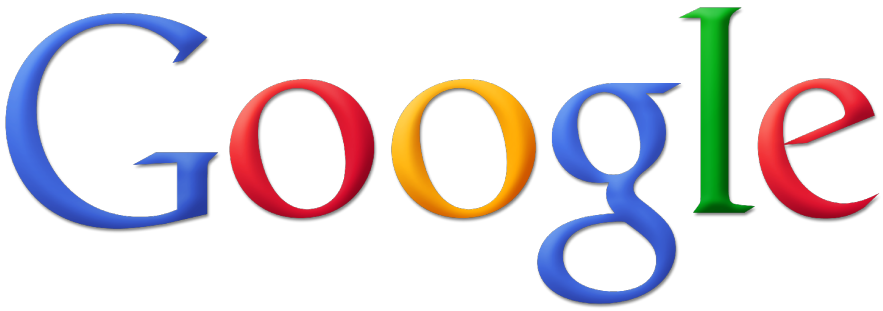

Google

Google

Google Crisis Response & the Common Alerting Protocol

Armond Zamanyan
June 2014

Google

Keep people safe...

*"I got the warnings on time to take the grandkids to school and **save me from having an accident** again."*

*"Thank you so much for the tornado warning. I was **able to get my family to safety** with time to spare."*

*"As a trucker, this increases my ability to **get home safely**."*

*"I'm a school bus driver...and the weather alerts are so important to me. Thank you so very much for keeping us aware of all conditions we need to know about to **keep our children safe**."*

*"I was in the affected area and was able to **seek shelter.**"*

...and help keep people's property safe

*"Absolutely love it because I have 2 very elderly neighbors who need help **taking care of their livestock and themselves in preparation** of a storm."*

*"Your storm warnings have helped me many times **get ready for flooding**... Because I was given a warning I was able to help with sandbags before the worst of it."*

*"Because of the warning we were able to get towels, tarps, and other stuff down in time to **keep the garage from flooding**."*

*"Helped me **save a lot of money** by keeping my car inside!"*

Google

Google Public Alerts

How Google Public Alerts Displays CAP

Quality of Content in CAP

CAP Tools

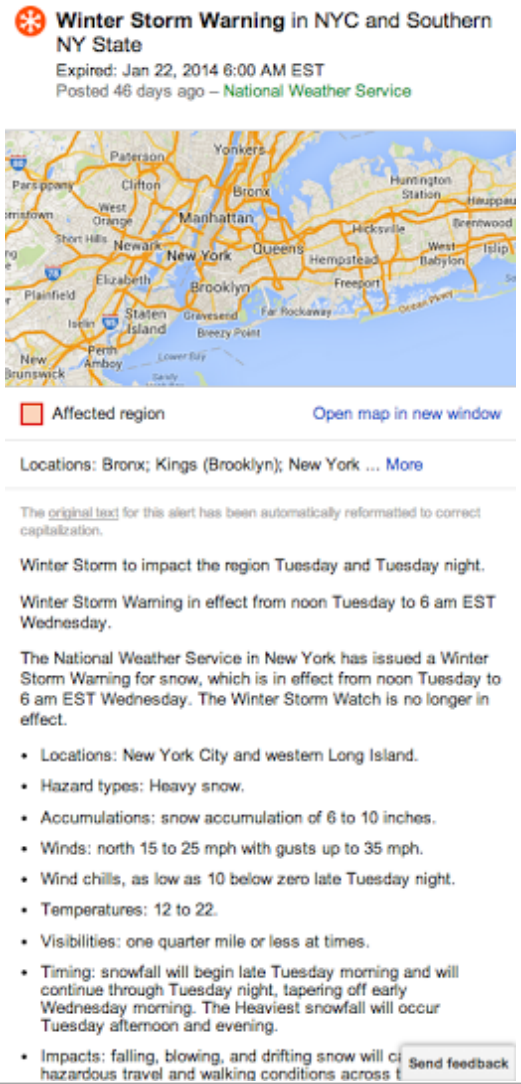
Google

Deliver accurate, relevant, credible information to the public

Emergency events affecting life and property

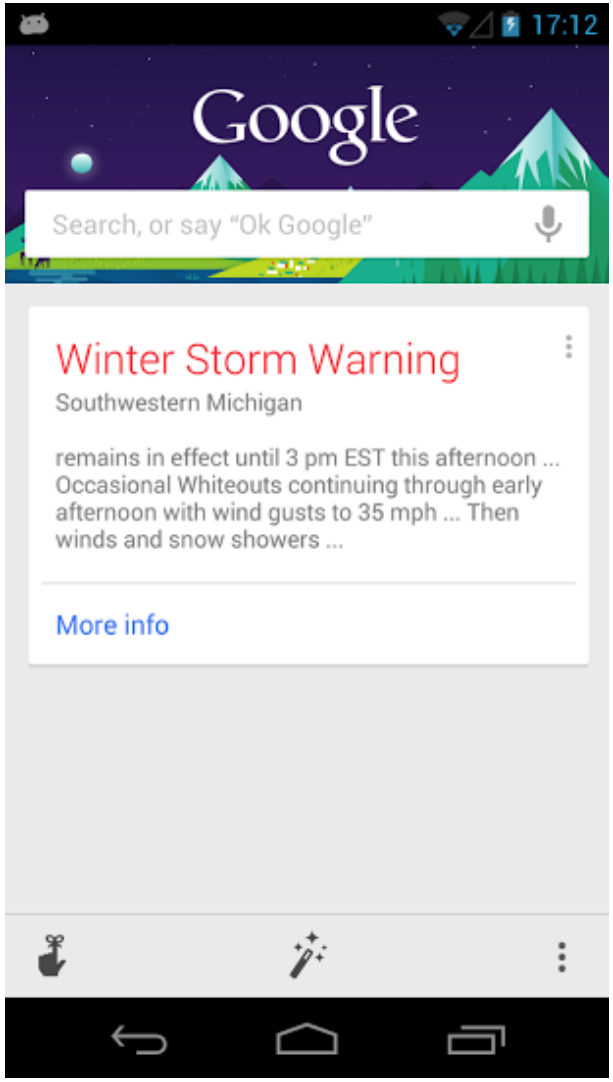
Distribute information as quickly as possible

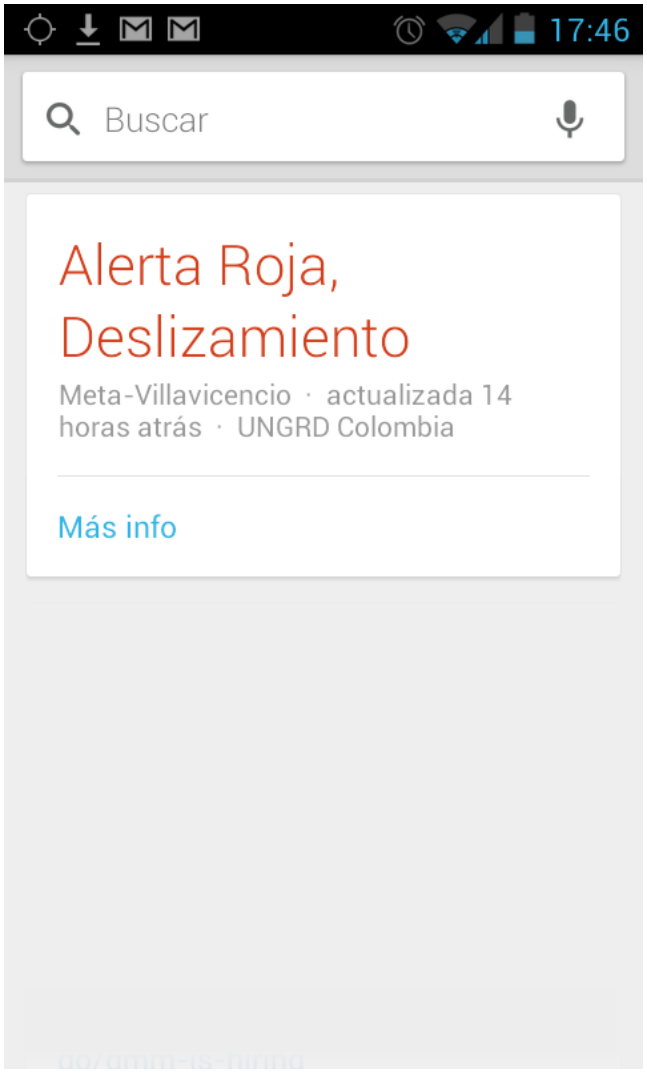
Across Google products



Google

Google Search, Google Now, and Google Maps





Google

Accurate, timely information when you need it

+You Web Images Videos Maps News Shopping Gmail more Sign in

« Google Public Alerts

Coastal Flood Warning in Northern Virginia

Active for next 14 hours
Location: Arlington, Falls Church, Alexandria

Posted 1 hour, 11 minutes ago – National Weather Service

How likely: How soon: How severe:

The original text for this alert has been automatically reformatted to correct capitalization.

Coastal Flood Warning In Effect Until noon EDT Thursday.

The National Weather Service in Sterling Virginia has issued a Coastal Flood Warning, which is in effect until noon EDT Thursday. The Coastal Flood Advisory is no longer in effect.

- Tidal anomaly: increasing to near 2 feet above normal through Thursday morning.
- Timing: within a couple hours of high tide through Thursday morning. High Tide at Alexandria is at 10:22 pm tonight and 10:31 am Thursday.
- Expected impacts: Minor tidal flooding near times of high tide through Thursday morning.

Recommended actions

A Coastal Flood Warning means that flooding is occurring or imminent. Coastal residents in the warned area should be alert for rising water, and take appropriate action to protect life and property.

Before: Excerpted from ready.gov

Build an emergency kit and make a family communications plan.

Elevate the furnace, water heater and electric panel in your home if you live in an area that has a high flood risk.

Consider installing "check valves" to prevent flood water from backing up into the drains of your home.

If feasible, construct barriers to stop floodwater from entering the building and seal walls in basements with waterproofing compounds.

More:

What to do before a flood.

During:

Affected region Expand map

Other alerts in this area

Flood Warning for Washington D.C.
National Weather Service - updated 1 hour 27 mins ago

Flood Warning in Northern Virginia
National Weather Service - updated 1 hour 27 mins ago

Flood Warning in Central Maryland
National Weather Service - updated 1 hour 27 mins ago

Flash Flood Watch in Northern Virginia
National Weather Service - updated 41 mins ago

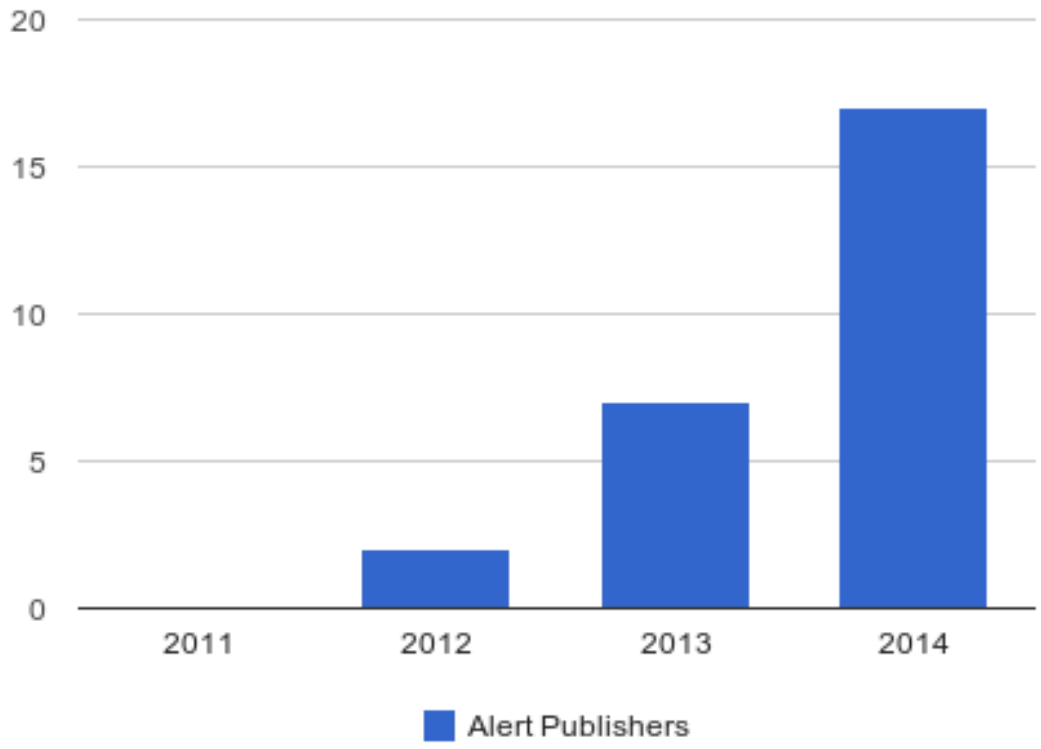
Send feedback

Google Public Alerts

- Launched in 2011
- 17 alert providers
- 7 countries
- 6 languages

Google

Google Public Alerts continues to expand



Google

Warnings in Google's products help citizens stay connected when traditional alert distribution channels may not be effective

*"I rarely watch the news so **getting alerts on my phone** is an awesome thing."*

*"So very much appreciate this network service. Just **lost power to my TV** listening to the weather, then I received this message."*

*"Your information is valuable especially **when we lose our local broadcast** or late in evenings."*

Google Public Alerts

How Google Public Alerts Displays CAP

Quality of Content in CAP

CAP Tools

Common Alerting Protocol

- What is happening?
- When is it happening?
- Who should be alerted?
- What should they do?

```
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.1">
  <identifier>AL20110412020900TornadoWarning</identifier>
  <sender>w-nws.webmaster@noaa.gov</sender>
  <sent>2011-04-11T21:18:07-05:00</sent>
  <status>Actual</status>
  <msgType>Alert</msgType>
  <scope>Public</scope>
  <info>
    <language>en-US</language>
    <category>Met</category>
    <event>Tornado Warning</event>
    <urgency>Immediate</urgency>
    <severity>Extreme</severity>
    <certainty>Observed</certainty>
    <effective>2011-04-11T21:09:00-05:00</effective>
    <expires>2011-04-11T21:30:00-05:00</expires>
    <headline>Tornado Warning issued April 11 at
    9:30PM CDT by NWS Birmingham</headline>
    <instruction>Do not wait to see or hear the tornado.
    For your protection, move to an interior room on the
    lowest floor of your home or business.</instruction>
    <area>
      <areaDesc>Cleburne</areaDesc>
      <polygon>33.61,-85.58 33.65,-85.58 33.72,-85.58
      33.81,-85.36 33.7,-85.34 33.7,-85.33 33.68,-85.33
      33.61,-85.58</polygon>
    </area>
  </info>
</alert>
```

Common Alerting Protocol

- Urgency
- Severity
- Certainty

```
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.1">
  <identifier>AL20110412020900TornadoWarning</identifier>
  <sender>w-nws.webmaster@noaa.gov</sender>
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    <expires>2011-04-11T21:30:00-05:00</expires>
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      <areaDesc>Cleburne</areaDesc>
      <polygon>33.61,-85.58 33.65,-85.58 33.72,-85.58
      33.81,-85.36 33.7,-85.34 33.7,-85.33 33.68,-85.33
      33.61,-85.58</polygon>
    </area>
  </info>
</alert>
```
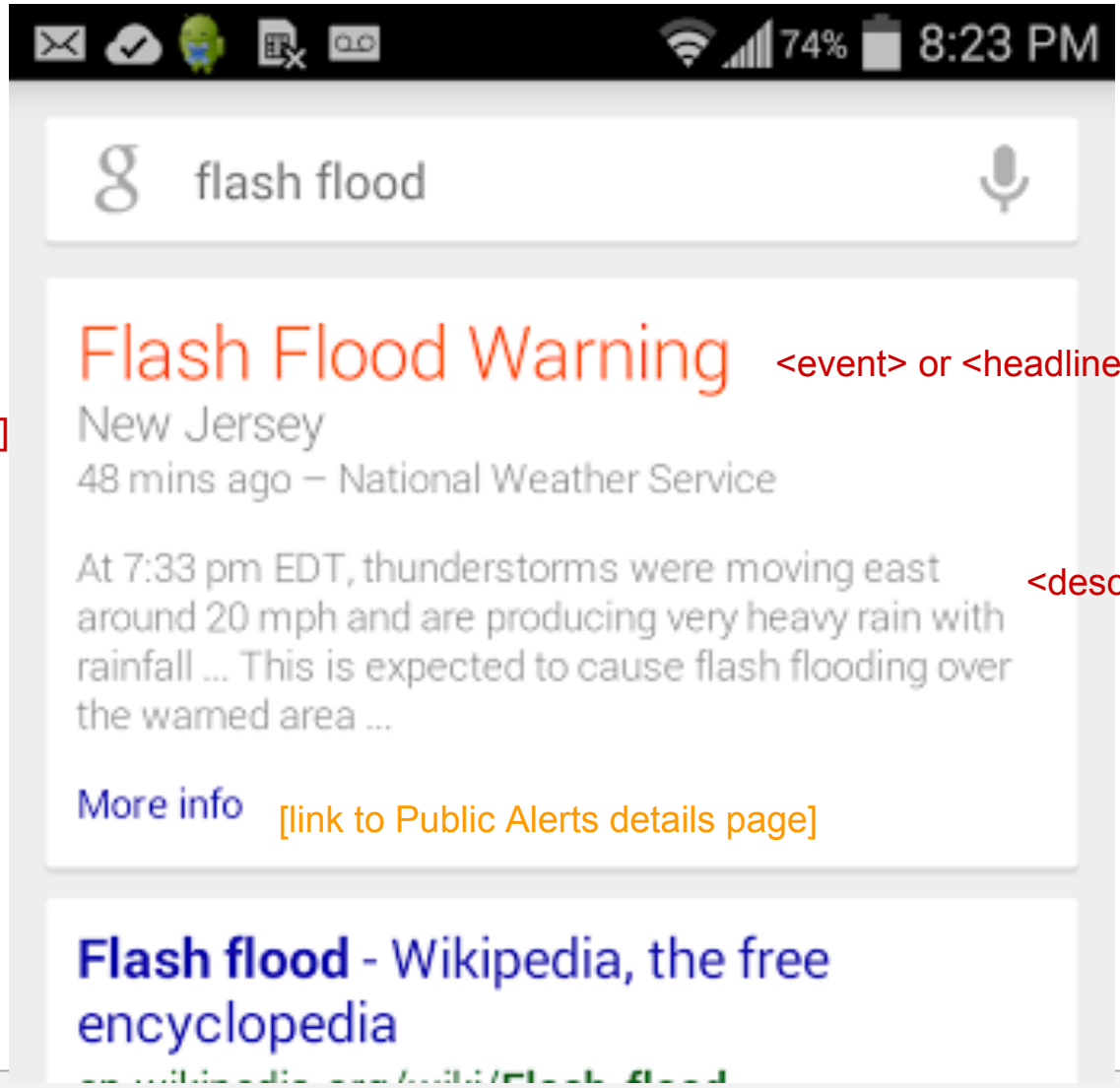

Google

How Google Displays CAP: Summary



<areaDesc> [modified]

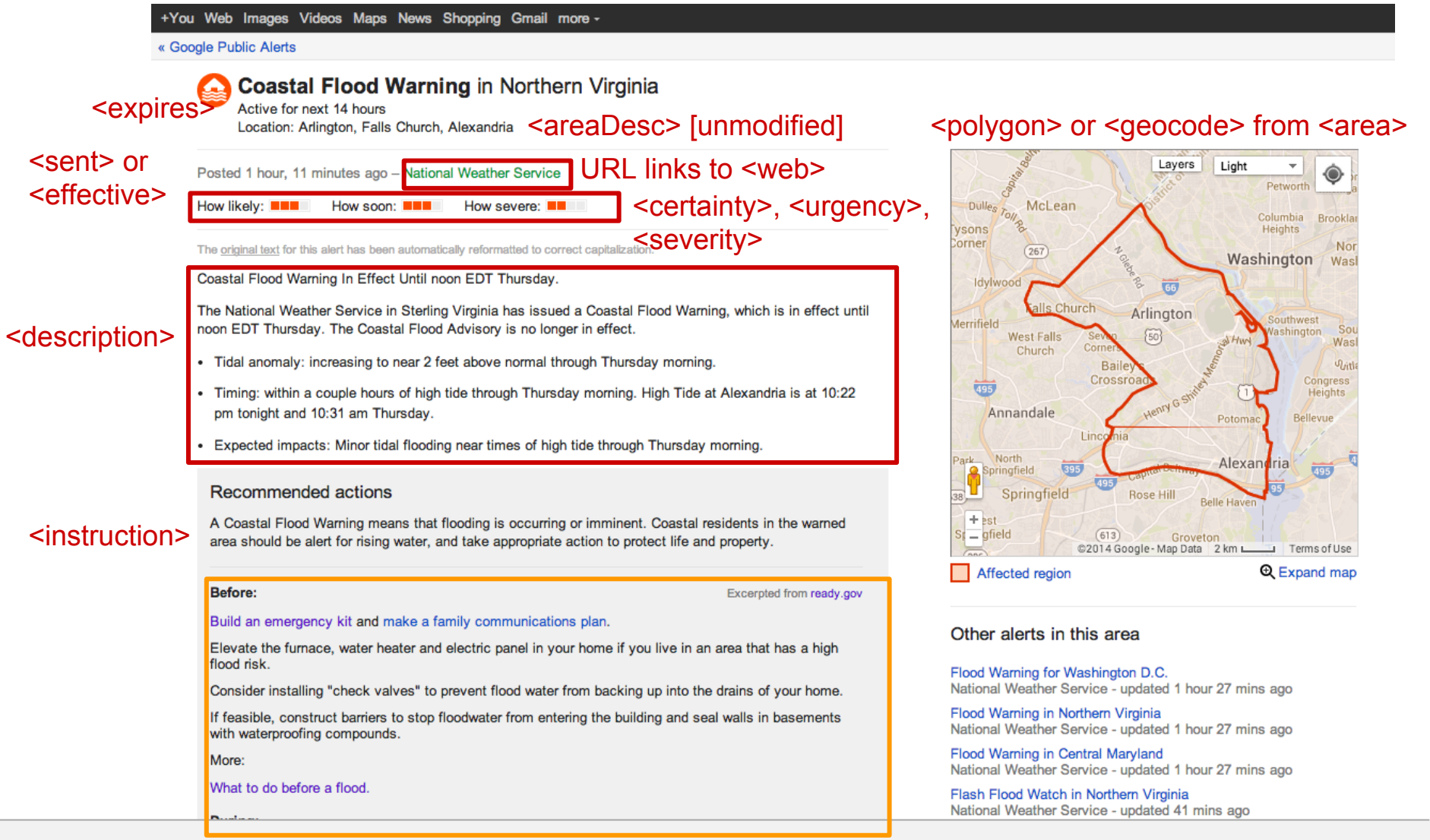
<event> or <headline>

<description>

<string> elements are from CAP
[string] elements are non-CAP content independent of CAP feed

[link to Public Alerts details page]

How Google Displays CAP: Details Page



Google

How Google Displays CAP: Details Page

- Secure your home. If you have time, bring in outdoor furniture. Move essential items to an upper floor.

Be aware of stream, drainage channels, canyons and other areas known to flood suddenly. Flash floods can occur in these areas with or without typical warnings such as rain clouds or heavy rain.

If you have to leave your home, remember these evacuation tips:

- Do not walk through moving water. Six inches of moving water can make you fall. If you have to walk in water, walk where the water is not moving. Use a stick to check the firmness of the ground in front of you.
- Do not drive into flooded areas. If floodwaters rise around your car, abandon the car and move to higher ground if you can do so safely. You and the vehicle can be swept away quickly.
- Do not camp or park your vehicle along streams, rivers or creeks, particularly during threatening conditions.

More:

What to do during a flood.

[recommended actions]

What is a Coastal Flood Warning?

Statement Watch **Warning**

A Coastal/Lakeshore Flood Warning informs users that coastal/lakeshore flooding which poses a serious threat to life and property, is occurring, imminent, or highly likely in the first to second forecast periods (first 12 to 24 hours). National Weather Service offices may occasionally issue warnings valid after the second forecast period when a strong likelihood of the event exists or when a longer advance notice is needed for public response. Source: nws.noaa.gov

[event definitions]

Google Public Alerts

How Google Public Alerts Displays CAP

Quality of Content in CAP

CAP Tools

What do Google users ask to see in alert descriptions?

- “Exactly what neighborhoods?”
- “Who are the most affected sites?”
- “When is it going to start?”
- “How long will it last?”
- “What’s the percentage [likelihood] of it to happen?”
- “How much snow is expected?”
- “What about road conditions?”

What do Google users ask to see in recommended actions?

- “What should I do in such a situation?”
- “Is it safe to travel?”
- “Where should I go?”
- “What should I be hoarding [collecting] now?”
- “What safety precautions to take?”
- “Do we bring in the dogs from outside tonight?”

Google

Users find alerts most helpful when alerts are updated in a timely manner

More detailed location information, whether in the alert description or area description, is a top user request

*"I would like to know exactly which is the **area most affected**."*

*"It would be good to know more closely **the specific sites to prevent risk**."*

*"But where in Villavicencio [a city and municipality in Colombia], or **which neighborhoods** of this town?"*

Google

When overly large areas are alerted, people may become frustrated or ignore alerts because they find them irrelevant

"Really? The entire Riverside County is affected by a wildfire? ***Much too vague*** *and no details."*

"I live in northern Ohio. This is a good warning system but ***need to fine tune the area*** *to include the area the person is currently in."*

"Area of warning is too broad. Most of the alerts I received today were ***not near me and it gets pretty annoying****."*

*"****This doesn't apply to me****...The snow warning is for the mountains. I live 45 mins away from those locations."*

"Not even close to my location...If all cell users in Georgia got this alert, ***I don't see its value****."*

*"****Wrong area****...I live in Covina, where we're a good 25 miles south of any chance of snow."*

Sample Alerts with Positive User Feedback

Winter Storm Warning remains in effect until 1 pm EST Monday.

- Locations: the Interstate 95 corridor from the Philadelphia metro area to Central New Jersey and across to coastal Northern New Jersey.
- Hazard types: mainly snow with some sleet and freezing rain possible at the start this evening.
- Accumulations: snow accumulation of 4 to 8 inches, along with around a trace of ice.
- Timing: any rain this afternoon will change to a period of sleet or freezing rain early this evening then to all snow by late evening. Snow will be moderate to heavy at times early Monday morning before ending early Monday afternoon.
- Winds: North 5 to 15 mph with gusts up to 25 mph.
- Visibilities: briefly one quarter mile or less Monday morning.
- Temperatures: plunging from the mid 30s late this afternoon into the upper teens to around 20 by Daybreak Monday.
- Impacts: The snow, sleet and freezing rain will create hazardous driving conditions tonight. Monday Morning`s commute will be particularly difficult.
- Following the storm, Near Record cold is forecast late Monday night as temperatures drop to between zero and 10 above.

A Winter Storm Warning in effect for mainly the West and Northwestern forecast area from 9 pm CST Monday through 11 am CST Tuesday.

A winter advisory is in effect for the surrounding counties within the Winter Storm Warning through 11 am CST Tuesday.

An area of freezing rain, sleet, and rain accompanied by Thunder will move across Southeast Texas this morning. The bulk of the precipitation will end during the mid and late morning.

Temperatures will be at or below freezing over all but the immediate coastal counties and portions of the Houston metro area toward Galveston Bay and downtown. Ice accumulations will likely exceed one tenth to one quarter of an inch across most areas in the warning. Locations toward the coast and Galveston Bay that experience a wintry mix that do experience icing will likely see amounts under one eighth of an inch. Locations across Houston, Trinity also likely experience amounts under one eighth of an inch. Temperatures by early afternoon are expected to warm to above freezing across the area.

Winter Storm Warning remains in effect until 11 am CST this morning.

- Event: freezing rain accumulations between a tenth to a quarter of an inch is possible.
- Timing: through 11 am.
- Main impact: treacherous driving conditions on many roads. Especially bridges and elevated roadways.
- Other impacts: possible isolated power outages over regions that receive higher ice accumulations.

The National Weather Service in Pleasant Hill has issued a Severe Thunderstorm Warning for: Southeastern Johnson County in east central Kansas. Northeastern Miami County in east central Kansas. Northwestern Cass County in West Central Missouri.

- Until 5:00 pm CDT.
- At 4:31 pm CDT, a severe thunderstorm was located near Cleveland. And moving northeast at 35 mph. Hazard, 60 mph wind gusts and quarter size hail. Source, radar indicated. Impact: hail damage to vehicles is expected. Expect wind damage to roofs, siding and trees.
- Locations impacted include: peculiar, Harrisonville, Belton, Raymore, Cleveland, Freeman and Stillwell.

1.00IN Wind, 60mph.

Google

Comprehensive information in one place, in everyday tools people already use, saves time and makes a difference

*"Perfect. Learned about the recent warning through Google Now, and **got absolutely every piece of information I needed**."*

*"If I didn't have Google Now, I never would have received the flood warning. Obviously I noticed the rain, but **I wouldn't have known the extent of the flooding**."*

*"I am not one with very much time. I have 2 kids and I am a single father so **these alerts help me out because my time is limited** to my two boys."*

To summarize, our users tell us that they care about several areas

- Create **alert descriptions** telling users what to expect, when, and where
- Provide **recommended actions** informing people what to do to prepare
- Distribute **timely updates** to alerts
- Include **specific alerting area** to target relevant and impacted users

Google Public Alerts

How Google Public Alerts Displays CAP

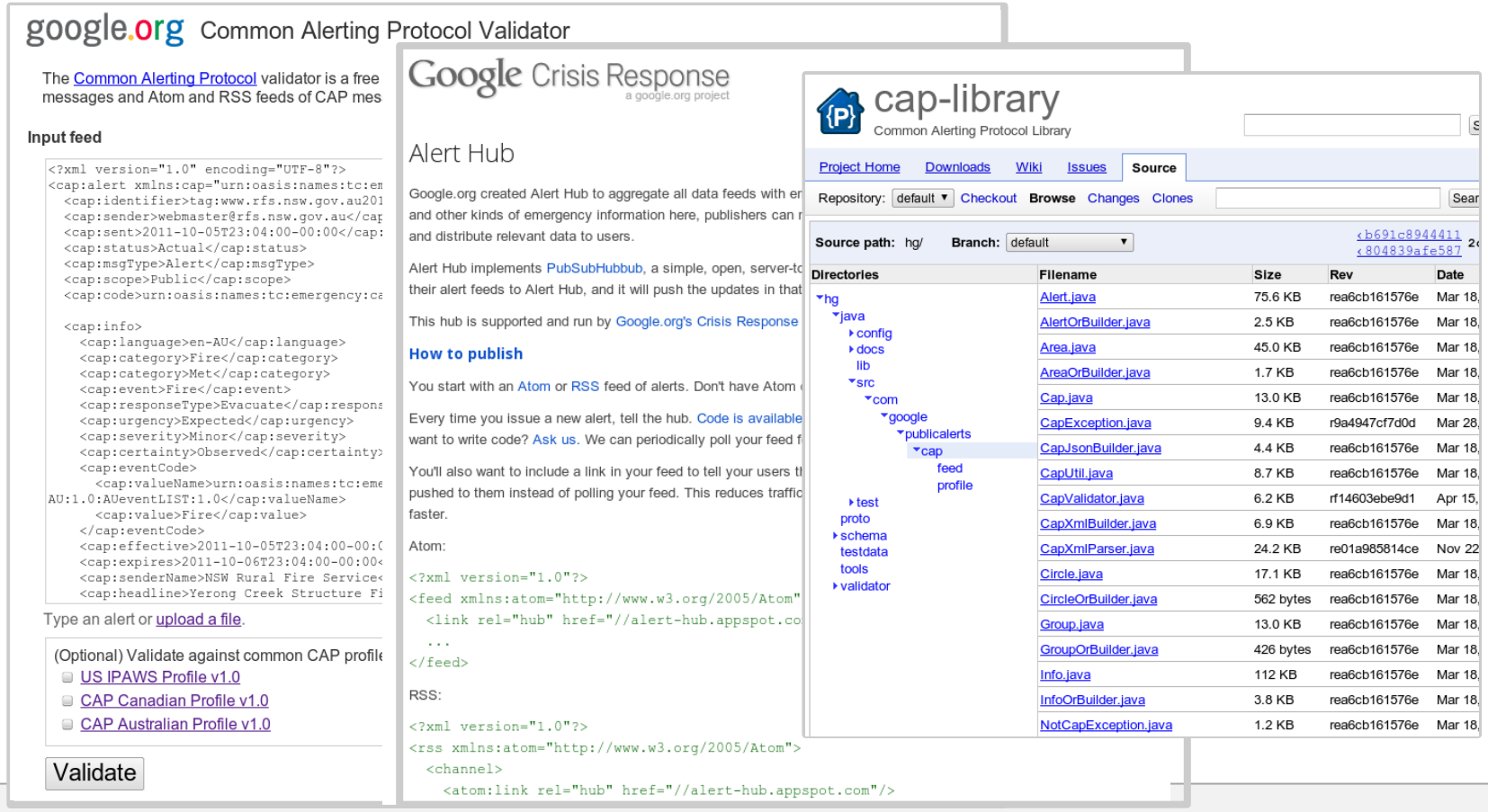
Quality of Content in CAP

CAP Tools

Google

Tools for the CAP Community

- http://cap-validator.appspot.com
- http://alert-hub.appspot.com
- http://code.google.com/p/cap-library



Google

Common Alerting Protocol Validator

google.org Common Alerting Protocol Validator

The Common Alerting Protocol validator is a free service that checks the syntax of CAP XML messages and Atom and RSS feeds of CAP messages. It supports CAP v1.0, v1.1 and v1.2.

Input feed

```
<?xml version = "1.0" encoding = "UTF-8"?>
<alert xmlns = "urn:oasis:names:tc:emergency:cap:1.2">
 <identifier>KSTO1055887203</identifier>
 <sender>KSTO@NWS.NOAA.GOV</sender>
 <sent>2003-06-17T14:57:00-07:00</sent>
 <status>Actual</status>
 <msgType>Alert</msgType>
 <scope>Public</scope>
 <info>
   <category>Met</category>
   <event>SEVERE THUNDERSTORM</event>
   <responseType>Shelter</responseType>
   <urgency>Immediate</urgency>
   <severity>Severe</severity>
   <certainty>Observed</certainty>
   <eventCode>
     <valueName>SAME</valueName>
     <value>SVR</value>
   </eventCode>
   <expires>2003-06-17T16:00:00-07:00</expires>
   <senderName>NATIONAL WEATHER SERVICE SACRAMENTO CA</senderName>
   <headline>SEVERE THUNDERSTORM WARNING</headline>
   <description> AT 254 PM PDT...NATIONAL WEATHER SERVICE DOPPLER RADAR
INDICATED A SEVERE
THUNDERSTORM OVER SOUTH CENTRAL ALPINE COUNTY...OR ABOUT 18 MILES SOUTHEAST OF
KIRKWOOD...MOVING
SOUTHWEST AT 5 MPH. HAIL...INTENSE RAIN AND STRONG DAMAGING WINDS ARE LIKELY
WITH THIS
```

Type an alert or upload a file.

(Optional) Validate against common CAP profiles:

- [ ] US IPAWS Profile v1.0
- [ ] CAP Canadian Profile v1.0
- [ ] CAP Australian Profile v3.0, Committee Specification 02
- [ ] Google Public Alerts CAP v1.0

Validate

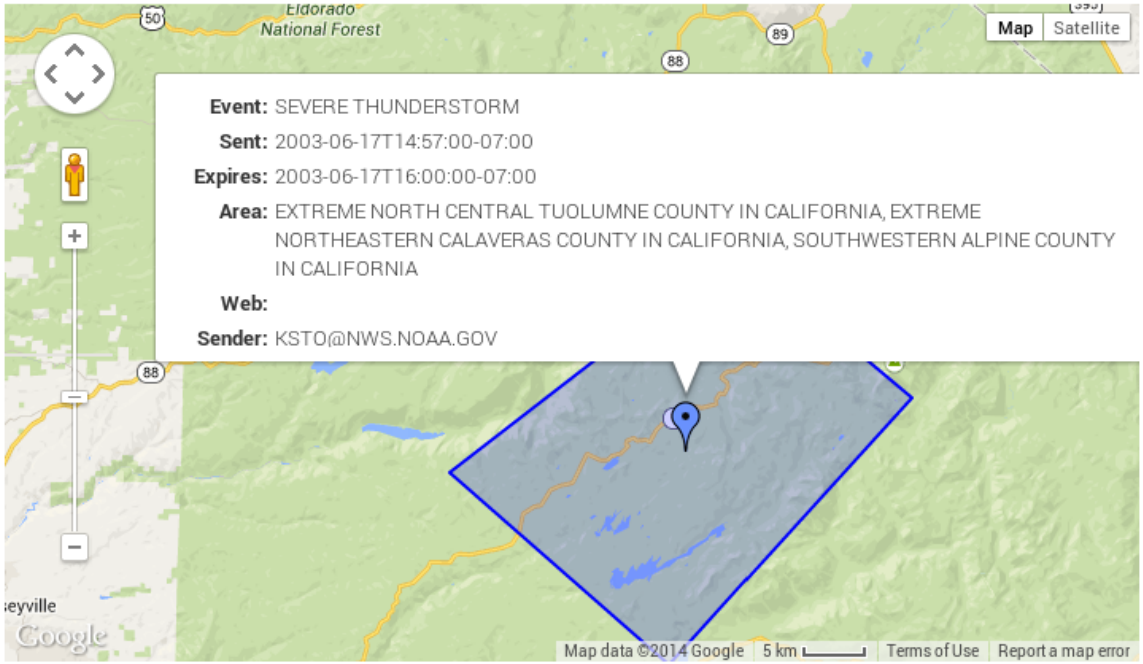
Try these examples:

- CAP 1.2 Severe Thunderstorm Warning
- CAP 1.2 Homeland Security Advisory
- CAP 1.1 Earthquake Atom feed
- CAP 1.1 Amber Alert RSS feed

Common Alerting Protocol Validator

Result

Valid!



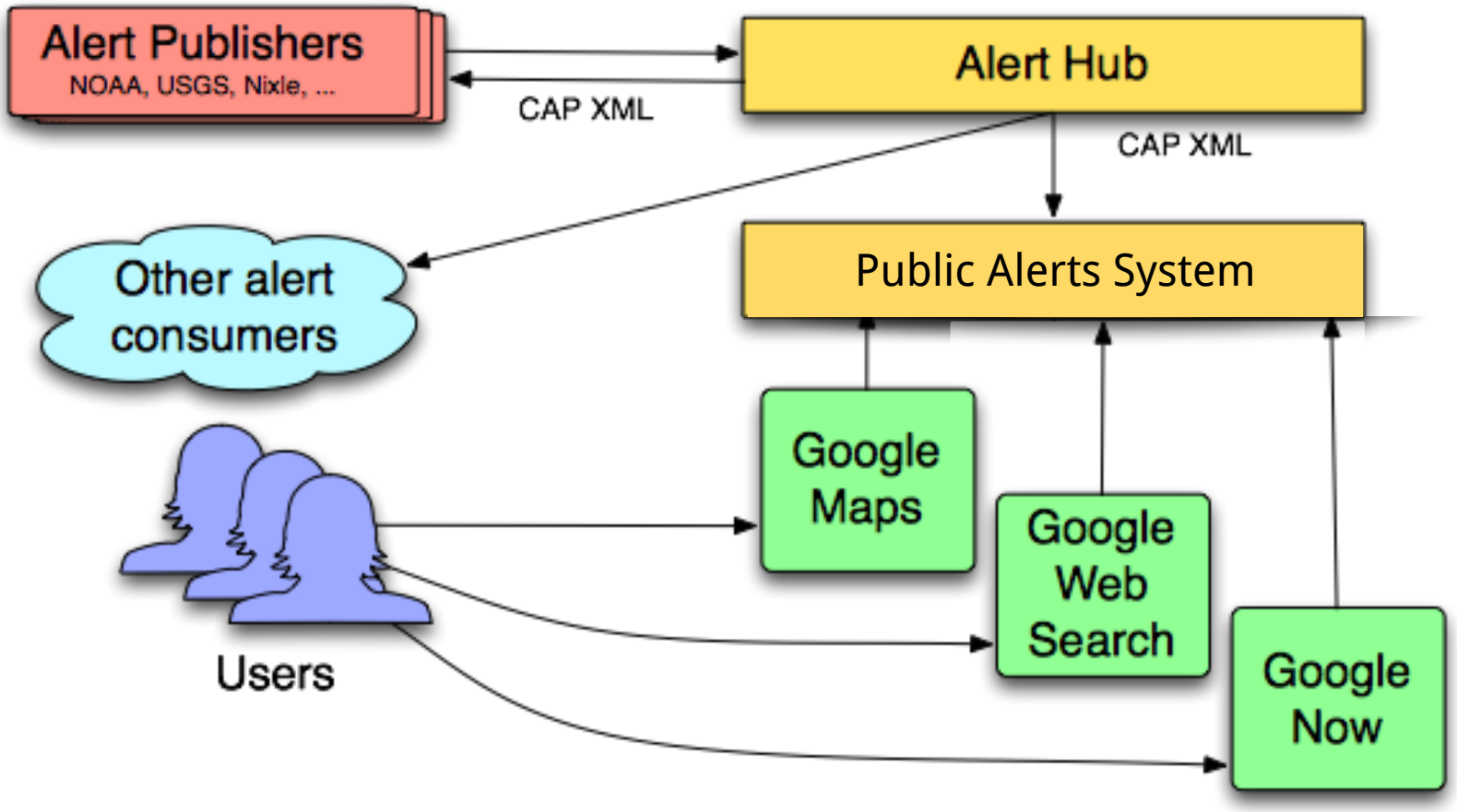
File

```
1  <?xml version = "1.0" encoding = "UTF-8"?>
2  <alert xmlns = "urn:oasis:names:tc:emergency:cap:1.2">
3  <identifier>KSTO1055887203</identifier>
4  <sender>KSTO@NWS.NOAA.GOV</sender>
5  <sent>2003-06-17T14:57:00-07:00</sent>
6  <status>Actual</status>
7  <msgType>Alert</msgType>
```

CAP Java Library Recap

- Easy-to-use, well-tested Java library for parsing and creating messages in CAP format
- Support for validating messages against common CAP profiles
- Includes simple web application that validates the correctness of CAP messages
- http://code.google.com/p/cap-library/

End to End Workflow with Alert Hub



Summary and Next Steps

- Google Public Alerts aims to improve access to emergency information from authoritative, trustworthy, credible sources
- Write quality CAP content well-suited for displaying on web
- Make sure CAP is valid
- Make access to CAP feed secure and verifiable

Thank you!