Archived Content

DHS Science and Technology Directorate
Smart Alerts Pilot Project

Smart alerts, smart decisions

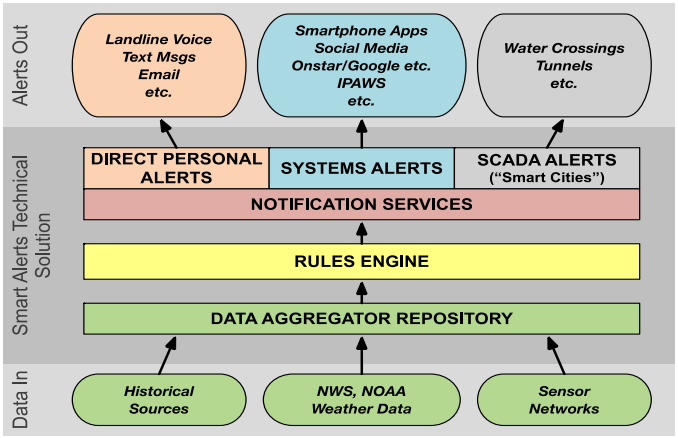
Flooding is a year-round threat in the United States. It is responsible for at least 80 fatalities per year and billions of dollars in property damage. Most fatalities occur when people take unnecessary risks, such as driving into flood water or walking near flood waters. It is easy to underestimate the force of flood waters. When facing such risks, having the right information as early as possible becomes critical both for first responders and the public. An early warning system capable of sending location- and time-specific alert information would greatly benefit endangered citizens and first responders.

A Flood Sensor Network for Real-Time Alerts and Warnings

The U.S. Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Smart Alerts Pilot project aims to make flood alerts and warnings smarter by sending location and time specific information to public. This will help local jurisdictions provide real time alerts so they can make better decisions when facing a flood threat.

The National Weather Service sends out warnings to a wide area ahead of a big storm. At a local level, many communities handle floods by dispatching first responders to the flooded area to assess the situation, put up barricades, report back to the command center, prepare alerts and warnings and send them out to the general public.

As part of the Flood Apex Program, S&T is working with the Lower Colorado River Authority (LCRA) in Austin, Texas, to develop a faster, better and safer way to deliver alerts and warnings to the general public. Instead of physically sending first responders to flooded areas, the project is developing a software system to collect data from low-cost flood sensors. Geo-targeted information is then sent to individuals in the areas specifically affected by the event by leveraging the location-based features of smart mobile devices. First responders can then concentrate their resources to where they are needed the most.



LCRA is partnering with local communities in central Texas to research and prototype this next generation smart alerts system. The system includes four critical components: 1) a sensor network that includes front-line sensors. 2) a data aggregation repository system that collects sensor data wirelessly for evaluation; 3) a real-time rules engine, which includes algorithms and logical rules applied to sensor data for better decision making regarding alerts and warning; and 4) an alert system that produces and disseminates real-time, geo-targeted alerts and warning messages.

Operational Testing for Three Use Cases

LCRA expects to complete initial tests by the end of summer 2017, and will then evaluate the prototype sensor network against three real-world use cases. The use cases include a preemptive warning and evacuation of a river basin community, predictive and real-time alerts to citizens surrounding a low-water crossing, and delivery of early warnings to LCRA's public safety dispatch system.

Homeland Security
Science and Technology

To learn more about Smart Alerts Pilot for the Flood Apex Program, email us at first.responder@hq.dhs.gov.

2017- 05-23