Enhancing decision support and management services in extreme weather climate events

Result in Brief

Project information

beAWARE
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Enhanced situational awareness improves decision-making during extreme weather events

Currently, emergency management of severe weather events is largely decentralised, leaving local communities responsible to prepare for and deal with disasters. Innovative crisis management tools and technology should enable a fast and effective response, significantly decreasing loss of life and property.

Enhanced situational awareness improves decision-making during extreme weather events

The intensity, frequency and economic costs of extreme weather events are increasing with global climate change. As a result, flooding, droughts, heatwaves and wildfires are expected to be more common and more severe in the future.

The EU-funded beAWARE project developed a comprehensive communications and analysis platform to help decision-makers, first responders and citizens. It includes multilingual verbal and written communication
analyses, multilingual report generation and emergency multimedia-enriched communication.

**Smarter and faster feedback and decision-making at the local level**

According to project deputy coordinator Dr Anastasios Karakostas: "In every disaster and crisis, time is the enemy. Getting accurate information about the scope, extent and impact of the disaster is critical to creating and orchestrating an effective disaster response and recovery effort. The main goal of beAWARE is to provide support in all the phases of an emergency incident."

The beAWARE knowledge base is the semantic foundation that provides the classification scheme and deduction rules and also analyses information and distributes outcomes. Information is obtained from local citizens, first responders, social media, local weather forecasts, sensors such as in situ static cameras to monitor water levels and even cameras on drones.

Citizens and first responders communicate with the beAWARE platform via the beAWARE mobile application. The social media monitoring module searches for and validates related social media content and then analyses it to perform spatiotemporal grouping of relevant posts.

The smart algorithms analyse both visual and audio information. As Dr Karakostas explains, “the visual analysis module can define the type of crisis, detect relevant objects (for example, cars in a flooded area) and estimate the traffic.” An automated speech recognition module transcribes audio messages received through the beAWARE mobile app or phone calls in four languages (English, Greek, Italian and Spanish).

“The Public Safety Answering Point (PSAP) is beAWARE’s central command and control system,” Dr Karakostas notes. “It receives information from citizens, first responders and social media, processes it through automatic reasoning engines and analytics services and generates automatic incident reports or enriches field reports with information based on multimedia, social media and sensor analytics.”

Two field pilots validated the beAWARE platform: a heatwave simulation in Greece, and a flood simulation in the Italian Eastern Alps region. During the flood test, the mayor as decision-maker was supported by various offices of the municipality and region to staff the control room and act as first responders.

**Increasing awareness of the platform and its utility for the public good**

In addition to publications and participation in numerous conferences, beAWARE also organised the first-ever (2018) and second (2019) international workshops on Intelligent Crisis Management Technologies for climate events (ICMT) at the International Conference on Information Systems for Crisis Response and Management (ISCRAM).

Widespread implementation of the beAWARE platform at the local level should enable communities to take charge of crisis management. Community leaders, first responders and citizens alike will be able to address increasingly severe weather events more quickly and effectively, saving lives and livelihoods.

**Keywords**
beAWARE, disaster, crisis, first responder, citizens, social media, emergency, crisis management, extreme weather, heatwave, local level

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