beAWARE

Enhancing decision support and management services in extreme weather climate events

beAWARE

Anastasios Karakostas
Stefanos Vrochidis
Ioannis Kompatsiaris

Information Technologies Institute
Centre for Research and Technology Hellas

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE

- Climate conditions are expected to **change worldwide**. This includes an increase in intensity and frequency of (among others) extreme weather events

- All major disasters require an **immediate**, **comprehensive**, and **professional response**

- Until now, a splintered structure dominated the emergency management landscape, leaving **each community or county** responsible for preparing for the disasters.

- This fragmented system often created significant **risk** exposures to communities, and limited resources resulted in significant **loss of life** and **property**.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE

- There is a need for…
  - disaster planners and responders should be able to use a wide variety of **technologies and tools** to **assist** them during an incident.
  - In every disaster and crisis, incident **time is the enemy**, and 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.
  - One of the main issues and problems during a climate crisis is the **management of the end users forces**. How can we efficiently have the proper forces to the right place in order to face a disaster? Although several solutions have been tested, many issues and problems are unsolved.
- The main goal of beAWARE **is to provide support in all the phases of an emergency incident**.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE concept

- Instead of focusing on a specific part of the crisis management problem, **beAWARE proposes a holistic approach to the realization of crisis management framework that it will support all the phases in an emergency call sequence.**

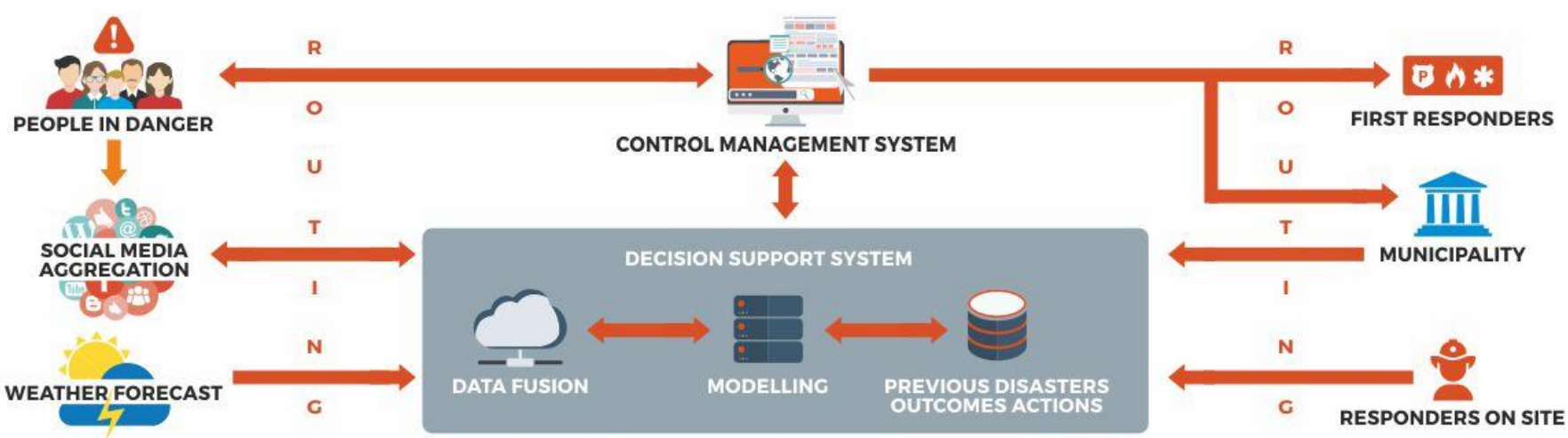
- The overall objective of beAWARE is to provide an **integrated solution** for **new decision support services** based on aggregated analysis of multimodal data and previous crisis management records.

- beAWARE will address the needs of the main sectors of the security emergency procedure, namely **first responder and PSAP**.

- Moreover, the project aims to bring first responders, PSAP centres and forecast services to collaborate together in order to explore new ways of working and delivering more effective outcomes.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE concept



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

Objectives

- Obj.1 – Perform a research **study on the requirements for emergency services** given the current digital landscape (i.e. end user in emergency need, PSAP operator, first responder).
- Obj.2 – **Multilingual speech and written communication analysis** in emergency calls
- Obj.3 – **Aggregate multimodal information from sensor networks, meteorological stations**, etc. and social media for decision support and validation purposes and issue early warnings.
- Obj.4 – **Visual context analysis during** emergency calls.
- Obj.5 – **Semantic integration of multimodal information from the emergency calls**, M2M/IoT platforms and social media for decision support and generation of early warnings.
- Obj.6 - **Multilingual report generation** from aggregated emergency data.
- Obj.7 – Research & development of **Main Public Safety Answering Point** (PSAP) for emergency multimedia enriched calls Develop a PSAP

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE pilots

- **1st large scale pilot exercise - Flood**: To support decision makers (AAWA) in the Italian Eastern Alps region during unplanned events (emergencies), in particular floods and flash floods.

- **2nd large scale pilot exercise - Fires** pose a threat to humans, animals and infrastructure and can in a short time create a lot of damage and heavy negative economic consequences. The fires can be influenced by the weather as periods of dry weather increases the risk of fires in the nature, and heavy winds can cause a wide spreading in a given direction. It is also important to use forecast and warning systems in the handling of the public and influence on their behaviour to minimize risk of fire.

- **3rd large scale pilot exercise – Heatwave**: A strong heatwave occurred during summer in a region in northern Greece. During the relative period, very high temperatures (over 40^{o}C) occurred throughout northern Greece.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

WPs – research and innovation

- WP2 Climate disaster management Requirements
  - Use case specifications
- WP3 Early warning generation
- WP4 Aggregation and semantic integration of emergency information for decision support and early warnings generation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

WPs – research and innovation

- WP5 Multilingual report generation
- WP6 Main Public Safety Answering Point for emergency multimedia enriched calls
- WP7 System development, integration and evaluation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

Evaluation

- Prototype and final system evaluation

- User-oriented evaluation
  - End users
  - External reviewers (e.g. i-REACT and ANYWHERE)
  - User Group

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

Expected results

- Final system dealing with 3 use cases

- Modules
  - Crisis classification
  - Advanced techniques for content distillation from multilingual textual and audiovisual material
  - Social event detection and decision support
  - Advanced techniques for emergency report generation and their performance
  - Main public safety answering point (PSAP) prototype

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

Exploitation and Dissemination

- Exploitation of results
- Creation of modules/tools
- Modules to be exploited by the industrial partners
- Business plan to exploit the final system

- Dissemination of results
- beAWARE user and open door days
- beAWARE conference and joint workshops
- Demonstration of results in End users
- Publication to scientific conferences and journals

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE

beAWARE impact

- **Impact on the security of people:** beAWARE improves the way in which people interact with a PSAP center by promoting a highly interactive way of communication between the different parties. It further improves trust between the people in danger and the emergency service as it establishes reliable and functional connections between the two.

- **Impact on the emergency working routines:** By facilitating innovative technical solutions will allow PSAP centers and first responders to do more focused and productive collaboration. The data analysis is also expected to transform the security mechanisms by making communication and understanding between people with needs and PSAP centers more efficient and easy.

- **Society:** It will facilitate the citizens access to the emergency call centres, thanks to inclusion of new communication channels (call, social media), making possible to inform about an emergency across different devices or services.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE Consortium

- **Centre for Research and Technology Hellas (CERTH)**
- **Motorola Solutions Israel Ltd (MSIL)**
- **Universitat Pompeu Fabra (UPF)**
- **Fraunhofer Institute of Optronics, System, Technologies and Image Exploitation (IOSB)**
- **Valencia Local Police (PLV)**
- **Hellenic Rescue Team (HRT)**
- **Finnish Meteorological Institute (FMI)**
- **IBM Israel**
- **Alto Adriatico Water Authority (AAWA)**
- **Frederikssund-Halsnæs Fire & Rescue Service (FH)**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475

beAWARE

beAWARE

Enhancing decision support and management services in extreme weather climate events

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700475