

*Abstract*

# A Novel, Reliable and Real-Time Solution for Triage and Unique Identification of Victims of Mass Casualty Incidents <sup>†</sup>

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**Abstract:** A mass casualty incident may result in tens or hundreds of victims. Triage, being the procedure of classifying victims according to their medical emergency, and the unique identification of victims are equally crucial procedures for effectively managing the crisis with respect to personnel (emergency medical services and non-medical civil protection practitioners) and assets (ambulances, medical equipment, hospital beds, etc.). The solution developed in this work aims at reducing the time needed for triage and identification procedures, and at the same time enhancing the situation awareness of crisis managers. Our system consists of (a) electronic wearable triage tags, aiming at replacing the legacy paper tags, supporting enhanced actuating and connectivity functionalities, visually presenting the status of the medical emergency of the victims and uniquely identifying them, (b) a mobile application, connected in real time with a cloud-based data aggregation node, enabling the emergency personnel to control the wearable device and to record the personal and medical emergency information of the victims, (c) an interoperability layer, supporting different connectivity options and capable of secure and reliable distribution of the collected data to multiple systems, such as Command and Control (C2s) systems of civil protection agencies, and (d) a web application, graphically presenting the victims' medical emergencies and their personal information in aggregated and in-detail views, intended to be utilized by crisis managers in tactical and strategic levels of command. The efficiency of our system has been demonstrated in multiple civil protection full-scale exercises across Europe.

**Keywords:** triage; victim; identification; medical emergency; crisis management; wearable; mobile application; real-time system; interoperability; civil protection

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