

## Technological Challenges for First Responders in Civil Protection; the RESPOND-A Solution

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**Abstract :** Summer 2021 was marked by a number of prolific fires in the EU (Greece, Cyprus, France) as well as outside the EU (USA, Turkey, Israel). This series of dramatic events have stretched national civil protection systems and first responders in particular. Despite the introduction of National, Regional and International frameworks (e.g. rescEU), a number of challenges have arisen, not only related to climate change. RESPOND-A (funded by the European Commission by Horizon 2020, Contract Number 883371) introduces a unique five-tier project architectural structure for best associating modern telecommunications technology with novel practices for First Responders of saving lives, while safeguarding themselves, more effectively and efficiently. The introduced architecture includes Perception, Network, Processing, Comprehension, and User Interface layers, which can be flexibly elaborated to support multiple levels and types of customization, so, the intended technologies and practices can adapt to any European Environment Agency (EEA)-type disaster scenario. During the preparation of the RESPOND-A proposal, some of our First Responder Partners expressed the need for an information management system that could boost existing emergency response tools, while some others envisioned a complete end-to-end network management system that would offer high Situational Awareness, Early Warning and Risk Mitigation capabilities. The intuition behind these needs and visions sits on the long-term experience of these Responders, as well, their smoldering worry that the evolving threat of climate change and the consequences of industrial accidents will become more frequent and severe. Three large-scale pilot studies are planned in order to illustrate the capabilities of the RESPOND-A system. The first pilot study will focus on the deployment and operation of all available technologies for continuous communications, enhanced Situational Awareness and improved health and safety conditions for First Responders, according to a big fire scenario in a Wildland Urban Interface zone (WUI). An important issue will be examined during the second pilot study. Unobstructed communication in the form of the flow of information is severely affected during a crisis; the flow of information between the wider public, from the first responders to the public and vice versa. Call centers are flooded with requests and communication is compromised or it breaks down on many occasions, which affects in turn - the effort to build a common operations picture for all first responders. At the same time the information that reaches from the public to the operational centers is scarce, especially in the aftermath of an incident. Understandably traffic if disrupted leaves no other way to observe but only via aerial means, in order to perform rapid area surveys. Results and work in progress will be presented in detail and challenges in relation to civil protection will be discussed.

**Keywords :** first responders, safety, civil protection, new technologies

**Conference Title :** ICCPCM 2022 : International Conference on Civil Protection and Crisis Management

**Conference Location :** Rome, Italy

**Conference Dates :** February 17-18, 2022