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A new European research initiative will develop innovative ways of detecting victims trapped under debris

In the face of natural or man-made disaster, urban search and rescue teams and other first responders like police, medical units or civil protection race against the clock to locate survivors within the critical 72-hour timeframe, often at their own peril due to the presence of instable structures or hazardous environments. In order to speed up the detection of survivors trapped in collapsed buildings and to improve working conditions for the first responders, the CURSOR project will devise novel technologies using drones, miniaturized robotic equipment and advanced sensors.

The project will most notably deliver the innovative CURSOR Search and Rescue Kit, which features miniaturized robots and different types of drones. The robots are equipped with chemical sensors that detect a wide range of chemical substances indicating human presence. They are carried from the operations headquarters to the disaster site by a transport drone. On site, the robots work independently in clusters searching for survivors. Additionally, the Mothership UAV (Unmanned Aerial Vehicle) acts as an aerial hub that produces high-definition imaging for accurate visualization of the disaster zone and allows communication with the control centre.

The initiative ultimately seeks to match the operational needs of search and rescue teams with current technological capabilities. In order to achieve this objective, the CURSOR team, which includes 16 partners*, involves first-response practitioners from four European countries; research organisations that will provide leading-edge technology; and small and medium companies that will develop key innovative components and commercialize the project results. Other relief practitioners will be involved as members of the project's First Responder Board, responsible for technology validation and standardisation activities.

"First responders have practical experience on the field and developers the technical know-how," explains Klaus Dieter Büttgen, coordinator of the CURSOR project at the German Federal Agency for Technical Relief (THW). "Through this unique collaboration between technical partners, industry, academics and first responders, expertise will be transformed into a novel technology that contributes to locating buried victims more swiftly and with less risk for the people conducting the research operation."

The European Commission granted €7M to the CURSOR research proposal under the Horizon 2020 funding scheme. The project was officially launched in September and will run for three years.

