



DMT - a box for rapid relief

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DLR has developed an innovative situation assessment and management system for disaster control. Called disaster management tool, it captures and disseminates any important information in the event of a crisis – and it is small enough to be carried by hand.

As natural disasters affect ever-increasing numbers of people, the call for rapid assistance in emergencies is growing more vociferous. Thus, civil protection and disaster control find themselves confronted by considerable challenges, nationally as well as internationally. The need for modularisation and international cooperation among crisis response forces has been recognised particularly at the EU level. At the same time, experience in the field shows that, as disaster scenarios grow more and more complex, cooperation requires a large measure of coordination which, in turn, implies communication and the exchange of experience. It is for this purpose that DLR designed a so-called disaster management tool (DMT). Developed at the Institute of Communications and Navigation in Oberpfaffenhofen, the system permits analysing situations quickly and disseminating the results in the assessment phase immediately after a disaster, when time is an extremely critical factor.

The DMT hardware consists of computers, displays, diverse communication interfaces, and sensors. All components of this highly compact system will fit into a box which can be carried as hand luggage. Rescue forces and decision-makers may use it to acquire, display, and disseminate information rapidly. Local data (maps, satellite images, rescue force locations, etc.) are visualised by the DMT in highly intuitive graphics. A user interface designed to fit the workflow in the management of major disasters enables field workers to enter relevant information more easily and quickly. Moreover, the system is extremely easy to operate.

Operability assured even without a local infrastructure

On a mission, information is exchanged and synchronised automatically by ad-hoc radio and satellite communication. The system's communication and coordination capabilities will be available even if the local infrastructure has collapsed. All teams use the same information status (joint situation awareness), which they update continuously. Moreover, the DMT permits directly integrating high-resolution maps such as those produced for EU missions by the DLR Centre for Satellite-based Crisis Information (ZKI). Thus, the DMT amalgamates communication, navigation, and satellite-based Earth observation – three of DLR's core specialties – into a single integrated, problem-specific solution.

The system is already being used successfully by assessment experts in international training courses. Among other things, it serves to guide assessment teams, to gather facts quickly on the spot, and to maintain communication between teams and their coordinating units. This is why supporting existing structures and workflows was a point of special importance in the system's development. Because it speeds up the acquisition and dissemination of information that is crucial for taking action, relief can be launched much more quickly and purposefully. Moreover, the system enhances the safety of the field forces and reduces the cost and risk of the aid organisations.

The DMT as a technology driver

Beyond its present functions and applications, the DMT may be used to support other DLR-made technologies and accelerate their application in civil security. One case in point is DLR's current research interest in navigation in a difficult environment: scientists are studying the options of using inertial sensors attached to relief workers' footwear (NavShoe/FootSLAM) to enable continuous monitoring of their whereabouts, and receiving and forwarding instant

information on their status. Another example is DLR's VABENE project, under which aircraft crews take high-resolution images which are directly transmitted to the ground, where they can be displayed by the DMT without further delay. Furthermore, there are plans to employ the DMT in future multi-agent systems which use mini-drones (micro aerial vehicles) to explore specific regions autonomously.

Scientists from two of DLR's main research areas, space and transport, are involved in this project, which at the same time forms part of security research, a cross departmental programme under which defence and security-related research and development activities are being planned and controlled.

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Commitment to dealing with disaster: the DMT



DLR has developed an innovative situation assessment and management system for disaster control. Referred to as Disaster Management Tool (DMT), it captures and disseminates any important information in the event of a crisis – and is small enough to be carried by hand. This image shows the DMT being used on a practice mission in Cyprus to assess the strength of a dam.

Credit: DLR (CC-BY 3.0).

Urban Search and Rescue



One of THW's urban search and rescue teams (USAR) on a practice mission.

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All components of the disaster management tool (DMT)



All components of the disaster management tool (DMT) fit into a hand baggage sized box. Relevant local information is displayed clearly on an easy-to-read map.

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