

# The 3<sup>rd</sup> DTIF Workshop

The latest Demining Technology Information Forum (DTIF) workshop focused on the use of ground penetrating radar (GPR) in humanitarian demining. Participants were able to share knowledge and formulate plans for the future of GPR in demining efforts.

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## Background

The primary aim of DTIF is to provide the R&D community with an opportunity to exchange information and ideas on technology for mine action. This is accomplished through workshops and an online journal ([www.maic.jmu.edu/dtif](http://www.maic.jmu.edu/dtif)). The 3<sup>rd</sup> DTIF workshop, GPR in Support of Humanitarian Demining, was held at the European Commission's Joint Research Centre (JRC) in Ispra, Italy, on 23–24 September 2002.

In selecting GPR as the topic, the organizers were aware of the successful outcome of the International Pilot Project for Technology Cooperation (IPPTC) on metal detectors. They intended that this workshop serve as a first step in promoting international collaboration to accelerate deployment of mature GPR systems to the field. Through a series of presentations and facilitated discussion, the participants were asked to assess the state of development of GPR, assess lessons learned from the testing and use of GPR systems in the field, and produce recommendations for future work.

Presentations were made on field trials of several GPR systems that are in an advanced development stage. These included handheld systems developed at ERA Technology (MINETECT) and QuinetiQ and the LOTUS vehicle-mounted system. Papers were presented describing basic R&D on new antenna configurations, signal-processing software, and the effect of soil characteristics and surface roughness. The perspective of the technology user was provided by Vernon Joynt and Kaj Hoerberg who described their experience with vehicle-mounted GPR systems looking for AT

mines on roads in Africa and the Balkans. All of the presentations are available of the DTIF website ([www.maic.jmu.edu/dtif](http://www.maic.jmu.edu/dtif)).

## Conclusions and Recommendations for Future Work

There was a consensus that GPR development in several countries had passed beyond the research phase and that there was a need to get the more advanced systems (GPR/metal detector combinations) into the minefield for evaluation by the demining community. In anticipation of an end-user trial, suitable test sites in mine-affected countries need to be identified. The characteristics of these test sites must be defined by developers and users, and the workshop participants made a good start on this task. It was felt that someone, such as members of the International Test and Evaluation Program (ITEP), should be asked to develop standard test protocols for an end-user trial.

The workshop participants also recognized the requirement for test sites, such as those at the JRC, where developmental GPR systems and improvements, such as new antennas and signal-processing software, can be investigated under controlled conditions. However, they were agreed that soil types and other conditions at these sites should be representative of conditions in a real minefield. They also stipulated that, if real mines (detonator replaced) cannot be used, adequate mine surrogates must be identified or developed. Characteristics of the test site must be documented with some form of quality control in place (updated ground truth).

The need to take soil properties into account when testing any GPR or metal

detector system was universally agreed upon by participants at this workshop and has been a concern at many other gatherings of scientists interested in technologies for mine detection. Participants proposed that the existing data be gathered together and a serious effort be made to collect additional data. The ultimate goal is to prepare a global soil database (possibly in the form of a map), making use of existing soil maps and databases created for reasons other than mine action. They recognized that this is a very ambitious undertaking and suggested collaboration under an international program such as ITEP.

The 3<sup>rd</sup> DTIF workshop can be considered a success because it gave many of those working on GPR systems a chance to exchange information and generate ideas for future work that will be passed to an organisation with a mandate to act on them. Contact information was provided to the participants so that this valuable interaction can continue. As always, the JRC was a generous host and excellent facilitator. Thanks are due to Mr. John Dean and Dr. Alois Sieber for their organizing effort. ■

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