Downlooking GPR Activities at FHR 1999-2016

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This presentation gives an overview of the past 17 years the FHR UWB Team was working on GPR based mine detection and IED detection. The first measurements started in 1999 using a commercial GPR. At that time the use of a ROC curve was for the first time a measure to compare results of different GPR systems from different research teams. In 2002 the FHR UWB team joined the MsMs activity at the Joint Research Centre in Ispra and was the only team providing GPR data for all 7 soil types with sufficient ground truth. In 2005 the International Test and Evaluation Procedures (ITEP) Group working under an international MoU developed standardization procedures to test handheld metal detectors. Also handheld dual sensor systems were treated. Results from in-field tests of the Minehound system e.g. in Bosnia Herzegovina paved the way for this commercially available handheld dual sensor system. Under ITEP again, in 2009 a measurement campaign was conducted in Germany where the "Comité Européen de Normalisation" CEN Working Agreement (CWA) 14747 was applied. FHR attended these tests with the GPR equipment. Finally, there was no international agreement possible for a standardization document on the handheld dual sensor test. Due to the good GPR signature database from the JRC trials a PhD topic on the simulation of GPR-signatures of mine-like targets proved the applicability of RCS prediction for GPR target identification. As a very short overview we can show the status of the military development in Germany on GPR usage for route clearance.

The latest projects of the FHR UWB team focus on mine signature database issues and the classification, the applicability of a forward looking, vehicle mounted GPR, and polarimetric issues.

The FLOSSI demonstrator was an intermediate step towards an airborne GPR development. This topic should be dealt with in a separate talk.