

TIRAMISU: Progress in Developing New Tools for Mine Action

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Introduction

TIRAMISU is a research and development project funded by the European Commission. The objective is to provide the Mine Action community with a toolbox to assist in addressing the many issues related to Humanitarian Demining and thus promoting peace, national and regional security, conflict prevention, social and economic rehabilitation and post-conflict reconstruction.

TIRAMISU stands for Toolbox Implementation for Removal of Anti-personnel Mines, Submunitions and UXO.

Progress in 2014

In 2014 important floods hit Bosnia-Herzegovina, Serbia and Croatia. Mines were moved and a new assessment of the situation was necessary in a short notice. An unmanned aerial system was deployed in Bosnia-Herzegovina in order to help BHMIC and various emergency organizations, such as the Belgian Fast Aid & Support Team [2][3][8].

Collecting data on suspected hazardous areas is a key activity to speed up the land release process. Some research is being done on methods to gather such additional information from remote sensing images and use this information to assess how likely an area is to be mined [13][18][19][27][28][36][41].

The development of the LOCOSTRA vehicle is continuing and an accreditation by CTRO is planned for 2015 [7][31].

The use of sensors mounted on unmanned ground vehicle for detection, technical survey of quality control and assurance is being investigated worldwide [35]. Some solutions developed in TIRAMISU were tested in particular in Belgium in July 2014. These systems include a multi-channel metal detector array [4][9], a densely-sampled ground penetrating radar array [33], among others. Some of these tools were tested in an international challenge [22]. A light-emitting polymer sensor to detect explosives for humanitarian demining is also developed [12][23][24][29][30][32]. It could be used for detection, technical survey and in coordination with the use of bees to detect explosives. Intelligent prodders are also being developed and evaluated for excavation and training [1][11]. A Field and Service Robotics backpack is also proposed [34].

When collecting a lot of data from different ways on the same areas, it is important to be able to manage all this information geographically. For this a repository system has been developed [20][39].

Training operators to the use of remotely-control vehicles in mine action may be a long process that may require the use of the vehicles, which therefore are no longer available for real work. This is one reason why we are working on computer simulation for training [5][21][24][25][26]. Methods to improve the training of operators to the use of hand-held detector are investigated too [10].

Experiments show that several projectiles cause more damage when they hit a piece of personal protective equipment (PPE) almost simultaneously than one at a time. This is something that should be tested when evaluating the relevance of a PPE for a given mine action activity. This is one of the ideas behind new guidelines to test and evaluate PPE for mine action [16]. We have also proposed guidelines to evaluate demining machines [6].

Transporting explosive hazards to where they will be disposed of is sometimes as dangerous as finding them. A dedicated container has been designed and tested for that purpose [14][17]. Improving the efficiency of neutralization of explosive hazards is also investigated [40].

After a test in Algeria the radio-broadcast theater play "Billy Goat" was tested in a very different context in 2014: Cambodia [37][38]. The use of video games to teach children lessons on the risk of mines will be evaluated in 2015 [15].

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