Anti-personnel landmines and unexploded ordnance (UXOs) present an important obstacle to the transition from crisis to peace for war-affected countries. They threaten post-conflict development and welfare.

The FP7 project TIRAMISU (total budget: 19M€) aims to provide the Mine Action community with a toolbox to assist in addressing the many issues related to Humanitarian Demining, thus promoting peace, national and regional security, conflict prevention, social and economic rehabilitation and post-conflict reconstruction.

Started in the beginning of 2012, TIRAMISU involves 26 project partners, including research institutes, universities and SMEs. TIRAMISU is to finish end of 2015.

Each issue of this publication will present the tools designed, built or tested by TIRAMISU. This first issue lists some of the robotic tools that were tested last year. It also describes a concept for labels that could help understand visually the main characteristics of a given tool, whether it is a detector, mechanical equipment, software, personal protective equipment, etc.

An introduction to our work to propose guidelines to test and evaluate personal protective equipment and propose acceptance tests for demining machines that are not designed to damage or destroy mines is also given.

This first issue ends with a short description of what a future European Centre of Excellence for Explosive Hazard could be, as a follow-on to the project.

It is our hope that this newsletter will allow the readers to have a better view on what we are doing and motivate them to comment and help us to focus our work on tools that will be useful for the Mine Action community. TIRAMISU will be present at the Mine Action Symposium in Biograd, Croatia, from 27 to 30 April 2015. We are looking forward to seeing you there.

For further details on the project and its activities please check our website at http://www.fp7-tiramisu.eu, our Facebook page at https://www.facebook.com/tiramisu.eu, and follow us on Twitter @TiramisuFP7.

Sensors on robots

Some sensors mounted on robotic platforms were tested last year in Belgium. This kind of equipment could be used to detect mines, perform technical surveys or quality assurance and quality control.

One such system is a three-coil metal detector from project partner Vallon mounted on a Husky robotic platform from the Institute of Systems and Robotics of the University of Coimbra, Portugal.

A five-coil multi-channel metal detector array, developed by Vallon and mounted on a TEO Dor robotic platform provided by the Royal Military Academy of Belgium, was also tested.

In order to test a complementary sensor, an array of densely sampled ground penetrating radars from IDS Corporation, Italy, and mounted on a car from the Belgian Armed Forces was also evaluated.

A TCP-Box system (for Time-stamp, Communication and Positioning-Box) was also under test. It gathers the data collected by the sensors, geo-references them with the relevant locations from GPS or GLONASS, and store everything into a common data base, so that analysing all these data into a common geographic frame would be made easier.

This test took place at the premises of the Belgian EOD unit, SEDEE-DOVO, in July 2014.

The research leading to these results has received funding from the European Union’s Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 284747
Labels for tools

When you buy alimentary products you may find on some packages nutritional labels containing the most important information regarding the ingredients. Why not doing something similar with tools for Mine Action and trying to transmit the most significant data about a given tool in a blink of an eye? For this a concept of informative labels has been designed by the TIRAMISU project partners in order to provide the user with easy access and explanations of a tool’s purpose and the parameters needed to make it work properly.

At the time of writing the following labels have been designed:

- labels for detectors, providing information on the working principle, size and weight, certification, etc.
- Labels on ground processing tools, describing the environment in which the tool can work, size and weight, certification, etc.
- Labels on protective equipment, describing the materials used, size, certification, etc.
- Labels on software and service, indicating the required hardware and software architecture, etc.
- Labels on ground and aerial platforms, to provide information on weight and size, payloads, etc.

Guidelines for test and evaluation

Experiments carried out at the Royal Military Academy of Belgium (RMA - the TIRAMISU Project Coordinator) confirmed that current practices for evaluating personal protective equipment miss some important information. The threat of multiple fragments dispersed after an accidental explosion is usually simulated by single ballistic impact tests, neglecting the interactions between multiple impacts. With the ‘triple impact technique’ designed by RMA these interactions are included in the overall assessment of the protective material. This could form the basis for new guidelines on test and validation of personal protective equipment.

In 2005 an attempt was made to define guidelines to test and evaluate personal protective equipment but it failed. The Mine Action community now lacks such document. NATO standards exist and are used but they do not cover the specific requirements of Mine Action, such as protection against almost simultaneous projectiles. TIRAMISU is trying to restart work on a definition document of such guidelines, learning from the past experience. We are working closely with the European Committee for Standardization (CEN) and its Spanish member, AENOR. CEN has already several technical committees dealing with PPE, and they will be involved in this work. An extension to the current CEN Workshop Agreement on testing demining machines (CWA 15044) to cover machines that are not designed to damage or destroy mines is also under consideration.

These guidelines should be drafted with as large consensus as possible. All comments on these issues are therefore welcome.

Creation of a European Centre of Excellence on Explosive Hazards

Discussions are taking place among TIRAMISU partners and interested stakeholders to create a European Centre of Excellence on explosive Hazards with the following objectives:

- Promote the use of tools developed in TIRAMISU
- Support a sustained effort to continue the development and fielding of technology for Mine Action
- Support standardisation activities
- Support an objective evaluation, validation and possible certification of tools aimed at countering explosive hazards
- Disseminate information on new technology developments, standardization and evaluation

This Centre of Excellence is expected to be created in 2015.

www.fp7-tiramisu.eu