HECTOS

Harmonized Evaluation, Certification and Testing Of Security products

D5.3 – People screening portals: Working set of performance requirements and skeleton T&E methodology

EXECUTIVE PUBLISHABLE SUMMARY

A report prepared by:
TNO
Iconal

Date: 2016-02-22
Project No: 606861
FOI Designation No: FOI-2012-1271
Dissemination Level: RE
Total No of Pages: 4

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 606861.

HECTOS

D5.3
People screening portals: Working set of performance requirements and skeleton T&E methodology

EXECUTIVE PUBLISHABLE SUMMARY

Version:	1.0 – Executive Publishable Summary
FOI designation no:	FOI-2015-1958
Responsible partner:	TNO
Author(s):	TNO: Martijn Koolloos, Erik Kroon Iconal: Mike Kemp
Number of pages:	4
Dissemination level:	RE – *Restricted to a group specified by the consortium (including the Commission Services)*
Start date of project:	September, 2014
Duration:	3 years

HECTOS

Executive Summary

HECTOS is a European project focusing on harmonization of evaluation, certification and testing of physical security products. Physical security equipment and systems are very diverse in technology, concept of operation, application area and performance, and similar security products are difficult to compare in terms of performance, accuracy, usage, trust and validation of functionality. Currently, there are very few test, evaluation and certification procedures in Europe that are mutually recognized by different Member States (MS). This leads to fragmentation of the market, as identified in the recent EC Communication on Security Industrial Policy, with negative impacts on both suppliers and users.

The HECTOS project focuses on the evaluation and certification schemes for physical security products, and studies how existing schemes used in other areas could be applied, adapted or developed for products used for physical security of people, property and infrastructure. Developed evaluation and certification schemes will be validated by applying them to two different product groups as case studies; explosives detection systems (outside of aviation security) and biometric recognition.

The objective of this deliverable D5.3 is to determine a working set of requirements and a skeleton test and evaluation (T&E) methodology for Weapon and Explosives (W&E) detection devices (portals) for people screening. The working set of requirements and skeleton T&E methodology will be subsequently used to investigate elements of the harmonized Evaluation and Certification (E&C) scheme developed in WP3.

A review of existing test-related standards for high TRL products was made, where a distinction was made between testing standards and performance standards. Outside the AvSec area, there are no European standards for explosives and weapons detection portals. There are however several test-related WTMD standards from two US institutes: the National Institute of Justice (NIJ) and the American Society for Testing and Materials (ASTM). Furthermore there is one international test protocol for MMW detection. From the review of these standards and test protocols the following conclusions wre drawn for the test method to be used in HECTOS WP5:

- All standards provide useful approaches that can be used to define a TM.
- Adversarial testing is no common practise for WTMD and MMW performance evaluation;
- Testing of different threat sizes / masses allows a more general application of the test results, including the application of multiple performance grades;
- When doing a full test, statistics are implicitly covered, but not quantified, by the large number of runs owing to the large number of variables (threat item, orientation, location, etc.), both for WTMD testing and for MMW testing. When doing a specific test (one threat, one direction, etc.), a dedicated statistical approach like in ASTM C1309 is recommended;
- A reference set of test items (threat and innocuous objects) and test laboratory site requirements are indispensable for repeatability of test results. The reference set of threat test items may consist of replicas or real threats. Replicas are enhance the repatability of a test, but are less realistic though, so there is a trade-off between realism versus repeatability.

The analysed standards and test methods were used to derive a set of performance requirements, which will form the base for a performance evaluation test method. The main

HECTOS

focus when evaluating W&E detection devices (portals) for person screening is on security performance, which is divided into detection rate and false alarm rate. The concept of ROC curve determination will be applied for WTMDs where the security performance of a detector is assessed for several object size classes and detector settings.

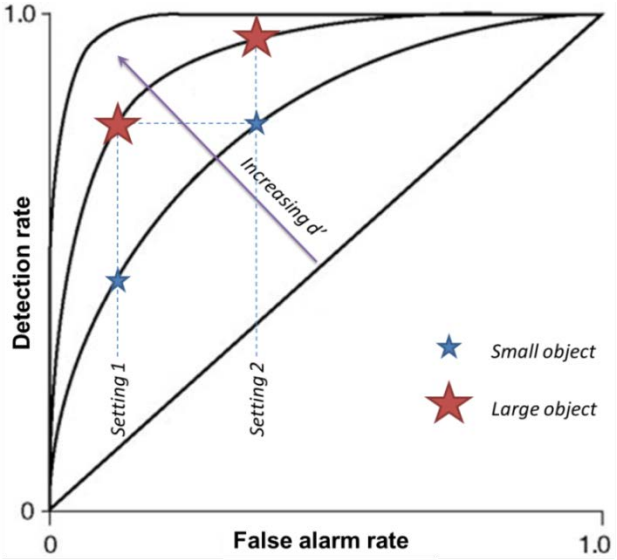

Figure 1 The detection performance of a WTMD for different settings and object sizes

Using a general threat set, the TM performance requirements were next discussed in more detail for scenarios that are considered relevant for W&E detection.

Based on the working set of requirements a high level test approach was developed focussed on security performance. This test method addresses the importance of repeatability and a sound statistical approach.

In order to validate the harmonized approach the following elements, which the stakeholders have indicated to be important to include in the harmonized C&E scheme, will be investigated during the next phase of WP5 by using the outline test methods presented in this report :

- Intralab repeatability, with the objective to identify important aspects that ensure intra-lab repeatability;
- Interlab repeatability, with the objective to identify important aspects that ensure inter-lab repeatability;
- Determination of the ROC-curve, with the objective to investigate the application-driven evaluation;
- Verification of technology independency, with the objective to identify elements of the test method that enhance or impede technology independency.

Although the performance requirements and respective test methods are mainly focused on the performance assessment of high-TRL portals, the approach to evaluation of the performance of explosives & weapons detection technology at the research and development stage, i.e. low-TRL testing, is also discussed.