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**D5.2**  
**Explosives trace detection systems: Working set of performance requirements and skeleton T&E methodology**

***EXECUTIVE PUBLISHABLE SUMMARY***

A report prepared by:  
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## Summary

HECTOS is an EU FP7 security research project that is exploring the issue that there are very few test, evaluation and certification procedures in Europe for physical security products that are mutually recognized by different Member States. As pointed out in the EC Communication on Security Industrial Policy, this leads to fragmentation of the market, with negative impacts on both suppliers and users. HECTOS will identify mechanisms to evaluate the performance of security products, as well as compliance with interoperability, regulatory, ethical, privacy and other requirements. The project will develop elements for a roadmap for the development of new harmonised product certification schemes.

By conducting two case studies in the priority areas “Biometrics” and “Weapons and Explosives Detection” HECTOS will enhance, and experimentally validate evaluation and certification schemes developed in WP3.

Deliverable D5.2 provides the tools by which this validation is performed for the area explosive trace detection (ETD). It starts with a brief analysis and comparison of existing standards and technical documents followed by a discussion of performance evaluation. Following this requirements for harmonised testing have been derived taking into account also the stakeholder’s needs and various requirements for harmonised evaluation. This led to the conclusion, that in case of ETD the most important requirements are concerning security performance by measuring of detection rate and false alarm rate. These two are not fixed parameters but are extremely dependant on the amount and the selection of threat and background substances. Therefore scenario related requirements have been reported in order to allow scenario adjusted evaluation.

Test methods and finally test results are the basis on which a harmonised evaluation is settled. Therefore, chapter 4 describes the main structures of test methods for high TRL ETD-systems identifying critical elements for repeatability and precision. The examination of the influence of those elements on testing results will be one major part of the testing which will be performed in the further progress of WP5. Especially difficulties in the preparation of reliable test samples will be further examined.

Only when testing fulfils all requirements of repeatability and precision its result can be used for type certification, while the certification process itself is not specific to explosives trace detectors and can be done according to the certification frameworks that are in place for various other application areas.

The focus on testing trace detectors at an earlier state (low-TRL) is somehow different. While type certification is not important at an early stage of development, repeatability and applicability to the planned use for example for optical non-contact detectors are crucial also for low TRL testing. Basic test methods for low-TRL explosive trace detectors will be developed in further process of WP5.