

Publishable summary

Description of the project context and objectives

Numerous measures and new regulations in civil aviation security have been introduced after terrorist attacks in the last 25 years, e.g. after the 9/11 attacks in New York. But can the current system with its ever increasing number and complexity of security regulations be sustained much longer? Concerns have been raised that the current regime inhibits technological innovation and the ability to adapt and respond to changes in threat perception.

The current regulatory framework (EC300/2008, EC185) focuses mainly on the types of equipment that are allowed to be used and their detection performance as components in isolation, rather than defining the required security performance of the overall checkpoint system. Because test and evaluation methods developed to date only aim at comparing performance against standards on this component level, it is unclear what overall security performance current checkpoints actually deliver. The sector needs a paradigm shift to address performance at the system level, and from separate consideration of security and operational impact, to a holistic approach from the design phase onwards, adequately supported by system level evaluation methods.

The aim of the XP-DITE (Accelerated Checkpoint Design Integration Test and Evaluation) project is to develop, demonstrate and validate a comprehensive, passenger-centred, system-level approach to the design and evaluation of airport security checkpoints. This will allow airports, checkpoint designers and regulators to incorporate a wide range of requirements and to evaluate checkpoint performance against system-level security, cost, throughput, passenger satisfaction and ethical factors. This will help ensure robust and controllable security performance, whilst providing freedom for airport operators to design checkpoints with innovative technologies and procedures.

The project will develop a suite of design tools and evaluation methods to implement the XP-DITE approach, which will be validated through trials at two European airports. Throughout the project, the XP-DITE team will work closely with airport operators, regulators and other stakeholders, both to gather requirements and to disseminate the results of the work so that the European and international security community can benefit from the project.

Work performed and main results

During the first period of the project (18 months) the following has been achieved:

As a starting point for an airport checkpoint design based on system level requirements a conceptual model has been developed. As input for this conceptual model were taken: requirements for components and for the checkpoint in total (system level), relations between components and a set of performance indicators in three defined performance areas: “security compliance”, “cost and operational”, and “customer satisfaction”. This conceptual model forms the basis for the development of the airport checkpoint design tool and the shared evaluation platform.

The development of new detection components for future airport checkpoints has almost been finished. For the stand-off / walk-through passenger scanning, the hand luggage scanning based on trace (vapour and particles combined) and biometrics tracking, reports are delivered about development progress during the first period. The report on the progress of the X-ray luggage scanning development will be delivered soon after the end of the first period. For detection components the development was facilitated by so-called data collection using real threats in dedicated laboratories. The performance assessment of each will

be done during the second period.

With regard to the design process, the requirements for this process and the design process elements are documented in detail. Important parts of the design process will be the design tool that will be used to design an airport checkpoint and the Design Handbook which will guide the user through the process.

The work on developing component test methodologies for prototypes and calculation methods for integrated ACPs has been started. The requirements for the shared evaluation platform have been delivered. This shared evaluation platform will enable the assessment of the performance of ACPs, either from a design through calculation, or from an actual ACP through combination of calculation and experimental testing.

As preparation for the future integration of two proof-of-principles ACPs an architecture for an overall alarm management system and a communication protocol are proposed. The technology providers within XP-DITE are already capable of using the communication protocol.

With respect to the ethical, legal, and societal aspects a framework has been developed that helps to understand where in the checkpoint design these issues can come up. It also helps in determining how well the design performs regarding ethical, legal and societal aspect. Based on this a set of design guidelines is derived to support the design of airport checkpoints.

Two stakeholder meetings have been organized: the kick-off meeting and a meeting for updating the stakeholders about the progress of XP-DITE. An XP-DITE leaflet has been issued as well as the XP-DITE website (www.xp-dite.eu).

Expected final results, impact and use

Final results

There is a growing understanding among European and national regulators, operators and industry that a change in the approach to aviation security checkpoints is required. The Airport Checkpoints (ACPs) in the future should deliver sufficient and more flexible security, and minimize negative effects including cost, and hassle so as to ensure a more positive passenger experience at the same time. To achieve this we propose and prepare an approach at ACP system level, support more quantifiable design of ACPs which enables explicit balancing of requirements, and support regulatory and operational control of overall performance.

It is the ambition of XP-DITE to pave the way for the design and operation of such future passenger-centred airport checkpoints by delivering:

1. A comprehensive set of system-level requirements and metrics for security, operation and aspects related to perception.
2. An ethical framework in view of human rights issues associated with some security technologies and procedures with appropriate attention for 'privacy by design'.
3. Design tool for integrated airport checkpoints.
4. A Shared Evaluation Platform (SEP) for testing and evaluating of integrated ACPs and its subsystems on all performance aspects.
5. Two proof-of-concept integrated ACPs at Schiphol and Manchester airport.
6. Recommendations for integrated-level security regulations and recommendations for using results in other security checkpoints (e.g. mass transportation).



Use

In the first instance, the project results will be exploited by airports, regulators and other stakeholders who will have the opportunity to assess the effectiveness of the XP-DITE approach. This has a significant value in itself. On the longer term it is the intention that the design process developed within the project will be mainly used by airport security infrastructure designers. The evaluation tools developed within the project are foreseen to be used mainly by regulatory bodies and auditors. Layered access rights ensure compliant handling of classified data. The innovative security system components developed during the project are all expected to be sufficiently mature by the end of the project that they can be built into the project proof of concept checkpoints and subsequently further developed and exploited as commercial products, either by the partners which developed them, or by licensing to other security system manufacturers.

Impact

For the **airport operator and checkpoint designer**, XP-DITE will provide a set of tools that will enable aviation security checkpoints to be designed and evaluated, both on paper and in the field. It will enable all aspects of performance to be included. XP-DITE should enable the use of innovative procedures and new technologies to be included in new checkpoints, and to allow airports to optimise checkpoint designs to the individual needs of their business. At the same time, the XP-DITE tools will enable them to provide evidence to the regulator of the level of security that they are achieving.

For the **regulator**, XP-DITE will explore new system-level approaches for the evaluation of checkpoint performance. The XP-DITE tools will allow regulators to carry out 'what if' experiments to explore the impact of new regulations, as well as the implications of new approaches and technologies developed by the industry. The tools should also allow the design of checkpoints that can be more easily adapted to respond to new and changing threats.

For **aviation security manufacturers**, XP-DITE will facilitate the introduction of new technologies and innovative products by enabling their effect on the overall performance of the checkpoint to be predicted and measured.

For the **travelling public**, XP-DITE should result in fewer delays and improved convenience at the airport, whilst ensuring that they are kept safe.

Website

www.xp-dite.eu

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