Current security screening efficiency is routinely assessed. Fictional threat images, known as TIPs (Threat Image Projection) are projected onto x-ray images of passenger baggage. Security screeners then identify these threats and are scored on their success. While this is useful for understanding some efficiency aspects, it fails to consider other expertise and skills used by security screeners. In many situations visual knowledge alone is ineffective. Objects can be presented at difficult viewing angles and set amongst clutter in bags. This can make it hard to differentiate and recognise potentially threatening objects, even with very experienced security screeners.

We have found that developing a better understanding of the strategies security screeners use, and how they solve problems, can show the way to a faster and more effective screening process.

Our solution

This project has set about to discover exactly how security screeners solve these problems day-to-day.

We carried out detailed observations of airport security screeners’ activities during x-ray screening of passengers bags.

Based on this, maps were generated that demonstrate the interactions between security screeners, their activities and the technology they use.

Maps are used to demonstrate what activities staff members do in their day-to-day work and how they relate to the sequence, context and type of activities performed.
Figure 1 A highly structured and organised problem solving sequence performed by an experienced security screener. After identifying the need to investigate the image, the security screener examines the object before deciding a closer look is needed. After a further examination the searcher is instructed to perform a manual inspection. The process takes 22.5 seconds.

Figures 1 and 2 compare problem solving sequences performed by an experienced and inexperienced security screener. In both examples the security screeners have identified an opaque, or hard to see, area that requires investigation.

Using the maps generated, differences can be seen between the processing strategies used by inexperienced and experienced security screeners during day-to-day problem solving.

Experienced security screeners effectively understand the type of problem solving required. Interactions are generally appropriate to the situation and are performed efficiently.

For less experienced security screeners, increased uncertainty and less developed skills occasionally result in decision making breakdowns and inappropriate actions, all of which results in hesitation and time delays.

Basically, experienced screeners are faster and more efficient in problem situations.

By discovering how and why, this research can be used to improve the training procedures of security screeners which in return will provide faster facilitation at the security screening point – a win for passengers and for staff.

What next?
We will continue to explore holistic airport security practices. Work is planned that will research and assess screening operator efficiency through automated monitoring.

The research is designed to support faster processing techniques and as a result, higher passenger satisfaction.

It will also support security screening operators’ performance and job satisfaction.

Want more information?
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