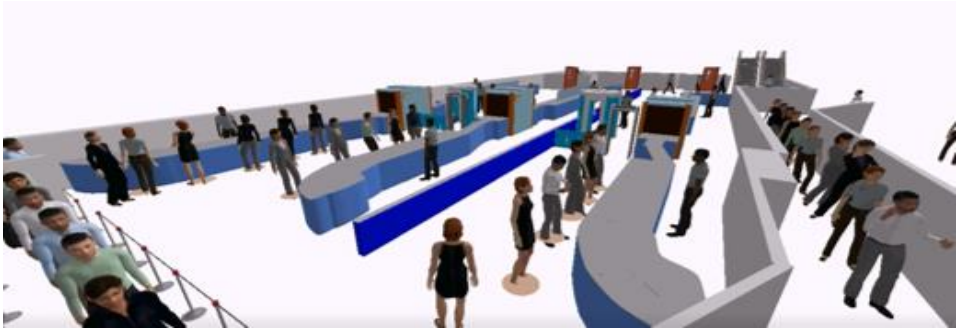
A methodology to test potential solutions at security checkpoints



About Result

Result are a company specialising in operational performance improvement and use Lean Six Sigma and Simulation tools in order to improve existing processes or design new ones.
Since 2006, we have spent a vast amount of time optimising and redesigning airport checkpoints so they offer a better customer experience and so they screen passengers more efficiently. We have worked all over Europe on checkpoint improvement projects and have in many cases totally transformed the checkpoint design.

Challenge

We have observed a common trend while optimising performance at security checkpoints. In most cases, the objective is crystal clear: ***increase passenger throughput*** or ***reduce passenger queueing times***. It's a good start….however the execution to realise the objective can often seem like a daunting task especially when rapid deadlines are exercised to survive the upcoming peak summer period.
Often, there is a scattergun approach to problem solving…."Let's trial a bunch of options to improve lane performance". However, a couple of weeks in and these efforts usually stagnate with not much to show for in terms of results.
There is a fundamental issue with this approach. The issue is that there are often an overwhelming number of truly great ideas and possible solutions suggested but only a finite amount of time in which to test them all. Often trials are run to test possible solutions, but can take weeks to obtain valid data sample sizes.

This sluggish approach of conducting trials for every possible solution however, often results in a select few of the options being trialled and all other efforts being put on the back-burner for next year's improvement initiatives. Fingers crossed that the right option was trialled!

Would it not be ideal if we could explore and test every possible option and the multiple combinations of options in just a couple of weeks? This is something Result have been doing since 2006!

Our Approach

So, how do we do it? We create a ***simulation model using Simio*** that has over 30 variable parameters in a single checkpoint lane. It can demonstrate at a glance how a security lane will behave, both before and after implementing possible solutions.

We test a number of scenarios in the model and identified the best mix of solutions to increase passenger throughput and reduce passenger queueing times….which consequently also improves the passenger experience, reduces conflict at the checkpoint and in turn **increases security**.

This is the single most important aspect of simulation modelling, since we are assured that we would get it right first time and that all possible options were explored. Our models have been over 96% accurate on predicting outcomes!

In terms of the results, by modifying a select few of the 30+ modelling parameters we can identify how process parameters impact on the overall system performance.

By the time we are finished modelling, we are able to identify the unique combination of solutions which are tailored to include airport characteristics and passenger demographics in just a few weeks.

More recently, with changes to security regulation coming up, we are using this technique to help airports predict what may happen when they introduce the newer CT X-ray technology and move to screening more passengers using body scanners. Using Simio in this situation is enabling airports to redesign their checkpoints for the future and working to stay efficient.

Case Study: Optimising Airport Security using Simio Simulation modelling

Result
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Results

Simulation models tell us how we should design checkpoints in order to optimise performance. We have found that Simio works really well for this as it is user friendly enough and has all the functionality to show 3D visualisations in high definition.
In most cases, following the modelling we setup trials with our clients to test the optimised checkpoint designs (where possible).
We run trials for a number of weeks and make minor adjustments until the checkpoint is running as the models suggest.
These trials typically show a throughput performance improvement of 25-75% depending on the airport.
Recent simulations have also shown a **30-*50% increase in security lane productivity*** which were later validated during trials in a live security environment.

In all the time we have spent doing this we have never delivered less that a 25% increase in passenger throughput per lane! Interestingly, a by product always seems to be an increase in passenger experience and an increase in security integrity….so sometimes, you can have your cake and eat it!! Passenger experience is always improved, and in some cases by as much as 30%.

A friend once told me that when a job is worth doing, it's worth doing right. And from a 'lean' perspective shouldn't we get it right the first time?

We believe that by investing in this type of work up-front, airports can make substantial commercial benefits through increased checkpoint efficiency and a longer infrastructure life. At one airport their infrastructure life was extended by 7 years, eliminating the need for enormous capital investment.
We also know that passengers with a good experience through the checkpoint tend to spend more in the retail areas too.

For more information on how we can help your organisation, contact our partner Andrew Boyd on andy.boyd@resultland.com or +44(0)7778678205