

Automated Border Control (ABC) Trial Stansted Airport 2008-9

Summary Report December 2009



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1 Foreword

The nature of travel through BAA London Stansted means that airlines and passengers are looking for speedy and efficient processes to enable them to transit through the Airport as conveniently as possible. This 6-month trial sought to improve clearance at border control. Building upon the 2006 miSense trial at Heathrow and capturing a growing public appetite for automation, this Trial has offered an alternative to manned desks utilising existing “chipped” passports. It has been a resounding success: validating the technology, building confidence amongst control authorities, passengers and the Airport operator, and offering a potential area for growth in the future.

The overall effectiveness of the system has been high, evidenced in part by the number of repeat users amongst arriving passengers. Our confidence in the automated gates, as a valuable addition to the service offered at border control, has meant that we have extended the Trial until the next generation of gates is introduced in early 2010. We are very grateful to all involved in the ABC Trial and I commend this report to you.



Neale Jouques
General Manager - Terminal
Stansted Airport

2 Introduction

2.1 Background to the Trial

The Automated Border Control (ABC) Trial was conceived by BAA and the UK Border Agency (UKBA) at the beginning of 2008. The goal was to trial the automated clearance of Travellers at the UK border using self-service gates, electronic passports (“ePassports”), and face recognition.

The ABC Trial followed the successful miSense Trial at London Heathrow Terminal 3 in 2006-7. miSense used fingerprint biometric technology to simplify a passenger’s journey through the airport, while further strengthening levels of security. It necessitated a dedicated enrolment into the “Trusted Traveller” scheme by participants, who were issued ePassport-like smart-cards containing their biometrics, as (at the time) ePassports were not in wide circulation.



Figure 1 – miSense logo

In contrast, the ABC Trial was designed to be accessible to any traveller over 18 years of age and of European Economic Area (EEA) nationality, with an ePassport issued by an EEA state. It relied upon the biometric face photo embedded in the ePassport’s chip, and no additional enrolment step was necessary: passengers could just turn up and use the Trial.

The ABC Trial system was custom-developed for BAA by Accenture Technology Labs, building on assets and experience from the miSense Trial. Development was carried out in collaboration with CrossMatch Technologies, 3M Rochford Thompson, and IER / Automatic Systems, with BAA and UKBA as key stakeholders.



Figure 2 – Location of London Stansted Airport

The ABC Trial was deployed at BAA’s London Stansted Airport (Figure 2), in the United Kingdom. Stansted (STN) is the busiest single-terminal airport in Europe, serving approximately 10.5 million arriving passengers annually. The airport experiences significant “peaks” and “troughs” of arriving passengers, driven by low-cost carriers’ schedules. In peak periods, long queues can form in the Arrivals Hall, which has recently necessitated expansion of the building.

2.2 *Functionality of the Trial*

The ABC Trial deployed a bank of six automated gates, each of which integrated an ePassport reader and a face camera with integrated illumination.



Figure 3 – The ABC Trial System in Use

Each gate captured a real-time image of a Traveller’s face and compared this with the digital facial image stored on the Traveller’s ePassport microchip. The system also checked the validity and authenticity of the ePassport and conducted background checks to confirm that the individual is permitted to enter the UK. If these checks were completed to UKBA’s satisfaction, the automated gate would open and the Traveller would enter the UK. This process is illustrated in Figure 4:

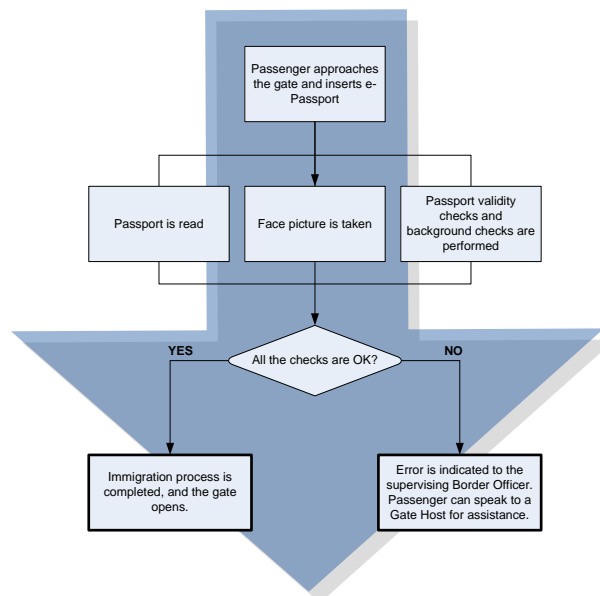


Figure 4 – Business Process at the Gate

Passengers requiring help using the system were aided by an airport customer service assistant (the “gate host”). Those passengers who were rejected by the gates were required to leave the gate area by a side exit, and present themselves to the dedicated “Exceptions” desk, which was a regular manual control sited adjacent to the gate area.

The ABC Trial system was custom-built to BAA’s and UKBA’s requirements, using Accenture’s “ASIS-Travel” framework. Hardware integration was provided by Automatic Systems / IER at their fabrication plant in Wavre, Belgium, and software integration by Accenture at their Technology Labs in Sophia Antipolis, France.

2.3 *BAA Objectives*

As the airport operator, BAA’s responsibilities include providing passengers and airlines with efficient and speedy departure and arrival facilities, and for providing the accommodation required for UKBA to fulfil its role. BAA’s high-level objectives for the Trial included the evaluation of the automated clearance process within the BAA airport environment and governed by UK Borders Agency legislation, assessment of the performance of the latest technologies (ePassports and biometric face matching) in a live, busy airport environment, and the prototyping and piloting of an ABC solution that is an optimal fit to the requirements of both BAA and UKBA.

2.4 *UKBA Objectives*

The purpose of the UKBA is to protect the UK border whilst facilitating legitimate travel and trade. A set of objectives for the Trial was drawn up by UKBA prior to the Trial commencing. These focused on the stakeholder benefits expected to result from such a system, and included factors such as the reliability of the gate system, its performance (both in terms of accepted / rejected passengers, and in terms of processing time), and its acceptability to both passengers and UKBA staff.

2.5 *Operation of the Trial*

The Trial was operated for six months, from 11th December 2008 to 10th June 2009. During this period approximately 200,000 travellers used the automated gates. Following the conclusion of the Trial, all data was removed from the system (having been automatically anonymised at the point of collection) for the purposes of reporting and identification of key learnings, and was then destroyed.

3 Key Trial Statistics

- The Trial started on December 11th 2008 and ended on June 10th 2009.
- During this time, the Trial saw 203 069 transactions in six months, an average of 1173 travellers per operating day. Of these, 21 217 (12.5%) were repeat users.
- The majority of passengers using the gates were of British nationality, though travellers from every EEA country issuing ePassports used the Trial system.
- The average successful transaction time at the gate (the interval between the passenger placing their passport, and the gate opening) was approximately 11 seconds, with over three hundred passengers able to pass through the gates in under 4 seconds.
- Reasons for passengers to be rejected by the gates included ineligibility; travel document reading or authentication failures; biometric capture or matching failures; and failure to pass UKBA's background checks.
- Of 362 passengers surveyed,
 - 77% reported using the system with minimal or no guidance;
 - 94% thought that the system got them through Passport Control more quickly;
 - 98% would use the system again.

4 Conclusions

The Trial met or exceeded the key objectives around business value and technical performance defined by UKBA and BAA:

- For the airport operator, BAA, the Trial demonstrated the concept of Automated Border Clearance in their airport environment, with efficiencies in both floorspace and throughput;
- For the border control authority, UKBA, it has shown that the increasingly widespread deployment of biometric travel documents can be built upon to increase security, improve efficiency and facilitate travel, at the same time enabling Border Officers to focus on high-risk cases while the automated gates process the bulk of low-risk transactions;
- And for the passengers, the Trial offered a straightforward, efficient and rapid path through Border Control. Even though automation at border controls is still a new concept for most travellers, they were almost universally positive about the ABC Trial experience.

In addition, valuable specific learnings were drawn from the Trial by both BAA and UKBA in areas such as:

- | | | |
|------------|---|--|
| People | { | <ul style="list-style-type: none"> • The usability of such a gate system by passengers, and the nature and level of instruction that they typically require; • The usability of gate monitoring tools by Border Officers, and the level of training that is appropriate; • The most effective level of supervision of such a gate system by Border Officers; • The value that gate hosts bring, and what activities should be included in their role; • The usability of such a gate system by passengers, and the nature and level of instruction that they typically require; |
| Process | | <ul style="list-style-type: none"> • The realistic capacity of such a gate system to process passengers, and key factors that affect the throughput; • The exceptions process followed when a passenger is rejected by the gates; • The appropriate support and maintenance processes for a live gate system; |
| Technology | | <ul style="list-style-type: none"> • Typical performances of the EEA ePassports currently in circulation; • The real-world performance of today's face biometric capture and matching technology; |
| | | <ul style="list-style-type: none"> • The impact of the face capture environment at the gate. |
| | | |

The outcomes of the ABC Trial will enable BAA's planned production-level ABC systems at Stansted and Heathrow airports to be optimised for ease-of-use, stability, and performance. In addition, this project has reinforced the practical working relationship between BAA and UKBA, and has set a positive tone for the future full-scale ABC programme.

Postscript: Given the success of the ABC Trial, BAA and UKBA have decided to extend support for the Trial through to early 2010, while work is underway to upgrade it to a production-level system. By early December 2009, the Trial had processed approximately half a million passengers.

5 Appendix - Images of the Trial



