



ENABLING INFORMED
DECISIONS

Comprehensive airport management and planning simulation

ArcPORT offers advanced features for simulation and evaluating airport terminal, airside and landside processes and systems. The software provides users with a platform to analyse and visualize flows of passengers, aircraft, vehicles, baggage and cargo within the airport infrastructure, in fast time. This facilitates the evaluation of infrastructure constraints, modification or expansion requirements and other what-if scenarios, ultimately allowing stakeholders to make more informed decisions.

- Departure hall layout and check-in management
- Arrival hall management
- Hold baggage system layout and management
- Security screening configuration and management
- Departure lounge allocation and management
- And much more...





GROWTH MANAGEMENT

BIRMINGHAM AIRPORT IN THE UK IS USING A SPECIALIST AIRPORT SIMULATION TOOL TO HELP PLAN AND PREPARE FOR FUTURE OPERATIONS

Birmingham Airport is the UK's third-largest airport outside of London and the UK's seventh-largest overall, handling almost 13 million passengers in 2017. As the Midlands' largest airport, it serves more than 150 direct scheduled and charter routes and offers an additional 340 possible connections worldwide. Around 35 million people live within its two-hour catchment, representing half the population of the UK.

During the autumn, Birmingham Airport will launch its new Masterplan – a plan that sets out how the airport plans to maximize its potential over the next decade by improving its facilities and maximizing the current infrastructure to deliver an improved level of customer service.

The city of Birmingham, previously known for its manufacturing and engineering industries, is now dominated by the service sector. The conference and exhibition trades are also well represented with the International Convention Centre (ICC) and National Exhibition Centre (NEC) – the latter is located in the immediate vicinity of Birmingham Airport. The city will also be hosting the Commonwealth Games in 2022, which is expected to have a

positive effect on business opportunities and employment in the region.

Birmingham's connectivity with its current road and rail networks offers excellent access to the airport and the NEC. With the new HS2 high-speed rail national infrastructure project, the journey time between London and Birmingham Airport will be cut from 70 minutes to 38 minutes by 2026 and will put 45 million people within two hours of Birmingham Airport. This will make Birmingham Airport the UK's first and only high-speed connected airport.

Capacity planning

Birmingham Airport has seen a period of unprecedented passenger growth over recent years – increasing from nine million passengers in 2013 to 13 million last year, an almost 50% increase over the four-year period.

An increase in demand also has its challenges of planning, resource management and expenditures on new technologies and staff. Birmingham Airport has a dedicated Capacity Planning Team, headed by Chris Wilson. The team has implemented a forward-thinking program that includes training in-house staff in new capacity management and modeling



ABOVE LEFT: Two-stage self-service bag-tag and bag-drop process at Birmingham Airport

ABOVE: ArcPORT simulation of Birmingham Airport's check-in hall

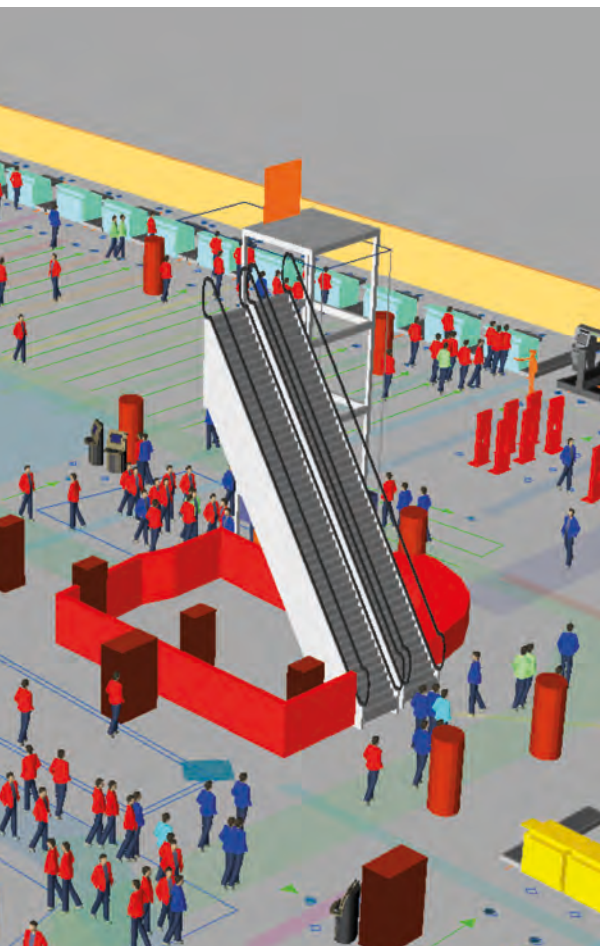
techniques. The airport has also invested in a range of industry-leading software, with the aim of establishing requirements for future operations and maximizing the use of the terminal facilities.

Over the past seven years, some of the planning and operations staff at Birmingham Airport have been trained in the use of ArcPORT, a strategic management and planning simulation tool from Transoft Solutions.

The airport has used ArcPORT to model and analyze different areas of the passenger journey including security, stand allocation and landside facilities. Another project involved the analysis of the layout of the Immigration Hall and potential queuing configurations for passengers, with the aim of developing a configuration with higher throughput and reduced waiting times for arriving passengers. In all cases, the in-house staff participated in data collection and analysis and were comfortable working alongside the Transoft team, having been trained in ArcPORT.

Better connections

It is almost certain that the introduction of HS2 will impact upon the daily operations of Birmingham Airport's terminal. Therefore,



RIGHT: Travelers waiting in line for check-in and bag drop

BELOW: Simulation demonstrates a good correlation between reality and the ArcPORT simulation for the flow of passengers queuing at the self-service bag-drop kiosks



The simulation results and the **actual queuing situation** showed an excellent correlation

various models were built in ArcPORT to simulate various scenarios and investigate the effect of increased footfall.

In the scenarios, various configurations and layouts of the landside terminal areas were built and tested using forecast schedules. Passenger flows and queuing were assessed in the models, which enabled the airport to test different combinations of self-service kiosks and traditional desks. Various scenarios and allocation strategies were tested and the resulting key performance indicators determined. The models were validated using the current operation in the North Terminal as a benchmark. The simulation results and the actual queuing situation showed an excellent correlation.

In September 2018, Birmingham Airport hosted a one-week ArcPORT training course, entitled the Scientific Management and Planning of Airport Terminals. In this training, three new staff members of the Birmingham Airport Capacity Planning Team were trained, alongside attendees from other European airports and consulting companies.

The business approach to develop and maintain a proper level of expertise has benefited the airport operation. The skills and knowledge gained enables the Capacity Planning Team to collect relevant data and analyze issues in the daily operation, as well as conduct studies on potential future situations. For complex modeling, Transoft is always on hand to provide expert support.

Many of these projects may be focused on capacity, but the end result is that passenger experience and comfort is always a high priority. The airport has therefore submitted a planning application for an extension to its existing departure lounge – an infill extension between the existing main terminal and short pier, within the existing airport boundary.

The additional space, which aims to improve the overall passenger experience, will allow for a variety of commercial offers to be extended, improvements to the circulation space, seating and toilet facilities, as well as a new mezzanine to increase the level of natural light. ■

