

Modern check-in and passenger handling systems deliver the benefits of reduced cost, improved customer relationship management and faster aircraft boarding times.

The benefits of modern check-in systems

Airlines are attracted by the benefits of enhanced revenues, and reductions in the cost of sales and passenger handling, that are offered by recent developments in modern check-in systems.

The latest development in this area is the introduction by British Airways (BA) of self-service check-in for all passengers on UK domestic flights from April 25th 2006. Check in will be via www.ba.com or at an airport check-in kiosk. BA will convert its conventional check-in desks to 'fast bag drop' desks for passengers with luggage to check in. Those who check in via the website can print their boarding pass up to 24 hours before their flight, allowing them to proceed directly to the departure gate at the airport.

SITA's Airport Survey 2005 shows that at least 50% of all airports have already installed some form of self-service kiosk. This figure will rise to 75% over the next two years. So why do airlines want to modernise their check-in systems and what are the benefits of this?

Old systems' woes

Airlines have been plagued by steep labour costs, due in part to the high staffing levels involved in the passenger check-in and boarding process. About 30% of an airline's staff work on this, accounting for 20% of its labour cost. Since airlines must rely on the manual check-in and boarding process, they are forced to outsource it to ground service companies at outstation airports on their route networks where they have no employees. This incurs high costs, which are sometimes unbearable when the

handling companies have monopolies at certain airports. This limits airlines' flexibility in opening or closing new routes, and introducing new services and technologies for passengers. When airlines try to restore profit by reducing labour costs, finding a cheaper substitute for check-in staff is usually a priority.

Airlines are struggling to reduce check-in, boarding and aircraft turnaround times, and improve efficiency, while providing passengers with more flexibility and comfort during check-in to gain a competitive advantage. The long queue at the check-in counter and the old-fashioned one-hour check-in time constraint have become symbols of low efficiency and passenger stress. Airlines' long-term aim is to eliminate both the check-in counter and the queue.

Their efforts have been boosted by the introduction of electronic tickets (e-tickets), which store the ticket holder's reservation information, and connect every relevant sub-system within an airline and a departure airport, thereby making automatic check-in feasible.

Modern check-in systems

Modern check-in systems currently utilise three technologies offering various advantages: kiosks, the internet and mobile phones.

Sited in numerous locations at the airport terminal to provide plentiful check-in opportunities for passengers, the kiosk offers a number of advantages: ease of use; reduction in airport congestion; improvement in airport space utilisation; and a faster check-in process.

The check-in kiosk also offers airlines

striking cost savings. According to SITA's survey, manual agent check-in costs \$3.68 per passenger, while self-service check-in costs just \$0.16. Air Canada, for example, has reduced check-in time by 80% through the use of kiosks. Attracted by these benefits, 31% of European, 56% of North American, 33% of Latin American, 36% of Asian, and 11% of African airlines have started using self-service kiosks.

The kiosks fall into two categories: the Common-Use Self-Service (CUSS) kiosk; and a kiosk designed to specific airline requirements.

At its main operation bases, such as London Heathrow, BA uses its own kiosks, which are tailored to cater for its demand patterns and are able to handle a high volume of check-ins and information from its own passengers, such as customer relationship management (CRM).

CSC Airline Solutions has developed a variety of functions for SAS's kiosks, including: check-in for passengers holding a transitional automated ticket (TAT) or an ATB2-ticket (replacing a handwritten ticket or an e-ticket); seat selection from a seat map; baggage registration; frequent-flyer information updates; flight changes; printing bagtags; and printing and updating boarding passes.

Dedicated kiosks also form an entry barrier, since competitors need to install their own check-in systems if they want to compete at the same airports.

At outstation airports, however, airlines prefer to use CUSS kiosks, provided by the airport authorities or ground service companies, to save costs. Airport authorities and ground service companies obviously favour CUSS kiosks,





which guarantee their traditional income from the passenger handling process.

Check-in via the internet is a relatively new service provided by few airlines. "Internet check-in services allow the passenger to check in and select a seat from any web-browser-based PC," says Carina Sundelius, industry specialist ground services at CSC Airline Solutions.

The advantages of internet check-in for passengers include: a faster travel process; check-in from any web-connected location up to 24 hours prior to departure; seat-preference selection; and updating personal details, such as visa information or food preference. The benefits offered by internet check-in systems to airlines include: increased additional check-in capacity that is cheaper than any other check-in process; obviating the need to own, operate and manage more systems at every airport location; lower passenger-handling costs because airlines neither need airport space nor have to buy the software for kiosks; small costs, such as for paper and printing, will be borne by passengers printing their own boarding passes; and improved customer relationship management through passengers' experiences on the airlines' websites.

Mobile phone check-in is only used by a few airlines worldwide, but it has emerged as a trend in the Asia Pacific. Air Asia's great commercial success is partly attributed to its mobile check-in service. In Europe, CSC has worked with SAS to produce a mobile-phone check-in system that combines SMS (text message) and speech technologies for the first time, turning a passenger's mobile into a check-in terminal. It works by combining the

continuous feed of booking and flight status information with a check-in notification SMS service. An automated speech check-in service in multiple languages is also included. The benefits for airlines are that it requires no new infrastructure and makes no special demands on IT, thereby reducing their costs and improving travel for passengers.

Technical support

A modern check-in system is integrated into an airline's and airport's whole information system, rather than isolated from others like the manual check-in method. It is underpinned by various sophisticated technologies.

Sabre Airline Solutions' departure control system (DCS) is part of the SabreSonic suite of passenger-management solutions for airlines. The SabreSonic check-in DCS exceeds the standards for core DCS features with a transaction-processing-facility (TPF) that provides unsurpassed reliability and availability for all SabreSonic airline clients. "These are considered check-in system components that supplement and improve the function of a DCS," says Murray Smyth, senior vice president of Europe and Middle East at Sabre Airline Solutions. "Key information technologies, which support kiosk, internet and mobile phone check-in, include narrow client application architecture that enables: centralised application installation and simplified deployment; IP connectivity for users at airports, at home and by mobile phone; a CUSS platform for kiosk users, which is an IATA-defined standard for the deployment of kiosk applications in a

Self-service kiosks are one of three new methods of self-service check-in coming available to airlines. These new systems collectively reduce airline staff and ticket issuing costs, as well as having the spin-off benefit of improving customer relationship management.

common use airport environment; and enterprise Java bean development, which allows the re-use of business logic across multiple user platforms and devices."

"We provide CUSS kiosks to our customers by leveraging SITA's AirportConnect platform," says Bill Evans, product manager at SITA. "AirportConnect's technology uses a single, common platform that accommodates SITA's CUTE workstations and CUSS kiosks, as well as a wide variety of applications and peripherals including legacy and proprietary ones. High-quality, reliable, shared systems are critical to the functioning of modern airports. When employed in a common-use environment, AirportConnect kiosks provide a path to the next generation of improved airport functionality. The kiosk has interfacing capability, a common check-in engine platform for all channels, and the ability to operate with other systems."

Bar-code boarding pass

A bar code boarding pass (BCBP) and radio frequency identification (RFID) tag for self-service luggage check-in have become popular with passengers as well as airlines, reducing the time and costs of handling passengers. A BCBP replaces the traditional magnetic boarding pass



obtainable only at the check-in counter.

"A BCBP provides three basic benefits to airlines," explains Smyth. "The first is cheaper materials for boarding passes. Airlines can now use thermal paper for these, rather than the industry-standard ATB stock, making cost savings of as much as 90%.

"The second benefit is the lower cost of printing devices. The thermal printers that produce BCBPs are cheaper to buy and operate," continues Smyth. "A thermal printer costs \$600, while a device to produce traditional magnetic boarding passes costs \$6,000. The third benefit is adherence to new IATA BCBP standards, which allows airlines more easily to produce and process boarding passes that can be read by other airlines, thereby simplifying the passenger-handling process. Boarding time is reduced, through a combination of BCBP and automated readers at the departure lounge, by several seconds per passenger, resulting in a saving of several minutes per flight. The automated reading systems also streamline the boarding process so that fewer airline staff are required to board passengers. The aircraft also departs on time, thereby alleviating any potential passenger frustration. The technical requirements for deploying BCBP are relatively simple, such as having the appropriate BCBP media, and the capability to print the barcode on the boarding pass, and read and process at the gate with infrared scanners."

"According to IATA, a BCBP can save up to \$3.5 per check-in. The BCBP's benefits include the passenger being able to print the card at home or in the office, faster check-in and increased flexibility when travel plans change," says Dr

Anselm Eggert, senior vice president passenger airline solutions at Lufthansa Systems. "The benefits for airlines are reduced infrastructure cost and better utilisation of terminal capacity."

RFID

"New technology like RFID tags, which are tiny attachable chips capable of sending digital information over secure wireless networks, will revolutionise the future of baggage processing. By dramatically speeding bagtag read rates and reducing read errors from today's average of 10-15% to less than 5%, RFID is predicted to cut the number of mishandled bags by almost half. This will minimise service recovery costs and also allow rapid baggage off-loading in the case of passenger no-shows. RFID technology will also allow baggage sorting systems to achieve increased throughput, by reducing the number of bags that must be manually processed due to unreadable baggage tags. RFID technology will also expedite the global tracing of lost bags, while helping to prevent theft and unauthorised baggage tampering," says Nick Gates, engineer and development manager at SITA.

Eggert explains that RFID read rates average 95-99%, while barcode read rates average 80-90%, and are as low as 50% at some airports. "Each baggage mishandling costs \$100, so a full RFID implementation would reduce the amount of mishandled luggage and generate savings of up to \$760 million per year for the whole industry. But RFID is not enough to get the real benefit. You also need applications that make use of the RFID technology. Lufthansa Systems

Scandinavian Airlines had self-service kiosks designed for it by CSC Airline Solutions. These have several functions that include seat selection, baggage registration, frequent flyer updates and printing boarding passes.

products support RFID."

Despite the obvious benefits, RFID technology looks set to remain on the periphery at airports in the near future. SITA's Airport IT Survey 2005 revealed that by the end of 2005 only 6% of airports would have deployed RFID tags for baggage management, and it would not make a serious impact until 2008 or 2009. Even then, only 45% of airports plan to be using it, while an equal number have no plans to use it. The resistance is because of the technology's high start-up costs, which makes the value for individual airports unclear.

Different attitudes

SITA's Airline 2005 Survey revealed that 77% of Asian airlines plan to deploy CUSS kiosks within five years, and are more interested than their European and North American counterparts in adopting mobile check-in systems. Only 20% of European airlines plan to offer voice mobile telephony by 2007.

"The different attitudes are explained by several factors," says Dominique El Bez, portfolio marketing manager of self-service at SITA. "Some countries are more advanced than others in using self-service processes. This especially depends on the innovation profile of the airlines that travel to and from these regions, and on macro-economic factors such as internet usage, the level of acceptance of the credit-card payment and self-service models in other industries in the country. It is important to understand that the use of automated check-in solutions in most cases requires another key technology and process enabler, such as e-ticketing. The 100% e-ticketing initiative pushed by IATA is key to the deployment of other self-service and passenger-enabled processes such as self-check-in or self-boarding.

"Some of the disparity is regional. Internet and wireless technology is less pervasive outside Europe and North America, and what is available is less robust," continues El Bez. "This is inevitably affecting the take-up rates of applications, such as web-based booking systems, that depend on these. Even so, there are still airlines in the US and Europe where poor underlying economic conditions are making it difficult for them to keep up with the technology pacesetters. An inclusive approach to airline technology is vital, however, if the

British Airways has recently made self-service check-in kiosks standard on all its domestic flights. It has also introduced website check-in, and passengers that use this facility up to 24 hours before the flight can proceed directly to the departure gate on arrival at the airport.



aviation industry as a whole is to achieve the high level of network efficiencies needed to achieve sustainable profitability. In North America, automated check-in and passenger self-service is widely developed and well accepted by passengers. Most airlines use it, whether via kiosks (dedicated or CUSS) or the internet. In Europe automated self-service check-in processes are well deployed, and airports such as Amsterdam Schiphol are innovators in this area. The deployment of self-service and automated check-in is evolving in Asia, the Middle East and Africa at a different rate subject to the influence and drive of the local leading airlines and airports. For example, large airlines such as Qantas, Air New Zealand, JAL, or innovative airports such as Dubai, have already been committed to self-service for several years, while some smaller airlines are just starting to work on it."

Selection criteria

To enjoy the benefits of modern check-in systems, airlines must be aware of their requirements and constraints. "There are no simple and straight choices. At SITA, we offer our customers a multi-channel check-in capability. This allows airlines to offer their passengers the most appropriate check-in channel subject to their location, profile or service expectations," says El Bez. "Airlines must understand the macro-environment they are dealing with, such as the penetration level of the internet or mobile phones in a particular country and given population, since it will obviously affect the pick-up rate of service offerings. There are also some rules and constraints associated

with the local civil aviation authorities. For example, some countries do not yet accept home-printed boarding passes at out-bound immigration check-points. This slightly reduces the appeal of an internet check-in service, since passengers have to go to an agent desk or to a kiosk to print a traditional boarding pass. The most effective check-in channel in one location may not be the best in another."

Sabre has a slightly different understanding of this issue. "We will address the issue of selection criteria with two answers – one regarding DCS, the other regarding the DCS supplemental components," says Smyth. "First, basic criteria for automatic check-in systems are outlined in the IATA ground handling manual (GHM). All ground handlers that use a DCS will look for the same basic functionality as defined in this industry-standard document. Airlines will also look for IATA GHM compliance when evaluating DCS systems. In addition, airlines will want incremental functionality to specifically help them better process their passengers, including: a user-friendly graphical user interface (GUI) for their staff to use when processing passengers; passenger self-service functions, such as check-in via kiosk or the internet; and load planning. The key criteria for determining which automatic check-in system component to adopt are usually based on the airport location and depend on three questions: is the airline's home DCS available and does it enable all these check-in technologies? does the airport have a CUSS kiosk platform, or can the airline install its own kiosks? and can the airline co-ordinate with local airport security to allow the check-in technology?"

Investment

Although the self-service systems have many attractions to airlines worldwide, acquisition costs are a main concern. "Fortunately for airlines today, minimal investment is needed to implement and utilise a state-of-the-art DCS. Rather than purchase a DCS, airlines can sub-contract the service to a vendor that provides the system via an Application Service Provider concept," explains Smyth. "The airline 'leases' the software, paying for it by use. The standard measure of 'use' is by Passenger Boarded, or PB. Airline investment is then measured by the amount of training needed to deploy at their airport locations and by the amount of service fees paid for the system's use."

Summary

Modern information systems and e-tickets have been catalysts for the advent and progress of modern kiosks. The cost saving offered by kiosks has motivated airlines and IT providers to innovate more technologies to provide cheap, reliable and efficient accesses for passenger check-in. The internet and mobile phones are emerging as mainstream systems for passenger check-in, although the use of the two methods by the world's airlines and airports is uneven. RFID is a next generation technology, which is still expensive for airlines to adopt. The investment in the adoption of these systems can be part of the whole investment in a company's IT system and is therefore worthwhile, especially considering the improved check-in efficiency, passenger satisfaction and cost saving. [AC](#)