Self-Service Kiosk Information and Kiosk Information

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Airlines, IATA, SITA and Trends

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Smart travel: New technologies promise to make air travel smoother for passengers and cut costs for beleaguered airlines

GET ready to change the way you travel. That is the message from Giovanni Bisignani, the head of the International Air Transport Association (IATA), an industry body that co-ordinates aviation rules and standards. He still wants you to travel by plane, of course, as 1.8 billion passengers did in 2004, and 1.9 billion will do this year. But with commercial aviation in a sorry state as a result of terrorist attacks, an economic slowdown, SARS, the Iraq war and high oil prices, he believes the best treatment for the industry is a strong dose of technology that could both reduce costs for airlines and make travel simpler and smoother for passengers. IATA's grand plan to do this, called “Simplifying the Business”, was launched in Geneva last November. It calls for a drastic overhaul of four aspects of the air-travel process—tickets, boarding passes, check-in and baggage handling—with an aggressive timetable that should start to deliver results this year.

At the same time, other new technologies are reshaping the nature of air travel. In-flight internet access, and even the use of mobile phones, could soon become commonplace, on some routes at least. Entertainment systems are becoming increasingly sophisticated as airlines compete for customer loyalty. What will all this mean for air travellers?

The first plank of IATA's plan is to eliminate paper tickets by the end of 2007. In many parts of the world they are already an endangered species: only about 20% of tickets issued in America are paper ones, and almost all of those are for international flights. But globally, electronic tickets still account for only 35% of all tickets issued, up from 10% in 2001.

With a paper ticket, details of the passenger's journey are stored in a magnetic strip that can be read by special readers. With an electronic ticket, these details are stored in an airline database, and are retrieved using a unique look-up code. This means there is no need to issue a physical ticket to the passenger: instead, the code can be delivered via the internet or over the phone. It is much more convenient for passengers, particularly when buying tickets online, and results in huge savings for airlines: an e-ticket costs around $1 to issue and process, compared with $10 for a paper ticket. Eliminating paper tickets could save the industry over $2.7 billion a year, says Michael Feldman of IATA.

No tickets, please

Implementing e-ticketing within a single airline is relatively straightforward. But “interline” ticketing (in other words, tickets for a journey involving more than one airline) is trickier, because it requires different airlines' databases to talk to each other. Getting rid of paper tickets, then, involves linking up the airlines. This is happening first within airline alliances, says Mr Feldman, and then between airlines that partner on

particular routes.

What of smaller, regional carriers? Linking up smaller airlines is not as tricky as it might seem, notes James Peters of SITA, a company that provides technology and infrastructure to the aviation industry. SITA runs a reservations system called Gabriel, which is used by more than 160 airlines, many of them small carriers in Africa and Asia. Support for electronic ticketing was added to Gabriel at the end of 2004. Problem solved, then? Not quite. What will take time, says Mr Peters, is establishing commercial agreements between airlines, changing procedures and training staff. “The technology and standards for electronic ticketing are well established,” says Mr Feldman. “But to implement it requires changes in business processes.” The cost savings ought to encourage airlines to get moving, however.

Doing away with paper tickets also means the check-in process can be completely overhauled, the second component of IATA's four-part initiative. For once a ticket is no longer a physical item, there is no need to be at the airport to present it: instead, you can check in for your flight from home via the web, or even while on the move via your mobile phone. In each case, the boarding card is issued in the form of a two-dimensional bar-code, an apparently random grid of black-and-white dots. This pattern, which can be printed out from a PC or displayed on the screen of a mobile phone, is then scanned at the gate before boarding. Several airlines already allow online check-in over the web. It is more convenient for passengers, since it means less standing in line at the airport; they can even see what choice of seats is available on-screen, and make their choice accordingly. It also saves airlines money, by reducing the need for check-in facilities and staff.

The next step, says Mr Peters, is to extend online check-in to mobile phones. SITA has developed such a system in conjunction with Siemens, and began testing it with a Brazilian airline last November. Check-in is handled by a small piece of software on the phone, downloaded like a game or a ringtone. The software establishes a wireless connection with the reservation system, offers a choice of seats, and then retrieves the boarding-pass bar-code, which is stored in the handset.

The system can be configured to send passengers a text-message reminder two hours before the flight; clicking a link in the message launches the check-in process. Several airlines plan to introduce mobile check-in later this year. But bar-code boarding passes cannot be used for interline flights unless all the airlines and airports along the route support them. Like electronic tickets, bar-code boarding passes will be adopted first by individual airlines, and then by alliances, before becoming ubiquitous.

The third component of IATA's plan is an expansion in the use of self-service kiosks, which are already popping up in airports around the world. Again, the benefits are speedier service for passengers and savings for airlines: a self-service check-in costs $0.16 on average, compared with $3.68 using human agents, according to Forrester Research, a consultancy.

Do it yourself

According to a survey carried out by SITA, airlines expect a majority of their passengers to be using kiosks for check-in by 2008. On busy routes thronged by frequent travellers, kiosks are already so popular that it is necessary to queue up to use them. Rather than installing more kiosks all over the place to handle peak demand, it makes more sense to switch from airline-specific kiosks to shared ones, which can handle passengers from several airlines. This makes it easier to scale check-in capacity to meet demand, and enables even small airlines to offer self-service check-in. Such shared machines, which conform to a standard drawn up by IATA, are known as “common-use self-service” (CUSS) kiosks. The first CUSS kiosks to serve multiple airlines were introduced last April in Toronto by SITA. Passengers are presented with a common welcome screen, select an airline, and that airline's own check-in software then pops up.

The switch to CUSS machines makes it feasible to put kiosks in places other than the airport, such as car-rental offices, railway stations or hotel lobbies—places where a row of airline-specific kiosks would have

taken up too much room and cost too much. Airlines are now examining the business case for putting kiosks in all kinds of places where passengers congregate, says Mr Feldman. Another trend, says Henry Harteveldt, an analyst at Forrester Research, is to integrate other, non-airline services into kiosks. It would then, for example, be possible to use a kiosk in a hotel lobby to check out of the hotel, look up the status of your flight, and then check in for it.

The fourth part of IATA's plan is the most ambitious, and will probably take the longest: switching baggage labels from printed bar-codes to wireless tags based on radio-frequency identification (RFID) technology. The aim is to reduce the number of misplaced items of baggage, a headache for passengers and airlines alike. Of the 1.5 billion bags carried on commercial flights each year, around 0.7% go astray. Dealing with each lost bag costs airlines an average of $100, or around $1 billion a year for the industry as a whole, not to mention the loss of customer goodwill. A big part of the problem is that crumpled or torn bar-code labels are misread by the machines that process baggage as it travels between passenger and plane: the accuracy of printed bar-codes can be as low as 80%. RFID tags, in contrast, have accuracy rates exceeding 95%. As a bag with an RFID tag passes through a scanner, a pulse of radio waves awakens the tag, which responds by transmitting a small burst of data.

Trials with RFID tags have been going on for several years. But so far, adoption has been hampered by the high cost of the tags—now down to about $0.25, but still too much—and a disagreement over which of two approaches to pursue. One approach is to use “pre-printed”RFID tags that contain a unique identity code that cannot be changed. When the bag is checked in, the tag is applied, and the airline's computer systems associate the tag's code with the passenger's electronic ticket. This approach is being championed by Delta, an American carrier that is particularly enthusiastic about RFID tags. It has the advantage that pre-printed tags are cheap: they cost around $0.05.

The drawback with this approach, however, is that the association between tag and passenger is stored in the airline's database. So every time the tag is read, a real-time connection to that database is needed to work out how to route the bag. It works well for a single airline, but when more than one airline is involved, links are needed between their databases. That is why many in the industry favour a second approach involving the more expensive tags. These have the advantage that data can be written into them, including passenger and routing details, when the bag is checked in. This information then travels along with the bag, without the need for any database look-ups.

All of this depends on the development of an international standard, and that will require extensive testing. At the moment, says Mr Feldman, the emphasis is on limited trials involving pairs of airports and airlines. In one recent example KLM and Japan Airlines tested RFID tagging of baggage on the Schiphol-Narita route. Another trial, at Montreal airport, involves kiosks that generate RFID baggage tags at check-in, making self-service check-in possible even for passengers with hold luggage. RFID tags will be widely adopted only if airlines, airports and ground-handling staff can be convinced that they are a good idea, says Mr Feldman. The cost of the switch will also have to be justified. But as RFID is adopted in other industries, economies of scale ought to reduce costs.

All of these technologies—electronic tickets, remote check-in, kiosks and RFID tags—have already been adopted, to varying degrees, by forward-thinking airlines and airports around the world. The aim of IATA's initiative is to introduce standards, to ensure interoperability, promote adoption, and make the benefits of these technologies available to the whole industry. The switch from proprietary, airline-specific technologies to open standards will, however, reduce the airlines' scope for differentiation. If all passengers are using the same facilities, how can airlines distinguish themselves from their rivals?

Primarily through the routes they fly and the prices they charge, of course; and the quality of their in-flight service. But while technology would seem to make competitive differentiation within the airport more difficult, it is simultaneously increasing the scope for differentiation in the air, through the provision of ever

more elaborate in-flight services.

In-flight entertainment is now a critical part of how airlines position themselves, say Mr Harteveldt. One of the most advanced entertainment systems in current use is Virgin Atlantic's V:port, currently available in 13 of the airline's 31 aircraft, and being installed in all its new aircraft. Its most notable feature is video on demand, with 300 hours of films and television shows that can be called up by any passenger at any time. The video is stored on hard disks on a central server and is streamed to each seat. V:port also has a music-on-demand service and a selection of games, some of which (such as a trivia quiz) support multi-user play between passengers. All this, says Lysette Gauna, Virgin's head of in-flight entertainment, reinforces Virgin's association with fun and innovation. Similar systems will become available on rival airlines in future, says Ms Gauna, so Virgin is already developing an improved system.

Another trend is the growing availability of internet access on board aircraft. The state of the art here is Boeing's Connexion service, which uses a satellite broadband connection to create a Wi-Fi “hotspot” inside the cabin. Lufthansa was the first airline to deploy the service, in May last year, and it intends to make it available on all long-haul routes by the middle of 2006. Japan Airlines and All Nippon Airways have also adopted the technology, and Singapore Airlines, China Airlines and SAS plan to follow suit. The service typically costs $30 on flights of six hours or more, and $20 on flights of between three and six hours. A similar system is offered by Tenzing, a subsidiary of Airbus. It recently established a joint-venture with SITA called OnAir, with a view to exploiting what is expected to be the next big trend in airborne communications: the in-flight use of mobile phones.

Contrary to popular belief, the main impediment to the use of mobile phones on planes is not interference with the aircraft's avionics systems. On a typical long-haul flight, says Mike Fitzgerald of Altobridge, a firm that makes technology to bridge satellite and cellular networks, 20 mobile phones are left switched on. Instead, the problem is that airborne mobile phones disrupt mobile networks on the ground. An airliner with 500 phones on board, whizzing across a city, would befuddle the network as the phones busily hopped from one base-station to the next.

But the technology now exists to allow passengers to get around this problem. A small base-station, called a “picocell”, is installed on the plane, and connected to the telephone network via a satellite link. The aircraft cabin is shielded to prevent handsets from making contact with base-stations on the ground. Instead, they “roam” on to the network signal from the picocell. Since the picocell is so nearby, the handsets can operate at very low power to maintain contact with it, which eliminates interference with networks on the ground. Picocell systems have been tested on several flights, including a flight over the Pacific last August, and a test over Geneva to demonstrate that ground-based networks were not affected. Getting final regulatory approval will take most of 2005, says Mr Peters, so commercial service will begin in 2006. According to SITA's annual airline survey, more than 20% of global airlines plan to introduce in-flight mobile telephony by 2007.

“Check-in can be handled by a small program on your phone, downloaded like a game or a ringtone.”

When the technical and regulatory rules have been sorted out, however, the small matter of in-flight phone etiquette will remain. “I have concerns that it will be extremely annoying,” says Nancy McKinley of the International Airline Passengers Association, a body that represents frequent travellers. However, OnAir's market research found that long-haul travellers expressed more interest in internet access and text-messaging than voice calls, and Mr Harteveldt says his research has found that very few travellers want to make voice calls while in the air. It may be that the voice market will be stillborn, and more discreet data communications will predominate.

Flying into the future

Putting all these pieces together, it seems that technology could soon make air travel smoother, swifter, more

fun and more productive. But there are two potential problems. The first is that customer service could end up taking a back seat to cutting costs. Even now, some travellers are suspicious of electronic tickets, notes Ms McKinley. Similarly, not everyone wants to use kiosks; some people would rather stand in line and talk to a human. Mr Feldman, however, notes that different airlines are using technology to serve different types of customers. Some see technology as a cheap way to provide no-frills services to economy-class travellers, while passengers prepared to pay more are given more personal attention; other airlines see technology as a way to appeal to frequent travellers who want fast service and like to be in control. So passengers will still have a choice.

Another problem is that, as airport procedures are streamlined by airlines, the lack of co-ordination over security procedures will become increasingly apparent. CUSS kiosks, for example, have been designed to support biometric technologies such as face-scanning or fingerprints in future, since governments intend to incorporate them into passports. So far, however, there is no international standard, and questions remain about the reliability of the technology. “We are trying to take into consideration where all of this is going, but there is still no clear global direction on which biometrics are going to be applicable and where,” says Mr Feldman. Variations in security rules could limit how smooth travel can be.

Looking ahead, IATA's “journey of the future” scenario imagines a seamless system in which security and immigration procedures are also implemented via check-in kiosks, so that there is no need to present the same documents repeatedly while moving through the airport. But this is a long-term vision. For now, the various plans to transform travel over the next couple of years would appear to be quite ambitious enough already.

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