IARO report 10.07

Check-in on airport railways

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Published by

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Our mission is to spread world class best practice and good practical ideas among airport rail links world-wide.

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Introduction

Air passengers may be deterred from using airport rail links if they believe that it will be difficult to manage their baggage, or if they are concerned about missing their flight due to unreliability of the rail service. Access by car is perceived as easier because baggage is carried door to door and within the control of the passenger. However, people tend to ignore the unreliability of this mode: problems like congestion, unreliability and the need to park some distance – sometimes a bus ride - from the terminal appear not to weigh heavily in the decision making process.

Providing check-in at a rail station can be seen as a way of attracting passengers to airport rail links, because it enables passengers to deposit their bags and receive their boarding pass earlier in their journey. Both of these are valued by some passengers.

This concept is often considered by those who are planning airport rail links, but practical experiences are mixed: every situation is different.

Rail station check-in involves a number of challenges, including logistics, security, finance and liability. Railways with a commercial remit will want to know how many additional passengers are attracted by check-in and whether these are sufficient to make its provision worthwhile.

IARO's members include a number who have had direct involvement with off-airport check-in. This report draws on this experience and IARO's unique database: it explores where and how the concept has and has not worked, what problems have arisen, how funding and security issues are handled, and what the future may hold.

This report has been difficult to complete as new developments have been coming on stream almost continuously, especially as airports and railways take advantage of new technology like CUSS. The situation continues to evolve: future developments will be reported on in "Air Rail Express".

Andrew Sharp

Director General

List of abbreviations and acronyms

AA   American Airlines

ACI   Airports Council International

ADV   Arbeitsgemeinschaft Deutscher Verkehrsflughafen (German
              Airports Association).

AEL   Airport Express Line, Hong Kong

AENA   Aeropuertos Españoles y Navegación Aérea (Spanish airports
              and air navigation authority)

Airside   The movement area of an airport – the part to which access is
              controlled, and usually restricted to authorised employees and
              ticketed passengers who have passed through security.

ANA   All Nippon Airlines

ARINC   Trading name of the company Aeronautical Radio, Incorporated

ATA   American Trans Air (US airline)

BA   British Airways plc

BAA   BAA plc, a UK-based privatised airport operator, formerly the
              British Airports Authority and now owned by a consortium
              headed by Ferrovial (as BAA Ltd.)

BBI   Berlin Brandenburg International – new single airport for
              Berlin

BIT   Baggage Identification Tag

BMI   British Midland Airways

CAT   City Airport Train (Airport Express in Vienna – Wien)

CAT   City Air Terminal (Asia)

Curb   kerb

CUSS   Common-use self-service kiosks

CUTE/Lite   Common-user terminal equipment – light version

DB   Deutsche Bahn - German Railways

DCS   Departure Control System

DFW   Dallas Fort Worth International Airport

GDS	Global Distribution System
GPS	Global Positioning System
Hand baggage	baggage carried on board by passengers and conveyed in the passenger cabin of an aircraft
Hbf	Hauptbahnhof - main station
Hold baggage	baggage conveyed in the hold of an aircraft
HSA	High Speed Alliance – operators of the HSL-Zuid
HSL-Zuid	High speed line - south (between Amsterdam and Brussels)
IARO	International Air Rail Organisation
IATA	International Air Transport Association
IER	French ticketing and boarding systems provider
JAL	Japan Air Lines
JR	Japan Railways. The acronym usually includes the name of one of the regions into which Japanese National Railways were split as a precursor to privatisation. Examples are JR West and JR Central.
KLM	Koninklijke Luchtvaartmaatschappij - Royal (Dutch) Airlines
Landside	The area of an airport to which the non-travelling public has free access.
LH	Lufthansa
MARTA	Metropolitan Atlanta Rapid Transit Authority
MAS	Malaysia Airlines
MDF	Mitteldeutsche Flughafen AG – operating company for the airports of Leipzig-Halle and Dresden.
MTRC	Mass Transit Rail Corporation, Hong Kong, and its successor
OOG	out of gauge (large baggage, too large for normal handling equipment)
RFID	Radio Frequency Identification
SAS	Scandinavian Airlines System
SBB	Schweitzerische Bundesbahnen – Swiss Federal Railways
SITA	Société Internationale de Télécommunications Aéronautiques (international society for aeronautical telecommunications)

SNCB	Société Nationale des Chemins de Fer Belge - Belgian National Railways
SNCF	Société Nationale des Chemins de Fer Français - French National Railways
Tag	in this report, a strip of strong paper with the IATA 3-letter code of the passenger's destination clearly printed on, together with a unique bar-code and other necessary information. The BIT is detached from this and given to the passenger.
TCRP	Transit Co-Operative Research Program
TSA	Transportation Security Administration (USA)
UK	United Kingdom
ULD	Unit Load Device (airline container)
US or USA	United States of America

Note that UK conventions are used for dates (day/month/year) and numbers (in 9,999.99 the comma , separates thousands: the full stop . is a decimal point). A billion is a thousand million, following US conventions. Dollars ($) are US unless the abbreviation is qualified.

1. Check-in

A flight and a train journey have many differences. These include the formalities at the start of the journey.

Especially in Europe, many rail journeys are short and passengers are not guaranteed a seat. In the majority of cases, tickets are available for any train, or at least for more than one train. The passenger simply arrives at the station, possibly gets the ticket checked, and boards the train. Sometimes there is on-platform or on-train help: there may be a welcome or assistance given by staff, particularly for first class passengers.

Sometimes tickets are checked on board. Baggage is usually carried by the passenger and stowed in the passenger compartment, although bulky items can sometimes be put into baggage compartments – sometimes formally checked in, especially in North America. Except for particular services (for example, Eurostar and the Shanghai Maglev) the security threat is not normally considered severe enough to warrant screening of passengers or baggage. Relatively few rail journeys cross frontiers: especially today with more open borders there is limited need for immigration or customs checks.

Air transport starts from a fundamentally different standpoint. For reasons of aircraft weight and balance, advance information is needed about the number of passengers and the amount of their baggage. Every passenger must have a seat. As many air journeys are long, the amount of baggage tends to be greater. Apart from hand luggage, bags have to be stored in the hold of the aircraft.

The security threat requires most passengers and baggage to be screened and hold baggage to be reconciled (a passenger's hold baggage is not normally loaded until that passenger is in the boarding gate area or physically on the aircraft). International flights in particular require detailed checking of travel documents (usually photographic identification, sometimes a passport and possibly a visa).

Airline check-in involves passengers presenting their tickets (flight coupons) and being provided with boarding passes which show the allocated seats (or, if seats are not allocated, at least ensures that there are not more passengers than seats). Hold bags are weighed and tagged for acceptance into the baggage sorting system and loading on to the aircraft. Check-in is normally done as a face-to-face transaction, although automated alternatives are being used in rapidly increasing numbers – see the "Changes to traditional airport check-in" section, page 58.

Check-in is one of the most stressful parts of the air journey, and can be the first point of direct contact between the passenger and the airline. Airlines and airports have invested heavily in the necessary hardware and staff, and the process is costly. Some airlines have focussed very heavily on customer service, while others have sought to simplify and speed up the process by automation (for example by internet check-in and self service check-in).

In the past, check-in has sometimes been available at an in-town terminal as well as at the airport, especially in cities having terminals connected by bus or limousine to the airport. Such terminals offered a full check-in and baggage handling service with a guarantee that, once checked in, your flight would not leave without you. Examples where the connection was by rail to the airport included London Victoria Station for passengers of British United Airways (later British Caledonian Airways and then BA) to Gatwick Airport, and at Brussels Central Station for passengers of Sabena to Zaventem Airport.

It was probably examples like these which led to the idea that new dedicated Airport Express rail links should include in-town check-in as an integrated part of the service. Heathrow Express and Hong Kong's Airport Express Line opened in 1998, followed by Oslo's Flytoget and Stockholm's Arlanda Express, then Kuala Lumpur's Express Rail Link (subsequently re-branded as KLIA Ekspres). The services at Heathrow, Hong Kong and Kuala Lumpur included in-town check-in, and the concept was researched (but not adopted) for the Stockholm and Oslo Airport Expresses.

Many airport rail links are not dedicated Airport Expresses like these. They serve other markets as well as the airport, and check-in on them is consequently less important – at least to the railway operator.

There are examples of baggage check-in, carriage and delivery services on non-dedicated rail links to airports. Swiss Railways has for many years carried air passengers' baggage from a number of stations, transferring it to flights at Zürich and Géneve airports. In Germany, carriage of air passengers and their checked bags on trains as an integral part of an air rail journey has been working on two key routes for a number of years. Air passengers can check-in their bags at Madrid's Nuevos Ministerios metro station: these are transferred by train to Barajas airport and put on flights.

The two key elements of a check-in service are as follows:

- Airline check-in counters or self service machines or both, where identities can be checked and where airline reservation and departure control systems can be accessed so that a boarding card can be issued

- Baggage systems and processes to tag and screen bags and transfer them to the aircraft. For off-airport check-in, there is normally a requirement for systems to deliver bags to the train, transport them to the airport and then take them from the airport station to the baggage sorting area, with appropriate security arrangements.

Early check-in is valuable for passengers, airports and airlines. Passengers get their boarding passes earlier, probably with a better seat. Airports find the screening process can be done more efficiently with bags arriving earlier – peaks are reduced. Airlines can be more certain about who is travelling on which flight, helping to optimise load factors.

It is possible to offer a check-in service without the baggage element (either for passengers with hand-baggage only, or in conjunction with a baggage drop system – see page 64). This can easily be provided by self service equipment (as is done in Malmö, Sweden, for example – see page 18).

In the chapter on "Where and how has off-airport check-in worked?" starting on page 13, several examples are described which help to understand the options available for off-airport check-in and some of the lessons learned from experience. Subsequent chapters look at specific issues and lessons learnt. Changes to traditional airport check-in and the impact of these on off-airport check-in are described in the section starting on page 58.

2. What is the significance of check-in for airport railways?

What is check-in?

Check-in is the process by which passengers present themselves, their documentation and their baggage with the positive intention of boarding a specific flight, and are accepted for this by the airline or its agent.

It may or may not include seat allocation, depending on the policies of the airline concerned (although only a few new entrant carriers do not allocate seats at check-in).

Requirements for check-in include a Departure Control System (DCS), so that the number of passengers accepted for each flight can be positively established. The DCS equipment will usually issue a boarding card; and where able to do so, a baggage tag for any hold baggage.

Hold baggage check-in

With conventional full hold baggage check-in, passengers take their bags and their documentation to a check-in position. Their documentation is checked, and they are asked standard security questions and given a boarding card with a seat allocation. Their hold baggage is accepted for transfer to the aircraft: a baggage tag is fixed to each bag and a counterfoil (the Baggage Identification Tag) is given to the passengers. They are then free to make their own way to the gate in time for departure.

If hold baggage check-in happens away from an airport, the hold bags will then be transferred to the airport, screened and loaded onto the aircraft (usually only after the owners have entered the boarding gate area or boarded the aircraft themselves).

In-town check-in

In-town check-in needs a DCS, communications, and a staffed area or self service machines or both at the locations where check-in is possible.

It has advantages in terms of customer service, but obviously has costs too. Funding issues are dealt with in the section starting on page 41: it is appropriate here to explore alternatives to full hold baggage check-in at off-airport locations.

One option is check-in for passengers with hand baggage only. This saves the complications of baggage transfer, but limits the value – after all, relieving passengers of their bags is a fundamental selling point.

A second alternative is to offer check-in to all passengers, but to ask those with hold bags to drop them off at a separate baggage drop point – usually at the airport (and the airport station may be a convenient point). Again, this saves the expense of separate baggage transfer but reduces the attraction to passengers.

This happens at a number of places where airlines code-share with railways – in particular in France. Passengers can check-in at train stations (for example Angers) and take their bags on the train with them to Paris Charles de Gaulle airport where they can check them in for their flight.

Self-service options

Another alternative includes an element of self service. Self service kiosks are proliferating rapidly: they, of course, reduce the need for staffing. Common use self service kiosks (CUSS) are an advance on this, by providing check-in services for a number or airlines rather than just one: this makes better use of limited space. They can be for all airlines at an airport, for specific airlines at an airport or for those of a specific alliance – it depends on what the participants want and are prepared to pay for.

Self service kiosks still need communications, and they still need staff to help the inevitable passengers with problems (it has been found that one person can supervise up to five units). Bags can be dealt with using a baggage drop – at the downtown station, at the airport station or at the airport itself.

Airport station check-in

The airport station is a feasible location for check-in or baggage drop, especially on non-dedicated services or for airports served by a network of rail routes. Passengers alight from trains at the airport station and check-in or drop their bags within the station itself, rather than having to move them to the airport check-in area.

While the concept has been explored, only three applications are known to exist at the time of writing. These are at the airport stations in

- Frankfurt, at Terminal T, adjacent to the high speed train station, with staffed check-in desks as well as self service machines,

- Manchester, where two new carriers accepted check-in desks at The Station because there was limited room in the terminals, and

- Zürich, where check-in desks have been provided immediately above the station.

It has been tried at Newark by Continental Airlines (who found that people preferred to go direct from train to terminal, rather than turning aside to check-in at the train station – see page 31) and at Düsseldorf (where a check-in area at the InterCity station closed after a few years, reportedly through low usage – see page 18).

Baggage drop systems are discussed in more detail on page 64.

3. Where and how has off-airport check-in worked?

Introduction

This section and section 10, "Future plans", draw heavily on two main sources – the IARO database, and the two seminal TCRP reports on surface access to large airports. These reports are numbers 62, "Improving public transportation access to large airports" and 83, "Strategies for improving public transportation access to large airports".

Bus based systems

- Historically, in-town check-in has been provided in conjunction with a dedicated bus service to the airport. This has been done in London, Paris, San Francisco and Zürich.

- On a more local scale, the Marin County Airporter operated to San Francisco airport in the 1980s for passengers of both American Airlines and United Airlines: the operation ended because of security related concerns associated with the first Gulf War of 1991.

- American Airlines operated Park & Fly services from various points in the Dallas and Fort Worth Metroplex. America West operated in-town check-in at Scottsdale, Arizona. All of these services ended in the 1980s.

- Frontier Airlines ran a bus service for passengers and checked baggage between Boulder (Colorado) and Denver International Airport until September 2001: the bags could be checked both from and to Boulder. Passengers travelling from Boulder were dropped off at the curb at the airport: the bus then continued airside and bags were off-loaded and transferred to flights.

- Another bus service which ended in the aftermath of 9/11 was the one operated by Continental Airlines' subsidiary Continental Express from Lehigh Valley Airport (Allentown, Pennsylvania) to Newark International Airport. This used the same baggage arrangements as the Frontier Airlines service: it too operated in both directions, but unlike the Denver service was available for passengers of all airlines. It was treated as a commuter flight.

Cruise liner terminals

- Another mode of transport providing off-airport check-in has been the cruise liner. As ships arrive at Port Everglades, Miami and Port Canaveral, passengers and their bags can be checked in for flights from Fort Lauderdale-Hollywood, Miami and Orlando airports respectively.

  Some cruise lines can give passengers a boarding pass and a baggage tag on-board.

In Miami, Royal Caribbean Lines, the TSA and American Airlines (the carrier accounting for 60% of Miami's air traffic) provide a "convenience package" for cruise passengers, with special counters and screening facilities at the Port bus terminal where buses take air passengers direct to the airport.

The same thing works in Vancouver: passengers on board ships can check-in themselves and their bags from Vancouver airport.

Hotel and convention centre check-in

- Hotel check-in too has had a respectable history. In the 1990s, a number of Las Vegas hotels provided check-in services. National Airlines performed the service in the other direction: passengers could pay $6 to have their bags transferred to one of two downtown hotels. These services too ended with the events of 9/11: their successors are dealt with in section 9, "Changes to traditional airport check-in", starting on page 58.

- Walt Disney then got into the act. Disney's Magical Express® service offers airline check-in as well as airport shuttle buses and luggage delivery for guests staying at Disney hotels. Inbound bags go direct from aircraft to hotel, and outbound bags are checked through from hotel to destination airport.

  It started in May 2005 and handled 20,000 passengers in that month, 320,000 in the first 8 months and was forecast to handle 1.8m by the end of 2006. Disney pays the airport authority for each bus entering it, and a fee for each passenger handled (initially 50¢, increasing with volume to 75¢ and then $1.25). They also pay for the transport of the bags: the main airline involved (Continental Airlines) does not pay anything, and does not expect to. Disney does not charge passengers for the service (yet) although the carrier they use also offers a pick-up service from non-Disney hotels at a cost of $15 a bag.

  This service frees up space at airport - reducing congestion at check-in – but the airport insists that passengers arrive at the airport 2 hours before flight departure (to ensure that they have the opportunity to shop there). This, incidentally, exposes a fundamental tension between the objectives of the airlines (to offer short check-in times) and the airports (to keep passengers in the terminal as long as possible to maximise retail opportunities).

  The benefit to Disney is that people spend more time at the resort.

  It was thought that the service would draw revenue from rental cars (one of the largest revenue sources at Orlando airport). This didn't happen: rental income increased by 6%, possibly because of the increasing numbers of people using Orlando to reach other Florida resorts. There was however a loss of taxi and limousine revenue as well as the initial capital cost. There is also the logistical complexity of the scheme. The consequent reduction in check-in area needed reduces check-in rental revenue to the airport.

Continental Airlines has an agreement with Disney and their third party carrier (which transports bags by truck between airport and hotel) for track and trace services – services which can track bags which did not make the same flight as the passenger, and trace any which have gone missing.

For security reasons, the trucks and the passenger buses are all equipped with GPS so that the whereabouts of all passengers and bags is known. Dispatchers monitor vehicle movements using Microsoft's TruckTracker software, in case of accidents or attempted thefts. They also monitor traffic conditions and can instruct drivers to re-route if traffic congestion is likely to cause delay.

A key lesson is the need for a comprehensive operating agreement, based on revenue at risk and revenue to be generated.

- American Airlines developed their AAdvance Bag Check programme from this. Their passengers can check-in and drop their baggage at remote locations – a number of cruise lines (including Royal Caribbean International, Celebrity Cruises and Norwegian Cruise Line), and 34 other locations including 19 Disney resorts and hotels in Orlando and convention centres in Chicago and San Francisco. The charge for this is normally $10, but it is $20 on some cruise lines.

The Radisson SAS group of hotels has from time to time provided check-in facilities at city centre hotels, with bags being transferred to the airport by airport bus.

Specific examples of off-airport check-in

Amsterdam

In the mid 1990s, Netherlands Railways' conductors provided an on-board check-in service for KLM passengers with hand baggage only. This service was available on InterCity trains from Enschede to Schiphol Airport, between Enschede and Appeldoorn. 24 hours notice was required. The service replaced a 1993 venture using a KLM hostess, which was abandoned because of the high cost.

At the same time, check-in was available at 's-Gravenhage (The Hague) – an operation made complicated by the fact that, unusually for the Netherlands, there are two major stations in the city.

In 2000, KLM were looking at self-service check-in at 47 major stations: this and some of the airline's other pioneering intermodal integration programmes ended with the economy drive needed after 9/11.

Antwerp

In January 2002, KLM started offering passengers the alternative of a train for the journey between Amsterdam Airport Schiphol and Antwerp. Passengers are checked through for their entire journey and have a through ticket (although a coupon needs to be exchanged for a rail ticket for the rail segment). No baggage handling facilities are provided. Initially KLM retained three return flights between the two cities but these were subsequently withdrawn. It is understood that, because of the short runway at Antwerp airport, hold baggage was restricted for weight reasons – not a problem for trains.

Atlanta

Atlanta Hartsfield-Jackson International Airport, in conjunction with Delta Airlines, its largest carrier, is in the process of setting up a check-in at one of its parking lots – something which has existed from time to time in the past. The new system will combine check-in with valet parking – adding value for airline, airport and passengers alike.

Initially the subway operator MARTA wanted to provide check-in at some of their stations, and this is still a long term aspiration. However they did not have the money to develop the concept, so the airport authority decided to set up a trial in a car park to test acceptability to both passengers and the TSA. Combining this with valet parking was sensible: the charge for valet parking is 50% more than that for ordinary parking, and the extra revenue would offset any increased costs.

The project has taken a long time to come to fruition: the latest issue is with Delta Airlines, who would handle the baggage. It is understood that the problem is financial.

- To the passengers, this will combine two valuable services: they can hand over both their bags and their car and proceed to the terminal with boarding pass in their hands – very much a premium product.

- To the airport, the main advantage is that cars can be parked much more precisely by professionals: they can pack them in much more tightly, making more efficient use of the space available. Given that the airport has the second largest car park in the United States, this effective gain in parking space is valuable.

  A subsidiary benefit is that they get the bags for screening earlier than they otherwise would have – also a benefit, at the world's largest airport.

- The airline can provide its passengers with a premium service.

The main positive result to emerge from the planned MARTA service is a check-in desk at the airport station, although there are also secure car parking facilities for air passengers at a number of stations on the line to the airport.

Birmingham

There have been plans for check-in desks at Birmingham International station, about 1½ km from the airport and connected to it by automated people mover. The station also serves the National Exhibition Centre, a major attraction.

Check-in at other locations on the rail network would probably not work – volumes are too small at any one point because of the airport's dispersed catchment area.

Brisbane

When the Airtrain Citylink connection to the airport was being planned in the late 1990s, there was an aspiration to have in-town check-in. The best place to do this was Roma Street, one of the two major downtown stations. It has a lot of parking space as well as a bus terminus. Central Station, the obvious alternative, is under the Sheraton hotel.

There were also plans for check-in facilities in the Gold Coast holiday resort area, at Robina station. Bags were to be taken from there to the airport by Qantas truck – which had the benefit from the railway's point of view of avoiding any liability issues from bags missing flights. Another benefit was that, since baggage would be trucked to the airport anyway, it would cost little extra and give more added value if it was collected from the resort hotels themselves and not just the station at Robina.

The check-in system was never implemented, and given the lower than forecast patronage of the railway, is unlikely to be introduced in the near future (although bus-rail ticketing and a VIP transfer service to the resort areas is available). However, the research results from Chicago (see page 69), showing that a third of potential passengers would not use the Airport Express if in-town check-in was not available, is interesting in this context. The research may not be valid: it may not be valid for Australian conditions – but it is interesting!

Brussels

The first air rail connection in Brussels was to Melsbroek airport, in 1952. Trains ran from a special platform at Central Station. In 1955 the airport moved a short distance to the present site at Zaventem, and in 1958 an in-town check-in facility was opened at Central Station.

One reason for the choice of Central Station as a terminus of the airport express service was the fact that Sabena's city terminal and offices were immediately adjacent, and were in fact directly above a point where a small terminal platform could be created in the sub-surface station. Platform 1a was built in 1952-53, and trains to the airport used this for some 30 years.

Passengers were able to check-in their bags at this terminal from 1958: bags were sent down in a conveyor to platform level and loose-loaded into a dedicated baggage compartment in a special sub-fleet of trains. It is not known when this arrangement ended, but the cause is understood to be security concerns.

Subsequently the airport train service was extended – first to all three central Brussels stations, and then on to some major destinations in Belgium.

Despite much research and the invaluable assistance of SNCB's archivist and colleagues from the University of Louvain-la-Neuve, dates quoted may be inaccurate by a year or two.

Copenhagen (Købehavn) Kastrup

As the Øresund fixed crossing was nearing completion, plans were being developed for on-train check-in facilities to be provided on trains from Sweden to Copenhagen, but these never came to fruition.

However, with the opening of the fixed link in July 2000, SAS did provide self service check-in machines at both stations in Malmö.

Düsseldorf

Check-in desks were available at the airport's InterCity station when it opened in May 2000. Because of lack of use and despite much marketing, they were closed in April 2004.

Check-in was available for 16 airlines (Aer Lingus, Air Berlin, Augsburg, Austrian, British Midland, Condor, CSA Czech Airlines, Eurowings, Hapag Lloyd, Iberia, LTU, Lufthansa, Malev, Regional Airlines, SAS and Tyrolean). Check-in closed an hour before flight departure.

At the station, bags were pre-sorted according to the different baggage sorting areas in the main terminal and then taken by truck to those areas. In some cases, the volumes checked in for specific flights justified direct trucks to those flights.

An automated baggage conveyor system was evaluated at the planning stage but was ruled out as too expensive.

Passengers use an automated people mover to reach the terminal from the InterCity station.

Firenze (Florence)

Alitalia passengers using Pisa airport can check-in their bags at Firenze's main station: there is a direct rail connection to the terminal building of Pisa airport.

Frankfurt

As part of a strategy to increase slot efficiency by providing short haul services by rail rather than by air, a number of integrated intermodal arrangements have been made by DB and the airlines serving Frankfurt, with the active co-operation of Fraport, the airport authority, and Lufthansa, the airport's leading airline.

After a trial on the Saarbrücken – Frankfurt route, facilities were provided for Stuttgart – Frankfurt and subsequently Köln – Frankfurt services. Both are branded as AIRail services.

Inbound passengers can check-in at their departure airport to Stuttgart or Köln stations: they get boarding cards for their flight and for the rail journey. Bags are checked through to the destination station. At Frankfurt airport, they are transferred by Fraport staff to the train within the standard 45 minute minimum connect time which applies to both air-to-air and air-to-rail connections. They are available for collection by passengers at the stations within minutes of the train arriving. Customs facilities are provided at both stations, funded by the German government (and, with the start of the service, the same facilities were also provided at Stuttgart airport).

The same system works in the opposite direction, for outbound passengers. People can check-in at airline desks at Stuttgart or Köln stations. They hand over any hold baggage and get boarding cards for the rail journey and for the flight. Bags are taken in a dedicated part of the train to the airport, where they are transferred to the sortation system by Fraport staff.

For passengers arriving by rail from other parts of Germany, there is a check-in area (Terminal T) as they leave the high speed train station concourse and start to move along the connector bridge to the terminals.

In the late 1990s, a Moonlight check-in service was provided at a number of stations (Düsseldorf, Köln, Bonn, Würzburg and Nuremberg). Passengers could check in their bags at these stations between 19:00 and 21:00 for flights the following day. It lasted about 5 years.

Problems with this kind of system are discussed on page 37.

Hong Kong Central and Kowloon

Early research showed that Airport Express passengers wanted (and were prepared to pay for) in-town check-in. The modal split to rail identified in the initial research was 34% in the base case (with no check-in), 37% with a US$5 charge for checked baggage, and 40% with no charge for checked bags.

This, and the parallel plans for in-town check-in on Heathrow Express, led Mass Transit Rail Corporation (MTRC) to design check-in facilities into their stations at Hong Kong (45 desks) and Kowloon (78 desks).

When the Airport Express Line opened in 1998, a full check-in service was opened in both stations. The facilities were built by MTRC, the rail operator, and are used by most airlines operating from Hong Kong International Airport (including US carriers).

The original assumption was that there would be a charge of HK$30, but the airlines refused to implement this, arguing that passengers were not charged for check-in anywhere else.

Baggage is taken by conveyors to a load make up area where it is loaded into containers. These are sealed with a small plastic seal, which proves the integrity of the containers on the journey. They are then loaded into the baggage car of the train. This procedure is normally done automatically, but there is provision for manual or semi-automatic operation in degraded mode.

The normal automatic mode is very impressive to watch – during the 60 second station stop time at Kowloon, full containers are moved from the load make-up area onto the trains and into the correct place in the car, at the same time as empty containers from the airport are being offloaded automatically from another door and moved to the load make-up area.

At the airport, containers are taken off the train (also automatically) and unloaded: bags are transferred to the baggage sorting area to be screened and put onto flights.

The costs of operating the check-in and baggage service are shared between the airlines and the rail operator, the proportion met by each varying with the number of passengers using the service.

Check-in is available up to about 70 minutes before take-off (compared with around 40 minutes at the airport for passengers with hand baggage only). Same day early check-in is also available. One factor in favour of check-in is that many flights depart from Hong Kong in the evening. With hotel check out in the morning, the downtown early check-in service is attractive as a kind of left luggage facility. The airport also sees it as an advantage to get bags in early for screening – it helps remove peaks in the screening process.

The check-in service is only available to rail ticket holders - passengers effectively need to go through a ticket barrier to get to the station check-in area. The system allows early check-in, and the ticketing system is sufficiently intelligent to cope with this.

Hong Kong's in-town check-in has proved to be successful, with no insoluble logistics or security problems

Initially, airline ground handling agents staffed the desks under MTRC supervision. Following the events of 11 September 2001, new security requirements were brought in for US airlines checking in passengers off-airport: the stations in Hong Kong had to comply with these.

By mid-2004, the situation was that United Airlines were using their own staff to check-in passengers at the stations, just as they were at the airport. Northwest were using a handling agent – in agency uniform – again, as they did at the airport. Both airlines employ authorised security agents to inspect bags before check-in. TSA send staff over each year to audit the whole procedure.

The system uses CUTE/Lite technology, managed remotely by a CUTE hub at the airport – one of the first such installations.

Initially, a number of transfer sidings were provided along the airport railway. The contingency plan was that, if a train broke down, it would have stopped at one of these: another train would have stopped alongside and passengers and checked baggage would have been transferred across. These sidings had platforms with rollers for easy transfer of containers. They received no use so they were eventually decommissioned.

In August 1998, just one month after the service started, in-town check-in was handling around 500 users/day – at that time, 25% of AEL's air passengers (and, of course, 50% of outbound air passengers).

This shows that passengers were remarkably quick to work out how the system could be used to their benefit – a process possibly helped by the fact that they had to change their travel habits: the airport was completely new, so what worked at Kai Tak would not work at Chek Lap Kok.

This percentage of passengers using the system has stayed reasonably constant - although, of course, numbers have increased considerably. In 2002, for example, 60% of air passengers travelling from Hong Kong and Kowloon stations were using the facility. High usage is helped by the excellent marketing and the fact that many of Hong Kong's flights are long-haul, so passengers tend to have more bags.

Average usage is now around 53% of airport-bound passengers (around 26% of all passengers): peak usage is 70% of airport-bound passengers.

Houston

Continental Airlines has a car park check-in system at its Houston hub.

At the AMPCO Express Parking lot on JFK Boulevard – the main access road to Houston's George Bush Intercontinental airport – there are five self service kiosks and manned check-in positions.

Checked bags are taken to the airport by airline staff. OnePass Elite passengers are given a free upgrade to valet parking.

Japan

Japan Air Lines (JAL) operates three baggage services. These are as follows.

- A flight caddy service, where they will pick up one bag free of charge from any address in Japan and deliver it to the airport. Like the comparable Swiss system (see page 34 below), this has long deadlines – the collection deadline from addresses in Tokyo and Yokohama for Narita airport is 12:00 noon the day before travel, for example.

- A complete baggage delivery service, where they will take bags from passengers at the airport or City Air Terminal and deliver them to any address. The charge from City Air Terminal to the airport is around ¥1800: from the airport to anywhere in the city region is around ¥3600. Both of these vary from airport to airport.

- There is an unaccompanied baggage service, where JAL passengers' baggage can be delivered to their home address in Japan.

Kuala Lumpur

KLIA Ekspres was opened on 13 April 2002 by the then Prime Minister of Malaysia.

Since then, in-town check-in at Sentral station has always been available for passengers of Malaysia Airlines (MAS) up to two hours before flight departure: there is an aspiration to reduce this to 90 minutes when it becomes possible. It is 90 minutes already for passengers with hand baggage only. Check-in is available between 5:00 and 23:30. Passengers need a KLIA Ekspres ticket to check-in.

MAS have 30 staff at Sentral station for check-in, baggage handling and ticket sales.

The MAS ticket office at Sentral is very successful: it replaced two downtown offices and now sells more than both of them used to – partly because of longer opening hours.

Check-in has capacity for 500 bags/hour. In early 2003, 30% of outbound passengers were using check-in. The average number of bags checked was 0.9/passenger. In 2005, it was being used by 800 – 1000 passengers/day.

Check-in for Cathay Pacific and Royal Brunei, the first non-Malaysian airlines to open a check-in service there, opened on 8 March 2003. MAS was used as the ground handling agent.

Air Asia (a local new entrant carrier) was to start an in-town check-in service the following month. However the arrangement did not begin as planned, because their flights were re-located to the Low Cost Carrier Terminal at the airport. This terminal, which opened in March 2006, cannot easily be served by rail at the moment. At the time of writing, proposals to extend the railway to the new terminal are with the government.

KLIA Ekspres's offer to Air Asia was that complimentary travel on the lower-quality KLIA Transit would be included, but it was thought that enough passengers would trade up to KLIA Ekspres to make it worthwhile.

KLIA Ekspres are in discussion with other airlines – in particular Air China, Emirates, Kuwait Airlines, Philippines Airlines and Singapore International Airlines - to open check-in services at Sentral station.

It was valuable to be able to locate the check-in desks where they are, underneath the viaduct carrying the Putra light rail line across the station: it would not have been easy to rent out that area for retail use.

Bags are accepted by airline staff at Sentral station, and put on a conveyor belt to the load make up area. They are tagged from XKL, the three-letter IATA code for Sentral station. A barcode is stuck on each bag and a duplicate on a sheet of paper: this sheet is put in an envelope on the outside of the container. Everything (including the container) is scanned. They use Hong Kong style security seals (see page 20) rather than padlocks for the containers.

Containers are sent down in a hoist to the platform and loaded onto the train. The vehicle at the city end of each train has a baggage compartment, which holds 5 containers. The driver has no access through this to the passenger compartment – unlike the situation on Heathrow Express and the Madrid Metro, there is no passage through the baggage area. Evacuation, if necessary, would be train to train.

The baggage handling hall at the airport has around five people to unload trains. The ramps and containers in use are very similar to those formerly used by Heathrow Express (see note on Marco Trailers, page 46).

At the airport, containers are unloaded from the train and emptied at platform level. The bags go up a helical belt, and on a conveyor across the tracks to the sortation system where they are screened and sent to their flights.

There has always been an aspiration to have in-town check-out too, so that passengers would be able to check bags from their originating airport through to Kuala Lumpur Sentral station.

Initially KLIA Ekspres planned to use ULDs for inbound checked baggage: the airlines were doubtful about this, believing that there would be insufficient volumes and logistical difficulties.

The concept then changed to adapting the baggage handling system at the airport so that bags could get from aircraft to Sentral station on the same train as the passenger or (at worse) the train after. This upgrade has been delayed by funding problems. However, the necessary contract was awarded in April 2006: work has started and is due for completion in 2007. Planned opening date is 13 November 2007.

The infrastructure at Sentral station was built to handle both inbound and outbound checked baggage. Containers are to be unstuffed at concourse level, and bags will be put onto two reclaim belts. Passengers will claim them from the reclaim hall. They will then have to go through Customs: they will have been through Immigration at the airport.

Leipzig-Halle

Mitteldeutsche Flughafen AG (MDF), the operating company for the airports of Leipzig-Halle and Dresden, has introduced remote check-in at Magdeburg station (100 km to the north west of Leipzig). This is a very competitive and contested area – it is mid-way between the airports of Leipzig-Halle, Hanover and Berlin.

From 30 June 2003, check-in facilities were provided at the DB travel centre at Magdeburg Hbf. They are available (to anyone – not just train passengers) between 18.00 and 21.00 the day before departure. The desk is staffed by a ground handling agent, who takes in and tags bags and issues boarding cards. There is a charge of €10 (except to accompanied children under 17 years old).

DB staff locally are thought to have inadequate language skills (especially in English, the universal language of aviation) so a ground handling agent is used to man the check-in desk. For the Magdeburg service, the agent drives a mini-van from the airport each afternoon to open up check-in from 18:00 – 21:00, and then drives back later with the checked bags.

So far, it is considered to be a success. People value it because, if they check-in at the station the night before, they have to be at the airport an hour before flight departure (otherwise it is 2 hours before – and some flights are at anti-social hours). Many passengers from Leipzig-Halle are travelling for leisure, so the average number of bags/passenger is quite high. The number of people actually using the train to get to the airport next day is higher than forecast.

This is a pilot: ultimately it will be followed by similar systems at Leipzig Hbf., Chemnitz, Berlin and Dresden in particular.

The airport authority is considering 24 hour check-in for Magdeburg, Dresden, Chemnitz and Berlin, although the big problem is moving bags to the airport.

MDF are in negotiation with DB to be able to transport checked bags by train. The most likely solution is a locked container in an ordinary reserved passenger compartment, but there are many parties involved, and it only takes one objection to slow things down.

Bags probably need to be containerised to keep the station stop time at an acceptable level. The containers used on the Stuttgart service may be sufficiently small and manoeuvrable to go round the two 90° turns necessary in order to get into a passenger compartment. However if it can be done, one wonders why is it not done on the Stuttgart route, where passenger compartments were removed to create a dedicated container space, and the Köln route, where bags are loose-loaded into reserved compartments.

Trains, especially those from Magdeburg, are InterCity trains with ordinary locomotive hauled coaches, not double-deck RE 160 push-pull units (which have space for luggage, bikes, prams and wheelchairs – and potentially baggage containers - in the lower deck of one of the vehicles on each train).

Through train services from Leipzig-Halle to Dresden are limited, and check-in there would be complicated because Dresden too has an airport (owned by the company which owns Leipzig-Halle airport).

Berlin's new airport at Schönefeld – BBI, Berlin Brandenburg International - will have a night curfew which is actually more restrictive than the one at the older Tegel. This adds to the potential of a Berlin in-town check-in for Leipzig-Halle, which has no curfew.

Another issue is the need for trains early enough in the morning to allow passengers to catch early departures from the airport – an factor for all airport railways. People need to be able to get to the airport early enough to check-in an hour before their flight, and flights often start around 6:00 – 6:30.

London City

There were plans for a check-in facility at Canning Town station to serve London City airport, but nothing has happened. Presumably, with the opening of the railway to the airport in December 2005, the option is no longer under consideration: it is certainly difficult to see many beneficiaries.

London Paddington

Full hold baggage check-in for Heathrow Express was introduced at Paddington Station on 23 June 1999 for the following airlines: AA, Air Canada, Air New Zealand, ANA, Austrian, BA, BMI, Finnair, LOT Polish Airlines, Lufthansa, Manx, Qantas, SAS, Singapore, Sri Lankan, Thai, United, and Varig.

This was a year after the full rail service opened: before that, from the opening of Heathrow Express in June 1998, check-in had only been available for passengers of AA, BA and BMI with hand baggage only. AA had provided a hand baggage check-in desk on the platform from January 1998, for passengers of Fast Train, the precursor of Heathrow Express.

For the hold baggage check-in system, a part of the station concourse area which was being redeveloped by the station operator was rented by Heathrow Express. They fitted out the area with check-in desks and standard airport baggage handling equipment. A conveyor took the bags beneath the concourse and the whole length of the platform, where they were loaded into containers which were put into a special compartment of the train.

In normal operation, with 8-car trains, the baggage compartment was adjacent to the load make-up area. On Saturdays, traffic was insufficient to justify 8-car trains so 4-car ones were used instead: for this, the containers had to be wheeled back along the platform to the baggage car (and not all trains had a baggage compartment on Saturdays). Subsequently, when a 9th vehicle was introduced, minor changes were made to the layout of the load make-up area to ensure security while allowing passengers access to the platform area adjacent to all of the passenger vehicles.

At Heathrow's Terminal 1, 2 and 3 (Central Terminal Area) station, the containers were offloaded and taken up to a transfer area where the bags were unloaded and moved across to vans which took them to the sorting areas at the individual terminals.

The security arrangements involved bags, containers and trains being recorded so that a complete trace was possible; and baggage handling took place away from public areas. Staff were employed by the train operator to handle the bags, but the rent paid for the desks by the airlines was intended to cover the operating costs.

In January 2002, BA provided 4 self service check-in machines at Paddington: one of the check-in desks was designated as the fast bag drop.

The events of 9/11 led to increased security requirements, especially by the US authorities: United Airlines and American Airlines suspended their Paddington check-in operations immediately. The events also led to the collapse of the Qualiflyer Alliance: they too stopped providing check-in.

BA were the next to withdraw (in July 2003) because of their imperative need to conserve cash. Star Alliance remained for a while – indeed, Lufthansa took the opportunity to open a ticket office in a vacant part of the check-in area – but finally they too withdrew at the end of November 2004. The space has now been handed back to the station operator and has been converted to retail use. The train operator has written off the investment.

Some £25 million had been invested, which had been justified after research showed that check-in would attract 7% more passengers. The additional revenue, plus the rental income received from the airlines, would have provided the required return on the investment. The figure of 7% had been obtained from a model of the attractiveness of certain features, which in turn had been calibrated on the basis of the experience with the Gatwick Express service. In the event, it was the airlines' decision to withdraw for cost and security reasons which caused the closure. In terms of reliability, the service had performed well, with very low levels of late delivery or lost bags.

There is a full description of the security issues raised by the Heathrow Express in-town check-in system in the case study on page 45.

London Victoria

An in-town check-in service at Victoria Station had been available for many years when the dedicated Gatwick Express rail service began in 1984: it was opened by British United (later British Caledonian) in 1962. It continued under BA management until March 2002 when it closed, essentially for cost reasons. American Airlines also provided check-in, but closed their operation in September 2001 in response to the events of 11 September.

The BA operation was based in a terminal above the platforms, where they had 16 desks: these handled 300,000 passengers each year for their flights and those of its partner airlines. Passengers had to check-in at least 120 minutes before the flight departure (90 minutes, for short-haul passengers). Very few passengers using check-in were taking domestic flights. The check-in area had its own road access: around two-thirds of passengers using it arrived by car or taxi, for which the location was good. Heathrow passengers with hand baggage only could also check-in there.

Among the financial benefits to BA was income from other airlines for handling their passengers, and commission - around £1m a year - from selling rail tickets. They also had lower space rental charges than at the airport, partly because the rail operator deliberately did not charge a commercial rent for the space.

To save BA staff handling cash, the Travelex bureau de change acted as their cashier. This was seen as a good deal for both parties.

The checked bags – there were up to 200 on each train at peak times - were transferred to platform level by conveyor, and were loose-loaded into the secure baggage van at the rear of the train to Gatwick. The vans on the original (class 488/489) Gatwick Express trains had no external door handles - they could only be opened from inside - and were under surveillance from the on-train staff. The latest rolling stock (of class 460, introduced from 2000 to replace the older trains) was built with a special baggage compartment with roller doors in each train rather than a dedicated baggage van.

The American Airlines check-in operation was on a smaller scale. This used an office at platform level (at the head of the Gatwick Express platforms) with opening times to suit the limited number of departures then operated by AA from Gatwick. Bags were containerised and containers were transferred on roller-bed trucks to the baggage area of the train.

At the airport, bags were unloaded manually onto trucks which were towed by tractor on a dedicated route from platforms 1 and 2 across one set of tracks to the airport baggage sorting area. Occasionally Gatwick Express trains did not use the platforms nearest to the terminals. Sometimes this was planned (for track or platform capacity reasons): sometimes it was necessitated by last-minute operating considerations. Bags were usually not loaded onto trains not scheduled to use the right platforms. If it did happen, bags could be off-loaded and transferred by truck and lift: a time-consuming alternative was to leave them on the train, take them back to Victoria then back again to the correct platforms at Gatwick.

BA paid rent to the station operator at Victoria for the check-in area, and met its own operating costs.

The costs became unsustainable when BA reduced its level of activity at Gatwick in the rationalisation after 9/11 (they moved long-haul flights to Heathrow, leaving largely domestic and European ones at Gatwick: short-haul passengers tend not to use in-town check-in).

Security issues became critical as the bags were not totally segregated after check-in.

There was continuing debate about the future of the Victoria operation. BA would have liked a platform-level presence, possibly in addition to a street-level office. However, the geography of the station made the provision of adequate space for this difficult. Different platforms could have been used for the dedicated Gatwick Express service to provide more platform level check-in space. However this might have necessitated expensive alterations to the tracks outside the station in order to maintain punctuality and the commercially attractive 30 minute journey time.

The long-running political debate about closer relationships between BA and AA also contributed to the uncertainties.

Los Angeles

Since September 2006, passengers booked on domestic flights have been able to check-in at the Convention Centre, the FlyAway bus terminals at Union Station and Van Nuys, and at the cruise ship terminal. This is part of the airport's Customer Service Improvement Programme.

Cruise lines participating are Royal Caribbean, Celebrity, Princess and Norwegian: airlines involved are American, American Eagle, Alaska, Continental, Delta, Horizon, Northwest, Ted, United, and United Express/Skywest Airlines. Other cruise lines and airlines were expected to join the program.

There is a charge of $5 to check-in up to two bags at the Van Nuys FlyAway Bus Terminal, and a charge of $5 - $15 for cruise line passengers. Check-in at Van Nuys is open from 4:30 to 19:00 daily. Bags are accepted at the FlyAway terminal up to two and half hours before flight departure.

Madrid

As part of the planning for the Madrid Metro line to the airport, the multi-level multi-line interchange at Nuevos Ministerios was extensively rebuilt in the late 1990s. It is in the administrative centre of the city, and has a fast direct service to Barajas airport.

Uniquely on a metro, check-in is offered at this station. The service opened with the extension of the airport line to Nuevos Ministerios in May 2002 (the line from Mar de Cristal to the airport had opened in June 1999, the short extension from the airport to Barajas three months later, and from Mar de Cristal to Nuevos Ministerios on 21 May 2002). 34 desks provide check-in for Iberia and other leading airlines: the operation is managed by AENA, the Spanish airports authority.

Deadline for check-in with hold baggage is 2 hours before flight departure. Bags are sent down from check-in level to platform level, where airport employees load bags into containers and containers onto trains.

The trains on the line have a special secure area for baggage containers.

At the UITP Congress in Madrid in May 2003, delegates were told that about 200 bags were being checked in each week. No reasons were given for the very low number, but it is consistent with observations at the check-in area. Possible causes are:

• Distrust of the Metro as a means of carrying checked bags

• The fact that Nuevos Ministerios is in the business and administrative area of the city, which tends to generate business trips. These tend to be of short duration and with little hold baggage.

• Not all airlines offer check-in at the station.

Manchester

Airline check-in desks were part of the original plans for The Station, Manchester Airport's multi-modal interchange. However, following 9/11, these plans were held in abeyance because of reduced demand.

By 2005, space in the terminals was at a premium, so when two new holiday charter companies needed check-in space, they were offered and accepted use of the vacant desks at The Station.

There have also been plans in the past for check-in at major stations on the extensive and well used regional network serving the airport – in particular, at Sheffield.

Milano

A limited check-in service for passengers with hand baggage only is available at Cadorna, the much-modernised downtown terminal of Malpensa Express, which serves Malpensa airport.

There was an initial aspiration for hold baggage check-in – both at Cadorna for Malpensa Express and at Centrale for a high speed Italian State Railways service - but neither check-in nor high speed rail service are yet available.

Montreal

VIA Rail Canada run a bus shuttle from Dorval station to Trudeau airport, and provide a baggage drop facility in Ottawa station. The shuttle connects with major Ottawa - Montreal trains. Bags can be handed in at Ottawa station and collected at the airport for check-in after alighting from the shuttle. The same system works in the other direction.

This was intended as a precursor to a full checked baggage service: over the years VIA Rail Canada have been in discussion with a number of airlines to introduce this. A similar baggage drop arrangement could be introduced from other stations on the network later, but the main demand is from Ottawa.

In the 1990s, KLM passengers were able to check their bags in at Ottawa station - but the connection to Dorval was by coach. Air France passengers could also use a check-in in downtown Ottawa, and again ride to Montreal Trudeau airport by coach. And Montreal's city air terminal is in the rail station, so air passengers can check-in there - but they too go by bus to the airport.

Moskva (Moscow) Kievsky

In early 2005, Russian Railways (RZD) opened a terminal at Moscow Kievsky station for airline passengers travelling to Vnukovo International Airport on the Airport Express. Passengers can register tickets and check-in luggage at Kievsky station.

Moskva (Moscow) Paveletsky

The Aeroexpress system between Paveletsky station and Domodedovo airport includes a full hold baggage check-in service.

This opened in August 2002 (at the same time as the new rail service) with 23 check-in desks, 5 airline ticket desks, 2 railway ticket offices, a lounge and a café. There are also on-line check-in information screens at the City Air Terminal.

Check-in for passengers with hold baggage is available downtown between 24 and 4 hours before their flight (international), or between 24 and 2½ hours before (domestic). For passengers with hand baggage, check-in ends 25 minutes before the departure of the last train which will get them to the airport in time.

Check-in and the train ride is free for passengers of airlines with an interline agreement. Over 20 airlines give passengers train tickets with their air tickets: large numbers of passengers use these tickets. Those passengers can use a special fast track security gate at the airport. Inbound passengers need to exchange the coupons for train tickets at a desk opposite the main ticket office – labelled only in Russian.

East Line Group, operators of the airport, paid for the infrastructure and check-in at Paveletsky station. East Line charge airlines for each passenger checked in: the airlines cover the cost of check-in and the rail ticket through a user fee.

One problem was that different airlines were using different check-in systems, different Departure Control Systems (DCSs).

Initially 4%-5% of Domodedovo passengers checked-in at Paveletsky. In 2003 this had grown to 18%: the history has been one of steady growth.

7000 passengers/year now check-in at the downtown terminal at Paveletsky. Check-in is offered by all Russian airlines (there are over 100) plus SWISS.

In May 2004, East Line was in the process of doubling the number of check-in desks. At that time, 18 months after opening, no bags had been lost on the system. There were no problems with out-of-gauge baggage - the baggage car is capacious enough for all needs.

During 2004 new baggage handling facilities were built at the airport station on the side of the track away from the Airport Express platform.

The ability to check-in in advance is beneficial for people travelling with a lot of bags (and many do). The number of bags varies with the destination - for example, passengers to St. Petersburg have very few hold bags and they do not use in-town check-in. People do not have to use the train if they check-in downtown.

München

At some point in the early or mid 1990s, Lufthansa installed 2 check-in desks at München Hbf. for use by their passengers and those of Lauda Air. The original intention was to transfer bags by train – by the local S-Bahn – to the airport, but it proved impossible to reach agreement on payment for this. The compromise reached was to divert the airport bus to the station to pick up checked bags. This was in operation in 1996, but had ended by 1998. For a short time, there was also a self service check-in machine at the station for passengers with hand baggage only.

It remains an option for a future improved airport service (in particular, the long-running plans for a maglev), but it has yet to be re-instated.

There have also been plans for check-in on the S-Bahn platform at the airport station for passengers using Terminal 2.

Newark

When the Airtrain service opened connecting Newark Liberty International Airport to a new station on the Northeast Corridor, there was an aspiration on the part of Continental Airlines to provide in-town check-in at New York Penn station and at the airport station. The service at the airport station opened on 18 November 2001, a month after the station itself opened.

Check-in desks were just off the passengers' natural route from train to plane. Using them meant a slight detour when leaving the connector bridge - a left turn to the desks rather than a right turn to the escalators to the automated people mover.

This seemed to be enough of a deterrent to be not worth-while: passengers apparently wanted to get to the terminal first and then check-in. The desks have now been closed.

Plans for check-in at New York Penn were never realised (although Continental Airlines' preferred passengers can use the Amtrak lounge, and the airline has ensured that there is reasonable passenger information for the airport service). There is a major space problem at the station (but see "Future plans" section, page 69). Space on the New Jersey Transit commuter trains is limited, especially in the peaks (however, this may change as the new fleet of double-deck trains is introduced), and the new security regime operating after 9/11 meant that the scheme has so far not got off the ground.

New York Jamaica

This station is a major interchange point between the New York subway, the Long Island RailRoad and the AirTrain to JFK. As Airtrain JFK was being built, there were plans to have check-in facilities at this station – and desks have actually been provided for this purpose. While these have not yet been brought into service, there are plans to put CUSS kiosks here – see page 61.

Orlando

The features of this rather special application of off-airport check-in are described in the introductory paragraphs to this section – see page 14.

Osaka

There is in-town check-in at the Namba CAT in Osaka for passengers of the airlines present there. Minimum check-in time is 130 minutes (90 minutes, for domestic flights). Airlines that had counters in 2000 were ANA, Alitalia, Austrian, Cathay Pacific, KLM, and Northwest. Japan Airlines used to have a presence, but pulled out because of financial issues with the operating company of the City Air Terminal.

When JR West opened its rebuilt Kyoto station on 12 July 1997, JR West's Kansai Express provided a direct link for passengers to Kansai International Airport, with an air terminal in the station which provided information and check-in facilities for flights. Japan Airlines had a presence there, but it is not known which other airlines do (if any).

Oslo

In 1994/5, as the Airport Express service was being planned, an in-town check-in service was considered: research covered terminal facilities, accommodation on trains, and baggage handling arrangements at the airport. They included the logistics and operational issues, the security system, financing and the investment case, market research (including willingness to pay), and collaboration arrangements with airport and airlines.

The Norwegian Civil Aviation Authority insisted that all bags had to be screened and handled in a closed system between check-in and the baggage handling system at the airport.

Research showed that costs (especially the costs of terminal facilities and operations) would be high and there was relatively little interest among passengers. One survey showed that 10-15% of passengers might benefit from it. Leisure passengers and those on new entrant airlines had no willingness to pay at all. 50% of business passengers in Scandinavia are travelling on one-day trips with hand baggage only.

The cost of each checked bag (assuming 25% of passengers used it) would be about €4 (1995 prices): this would have made no noticeable difference to the workload at the airport, and would have given no cost savings to offset the costs of facilities to transfer bags from check-in to the sortation system. Nor would in-town check-in increase the railway's share of the market.

It would have been funded by the railway company, with the airlines staffing and operating the desks. Because of the poor economics and low attractiveness, it was never introduced.

When the train service opened in October 1998, hand-baggage check-in was available for passengers of SAS and Braathens: this used both staffed desks and self-service machines.

Paris

In May 2000, Air France withdrew all Brussels-Paris flights and replaced them with a code-share between Air France and Thalys. Since then, Air France passengers travelling from Brussels have been able to check-in at the Air France office at Brussels Midi station up to 20 minutes before departure of the train. Assistance with baggage is provided on the platform at both Brussels and Charles de Gaulle. Checked bags are locked into a special compartment at the front of the train adjacent to the Air France reserved carriages at Brussels and off-loaded at Charles de Gaulle: passengers then have to take them to the check-in counters at the airport.

While there are many code-share arrangements with SNCF through Paris Charles de Gaulle, it is understood that this is the only one which makes any provision for baggage (and, strictly, this one is with Thalys International rather than with SNCF – although this is likely to change from April 2007).

It is seen as too difficult for other stations, which tend to handle low volumes, although some (Angers, Le Mans, Lille, Lyon, Nantes, Poitiers and St Pierre des Corps, Tours) have e-ticketing check-in facilities under an agreement between SNCF and SITA concluded in September 2006. There have been aspirations to install baggage check-in facilities at platform level at the TGV station at Charles de Gaulle.

Until 9/11, Air France also offered check-in for its passengers at the Villepinte exhibition centre, close to the airport. Bags were transferred to the airport in a sealed container in a van.

Plans for check-in in conjunction with an Airport Express are described in the "Future Plans" section of this report (page 71).

Pisa

See Firenze, page 18.

Roma Termini (Leonardo Express)

Facilities for check-in for passengers with hand baggage were provided by Alitalia at Roma Termini station at one stage: it is not known how long this arrangement lasted. It was operational in the late 1990s.

Saarbrücken

To test the potential of through baggage checking for the planned AIRail system (see page 19), a short-term trial was run on the Saarbrücken - Frankfurt service: this started on 15 June 1998. A number of trains were given Lufthansa flight numbers, and passengers were able to get their boarding passes and baggage tags at Saarbrücken station. Bags were checked to the final destination.

The trains had a number of reserved 1st class seats for Lufthansa passengers – both business and economy class passengers used these. To keep the operation as simple as possible, two bays of seats were reserved by priority for Lufthansa passengers joining at Saarbrücken, the start of the train's journey. If they were not occupied, they could be used by anyone else.

Lufthansa staff accepted the bags at check-in, and DB staff moved them to a locked container on the train. Fraport staff unloaded the container at Frankfurt, where the contents were transferred to a point where they could be screened, scanned and taken to the onward flights.

The trial was a success: it proved that the systems worked. It ended, probably when the Stuttgart service started on 1 March 2001 (although the trains still retain their Lufthansa flight numbers).

Stockholm Arlanda

When Arlanda Express started, automatic check-in machines at Stockholm's Central Station provided check-in facilities for passengers with no hold baggage using the Arlanda Express rail service to Arlanda Airport. They were provided by SAS and BA/Finnair, and have now been removed. Hold baggage check-in was an aspiration, but this has yet to happen.

Switzerland

Swiss Railways have, for many years, offered a service branded as Fly Rail Baggage, which provides check-in at 116 stations (60 of which are equipped to issue boarding cards). There is a fee of 20 Swiss Francs (around $15), halved if passengers only have hand baggage. Most of the operations are relatively small scale and involve little mechanisation. Baggage is carried in the baggage compartments of the trains and transferred at the airports to and from the sorting areas.

Originally the checked bags received no special treatment, but at some point in the decade 1994 – 2003 the practice of sealing them with transparent shrink-wrap plastic was adopted.

Passengers can also check bags from their departure airport to most staffed Swiss rail stations (the 116 major stations), on most airlines.

80% of the demand is for travel through Zürich airport. Check-in is not available on flights to the US. Relatively long check-in or collection times are required, sometimes with check-in the day before (for morning departures) or collection on the day after (for afternoon or evening arrivals).

The operation continues at a relatively low level, with the operating costs effectively being met by the individual passengers.

Zürich Airport also has check-in desks at its rail station, in an attempt to make the train service even more attractive by providing dedicated check-in.

To overcome the problem of the long check-in time for baggage, in 1999 SBB introduced Flugzug, a special train service (hourly in the peaks, otherwise two-hourly) between Basel and Zürich airport – by-passing the terminus station at Zürich Hbf in the interests of speed. Passengers can check-in at Basel station as little as 25 minutes (30, if travelling in economy class) before the last train which will connect into their flight.

Tel Aviv

El Al operates an in-town check-in service at their Tel Aviv Town Terminal at the railway station on Arlozoroff Street, which has a rail connection to Ben Gurion airport. It is also provided at the Tel Aviv Hilton, for hotel guests only.

Passengers can deposit their baggage and receive their seat allocation and boarding card between 16:00 and 21:00 for the next day's flights. This means they only need to arrive at the airport 75 minutes before the scheduled departure time. El Al provide this service in their own building: passengers of some other airlines (Air France, Alitalia, Austrian, KLM, LOT Polish Airlines, Lufthansa, Malev, Olympic, Swiss, Transaero and Turkish) are served in a separate adjacent building. Other airlines do not offer it.

Tokyo Haneda

Domestic passengers using ANA with hand baggage only can use self-service check-in machines at a number of stations in the Tokyo area.

At the time of writing, the following locations had check-in machines: Hamamatsu Cho Monorail Station - M-CAT (check-in time 50 minutes prior to flight); Shinagawa Station, Keikyu Line; Kanayama Station and Yokohama City Air Terminal - Y-CAT (all 55 minutes prior); JR Sapporo Station and Meitetsu Nagoya Station (both 60 minutes prior).

Tokyo Narita

There is a downtown check-in facility connected to the airport by luxury bus.

There was trial of a hands-free travel service using RFID technology between March 2004 and March 2005. This allowed passengers to check their bags from an address in Japan to their destination airport. Bags were collected the day before travel: it was used by 12,000 passengers (mainly JAL, but some ANA).

An advantage of RFID technology over bar-coding is that the tags have more capacity, which allows specific coding of labels.

Wien (Vienna) Mitte

When the City Airport Train (CAT) service started on 14 December 2003, there were 4 check-in desks at the downtown terminus. This was increased to 10 shortly afterwards - nine for Austrian Airlines and one for Air Berlin and Fly Niki. There were also 3 Austrian Airlines self-service machines for passengers with hand baggage only. By the end of October 2004 this had been increased to 8, of which 4 were for people with just hand baggage.

At the time of writing, there are 4 desks and 5 self-service check-in machines (of which 4 are for people with hold baggage and one for those with hand baggage only). Airlines offering check-in facilities are Adria, Austrian Airlines, Austrian Arrows, Air Berlin, Air Canada, Air New Zealand, ANA, Asiana, Blue 1, BMI, Croatia, Lauda, LOT Polish Airlines, Lufthansa, Niki, Singapore Airlines, South African Airways, Spanair, TAP Air Portugal, Thai, United Airlines, US Airways, and Varig.

Check-in is available between 24 and 1¼ hours before departure: bags cannot be checked to the US.

Baggage containers in the trains are not sealed: they have 3 rigid sides and a flexible cover draped over the top and forming the fourth side. It was thought that there were no security issues because the bags would be scanned and screened at the airport. Containers are locked in place to the side of the vehicle: bags are usually unloaded by hand with containers left on the train unless there are unusually high volumes.

Trains have double-deck coaches: the baggage car (which is marshalled at the airport end of the train) has seating on the upper deck and checked bag space below. Apparently the seating area in this car is unpopular with passengers.

CAT (a joint venture between the airport authority and the railway company) paid the capital cost of the city centre check-in: the airport paid for the facilities at airport. Airlines pay for their check-in staff, and pay the airport a fee for each bag handled.

By the end of 2004, 20%-25% outbound passengers were using check-in (around 10,000 passengers/month).

4. What problems have arisen?

Introduction

Generally, in case things go wrong, responsibilities and interfaces between all parties concerned need to be clearly defined and agreed in advance, so that questions of compensation for lost or delayed baggage can be settled in a pre-determined manner. Obviously, this needs to be done without the passenger having to establish who is at fault or having to approach more than one operator.

Problems getting the project off the ground

Reaching agreement among the many partners involved, and especially reaching agreement on sharing costs, has been a significant factor in preventing, inhibiting and delaying the launch of in-town check-in.

Operating problems

The Airport Express Line in Hong Kong originally had some emergency platforms along the route for use in the event of a train failure. These were specially equipped with roller-beds to transfer baggage containers between trains if necessary. They were never used and were subsequently decommissioned.

The baggage compartment on Heathrow Express trains took up half of one carriage. The other half was used by passengers. Loading the containers was a relatively noisy process and the weight transfer sometimes caused the train to rock: some passengers were alarmed by this.

The CAT in Wien (Vienna) had problems with handling out of gauge (OOG) bags – something needing special consideration.

Problems specific to moonlight check-in

Under this system, passengers check-in bags the night before their flight. It has been offered in Germany, in Zürich, and by Virgin Atlantic (and subsequently other airlines) in Gatwick.

If it is offered only at the airport, passengers may have to make two surface access trips rather than one – one to check-in and one to travel. Obviously, if passengers stay in an airport hotel or can check-in downtown this is not the case.

It can increase the short term parking load – passengers using moonlight check-in are almost certain to be carrying bags, and are therefore more likely to travel by car to the airport to check in.

It can reduce dwell time in the airport, as passengers with hold bags to check-in are normally asked to be there substantially before those with hand baggage only. This is an advantage to airlines and passengers, but not to airports wanting to increase retail and catering sales.

The system does need early bag storage space at the airport: not all airports have this.

So it can

- add to the handling workload (although it can de-peak the screening workload),

- reduce airport revenue (but enhance passenger satisfaction)

- add to airport road traffic and parking load (unless done downtown).

Hence it may be best used for high-value business travellers or where the baggage handling system is stretched by early-morning outbound flights (as with the former SN-Brussels code-share with Thalys between Paris and Brussels – see page 54).

Security problems

These can be exaggerated. In the US, the TSA supports the concept of off-airport check-in because it removes some of the baggage screening peak volumes immediately before major flight departures. However, they do insist on auditing in-town check-in facilities outside the US each year to check on security arrangements.

The European Union may be moving to a situation where anyone in contact with checked bags must be screened. The timescale for this is uncertain, but it will have an impact on costs and practicalities.

Financial problems

Funding issues generally are covered in the next section.

The events of 9/11 in particular caused major financial problems for airlines. This led them to conserve cash as a priority, dropping things which had been perceived as frills, including in-town check-in.

Customer related problems

Customers can be reluctant to use the system for a variety of reasons – some valid and some less so.

There can be an issue of trust, of belief that the system will work. Handing a bag to an airline at an airport is an act of faith – will it arrive at the destination when it should? Handing it to an airline at a downtown train station involves a larger act of faith – how will the bags get to the airport in the first place, leave alone the final destination? This can be a problem particularly in those places where the local transport organisation does not have a high reputation.

However, experience (in particular on Airport Express Hong Kong) shows that there is a higher probability of a bag reaching its destination at the same time as the passenger if it is checked in downtown rather than at the airport.

When passengers check-in their bags at a downtown station on the outward journey, there may be an expectation that they can pick them up at the same place on their return. Sadly, this is rarely true!

Passengers may just not realise that in-town check-in is possible. As with all jargon, the term check-in has a clear and distinct meaning among those in the aviation industry: it can be difficult to realise that the meaning is less clear and distinct to ordinary passengers, especially those who do not travel by air frequently.

Design problems

Some in-town check-in facilities have received less use than forecast partly because they were not well-placed on the natural line of route between the point of arrival at the station and the trains. They were not immediately obvious to passengers, or use meant a detour to reach them.

This happened with the Heathrow Express facilities at Paddington, and with Continental Airlines at Newark Liberty International Airport Station, for example.

In the former case, the check-in desks at Paddington were significantly off the natural line of route between either taxi drop-off or the London Underground station and the Heathrow Express platforms.

At Newark Airport, the detour was trivial but because passengers were by then very close to the terminals, their natural reaction was to go straight there rather than checking in at the station.

Demand

The only quantified research available is for Heathrow Express (see page 26), and it is not possible to establish definitively from this that usage was lower than forecast or that usage of the train service dropped when the check-in service was withdrawn. There were certainly many complaints – to BA in particular – but there is too much random noise in the train service usage statistics to be able to draw any firm conclusions.

External problems

New entrant carriers have tended not to have sophisticated DCSs and this has reduced their ability to offer in-town check-in – even though their passengers tend to be strong users of airport trains.

Their business model makes them very unwilling to pay for anything seen as unnecessary: facilities for in-town check-in could be seen in this light.

In-town check-out problems

When KLIA Ekspres were planning their in-town check-out service, they hit problems with airline standards.

They did not want to issue integrated air-rail tickets, because the GDS charge – around $4 a sector - would have eliminated any profit for them. However, IATA standards required passengers to be ticketed for the entire journey for which their bags were to be checked. KLIA Ekspres, assisted by IARO, negotiated a special amendment to IATA's Recommended Practice 1780e (the Intermodal Interline Traffic Agreement): under this amendment, bags can be checked to nominated city centre stations even if passengers only have tickets to the nearest airport.

Under IATA procedures, the final carrier is responsible for tracing and retrieving missing or delayed bags – bags which do not arrive at the same time as the passenger. This responsibility is usually delegated to one carrier in an alliance or a ground handling agent at an airport. The same track and trace equipment and facilities would be expensive to replicate at a downtown station.

However, given today's technology, it should be possible for someone at an airport to interface with a passenger at the city station and deal with the problems remotely.

Something along these lines is being worked on by SITA. In conjunction with their WorldTracer kiosks, an arrivals-area kiosk is being developed for launch in mid 2007. This will allow passengers to consult the latest baggage tracing information, and will allow them to fill in a lost baggage form on-line rather than having to wait for an agent to assist them.

Cost issues still need to be faced, although they are adequately covered in the Intermodal Interline Traffic Agreement.

5. Funding

Introduction

In principle, the only extra costs of in-town check-in are those relating to the transfer of bags between city and airport, and possibly accommodation.

Staff, space and equipment are all needed on-airport, just as they are off-airport; and there may be savings in on-airport requirements because of the presence of off-airport check-in. The latter however is likely to be less productive – the ratio of passengers to staff or to kiosks is likely to be lower off-airport.

General

Many different stakeholders are involved in an in-town check-in project – airlines, airports, railways and passengers – all incurring costs and reaping benefits.

Capital outlay is needed for the desks, conveyors, handling equipment and on-train equipment.

Running expenses include building rental, staff costs and maintenance.

The flow of costs and benefits is unequal, especially over time – the up-front investment has to be made some time before the first passenger travels, pays a fare and provides income.

It is difficult to demonstrate exactly who – airline, airport, railway – receives exactly what in extra revenue. Resolving this problem has proved very difficult.

In addition, finance is a highly sensitive issue, so finding the basic facts is also difficult – a factor behind the limited amount of information in this section.

Some of the complexities are discussed in the Disney case on page 14.

The Strategy of Co-operation

The Strategy of Co-operation between Deutsche Bahn, Fraport and Lufthansa regarding the AIRail service at Frankfurt is instructive – and inspiring. The three Chief Executives realised that any calculation of the costs and benefits would be time-consuming and fraught with problems, so they took the bold and far-sighted decision to split the costs equally three ways.

This recognised that everyone benefits.

- Passengers are relieved of their baggage early in the journey.

- Airlines gain a downtown sales presence, save on expensive desk space at the airport, and may improve - or at least preserve - their competitive position.

- The airport needs less space for check-in desks and therefore has more space for retailing.

- Slot congestion can be eased by the reduction in short-haul flights – which are less likely to be profitable to airline and airport.

- The catchment area of airport and airlines can be increased.

- The railway sees more passengers - 6-7% more, according to research done for Heathrow Express; and 20% more, according to Airport Express Line in Hong Kong.

The way ahead

There is a good case for all beneficiaries to pay the costs, but coordination of this is very difficult. Each of the beneficiaries may have different

- funding methods (private or public),

- objectives (profit or service), and

- timescales (long term, the next budget, the next financial year-end or the next financial reporting period).

One of the agencies involved will probably need to take a lead, but because of the differences in outlook, negotiations may well not lead to an optimal result. It can be a bit of an act of faith.

Specific examples

In 2002, it was forecast (in an interview between the French transport periodical La Vie du Rail and the three partners in the project) that check-in for CDG Express would cost €60.975m. This included containers and a system of underground conveyors through tunnels under the downtown station at Gare de l'Est.

Problems with reaching an agreement on funding a key part of the München in-town check-in system are described on page 31.

Examples of some cost-sharing arrangements which work in practice are listed below.

- In Switzerland the customer pays - a flat fee of 20 Swiss francs for each bag, or 10 francs for passengers with no bags to check in. This covers the operating costs of the system. Some airlines pay the fee for their business class passengers.

- In Hong Kong the service is paid for partly by the railway and partly by the airlines, with the railway's contribution to the cost of the system varying with the number of users (something which, after nearly a decade of operation, the railway company is currently re-assessing as part of an examination of the future of in-town check-in).

- In Kuala Lumpur, KLIA Ekspres paid for the baggage hall and the accommodation at Sentral station.

- In London Paddington the airlines rented the desks in a building paid for by the railway: the (airport-owned) railway provided train space, transfer equipment and staff at both ends. The airlines also funded transfer of the bags from the airport station to the terminals.

- At London Victoria the airlines handled the baggage themselves and rented the check-in area from the railway infrastructure owner: the railway operator provided space in the trains.

- In Moscow, the operators of Domodedovo airport funded the downtown station infrastructure, and charge airlines for each passenger checked in there.

- In Vienna (Wien), City Airport Train, which is a joint venture between the airport authority and the railway company, paid the capital cost of the city centre check-in. The airport authority paid for the facilities at airport. Airlines pay for their own check-in staff, and pay the airport a fee for each bag handled.

The concept is that in-town check-in will be beneficial in some way – perhaps giving increased passenger revenue, increased customer satisfaction or some other advantage which helps to meet the stakeholders' objectives. Benefits are difficult to measure, and few results have been published.

6. Safety and security

The threat to transport in general and air transport in particular is constantly changing, as are the processes to reduce the risks. Readers may find IARO's report 9/06, "Security on airport railways", valuable: it is free to IARO members or available at £250 to anyone else.

In the past, the main threat has been hijacking: this led to the checking of passengers and hand baggage for weapons before boarding. Subsequently the threat changed to bombing, so hold baggage screening and reconciliation was introduced. In more recent times the suicide attacker has become a threat, taking the focus back to the passenger.

With any remote check-in system, there is a concern that actions could take place after check-in to increase the risk that, for example, explosives could be put into bags. Hold baggage, if it is taken direct to the aircraft, must be protected from unauthorised interference (and it is understood that regulations to ensure this are being strengthened, in particular in the European Union). Remote check-in systems, including those provided in town by airport railways, have therefore had to include a system of keeping baggage secure and monitored once it has been taken from the passenger. This may involve a combination of screening at the in-town terminal, CCTV, monitoring the progress of the bags (usually through a system of tagging), and keeping baggage areas secure.

Normally bags checked-in off-airport are thoroughly screened at the airport, where they are regarded as transfer bags and x-rayed and scanned. Because this process is done thoroughly at the airport, at least two railway operators transfer bags to the airport in locked compartments but not in sealed containers. They take the view that, because only security staff or vetted employees have access to the baggage car and bags are screened at the airport, there is no need for a secure container too.

Remote check-in has of course not replaced the need to search passengers and hand baggage at the airport, as near as possible to the point where they board the aircraft.

For sound practical reasons, safety standards are different on railways and on aircraft. The design and operation of the baggage handling system has to recognise both sets of standards.

Baggage containers suitable for carriage on trains are not necessarily suitable for transport on aircraft. In addition, it is unlikely that a container full of bags for a specific flight can be assembled at a downtown terminal except in special circumstances. Considerations like these lead to the need for the unloading of bags from containers at the airport – a factor which increases the costs of the operation.

Security is a key consideration in any off-airport check-in system, especially since a multiplicity of agencies (railway and aviation, both domestic and at potential destinations) may be involved, each with its own standards.

Leipzig-Halle Airport, for example, found when trying to develop in-town check-in that some of the German Federal States would accept the concept of checking in baggage at stations and others would not.

The security situation continues to change: this creates particular challenges for any form of remote check-in. However, solutions have been found which meet the rigorous security requirements currently imposed by a number of countries.

Control and monitoring of baggage is a key area, and the case study of the Paddington operation will show some of the problems and solutions.

Case study – Heathrow Express at London Paddington

Bags handed in by passengers were tagged by airline staff with the standard airline baggage tag, which included a unique identifying number, a flight number and the IATA 3-letter destination airport code. The baggage tag, as well as being needed by the airlines for sorting purposes during the journey, was a fundamental part of the control and monitoring process.

The tagged bags were put onto a conveyor by check-in staff. This conveyor was secure, fireproof and monitored by CCTV: it was also duplicated in order to ensure continuous service despite the need for maintenance. It took the bags along a specially constructed tunnel under the platform to a sorting area (the load make-up area) at the head of the train, where the tags were scanned.

This scanning process at Paddington did three jobs: it allowed bags to be sorted by terminal, it acknowledged transfer of responsibility for that bag from airline to railway, and it facilitated service quality monitoring (measuring how long bags were taking to get from desk to terminal). The latter point had financial implications: Heathrow Express got a bonus from the airlines based on the percentage of bags reaching the airport in less than an hour, so they in turn incentivised the baggage handling staff to get them there in 45 minutes.

Bags were sorted into a maximum of 8 special containers, the capacity of the baggage compartment on the trains. Nominally there could be two for each terminal, although inevitably there was at least one - the rummage container - with bags for a mix of terminals. Container design issues are discussed on page 46 below.

The containers were manually loaded into a secure area of the train - the baggage compartment, the front part of the front vehicle immediately behind the driver's cab.

A key problem was posed by two conflicting security requirements. No-one could be given access to the containers, but a clear passage had to be allowed past them in case there was a need for emergency evacuation of the train through the cab.

The baggage area doors were protected with alarms, so that staff would know if security could have been breached. The containers were strong, secure and well locked, so the possibility of unauthorised access was minimised. The locks were designed so that any attempt to tamper with them would be obvious. The second generation of locks used a system of random encrypted numbers which changed each time the lock was opened. These were scanned at the start and end of the journey to check that they were identical: if they were not, the contents of container could have been tampered with.

There were fixed cupboards and racks for out-of-gauge items – things like skis, bikes and cellos - within the container storage area.

Loading arrangements and the weight distribution inside the vehicle also needed careful planning. Moving a full container up a ramp and turning it through 90° to lock it into place in a restricted space is not easy.

At Heathrow, containers were off-loaded at the Central Terminal Area station for Terminals 1, 2 and 3. The head of the train stopped in a secure area where the containers were unloaded from the train and taken by lift to the surface. During the day when trains were running, these lifts only served the platforms (which are in deep tunnels under the airport) and the ground level baggage trans-shipment point. At night, they were to be used for moving cleaning equipment and stores for the office and retail areas at intermediate levels.

At the surface level trans-shipment point, bags were unloaded from the containers and the tags scanned again. This confirmed transfer of responsibility back from railway to airline.

The airlines (or their handling agents) provided four secure vans – essentially one for each terminal - to move bags from the central trans-shipment point to the baggage sortation systems in the individual terminals. Baggage van routes were specified, with special clearance routines through the control points giving rapid access to the airside areas. These were designed to avoid congestion and delay as far as possible.

At the terminals, bags were fully screened as if they were transfer bags before being put into the airport sortation system. The hold baggage reconciliation system ensures that bags are only loaded onto the plane when the owner is in the departure lounge.

Containers were returned empty to Paddington - although there were proposals to use the space commercially. Possible uses included a home delivery service (see Baggage Direct, page 66), courier or diplomatic bags, and a delayed bag delivery service, although none of these actually worked for any length of time.

Container design

It is an interesting fact that the secure containers for no less than three of the in-town check-in systems which have operated recently have been supplied by a small manufacturer on the South Coast of England. Marco Trailers, of Newhaven, has produced the containers for KLIA Ekspres in Kuala Lumpur, the Madrid Metro and Heathrow Express.

The Marco containers used by Heathrow Express were probably typical of the highly secure means of baggage transport seen to be necessary. They were fireproof, burst-proof and with encrypted locks. They had eight wheels (four fixed centre wheels and four swivelling outer wheels, to ensure good manoeuvrability).

Inevitably different countries have different requirements, and as described above some railways do not require this level of security.

In Hong Kong the container loading system is automated: because of this, container size is only limited by the size of the train doorways. Their containers were purpose built, with flat bases (neither wheeled nor roller bed). They move on rollers, and are made of sheet metal. External dimensions (in millimetres) are 1550 high x 1650 wide x 1200 deep.

On other railways, containers are loaded onto trains manually and the key restriction is the size and weight which can be safely moved by people (specially trained staff, usually, following defined procedures to avoid the risk of injury).

7. Staff and facilities

Introduction

Check-in is often the first personal point of contact between passenger and airline and therefore is important in terms of service quality. Airlines may be prepared to allow a handling agent to undertake the task, but will usually have strict specifications about the quality of service offered.

The point has already been made that location of the in-town check-in is important. If it is not on a natural passenger route from taxi set down or metro exit then passengers will be less likely to find it or use it – and, in at least two cases, this has been a contributory factor to the failure of the in-town check-in system.

The downtown station - equipment.

Check-in equipment used at the downtown station is normally standard airport equipment – tried and tested. Baggage handling and check-in experts at the airport will be able to give advice on space and equipment requirements as the system is being planned.

At the downtown station, access to the airline's computer system will be required for check-in, or alternatively common use equipment which permits access to multiple airline reservations and departure control systems will be necessary.

Equipment is needed to transfer bags from the check-in desks to the airport. The line haul is normally done by the airport railway, although the plan in Brisbane and the method actually used in Leipzig-Halle and for the SN-Brussels Paris-Brussels service was that checked bags were taken by road to the airport.

If a train is used, baggage handling equipment will be required to transport bags from the check-in area to the train. This may be very simple, like a cart or trolley; or it may involve belts and sorting systems. If the train service operates from a number of platforms rather than one dedicated platform, the equipment will have to be very flexible.

At Stuttgart, trolleys towed by tractors are used. One side of the trolley lets down on hinges to become a drawbridge, across which containers are wheeled into the train. The trolley floor is at the same height as the train floor. In Frankfurt, where the height difference between platform and train floor is less, local staff have made portable ramps to allow containers to be wheeled from coach to platform: the original plan was to use a scissors lift.

If in-town check-out, as well as in-town check-in, is provided, the facilities necessary for tracking missing or delayed bags will need to be provided (see page 39).

If vans rather than trains are used, there may be a need for GPS tracking systems to ensure their integrity and security.

The downtown station - customer interfaces.

The station needs to look as much like an airport terminal as possible, for reasons of customer confidence. Some national railways do not have a high public image: passengers need to be reassured that their bags are in good hands. Otherwise numbers using in-town check-in will be low and everyone will lose out.

Quality of service needs to be assured. In Hong Kong there are detailed service level agreements between the railway and the airlines. These ensure that passengers get the same quality of check-in service at the stations as they would at the airport. In particular, opening times and maximum queue lengths are specified and controlled.

In Hong Kong (and London when the systems there were operational), passengers are asked the standard security questions downtown but their bags are screened at the airport. Provision needs to be made for people who cannot answer the security questions satisfactorily - whose baggage needs special scrutiny. This can be done either at the downtown station or at the airport: the latter has better facilities but postponing the check increases the risks. An x-ray machine was provided at Paddington for examination of the bags of passengers who could not satisfactorily answer the security questions.

Excellence in customer handling is obviously essential. Many otherwise normal human beings behave completely irrationally when faced with public transport - a phenomenon known to airport check-in staff as "packing their brains along with their bags". This sometimes needs tact and, as always on an airport railway, the ability to think like a passenger.

An illustration of the need for this comes from those countries which allow departing non-residents to reclaim sales taxes. This can usually only be done at the port of departure by showing their purchases to the excise officials. Passengers need to be reminded not to put those purchases in their hold baggage!

On the trains

On the train, baggage is normally transported in a separate secure compartment. The systems which have been used for this in different places are described in section 3, "Where and how has off-airport check-in worked?".

At the airport

At the airport station, equipment will be required to unload the bags from the train and transport them to the airport baggage sorting area. The amount of handling required will have an impact on the staffing levels and therefore costs (an argument for containerisation – which also speeds up the transfer procedure, but obviously at a cost).

The prime need is for a quick and secure route between train and sortation system.

At Heathrow, this was done by using dedicated vans with a designated route through a specific security gate to the airside area of the airport: these vans were fast-tracked through the gate.

At Gatwick there was a dedicated route for tractors towing baggage trucks.

This kind of facility is easier to provide in a totally new airport and railway: it can be planned in from the start. Where this is not possible, aspirations need to be built into masterplans as early as possible so that options are not closed off.

Timing

Passengers using the facility at Paddington needed to check-in at least 120 minutes before departure – the same time as would be needed at the airport to check-in for an international flight, although more than would be required for a domestic flight.

This was initially the case in Hong Kong, but it has now been reduced in the light of experience to 90 minutes before departure (again, the same as is required at the airport).

90 minutes would have been possible for terminals 1, 2 and 3 at Heathrow, and some airlines actually advertised this reduced time. However, the distance between the Central Terminal Area Station (where all bags were unloaded) and Terminal 4 (heavily used by BA, the main airline at the airport) made it difficult to publicise a shorter time generally.

In Kuala Lumpur, latest check-in time is 2 hours before departure (90 minutes, for passengers with just hand baggage).

In some other places, a pragmatic approach has been adopted, especially for passengers with just hand baggage – are they likely to be able to reach their flight in time, bearing in mind distances and queues?

The check-in time allows for a wait for a train, the journey to the airport, finding the gate, and for the bags to travel across the airport and be screened and taken to their flight.

Staffing

At Paddington, at any one time there were three people taking bags off the conveyor and loading them into containers. Two or three more were loading containers onto trains (and unloading empty containers coming back). There were also five unloaders at platform level at Heathrow and five more at surface level, 18 hours a day, 7 days a week. It can be a labour intensive business.

8. Demand

Customer Attraction

A fundamental question is: does having check-in attract more passengers to a rail link? If all other things were equal, the answer must be yes, but the next question is: how many? Is this enough to meet the objectives set? What are these objectives? They could be to increase mode share, or to increase net revenue. Both are sensible and valid, but have different impacts – it is probably easier to increase mode share than to increase net revenue.

The question is also related to the issue of funding discussed in section 5 above, as fare revenue from additional passengers attracted to the rail service could help to justify the costs of check-in.

Surveys indicated that the pre-launch estimate of around 7% additional passengers on Heathrow Express because of check-in was probably broadly correct, but it was impossible to show that the withdrawal led to a reduction. This was because other factors, such as the composition of the passenger market and the availability of other types of check-in, were also changing at the same time. The relatively small numbers involved and the fact that closure was staggered over more than three years (see page 25) made statistically valid research difficult.

MTR's experience in Hong Kong is that 20% of passengers are attracted to rail because of the check-in service. The check-in areas are purpose designed, and the ability to check-in early for afternoon or evening flights is a valuable selling point. 20% of Airport Express Hong Kong's passenger income is HK$112m.

Experience from Leipzig-Halle, where passengers are charged a fee to check-in off-airport, is interesting although the predominance of leisure traffic probably makes it something of a special case. Do people value something which they have to pay for more than something which is provided free? See page 23 for details of the system used there.

The presence of airlines in a check-in area at the downtown station helps to cement the idea that the rail service is part of the whole journey experience, that it is the way to the airport. This probably increases demand by giving the service more credibility.

The following figures have been drawn together to summarise usage. Percentages are the percentages of outbound air passengers using the train who also used check-in downtown.

Railway	Date	Usage
Airport Express Hong Kong	August 1998	50%
Airport Express Hong Kong	2002	60%
Airport Express Hong Kong	2005	53%
Gatwick Express	Late 1990s	300,000 bags a year
Heathrow Express	2002	Over 20%
KLIA Ekspres	February 2003	30%
KLIA Ekspres	2005	800 – 1000 bags/day
Madrid	May 2003	200 bags a week
Moscow Domodedovo	2003	18%
Vienna	December 2004	20%-25%

In 2002, 10% of all Heathrow Express users (20% of outbound passengers) used check-in. Main reasons given by those not using it were that they had hand baggage only, were too late, or were not an air passenger.

Customer expectations

Passengers expect different standards of service from different airlines or different classes of travel. Premium passengers expect a very high quality of personal service (and airlines expect to provide this themselves – so provision of off-airport check-in may give rise to problems here). Passengers on new entrant carriers usually expect a pared-down service, with enhancements available for a charge. Frequent fliers expect a quick check-in through self service machines and on-line check-in.

These factors point towards the segmentation of demand for off-airport check-in by specific markets.

The premium market may want the service, with the cost absorbed in the high ticket price (as in Switzerland) or as an optional extra for a charge. The airlines might however want to handle their own passengers, or at least insist on a high quality of service: this trend too is starting to emerge in Switzerland.

Self service check-in will suit those parts of the market which are more time constrained.

Frequent fliers are more likely to be confident with self-service machines and on-line check-in and therefore will be more likely to use these. They will tend to be travelling on business, and will tend to have less hold baggage than leisure passengers. These factors will affect demand for physical off-airport check-in.

The linkage of airport railways to airline internet check-in sites could enable transactions and the provision of information to be combined.

An issue which arose in Kuala Lumpur was that people wanted to use the check-in downtown without using the railway: this led to questions being asked in the Malaysian Parliament. The expectation that a facility like this could be used without payment needs to be managed: only in Madrid (and, it is understood, Moscow Paveletsky) can people use in-town check-in without either a train ticket or an additional fee.

Customer concerns

A potential deterrent is a concern that baggage checked in remotely may be mishandled. A common conception is that transferring baggage en route results in higher rates of mishandling, but experience of baggage handling on Heathrow Express and Hong Kong's Airport Express is that the rates of mishandling were lower than with baggage checked in at the airports. KLIA Ekspres records a 100% success rate, with no mis-handled bags since opening in April 2002.

There may be issues related to legal liability if a bag does not reach the destination with the passenger – a potentially serious issue for the in-town check-out system planned for Kuala Lumpur (see page 40).

In order to ensure that a passenger can catch their flight, in-town check-in has to take place in good time, typically 2 hours before flight departure. On the one hand, this may deter some passengers who feel they can get to the airport quickly on the train and check-in there. On the other hand, passengers may feel happier to check-in early with the certainty that they can get to the airport in good time (or on the assumption that, if they do arrive late, the airline will be reluctant to go to the trouble of locating and off-loading their bag).

Lessons from the London operations

In both of the London examples, the airlines were required to meet many of the costs, on the basis that check-in is essentially an airline responsibility. However, the airlines, in seeking to reduce their costs in order to stay competitive – and, after 9/11, to stay solvent - realised that the unit cost of checking-in a passenger downtown was much higher than at the airport, partly because of the extra baggage handling involved, but also because the throughput was low and less efficient in manpower terms than at the airport.

Location may have also been a factor in both London examples. At Victoria Station, the BA check-in area was at a different level from the platforms. Although directly accessible from the road, it required passengers who arrived by Underground or other rail services to change level twice, once with their baggage. At Paddington, the permanent (phase 2) check-in area was at the same level as the platforms, but (unlike in the new stations in Hong Kong and Kowloon, for example) was not on a direct route from either the taxi set down area or the Underground exit, and was not immediately visible to passengers going to the platforms.

This contrasted with the phase 1 facilities for hand-baggage check-in which existed between June 1998 and June 1999, where the check-in counters were beside the entrance to the dedicated platforms. They were on the natural line of route, and passengers could decide whether to divert or not depending on the proximity of departure time of the train. The American Airlines check-in desk for Fast Train, the short-lived precursor to Heathrow Express, was actually on the platform – an even better location (if sometimes unpleasant for the check-in staff).

A view is that in phase 1, the hand baggage check-in was used by short-haul business passengers, because they were the travellers with no hold baggage. The phase 2 hold baggage check-in was used by long-haul business passengers: they had hold baggage and were used to checking in bags, and travelled sufficiently often to learn about the system. Long-haul leisure passengers, on the other hand, travelled infrequently and had less opportunity to become aware of the system and find out where the check-in desks were. They would not have known how it worked, and were therefore less likely to trust it. They are also less likely to use Heathrow Express anyway because of a greater price sensitivity.

The length of stay and journey purpose matrix below indicates that the business passenger staying away more than 3 nights is in the minority, and that failure to capture the leisure market was probably crucial to the lack of success at Paddington.

It was always a convenience, a piece of added value: when it was withdrawn, there was no measurable impact on carryings. It had no measurable impact on mode share.

Lessons from the SN operation at Brussels

The Belgian airline SN Brussels (SNBA) copied Air France when it suspended operation of its flights between Paris and Brussels in December 2003 in favour of a code-share with Thalys. However, SNBA re-started them in May 2005.

The reasons behind SNBA's decision to re-start flights, some of which have relevance to check-in, were as follows.

They formerly used an RJ-100 regional jet: it was only used for the Paris - Brussels service, and in consequence was left idle for over 20 hours a day. The new service uses a 737 hired from a French charter airline: it is then used the rest of the day for charter flights, so the operation is significantly more cost-effective than the previous arrangement.

Other more relevant problems with the service were that

- Journey timings were inconvenient, for pathing (slot) and connectional reasons

- Inbound passengers had a long wait at Brussels airport station before departing for Paris (and then a long wait on the train at Brussels Midi station)

- These factors gave a long journey time between Brussels airport and Paris

- The departure time from Paris was very early

- The check-in arrangements at Paris Nord were not particularly good

- Because of the early departure time of the train, hold bags had to be checked in the day before and were then sent by road to Brussels airport

- Passengers on the African routes in particular tended to have much baggage, and did not like the fact that there was little assistance in handling it at the stations

- SNBA hired accommodation in Confort-2 class coaches from Thalys, so business passengers had to travel in what was effectively economy class on the train. So they tended to buy their own Confort-1 tickets and made their own way between Paris and Brussels airport – sometimes more quickly than on the code-share train. While the present flight is one-class only, there is a direct connection with shorter transit times.

What kind of traffic, what kind of passenger, uses in-town check-in?

Statistics from the USA indicate that length of stay and journey purpose vary as follows:

	Business	Other	All
0-3 nights	62%	35%	46%
4-6 nights	27%	39%	34%
More than 6 nights	11%	26%	20%

The amount of baggage seems to be positively correlated with length of stay, and propensity to drive to the airport and park there is negatively correlated with length of stay.

So people staying away from home for a relatively long time are more likely to have hold baggage, and are less likely to drive to the airport and park there. They are also more likely to be travelling for non-business reasons: this implies that they are more price-sensitive and less familiar with flying in general and the range of check-in options in particular.

Business passengers travel more frequently than leisure passengers and are therefore more likely to know the system and be aware of facilities like in-town check-in.

A strong determinant of the propensity to use rail to access the airport is whether the passenger is a resident or a visitor. Partly this is because visitors tend to want to get to the city centre to which the rail service operates, whereas residents have a more dispersed set of destinations.

However, visitors may also need reassurance that the rail service they choose is the right one, and check-in provides an element of certainty.

Residents are more likely to have a car available than visitors, and are more likely to be familiar with (and be confident using) the local transport system.

People resident in the country but not in the catchment area of the airport (for example people from Scotland flying into Heathrow, or from New York flying into Chicago) are more likely than non-residents to be confident about using public transport to and from the airport.

More generally, some cultures are more familiar with and likely to use public transport than others.

Group size is also relevant – a large group, like a family going on holiday, may find it more economic to take a taxi to the airport than to buy individual tickets and have the hassle of managing baggage at the interchanges too.

Some airport railways overcome this by offering attractive group fares. Probably the most advanced is the one developed by the train operator Thameslink (which formerly had the franchise for the service to both Luton and Gatwick airports in London) and adopted by its successor, First Capital Connect. It worked in partnership with a telephone sales company to offer a very attractive group fare to either airport: the fare included a taxi from home to station in both directions.

Success factors

It can be seen that factors needing to be taken into account in planning a system and in marketing and communications generally include:

- Deciding on objectives

- Traffic patterns (average number of bags, group size, length of stay, passenger origin)

- Catchment area (are passengers funnelled through a single point, as in Oslo where the majority of airport users come from central or western Oslo?)

- Getting the business model right

- Sorting out funding

- Location of check-in area in the station

- Convenience of the service to passengers

- Passenger expectations

- Passenger concerns

Both of the latter can be dealt with by good communications.

<u>When things go right.....</u>

.......more passengers will use the airport railway - and between 20% and 60% of passengers will save themselves stress by using the in-town check-in. It is clearly something valued by customers, something worth providing.

A real problem is knowing what the demand is. It is interesting that the service is popular with passengers both where it is free (Hong Kong, London) and where it is charged for (Leipzig-Halle). How much do passengers value it? Research is needed here.

9. Changes to traditional airport check-in

Introduction

Check-in developments available now or on the near horizon include variants on self-service check-in (CUSS, internet and home check-in), baggage drop systems, and home collection and delivery services. These can be combined depending on local requirements. Also on the horizon are changes to the security situation, changing passenger expectations, and new technology.

The key driver of change is cost. Recent estimates are that traditional in-person check-in costs about $3.62 a transaction, check-in at a self-service kiosk costs $0.52 and internet check-in $0.16. The time taken to check-in varies in the same way.

A trend in North America is jetway check-in or valet check-in – passengers take their larger items of hand baggage to the aircraft door or the jetway where they are checked in and loaded into the hold: they are released to passengers as they disembark on arrival.

Some new entrant carriers seem to be moving towards a variant of this - a situation where passengers take all bags direct to the gate room where they are separated into hold baggage (checked in and loaded into the hold) and hand baggage (carried on board by the passenger).

Options are dealt with in turn in the section below, although inevitably there is some overlap with other sections. For example the JAL collection and delivery system has been described on page 21, and the Ottawa – Montreal bag-drop system was described on page 29.

All of these developments will affect the way in which off-airport check-in can be provided and its likely success. They also impact on airport geography – passengers in future will be more likely to go direct from airport curb to security, rather than from curb to check-in and then on to security.

Changes in rules for airline baggage

Some airlines are changing their baggage handling practices, for a variety of reasons.

Some carriers – in particular the new entrant carriers – are trying to reduce the amount of hold baggage carried, by charging for it specifically, by reducing the free allowance, or by increasing the cabin baggage allowance (passengers are allowed to carry any amount on board as long as the dimensions permit stowage in the cabin).

Long haul airlines are also restricting their free hold baggage allowances, or restricting the weight of individual pieces. Some airports too place restrictions on the maximum weight of each piece, in the interests of staff safety.

These changes are primarily intended to reduce baggage handling at airports. Their effects on the use of rail links and demand for in-town check-in facilities are uncertain, but there can sometimes be unintended consequences from such policies.

The security scare of August 2006 has also changed aspects of baggage handling – some no doubt only temporarily. This kind of occurrence shows that changes in restrictions on carry-on baggage and through checking of bags can have a major effect on airports, and possibly a knock-on effect on off-airport check-in too.

If the American practice of jetway check-in (see above) catches on elsewhere, this might well reduce the demand for off-airport check-in.

Queue busters

The concept of using hand held personal computers to check-in passengers has been used for some time, with varying results. Northwest introduced them at Detroit and Minneapolis/St. Paul in April 2000: American Airlines, ATA and BA tested them a year later.

ATA had a specific problem at its Chicago Midway hub: it could only get access to a very few check-in desks and therefore had to find some means of reducing the queues. The initial system devised – RovingAgent, produced by Sabre and Symbol Technologies – incorporated a screen, a scanner and a boarding pass printer: a subsequent version also had the capacity to generate baggage tags, printed at a designated check-in counter on a conventional printer.

United Airlines developed complete mobile check-in desks – Chariots – for Chicago O'Hare, San Francisco and Heathrow: the French technology firm IER have also developed something similar, branded MobiCheck, with all necessary equipment for check-in (computer, ticket and boarding pass printer, and baggage tag printer).

These are feasible at an airport, and no doubt off-airport too – indeed, IER's check-in terminals were initially developed for SNCF.

Self service check-in

Check-in - and issuance of baggage tags - can now be done automatically, by machine. Electronic check-in is far from uncommon. This is a reasonable alternative to staffed check-in positions especially where passenger volumes are low, and it opens up all kinds of options which were not available a few years ago.

Self service check-in began as a way of reducing queues and saving staff costs at airports, but remote self service check-in could be a low cost solution for rail station check-in (either at the in-town terminal or at the airport station – which could save passengers carrying bags between train and terminal). Initially self service check-in was only available for passengers with hand baggage, but it can now cater for passengers with hold baggage (usually by a bag-drop system). For example the BA system at Paddington station designated one of the staffed check-in counters as the fast bag-drop, for passengers using the self service check-in machines.

In a trial at Frankfurt airport, self-service machines with facilities for issuing baggage tags were tested, but passengers found the complexity of affixing their own baggage tags daunting so a staff presence is generally considered to be necessary.

An issue at Paddington with the Heathrow Express desks was the comparatively low productivity of staff there compared with at the airport - although the positive side of this from the passengers' point of view was that they rarely had to queue. At Heathrow, there is always someone waiting for the next check-in agent: at Paddington, this was not the case. Self-service check-in off-airport also suffers from this low productivity, but at lower cost.

Possibly the most advanced self service system is available in Vancouver, where at the time of writing there are 77 self-service check-in machines. Of these, 19 are off-airport, in car parks, hotels, tourist information offices and the convention centre. About 85% of domestic passengers use them. Initially they were only available for domestic flights, but now they can be used by passengers travelling to the US. There are plans to add other - ultimately all - international destinations, and off-airport baggage check (including on the CanadaLine trains to the airport – see page 72).

Recently BA stopped traditional check-in for domestic passengers. They have to use internet or self-service check-in, in conjunction with a fast bag-drop if they have hold baggage.

The prospect of check-in on the train, using the dead time available during the journey, seems attractive. However, absolutely reliable wireless technology would be needed to link to airline check-in systems. Few railways have this, although the number is growing. Also, as some airport rail links have very short journey times, there may not be enough time available to undertake the transaction. It may therefore only be suitable for premium passengers or on the longer air rail links.

Common-user self-service (CUSS).

With the common-user self service concept, check-in machines which can be used by passengers of several airlines are provided.

A key problem for the provider of a CUSS system is the charging method – the optimal way to charge for use.

At one pioneering airport, Westchester County airport in New York State, the airlines themselves own the kiosks collectively, and they managed the installation in conjunction with the airport authority. This, of course, is easier at an airport served by 8 airlines than one served by 80.

The technology used was wireless, and this led to capacity problems – CUSS needs more bandwidth than the average laptop user, for example.

During 2005, BAA started trials of CUSS terminals at Heathrow and Gatwick airports: they were initially used by American Airlines, Air Canada, JAL and United Airlines. There was an aspiration for some of these terminals to be installed at London's Paddington station, but this has not yet been met because of concerns about low demand and low productivity.

It is understood that the machines are owned by Heathrow Airport Ltd. but serviced by Heathrow Express. They are remotely monitored by the French ticketing and boarding systems provider IER. This brings out an important point about these machines: they need to be serviced and maintained by an organisation competent to do so.

The same company provides kiosks to Brussels, Madrid, Nice, Orlando, San Francisco and Singapore Changi airports, and is working with the Airport Authority of Hong Kong. SITA has also installed CUSS kiosks at New York JFK and Basle-Mulhouse airports, and 50 have been provided at the new Bangkok airport.

In the summer of 2006, the Port Authority of New York and New Jersey announced plans for common-use self-service kiosks at 14 locations, including Airtrain JFK's Jamaica station. Passengers of any participating airline, domestic or international, would be able to use any kiosk.

ARINC have developed a product which combines CUSS and a local DCS, for airlines and ground handling agents without access to a host computer.

Las Vegas McCarran Airport, in conjunction with Southwest Airlines, has provided Airport SpeedCheck Advance CUSS kiosks in two city centre hotels (The Luxor and The Venetian) and the convention centre: this includes hold baggage check-in. It is being extended to other airlines and other hotels. The service is provided by McCarran International Airport and Bags To Go (a TSA approved vendor), in partnership with the TSA and Southwest Airlines. The checked luggage is transported to an off-airport site, where it is screened and stored before being loaded onto the customer's flight. The service costs $20/person for up to three bags.

IATA maintain a list of CUSS-ready airports world-wide: this can be found on http://www.iata.org/stbsupportportal/cuss/airport_readiness.htm.

According to recent a SITA survey for ACI, 14% of passengers use on-line check-in when it is available. A third use self service kiosks (nearly a half at airports like Atlanta). Around half of all airports have self-service kiosks: 9% have common-user kiosks and 75% expect to within two years.

Curb-side check-in

The ability to check-in bags from cars as passengers arrive at an airport is a valuable facility for people driving to airports, but it needs both the technology and the curb space so it is more common in North America than anywhere else.

Some airlines and airports now make a charge for this. For example at San Francisco's new long-term parking area, passengers of Alaska Airlines, American, Continental Airlines, Delta, Northwest and United can check in for $2 if they just have hand baggage, or $5 if they have up to two bags. The impact of the charge on demand is not known.

Silverjet, the new business-class only service between London Luton and Newark Liberty International Airport which started in January 2007, uses an up-market check-in system. On arrival at the terminal, passengers hand their bags to a concierge and take a seat in the lounge. A check-in agent with a lap-top computer sits beside them and checks them in. This is a small operation, using modified Boeing 767 planes with just 100 seats.

This and car park check-in is the road equivalent of airport station check-in.

Car park check-in

At San Francisco airport, passengers can check-in at some of the car parks: baggage handlers will help them manage their bags.

Kuwait airport has recently introduced car park check-in.

Systems available in other airports have been described above – in particular, at Atlanta Hartsfield-Jackson airport on page 16 and at Houston Bush Intercontinental airport on page 21.

Bus check-in

At the Airport Security exhibition in Wiesbaden, Germany, in 2003, one of the exhibits was a bus with check-in facilities on board. Passengers could board the bus at one end, pass through an x-ray arch, pass their bags through an airport-style scanner and disembark from the other end.

Conceptually this means that a similarly equipped train could take landside passengers from a city centre station and turn them into airside passengers before they reach the airport (and the Virgin Group planned to check in passengers on trains in a London Moorgate – Heathrow service which they promoted in 1996). Whether or not this is worth the effort would depend on circumstances. Certainly there are automated people movers which are both landside and airside (as well as automated people movers which are just landside or just airside), but there currently are no known examples of trains which run airside.

In the past there have been plans to use trains as inter-airport shuttles in the context of airport rationalisation. One example was the idea of using Los Angeles International Airport for international flights and nearby airports like Ontario or Palmdale for domestic services: passengers connecting between domestic and international flights would use a high speed train to transfer between the two airports. With on-train screening, passengers could complete international flight boarding formalities in transit. Clearly, this would need careful control to ensure that airside passengers remained airside ("sterile", in aviation parlance) and had no contact with landside passengers.

Internet check-in

Increasingly, passengers are able to book travel and check-in on the world-wide web (directly, or using mobile technology like WAP and SMS). Some airlines effectively check passengers in as they book – a seat allocation is given at the time of booking. Check-in is moving upstream – away from the traditional system of check-in immediately before boarding the aircraft.

This adds to the potential for baggage drop at stations – maybe in conjunction with an internet-café style of service.

On-line check-in is fine for passengers with lap-tops on the move, or for people using hotel in-room internet services, but one problem is the inability to print a boarding pass – few people travel with a printer. BA's internet check-in system is one which makes provision for this: it offers "Print boarding card" or "No printer available" options.

Telephone check-in

SITA started experiments in 2004 with mobile phone check-in. Passengers can call the automated system of their airline and receive an encrypted bar-code with the check-in information. The phone's screen is scanned at the airport – at the security check point and at the gate.

ANA and JAL do the same at their major Japanese airports for domestic passengers. ANA's service, branded Skip, was introduced at 24 airports in September 2006 and was to be extended to all airports in the country. It is reportedly used by 15,000 passengers a day, and extension to airports outside Japan is under investigation. JAL's Touch and Go system started with four airports in 2005, and by early 2007 covered 44. Japan does not require identity checks for domestic travel, so true ticketless travel – with not even a boarding pass – is possible here.

The same system is available to passengers of the German airline DBA (owned by Air Berlin) on the Hanover - Munich route. It is used by around 150 people a month, and cannot be used by passengers with hold baggage.

Air Canada, Lufthansa and Singapore Airlines have all tried this kind of system too.

At a conference in 2006, a speaker was reported as saying that telephone check-in for flights, car rental and hotels was feasible now.

Hotel check-in

The arrangements which existed before 9/11 have been described on page 13. Their successors are considered here: at the time of writing, it is thought that the list below is reasonably comprehensive although the situation continues to evolve.

Canada

Edmonton airport is working with hotels in the Greater Edmonton area to allow passengers to check out of their hotel and check-in for their flight simultaneously. Hotel staff will tag bags and send them to the airport baggage handling area.

Hilton Group

The Hilton Chicago O'Hare opened check-in kiosks in its lobby on 28 February 2006: this was to be followed by 34 other hotels over the next 10 days. Initially, check-in was available for passengers of American, Northwest and Continental Airlines, but other domestic carriers were likely to join in.

Holiday Inn (InterContinental Hotels)

Flight check-in trials started at the Holiday Inn in Duluth, Georgia, in 2005, for passengers of Delta, AirTran and Frontier Airlines using Atlanta airport. This concept is likely to expand to other hotels in the InterContinental group.

Hyatt

In February 2006, Hyatt Hotels announced that passengers would be able to sign up for the Registered Traveller programme in hotel lobbies. This programme is for low-risk passengers, who having signed up to the scheme and proved their identity, are allowed to board aircraft with less intrusive screening than other passengers.

A check-in service started trials in Denver, and was to be rolled out across more hotels from March 2006.

Marriott

In Los Angeles, two Marriott hotels were reported to be starting tests of check-in kiosks. These will be able to print boarding passes, but will not be able to deal with anything complex.

Vancouver

The Delta Vancouver Airport and Delta Vancouver Suites hotels have CUSS kiosks for Westjet, Air Canada and Air Canada Jazz. Use is about 950 passengers a month. See page 60 for more information on the Vancouver situation.

Baggage drop systems

The concept of a baggage drop is that passengers can take their checked bags to a designated point and hand them over for secure transfer to the airport sortation system.

It can be used in conjunction with self-service or hand baggage check-in.

There is no obvious limit on the distance between check-in and baggage drop – indeed, check-in using the internet relies on passengers bringing bags from home or office to a baggage drop point at the airport.

With conventional self-service check-in, one of the screens asks passengers if they have bags to check-in and if so, how many. A positive response triggers a message to print the appropriate number of baggage tags. The passenger then takes the bags to a baggage drop point where (usually) airline staff will print the tags and affix them to the bags: it has been found that this process is too complex for passengers.

JetBlue, a new entrant carrier, issues bag tags but prints the number on the passenger's boarding pass rather than giving them a separate baggage identification tag. This does simplify the process.

In an airport railway system, baggage drop points are likely to be at the downtown terminal, at the airport station, at major interchange points or conceptually on the trains themselves (see "Self-service check-in", page 60).

Among the short-term measures for increasing the throughput of San Diego airport, there are plans for an "intelligent curb" with CUSS units and common-use bag drop at each end of the terminal – a possible application of the technology.

Home collection & delivery services

This is old technology indeed. In the 1950s, holidaymakers travelling by train in the UK were accustomed to using a system called Passengers' Luggage in Advance. They could get their heavy baggage collected from their home a day or so before they travelled and have it delivered to their holiday address: the same system operated in reverse.

Baggage collection and delivery systems – potentially operating in both directions - can provide acceptable alternatives to full downtown check-in, and have different cost and quality characteristics. With these systems, passengers can send their baggage from home, office or hotel a few days in advance – either to the departure airport or to their final destination. If it is sent to the airport, they will need to reclaim it to check it in themselves before their flight in the usual way. On the return journey, they have to deliver it to a carrier who delivers it to their departure airport, or to their home or office within a stipulated time (generally up to three days).

As well as allowing hands-free travel, these arrangements allow later check-in at the airport: typically, check-in times for passengers with hand baggage are shorter than for those with hold baggage.

The disadvantage is that passengers have to plan in advance – they have to have their hold baggage ready a few days before departure. This is easier and more acceptable in some markets than others.

Clearly, a number of issues need to be considered.

Security is essential, of course. This is likely to include vetting of collection and delivery staff, and a GPS tracking system on the vehicles. If bags are delivered to the airport of departure, storage space and facilities for a secure hand-over to the passenger are necessary.

Space at airports can be an issue – some have more early bag storage space than others.

The system can be combined with home check-in – by either the passenger or the van driver using the internet. A trained driver is more likely to be able to attach baggage tags securely – essential if the bags are to be successfully delivered.

It has been suggested by one organisation promoting this (the Coalition for Luggage Security and Universal Express) that the advantages are such that passengers should pay a separate fee to check-in hold baggage: they would then be incentivised to find more effective ways of moving their bags. Environmental benefits have also been claimed for them because if the bags are trucked direct to the passenger's final destination, this could possibly cost less in fuel than flying them. It would also reduce the amount of luggage to be screened at airports. As well as the environmental benefits, faster aircraft turn-rounds could be achieved if there was less luggage to be loaded; and passengers choosing to pay the check-in fee would give airlines additional revenue. The validity of these claims needs research to clearly demonstrate the case.

Some new entrant carriers are moving to a separate charge for checked baggage to reduce the amount of checked bags carried and to reduce costs and turnround times (this is something which People Express, a pioneer US low cost carrier, did in the early 1980s).

Those home collection and delivery systems which operate or have operated are described briefly below.

Baggage Direct

Baggage Direct was a service introduced in connection with Heathrow Express. Passengers arriving by air at Heathrow could reclaim their bags, take them through Customs and Immigration, then hand them in at a Baggage Direct desk. For a fee, the bags would be delivered within 3 hours to any address in the London area. A nice feature was that people could go hands-free to a conference while their bags went to their hotel: passengers could check the status of their bags on their mobile phone or lap-top and, if the destination was a hotel, would be told not only that their bag had arrived but also their room number!

Sadly, this complement to in-town check-in failed to take off – not enough people were prepared to use it.

First Luggage

First Luggage, in association with FedEx, was one of the companies to launch a successor, more comprehensive but significantly more expensive.

This service will collect and deliver luggage – collecting from home, office or hotel the day before outward travel for delivery to the destination address, and collecting from there on the day of departure for delivery the following day. Neither collection nor delivery are available on Saturdays and Sundays.

Reservations can be made (at least 7 days in advance) by phone or on-line. Collection and delivery are confirmed by SMS messages to a mobile phone: the message includes a tracking number so that progress can be followed on-line.

The service was initially available within the European Union only, but there were plans to extend it to the rest of the world.

There were initially slight (and quirky) differences in price between the 15 old EU member states and the 10 accession countries who joined later. A snowboard, for example, would cost £30 one way or £49 return between the old member states but £35 or £59 to or from new ones. A suitcase to the old Europe cost £80 one way, £149 return.

See www.firstluggage.com for more information.

Flymycase.com

Another similar home to destination baggage delivery service, Flymycase.com, is based in Hayes, close to Heathrow airport, and works in conjunction with FedEx.

To send two suitcases from London to Brussels would cost £130, including value added tax, so the service is not cheap.

Virtual Bellhop

This company works with a number of companies in the travel industry (for example American Express, Sabre and Hertz) to transport passengers' bags from home to destination and back.

Other providers

Luggage Express, Luggage Forward, Luggage Free, and Sports Express use cargo carriers like FedEx, DHL and UPS to take air passengers' bags, but they simplify the end-user's paperwork.

In the 1990s, Luggage Express were marketing their services to airport railways – and trying to persuade them to fund trials. Typical costs for Luggage Express today are $125 for a small suitcase or $185 for a large one, one-way.

Premium services are attractive to a select market, prepared to pay for convenience. Is the market large enough to support them all? How far is it possible to provide a non-premium service like this economically? With demographics leading to an ageing customer base – more leisure passengers less able to manage their baggage – is there likely to be a real increase in demand here?

The growth in business-class only services across the Atlantic may be a pointer – there is a real market for a totally different service, one which is geared to few rather than many, something close to individual transportation rather than mass transportation.

Home to airport chauffer services

These are normally provided by airlines for their preferred passengers – airlines like Virgin Atlantic and Etihad offer to take first or upper class passengers from home to airport by car without charge.

The German airline LTU partners with the company German Transfer (www.german-transfer.com) which will collect passengers and bags from home and take them as far as check-in. This service is charged for.

Both could be – but are not yet – combined with check-in.

KLIA Ekspres's VIP service – limo plus train, giving a door-to-airport service in both directions – is also not explicitly linked with in-town check-in, although it would be very easy for outbound passengers to check-in bags at Sentral station.

New technology

New technology, or changes in technology, is providing new solutions to some of the challenges.

One example is the boarding card: in the past this has been magnetically encoded, but some carriers now use bar-coded boarding cards instead. The relevance of this is that boarding cards no longer need a special printer: they can in principle be printed on any printer. This innovation permits passengers to print their own, at home, in an office or at a hotel lobby check-in, without specialised printers.

Bar-codes sent to mobile phones can also be used as unique identifiers – and as travel tickets or boarding passes.

Another example is Radio Frequency Identification (RFID) tags. RFID technology is being used in baggage handling systems to reduce baggage losses: it is more reliable than bar-coding for baggage tags, and has more capacity for storing information.

10.   Future plans

This section lists places where it is known that there are or have been plans for in-town check-in services. Those which are still under consideration are listed in the first part: those which have now been dropped but from which useful lessons may be drawn are in the second part.

Plans under consideration

Amsterdam

KLM is part of the High-Speed Alliance, formed to operate the new Dutch high speed line (HSL-Zuid). In early 2006, plans were being made to introduce an electronic ticketing solution which would properly integrate the rail segment into a multi-modal journey. The aspiration was to be e-ticket compliant, and to be compatible with home and self-service check-in.

Plans for the Zuidas (Southern Axis) development include a new railway between Schiphol and the city serving the new financial district: plans are for stations on this new line to have in-town check-in.

Boston

A number of airlines – AA, Alaska, Continental Airlines, Delta, JetBlue, and Northwest – are planning an arrangement with the Boston Convention Centre whereby delegates will be able to check-in bags there. A charge of $10 is likely.

Chicago

There have been plans in the past for in-town check-in: these seem to be coming to fruition as part of the innovative Airport Express currently being planned. It will have check-in at the downtown station, which will serve both O'Hare and Midway airports. Luggage would be carried in secure cars which meet the same Federal Aviation Administration security regulations as are imposed on airlines. The baggage cars may also be used to carry express parcels to and from the airports, which will benefit the economics of the service.

Dallas Fort Worth (DFW)

There are plans for a direct rail link between Dallas and DFW International Airport: this will probably have check-in in downtown Dallas.

Germany

The German Airports Association (ADV) are understood to want a Swiss-style system for station check-in (see page 34) in Germany.

Johannesburg

Plans for the Gautrain link under construction between Pretoria (Tshwane), Johannesburg and the airport include check-in facilities, probably at Sandton station.

Köln/Bonn

Cologne/Bonn airport is understood to be interested in off-airport check-in at a number of German stations.

London Gatwick

The airport is considering check-in at airport car parks and selected railway stations, as an extension of internet and self-service check-in.

Los Angeles

Future plans for Los Angeles airport include concentration of check-in at the Aviation Boulevard area, with convenient access to the Green Line of the city's transit system. Passengers would be processed and go airside here, then be taken to individual terminals by people mover. This is in part a security measure, aimed at reducing car traffic near sensitive areas of the airport like the terminals and control tower.

Milwaukee

The airport station opened in January 2005. Since then, plans for check-in and check-out at Chicago Union and Milwaukee downtown station have been discussed, as have plans for integrated ticketing. Check-in and check-out at intermediate stations is also a possibility. These enhancements would help the airport to capture traffic from the Chicago airports.

Moscow Sheremetyevo

There are firm plans for an Airport Express to the airport: Aeroflot wants it to have in-town check-in.

New Delhi

Plans for the proposed airport rail link include in-town check-in at New Delhi station, with dedicated baggage space on the express or limited-stop trains.

New York Penn.

There are ambitious long term plans for a one-seat ride between New York JFK airport and Manhattan, and concentration of rail services to both Newark and JFK airports in the same city centre terminal – probably an expanded Penn station. If this happened, check-in would probably be provided at the downtown station.

Paris CDG

The plans for the CDG Express dedicated rail link included a check-in facility at Gare de l'Est, the proposed in-town terminal. The promoters, initially a consortium of Aéroports de Paris, SNCF and RFF, clearly wanted to learn lessons for the planning of their facility and did much research (which has contributed to this report). The proposed check-in facility was well located on the route between the Metro exit and the platforms, and also between the taxi set down point and the platforms.

Responsibility for the project has now moved to the French Ministère de l'Équipement, des Transports et du Logement, with plans for a private sector contractor to take it forward. The intention is for a contract to be signed in 2008 with completion in 2012. It is not certain that in-town check-in is still in the plan.

Phoenix

Plans published at the beginning of 2001 indicated that there would be a station on the new light rail system at the 24th Street station. At this point, passengers could check their luggage and then use the people mover into the airport. Two airlines had already indicated that they would consider establishing ticket counters at 24th Street.

São Paulo Guarulhos

In 2001, there were plans for city centre check-in for the planned Airport Express (which has still to materialise: plans fluctuate periodically between this and a metro extension).

Seoul

It is planned that the Airport Express to Gimpo and Incheon airports, to open fully in December 2009, will have check-in downtown. Unless Chicago gets there first (see page 69), this would be the first Airport Express serving two airports, and the first in-town check-in operation serving two airports. Challenging!

Tokyo Narita

This airport has 175 self-service kiosks. An advanced check-in system is being developed to create remote and off-site baggage drop zones. These will ultimately be at holiday resorts, conference centres, car rental offices, car parks, and train stations.

Toronto

Early plans for an Airport Express – now materialising under the brand Blue-22 – were for in-town check-in to be provided at Union Station.

Vancouver

Plans for the CanadaLine automated light rail system between Vancouver, Richmond and the airport include CUSS kiosks at all stations. It is envisaged that at most stations these would not be staffed, although major downtown stations would be. Kiosks are likely to be operated in conjunction with a bag-drop facility at the airport.

Ambitious, but fully in line with other developments in Vancouver (see page 60).

Plans which have now been abandoned.

In-town check-in has been an aspiration in a number of places in the past. Details of abandoned projects, as far as they are known, are as follows.

Copenhagen

In both Copenhagen and Stockholm there was an aspiration to have machines downtown to issue baggage tags together with a baggage drop point at the airport station. It was planned that passengers would tag their bags, carry them to the airport station and hand them in as they got off the train.

SAS's check-in concept for Copenhagen entailed the use of self-service machines issuing boarding cards at stations.

They did some work on plans for a baggage drop train-side at Kastrup airport station. There were plans for check-in at 4 - 8 major stations (Odense was to be the test-bed). The outcome is unknown: no publicity has been seen for any concrete result.

Florida

Plans in the 1990s for the Florida Overland eXpress (FOX) high speed train service included off-airport check-in for Miami, Orlando and possibly Tampa airports. These foundered because of withdrawal of funding for the planned service.

London Luton

There have been plans for check-in at the Parkway station, some distance from the airport but connected to it by a shuttle-bus. It was to be at connector-bridge level, for passengers coming off trains. The scheme is however not mentioned in the draft airport masterplan, issued in October 2005. The predominance of new entrant carriers is a factor militating against this.

London Stansted

There were plans at one stage for check-in at the Royal Mail centre at Liverpool Street station, the downtown terminus of Stansted Express.

Now that the airport is so heavily dominated by new entrant carriers, this is highly unlikely to happen.

New York Penn.

The plans in the 1990s for a new ticketing hall in the Farley Building included airport check-in for both JFK and Newark airports. Check-out and through rail – air check-in was also envisaged (intercity rail to air). The exact status (abandoned or still under consideration) is uncertain.

Prestwick

There have been aspirations to start a check-in facility at Glasgow Central station, but these are unlikely to come to fruition as long as the airport is dominated by new entrant carriers.

San Francisco

In early 2001, there were plans for in-town check-in in downtown San Francisco as part of the BART extension to the airport (which opened in June 2003). These have yet to materialise.

St. Louis

There have been plans in the past for in-town check-in on the light rail line to Lambert airport.

Singapore

Check-in was planned for both ends of Changi airport station, but this has yet to be introduced. The baggage tunnel between Terminal 2 and the new Terminal 3, to open in 2008, runs underneath the station.

Stockholm

In both Copenhagen and Stockholm there was an aspiration to have machines downtown to issue baggage tags together with a baggage drop point at the airport station: passengers would tag their bags in the city centre, carry them to the airport station and hand them in as they got off the train.

Reasons for abandonment

In summary, of those schemes in the "projects abandoned" section, the main reason seems to have been the inability to create a sound business case (although it is fair to say that relatively few details are available in many of the cases).

Security concerns and more important – more short-term – projects are given a higher priority for understandable economic reasons.

The uncertain impact of technological developments, the subject of section 9, "Changes to traditional airport check-in", is also an incentive to delay.

11.   Key issues

In this chapter, the critical issues are considered to see if there is any pattern behind success or failure of off-airport check-in. The issues discussed are

- location

- customer attraction

- the market

- security

- mis-handled baggage

- future developments

- finance and

- leadership.

Perhaps the most significant conclusion is that there is no set of solutions which will guarantee the success of an off-airport check-in system – at, for example, a railway station. There have been many examples of attempts to provide this kind of service, but few are unqualified successes. The best that can be concluded is that, if there is a strategic reason to provide check-in with an airport rail service, there are a number of features which, subject to the particular conditions of the link, will help to maximise usage.

Location

The first of these features is the location of the check-in facility. The ideal location is

- close to

- at the same level as

- on a direct route from the key entrances to the station to

the platforms used by the airport train. This will maximise the visibility, the exposure of the facility and make it attractive to air passengers to drop their bags there.

Customer attraction

This is a combination of

- location

- marketing

- communications

- convenience and

- reliability.

The system needs to be in the right place – this is fundamental, as has been seen from the case studies. It needs to be well marketed, with the benefits well communicated to passengers. It must be reliable, and convenient and easy for passengers to use.

The market

The amount of baggage seems to be positively correlated with length of stay, and propensity to drive to the airport and park there is negatively correlated with length of stay.

So people staying away from home for a relatively long time are more likely to have hold baggage, and are less likely to drive to the airport and park there.

A strong determinant of the propensity to use rail to access the airport is the passenger's status - resident or visitor.

Local residents are more likely to have a car available than visitors, and are more likely to be familiar with (and be confident using) the local transport system. People resident in the country but not in the catchment area of the airport are also more likely than non-residents to be confident about using public transport to and from the airport.

More generally, some cultures are more familiar with and likely to use public transport than others.

Research in the UK shows that independent business passengers and back-packers are the categories of traveller most likely to use public transport to access airports.

Business passengers travel more frequently than leisure passengers and are therefore more likely to know the system and be aware of facilities like in-town check-in. They are, however, less likely to have bags to check-in.

Group size is also relevant – a large group, like a family going on holiday, may find it more economic to take a taxi to the airport than to buy individual tickets and have the hassle of managing baggage at the interchanges too.

Security

It is of course necessary to ensure that security issues are fully dealt with. With the increasing need for 100% hold baggage screening, this may be less of an issue as all bags, from whatever source, have to be checked at airports. Indeed there are examples where the remote checking of bags is deemed to be an advantage as screening can be done when there is more time available. It reduces some of the peaks.

However, the possible future need for security checks on all staff potentially in contact with checked bags (see page 38) will add to the complexity and cost of the system.

Mishandled baggage

An issue which may be of more importance to the passenger is the risk of lost or delayed baggage. Many airport rail link operators have been able to demonstrate a better than average performance in terms of mishandled baggage, and it is important that this is communicated to passengers.

Communications with passengers to explain how the system works – how bags will reach aircraft - may also be important, although there is no research to back up this assumption.

Future developments

Another need is to consider a range of solutions to suit the particular location and market. Full check-in and baggage drop is one end of the range, but alternatives include home collection and delivery, check-in without baggage drop, self service check-in, and cooperation with other possible providers of off-airport check-in (for example, hotels and convention centres). There are a number of future developments, including technological change, changing security requirements and revised airline baggage arrangements, which may affect the demand for in-town check-in.

Finance

Financial issues are the most crucial and the largest cause of failure – or failure to start up a system in the first place. The costs must normally be shared, as no single party is likely to be able to recoup the total costs from other benefits such as increased ridership or reduced costs elsewhere. If the system is really valuable to the passenger, they may well be willing to pay for the service (and the lessons from Leipzig-Halle are instructive – see page 23).

It is very difficult to allocate costs with real accuracy and, given that any system will result in cost changes elsewhere, simplicity is often the best policy. It is best for organisations to take responsibility for those parts of the operation which they can control or are familiar with, so that they can manage risks best.

Leadership

A determined leader – a champion who really wants the product – is virtually essential.

Summary

To sum up, check-in and baggage drop can help to make an airport rail link successful, but is certainly not an absolute prerequisite. If check-in and baggage services are provided, then there is a range of options available depending on the market and the service. Costs are best shared; and risks are best managed by the parties most used to them.

Members of IARO have had much experience of dealing with these issues. Railways, airports and airlines among our membership have direct practical experience of how systems work on the ground; and some of our consultant members have significant experience in implementation (including acquiring the necessary permissions to operate from a range of authorities).

This report brings together some of that expertise. For best results, those considering implementation of off-airport check-in systems need to discuss the real issues with people who have that direct experience.

IARO's Air/Rail conferences and workshops

Copies of the published reports of the earlier workshops and other research reports are available price £250 (free to IARO members). See www.iaro.com/publications.htm. Papers presented at more recent workshops are available on CD-ROM at the same price.

Workshops are very focused, dealing in detail with a restricted number of key issues, and complement the regular Air Rail Conferences. Workshops and conferences (with site visits) have been held as follows.

1993 - Zürich

1994 - Paris

1996 - London (Heathrow Express, Stansted Express)

1997 - Oslo (Airport Express Train)

1998 - Hong Kong (Airport Express Line)

- Frankfurt (with the AIRail station and the Cargo Sprinter)

1999 - Workshop 1: Berlin (the Schönefeld link)

- Copenhagen (the Øresund Link)

2000 - Workshop 2: Milan (Malpensa Express)

- Paris (plans for CDG Express)

- Washington (Baltimore-Washington International Airport)

2001 - Zürich airport: Air rail links - improving the partnership

- Workshop 3: Madrid (and its airport rail links)

- London Heathrow (Heathrow Express)

2002 - Workshop 4: Amsterdam, for railways serving airports but not as their main job - "Help - there's an airport on my railway".

- New York (the Airtrain projects)

2003 – Workshop 5: Barcelona. Today's design and funding issues for airport railways

- Frankfurt (The AIRail project)

- Workshop 6: Newark. Practical air rail intermodality

2004 – Workshop 7: Oslo. Leisure passengers – a market for airport railways.

2004 - Brussels (Thalys:Air France code-share)

2005 – Chicago (Chicago's future in an era of successful air-rail intermodality)

- Shanghai study tour

- Workshop 8: Edinburgh. Security on airport railways.

2006 – Workshop 9: Baltimore (BWI). Security on airport railways.

- Workshop 10: Marketing and ticketing innovations (e-air-rail) Düsseldorf

Planned workshops and conferences

2007 –

- Los Angeles: Air/Rail East/West
- Washington DC: The seamless journey
- Vienna (Wien): Communications.

2008 -

- Amsterdam
- Hong Kong: celebrating 10 years of 3 leading Airport Expresses

Details are available from IARO, or on www.iaro.com: you can sign up for details of future events in different parts of the world on www.iaro.com/events.htm

Future plans are, of course, subject to change.