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Case studies in co-operation between air and high speed rail

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Editor: Andrew Sharp

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International Air Rail Organisation

6th Floor, 50 Eastbourne Terrace

London W2 6LX

Great Britain

Telephone +44 (0)20 8750 6632

Fax +44 (0)20 8750 6615

website www.iaro.com, www.airportrailwaysoftheworld.com

email enquiries@iaro.com

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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

This paper contains information about five examples of successful integration between air and high speed rail. This is followed by

- a discussion of the need for an integrated train station at the airport and
- a note of the legal issues which arise from air-rail integration and coordination, showing how different authorities in different jurisdictions have dealt with them.

It ends with a set of conclusions.

Examples of genuine cooperation between airlines and short-haul rail services – typically an Airport Express connecting airport and city – are not particularly common even now. Less common still is cooperation between airlines and high speed railways, which are often seen as natural competitors.

A key lesson is that this can work to mutual benefit, given a mutual willingness to cooperate. However, an essential pre-requisite is a high speed train station at an airport. None of these case studies would work without that feature, for understandable reasons.

The following case studies examine how and where cooperation between airlines and high speed railways really does work. Comments, feedback and updates are welcome.

Andrew Sharp

Director General

Abbreviations and acronyms

ARJ	Advanced Regional Jet
BA	British Airways
BWI	Baltimore Washington International Thurgood Marshall Airport
CDG	Paris Roissy Charles de Gaulle Airport
CHF	Swiss Francs
CNL	CityNightLine - international overnight train operator
DB	Deutsche Bahn - German Railways
DM	Deutsche mark – former German currency
Fraport	Flughafen Frankfurt AG - Frankfurt Airport Company
GDS	Global Distribution System
HLX	Hapag-Lloyd Express
IARO	International Air Rail Organisation
IATA	International Air Transport Association
IBMTS	International Bi-Modal Transportation Service
ICAO	International Civil Aviation Organisation
ICE	InterCity Express - German high speed train
KLM	Koninklijke Luchtvaartmaatschappij - Royal (Dutch) Airlines
LH	Lufthansa
OAG	Official Airline Guide
PARS	Programmed Airline Reservation System. SWISS International's distribution system
PNL	passenger name list
SARS	Severe Acute Respiratory Syndrome
SBB	Schweitzerische Bundesbahnen – Swiss Federal Railways
SITA	Société Internationale de Télécommunications Aéronautiques (international society for aeronautical telecommunications)
SN-B or SNBA	SN-Brussels Airlines (now Brussels Airlines)

SNCB	Société Nationale des Chemins de Fer Belge - Belgian National Railways
SNCF	Société Nationale des Chemins de Fer Français - French National Railways
SWISS	SWISS International Airlines Ltd
TAP	Transportes Aéreos Portugueses
TGV	Train à Grande Vitesse – French high speed train
TGV'Air	Integrated air-rail code-shares using French Railways
Thalys	French/Dutch/Belgian high speed train service.

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.

Case study 1 – Frankfurt

Introduction

Deutsche Bahn (DB), Lufthansa (LH) and Frankfurt Airport (Fraport) have been in active co-operation for a number of years. One key objective of this co-operation has been to preserve the future of Frankfurt Airport by meeting demand without increasing the number of flights. Slot constraints are very real: environmental constraints are also significant.

Fraport also wish to extend their catchment area: if they can increase it from 100 km to 200 km, it will be larger in population than those of London Heathrow or Paris Charles de Gaulle.

History

In the 1980s, Lufthansa experimented with their own train service – the Lufthansa Airport Express. This ran between Düsseldorf, Köln and Frankfurt (with 4 trains a day), and also for a short time between Stuttgart and Frankfurt (this started with two daily trains in May 1990). The service was limited to passengers of Lufthansa and eleven interline carriers.

This worked between March 1982 and May 1993, but the need to renew rolling stock and the relatively low revenue – the trains were popular with tourists in economy class, rather than premium fare business passengers - coupled with other economic problems led to withdrawal.

In 1992, DB and LH started the Lufthansa Airport Service, an off-airport check-in service for their customers. From 31 May that year, LH passengers flying out of Frankfurt could check-in with their luggage at special counters in six stations (Köln, Bonn, Koblenz, Aschaffenburg, Würzburg and Nuremburg) on InterCity line 1 between Köln and Nuremberg.

Check-in was available from 24 hours in advance to 20 minutes before departure of the train. DB staff dealt with labelling and security checks. Bags were transferred direct from the train to the flight.

This service ended on 28 May 1997.

The strategy of co-operation

The next step was to share trains. This took account of the fact that the economic load for a train was usually significantly higher than for an aircraft – especially a short-haul aircraft. LH hoped that sharing trains would lead the way to abandonment of some short haul flights to improve slot productivity.

To this end, a strategic cooperation agreement – the Strategy of Cooperation – was signed in early July 1998 by the Chief Executive Officers of DB, LH and Fraport. One important provision was that costs and benefits of some parts of the project would fall on different parties: it would be too difficult to calculate these precisely and therefore the costs would be shared equally between the three organisations.

An objective of the Strategy was to replace 20,000 short distance air traffic movements a year by rail.

So far, the project has been implemented in four phases.

Phase 1 - Saarbrücken

The initial experiment was a very small-scale one on the 136-km route between Saarbrücken and Frankfurt Airport's regional train station. From 15 June 1998, Lufthansa passengers could check-in at Saarbrücken station: any hold baggage was checked in by Lufthansa staff at their desk in the travel centre. It was then taken to the train by DB and locked in a special cupboard: at Frankfurt Airport Station it was transferred by Fraport staff through a screening process to the plane.

Passengers travelled in the first class area of the train (regardless of their class of air travel). Seats on specific Saarbrücken – Frankfurt trains were reserved by priority for Lufthansa passengers: if not occupied, they could be used by any passenger with a first class ticket.

This experiment demonstrated that the concept worked and was acceptable to all of the stakeholders. The arrangement continues at a low level: all flights between the two cities are code-shares, by train. It is however no longer possible to check-in at Saarbrücken station: it is likely that check-in only operated here between June 1998 and March 2001.

Phase 2 - Stuttgart

Phase 2 involved co-operation on the Stuttgart – Frankfurt Airport sector. From 1 March 2001, the existing 6 flights a day were supplemented by a code-share on 6 trains a day each way (7, from 10 June), giving a combined service which ran almost hourly. DB reserved coach 12 of the alternate-hours Stuttgart – Hamburg trains between Stuttgart and Frankfurt Airport, and modified a sub-fleet of 21 ICE-1 trains to incorporate a compartment for checked baggage containers. Trains used the new high speed station at the airport, which had opened in May 1999. A customs presence for inbound passengers was introduced at Stuttgart's main station (and at the airport too), funded by the Federal Finance Ministry.

Baggage handling was seen as an essential component. Around 90% of Stuttgart – Frankfurt air passengers were interlining, and Lufthansa considered it essential that the combined journey looked as much like an air journey as possible. Integrated air rail tickets were sold through GDSs, and it was possible to check bags on the through train + plane journey to all Lufthansa destinations except Tel Aviv. It also worked for the 19 airlines with which Lufthansa had interline agreements.

Passengers are given a rail coupon as part of their flight ticket: this is valid for travel on the train although a boarding pass will normally also be issued. Both ticket and boarding pass show train reservation details - the coach and seat numbers. Passengers were also able to check their hold bags end-to-end (Stuttgart station – Frankfurt airport – London Heathrow, for example). Bags checked in at Stuttgart rail station were screened at Frankfurt Airport.

An important part of the concept was that the minimum connect time between train and plane at Frankfurt airport should be 45 minutes, the same as between plane and plane. To ensure that this worked, major investment to upgrade the baggage handling system and to create the new Terminal T at the airport's high speed train station was needed. Under the Strategy of Cooperation, the Chief Executives of Fraport, Lufthansa and Deutsche Bahn agreed to pay a third of the costs each as the simplest way of apportioning the expenditure necessary.

Lufthansa's vision was to re-create the former Lufthansa Airport Express (see page 7) - but running every hour.

There were legal complications at the station itself. Under German law Fraport was not allowed to build a train station, so DB built it and will at some stage pass ownership to Fraport. Railway laws and procedures apply at platform level, while ICAO rules apply at concourse level. Therefore there could be some scope for confusion - for example if the area has to be evacuated for security reasons, or if a suspect package is discovered.

Lufthansa provides coverage for compensating delayed or injured passengers on trains to the limits of Warsaw and Montreal Conventions, and (if they had to pay) would claim this back from DB.

It does work, but Lufthansa say that it needed far more marketing than an equivalent new air service. This was because of passenger unfamiliarity with trains in general and intermodal code-shares in particular. Marketing for the Stuttgart service cost €200,000 – the same as that for Lufthansa's new Denver route, which took off and became mature much more quickly.

And because the service is tied to DB's timetable and their inter-connecting network of trains, the timings of the trains do not always work well for Lufthansa. Some rail-air connections are very poor – and therefore long distance connections in particular are not commercially attractive. Airline and travel agent reservation screens (on GDSs – Global Distribution Systems) sort journey combinations by elapsed travel time: the fastest end to end journeys are on the first screen, from which most bookings are made. Because of the poor connections, relatively few rail + air options appear on that crucial first screen.

This illustrates a key difference between rail and air.

Airlines tend to use a hub-and-spoke concept, with waves of flights arriving at a hub from different directions at key times each day. They interconnect with another wave of flights departing shortly afterwards. Up to four inbound and outbound waves operate each day at times of peak demand – early morning, midday, late afternoon and evening.

Railways by contrast prefer to use a clock-face timetable, with trains departing on multi-stop journeys at the same time every hour, on a schedule which is memorable for passengers.

Because journeys are multi-stop, the airport is not the prime focus of the train service: it has many other jobs to do along its route.

The trains used have 800 seats (compared with 200 on the aircraft). 48 of these are used for the code-share. According to Lufthansa, the break even load factor on Stuttgart flights is just under 100%: it is in the high 80s for the train service. Both are virtually impossible to achieve (see Economics section below).

The terrorist attacks of 9/11 were very bad for ridership because around 45% of the passengers using the service connected onto Transatlantic flights. They also complicated arrangements for checked bags to the United States: security requirements for this were tightened up considerably

In 2001, trains had an 18% load factor: 30% - 35% was attained in 2002. It was subsequently reported that some trains had reached a load factor of 100% – all 48 seats were full. Ironically this poses another problem, because increases above this are difficult to handle: it is thought to be easier if air passengers travel in their own dedicated area of the trains.

Phase 3 - Köln

In May 1999, the new Frankfurt Airport High Speed Station (Fernbahnhof) was inaugurated. In August 1999 the high speed line between Frankfurt and Köln opened. On 5 May 2003, the Frankfurt – Köln air-rail code-share started and 7 of the 10 round trips between the two cities used rail rather than air.

With an hourly service between Frankfurt and Köln, long-distance flight connections are better and more rail + air journeys are on the first screen.

Withdrawal of flights between Stuttgart and Frankfurt is unlikely in the medium term because of the competitive situation. Withdrawal of flights between Köln and Frankfurt started with the opening of the high speed line: two of the six flights each way ceased then. The remaining four were withdrawn in November 2007. This has freed up slots at Frankfurt airport which can now be used for long haul flights – for journeys which can only be made by air.

Baggage handling facilities on this service were slightly different to those on the Stuttgart service. Instead of using containers travelling in dedicated compartments of converted trains, bags are loose-loaded into ordinary passenger compartments with seats protected by special covers – something which was also done on the Stuttgart service when one of the special converted trains was not available. This reduced costs and complexity.

On the Stuttgart service, all passengers travelled in a first class coach on the train, regardless of class of air travel. On the Köln service, they travelled in second class if they had an economy class ticket. On average, up to 10 first class and 30 second class seats are reserved on each train by Lufthansa for AIRail passengers (its own and those of 27 partner airlines).

Phase 4 - Bonn

Also in November 2007, the AIRail service was extended to Bonn (to the high speed station of Siegburg/Bonn, where a Lufthansa check-in machine was installed).

Through baggage check-in ended at that time: all bags are now checked to or from Terminal T at the airport, and not to or from the train stations at Stuttgart and Köln. This was unpopular with passengers, leading to a number of complaints.

Results

At some point it is hoped that there will be AIRail services to Düsseldorf; and one to Nuremberg will be introduced when DB increases speeds to air equivalent journey time (for which there are no firm plans yet).

In a survey, 90% of users rated the Stuttgart trains good or excellent. 95% of trains were on time - significantly better than airline punctuality.

The initial forecast was that the AIRail station would handle 300,000 passengers a month. By 2015, it is likely that the high speed train service will result in the transfer of 3 million passengers a year from other airports.

In 1998, 68.2% of the passengers travelling over 100km to airport did so by high speed rail: the percentage had increased to 78.1 in 1999. 30.4% of all passengers travelled over 100km to airport in 1998: the comparable figure was 31.8% in 1999.

Economics

The economics of short haul flights are interesting. The cost of flying between two points has two components – the fixed element (including landing fees, the fuel costs of take-off and reaching cruise altitude, the costs of descent and braking at the destination), and the variable costs (in particular, the costs of cruising at cruise altitude). Variable costs – obviously – vary with the distance flown: fixed costs do not. Therefore the average cost/kilometre decreases with distance flown.

Because of the quirks of air fares – especially the concept of common rating – the earnings from short haul flights can be low. It is possible, for example, for the fare for Stuttgart – Frankfurt - New York to be the same as the fare for Frankfurt - New York: in this case, the revenue for the Stuttgart – Frankfurt sector is effectively zero.

Therefore

- airlines can gain economically by withdrawing from short haul flights and code-sharing with rail
- railways benefit from this by carrying more passengers
- airports also benefit – they can make more efficient use of scarce slots: they earn more revenue from a 777 flying between Frankfurt and New York than a 737 flying Frankfurt – Köln
- The environment benefits: pollution along the route from a high speed train – especially an electrically powered high speed train – is significantly lower than from an aircraft.
- Noise and congestion are also lower
- And passengers get more leg-room, a better view, shorter check-in times and a choice of destination (in Stuttgart anyway) between city centre and airport.

Good for Train

Another service offered by DB and Lufthansa is the "Good for Train" product. Air passengers may exchange their air ticket for a rail ticket and reach their domestic destination by rail: this arrangement has been set up with 90 airlines worldwide. The financial arrangements are not known.

Rail + Fly

"Rail + Fly" is another product offered by DB. Participating airlines can sell rail tickets to destination QGV, German Rail, which are good for travel between an airport in Germany and any station on the DB network. These tickets are sold as flight coupons - physically or (certainly for some airlines) electronically. Where an electronic ticket is sold, the passenger has to collect it at a Deutsche Bahn ticket machine by entering the ticket pickup number.

The airline carries the liability for any compensation due under the Montreal and Warsaw Conventions while travelling on the rail segment and (if they had to pay any) would claim this back from DB.

In 1991, it was reported that these were sold to airlines at DM 44 (second class) or DM 66 (first class) for journeys up to 251 km; and DM 64 or DM 96 for longer journeys. DB sold them to passengers at a higher price – DM 75 for up to 251 km and DM 110 for more: first class cost 50% more.

There are no arrangements for through checking of baggage: passengers are responsible for their own baggage on rail.

Airlines known to be selling these include Asiana, Air Namibia, Etihad, the Lan Airlines group, Middle East Airlines, Qantas, Qatar Air and Singapore Air.

Some airlines – notably China Airlines and TAP Air Portugal – give these tickets to their passengers free of charge, in order to compete better with Lufthansa: it effectively gives them a German domestic network. Another airline, HLX, offers similar tickets to its international passengers at a deep discount - again for competition reasons. At one stage Continental Airlines also used these.

Bill Hood, Managing Director Corporate Affairs for American Airlines, said at the IARO Chicago conference in April 2005 that AA code-shared with DB to 15 German cities. Their website implies that these include the following.

Berlin	Köln
Bonn	Mannheim
Düsseldorf	München
Göttingen	Nuremberg
Hamburg	Stuttgart
Hanover	Würzburg
Kassel	

Case study 2 – Newark

History

Historically, when Continental Airlines' Newark hub was congested because of bad weather, the airline would cancel its Philadelphia flights and send passengers by bus to Newark Penn station. It would put them on Amtrak trains to their destination to reduce the backlog of flights.

This proved popular with passengers, so after the new station opened on the North East Corridor at Newark Liberty International Airport in October 2001, Continental Airlines entered into a full code-share with Amtrak and withdrew all Philadelphia flights. This freed up 14 slots at each airport – a valuable commodity.

Continental Airlines also started a code-share to three destinations they had never served – Wilmington (Delaware), and New Haven and Stamford (Connecticut). Amtrak's press release ATK-02-008 of 17/1/02 said that this was due to start in mid-March 2002.

In this way, the train station grew the network and expanded the catchment area for the airport and its major airline.

Development

The system has not been entirely free of problems.

Certainly for the first few years, by far the largest part of the traffic was to the two cities to the south of Newark. This could be because the journey to Connecticut, through the crowded New York conurbation, gives the impression of an unattractive long and slow ride, whereas the less complex geography on the ride to the south gives a better impression to passengers (whatever the realities of the situation are).

Some of the trains on the route do not have reservable seats, and Continental Airlines is reluctant to put its passengers onto a train where they may have to stand.

Facilities for bags are not very good – it is not possible to check them through for the rail + air journey.

And Amtrak is unwilling to stop its flagship high speed Acela Express trains at the airport. On the New York - Washington DC journey they already stop at Newark Penn, Philadelphia, Baltimore and BWI Airport, and another stop would make the service proportionally less attractive commercially. They have however agreed to stop them there for Continental Airlines' passengers when flights are disrupted.

At one stage, Continental Express, Continental Airlines' short haul partner, reinstated one round trip between Philadelphia and Newark: this was subsequently withdrawn and currently there are none.

Practicalities

Passengers using the rail code-share services to access Newark airport can check-in at Amtrak self-service Quik-Trak machines or at ticket offices at the start of their journey. There are no Continental Airlines' eTicket kiosks at Amtrak stations. The main reasons for this are cost, the existence of better locations for them, and Amtrak's preference to do the check-in themselves.

Passengers travelling the other way - by air then by train - get a boarding pass for the air sector and an information document for the rail sector. This document confirms that travel is by train. It reminds passengers to claim any hold baggage at Newark Airport, to keep their baggage with them on the train, and to check-in with Amtrak at the AirTrain station. Continental Airlines also sends Amtrak the PNL (passenger name list) 30 hours prior to first leg of departure, so that their system will be expecting the passengers.

On arrival at Newark Airport, inbound air passengers take the monorail to the station and use the Amtrak Quik-Trak machines or the ticket office to check-in for trains to Philadelphia, New Haven, Wilmington or Stamford.

Continental Airlines' frequent fliers can get 250 One-Pass miles (325 in Business Class) for these train journeys. Miles can be redeemed on these train services at no cost in miles as long as a Continental Airlines flight is included. There is no fare penalty – recent research showed that the London - Newark – New Haven return fare was about £50 more than the London - Newark fare.

Tickets can be booked on Continental Airlines' web-site, Continental itself or a travel agent – but not through Amtrak.

Case study 3 – Paris Charles de Gaulle

Introduction

In 1995, Lille Chamber of Commerce was instrumental in negotiating an integrated service with Air France and French Railways (SNCF) via Paris Charles de Gaulle Airport. The rail distance is only 180 kilometres: with the introduction of a frequent service of 300 km/h high speed trains – TGVs - an air service was no longer justified. However, there is resistance in some cultures to doing business in a city where there is no air service. Hence the TGV'Air service was created, with a 3-letter IATA code (XDB) for Lille Europ station, establishing "flights" by TGV at level 0.

The concept has developed since then, with regular increases in both the number of domestic destinations served and the number of airlines taking part.

TGV'Air

Non-French airlines have found it difficult to partner with domestic French airlines for domestic destinations in France via Paris Charles de Gaulle airport, so a partnership with SNCF is valuable. TGV'Air is currently used by around a dozen airlines to a dozen locations in France (all of which have 3-letter IATA codes). See page 22 for more details.

A similar system is used between Paris and Brussels: the section on page 17 below has more information about this.

While in principle every participating airline could use the service to every participating destination, in practice they do not. This is partly for competitive reasons. Lufthansa fly from both Lyon and Marseille and therefore want to carry long haul passengers by air from there through their hubs at Frankfurt and München, and not by rail through Paris (although this may change with their 2008 code-share arrangements with United Airlines' flights from Paris Charles de Gaulle to the US).

It is not entirely seamless.

It is not possible to check bags through, so passengers have to handle their own luggage between train and plane. Apparently no-one was willing to pay for the necessary facilities.

Legal complications are understood to necessitate the use of exchangeable vouchers rather than a standard air ticket: passengers have to change their voucher for a ticket before joining the train. This is because French law requires specific wording on train tickets. Passengers are supposed to exchange their air coupon for a rail travel ticket. If they do not, they can exchange it on the train (although this is discouraged).

Practicalities

Four days before departure, the airlines specify how many seats in each class they want on each train.

In principle, travel could be on any TGV to or from Paris Charles de Gaulle Airport Station, although in practice some trains are more valuable than others in terms of connections with flights. A number of seats are allocated by SNCF on each train: the number can be increased although this can be difficult. The blocks of seats are "soft" blocks: airlines only pay for the seats they actually use.

Passengers must have a reservation before travelling on a TGV.

Airlines charge passengers: the railway charges the airlines. There is no legal relationship between railway and passenger. In principle, there is no difference in the fare for a New York - Paris – Bordeaux journey whether the final leg is by plane or by train.

Electronic ticketing was initially not possible. However, in September 2006, SNCF reached agreement with SITA whereby Air France e-ticketing check-in facilities would be available at 7 major stations on the TGV'Air network (Angers, Le Mans, Lille, Lyon, Nantes, Poitiers and Tours St-Pierre des Corps).

Rail travel is subject to domestic law on liabilities for loss, damage or delay.

Each airline has the same contract with SNCF. If an inbound flight is delayed and a connection is missed, there is a contractual obligation for SNCF to rebook passengers on the next available train. If this is the next day, the airline pays the hotel bill. If, because of a late train, a passenger misses a flight, the airline will rebook them: if the next flight is the next day, SNCF pays the hotel bill. The organisation causing the delay pays.

An example is the Lufthansa arrangement. According to Lufthansa's web-site www.lufthansa.fr/voyagez/tgv_avion.htm (in French, printed 13/6/00), TGV + Avion is available to or from Angers, Bordeaux, Le Mans, Lille, Lyon Part-Dieu, Nantes, Poitiers, Rennes and Tours St-Pierre des Corps. It includes first class rail travel. At least 20 minutes before train departure, passengers must exchange their coupon for a rail ticket (at nominated counters at each station) and validate the train ticket. On arrival at Paris Charles de Gaulle Airport, they have to take their bags to the check-in. Coming the other way, they are told to collect their bags at the airport's baggage reclaim and take the shuttle to the TGV station. At least 20 minutes before train departure, they have to exchange their coupon for a train ticket at counter 10 of the SNCF ticket office. Minimum connect time for Lufthansa passengers is 90 minutes.

Paris – Brussels: Air France

The rail-air intermodal concept was sufficiently attractive to all concerned for Air France to withdraw all its flights on the 271-km sector between Paris CDG and Brussels in favour of a code-share with Thalys.

The service started in March 2000. At some point Air France hoped to extend the service to cover Brussels – Paris Gare du Nord point-to-point flows too, but it is understood that this never happened.

Initially Air France's agreement (similar to a unilateral code-share) was with the international train operator Thalys Rail: subsequently Thalys concentrated on services north and east of Brussels because of pressure on the limited amount of rolling stock they have. The agreement therefore transferred to SNCF from 1 April 2007.

Air France have either one or two coaches reserved on key trains between Brussels and Paris Charles de Gaulle. They like to keep air passengers separate from train passengers because of potential unfamiliarity with trains.

American Airlines also have an arrangement (slightly different to the Air France agreement) for carriage of their passengers by train between Charles de Gaulle Airport and Brussels.

A key feature of the service is that it caters specifically for interlining passengers rather than point to point passengers. The airport station is essential. Brussels - New York passengers have a choice: they can go on Air France and SNCF via Paris Charles de Gaulle, on BA via Heathrow or via Amsterdam on KLM (not part of the Air France group when the service started). Without a station at Charles de Gaulle airport, passengers would be unlikely to choose the route via Paris – so Air France would not have withdrawn their flights.

Liability for baggage is an unresolved problem. At both Brussels Midi and Paris Charles de Gaulle stations, Air France staff load passengers' baggage into a baggage compartment, which is locked for the journey. The compartment is adjacent to the coaches used for Air France passengers. Air France will not accept liability for loss or damage: they claim that the luggage is not under their control (although they retain the key to the baggage compartment), and the Montreal Convention states that an air carrier is not responsible for the rail leg of an intermodal journey. The railway company do not have a contract with the air passengers and therefore do not accept liability either. It is understood that there have (perhaps fortunately) never been any problems with luggage.

Another minor issue is bicycles. Passengers were not allowed to take these on Thalys trains. However, Air France passengers are allowed to take them on flights, and since Air France staff load the trains at Brussels and Paris, there was no problem – bikes are loaded along with other bags.

The issue now that SNCF is involved is slightly different. Places have to be reserved for bikes on TGV trains at a fee of €10: space is limited. Presumably the same solution applies.

The agreement between Thalys and both Air France and SN Brussels (see below) was an International Bi-Modal Transportation Service (IBMTS) – a form of sub-contract between airline and railway. The carrier was the airline Thalys-Air, not the train operator Thalys International. Air passengers were considered Thalys-Air passengers, and did not have a contract with the railway operator (Thalys International) itself. Thalys International has the IATA code 2H (SNCF has 2C).

The segment was legally an air segment, where the airline assumed liabilities for any compensation under the Montreal and Warsaw Conventions. If there was a claim, the railway would meet its obligations under railway Conditions of Carriage and the airline would meet any additional obligations.

The situation is presumably the same now that SNCF has taken on the agreement.

Passengers are issued with IATA flight coupons: because these are not compliant with the COTIF convention, they need to be exchanged for rail tickets before the rail journey starts. The ticket exchange is likened to a boarding card process.

Air France reserve 15 coaches each day on 10 trains each way on the Paris CDG – Brussels route. The trains were selected to meet waves of flights: they replaced 10 flights. A 75%-80% load factor is achieved. They normally use first class (Confort 1, in Thalys days) coaches, but there is flexibility for groups and in peaks. Passengers are airline passengers: the airlines manage sales, information and reservations. The number of seats is virtually fixed from day to day: there is relatively limited flexibility but the airline can buy extra seats if they are available.

The check-in and ticket office at Brussels Midi station is open between 6.30 and 21:00. Air France passengers are checked-in to their final destination: other passengers can be checked in too, but not always to the final destination. There has been a lounge for air passengers at Brussels Midi from 2003. Minimum check-in time is 20 minutes in theory, 20 seconds in practice (if passengers are too late for full check-in, they only get a boarding card for the train). Snacks and drinks are provided to passengers on the train at their seats.

Through baggage checking is not something passengers ask for – they want to be helped (by baggage handlers) but do not necessarily want to have their bags checked. If bags were to be checked through, the check-in time would have to be increased.

There have been problems with baggage handling – especially the occasional absence of trolleys at Brussels Midi and lifts out of service at Charles de Gaulle Airport Station.

The situation is not especially easy at Charles de Gaulle Airport Station at platform level, but there have not been significant numbers of complaints about this.

The baggage loaders at Brussels Midi were used by Air France to load bags and by Thalys to load food trolleys: they were employed by both companies. There is capacity for around 100 bags, but extra bags can be loaded into seating area if necessary.

Some problems arise because there is no signage airside at Charles de Gaulle.

The trains achieve 95%-99% punctuality (within 15 minutes) and 99.99% reliability. The only cancellations have been caused by strikes.

For some years, all city to city passengers have used the train: only interlining passengers used the flights.

Satisfaction is very high, especially with punctuality, on-board comfort and service. The expressed re-purchase intention is very high – higher than for plane passengers.

There were 493,000 passengers between March 2001 and September 2004. There was a 35% growth despite the terror attacks of 9/11 and the SARS epidemic.

Initially, the agreement was only with Thalys. There were the same numbers of Thalys and TGV trains between Charles de Gaulle airport and Brussels, so people could have caught an SNCF TGV instead of a Thalys. This apparently was not a big problem: there were the same issues when two airlines (Sabena and Air France) were flying the route!

Minimum connect time at Charles de Gaulle for Brussels passengers is an hour, with or without hold baggage. This is half an hour less than the standard TGV'Air connect time.

Paris – Brussels: SN-Brussels

In December 2003 the operator of the last remaining Brussels – Paris flight, the Belgian airline SN Brussels (SN-B), also agreed a bi-modal agreement with Thalys. Where the Air France bi-modal agreement was for travel between Brussels Midi and Paris Charles de Gaulle airport, the one with SN-B was between Paris Gare du Nord and Brussels International Airport – the only long distance train to use the airport station at the time.

SN-B reserved one or two Confort-2 coaches (with the potential for more at weekends). There were dedicated trains on Sundays. There was a SN-B representative on board: passengers were given a lunch box.

SN-B checked-in bags at Paris Gare du Nord for Brussels, then took them by road to Brussels.

This arrangement ended on 30 April 2005 at the request of the airline, who cited economics as a reason.

SN-B initially used a regional jet - an ARJ - on the service: it was left idle at CDG airport for over 20 hours a day. Subsequently their service used a Boeing 737 hired from a French charter airline: it was then used the rest of the day for charter flights, so it was significantly cheaper for them than the previous arrangement.

Other problems with the service were that

- ✈ There was a long wait at Brussels Midi station, giving a long journey time between Brussels airport and Paris

- Journey timings were inconvenient, because they had to fit in with the other needs of a multi-stop multi-tasking international train service, integrated with other services in four countries. For outbound passengers, departure time from Paris was very early. Inbound passengers had a long wait at the airport station before departing for Paris (and then a long wait at Brussels Midi).

- SN-B used accommodation in Confort-2 coaches, so effectively business class passengers travelled in economy class. So some would buy Confort-1 tickets and make their own way between Paris and Brussels airport. While the present flight is one-class only, it gives a direct connection with shorter transit times.

- The check-in facilities at Paris Nord were not good: because of the early departure time, bags had to be checked in the day before

- Passengers on the African routes had much baggage, and did not like the fact that there was little assistance in handling it.

Paris – Brussels: American Airlines

The agreement with American Airlines was different: it was described as a co-contracting agreement, where passengers were Thalys International's passengers. The passengers were responsible for their own luggage: the IATA flight coupon had to be exchanged for a rail ticket before boarding the train. Railway liability rules under the CIV applied on the rail segment: on the air segment, of course, aviation rules applied.

American Airlines reserved 10 seats a day.

Paris – Brussels: results

There were about 200,000 Air France passengers a year, and about 1,000 American Airlines passengers. This was 5% of Thalys's turnover, and was based on business contracts with airlines.

The number of seats allocated each year was 220,000 for Air France, 90,000 for SN-B, 12,000 for KLM on the Antwerp-Amsterdam code-share (see page 24), and 2,000 for American Airlines.

TGV'Air

As far as is known, this is the full extent of the TGV'Air scheme at the time of writing. Information comes from a variety of sources, mainly the technical press.

Airline code (see note 4 below)	AA (6)	AC	AF	CO	CX	DL (5)	EK	LH (2)	UA	UU
Aix en Provence TGV										y
Angers	y		y	y		y		y	y	y
Avignon	y			y		y	y		y	y
Bordeaux	y			y	y		y	y	y	y
Brussels (1)	y		y						y	y
Le Mans	y		y	y	y	y		y	y	y
Lille	y		y	y	y	y	y	y	y	y
Lyon	y	y	y	y	y	y	y	(3)	y	y
Marseilles	y			y	y	y	"soon"		y	y
Montpellier	y			y	y	y	"soon"		y	y
Nantes	y		y	y	y	y	y	y	y	y
Nimes	y			y		y	"soon"			y
Poitiers	y		y	y	y	y		y	y	y
Rennes	y			y		y	y	y	y	y
Tours	y		y	y	y	y		y	y	y
Valence TGV				y		y			y	y

Note (1) – The Brussels service is not strictly part of the TGV'Air arrangement.

Note (2) – Lufthansa information is taken from the winter 2003/04 timetable.

Note (3) - According to Lufthansa's French web-site (printed 13/6/00) www.lufthansa.fr/voyagez/tgv_avion.htm, TGV + Avion is available from Lyon Part-Dieu.

Note (4) - The airline codes are:

AA American Airlines

AC Air Canada

AF Air France

CO Continental Airlines

CX Cathay Pacific

DL Delta

EK Emirates

LH Lufthansa

NW Northwest

UA United

UU Air Austral (Air Tahiti Nui and Qatar Airlines also offer the service to the same destinations).

Note (5) All of the DL code-shares are in a Delta timetable effective 7 January 2004 – which in a few cases (Lyon, Marseille, Montpellier, Nantes, Rennes) also shows their code-shares with Air France on the same route.

Note (6) – According to Bill Hood, Managing Director Corporate Affairs for American Airlines at the IARO Chicago conference in April 2005, AA code-share with SNCF to 15 destinations (one more than the 14 on the list above), although most of the traffic is to Lille.

"Airport intermodality indicators CARE II: MODAIR: Measure and development of intermodality at airports" (Eurocontrol 10/05, paragraph 4.1.2.1) has a similar list. It does not include Air Canada: Delta entries are all question marks. It shows Emirates serving Nimes and KLM with the same service as Air France. It does not show a UA service to Lille.

KL and NW were reported to code-share to 13 (un-named) destinations.

It is understood that at five stations it is possible for Air France passengers with hand baggage only to get a boarding card for their flight.

Case Study 4 - Amsterdam

Introduction

KLM saw their 120 kilometre Amsterdam – Antwerp flights as uneconomic, and wanted to withdraw them without losing either the traffic or the city from its network. They therefore entered into a code-share with Thalys, the international high speed train operator. This started in January 2002: KLM initially retained 3 flights a day between the two cities.

Practicalities

The agreement between Thalys and KLM is the same as that between Thalys and Air France/SN-Brussels in Case Study 3: an International Bi-Modal Transportation Service (IBMTS) – a form of sub-contract between airline and railway. Air passengers are considered Thalys-Air passengers with no contract with the railway operator (Thalys International) itself. The segment is legally an air segment, where the airline assumes liabilities for any compensation under the Montreal and Warsaw Conventions.

KLM reserve a block of seats on 5 Thalys trains each day. Actual passenger numbers are confirmed 4 days before travel.

The capacity is sold with a KL flight number; and is in the timetables of both KLM (which is now only electronic) and Northwest (and possibly others: it is available for KLM's alliance partners).

In 2005 it was reported that 12,000 seats a year were being sold. It is understood from Thalys that there was a healthy increase in 2007 – possibly because of the opening of the modernised Antwerp station, or possibly because Belgians are getting more used to flying through Amsterdam (although 2007 saw an increase in the number of passengers using Brussels airport too).

The flight coupon has to be exchanged for a train ticket in both directions (with SNCB at Antwerp, and KLM at Schiphol). There are no ground or on-train facilities for air passengers. No arrangements are made for baggage – passengers handle their own in both directions, and the airline is only liable for it while in their custody (from check-in to baggage reclaim).

Issues

Despite the benefits, there are problems.

The first is the incompatible reservations system – KLM has to buy a number of seats from Thalys and manually enter them into their reservations system. This is expensive.

The second arises from a key difference between rail and air. Flights are normally non-stop, so air passengers wanting an Antwerp service naturally look for signs to Antwerp. However, trains are not normally non-stop, and the Amsterdam – Antwerp Thalys trains continue via Brussels to Paris. So passengers interlining from flights at Schiphol have been known to look for signs to an Antwerp train: seeing a train going to Paris they didn't catch it – instead they took a local train to Antwerp operated by the Dutch and Belgian State Railways. Those operators then charged KLM for the journey which KLM had already paid Thalys for.

Other points

Northwest Airlines code-shares with Thalys between Amsterdam and Brussels to enlarge its network. This apparently attracts trivial numbers of passengers – which could be because it is poorly promoted. Searching on Northwest's web-site for flights to Brussels gave a list of KLM flights from Amsterdam; and searching for ZYR (the IATA 3-letter code for Brussels Midi station) gave an error message. Searching on the OAG on-line timetable gave connections to ZYR via Paris Charles de Gaulle.

The future

As this paper was being prepared, plans were announced for a lounge and check-in at the newly modernised Antwerp Central station. If successful, the concept would be developed elsewhere too.

Passengers will be able to check-in at Antwerp. Those with hold bags will need to take them on the train to Schiphol, where there will be a bag-drop immediately above the platform area (although the precise location has not yet been chosen).

Case study 5 – Zürich

Introduction

Switzerland has long been a model of intermodality, with long-distance trains connecting with mountain railways connecting with post-buses with cuckoo clock efficiency. For some years Swiss Railways (SBB) have offered a number of services to air passengers.

Infrastructure

Zürich Airport station is directly below, and fully integrated with, the main terminal building: Géneve Airport station is also integrated with the airport terminal.

Swiss Travel Passes

Swiss Travel Passes are sold abroad on IATA style tickets in conjunction with flights, by SWISS (SWISS International Airlines Ltd) through their internal distribution system PARS. SWISS acts as an agent for SBB and other Swiss surface carriers. While Swiss domestic law applies to liabilities for compensation for travel on the surface, it is understood that this is subject to a challenge from the USA.

Checked baggage

Inbound air passengers can check their bags through from their departure airport to 120 Swiss railway stations via the airports of Zürich or Géneve. This product is branded “Fly Rail-Baggage”. For this, passengers need a special tag, available from Swiss Travel System agencies and SWISS. The tag incorporates both the name of their destination station and a customs declaration form stating that there are no forbidden or dutiable goods in their baggage: if any are found in a random search at the airport, the passenger is obliged to return to the airport to claim their baggage and sort out the irregularity.

Outbound passengers can check their bags from 55 stations to their final air destination, or check-in and get their boarding cards at over 100 stations. The product is branded as “Check in at the railway station”: passengers have to carry their own bags to the airport.

US airlines’ flights have never been included in this arrangement; and since December 2003, no flights to US destinations are included – probably because the ground handling agent does not consider the volumes handled to be worth the effort of getting US government approval.

The charge for inbound and outbound checked baggage is CHF 20 for each item, or CHF 10 for passengers with hand baggage only: this covers the operating cost of the system. Some airlines absorb this charge for their preferred passengers.

Passengers have separate air and rail tickets: rail liabilities under Swiss domestic legislation apply to the rail segment and the air liability regime to the air segment.

Between 3% and 4% of Zürich and Géneve air passengers check-in at SBB stations. 80% of users of the system are charter flight passengers, especially those with inconvenient flight departure times.

The disadvantage of the system for handling checked bags has been time. Passengers checking bags through to a railway station are given a time, a number of hours after their flight lands at Zürich or Géneve, when they can collect their bags. If the flight arrives late in the evening, it could be the next day before they could collect their bags.

Similarly outbound bags have to be handed in at the station several hours before the departure of the flight. The maximum is 24 hours: the minimum is 3 hours but this depends on the distance between the station where passengers check-in and the departure airport. For example passengers from Bern have to check-in bags at least 5 hours before their flight from either Géneve or Zürich.

That is reasonably attractive to leisure passengers but less so to premium passengers (although they are less likely to have hold baggage anyway).

Flugzug

In an attempt to overcome this disadvantage, Swiss Railways introduced the Flugzug concept (probably in 1999). Trains ran 9 times a day each way - at least every two hours between Basel and Zürich Airport – and to ensure a commercially attractive journey time, they by-passed the main station in Zürich. Trains had Swiss flight numbers, on a code-share with SWISS, and bags could be checked in at Basel up to half an hour before the departure of the last train which would connect with the flight (25 minutes, for first and business class passengers). There is integrated ticketing: a rail coupon is included as part of the flight ticket. Reservations and sales of the Flugzug product are only made by those airlines which have an agreement with SBB. While SBB only sells the product to passengers with an air ticket, the trains do stop at a number of stations and ordinary SBB tickets can be used for intermediate journeys.

This system worked, and there were plans to extend the concept to Bern.

Subsequently (after April 2000) the checked bag facility was withdrawn – it was little used (50,000 bags a year) and was not material to the passengers' choice of mode.

Code-shares

SWISS have a code-share with SBB between Zürich Airport and Basel (and possibly Bern, Lausanne and Luzern).

At some point (possibly in 1999) Finnair entered into a code-share with Swiss Railways for journeys between Zürich and the railway stations of Basel (IATA code ZDH), Bern (ZDJ), Luzern (QLJ) and Lausanne (QLS). Trains are shown on GDS screens as Finnair flights, with an asterisk to indicate that Finnair is not the carrier and a TRN (= train) equipment code.

Legal complications

There are legal complications with these code-shares.

The airlines wanted SBB to take the same legal liability for death, injury, loss or damage to baggage, cancellation or delay as they do. SBB, owned by the government, were not willing to do this. Their liability for death or injury to passengers or loss or damage to luggage is specified in Swiss domestic law; and SBB are unable to accept either greater liabilities or the free choice of court which an air passenger would have under the Warsaw and Montreal conventions.

Additional insurance to cover this would be expensive: it is a niche product. After much discussion, SBB took out insurance on behalf of Finnair passengers so that they can accept Warsaw Convention liabilities, but the insurance company is unwilling to extend this to any other carrier.

Night&flight

On 12 June 2005, a service called Night&flight was introduced by the international overnight train operator CityNightLine (CNL) and the airline SWISS. Under this arrangement, passengers travelling from Basel or Zürich can use an overnight train in one direction and a SWISS flight in the other.

Destinations publicised on the web-site are Berlin, Frankfurt, Hamburg, Hanover, Düsseldorf and Amsterdam, although a report in the January 2008 issue of International Railway Journal said that destinations in Denmark and the Czech Republic were also included in the scheme.

There are 4 fares - €299, €399, €449 and €499 – depending on the class of travel by rail (economy or de luxe single) and air (economy or business). An open jaw ticket (where, for example, passengers could fly Berlin - Zürich and then travel back by train from Bern to Dresden) is possible.

Is a high speed station at an airport necessary?

Introduction

All five of the case studies have one characteristic in common – there is a high speed or regional rail station at the airport, served by long-distance trains. Passengers are able to change between plane and train, with no need for a second change of vehicle.

It was pointed out in the Paris case study (see page 18) that a station at the airport was essential: without it, the system would probably never have started.

At some of the airports (notably at Newark, but to a degree at Paris Charles de Gaulle and Frankfurt) train to plane transfers can involve complex journeys and automated people movers or buses. These seem to be accepted as the equivalent of inter-terminal transfers.

The Interchange penalty

Apart from inter-terminal transfers, interchange is a considerable disincentive. People expect to have to change between plane and a surface vehicle, but a second change is much less acceptable.

Research supported by IARO some years ago made this point strongly: the researcher found that the need to change trains once on the way to the airport was such a disincentive that it was unnecessary to evaluate the impact of more than one change.

An illustrative example is the re-introduction of through trains between Manchester airport and Scotland in 2007, which saw a 47% increase in passenger numbers.

Another case highlighting this point is that of London City Airport. The rail mode share of air passenger ground access is about 50%. Many of those who do not use rail travel by taxi between the airport and Canary Wharf, even though travelling by the (significantly cheaper) Docklands Light Railway would only necessitate a very easy change of vehicle – it is not even necessary to change platforms.

Contrary evidence

Evidence contradicting the hypothesis that an airport station is essential to good air rail cooperation is not easy to find.

Another airport with a high rail mode share is Oakland, California: passengers need to use a bus shuttle – AirBART - to transfer between the airport and the rail station. This takes around 20 minutes – between 15 and 30, according to Southwest's web-site. It is possible that these passengers regard the bus as an inter-terminal transfer rather than a different mode. In addition, many use the low-cost carrier Southwest, and are therefore looking for a bargain.

There are examples of air-rail ticketing, where it is possible to travel by air in one direction and rail in the other.

Amtrak and United Airlines are understood to have this kind of cooperation, as are Eurostar and British Midland.

Midwest Airlines gave frequent flier points to passengers using Amtrak's Chicago – Milwaukee trains, as an incentive to use Midwest from Milwaukee airport rather than using other airlines from the Chicago airports.

Continental Airlines give frequent flier points to Amtrak passengers travelling between New York and Boston or Washington DC.

These are interesting examples of cooperation, but hardly counter the point that a high speed or regional rail station at an airport is necessary for real integration.

Few airports have high speed rail stations: the only one which does and does not have a code-share arrangement is Lyon St-Exupéry. The train service at this station, however, is not convenient to the average air passenger.

Conclusion

It is concluded that a train station at an airport is essential for the kind of air rail cooperation discussed in these case studies.

Air rail integration case studies – legal issues

Liability for compensation for death or personal injury, or loss of or damage to baggage.

Air carriers operate under international conventions – in particular, the Warsaw Convention of 1929, the Chicago Convention of 1944 and the Montreal Convention of 1999. In Europe, they also operate under European Union legislation (in particular, EU Regulation 2027/97 of 1997).

Each airline also has its own Conditions of Carriage: these are all similar, but with detail differences.

Rail carriers operate under domestic law for internal travel, and under international conventions (for example the COTIF/CIV arrangements) and (in the EU) EU legislation for international journeys. Each railway has its own Conditions of Carriage, which apply while it is the carrier. These will normally specify which country's law governs them.

Limits of liability differ between different regimes. A passenger travelling between Paris and Lille could receive different compensation depending on whether the journey was international or just domestic; or, if they held a Paris – Brussels ticket, whether the train was crossing the French-Belgian frontier or not. Some carriers just accept that there are differences, but this is becoming more difficult as the state withdraws from control of railway companies and airlines.

The EU has recently legislated on this: identical rights will apply at some point to most passengers on national or international railways in the EU.

Denied boarding

Most airlines will, as a matter of course, try to sell more than 100% of the seats available on any particular flight. They know from experience that not all passengers will turn up, and that overbooking is essential to get as high a load factor as possible. Inevitably there will be occasions when they misjudge the situation, and more passengers wish to travel than there are seats available. Compensation regimes are laid down for this.

Railway reservations systems, by contrast, are not generally able to do this. Passengers are allocated a specific seat in a specific carriage when they reserve accommodation, and the system will not normally allow the same seat to be sold twice. So overbooking can only result from system malfunction or human error.

However, overloading practices vary between railways and between types of service.

On the TGV services in France, passengers must have a reservation before they board the train: standing passengers are not allowed.

This is not the case on the German ICE services: passengers are encouraged to reserve seats, but if they do not, they can still travel. If there are vacant seats, they can sit down: if not, they stand. It is understood that at one time attempts were made to adopt the French system, but these were dropped after public protest. When German trains started running into France and French ones into Germany in 2007, provision was made for these national customs to remain.

A major selling point of rail travel is its walk-on nature: people can catch whichever train they want at the last minute, and accept that the price of this choice may be standing for some or all of the journey.

In-town check-in

A few railways offer in-town check-in at specific stations. Here passengers can check in their hold baggage and obtain their boarding passes.

Following the terrorist attacks of 11 September 2001, the US government brought in new arrangements for of airport check-in. Because of this, if passengers wish to check bags to the United States, they need to be interviewed by US-approved security staff before they can check-in.

The approval of the US government is required for off-airport check-in for travel to the United States: an approved security inspection team will make an annual check of the stations and the security procedures.

The initial strict requirements have been gradually relaxed, and this process is likely to continue.

Conclusions

IARO's role

As has been noticed in other areas of air-rail intermodality, a number of different solutions have evolved in different places to solve similar problems.

The role IARO can play is to inform organisations about those different solutions and, where possible, their benefits and disbenefits. This approach is especially valuable to people wishing to introduce similar systems, but will also be of use to those already running them.

Legal issues

For example, legal issues are seen by the legal community as potentially very important, very fundamental, and in need of clear resolution before start of service. This can be a major cause of delay because of the different approaches taken by airlines and railways to some legal and contractual issues – which in turn arise from their different historical and geographical backgrounds.

However in practice few problems have arisen. It is clearly necessary to have a framework within which problems which do arise can be resolved; but it is reassuring to hear that, according to people who actually run the systems, it is not a major issue.

Airport stations

In principle, intermodal solutions like those illustrated in this report are likely to increase – costs, environmental issues and slot congestion at major airports are working against short-haul flights. However, these only appear to work if there is a high speed rail station at the airport – and there are relatively few of these. There are strong arguments for routing future high speed lines to serve major airports – a key lesson.

Connections, frequencies and services

The report notes in the case of both the Paris – Brussels and the Stuttgart – Frankfurt services that air–rail connections are not optimal because the airport is just one station on a multi-stop international train service, needing to fit in with trains of other companies and other countries. A related problem – reluctance to stop the main high speed services – was noted in the case of Newark.

There are two other cases where the nature of the train service does not facilitate air-rail intermodality – Lyon St-Exupéry and Birmingham.

St-Exupéry, Lyon's main airport, is on the high speed line between Paris and Marseille on a loop passing round the eastern side of Lyon, not serving the city centre.

Trains calling at the airport are relatively infrequent. This could be because the train company does not want to help a competitor on the Paris – Lyon route, or because the service is orientated towards more local needs. Whatever the reason, the service is not particularly convenient for air passengers. For example there are no trains between Avignon and the airport between 7:14 and 12:13, or back between 11:42 and 21:42.

There is a theory that the air-rail connection at Lyon St-Exupéry does not work because – unlike the airports in the case studies – it is not a hub. It seems more likely that the problem is the train service – both the timings and the places it serves.

Birmingham airport is served by Birmingham International station, on the main line between Birmingham and London. The line is congested – much of it is two-track, used by cross-country and suburban trains as well as the frequent Birmingham – London services – with little capacity for trains to other parts of the region. The train service is mainly oriented towards the London market. However, this is not a market the airport really serves: it is geared to the needs of the West Midlands conurbation and does not see itself as being in competition with the London airports.

Bags

Facilities for handling bags on air-rail services can also be an issue, although it is uncertain if this can be described as a problem. The service through Frankfurt was the only one making such provision (and this has recently ceased). Anecdotally, it was not something demanded by passengers – although when the Frankfurt facilities were withdrawn (see page 11) there was apparently much adverse reaction, particularly from high-value business passengers.

There is a need to research non-users to see if this is a major reason for non-use.

The future

We hope to keep this report updated: feedback from readers would be welcome.

Readers may also be interested to know that a report in course of preparation is on the subject of high speed rail competition. It attempts to analyse the reaction of airlines to the introduction of high speed rail on a parallel route.

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.

- Regional meeting 1: Stockholm
- Workshop 10: Marketing and ticketing innovations (e-air-rail) Düsseldorf
- Regional meeting 2: Kuala Lumpur

2007 –

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

Planned workshops and conferences

Please note that in future, it is planned to have IARO events in mid-May and November each year

2008 -

- October - London Gatwick. One-day conference on ticketing
- November - Brussels. One-day conference on air-rail cargo

2009

- May - Amsterdam, with site visit on the HSL-Z to Antwerp station
- October – Vancouver: light rail to airports

2010

- May – to be confirmed
- October – Lyon: high speed rail to airports

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.