

**IARO report 3.01**  
**Report of the Baggage Task Group.**

**IARO Report 3.01: Report of the Baggage Task Group.**

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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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## **List of abbreviations and acronyms**

- AA American Airlines
- AG Aktiengesellschaft - Company (German)
- ANA All Nippon Airlines
- APM Automated people mover
- BA British Airways
- BAA UK based airport operator - formerly British Airports Authority
- CAT City Air Terminal
- CCTV Closed circuit television
- CDG Roissy Charles de Gaulle Airport, Paris
- CRS Computer reservation system
- CTA Central Terminal Area (usually Heathrow Airport)
- CTA Chicago Transit Authority
- DB Deutsche Bahn - German Railways
- DSB Danske Statsbaner - Danish State Railways
- FAG Flughafen Frankfurt AG - Frankfurt Airport Company (now Fraport)
- IARO International Air Rail Organisation
- ICE InterCity Express (German high speed train)
- JR Japanese Railways. The national rail system was divided into a number of distinct companies (like JR West), each serving distinct areas.
- KLM Koninklijke Luchtvaartmaatschappij - Royal (Dutch) Airlines
- LH Lufthansa
- LIRR Long Island Rail Road
- LRV Light rail vehicle
- MARTA Metropolitan Atlanta Rapid Transit Authority
- MAX The light rail system in Portland, Oregon
- MML Midland Main Line. The rail route between London St. Pancras and Derby, Nottingham, Sheffield and Leeds.

NS Nederlandse Spoorwegen - Netherlands Railways

RER Réseau Express Régionale - regional express network (usually Paris)

RMV Rhein Main Verkehr. Local transport co-ordination organisation in Frankfurt

SAS Scandinavian Airlines System

S-Bahn Suburban railway (Germany/Switzerland/Austria)

SBB Schweizerische Bundesbahnen - Swiss Railways

SJ Statens Järnvägar - Swedish Railways

SLA Service level agreement

SMS Small messaging system

SNCF Société Nationale des Chemins de Fer Français - French National Railways

Subway This is used in the British sense - a pedestrian passage under tracks or a road.

TGV Train à Grande Vitesse - French high speed train

Thalys French/Dutch/Belgian high speed train service.

UK United Kingdom

USA United States of America

VAL Voiture automatique légère - light automatic vehicle (and APM system using these)

# **INTERNATIONAL AIR RAIL ORGANISATION**

## **Report of the Baggage Task Group**

### **Introduction**

The difficulty of carrying baggage is one of the main reasons why air passengers avoid public transport and, in particular, rail links to airports. What are the solutions? How can actual and perceived difficulties be overcome? This report reviews the current situation in order to contribute towards one of the objectives of IARO, the spreading of best practice world-wide.

The report draws from IARO's database, from the contributions made at a workshop held in Milan in April 2000, and from other sources. The authors of those contributions are gratefully acknowledged. Some of the papers presented at the workshop are reproduced in full as appendices.

The report begins with a review of current practice (in particular, looking at the key problem areas) and then looks at some specific case studies.

It is clear from the amount of work being done, the new developments coming on stream and the level of interest in the topic that this subject will need further work and, in time, an update to this report. Contributions, comments and ideas would be appreciated.

## **Review of baggage handling on air rail links**

The case studies which follow show the basic features of a number of air rail links and the ways they cope with baggage. They were chosen because they had specific features relevant to baggage handling from which lessons could be learnt.

The main conclusions of an analysis of these can be summarised as follows.

### **Away from the airport**

Only a few air rail links offer full check in for hold baggage - so that passengers can check-in remote from the airport. From the passengers' point of view, full check-in overcomes the difficulty of carrying baggage on a train. However, from the airline, airport or train operator's perspective it is very expensive.

More links have check-in for passengers with hand baggage (where they can get a boarding card) and others have or are planning a baggage drop system (where passengers can be relieved of their bags for some part of the journey).

Two systems - the Swiss Fly-Rail baggage system and Heathrow Express's Baggage Direct arrangement for inbound bags - currently make a charge to the passenger to help cover costs.

The issue of payment for check-in is dealt with in Appendix 7.

### **On Train**

Provision of ample visible space for accompanied baggage on the train is important.

It is however more difficult if the train is also used as a commuter or metro service. London's Piccadilly Line shows a commonly used solution - where the baggage area by the doors is also a passenger standing area at peak times. This is also done on systems as far apart as the München S-Bahn and the Kowloon-Canton Railway. In Atlanta, MARTA's baggage area has the overhead horizontal grab-rails signed to take suit carriers.

Air passengers are often concerned about the security of their baggage and therefore the baggage areas must remain in visible: transparent sided stacks and transparent overhead racks are important. The latter also reduce the risk of passengers leaving items behind.

Provision of space for checked bags - and arrangements for loading and unloading them - can also be complex. Appendix 4 reviews this issue in more detail.

### **Platform and Train Access**

If train and platform are level, it is relatively easy to carry (or wheel) bags across the gap. Many metros aspire to this level access because it also enables fast loading and unloading of passengers, and facilitates wheelchair accessibility.

Stairs within a train exacerbate the access problem, so there are particular problems where double deck (bi-level) trains are used on airport services - as in Sydney, Amsterdam, Milano Malpensa and Berlin Schönefeld. Some of these - and Berlin Schönefeld is an excellent example - overcome the problem by having step-free access to a lower deck area. This is accessible from a door area which is level with the platform, and an internal ramp down to the normal lower deck level.

### **Access at the City**

For all passengers, not just those on the air-rail link, easy access to the street, to taxis and to other public transport is essential. In general, terminus stations have the advantage of being able to provide level access, whereas through stations will almost always involve a change of level. Handling this is a challenge - some people are claustrophobic in lifts, heavy luggage is difficult to handle on escalators, and ramps take a lot of space.

Underground and metro systems usually involve escalator access, on which handling baggage can be difficult.

While baggage trolleys can be taken on escalators in some places - notably Zürich - this feature is uncommon on underground systems. It requires specially equipped trolleys, with wheel-gear designed to lock onto the escalator steps.

Particularly if the escalator is long, there are issues of safety - can it cope with a number of loaded trolleys simultaneously? If not, then as at the Eurostar terminal at London Waterloo, a manual control over numbers has to be exercised. This of course is labour intensive.

### **Trolleys at the City end of the journey**

Except on metro systems, trolleys are usually available at city centre stations. Sometimes these use a deposit system, where passengers have to insert coins in order to release trolleys from their storage area: the coins are returned when the trolley is returned to a designated area.

This is not particularly user-friendly. Inbound visitors to the country may have notes in the local currency but not coins. Multi-currency versions are available, but almost inevitably they do not handle all currencies.

Heathrow Express staff have instructions to ensure passengers can use the trolleys at London Paddington (which require a deposit), even if this means handing out the necessary coin.

### **Access at the Airport**

Most air-rail links provide lifts or ramps at the airport station to enable passengers with trolleys or wheeled baggage to get to the terminals.

However, those smaller interchanges where the airport station is some distance from the terminal building may pose problems. An example is Graz, in Austria, where the station is 300 metres from the terminal building.



Again Berlin Schönefeld provides a good case study. Passengers alighting from trains have access to free trolleys. There is a wide ramp down from the platform to the subway under the tracks, a wide ramp up to the airport shuttle bus, and the bus floors are on level with the curb at station and airport. Passengers are guided along the route by a line of red footprints leading to the trains, or blue ones to the planes.

### **Trolleys at Airports**

Virtually all airports provide trolleys at the air-rail link station, usually free of charge.

## **Case studies**

At IARO's Milan workshop in April 2000 there were two presentations covering the Gatwick Express baggage check operation. One was from the perspective of the train operator: the other gave the view of the main airline involved.

Summaries of these presentations are at Appendix 1.

A presentation on the use of trolleys in air-rail links was given by a leading manufacturer and a summary of this is at Appendix 2.

At Appendix 3 is a summary of the plenary session discussion on these issues.

Two papers outlining the Heathrow Express checked baggage operation are at Appendix 4.

The Baggage Direct system is reviewed in Appendix 5.

Details of the Frankfurt - Stuttgart project (operational March 2001) are in Appendix 6.

Funding issues are discussed in Appendix 7.

Other case studies follow immediately: they are all set out in the same way, in a table showing how the main problem areas are dealt with.

<b>Airport</b>	<b>Atlanta Hartsfield, Georgia USA</b>	<b>Amsterdam Schiphol, Netherlands</b>	<b>Brisbane, Australia</b>
<b>Rail Link</b>	MARTA (Metropolitan Atlanta Rapid Transit Authority)	NS (local, regional and international services). Thalys (long distance trains)	Airtrain Citylink (operational May 2001)
<b>Check In</b>	At the airport station, with Delta Airlines.	No	Planned for one of the central area stations and for another in the Gold Coast resort area
<b>On Train</b>	Good luggage provision at the end of some cars. Includes horizontal overhead grab-rails signed to take suit carriers.	Varies. Mainly overhead racks	Limited baggage stacks
<b>Platform/train access</b>	Reasonably level	Step up or steps within train (on double deckers)	
<b>Access at City</b>	Stairs, escalators and lifts	Escalators and stairs	
<b>Trolleys at City</b>	No		
<b>Access at Airport</b>	Stairs, escalators and lifts	Inclined moving walkways	
<b>Trolleys at Airport</b>		Yes, on platforms	No. Platforms slope towards tracks.
<b>Other</b>	Enhancements to the in town check in arrangements are being considered, with the airport authority and Delta.	There is a home luggage collection service, for which a charge is made. In the 1990s, there was on-train check-in on some routes (especially from Enschede). Despite trying various methods, this proved to be uneconomic and was dropped.	Checked baggage may be moved to airport by truck, rather than by rail, because of space limitations on the trains. A baggage drop system is being investigated as an alternative to immediate introduction of full in-town check-in.

<b>Airport</b>	<b>Chicago O'Hare, Illinois, USA</b>	<b>Copenhagen Kastrup, Denmark</b>
<b>Rail Link</b>	CTA Blue Line	Danish State Railways (DSB) and Swedish State Railways (SJ) - local, regional and international services
<b>Check In</b>	No	No
<b>On Train</b>	No provision	Overhead racks and open areas
<b>Platform/train access</b>	Reasonably level	Generally good. On some types of train, a step extends close to the platform at stations where this is necessary.
<b>Access at City</b>	Stairs (sometimes escalators) to elevated stations	Escalators to street level (Copenhagen). Lifts (Malmo Syd). Level (Malmo Central)
<b>Trolleys at City</b>	No	
<b>Access at Airport</b>	Escalators, lifts and stairs	Inclined moving walkways
<b>Trolleys at Airport</b>	No - turnstile barriers	Yes, on platforms
<b>Other</b>		Baggage drop is planned, at major stations in Denmark. Initial sites proposed were on the airport station platform and at Odense. Check in machines are available at Malmö Central and Malmö Syd stations, but these are for passengers with hand baggage only. As well as overhead racks, DSB are experimenting with aircraft-style overhead lockers.

<b>Airport</b>	<b>Frankfurt, Germany</b>		<b>Geneva, Switzerland</b>	<b>Hong Kong Chek Lap Kok</b>
<b>Rail Link</b>	DB (long distance and high speed services)	DB and RMV (local, regional and S-Bahn services)	SBB (local, regional and international services)	Airport Express
<b>Check In</b>	At 5 main stations plus the airport station (see note)	No	Fly-Rail baggage available from over 100 stations	Full baggage check in for all airlines at Hong Kong Central and Kowloon
<b>On Train</b>	Varies, mainly overhead racks	No provision	Overhead racks	Baggage stacks beside each door
<b>Platform/train access</b>	2 steps up	Level	Steps up	Level
<b>Access at City</b>	Varies, normally escalator or stairs	Level to street for terminating services, escalators for through trains	Stairs	Level to taxis and street
<b>Trolleys at City</b>	Yes, on platforms	Yes		Yes, on platforms (platform screen doors)
<b>Access at Airport</b>	Escalator and lifts	Escalators	Escalators	Level and ramped access to terminals
<b>Trolleys at Airport</b>	Yes, at platform level, free of charge.	Yes, at platform level	Yes, at platform level	Yes, on platforms (platform screen doors)
<b>Other</b>	<p>Remote check-in is currently overnight only ("Moonlight check-in" - passengers can check in their bags the night before and get boarding cards). Bags usually travel in a special compartment of a train to the airport.</p> <p>This supplements the national Fly-Baggage scheme, whereby passengers can have bags collected from their homes and delivered to the airport of their choice. A three-day delivery time applies.</p> <p>At Frankfurt AIRail station there is a check in area with 8 desks and 2 self-service machines on the bridge to the terminals.</p> <p>Further integration is being developed under the Strategy of Co-operation. Initial experiments during 1998/2000 were based on trains from Saarbrücken to Frankfurt: bags were checked in at Saarbrücken and carried in a special compartment on the train. They were loaded and unloaded by DB staff.</p> <p>On 1 March 2001 similar integration between Stuttgart and Frankfurt started (see Appendix 6 for details).</p>		<p>Fly-Rail baggage system also operates for inbound passengers. This delivers bags to destination stations.</p>	<p>Fully automated baggage transfer system.</p>

<b>Airport</b>	<b>Kuala Lumpur Serpang (KLIA), Malaysia</b>	<b>London Gatwick, UK</b>		<b>London Heathrow, UK</b>	
<b>Rail Link</b>	Express Rail Link (to open 2002)	Gatwick Express	Connex, Thames, Thameslink, Virgin Cross Country	Heathrow Express	Piccadilly Line
<b>Check In</b>	Planned	Full baggage check in for BA and partners, and for American Airlines	None - but passengers could use Gatwick Express check-in	Yes, for a large number of airlines	No
<b>On Train</b>		Baggage stacks by doors	Overhead racks	Baggage stacks and overhead racks	Baggage space beside doors
<b>Platform/train access</b>		One step up	One step up	Level	Level or small step down
<b>Access at City</b>		Level to street and taxis, escalator or lift from check in, stair and escalator to Underground	Level to street and taxis, stair and escalator to Underground (Thameslink - stair or escalator to street, depending on in-town terminal used)	Level to taxis; lift, escalators and stairs to Underground	Escalators or stairs
<b>Trolleys at City</b>		Yes, on platforms	Yes, on most platforms	Yes - deposit required	No
<b>Access at Airport</b>		Escalator and lifts (some services use platforms with stairs and lift only)	Escalator and lifts (most services use platforms with stairs and lift only)	Escalators and lifts	Escalators (lifts at Terminal 4)
<b>Trolleys at Airport</b>		Yes, but not at platform level	Yes, but not at platform level	Yes, but not on platforms	Yes but not at platform level
<b>Other</b>	Check out (baggage service for arriving air passengers) also planned	Check-in operational since May 1962 for BA and partners. Also available for AA passengers (a separate, newer system).	Thameslink have considered in-town check-in. Thameslink run to 5 city centre termini: Virgin and Thames are cross-country services.	Baggage Direct gives a baggage delivery service from Heathrow to Central London at an extra charge (see appendix 5).	

<b>Airport</b>	<b>London Luton, UK</b>	<b>London Stansted, UK</b>	<b>Madrid Barajas, Spain</b>	<b>Manchester, UK</b>	<b>Milano Malpensa, Italy</b>
<b>Rail Link</b>	Thameslink, Midland Main Line (MML)	Stansted Express	Madrid Metro	Central Trains, Northern Spirit, First North Western	Malpensa Express
<b>Check In</b>	None	No	Planned at downtown station (under construction, 2001)	Planned at Airport Station	Hand baggage only, at Milano Cadorna Station, for Alitalia and partners.
<b>On Train</b>	Overhead racks. MML trains have stacks too.	Baggage stacks and overhead racks	Stacks.	No special provision - generally overhead racks	Baggage stacks in lower level of double deck trains
<b>Platform/train access</b>	One step up	Step up	Level	Step up	Level
<b>Access at City</b>	Level to street and taxis (MML), stairs to street and taxis, stairs and escalator to Underground	Escalator to street and taxis, stairs and escalators to Underground	Steps and escalators	Usually level: steps needed for one platform	Level
<b>Trolleys at City</b>	Yes, on platforms (MML only)	No	No		
<b>Access at Airport</b>	Escalator and lifts	Ramps, lifts and escalators	Stairs, escalators and lifts	Stairs, escalators and lifts	Inclined moving walkways
<b>Trolleys at Airport</b>	Yes	Yes, on platforms	Not on escalators	On platform	Yes, but not permitted on platforms
<b>Other</b>		In town check-in has been considered, but there has been no agreement on funding.	Madrid Metro plan to do the checking-in themselves.	Exploring use of technology for remote check-in - self service machines likely at Manchester Piccadilly by 2002. In future, baggage drop (with baggage tag issue) likely at major stations.	Provision for baggage transfer built into airport station.

<b>Airport</b>	<b>New York Newark</b>	<b>New York JFK</b>	<b>Osaka Kansai, Japan</b>	<b>Oslo Gardemoen, Norway</b>	
<b>Rail Link</b>	Airtrain then New Jersey Transit or Amtrak (September 2001)	Airtrain then Long Island Railroad (2003) or New York Subway (2002)	JR West, Nankai Electric Railway	Flytoget	State Railways
<b>Check In</b>	An aspiration for downtown: to be available at the airport station.	Planned for Jamaica station (LIRR and New York Subway).	At Osaka City Air Terminal for ANA, North West, Austrian, KLM, Cathay Pacific and Alitalia	Hand baggage only for SAS and Braathens	No
<b>On Train</b>	Trolleys can be taken on Airtrain	Trolleys can be taken on Airtrain	Luggage spaces near doors of both companies' airport express services, but not on local services.	Baggage stacks at each door	Varies
<b>Platform/train access</b>	Level	Level	Level	Two steps inside train. Wheelchair lift available.	
<b>Access at City</b>	Steps, lift, escalators	Steps, lift, escalators	Escalators and lifts. There are barriers at stations.	Level or ramped to taxis and street	Ramped access to taxis and street
<b>Trolleys at City</b>	No	No	Free, but difficult to find.	Yes, on platforms	Yes, on platforms
<b>Access at Airport</b>	Stairs, escalators and lifts			Lifts and escalators to terminals	Lifts and escalators to terminals
<b>Trolleys at Airport</b>	On Airtrain	On Airtrain	Free, but not on platforms (barriers)	Yes, on platforms. Trolleys can pass through ticket barriers	Yes, on platforms
<b>Other</b>			Baggage delivery service available from airport. In-town check-in under review - low usage affecting finances. JAL no longer use it. JAL have check-in counters at Nankai Railways' Namba CAT and at JR's Kyoto CAT	Full in-town check-in for SAS and Braathens under discussion	No



<b>Airport</b>	<b>Paris Orly, France</b>	<b>Paris Roissy Charles de Gaulle, France</b>		
<b>Rail Link</b>	RER Line B and VAL light metro	CDG Express (planned)	RER Line B	French high speed network
<b>Check In</b>	No	Planned	No	No
<b>On Train</b>	Limited overhead racks. Stacks on VAL		Limited overhead racks	Overhead racks and stacks at end of carriages
<b>Platform/train access</b>	level		One step up	One step up
<b>Access at City</b>	Escalator		Escalators and stairs	None (serves many stations within France as well as Brussels, but not Paris)
<b>Trolleys at City</b>	No		No	-
<b>Access at Airport</b>	Stairs have to be used at interchange point	Escalators and lifts	Escalator (at both stations) and lift at CDG1.	Escalators and lifts
<b>Trolleys at Airport</b>	Yes	Yes	Yes (but not on platforms at either station - barriers)	Yes - free
<b>Other</b>	Ticket barriers at both downtown and interchange station.	Service to open in 2006/7 between Charles de Gaulle and Paris Gare de l'Est. It is forecast that a third of passengers will use in-town check-in.		The station is connected to the line around Paris - the Grande Ceinture - which connects with other major high speed routes radiating from Paris. It is served by both SNCF's TGVs and the international Thalys service. SNCF believe that baggage check-in is currently too difficult. Thalys however are working on this for Brussels - a major market, because of Air France's decision (September 2000) to pull out of Paris - Brussels flights (which they did from March 2001). Check-in terminals on trains are seen as too difficult, however.

<b>Airport</b>	<b>Portland, Oregon, USA</b>	<b>Stockholm Arlanda, Sweden</b>		<b>Stuttgart, Germany</b>
<b>Rail Link</b>	MAX light rail line (operational September 2001)	Arlanda Express	State railways	DB S-Bahn
<b>Check In</b>	No	Hand baggage only, for One World and SAS	No	No. See appendix 6 for check-in arrangements for combined train and plane journeys via Frankfurt Airport.
<b>On Train</b>	7 LRVs have been modified to include luggage racks	Generous baggage stacks beside each door	Overhead racks	Small overhead racks, and an open area with tip-up seats in some cars.
<b>Platform/train access</b>		Level	Steps up	Level
<b>Access at City</b>		Level to taxis and street	Level to taxis and street (some platforms only)	Escalator, stairs and lift.
<b>Trolleys at City</b>		Yes, on platforms	Yes, on platforms	Yes. Deposit required.
<b>Access at Airport</b>		Lifts and escalators to terminals	Lifts and escalators to terminals	Stairs, lifts and escalators
<b>Trolleys at Airport</b>		Yes, on platforms	Yes, on platforms	Not on platforms
<b>Other</b>				See appendix 6 for Frankfurt - Stuttgart service.

<b>Airport</b>	<b>Tokyo Haneda, Japan</b>		<b>Tokyo Narita, Japan</b>	<b>Zurich, Switzerland</b>
<b>Rail Link</b>	Tokyo Monorail	Keihin Express Electric Railway	JR East (Narita Express), Keisei Line	SBB (local, regional and international services)
<b>Check In</b>	No	No	No	Fly-Rail baggage available from over 100 stations
<b>On Train</b>				Overhead racks
<b>Platform/train access</b>				Steps up
<b>Access at City</b>				Level
<b>Trolleys at City</b>				
<b>Access at Airport</b>				Escalators
<b>Trolleys at Airport</b>				Yes, at platform level. Allowed on escalators.
<b>Other</b>	Baggage delivery service at airport.			Fly-Rail baggage system also operates for inbound passengers (delivers bags to destination station)

## **Conclusions**

The difficulty of carrying baggage is a deterrent to the use of air-rail links. How much of a deterrent, and whether and how this varies with journey distance and purpose, is a topic on which IARO is encouraging research.

There are different ways of helping passengers with baggage. How valuable are these to passengers, and how much do they remove the luggage barrier? Why are they not used more than they are?

Providing baggage facilities and services is expensive, and the passenger may not be willing to pay extra. If the passenger will not pay, who should?

The case for extensive baggage facilities is not yet proven. There are many successful metro services, for example, which carry many passengers to airports without making any provision for baggage.

However, where a dedicated rail link can be justified, part of the premium product which differentiates the link from its other public transport competitors must be the ease of baggage handling. Only if such services are provided, marketed and accepted by passengers can the train really compete with private car and taxi.

## **Appendix 1 - baggage check in for Gatwick Express**

Summary of a presentation made at the IARO Milan workshop in April 2000

### **BAGGAGE SYSTEMS FROM A CUSTOMER POINT OF VIEW - THE RAIL PERSPECTIVE by Roy Campbell, Head of Marketing, Gatwick Express**

The presentation started with a video of a journey from London Victoria station to Gatwick Airport, from the bag's viewpoint. An overview of remote check in included the following issues:

- Benefits to passengers - being able to get rid of bags early, and having the aircraft seat allocated
- Benefits to airports - less congestion at the airport check in
- Benefits to airlines - early check in can resolve any difficulties with the passenger's ticket and enable yield management to be improved
- Infrastructure and security issues create challenges to be overcome
- There may be a lack of clarity about who should promote the service - the airline, the rail operator, or the airport?

From the passenger's perspective, there is no doubt that baggage can dictate the mode used, with taxi often being the easiest for those with a lot of baggage. Making it easy to carry baggage on rail links means trying to avoid changes of level. Finally, passengers are concerned about their bags reaching the right destination<sup>1</sup>.

Airport and in town stations are often complex interchanges and there is always a question of whose resources are used to create the baggage systems. In addition the approvals needed from security and safety authorities have to be obtained.

The rail operator needs to understand how the check in process works and ensure that the promotion of the service is consistent with the airline delivery. The airline wants to ensure that it provides a service consistent with its airport operations but which provides that extra convenience for its customers.

Two case studies of in town check in were discussed - Paddington for Heathrow Express and Victoria for Gatwick Express.

Paddington has new purpose built infrastructure with 27 desks occupied by 19 airlines covering most of the alliances. Security procedures are carried out as if the desks were at the airport and bags are conveyed to the front of the train by an underground conveyor. The train operator's contractor then sorts and loads the bags onto the train.

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<sup>1</sup> Hong Kong's Airport Express Line say that the probability of a bag not reaching its destination is less if it is checked in downtown than at the airport.

There is a Service Level Agreement (SLA) between the airlines and the train operator which requires the bags to be delivered to the airport in a set time, each bag and container being coded and tracked through the system. At the airport, the bags are unloaded from the train by the train operator's contractor and handed over to the airlines, who then transport them to the terminals.

12% of Heathrow Express passengers use Paddington check in, and Heathrow Express delivers 99.7% of bags within the 60 minute SLA. Since it started operations in June 1999, over 100,000 passengers have used the facility<sup>2</sup>.

Among the learning points from the operation were the following:

- The operation would have been more slick if the containers were taken direct to the baggage sort areas rather than unloaded at the airport station. This, of course, would have needed more containers
- It would have been more efficient to have had one operator to take bags from the airport station to the baggage sortation areas, rather than two.
- It has been difficult to cope with out-of-gauge baggage.

The Victoria check in operation for Gatwick Express has been operating in one form or another since the 1960s. British Airways have 18 desks (of which two are for passengers with hand baggage only) at an upper level adjacent to the taxi set-down point. Bags are taken by conveyor to platform level where they are loaded onto a truck: this is then taken to the train side where the bags are loose-loaded onto the train by BA staff. American Airlines have two desks at platform level: their bags are loaded into containers which are then put onto the trains by a contractor. At the airport station BA bags are individually loaded onto trucks and the AA containers are offloaded. Each are then driven along a designated route to the baggage sortation areas.

Problems arise at the airport station because some trains do not use the dedicated platform and it is then difficult to take baggage to the baggage sort areas. The airport station relies on manual handling and does not have modern systems or amenities.

**BAGGAGE DELIVERY FROM AN AIRLINE PERSPECTIVE by Sue Atkinson, Customer Services Manager, British Airways Gatwick London Terminal**

The third presentation began by noting the fear that passengers have that they will arrive without their baggage and the cost to the airline or repatriating any lost bags which is between £100 and £200 per bag. Baggage handling remains one of the airlines' greatest challenges, having improved so many other areas of their service (lounges, on board service and fares).

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<sup>2</sup> Including 10% of Concorde users.

Passengers will often choose to reclaim their bags at a transfer airport rather than trust the airline to deliver it, so the challenge is to operate remote check in at a rail station viably and with customer confidence. Other factors involved in such an operation are train punctuality and reliability and the operation and maintenance of the rail infrastructure.

In order to rise to this challenge, airlines, rail operators and airports have to work closely together.

The Victoria operation evolved from a city centre check in which used dedicated buses to serve the airports. Baggage is loaded and offloaded manually and there is double handling. At Gatwick Airport the journey from the platform to the terminals entails crossing the tracks and passing through security gates, and bags may take 30 minutes from station to aircraft.

Minimum check in time at Victoria is 2 hours for long haul flights and 90 minutes for short haul. The service is popular with passengers and there is a high level of customer satisfaction and repeat business.

For British Airways, the advantages of Victoria check in are that it may be more cost effective to handle high yield passengers in town rather than at the airport. Some passengers using Victoria in particular have large amounts of excess baggage and this helps to keep the operation viable. BA's marketing of the Victoria check in targets particular groups and flights which can be better dealt with there.

## **Appendix 2 - the use of trolleys in air-rail links**

Summary of a presentation made at the IARO Milan workshop in April 2000

### **BAGGAGE TROLLEYS AND THEIR SECURITY IN USE ON RAILWAY PLATFORMS AND THEIR RETRIEVAL IN RAILWAY STATIONS by Wolfgang Kratzenberg, Managing Director, Expresso Deutschland**

Expresso Deutschland is a worldwide company in the area of small goods handling. The product line includes modular aluminium hand trucks, modular lift trolleys, hand sensor controlled electrically driven trucks, mobile vacuum cranes and luggage trolley systems.

Surveys show that trolleys are very important to passengers at airports and railway stations, especially if they can't find one. Planners and architects sometimes forget to design in trolley systems, and their supply and distribution is then an afterthought. Expresso have been looking for solutions to the whole question of trolley supply, storage and distribution.

There are various types of trolley. It is a pre-condition for railways that there is a dead-man brake (where the brake is applied unless specifically released by a passenger holding it off to push the trolley). Tests are required on rail stations with passing trains to demonstrate that a trolley will not fall onto the track. Large tyres are required to avoid getting caught in small gaps such as at the end of escalators where most accidents occur. Trolleys for use on escalators are available but tend to be larger and less manoeuvrable.

Trolleys in storage take up large amounts of valuable spaces. Expresso have developed a storage and distribution system which creates vertical storage throughout the building which also distributes trolleys from drop off points to pick up points. These can use 'paternoster' lifts (which, like ski-lifts, never stop) and automatic discharge systems. A system is being designed for the terminal and rail station at Zurich Airport.

In the discussion that followed this presentation the issue of payment for trolleys was debated. At Malpensa Airport among many airports and rail stations, a deposit is required which is refunded when the trolley is returned. This encourages the return of trolleys and helps with the management of circulation. However, it causes inconvenience to passengers who may not have the right coins. It may also cause passengers to leave bags unattended while a trolley is fetched or returned.

Also discussed was the issue of braking. Rail stations require the brakes to be applied unless held off, but this system reduces manoeuvrability of trolleys in bulk, which is necessary at some airports. Unbraked trolleys are permitted at some stations, where platforms are wide and slope inwards and the risk of falling onto the track is low.



### **Appendix 3 - summary of the plenary session discussion at IARO's Milan workshop in April 2000.**

The common theme reported back was the issue of the value of the various operations associated with baggage handling on airport rail links.

The train operator bears the cost of carrying checked baggage in a special compartment and possibly some of the loading and unloading costs. The benefit received is in the form of additional passengers attracted to the rail service by the availability of check in.

The airport may bear the cost of providing some of the systems at the in town terminus but will benefit by reducing congestion at the airport terminal.

The airline bears most of the cost of providing the check in service, which may be more expensive than doing it at the airport, but benefits by having a competitive advantage and also by reducing congestion and last minute problems at the airport.

The value of baggage trolleys to the passenger, to the airport and to the rail operator is also an important issue, with cost sharing and payment or deposit systems being dealt with differently around the world.

Other baggage issues were discussed during the plenary session. Developments in the Swiss Fly-Rail product now enable baggage collection and delivery at 125 stations throughout the country. The possibility of making the service free, but funded by a general increase in airport taxes, is being considered. The question of what standards of service should apply to in town check in, and whether these should be the same as at airports, was also addressed.

Finally, it was agreed that the issue of baggage handling on airport rail links, and in particular baggage check in at in town terminals, should be addressed by an IARO Task Group, who will be asked to study the issues and report back to a future IARO meeting.

## **Appendix 4 - the Heathrow Express checked in baggage operation**

### **Introduction**

*This is an edited and updated version of an article first printed as a supplement to "Air Rail Express", the newsletter of IARO, in June 1999.*

In-town check-in is a major topic of interest for airport railways around the world.

The ability to check-in hold baggage at a downtown station is currently only available at

- Gatwick's London Victoria terminal (where it has been provided by British Airways and its predecessors for over 25 years, and more recently by American Airlines too)
- in Switzerland (from 125 major stations, for most airlines)
- Saarbrücken (for services connecting with Lufthansa flights). This was a trial to provide experience before wider introduction on German Railways. It is complete and has been superseded by the Frankfurt - Stuttgart trial (see appendix 6)
- at Hong Kong Central and Kowloon.

From 23<sup>rd</sup> June 1999 it has also been available at Paddington: the experience with the Heathrow Express project has been drawn on to produce this article.

In-town hold baggage check-in is a clear aspiration for a number of railways, including Flytog (Airport Express Train) in Oslo, Stansted Express, Arlanda Express in Stockholm, Express Rail Link in Kuala Lumpur, and Airtrain Citylink in Brisbane.

This article examines the practical issues arising when introducing downtown hold baggage check-in.

### **The downtown station - customer interfaces.**

The station needs to look as much like an airport terminal as possible, mainly 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 reduced 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.

In both Hong Kong and London, 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 station or at the airport: the latter has better facilities but postponing the check increases the risks. At Paddington, for example, a common-use X-ray machine has been provided for this.

Other problem areas include out-of-gauge baggage (which needs special handling) and items like rucksacks (whose straps are known to tangle with conveyor equipment).

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! To avoid this problem, a system has been set up at Paddington for passengers to discuss their purchases with the Customs officials at Heathrow so that VAT can be reclaimed with less hassle.

### **The downtown station - other interfaces.**

Cost is a key consideration. Capital outlay is needed for the desks, conveyors, handling equipment and on-train equipment. Running expenses include building rental, staff costs and maintenance.

Who pays?

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

There is a good case for all beneficiaries to pay the bills.

In practice, in Switzerland the customer pays - a flat fee of 20 Swiss francs for each bag. In Hong Kong the service is partly paid for by the railway and partly by the airlines. At Victoria the airlines handle the baggage themselves and rent the offices from the railway infrastructure owner: the railway operator provides the rolling stock. In Paddington the airlines rent the desks in a building paid for by the railway: the (airport-owned) railway provides train space, transfer equipment and staff at both ends. The airlines also transfer the bags from the airport station to the terminals.

Security issues are key. The obvious area is the initial permission from aviation security organisations. One which is less obvious is the downtown station security staff - railway, police and railway police. Unlike their airport counterparts, they are not accustomed to dealing with emergencies involving checked baggage and are less familiar with the issues. An education process is necessary here.

### **The downtown station - equipment.**

Equipment is needed to transfer bags from the check-in desks to the airport. The line haul is normally done by the airport railway. In Australia, because of limited space on airport trains, Qantas will probably take checked bags by road from central Brisbane and the Gold Coast resorts to the airport.

Security is a key consideration. At Paddington, bags handed in by passengers are tagged by airline staff with a unique identifying number, a flight number and a destination code. The baggage tag, as well as being needed by the airlines for sorting, is a fundamental part of the control process (as explained below). The check-in staff then send the bags to the conveyor, just as they would at an airport.

This conveyor (which is secure, fireproof and monitored by CCTV) takes 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.

Bags are sorted into 8 special containers (nominally two for each terminal, although inevitably there will be at least one - the rummage container - with a mix of bags).

The containers, constructed like the loading and on-train equipment by Marco Trailers, are fireproof, burst-proof and with encrypted locks. They have eight wheels (four fixed centre wheels and four swivelling outer wheels, to improve manoeuvrability).

The containers are loaded - manually at Paddington, automatically or semi-automatically in the Hong Kong stations - into a secure area of the train.

### **On the train**

The baggage compartment is the front part of the front vehicle (or the whole of the front vehicle, in Hong Kong).

A key problem is posed by two conflicting security requirements. No-one must be given access to the containers, but a clear passage must be allowed past them in case there is a need for emergency evacuation.

The baggage area doors are protected with alarms, so that staff will know if security may have been breached. The containers are strong, secure and with special encrypted locks, so the possibility of unauthorised access is minimised and easily detectable.

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

Loading arrangements and the weight distribution in the vehicle also need to be considered. At Paddington, staff are specially trained in manual handling techniques and use a defined set of unambiguous commands when loading trolleys (a two-person job).

### **At the airport**

At the airport, the head of the train stops in a secure area where the containers are unloaded from the train and taken by lift to the surface. During the day when trains are running, these lifts only serve platform and the ground level baggage trans-shipment point. At night, they are used for moving cleaning equipment and stores for the retail and commercial areas at intermediate levels.

Bags are unloaded from the containers and the tags scanned. The airlines (or their handling agents) provide four vans - one for BA and one each for Terminals 1 to 3 - to move bags from the central airport trans-shipment point to the individual terminals. Baggage van routes are specified, with special clearance routines through the control points giving rapid access to the airside areas. These are designed to avoid congestion and delay as far as possible. Containers are returned empty to Paddington - although there are proposals to use the space commercially (possible uses include a home delivery service, courier or diplomatic bags, and a delayed bag delivery service).

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

### **Timing and staffing**

Originally, passengers with hold baggage using the facility had to check-in at Paddington at least 120 minutes before departure (the check-in time for passengers with hand baggage is 60 minutes). This was initially also the case in Hong Kong, but it has now been reduced there in the light of experience to 90 minutes before departure.

A 90 minute check-in at Heathrow was initially tried by American Airlines (who use Terminal 3) and has now been adopted by all airlines there except for BA. The 90 minute check-in time is achievable for terminals 1, 2 and 3 at Heathrow: unfortunately the distance between the Central Station and terminal 4 (which BA uses) makes a shorter time for them difficult.

The check-in time allows for a wait for a train, the journey to the airport, and for the bags to travel across the airport and be screened and loaded.

At any one time there are three people serving the conveyor at Paddington. Two more are loading containers onto trains (and unloading empty containers coming back). There are also five unloaders at platform level at Heathrow and five more at surface level. It is a labour intensive business.

### **If things go wrong**

Responsibilities and interfaces between all those concerned need to be clearly defined and agreed in advance, so that questions of compensation for lost or delayed baggage can be settled. Obviously, this needs to be done without the passenger having to establish who is at fault.

The Airport Express Line in Hong Kong has some emergency platforms along the route for use in the event of a train failure. These are specially equipped with roller-beds to transfer baggage containers between trains if necessary.

### **When things go right.....**

.....more passengers will use the airport railway - and between 25% and 55% of outbound air passengers will save themselves stress by using the in-town check-in. It is clearly something valued by customers, something worth providing.

Future innovations include the plans for Kuala Lumpur to provide two-way check-in (so that you will be able to check your bag from Hong Kong Central to Kuala Lumpur Central, not just to the airport) and for Brisbane (where Qantas plan to provide hotel check-in, and road-haul bags from the Gold Coast resort area to the airport).

### **What happens elsewhere?**

Arrangements on the older Swiss and Gatwick Express systems are simpler, but the same security considerations apply.

### **The BA operation at London Victoria**

At Victoria, BA have 18 desks (of which 2 are for passengers with hand baggage only) handling 300,000 passengers each year. Passengers have to check-in 120 minutes before the flight departure (90 minutes, for short-haul passengers). The majority - perhaps two-thirds - of passengers using the facility arrive by car or taxi, for which the location is good. Very few are using domestic flights.

Among the financial benefits to BA are lower space rental charges, income from other airlines for handling their passengers, and commission - around £1m a year - from selling rail tickets.

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

The checked bags - up to 200 on each train at peak times - are transferred to platform level by conveyor, and are loose-loaded into the secure baggage van. These vans have no external door handles - they can only be opened from inside - and are under surveillance from the on-train staff.

Transfer from train to sortation system at Gatwick is also manual.

### **AA at Victoria**

American Airlines have a smaller operation, based in a building at platform level.

They use containers on roller-bed trucks for the transfer to the trains.

### **The future**

There is much debate about the future of the whole Victoria operation.

BA would like a platform-level presence - possibly in addition to a street-level office. However, the geography of the station makes the provision of adequate space for this difficult.

Different platforms could be used for the dedicated Gatwick Express service to provide more platform level check-in space. However this might necessitate expensive alterations to the tracks outside the station in order to maintain punctuality.

The long-running political issues surrounding closer relationships between BA and AA have also contributed to the uncertainties.

### **Control of baggage**

It was said above that the baggage tags are read by a scanner before they are loaded into containers at Paddington - and also when they are unloaded at the airport.

The scanning process does three jobs.

- it allows bags to be sorted by terminal, which speeds the transfer process at the airport. It takes only a matter of minutes to unload containers into trucks there.
- it acknowledges transfer of responsibility for that bag from airline to railway
- it facilitates service quality monitoring (are bags getting from desk to terminal in the specified time?).

At the surface level trans-shipment point at Heathrow, bags are scanned again as they are unloaded from the containers.

This confirms transfer of responsibility back from railway to airline.

### **Is there a cheaper way?**

Lower cost alternatives are possible.

Limiting the service to those with hand baggage significantly reduces the problems - although it significantly reduces the value of the service too. People with heavy baggage are more likely to want to get rid of it early in the journey. Downtown hand baggage check-in can be seen in a number of places - for example München, Oslo, and London Paddington (until the full hold baggage service was launched on 23<sup>rd</sup> June 1999).

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 where volumes are low.

On-train check-in - usually restricted to passengers with hand baggage - has also been used. It was abandoned on Dutch Railways some years ago because of high costs. Plans are being developed for it to be used on trains from Sweden to Copenhagen.

Baggage drop systems - operating in both directions - can also provide acceptable lower-quality alternatives to full downtown check-in. With these, passengers can send their baggage (sometimes, as in Germany, a few days in advance) to the airport. When they get there before their flight, they need to reclaim it to check it in themselves in the usual way. On the return journey, they have to deliver it to a carrier - the national railways, in the case of Germany - who delivers it to their home or office within a stipulated time (up to three days).



## **Appendix 5 - Baggage Direct**

This is an innovative experimental service which carries bags from Heathrow to London. If successful it could in future be extended to other airports and to cover the rest of the UK.

In the basic service, passengers bring their baggage from the aircraft or reclaim and take it to the Baggage Direct desk in the terminal. Passengers have to provide proof that they have just arrived by air (ensuring security) and give the delivery address. The bag is tagged with a radio-frequency tag: the counterfoil with a unique number is given to the passenger. The bag is then wrapped in a plastic cover. This is partly to eliminate all possibility of pilferage, and partly for general security - interestingly, bags checked in by air passengers at SBB stations are similarly wrapped. Bags are collected from the terminal by van and taken to CTA station - the location on the surface where checked bags are transferred from container to van. They are loaded into a container - one of the containers used for outbound checked bags - taken down in a lift and loaded onto a train to Paddington. At Paddington, they are unloaded from the train and loaded into vans for delivery to the customer.

The use of radio frequency tags and scanners means that bags can be monitored at key points on their journey. Information is immediately transferred to the Baggage Direct database. Passengers can interrogate this using the Internet, or can receive progress reports by SMS or pager.

The service is particularly useful to people attending conferences and meetings. They can shed their bags at the airport and go off to their meeting unencumbered. They can check the delivery of their bag, and if it is going to a hotel, the system will even tell them their room number.

An enhanced level of service is planned. Under this, passengers will be able to go to the Baggage Direct desk airside in the customs hall. They will be escorted to reclaim by a Skycap, who will take the customer and the bags through customs to the landside Baggage Direct desk where they can complete the documentation. The rest of the service is the same as the basic service.

Bags are delivered to central London addresses within three hours, and outer London in four hours. For addresses within the M25 orbital motorway, the timescale is agreed before handing over the bags. The service operates from 5.00 to 20.00.

As well as a nationwide and all airports service, Baggage Direct are investigating the potential of a home collection service. All of these will be phased in as technology, demand and economics permit.

## **Appendix 6 - Frankfurt - Stuttgart project**

In September 1997, a Strategy of Co-operation agreement was signed between Lufthansa (LH), Frankfurt Airport AG (now Fraport) and German Railways (DB). Under this, as the domestic high speed train network improved in quality and coverage, flights between Frankfurt and Köln, Düsseldorf, Stuttgart and Nürnberg were to be progressively abandoned, in order to increase slot productivity. There were also concerns about the competitiveness of the airport; and Fraport were keen to increase its catchment area.

Behind this simple concept lies a host of complex issues needing resolution - things like ticketing, baggage handling, station and airport facilities, revenue sharing, costs and benefits, intermodal transfer arrangements, minimum connect times and air miles.

So far, two services have been launched to test different aspects of the system - a low volume trial on the Saarbrücken - Frankfurt sector, and a more comprehensive one on the Frankfurt - Stuttgart route.

A third - between Frankfurt, Köln and Düsseldorf - will start in 2003 when the new Rhein-Main high speed line opens. That line will give travel times from Frankfurt Airport to Köln of 47 minutes and Düsseldorf of 68 minutes.

The first trial was launched on 15<sup>th</sup> June 1998 on the Saarbrücken - Frankfurt service. A number of trains were given LH flight numbers, and passengers travelling via Frankfurt airport could check-in and be given their boarding passes and baggage tags at Saarbrücken station. Bags were checked through to the final destination. On the trains, passengers used designated bays of reserved first class seats - allocated by priority to Lufthansa passengers, but if free after leaving Frankfurt airport or Saarbrücken, were available for use by other passengers. DB staff performed the check-in procedures using standard airline computer terminals and baggage tag printers. Lufthansa staff took the bags to the trains where they were put into a special locked container in the gangway area of the passenger compartment. At Frankfurt, Frankfurt Airport staff unloaded the containers and took the contents to the airport: there they were x-rayed and taken to the onward flights.

This was a limited scope trial, just to check the operation of the basic procedures. It never could (and never did) handle high volumes. The trial has now ended, and management attention is now focused on the Stuttgart service.

The Frankfurt - Stuttgart trial, launched on 1 March 2001, was a major advance. Under this, the 7 daily return flights between Frankfurt and Stuttgart in the Lufthansa timetable were supplemented by 6 return trains (7, from 10 June). Trains and planes do not compete: none of the trains are overtaken by planes. Journey time by rail is 73 minutes.

The trains used for the service are first-generation ICE high speed trains. A sub-fleet of ICEs (21 of the 59 ICE-1s) was specially modified for the service. Lufthansa charters one first-class carriage with 46 seats on each of the trains and sells them as flights through CRSs under LH flight numbers. This is car 12, next but one to the restaurant car.

There are three 5-seat compartments, and the rest of the seating is at tables in an open area: some have two seats and others have four. As well as overhead racks, there is a wardrobe.

At both Frankfurt and Stuttgart there are blue information pillars where car 12 will stop, saying that car 12 is reserved for LH passengers. There are reserved signs above the seats for the Frankfurt Airport - Stuttgart journey. Dedicated on-train staff hand out newspapers, refreshing towels, snacks and drinks.

Trains run every other hour (5.14 - 17.25 from Stuttgart, 9.20 - 21.21 from Frankfurt). Therefore bags, which can be checked from anywhere to Stuttgart station, need to be on the same train as the passengers. To achieve an acceptable station stop time, bags had to be containerised. Initially DB wanted the transfer to be achieved in two minutes but conceded three. Some in practice are timed to stop for four minutes at Frankfurt AIRail station although this may be for traffic purposes as much as for luggage loading - it is a busy station.

Station times are less of an issue at Stuttgart - it is a dead-end terminus and for those trains which do not end their journey there the limiting factor is the time needed to reverse, rather than the time needed to load or unload containers.

To accommodate baggage containers, two bays of 8 seats have been removed from the end of a second class coach - the vehicle next to the power car. This creates a space which will hold 6 containers, each with up to 12 cases. These are loaded through the ordinary external door (which is labelled "Not for use by passengers").

The container compartment has a rail under the windows with locking devices - metal handles which rotate through 90° to lock containers into place. There is a door into the passenger compartment.

The containers are about two metres high, 0.75 wide and 1.25 deep. They have four wheels with foot operated anchor brakes. There is a vertical rail at each corner to facilitate pushing.

At Frankfurt, containers are taken to and from trains by FAG staff - usually a team of four. They use an ordinary passenger lift to and from the platforms: this will accommodate two containers and the trolley carrying the ramp used to load them. The ramp is about three metres long, of wood and metal, with one end hinged to ensure a smooth passage with no gap. There are side guide-rails and four carrying handles.

The ramp is quite steep - it rises about 0.5 metres. Four people push loaded containers up: two guide them down.

At Stuttgart, loading and unloading is by DB staff - usually a tractor driver and two loaders. A smaller ramp - about a metre long - is used to transfer containers between train and a trolley (which is at the same height as the train floor). The trolley is pulled by a tractor along the platform to the concourse, then down a ramp to street level. Containers are transferred to a temporary customs hall and unloaded. Passengers identify their own bags: depending on their origin they are allowed out or are questioned about the contents.

Lufthansa have two check-in desks opposite the customs hall. Bags can be checked to any LH destination<sup>3</sup>, and onto flights of Lufthansa and the 19 other airlines with which it has concluded an interline agreement. The system is branded Lufthansa and Star Alliance.

Much construction work is going on in the check-in and customs hall area, so precise arrangements may change.

Baggage handling was the major challenge for the Frankfurt - Stuttgart trial. The journey had to look like an air journey, so it had to be possible to check baggage to anywhere at the journey origin, whether this was a station or an airport. Both Paris Charles de Gaulle to Stuttgart station and Stuttgart station to Paris Charles de Gaulle, for example, had to be possible.

This meant that Stuttgart station had to have a three-letter IATA code (ZWS) and a customs point; and secure space needed to be available at the stations and on trains to cope with the luggage. In airline terminology, the bags need to be kept sterile.

At the same time, customs facilities were also newly provided at Stuttgart airport. So there is now full check-in and check out at Stuttgart - both at the airport and at the station. Interestingly, the minimum check-in time at the station is 20 minutes - 5 minutes better than at the airport.

Fraport has extended its automated baggage conveyor system to the ICE station at Frankfurt. Outbound bags are screened and security-checked there.

The possibility of trains being modified to carry 3 containers rather than 6 is being investigated.

At some point Lufthansa will consider terminating the air services<sup>4</sup>, which would cut the number of flights at Frankfurt by 20,000/year or 5% (about a year's growth).

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<sup>3</sup> Some reports add "except Israel".

<sup>4</sup> On what they refer to as "miniroutes"

There is a complex commercial arrangement between DB, FAG and LH involving bilateral and multi-lateral contracts. These provide for the underwriting of the costs of all the changes - some DM 20m. The German Government is involved through the introduction of customs facilities to Stuttgart airport and station.

## **Appendix 7 - Funding issues**

Appendix 4 reviewed the benefits of remote check-in, in whatever form. Passengers, airlines, airports and railways all gain from in-town check-in at stations. There are also costs - often significant costs - and much work is needed to reach even an approximate symmetry of benefits and costs.

True symmetry is probably impossible, although achieving it is increasingly important as the partners in the transportation chain are commercialised or privatised.

The difficulties arise partly because of the inability to fully capture the benefits, partly because of the difficulty of identifying costs accurately, and partly because the benefits generally flow evenly over the life of the project while costs are largely incurred up front, before it starts.

The case of Heathrow Express at Paddington was probably extreme - some of the work done for the baggage transfer system was needed anyway to widen the platforms - but it is nonetheless instructive.

Also adding to the costs was the fact that Paddington station is a historic structure. Heritage bodies as well as local planning authorities needed to be satisfied before any alterations could be done.

Heathrow Express was granted exclusive use of two platforms, 6 and 7. These were narrow, curved and tapering.

Widening these to the extent necessary to satisfy present-day health and safety requirements and also the customer service aspirations of Heathrow Express cost £13m. This figure included the cost of a new 180 metre tunnel virtually the full length of the platform to accommodate baggage conveyors. It also included the cost of raising them so that they were level with the train floors - a factor much appreciated by people with wheeled bags, golf carts and buggies.

Other station modifications, including the conveyor system (a standard airport system, with two belts to allow the system to operate whilst one is under maintenance), cost £4m.

Work at Heathrow (baggage lifts and other infrastructure) cost £2.5m.

Modifications to the trains included removing a number of seats, installing out-of-gauge luggage containers, installing equipment to ensure that the containers were securely locked in place, and fitting alarmed doors to the passenger compartments. The doors are needed because passengers may need to pass through the luggage compartment if the train has to be evacuated.

These modifications, together with alterations at Paddington and general project overheads, amounted to £4.5m. As could be expected with major work to a high speed electrified 24-hour railway, the latter were significant.

The station modifications involved the creation of a check-in area behind the station concourse in what had been retail and storage space (for both the station and the adjacent hotel). This was rationalised (indeed, transformed) and at the same time access to the London Underground - both by lift and by escalator - was improved. Significant additional retail space of a significantly higher quality than had existed before was also provided.

The creation of 27 check-in desks, accommodation for their staff, and space for an X-ray machine for bags whose owners could not satisfactorily answer security questions, was an up-front cost, and fell on BAA as owner of Heathrow Express.

Railtrack, owners of the station, paid for the retail space: access improvements to the London Underground station were funded by BAA.

Heathrow Express also incur running costs - the costs of transfer of the bags, and maintenance of the belts at Paddington and the lifts at Heathrow: this is remunerated through the desk rental.

The airlines pay the rental: they also pay their own staff at Paddington and for the van service which moves the bags from CTA to the airport sortation system.

Heathrow Express, whose expenses are to be remunerated through extra passengers, pays rent to Railtrack for the check-in area.

Passengers do not pay a premium for the service - indeed, they can use it without actually using Heathrow Express - so the extent to which it actually recoups its investment is somewhat speculative. Gains made by user airlines from having a downtown presence are similarly speculative, although those who use check-in (a large proportion of whom are premium passengers) love it! It has to be said that not all airlines are there - Aer Lingus, Air France and Virgin Atlantic have never been, and Swissair pulled out in 2001.

An additional complication is that Railtrack charge a higher rental for retail activities than for passenger processing activities, so if airlines wanted to sell tickets it would cost them more. This is a matter of concern to some airlines: they believe that they are part of the transportation chain and should be allowed to perform the normal functions of a link in that chain - including sale of tickets - without penalty. None do, but some see this as wrong. It is also ironic that virtually the only place on Paddington station where one cannot buy a Heathrow Express ticket is at the check-in desks.

The payment situation in other places can be briefly summarised as follows.

- In Switzerland the customer pays the operating costs and railway and airport pay their own capital costs. A flat fee of 20 Swiss francs (SFr) is charged for each bag. However in some cases - first and business class passengers, and frequent fliers - the cost is absorbed by the airline. The 20 SFr only covers the direct operating costs, and not the setup cost of the system.
- In Hong Kong the service is partly paid for by the railway and partly by the airlines.

- At London Victoria the airlines handle the baggage themselves and rent the accommodation from the railway infrastructure owner. Gatwick Express, the railway operator, provides the rolling stock. The airlines transfer the bags from train to sortation system - BA move their own but AA contract it out.

Clearly, there is no standard and each case is met on its merits and according to the negotiating power of the parties involved.

What can be said is that if it is not provided, more passengers will go by car and all will lose. If it is provided, it is valued by a discerning market: a clear illustration of this is provided by the fact that, when Concorde was flying from Heathrow, 10% of its users checked in at Paddington.



Task Group reports are usually the topic of all or part of an IARO workshop.

Copies of the reports of the first (in Berlin in 1999) and second (Milan, 2000), are available price £250 (free to IARO members).

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

1994 - Paris

1996 - London (and Heathrow Express)

1997 - Oslo (and Airport Express Train)

1998 - Hong Kong (and Airport Express Line)

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

1999 - Berlin workshop (and the Schönefeld link)

- Copenhagen (and the Øresund Link)

2000 - Milan workshop (and Malpensa Express)

- Paris (and plans for CDG Express)

- Washington (and Baltimore-Washington International Airport)

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

- Madrid workshop (and its airport rail links)

- London Heathrow (and Heathrow Express)



#### Planned workshops and conferences

2001 - Sydney/Brisbane (and Airtrain Citylink)

- Railways serving airports - but not as their main job  
(seminar: venue to be arranged)

2002 - Barcelona (and its airport railway)

- North America (Boston, Dallas or San Francisco)

- Kuala Lumpur (and Express Rail Link)

Details are available from IARO. Future plans are subject to change.