



Arup Aviation

Ten-year prospective view
of Heathrow Airport

Airport privatization

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- 1. Heathrow airport development**
2. Heathrow performance indicators
3. Airport privatization market

London Heathrow airport overview



- Third largest airport in the world in passenger throughput (67.5 mppa in 2007) after Atlanta and Chicago O'Hare
- Heathrow is the world's largest international airport
- 34% of passengers at Heathrow are transfer pax
- Heathrow handles 1.3 million tons of cargo per year and is the 4th largest cargo airport in Europe
- Heathrow is a destination for 90 airlines and has direct connections to 180 airports in the world
- Heathrow has 5 passenger terminals including T5 with an initial capacity of 35 million passengers +45 million for the others
- Home base of British Airways (oneWorld), BMI (Star Alliance) and Virgin Atlantic
- London Heathrow has the highest connectivity (# flights) in the transatlantic market, the largest single market in the world
- Heathrow operates under strict environmental constraints
- The airport employs around 68,000 staff, 4,500 by BAA alone
- Heathrow airport is owned by BAA, which also owns Gatwick and Stansted in the London area
- Aeronautical charges are regulated through a price-cap. Following the latest review Heathrow is allowed to increase its charges by 23% in real terms over the next 5 years

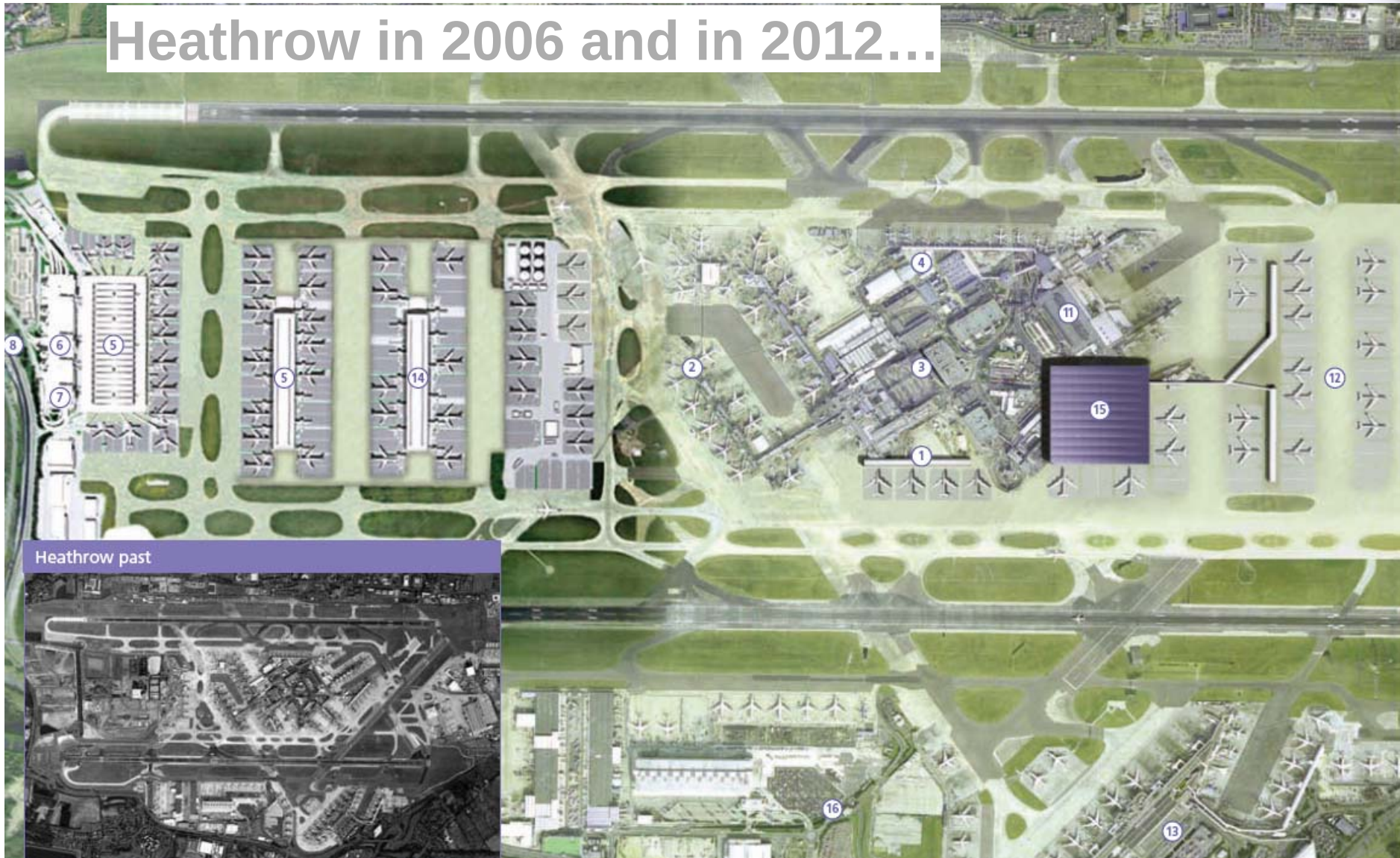


	Current passenger numbers (mppa)	Runways*	Destination s served	Current ATMs (arrivals and departures)	2010 ATM capacity	%Full (Current ATMs as a proportion of 2010 capacity)
Heathrow	67.5	2	180	477,000	480,000	99%
Frankfurt	52.8	4	265	490,000	660,000	74.2%
Paris CDG	56.8	4	223	541,000	710,000	76.2%
Amsterdam Schiphol	46.1	5	260	440,000	600,000	73.3%

- Heathrow is congested and offers poor passenger experience
- Its two runways operate at 99% of permitted capacity. By contrast, Frankfurt has been given the go ahead for a fourth runway, Paris Charles de Gaulle has four and Amsterdam has five – all operating at around 75% of capacity
- Heathrow served 227 destinations in 1990. This dropped to 180 in 2007
- Heathrow has fallen behind Frankfurt, Paris, Amsterdam and Munich in terms of destinations served
- Heathrow is also competing worldwide with airports like Dubai, Doha, Abu Dhabi and Singapore in the 'Kangaroo route' between the UK and Australia/ NZ
- After the recent implementation of the 'Open Skies' agreement several American airlines started flying to Heathrow, by acquiring slots from other airlines marginally increasing passenger numbers
- The ownership of BAA over its London airports is currently being scrutinised by the competition commission, which might lead to a possible breakup of the BAA quasi-monopoly
- The price cap review mechanism is only valid for the next 5-years; from then on there uncertainty to what that level might be
- The airport site is the smallest of any of the large European airports further limiting expansion opportunities



Heathrow in 2006 and in 2012...



London Heathrow major development projects... already completed



2007

2008

2009

2010

2012

1

2

3

4

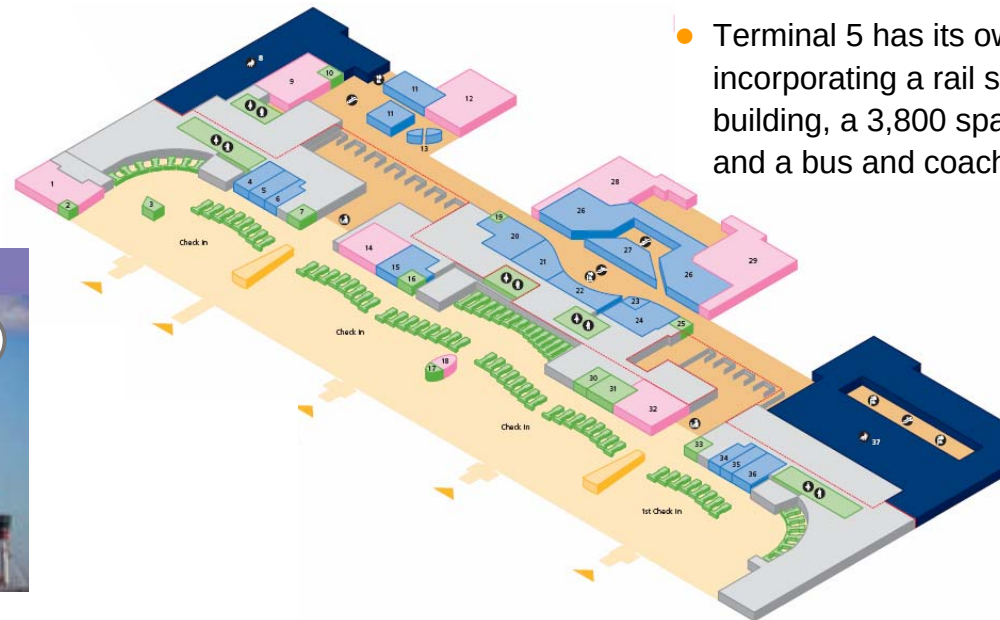
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Air Traffic Control Tower



- Air traffic control tower: Located in the middle of the airfield the new control tower is fundamental for the future development of future infrastructure
- Terminal 5: 396 meters long and 176 meters wide, T5 (A + B) has a 35 mppa capacity and is the base of British Airways the world's largest 747 operator (57 units)
- Terminal 5 has its own transport interchange incorporating a rail station under the terminal building, a 3,800 space multi-storey car park and a bus and coach station inter

Terminal 5



London Heathrow major development projects... under development



2007

2008

2009

2010

2012

1

2

3

4

5



- Airline relocation: After BA relocates most of its flights to T5, the oneWorld alliance will be relocated to T3; Skyteam to T4 and Star Alliance to T1. Relocation will minimize transfer times and allow for the implementation of the 'under one roof' concept for each of the 3 alliances

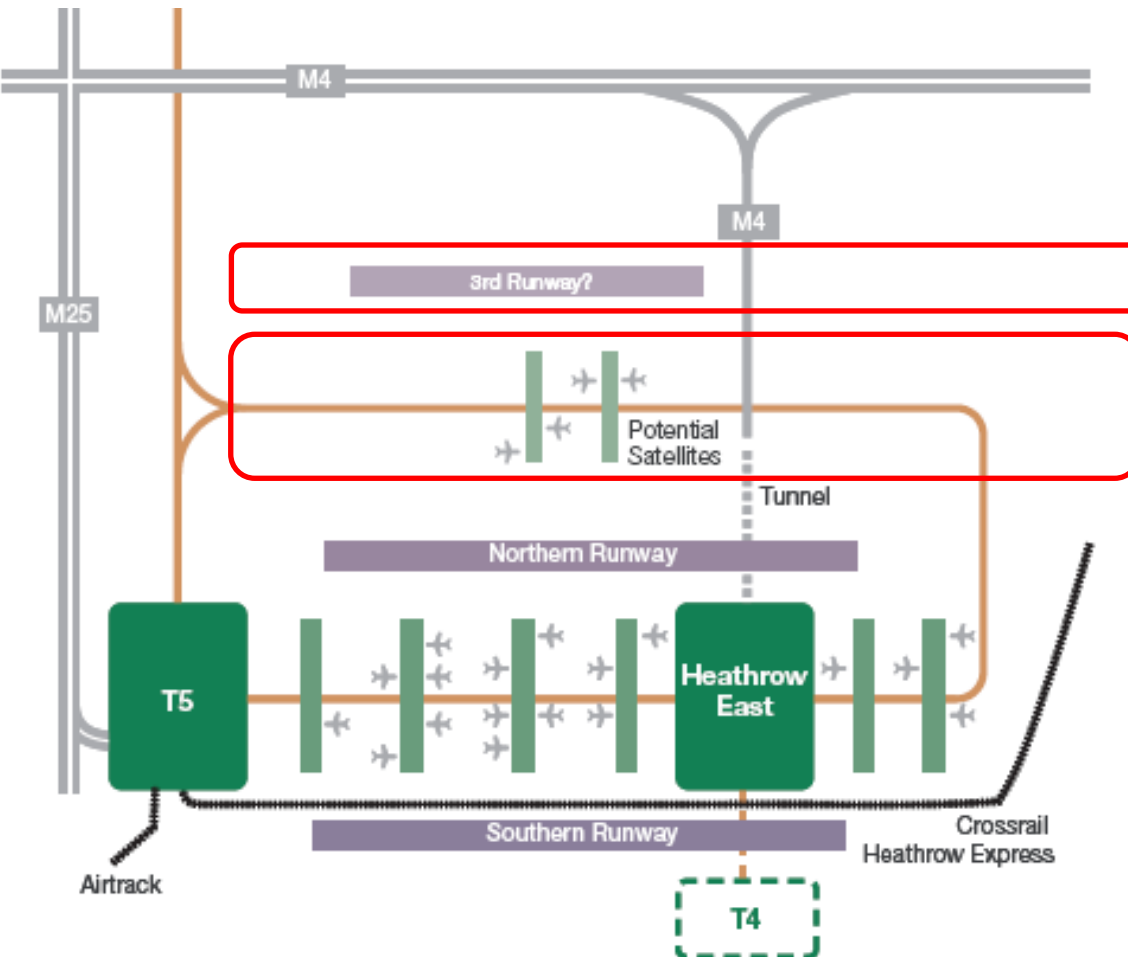
- ③ Terminal 1 and Terminal 4 refurbishment: After T5 BAA will upgrade T4 with a terminal extension, forecourt redevelopment, increase in check-in capacity, new lounges and the immigration hall departure and arrival concourses will be renovated
- ④ Terminal 5C: Terminal 5 second satellite building will open in 2010 and will be linked with other T5 buildings by an underground transit system
- ⑤ Heathrow East: Replacement of Terminals 1 and 2 with a new terminal which will be the base of Star Alliance. The terminal should be ready for the Olympic Games

London Heathrow potential long-term development projects (i)



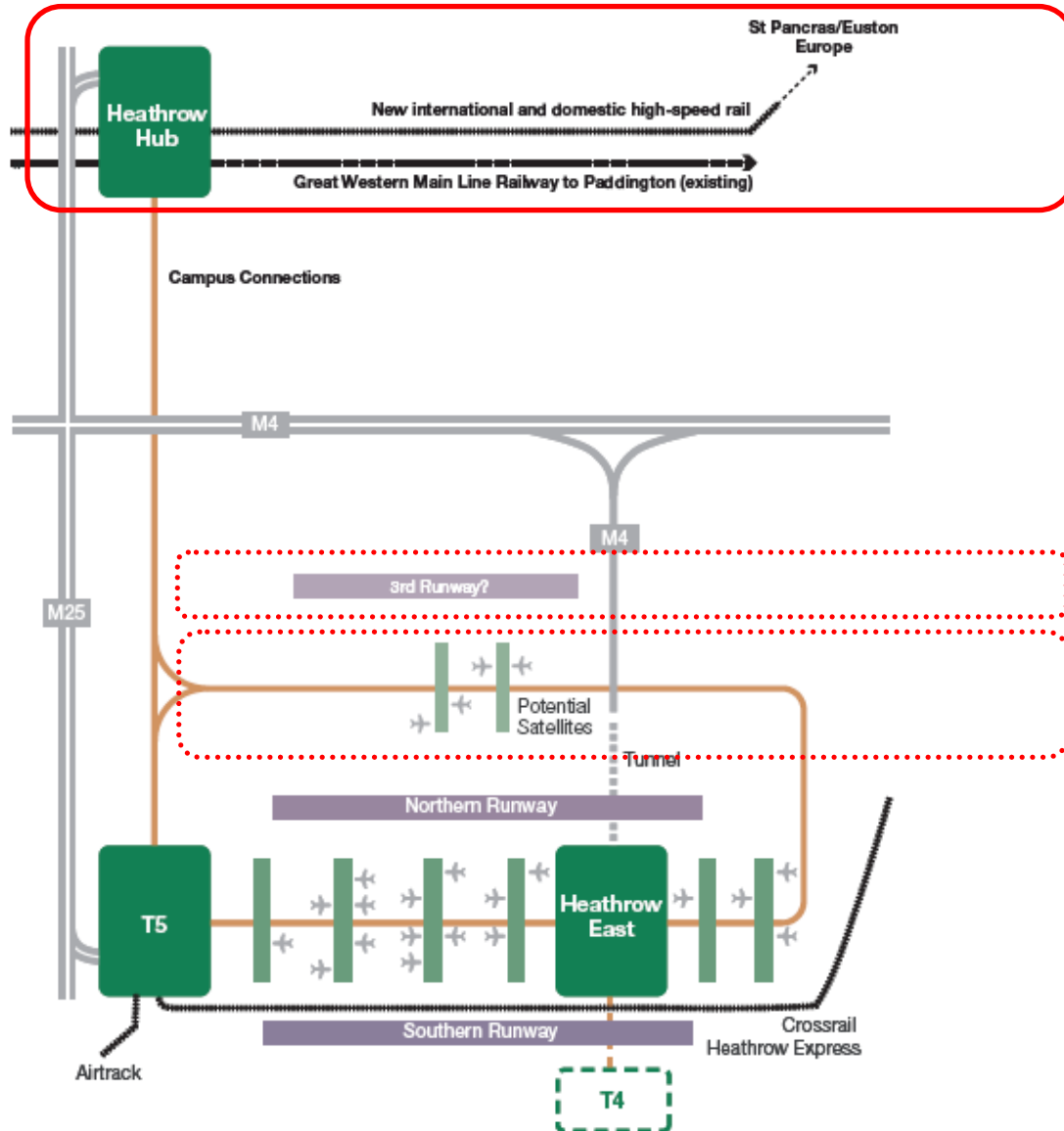
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- Third runway: put forward by BAA together with other measures should increase the number of movements at Heathrow by 50% allowing for additional capacity
- Terminal 6: to be located between the Northern and the future Third runway T6 would allow for matching airside capacity created by the 3rd runway with terminal capacity

London Heathrow potential long-term development projects (ii)



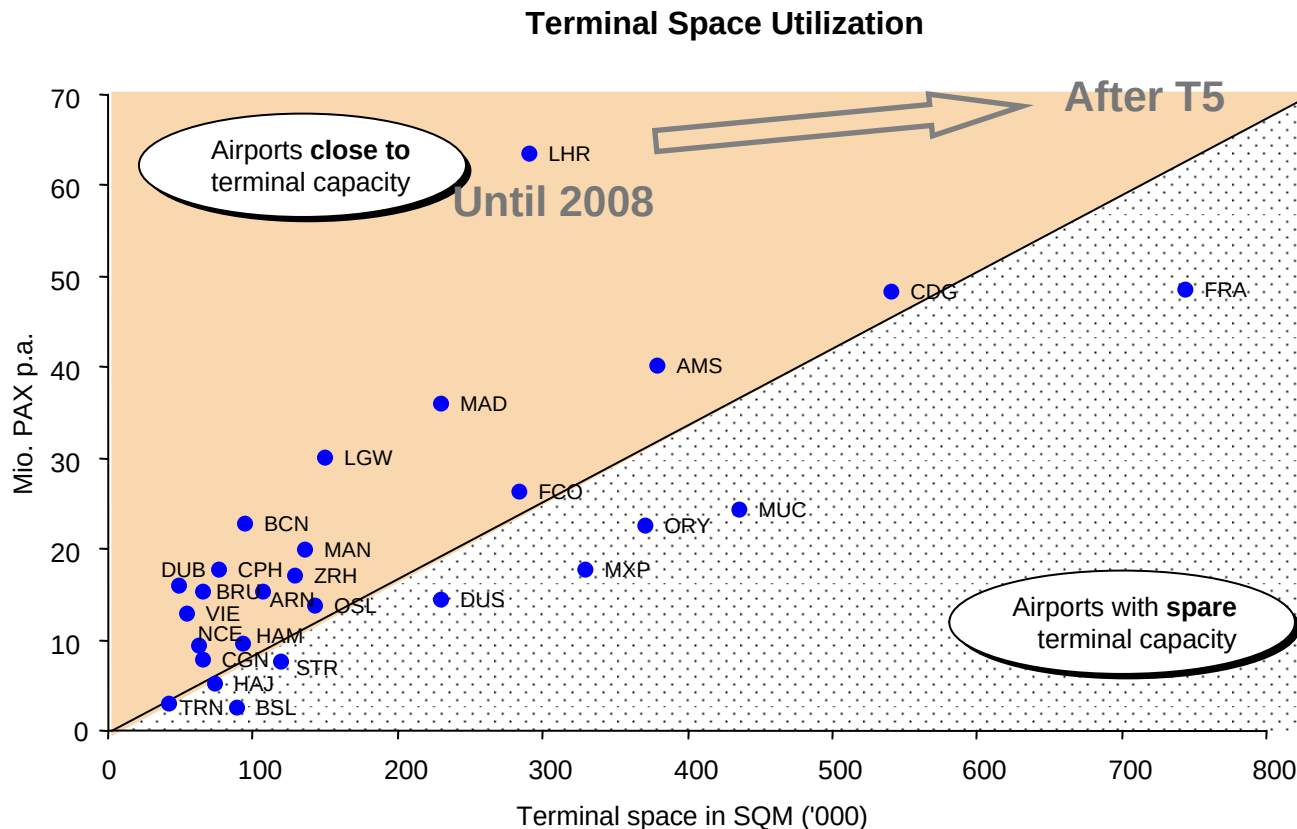
- Heathrow hub: Heathrow to become the first stop on an extended High Speed Rail Network that currently terminates at King's Cross St Pancras. This would provide the airport with a direct rail link to continental Europe.

Up to 104 domestic flights arrive and depart Heathrow, and a further 140 flights go to and from European cities that would be within a two and a half hour high-speed train journey from the airport. Extending the high-speed network to Heathrow would offer passengers the choice between different modes of transport .



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Heathrow's Terminal 5 impact



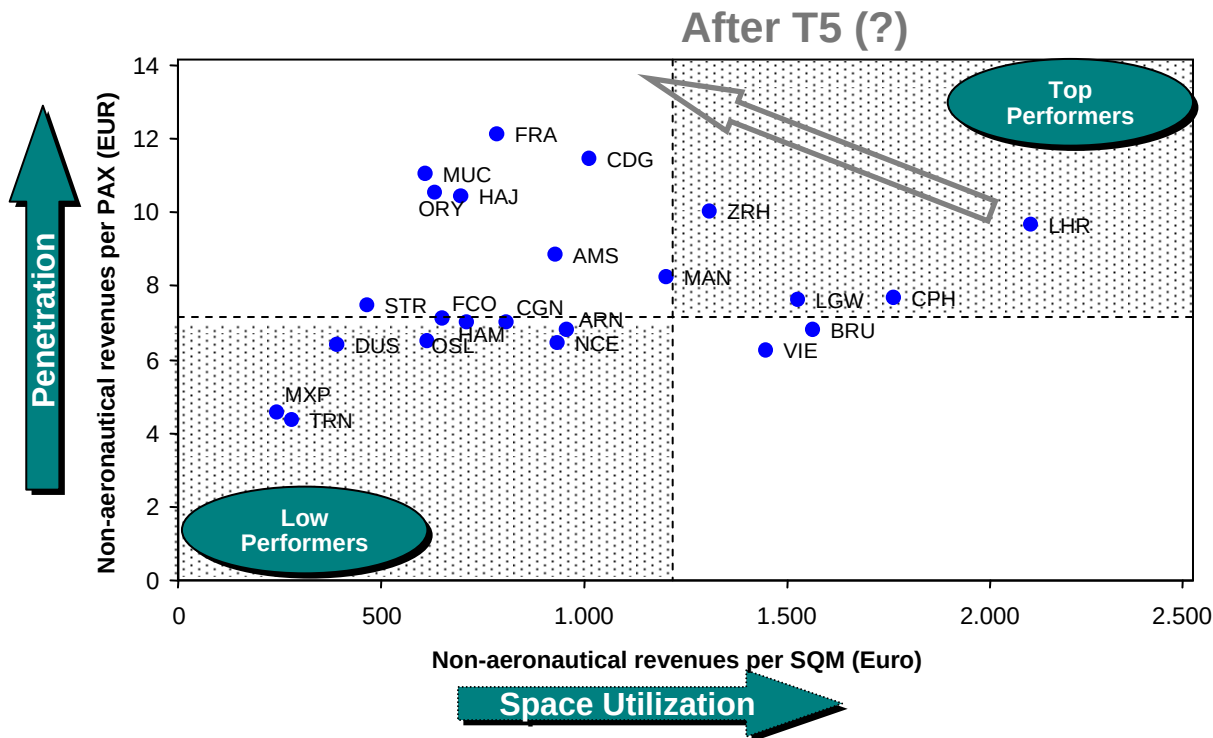
- Besides runway constraints, Heathrow also faces terminal congestion
- Terminal congestion has impacts on service levels and of passenger airport experience
- Lower service levels might become a critical issue for transfer passengers who have the choice between several European hubs
- T5 will put Heathrow at par with its European rivals and minimize transfer times as most transfer pax fly British Airways

Source: IATA(2004), ACI(2003)

Success in the non-aeronautical business depends on high penetration levels and optimal space utilization



Non-Aeronautical Revenues per PAX vs Non-Aeronautical Revenues per SQM



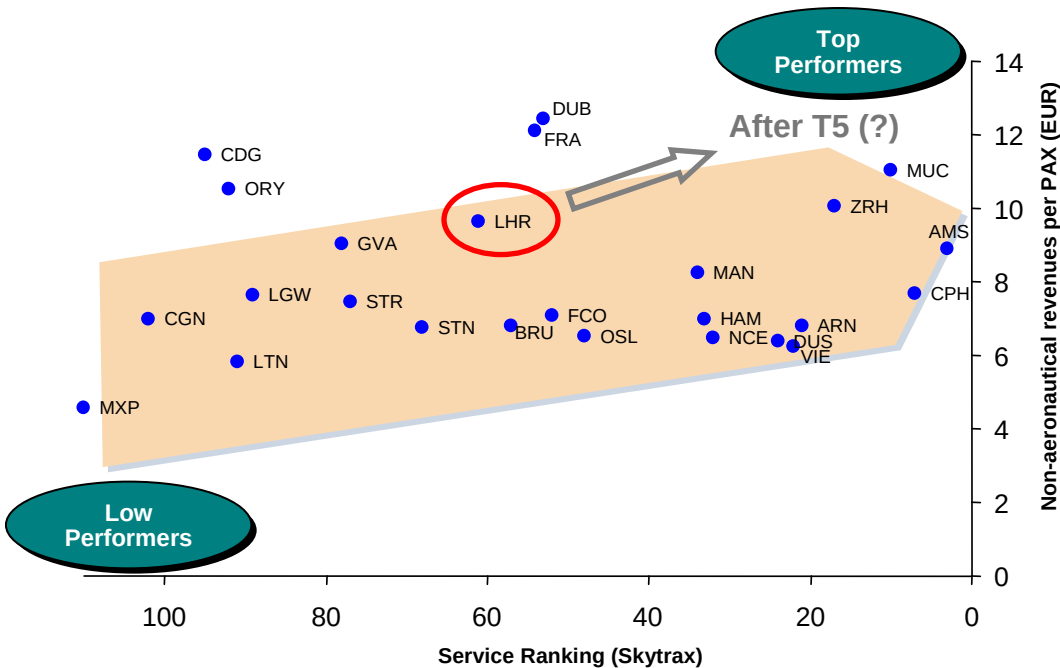
Source: Annual reports (2003), ACI (2003) , IATA (2004)

- Heathrow's space utilization is largely due to terminal congestion rather than its commercial proposition
- In theory Heathrow should be able to outperform its peers as it has a larger share of high-spending intercontinental passengers
- Increased levels of service (i.e. less time required for c/I, passport control, security) should allow for increased quality time for commercial activities (shopping)

London Heathrow loses non-aeronautical revenue by offering poor passenger service



Service Ranking vs. Non-aeronautical revenues per PAX



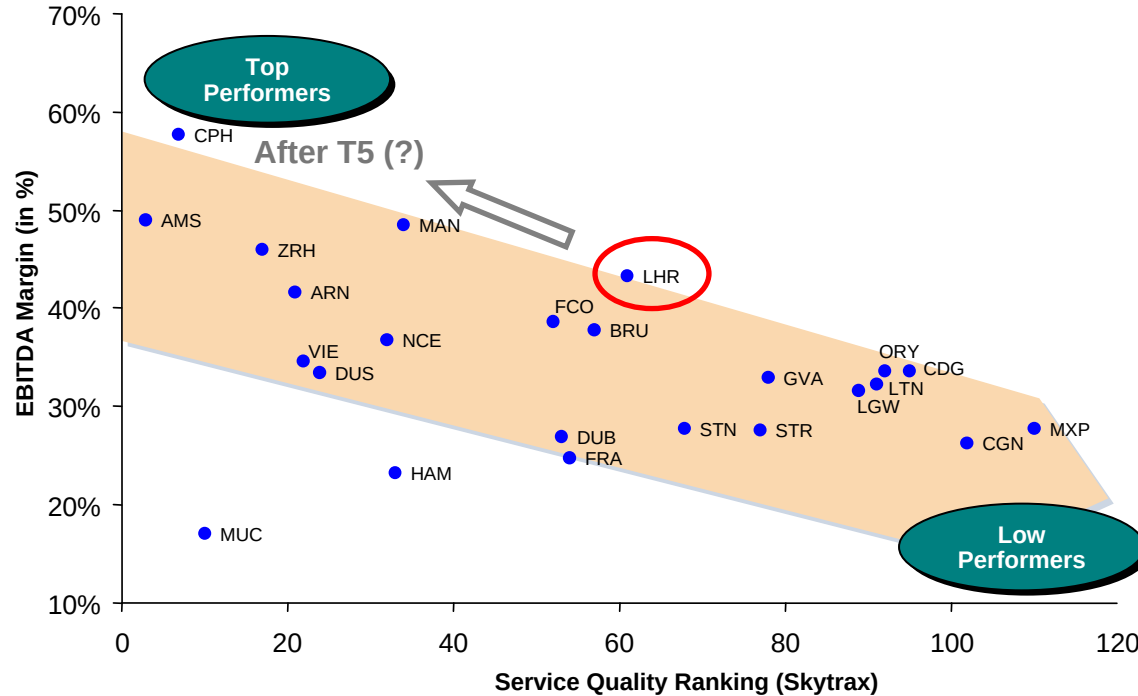
Source: Skytrax (2004), Annual reports(2003), ACI(2003)

- Skytrax defines Service Quality as:
 - Finding your way around
 - Parking
 - Transportation
 - Access and directions
 - Distance between gates
 - Terminal facilities
 - Retailers, restaurants and fast food
 - Airline lounges
 - Business facilities
 - Hotels
 - General passenger comfort
 - Public seating areas
 - Cleanliness and smoking policies
 - Flight information
 - Immigration, security

Looking at a recent service quality ranking, most of the top ranked airports outperform their European peers in terms of profitability



Service Quality Ranking vs EBITDA Margin



Source: Skytrax (2004), Annual reports(2003), ACI(2003)

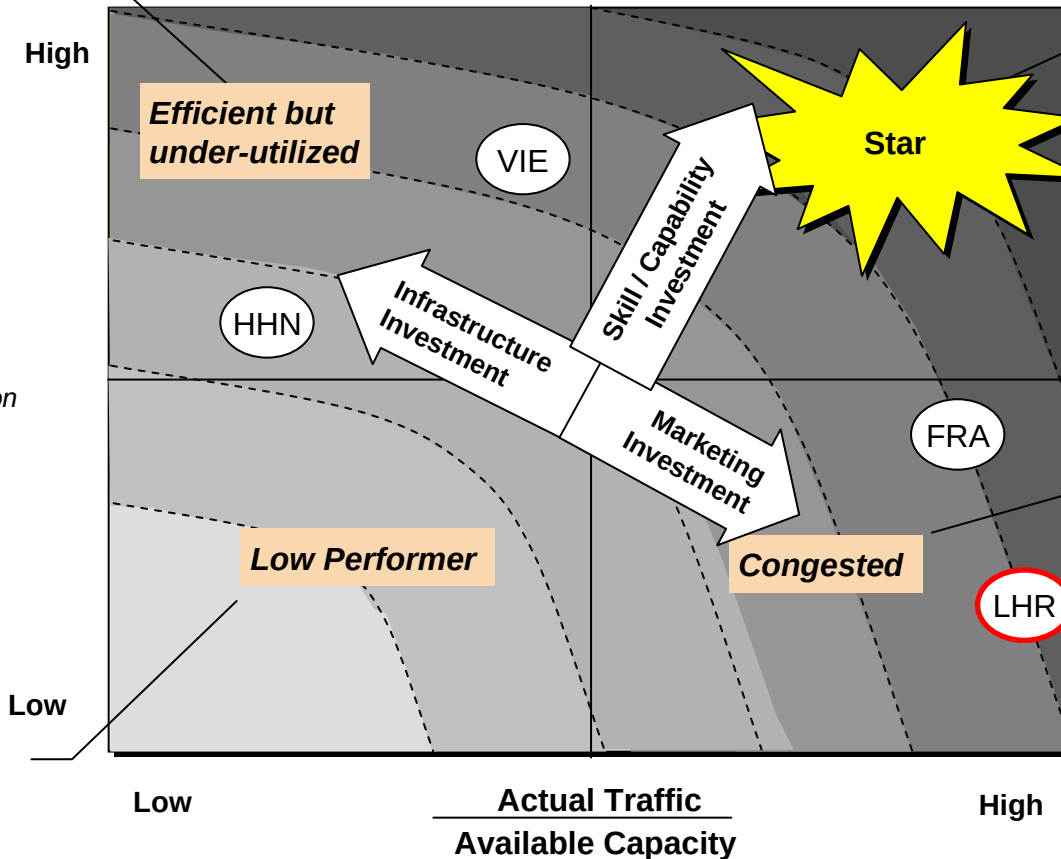
- There is a correlation between service quality offered to passengers and EBITDA margin
- London is up to a point able to outperform its peer based on the large share of intercontinental traffic
- It is believed that new terminals, specially T5 will be able to significantly increase spending per pax (non-aeronautical revenues)

As a result, besides capacity utilization, Heathrow should also focus on the improvement of customer service levels...



- ▶ Low Return on Assets (RoA)
- ▶ Good long-term perspectives

Airport Performance Positioning Matrix



- ▶ Generally profitable
- ▶ Generally at world-class level...
- ▶ But this is difficult to reach

- ▶ High traffic limits ability to deliver high service levels
- ▶ Infrastructure investment required for long-term growth

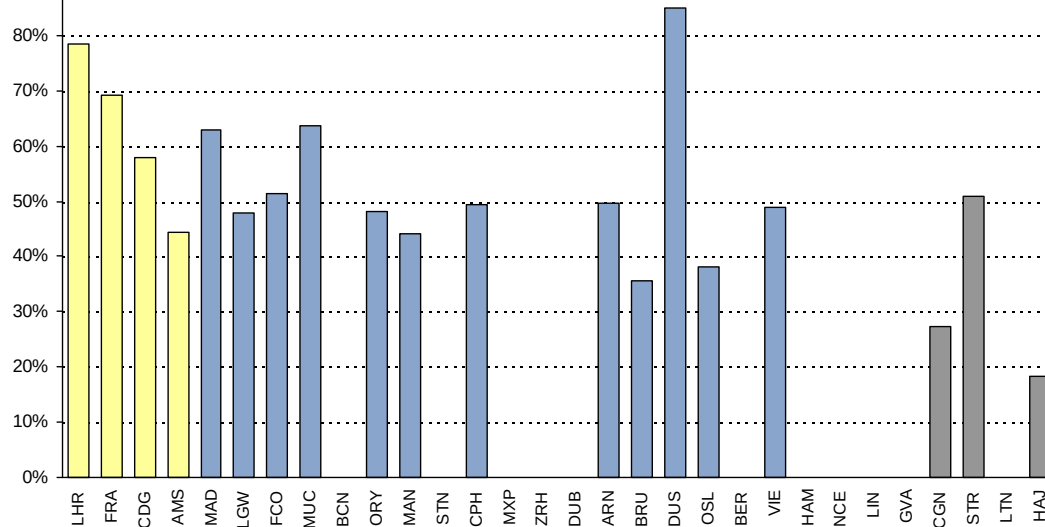
- ▶ Growth opportunities constrained by skills/capabilities

- ▶ Actual traffic (movements, passengers,...)
- ▶ Available Capacity (runway, apron, terminal,...)

Benchmark of Heathrow Runway Capacity Utilization

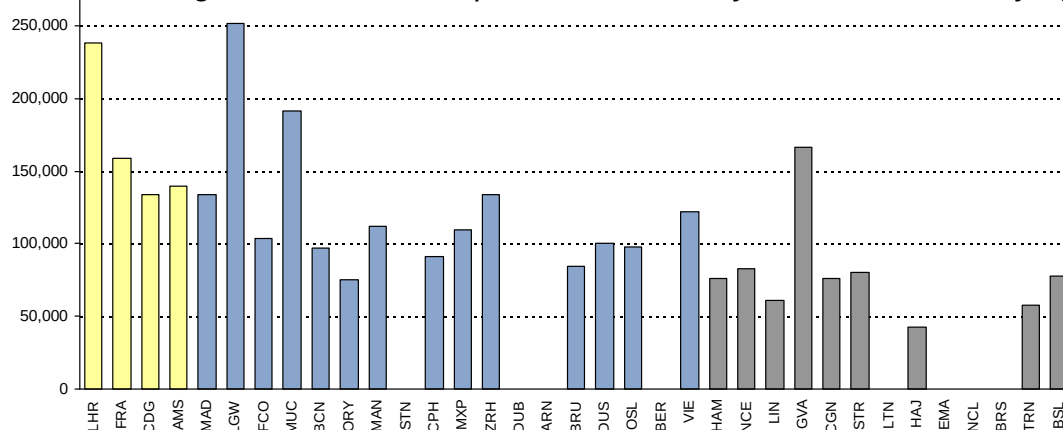


Actual Runway Capacity Usage vs. Declared (Opening Hours) Capacity (2002)

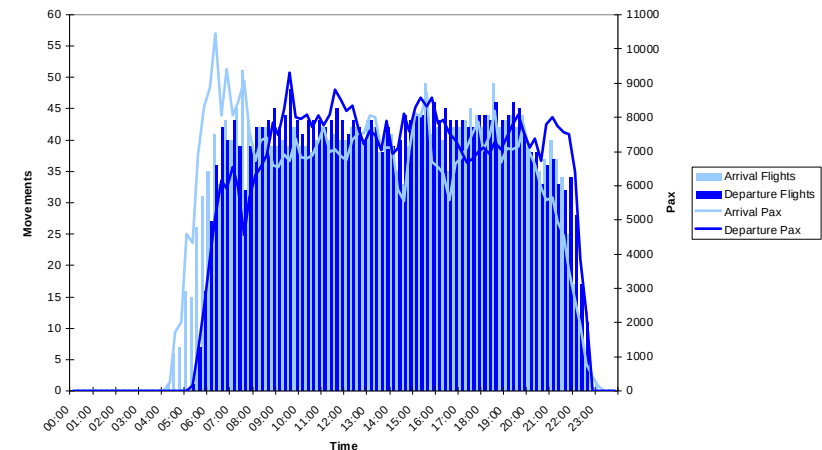


- In terms of runway operations London Heathrow is one Europe's most efficient airports
- Under current operating conditions there is little scope for improvement i.e. traffic growth is severely limited
- Current capacity restrictions (not allowing for simultaneous arrivals and departures from one runway) still artificially limit LHR's throughput
- Runway restrictions at Heathrow are partially compensated by large average aircraft size

Average A/C Movements per Year divided by Number of Runways (2004)



Heathrow Airport Planning Day Profiles
Summer 2007 - All Airport

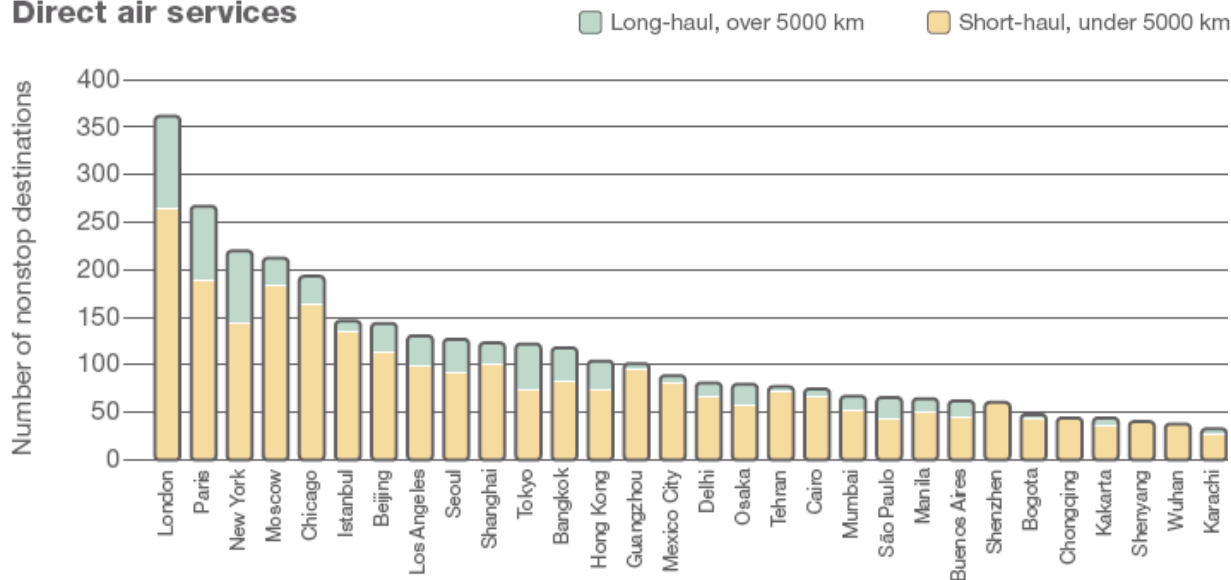


Heathrow future opportunities



Potential for New Destinations

Direct air services



Source: Boeing – Current Market Outlook 2007

Note: cities with population over 6 million

- Nonetheless Heathrow has a tremendous potential. The underlying fundamentals are excellent:
 - Significant local catchment area: London (Europe's richest region) plus all SE England i.e. more than 20 million habitants with high propensity to fly
 - Improved accessibilities with high speed rail will put the whole of England + Benelux + Northern France within Heathrow's catchment area
 - UK's economy is expected to grow above the Eurozone with corresponding effect in air travel
- From an industry perspective:
 - The airport operator BAA is in good financial shape and its based carriers: BA, BMI and Virgin are profitable and have ambitious expansion plans
 - By 2012 Heathrow will handle 80% of its passenger in new terminals and by 2015 it will have considerable runway capacity (in case the 3rd runway is built)
 - BAA plans to invest 6.2 billion pounds (8.0 billion EUR) over the next 10 years in Heathrow



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Rationale for airport privatization – demand side



- Civil aviation worldwide is growing faster than GDP
- Airports have proven to be crisis resistant and/or having rapid recovery after world-wide crisis
- Boeing Current Market Outlook 2007 “Economic and traffic growth, 2006-2026”: Worldwide rise in GDP will average 3.1 percent per year, annual increase in passenger numbers 4.5 percent
- Airports offer:
 - relative stability and quick recovery from any shocks
 - high returns and low volatility
 - strong asset backing
 - the ability (for institutional investors) to match long-term assets with long term liabilities
 - scope for commercial opportunities
 - limited competition among airports and high barriers to entry



Source: IATA, IMF

Rationale for airport privatization – supply side

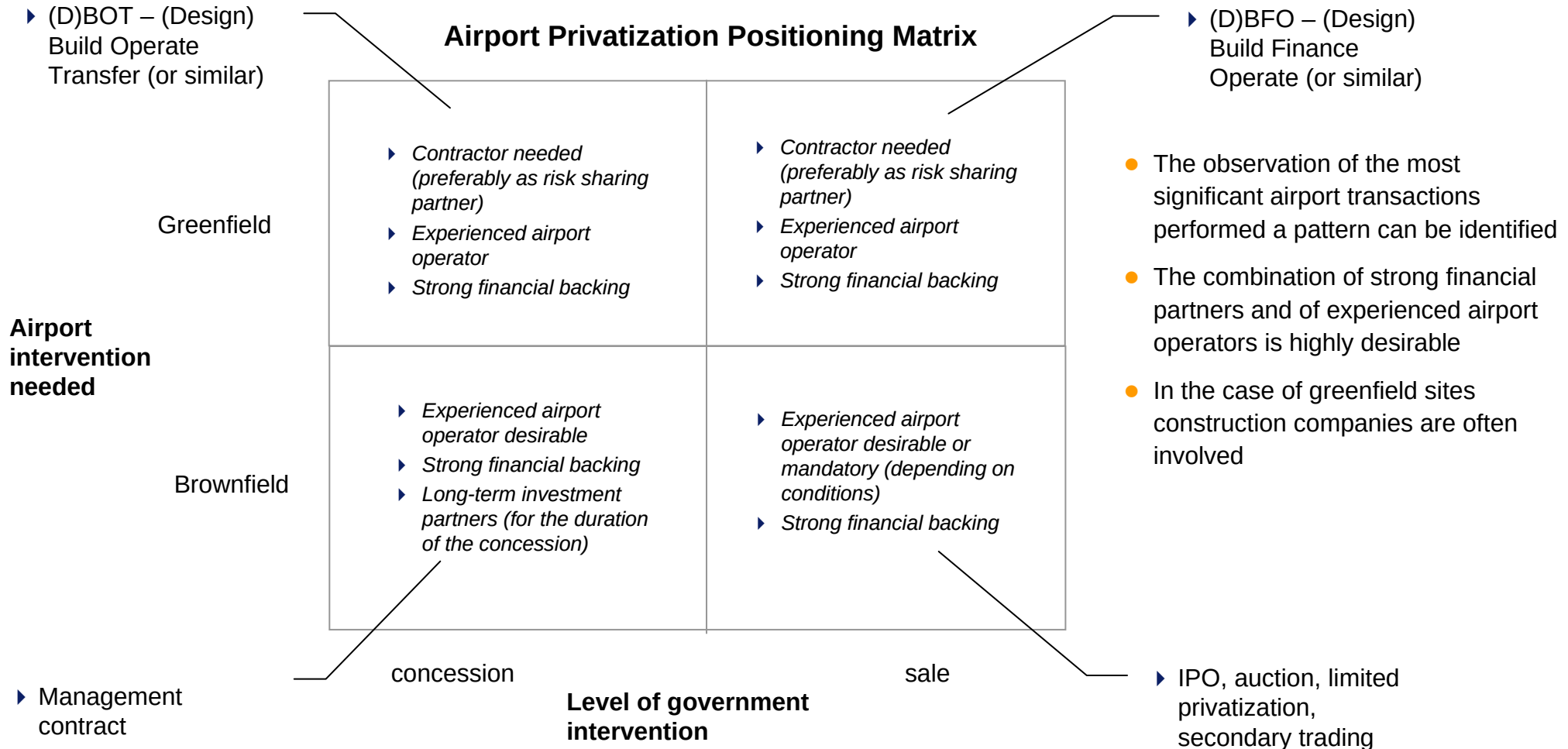


AIRPORT/TERMINAL	PLANNED INVESTMENT	OPENING DATE/MAJOR PROJECTS
EUROPE		
London-Heathrow	US\$ 10.6 billion	Terminal 5 – first stage now expected to open in March 2008; (incl. \$8.0 million for T5) improvements at the other four terminals (incl. Heathrow East at the site of T2) and the runway/taxiway system
Frankfurt	US\$ 5.4 billion	CargoCity South expansion, T3 expansion, fourth runway (2009), third terminal (2015)
Paris (third airport)	US\$ 4.0 billion	new airport after 2015, if ever built
Amsterdam-Schiphol	US\$ 3.6 billion	current terminal & runway projects until 2007; 5th runway completed
Lisbon	US\$ 3.5 billion	completely new airport at Ota by 2017
Paris (CDG + Orly)	US\$ 3.0 billion	terminal & runway work until 2006
Rome-Fiumicino	US\$ 2.9 billion	staged terminal expansion
Berlin-Schönefeld	US\$ 2.64 billion	first-phase expansion into BBI until 2010
Madrid-Barajas	US\$ 2.4 billion	new cargo terminals, general upgrading work
Lublin/Poland	US\$ 2.3 billion	completely new airport planned in eastern Poland
Moscow-Sheremetyevo	US\$ 2 billion	new Terminal 3, general upgrade
Barcelona	US\$ 1.9 billion	third runway (completed), new pax & cargo terminals
London-Gatwick	US\$ 1.6 billion	new midfield terminal and refurbishment of facilities
Dublin	US\$ 1.4 billion	ten-year expansion plan, incl. a new terminal
Don Quijote Airport/Spain	US\$ 1.36 billion	completely new airport near Ciudad Real
Manchester/U.K.	US\$ 1.35 billion	planned capital investments until 2010
Moscow-Vnukovo	US\$ 1.3 billion	complete overhaul of all facilities
London-Stansted	US\$ 1.26 billion	improving ground access; second runway; third satellite terminal
Copenhagen	US\$ 1.2 billion	new pax & cargo terminals, road & rail access
Düsseldorf	US\$ 1.1 billion	new terminals, rail station, runway extension
Vienna	US\$ 1.1 billion	new Terminal 3, apron, tower, office park by 2008
Stuttgart	US\$ 800 million	third terminal (completed); second runway, main-line rail station
Stockholm-Arlanda	US\$ 720 million	third runway & capacity increase (completed)
New Crete airport	US\$ 715 million	planned airport west of Chania, near Kastelli
Thessaloniki 'Makedonia Apt'	US\$ 715 million	Runway extension, new passenger terminal
Lyon-Satolas	US\$ 700 million	doubling of capacity
Zagreb	US\$ 600 million	Master Plan projects
Prague	US\$ 585 million	major terminal expansion, new runway
Funchal/Madeira	US\$ 550 million	runway, apron extension & terminal upgrade (completed)
Lisbon	US\$ 530 million	improvements at the existing Portela Airport
Nantes	US\$ 526 million	new airport at Notre Dames des Landes by 2010
Hamburg	US\$ 500 million	new terminal & satellites, new apron

- High capital expenditures needed to cope with increasing demand, especially in developing countries
- In Europe alone there are 30 new and recent projects requiring an investment over 500m USD each in a total of over 60bn USD (source: ACI)
- Eurozone countries have tight budgetary constraints
- Private investors allow for:
 - Access to domestic and international capital markets
 - Reduce the financing requirement for public entities
 - Transfer risk/ responsibility in an operation
 - Introduce efficiencies and thereby improve financial performance



Different forms of airport privatization





Type of investors

- Around 60 airport investors are currently active in the market. They come from different backgrounds, typically: **airport operators, construction companies, banks and fund management companies**
 - Airport operators actively involved in the airport market are: AdP, AdR, Fraport, Schiphol, BAA, Vienna Airport, Changi, etc
 - Construction companies who also have invested in airports include: Hochtief, Ferrovial, Abertis, TAV
 - Banks with large investments in airports are: Citi, Macquarie, RBS, Santander, CSFB
 - A large number of funds both private equity and sovereign wealth funds with different investment strategies (see figure)

	Private equity funds	Sovereign wealth funds
Investment strategy	Limited investment horizon of three up to seven years, then exit by sale or IPO	Long-term investment horizon with focus on sustainable growth and asset appreciation
Objective	Maximization of return on investment (RoI)	Statutory obligation to create prosperity and welfare for coming generations
Investor activity	Insistence on control	Passive co-Investors

Airport privatization summary



1987	BAA	Key:				
1989	Samui	IPO (full or partial)				
1990	Liverpool	Concessions, trade sales or management contract				
1992	GLA Prestwick	Vienna				
1993	East Midlands					
1994	Copenhagen	Belfast City	London Southend			
1995	London City	Bournemouth	Cardiff			
1996	Belfast Int	Athens	Sukothai			
1997	Dusseldorf	Perth	Birmingham	Santiago	Kamloops (CA)	
	Bolivian Apts	Brisbane	Kent (UK)	Cranbrook (CA)	Moncton (CA)	
	Bristol	Melbourne	Rome	Dom Rep (6)	Hamilton (CA)	
	Sanford	Naples	Lahr	Fort St John (CA)		
1998	Argentina	Mexico ASUR	Adelaide	Shanghai	Archerfield	Townsville
	Hannover	Hobart	London Luton	Coolangatta	Hanover	
	Wellington	NT Airports (AUS)	ACSA South Africa	Turks Caicos Is	Stockholm	
	Haikou	Canberra	Auckland	Launceston	Skavsta	
1999	New York Stewart	Malaysia Airports	Humberside	Antalya T1		
	Costa Rica	Mexico Pacifico	Cochin	Hahn		
2000	Hamburg	Zurich	Beijing	Florence	Marsa Alam	
	Plymouth	Rome	Centro Norte (Mex)	Kilimanjaro		
2001	Turin	Jamaica	Newcastle	Hyderabad	Fraport	Sabiha Gökçen
	Florence	Oman*	Bangalore	Malta	Pietersburg	
2002	Sydney	Lima	Kruger RSA			
2003	Trat					
2004	Hainan	Coventry	London Ashford	Biella	Angers	
	Airports of Thailand	Durham Valley	Blackpool	Grenoble	Tirana	
	Brussels	Norwich	Doncaster	Chambery		
2005	Mexico ASUR	Cyprus (2 apts)	Maastricht	Uppsala		
	Budapest	Venice	Luebeck	Cairo + 5 airports		
2006	Delhi	Mexico GAP	Rygge (Norway)	Bogota	Nassau	
	Mumbai	Exeter	Chittagong	Varna	Toluca	
	Peru Regional	Paris	Kosice	Burgas	Quito	

Source: CAPA

Note: No secondary transactions, cargo-only or general aviation airports included

- The market for airport acquisition has existed for about 10 years with a constant number of deals coming to the market
- Concessions, trade sales or management contracts have been the vehicle of choice rather than IPO's
- The increasing number of privatized airports has created a market for secondary offering e.g. BAA, Budapest, London City, etc
- Different countries have different types of airport ownership at country, regional or local level, which influence the type of privatization

Future deal flow



- According to ACI there will be a 4% average annual growth in traffic until 2025
- To match this growth investments of 200 bn USD will be needed in airport infrastructure (source: BCG)
- Likely airport privatization processes in the short-term (until 2010) are as follows:





Opportunities

- For the State
 - Accelerates infrastructure development
 - Promotes economic growth and employment
 - No financial burden to state and taxpayers
- For airports
 - Modern and adequate infrastructure
 - Sufficient funding for growth
 - Professional management and higher efficiency
 - Focus on commercial development
- For airlines
 - Adequate infrastructure and service quality
 - State of the art technology
- For passengers
 - Customer service & convenience
 - Improved commercial offering
 - Value for money

Concerns

- Airports represent an essential service and piece of infrastructure which must remain in state hands
- Private party wants to have management control and implement sometimes radical change management processes
- Possible private abuse of an alleged monopoly
- Airports are indispensable elements of structural policy
- Airports need to be developed in line with public interests (e. g. traffic vs. environment)
- Negative experiences with full privatizations
- Negative image of private investors
- National security
- Ownership of a network of airport (at regional or state level) might lead to a monopolistic position and abuse of dominant position vide BAA

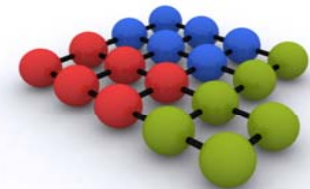


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