Preparing for one of the industry’s biggest shake-ups
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Dr. Daniel Stelter is vice president and director at The Boston Consulting Group in Berlin and Global Practice Area Leader for Corporate Finance and Strategy.

Dr. Achim Fechtel is vice president and director at The Boston Consulting Group in Munich and a BCG airport and aviation expert.

Premal Desai is manager at The Boston Consulting Group in Frankfurt.

Our co-authors include:

Mike Deimler is vice president and director in Atlanta and Global Head of BCG’s Travel and Tourism Practice Area.

Martin Koehler is senior vice president and director in Munich, a member of the Travel and Tourism Leadership Team and a BCG airline expert.

Greg Sutherland is vice president and director in Atlanta, a member of the Travel and Tourism Leadership Team, and a BCG airline expert.

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Contacts

For further information on this study, please contact your regional expert:

Europe: Dr. Daniel Stelter: stelter.daniel@bcg.com
US: Mike Deimler: deimler.mike@bcg.com
Asia: Ross Love: love.ross@bcg.com
As passenger numbers pick up in the wake of recent international crises, including 9/11 and SARS, many airports are anticipating a return to the stable, long-term growth that characterized the last two decades. However, the reality is likely to be different, according to BCG research.

Although passenger volumes will rise, albeit more slowly than originally forecast, growth will be concentrated in a much smaller number of airports in the future, leaving many operators with far less traffic than their already overly ambitious investment plans assume. True, low-cost carrier (LCC) traffic has led to booming passenger numbers for some airports, but profitability of LCC airports remains a major issue. To add to these challenges, operators will come under mounting pressure to act more like businesses—not just infrastructure suppliers, with much lower costs and higher revenues.

In short, the rules of the game are about to change.

This report describes the forces driving these changes and their strategic implications for not only airports but airlines, investors, and governments as well. Based on in-depth research and interviews with executives throughout the aviation industry, it also outlines the strategies and business models that airports will need to survive and thrive. Most airports can succeed, provided they start preparing now. We hope this report facilitates this process and, at the very least, provides a much needed wake-up call.
This report distinguishes between four different types of airports: primary international hubs, secondary hubs, international “origin and destination” (O&D) airports, and regional airports. The table below describes the key characteristics of each of these. (Exhibit 1)

**EXHIBIT 1**

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
<th>Key characteristics</th>
<th>Airline</th>
<th>No. of airports</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International hubs</strong></td>
<td>Atlanta</td>
<td>High share of transfer traffic</td>
<td>Main hub of major international airline</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large catchment area</td>
<td>Leadership role in alliance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAX = 79M</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>International O&amp;Ds</strong></td>
<td>Sydney</td>
<td>Lower share of transfer traffic</td>
<td>Main hub of international long-distance airline or secondary hub of major airline</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large catchment area</td>
<td>Subordinate or niche player in alliance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAX = 22M</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Secondary hubs and O&amp;Ds</strong></td>
<td>Vienna</td>
<td>Low share of transfer traffic</td>
<td>Main hub of regional airline or secondary hub of major airline</td>
<td>~ 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sizeable catchment area but often overlapping</td>
<td>Subordinate role in alliance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAX = 12M</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regionals</strong></td>
<td>Albany International Airport</td>
<td>No transfer traffic</td>
<td>Regional airlines LCC</td>
<td>~ 2,400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Smaller or remote catchment areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAX = 1.5M</td>
<td></td>
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</tr>
</tbody>
</table>

Source: BCG analysis

**FOUR TYPES OF AIRPORTS CAN BE DISTINGUISHED**
The drive for lower costs among the world's top airlines, coupled with the rise of low-cost carriers, will substantially alter the distribution of passenger growth between airports.

The unprecedented string of international crises over the last three years—from 9/11 and SARS to the Iraq war—has left many of the world’s financially fragile airlines with unsustainable losses. To cut costs, the members of the top three alliances will redirect the bulk of their long-haul transfer traffic into a handful of mega-hubs, sidelining many of today’s secondary hubs. This trend will be accelerated by “open-skies” deregulation, mergers, and the introduction of mega-planes, such as the A380, which only the largest hubs with significant feeder capacity will be equipped to handle. In fact the share of total traffic at the top 50 airports claimed by nine potential mega-hubs has already risen from 30% to 34% in the last two years.

The expansion of low-cost carriers represents a second trend. Attractive O&D locations as well as some regional airports stand to benefit from an increase in convenient and financially attractive point-to-point travel in the short- to medium range. This decentralization of traffic patterns might be repeated in the long-haul segment, once new and cost-efficient equipment like Boeing’s 7E7 becomes available.

Among the large airports, only the mega-hubs and attractive O&D locations that feature prominently in the alliances’ schedules will enjoy significant long-term growth. Just 40 or so of today's 180-plus hubs are likely to be in this position. Mega-hubs will profit from the consolidation of long-haul traffic. While they are largely bypassed by LCC traffic, they will not be negatively affected by the general rise in point-to-point travel with planes like the 7E7, since frequencies will increase as mega-hubs are too essential to be bypassed by long-haul traffic.

Selected O&D locations as well as regional airports well positioned to attract LCC traffic will gain from the rise in point-to-point traffic. The others, notably secondary hubs with weaker airlines, will experience much less growth than their overly ambitious investment plans assume. Long-haul traffic is consolidated away from them into mega-hubs, and point-to-point travel threatens to bypass many secondary hubs. This will force them to explore new avenues to cover the cost of their capital and to grow profitably.
With growing affluence in previously remote regions of the world and the further rise of LCCs, a significant number of regional airports and smaller international O&Ds will also experience substantial passenger growth. Still, overly ambitious plans speculating on this growth are in many cases risky, since the winners in this group of airports are much harder to predict.

**Faced with lower than anticipated growth, airports will have to act more like businesses to thrive, not simply as infrastructure suppliers. Privatizations will intensify this need.**

As state-owned and protected monopolies, airports have historically been treated as means to regenerate regional economies, not as businesses. This has not only led to massive investments that often bear little relation to airports’ growth potential. It has also created an oversupply of hubs—often with excess capacity, and bred unnecessarily high operating costs, which could in general be reduced by 20% to 30%. These costs will have to come down—in order to not just keep tomorrow’s airports profitable but to satisfy carriers’ demands for lower, more flexible charges.

Governments’ growing reluctance to subsidize and protect airports, reflected in a rising number of privatizations and more widespread deregulation of the value chain will add to this pressure. Under the glare of the world’s capital markets, privatized airports will be expected to deliver more aggressive improvements in revenues. Non-aviation revenues such as retail will be critical, particularly for destinations dependent on LCCs: in BCG’s experience, no LCC airport is likely to achieve profitability without extraordinary focus on non-aviation revenues.

**Different types of airports, such as mega-hubs and regional airports, will require different investment and carrier strategies.**

Only airports home to a leading and financially secure main carrier in one of the alliances will be eligible to become a mega-hub. They will also need to be in a central location with a large, affluent catchment area. Most of these airports still need to make sizeable block investments to accommodate future growth. Their carrier focus will have to shift to the dominant member of their alliance. Providing outstanding service and innovative products will be vital.

All other airports should freeze block investment programs and only add capacity on an incremental “needs-musts” basis. Destinations that are likely to remain secondary hubs should concentrate on alliance carriers, while international O&D airports must court intercontinental airlines and sweat existing assets. Targeting LCCs in order to fill existing overcapacities can be a worthwhile consideration. Regional airports should target LCCs, underpinned by tight cost management.

In all cases, operators will have to work much more closely with the carriers to optimize joint interfaces and to leverage cost and revenue synergies. Such opportunities have been underexploited due to the historically adversarial relationship between the two players.
Selecting the right position in the value chain will be decisive.

Few operators have the breadth of expertise and resources to optimize every link in a value chain as diverse as an airport’s. Retail, ground handling, and other links in the chain all require different skills and business models. Tomorrow’s winners will position themselves in the section of the chain where they can extract the maximum value based on their capabilities and the competitive outlook of their chosen segment.

Some will specialize in particular links in the chain and leverage their expertise, especially in standardized, labor-intensive activities such as facilities management and ground handling. Others will handle broader categories of services. A minority, meanwhile, will act as “orchestrators,” coordinating almost entirely outsourced elements of the value chain in order to ensure the suppliers deliver a consistently high, cost-effective level of service. Each option will require a different business model, including different skills, and different levers to lift revenues and reduce costs.

Planning for this new world must start now—the process will yield immediate returns.

This new aviation landscape is likely to take shape within the next ten years. Already there is evidence of airlines consolidating traffic into larger hubs and movement to introduce more competition into the airport sector. To succeed in tomorrow’s environment, it’s essential that airport operators identify their likely position in the new landscape, develop appropriate investment and carrier strategies, and position themselves at the optimum point in the value chain.

The imminent trends will lead to a stronger segmentation among airports. They should proactively start to enter this competition, not only by adding abundant capacity and thus adding cost, but by defining their role in the future aviation arena and by differentiating accordingly.

Above all, they have to operate more like profit-driven businesses, reducing costs and pinpointing opportunities to lift revenues per passenger. This can be done now and will generate rapid rewards.
NEW PATTERNS OF PASSENGER GROWTH

For decades, the world’s top airports have enjoyed relatively stable growth under the protective wing of governments, encouraging many to invest heavily in additional capacity on the assumption that tomorrow will simply be a continuation of the past. But their ultimate paymasters—the airlines—live in a very different world. Their demands, not the least of which will be for lower costs, will radically alter how future passenger growth is distributed amongst airports, thereby creating clear winners and losers.

A life cycle of air-traffic patterns

The pattern of air traffic has been following a particular life cycle. Point-to-point connections between the world’s largest cities dominated networks in the early post-war period. Only a few routes had sufficient demand to serve air traffic. With growth in demand came development of a large number of small and mid-sized regional hubs and international O&Ds, a second stage of the life cycle. Most recently, increasing cost pressures as well as airline and alliance consolidation is leading to a concentration of long-haul traffic into a few mega-hubs, with an accompanying rise in continental point-to-point traffic. This puts massive pressure on the “middle tier,” a significant number of secondary hubs. While this development is already evident in the US and Europe, Asian air traffic is still in an earlier phase of the life cycle.

Exhibit 2 describes the current trend. Until recently, there was a clear distribution of roles in the aviation landscape, with steady growth for all players. The emergence of LCCs as well as technological advances in the construction of new planes have substantially redistributed the shares in the matrix. Growth will be far less homogenously spread in this time of change. LCCs have increased the area of point-to-point travel, which is being further expanded by a new generation of planes such as the 7E7. The pressure exacted on “established” airlines, signified by the shrinking size of the flag carriers’ pie, leads to an increasing consolidation of transfer traffic into few mega-hubs. Let us look at these developments in more detail.

The problem: an oversupply of hubs

Airports are arguably the most comfortable members of the aviation industry. As natural monopolies, protected by regulations and predominantly owned and subsidized by governments, most have enjoyed stable, long-term growth. This is reflected in the fact that the rankings of the world’s top 50 airports as measured by passenger numbers barely changed between 1991 and 2003; as Exhibit 3 illustrates: seven airports dropped out of the top 50 over this period, but none of them was a member of the top 30. It can
also be seen in airports’ disproportionately high margins, relative to airlines’: on average, airports’ cash and profit margins are roughly four times higher. In addition, their return on investment is more than twice as high (see Exhibit 4).

The problem is that governments have not treated airports as profit-oriented businesses but as infrastructure suppliers whose primary aim is to boost regional economies. In interviews with BCG, government entities responsible for regional and international airports all cited regional economic considerations, such as employment and tourism, as the key drivers of investment decisions. Although this strategy has often had the desired effect—large hubs like Atlanta typically employ 45,000-plus people—it has produced three major difficulties:

- **An oversupply of hubs:** This can be seen in the dense clusters of hubs in Exhibits 5–7. Does US Airways, for example, really need three neighboring hubs on the eastern coast of the USA (Exhibit 5)? Or does the SkyTeam alliance require four hubs in Europe within an hour’s flying time of one another (Exhibit 6)? Since Asia is still in an earlier stage of the air-travel life cycle, the situation there is somewhat different, with many airports still engaged in a battle for mega-hub status. Even those airports not achieving this status will enjoy significant (though smaller) growth over the next decade (Exhibit 7).

- **A capacity imbalance between hubs:** The emphasis on regional economic development at the expense of commercial considerations has led to massive block investments that bear little relation to airports’ growth potential, creating excess capacity at some locations and an undersupply at others. In most cases, surplus capacity is the norm. As Exhibit 8 illustrates, based on a group of North American airports that plan to invest $24.5 billion over the next two years, operators will have excess capacity of between 29 million and 352 million (3.9% to 46.9% of total

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**EXHIBIT 2**

**Previously: Clear role allocation—growth in all sectors**

- **High**
  - P2P\(1\) (O&D airports)
  - Hubbing (all hubs)

- **Low**
  - Hubbing (all hubs)
  - Hubbing (primary hubs)

**Today: Substantial change—uneven growth**

- **High**
  - FC P2P\(2\) (O&D airports)
  - FC hubbing (increasingly mega-hubs)

- **Low**
  - LCC P2P\(3\)
  - FC hubbing (increasingly mega-hubs)

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(1) Point-to-point

(2) Flag carrier P2P

(3) Low-cost P2P

(4) Flag carrier hubbing

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**EMERGENCE OF LCC AND TECHNOLOGICAL CHANGE HAVE FUNDAMENTALLY CHANGED AIRLINE AND AIRPORT LANDSCAPE**
EXHIBIT 3

Stockholm, Copenhagen, Sapporo, Düsseldorf, Pittsburgh, Washington, and Zurich no longer among the top 50

RANKING OF TOP AIRPORT LOCATIONS HAS REMAINED FAIRLY STABLE OVER TIME

EXHIBIT 4

AIRPORTS HAD SIGNIFICANTLY BETTER MARGINS THAN AIRLINES EVEN BEFORE RECENT CRISIS
What will be the consequence for individual hubs if airlines consolidate their hub strategy?

U.S. AIRPORT LANDSCAPE CHARACTERIZED BY DENSE HUB SYSTEM—MAIN AIRLINES WITH LARGE SHARES AT AIRPORTS

EUROPEAN AIRPORT LANDSCAPE HAS OVERSUPPLY OF HUBS DOMINATED BY THREE MAJOR ALLIANCES

(1) Assumes successful Air France-KLM merger
Note: Alliance capacity shares is measured in percent of scheduled seat capacity in 2002, total PAX numbers from 2003, MXP from 2002
Source: CSSB Hub Fact Book 2003, BCG analysis
capacity) passengers by 2010, depending on the ratio between replacement investments and investments into additional capacity and assuming passenger numbers grow in line with IATA’s forecasts. And the situation is poised to get worse. By 2015, an additional $150 billion to $200 billion will be invested into airports globally. The core problem with these investment programs is that they are based on two overly optimistic assumptions. First, that passenger growth will return to its historical long-term average. This is by no means certain. As Exhibit 9 shows, forecasts have already been revised downwards in the wake of 9/11, SARS, and the Iraq War. While these crises are now largely behind us, the geopolitical instabilities that caused some of them have not been resolved: similar events in the short to medium term cannot be ruled out. The second, more dangerous misconception is that any future growth will continue to be shared relatively equitably between airports. However, as we discuss below, this is unlikely to be the case. There will almost certainly be clear winners and losers, leaving many airports with even larger volumes of redundant capacity.

**Higher carrier charges:** As monopolies, airports have been able to pass on the costs of excess capacity to the carriers in the form of higher charges—costs that few of today’s financially unstable airlines can afford (see below). San Francisco airport is a case in point: It recently expanded its facilities on the ambitious assumption that passenger volumes would escalate by 7.9% a year between 2001 and 2006, but traffic actually shrunk between 2000 and 2002 by 12.3% a year (and still further in 2003), leading to a 23.8% rise in airlines’ landing and terminal charges to pay for the costs of the expansion (Exhibit 10).
The future: traffic will increasingly be channeled into mega-hubs

The huge financial pressures on the major carriers will leave them with little choice but to consolidate their traffic into mega-hubs, sidelining many of today’s primary and secondary hubs.

Although the airline industry has always struggled with profitability, averaging a net profit margin of just 0.3% since 1975, the recent severe downturn in passenger volumes, sparked by 9/11 and other international crises, has left many carriers with unsustainable losses. Between 2001 and 2002, IATA members’ losses amounted to $20.4 billion, borne predominantly by the flag carriers in the three alliances (SkyTeam, Oneworld, Star Alliance), which account for 55% of global passenger volumes. Over half of the alliances’ airlines are unprofitable and often unsustainably so.
In the past, governments could usually be relied on to come to the rescue but not in today’s more laissez-faire political climate as Sabena recently discovered. Nor will airlines be able to rely on an upturn in passenger traffic to lift revenues to a sufficiently high level to cover the shortfall. As Exhibit 11 shows, revenue has been increasing slower than passenger growth over the last 20 years, a trend that will continue as LCCs expand. Airlines will inevitably have to cut costs.

To reduce costs, each of the three main airline alliances is likely to concentrate future long-distance passenger growth into one mega-hub in each continent. These airports will have three key characteristics: a central geographic location, a large and affluent catchment area, and a resident carrier that is both, financially sound and a major player in its respective alliance. In the U.S., Atlanta and Dallas are examples of likely candidates; in Asia, Singapore and Hong Kong are possibilities.
The introduction of a new generation of mega-planes, such as the A380, which will require large hubs with substantial feeder capacity, will accelerate the shift to mega-hubs (as well any further international crises).

There are already signs that traffic is starting to be consolidated into larger hubs. During the sharp downturn in volumes between 2000 and 2002, the smaller “bottom-quartile” hubs in the U.S. lost 12.8% of their traffic, while the larger top-quartile hubs suffered only a 6.3% fall. More recently, several U.S. carriers have announced plans to rationalize their hub networks. US Airways, for example, is likely to shed at least one of its hubs, while Delta and Northwest intend to focus traffic on select hubs. Similar moves have been seen in Europe. British Airways, for instance, has moved services from Gatwick to its larger neighbor, Heathrow, contributing to a 5.1% drop in passenger numbers at Gatwick and a 4.3% rise at Heathrow.

None of this would be a major problem if hubs didn’t depend heavily on individual carriers, but the fact of the matter is that the vast majority do: over three quarters of the world’s top 50 airports rely on a single carrier for 40% or more of their traffic (Exhibit 12), rising to as high as 80% in several cases. Many U.S. hubs are particularly dependent, raising questions about their long-term viability.
The growth of point-to-point travel will place secondary hubs under greater pressure

While intercontinental traffic, with some qualifications, is likely to be consolidated into hubs, the pattern of continental traffic is somewhat more complex. The growth of point-to-point travel, which is more cost-efficient, profitable, and convenient for both, carriers and passengers, will draw traffic away from hubs, especially secondary hubs. This will be driven by two key developments:

- **The rise of LCCs**: Regional, point-to-point LCCs, such as Southwest Airlines in the U.S. and Ryanair in Europe are dramatically changing the way the aviation sector operates. These airlines have already stolen up to 60% of passenger growth from the major flag carriers on selected routes (Exhibit 13), predominantly in Europe, where they service 95% of primary airports, and increasingly in the U.S., where they are expected to reach 80% of passengers within the next three to five years. Asia’s LCC market is still relatively immature, but it too is gathering pace, reflected in a flurry of recent LCC upstarts—among other Malaysia’s Air Asia, Singapore’s Tiger Airways as well as Thai Air Asia. The continued growth of point-to-point LCCs will have a major impact on the world’s hub network, as it will drain traffic from the hubs. Although all hubs will be affected, including mega-hubs, secondary hubs that depend on relatively small regional airlines will be hit the hardest. These airlines will not be able to compete with LCCs’ cost base and will switch to providing feeder services for their alliance’s respective mega-hub.

- **The arrival of the new Boeing 7E7**: Designed mainly for intercontinental point-to-point travel (although it also has regional potential, notably in long-haul continents, such as Asia), this jet and others like it will be able to bypass hubs by providing direct point-to-point travel, thus offering more cost-efficient and convenient routes. Only attractive destinations capable of servicing this plane will be safe. Mega-hubs will feel little impact as frequencies are likely to increase. But small and less attractive secondary hubs will suffer. The increased 7E7 traffic at preferred secondary hubs, however, will struggle to offset the losses incurred by the growth of LCCs, leaving them still with unexpected overcapacity.

Deregulation will accelerate this trend, especially in Europe

“Open-skies” deregulation will not only give carriers the freedom to operate from hubs of their choice in Europe, it will spark a spate of mergers between the airlines, sucking traffic into the lead carriers’ home hubs. Although the longed-for regulatory approval is unlikely to happen any time soon, there are signs it is moving closer: in October 2003 the EU started negotiations with the U.S. government to establish the parameters of a U.S.-European open-skies accord.
It’s difficult to say with any certainty how rapidly global passenger volumes will grow in the long run. Some organizations—usually those with a vested interest in painting a rosy picture, expect a return to the healthy rates of the last decade—when the compound annual growth rate was around 4%: Airbus and Boeing, for example, forecast 4.7% and 4.9% respectively up until 2020. Others are less optimistic: IATA predicts 2.2% over this period.

What is unquestionable is that the consolidation of the hub network will radically alter how this growth is distributed between airports. In fact, there is already a mismatch between different airports’ growth rates, as Exhibit 14 illustrates. Looking ten years ahead, there will be even starker differences. Mega-hubs will enjoy the greatest growth. O&Ds and regional destinations that are favoured by point-to-point carriers will also experience a significant increase in traffic. Most airports, however, will experience much lower growth and, in some cases, an absolute decline in passenger volumes.

Exhibit 15 shows that there has already been a significant consolidation of traffic into mega-hubs and away from secondary hubs during the recent crises. The share of total top 50 airport traffic passing through nine potential mega-hubs increased from 30% to 34% in just two years. Exhibit 15 also indicates what the distribution of passenger growth might look like in the next five years up to 2008, owing to further hub consolidation. This is only intended as a rough indication of the winners’ and losers’ shares, not a definitive outcome.
**Exhibit 14**

**Beginning airline consolidation will be decisive in setting future airport landscape in Europe (PAX change 2000–2003)**

**Exhibit 15**

**Share of top 50 traffic (%)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2008</th>
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<tbody>
<tr>
<td>29.8</td>
<td>30.4</td>
<td>33.9</td>
<td>38.0</td>
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<tr>
<td>70.2</td>
<td>69.6</td>
<td>66.1</td>
<td>62.0</td>
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</tr>
</tbody>
</table>

**Total PAX at top 50 airports**

- Nine potential mega-hubs
- Other 41 of top 50 airports

**Note:**
- Forecast for remaining top 50 airports: Annual forecast for worldwide growth with 35% discount due to saturated market.
- Source: Airbus, Boeing, IATA, ACI, BCG analysis.

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**NINE POTENTIAL MEGA-HUBS HAVE INCREASED THEIR PAX SHARE AT THE EXPENSE OF SECONDARY HUBS**

- Swissair grounding October 2, 2001
- Sabena grounding November 7, 2001

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**Forecast for mega-hubs:** Average of Airbus and Boeing forecast (4.8%) plus 10% assumed mega-hub bonus due to consolidation trend.

**Forecast for remaining top 50 airports:** IATA forecast for worldwide growth with 25% discount due to saturated market.

**Source:** Airbus; Boeing; IATA; ACI; BCG analysis.
Exhibit 16 illustrates where different airports are likely to be positioned in tomorrow’s consolidated hub network, based on the strength of both, their top carrier and their local environment—the size and affluence of the catchment area, tourism potential, and geographic location. Airports in the top-right corner, such as Frankfurt and Heathrow, will probably be mega-hubs for their respective alliances, while Munich, Gatwick, and other players in the middle section will continue to operate as secondary hubs. Interestingly, many of the airports in this segment of the matrix have significant unused capacities already today. The hubs in the lower left corner will be relegated to international O&Ds providing merely point-to-point traffic. Some of the players on the margins of these areas, will probably engage in an “investment gamble”, trying to outbid rivals’ investments in an attempt to secure their desired position as mega-hubs. Few airports will indeed be mega-hubs, but many more follow investment strategies as if they were destined to be among this elusive group—a dangerous game for the losers, who will be burdened with high excess capacity.

Source: BCG analysis
The cozy world of the past has encouraged many airports to neglect operating costs, as well as opportunities to lift revenues: most have functioned as infrastructure suppliers not businesses. In the future, carriers’ demands for lower charges, coupled with governments’ growing reluctance to support airports, will force operators to function more efficiently. Lower than anticipated passenger growth at many airports will intensify this need.

Despite relatively high margins, the state-protected environment in which the vast majority of airports has lived over the last eight decades has meant that most have not operated as competitive, profit-driven businesses. This is most obvious in the field of investments, where the basic principle that investment growth should only be pursued once profitability is above the cost of capital, has been widely ignored, especially at regional airports. Most regional airports are unprofitable yet still have ambitious expansion plans. Operating costs have also been overlooked, partly due to the fact that fixed assets dominate airports’ balance sheets. According to BCG’s analysis, airports could reduce their operating costs by 20% to 30% on average, including 5% to 7% in the short run.

Three key developments will force airports to look much more closely at both, costs and revenues:

1. Lower than expected passenger growth
   The drop in aviation and non-aviation revenues that will accompany lower than expected passenger growth at airports will leave many struggling to service the debts of their existing investment programs. To compound this problem, credit-rating agencies are likely to downgrade operators suffering steep declines in passenger growth, increasing the cost of raising additional funds. Pittsburgh International Airport provides a salutary warning of what the future might hold. Its General Airport Revenue Bond (GARB) was recently downgraded from A to BBB by the Fitch Rating Agency after US Airways rejected a lease agreement with the airport, suggesting the airline might abandon Pittsburgh as a hub.

2. Carriers’ demands for reduced charges
   Airport charges, including aeronautical and ground-handling fees, account for a substantial proportion of carriers’ costs, typically one quarter of the price of the average airline ticket (Exhibit 17). In the past airlines have found it difficult to negotiate reductions due to airports’ monopoly positions and ignorance of the operators’ true costs. Today, however, carriers increasingly have access to more detailed cost breakdowns, thanks to governments’ demands for greater accounting transparency, placing them in a stronger negotiating position. More significantly, they are acutely aware that their survival—and the future of the airports, most of which depend heavily on a single carrier—hinges on lower charges. The drive to reduce these is further fuelled by the widespread sense of injustice within the aviation industry over the large discrepancy between the two parties’ margins. As one executive said: “If one of the
partners is losing his shirt while the other is counting money, it is no longer a partnership.” LCCs, which have shown themselves to be more than willing to pull out of destinations if the figures do not add up, will add to the pressure, particularly if the European Commission puts a stop to regional airports offering LCCs sweeteners, as witnessed in the recent Charleroi ruling and Ryanair’s subsequent decision to cut down on its Charleroi routes.

3. Government’s growing reluctance to subsidize airports
Governments are both politically less willing and financially less able to support airports. Free-market solutions are increasingly the preferred option in most public-service sectors, especially as the widening gap between tax receipts and public expenditure makes continued state support unsustainable. This is reflected in two trends within the airport sector:

- **More widespread privatization:** Since 1987, there has been a steep and relatively steady increase in the number of airport privatizations that is due to pick up again after being halted in the recent crises as Exhibit 18 shows. To date, over 60 airports have gone down this road, spanning virtually every continent, from Europe and South America to Australia and Asia. Europe has the highest concentration of privatized airports (nine out of the top 20), with several more due to join their ranks. In the U.S., only few small operators such as Buffalo and Albany, have been privatized, a reflection of the fact that airports remain one of the few avenues open to influence regional economic development in this otherwise highly deregulated economy, as well as considerations of national security. This situation, however, may be about to change, not the least of which is due to severe budget problems, foremost the U.S. federal deficit, but also budgetary constraints faced by many states and cities.
Privatization to yield more efficient operations and to secure airport financing of infrastructure.

**EXHIBIT 18**

Airport value chain very diverse

**EXHIBIT 19**

<table>
<thead>
<tr>
<th>Infrastructure provision</th>
<th>Business-to-business services</th>
<th>Business-to-customer services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>Burgess</td>
<td></td>
</tr>
<tr>
<td>Support functions</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>1. Property and utilization rights</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>2. Real-estate and infrastructure development</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>3. Facility management</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>4. Flight OPS Terminal OPS (incl. security)</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>5. Ground services</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>6. Space allocation (non-aviation)</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
<tr>
<td>7. Other services</td>
<td>Burgess</td>
<td>Burgess</td>
</tr>
</tbody>
</table>

Source: BCG analysis; press search.
Further privatization will not only force airports to increase efficiency in order to keep shareholders on board, it will also provide access to additional funds via the world’s capital markets. It will not necessarily guarantee success—both, Brussels and Zurich are privatized airports—but, on balance, it will lead to a significant improvement in performance.

**Deregulation of the value chain**: Few airports have the specialist skills or scale to optimize each of the links in their highly diverse value chain. As Exhibit 19 shows, these links can range from real-estate and facility management to retail, terminal operations, and ground handling. At the moment, responsibility for the different parts of the chain tends to be shared between the airports and carriers, with the balance of roles varying between airports. At Atlanta, for example, Delta handles most of the chain, including retail and facility management, leaving the airport authority to manage a limited number of services, while the opposite is the case at Frankfurt (Exhibit 20).

Deregulation will deconstruct the chain further, enabling new players to enter different elements of the chain, bringing all the efficiency gains that competition entails. Retail has already been deregulated at many locations and has produced impressive results, often via outsourcing. Since BAA has managed Pittsburgh International’s retail operations, revenues have tripled. More recently, ground handling has been deregulated in Europe, lowering costs especially in those EU member states with former handling monopolies, such as Greece and Italy, according to an EC study. Further deregulation of other parts of the chain is inevitable, especially as privatization becomes more deeply entrenched in the industry.

### Exhibit 20

<table>
<thead>
<tr>
<th>Frankfurt</th>
<th>Atlanta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraport</td>
<td>Airport Authority</td>
</tr>
<tr>
<td>Real estate/landlord</td>
<td>Real estate/landlord</td>
</tr>
<tr>
<td>Facility management</td>
<td>Flight OPS</td>
</tr>
<tr>
<td>Flight OPS</td>
<td>Flight OPS</td>
</tr>
<tr>
<td>Terminal OPS</td>
<td>800 employees(1)</td>
</tr>
<tr>
<td>Ground handling</td>
<td>Ground handling</td>
</tr>
<tr>
<td>Cargo handling</td>
<td>Ticketing and sales</td>
</tr>
<tr>
<td>Retail</td>
<td>In-flight passenger services</td>
</tr>
<tr>
<td>13,000 employees</td>
<td>Cargo handling</td>
</tr>
<tr>
<td></td>
<td>Fleet management</td>
</tr>
<tr>
<td></td>
<td>Technical issues/maintenance</td>
</tr>
<tr>
<td></td>
<td>Retail</td>
</tr>
<tr>
<td></td>
<td>36,000 employees(2)</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>Delta</td>
</tr>
</tbody>
</table>

(1) Estimation ($40 million for salaries; average of $50,000)
(2) First estimate (approximately 80% Delta business at Atlanta airport)
Source: Lufthansa, Delta, Fraport

**Depending on airport, operators and airlines take on different roles**
Airports will have to rethink their strategies and business models to survive and thrive in tomorrow’s environment. The first step is to soberly assess your role in the new hub network and expected passenger growth. This will determine your investment and carrier strategy. It will be equally critical to position yourself at the most competitively advantageous point in the value chain, with a clearly defined role.

Developing appropriate strategies

The redistribution of passenger growth will redefine airports’ roles, requiring different investment and carrier strategies for different types of airports:

Identify your role in the new network

Two key factors will determine airports’ roles in the new landscape and, consequently, their relative growth and capacity requirements:

- **Geographic location, including size and affluence of catchment area**: Only airports with central locations and large, affluent catchment areas will be eligible to be mega-hubs. International O&Ds will need a similar catchment area to succeed.

- **Carrier’s strategic and financial strength**: In addition to the right geographic location, mega-hubs will be the primary home of a leading alliance airline. Heathrow, which is dominated by the OneWorld alliance airline BA, is one example. Secondary hubs will also require a strong relationship with a major carrier in an alliance. At all airports, from mega-hubs down to regional airports, the financial health of the lead carrier will be paramount. This must be carefully analyzed, especially in relation to any investment plans. As Brussels Airport discovered, the impact of a financially ailing airline can be devastating: since Sabena went bankrupt, the airport’s passenger volumes have plummeted by 30%.
Different strategies for different types of airports (Exhibit 21)

- **Mega-hubs**: These must focus on the lead airline in their respective alliance, as well as regional feeders. Providing the highest quality of service and innovative ways to spread capacity throughout the day will be vital. Intelligent differentiation between premium and basic products will also be required. Only mega-hubs will be in a position to make large "batch" investments to expand capacity, secure in the knowledge that there will be long-term passenger growth.

- **Secondary hubs**: Many of today’s hubs will be downgraded, making their overly optimistic investment plans redundant. All investments should be revisited and switched to an incremental, “needs-must” basis. Attention should be concentrated on alliance carriers.

- **International O&Ds**: The emphasis must be on sweating existing assets to extract maximum value out of historically high investments. Airlines with a sound strategy, alliance, and financial position should be actively courted to ensure commitment to the airport. Those international O&Ds that stand to profit from an enlarging catchment area and subsequent rise in point-to-point traffic should base their expansion strategy on careful foundations and sound planning, which should always favor incremental investment approaches over block investments. Attracting LCCs to fill existing overcapacities should be considered, but no capacity extensions to cater for LCCs.

- **Regional airports**: The focus should be on LCCs and exceptionally tight cost control, not just to satisfy LCCs’ demands but to return to or maintain profitability. In view of the likelihood that these airports will continue to be used by governments as tools for regional economic development, state funding for any (incremental) investments should be sought. Creating new regional airports will, in most cases, be unwise.

### Exhibit 21

<table>
<thead>
<tr>
<th>Example</th>
<th>Airline focus</th>
<th>Key issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International hubs</strong></td>
<td>Leading airline within alliance</td>
<td>Quality leadership</td>
</tr>
<tr>
<td></td>
<td>Regional feeders</td>
<td>Privatization imperative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capacity management</td>
</tr>
<tr>
<td><strong>International O&amp;Ds</strong></td>
<td>Intercontinental airlines</td>
<td>Sweat your assets over the limit</td>
</tr>
<tr>
<td></td>
<td>All other airlines</td>
<td>Maximize return</td>
</tr>
<tr>
<td><strong>Secondary hubs and O&amp;Ds</strong></td>
<td>Member of airline alliance</td>
<td>Support your alliance airline</td>
</tr>
<tr>
<td></td>
<td>All other airlines</td>
<td>Stop investments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Streamline business model</td>
</tr>
<tr>
<td><strong>Regionals</strong></td>
<td>LCC</td>
<td>Focus on LCC segment</td>
</tr>
<tr>
<td></td>
<td>Regional feeder</td>
<td>Thight cost management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acquire public funding</td>
</tr>
</tbody>
</table>

*Source: BCG analysis*
Managing airports as businesses, not infrastructure suppliers

Select the right business model for your chosen point in the value chain

As mentioned earlier, few operators have the breadth and depth of resources and expertise to maximize returns from each link in airports’ highly diverse value chain. Instead of acting as integrators of the entire value chain, operators will have to identify a position within the chain where they can add maximum value, based on their capabilities and the competitive outlook of their chosen section of the chain.

Each part of the chain will require different skills and resources plus different levers to reduce costs and boost revenues, as Exhibits 22 and 23 illustrate. Ground handling, for example, will depend on personnel allocation and process optimization to create value, while aviation-related services will hinge on cost transparency, negotiation strategies, and investment control, among other demands. Some operators will be best equipped to concentrate on individual links in the chain, others will benefit from taking broader roles.

Generally, there will be four types of operators:

- **Specialists** will focus on particular links in the value chain and leverage their scale and know-how globally. Usually this will involve standardized, labor-intensive activities, such as ground handling and facility management. As these are traditionally low-margin fields, scale will be critical. Already several global specialists are emerging. In ground handling, ServisAir/GlobeGround...
operates at 39 locations, with a turnover of more than $800 million, while Swissport is present at 24 airports. Within the U.S., Delta Air Lines has also started to aggressively market its maintenance services to other airlines, turning a $50 million side business in 2000 into a $160 million operation by the end of 2003.

■ **Layer-masters** will handle categories of related services, for instance, business-to-consumer services such as retail, conferencing, and parking. BAA’s retail managing contracts are an example of this development.

■ **Orchestrators** will coordinate outsourced services at individual airports, ensuring consistent quality standards and cost control, as well as act as the interface with airlines to deliver innovative, value-added products and services. Pure orchestrators have yet to emerge, but Athens International Airport is a pioneer.

■ **Integrators** will continue to handle the whole value chain, as Frankfurt does now.

**Drive down costs**
Operational excellence has to be the new management imperative. **Exhibits 22 and 23** highlight the main levers for reducing costs (and increasing revenues) in different parts of the value chain. The golden rule, which has so often been broken in the past, is that no investments should be made unless expected profitability is above the cost of capital.
Exploit non-aviation revenues

Increasing revenues per passenger through non-aviation channels, such as retail and parking, will be a key driver of growth and profitability for all airports, especially those that experience lower than expected passenger growth or even an absolute drop in traffic. In fact, in BCG’s experience, airports that depend on LCCs will usually only be able to sustain profitability via non-aviation revenues. Love Field airport in the U.S. is a case in point: Its non-aviation revenues, which were three times higher than aviation revenues, kept it in the black in 2001, with a modest $9.9 million profit (Exhibit 24). Its parking revenues alone were five times larger than its landing fees and bigger than all its non-aviation revenues put together.

Retail is likely to provide some of the richest pickings as BAA’s airports have shown. To maximize this revenue, operators will have to persuade carriers to strike an intelligent balance between their demands for shorter transfer times and the airports’ need to keep passengers shopping for as long as possible. This will ultimately be in both parties’ interests: higher revenues will give operators more leeway to lower carrier charges.

Consider privatization

Many airports should consider at least partial privatization in order to raise funds, gain access to the capital markets and trigger efficiency improvements. This can be done via an IPO—a route successfully taken by Frankfurt and Vienna—or by offering stakes through a trade sale. Strict management of the privatization process is essential for success and is controlled by an IPO task force: strategies must be refined, resources mobilized, efficient controls put into place, and the organization aligned with the capital markets. Trade sales can provide an attractive alternative to IPOs, by recruiting strategic investors to take significant stakes in the airport company. External know-how can thus be bundled to ensure greater optimization of potential.

EXHIBIT 24

<table>
<thead>
<tr>
<th>In million dollar</th>
<th>Aeronautic operating revenue</th>
<th>Non-aeronautic operating revenue</th>
<th>Non-operating revenue(1)</th>
<th>Labor cost</th>
<th>Communication and utilities</th>
<th>Supplies and materials</th>
<th>Other operating expenses</th>
<th>EBITDA</th>
<th>Interest change</th>
<th>Depreciation</th>
<th>Net profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.7</td>
<td>24.2</td>
<td></td>
<td>6.8</td>
<td>6.0</td>
<td>2.5</td>
<td>10.7</td>
<td></td>
<td>1.4</td>
<td>18.1</td>
<td>1.6</td>
</tr>
</tbody>
</table>

(1) Excluding grant receipts of $2.5 million, only covers interest income and other non-operating revenues
Source: BCG analysis

LCC AIRPORTS CAN ONLY BE PROFITABLE WITH THE RIGHT REVENUE MIX—EXAMPLE LOVE FIELD, TEXAS
Treat airlines as partners

The future of the airport sector lies in closer cooperation with the major airlines as business partners, not just customers. As a first step, joint seminars and workshops could foster better understanding. In many areas, there are considerable opportunities to leverage cost and revenue synergies, for example, by pooling customer information to target high-margin passengers and by bundling together common support services, such as IT, and by clearly defining interfaces. (Exhibit 25) Transparency and clearly defined contracts provide the basis in all areas of cooperation. Service-level agreements should become standards in strong relationships. Short-term aids in crises also work to improve the relationship, as significant temporary reductions in landing fees at major Asian airports during the SARS crisis signified.

EXHIBIT 25

Win-win situation as result of open cooperation

PROCESS EFFICIENCY GAINS CAN BE YIELDED BY JOINT IMPROVEMENT OF INTERFACES

Transaction of property
Real-estate and infrastructure development
Facility management
Flight OPS
Ground services
Space allocation
Other services

Airport authority
Airport authority
Airport authority, airline, and sublease companies
Airline
Airline
Airport authority, airline, and sublease companies
Airport authority

Bundling
Outsourcing
Jointly coordinate operations
Share scheduling information
Jointly optimize IT and disposition instruments
Find trade-off between minimum connection time and retail-optimized terminal design

Joint cost reduction
Quality assurance
Risk reduction/planning reliability
Joint cost reduction
Additional revenue sources

Source: BCG analysis
Airlines: Bring airports into focus and tighten operational links

Airlines have long neglected the value potential of airports due to their focus on network development. There are various levers to reduce airport-related costs and revenues:

- By working closely with a particular operator, airlines can identify potential to improve process efficiency. This will lead to reduced costs for airports and, via lower charges, for airlines. But the more substantial contribution to higher airline margins will be through shorter turnaround times and consequently higher aircraft utilization.

- Airlines can support airport operators in increasing their retail revenues by helping them find partners who are best suited for optimal exploitation of the revenue lever. Moreover airlines can contribute by providing valuable information about their passengers, which allows retailers to custom-tailor their offerings. Airports should then share the increased revenues with airlines, creating a win-win situation that encourages all parties to move in the described direction.

Although severe frictions between airports and airlines characterize the current situation, both parties should work towards easing the tensions since both will profit from a renewed partnership.

Investors: Pick the right investments and improve profitability

It has never been a better time to invest in airports. Many owners face difficulties in financing their airport shareholdings and are increasingly willing to sell off stakes in attractive locations. But investors have to thoroughly analyze the options before entering the complex airport business:

- Investors should screen all possible targets and analyze long-term growth options based on airline prospects as well as geographic and environmental factors. Only airports exhibiting a stable growth outlook and a realistic perception of themselves will lead to long-term returns on adequate investments.

- From along the diverse value chain, investors should decide which business to invest in. Depending on an individual investor’s risk profile, capability portfolio, and investment strategy this can be
either in real estate, airport management, or business-to-consumer services. If investors do not take into account the ongoing deconstruction of the value chain, they risk an attack from better-positioned competitors.

- Investors must be aware of the various cost and revenue levers airports can pull to improve their margins. The potential to increase efficiency and revenue per PAX is large at most airport locations and can significantly raise the returns on investment.

Well-advised investors with a clear strategy and a set of relevant investment criteria will emerge on top of the current developments in the airport industry.

Public authorities: Secure infrastructure provision without suffering negative returns

Infrastructure provision as a means of regional development has always been the focus for public authorities. This will remain the case in the future. But in times of dwindling public budgets, authorities are looking for opportunities to reduce their investments and increase returns on airport shareholdings without neglecting its infrastructural importance for their particular region. Key steps to take and issues to consider include:

- Authorities must soberly analyze the growth potential of each airport. Although every region would like to profit from a nearby intercontinental hub, only a few will enjoy this privilege. It is fairly obvious which cities will be the location of mega-hubs as this is determined by airline network strategies: authorities must understand and accept the reality of the growth prospects of their airport portfolio.

- To reduce requirements of public funding, governmental institutions should encourage airport managers to exploit the revenue potential offered by retailing. Increasing revenues per PAX is a comparatively easy option since its implementation does not require unpopular decisions like workforce reductions.

- Authorities should ensure that airport managers implement a tight cost control, focusing on process efficiency and adequate real-net output ratios. Significant efficiency gains are a direct way of saving taxpayer’s money.

- Alternative sources for financing airport investments should be explored. Getting private investors involved is an excellent opportunity to trigger changes in airport management and reduce airports’ dependency on subsidies.

These recommendations will not endanger the provision of airport infrastructure; they will ensure the long-term survival of individual airports. Structural changes force all airport owners to act in order to avoid deterioration in their shareholdings.
BCG’S EXPERIENCE IN THE AVIATION INDUSTRY

BCG has extensive experience in the airport and aviation industry.

BCG works closely with numerous clients within the aviation sector—airlines, airports, and other service providers—always with the goal of developing our clients’ competitive advantage, successfully implementing it, and increasing their sustained earning power. Projects we have been involved in have ranged from privatizations and profit improvement measures to value management, strategic positioning, and internationalization. All have shown bottom-line impact and enabled our customers to achieve a superior strategic positioning within a changing business environment.

In addition to the frameworks described in this report we have developed a set of tools specifically for the aviation industry. This includes a standardized airport “health check” to identify the measures needed to prepare our clients for the future.

If you would like to discuss this report’s findings in more detail or require assistance in any other field, please contact one of our world experts.
### Questions for airlines

1. What is the overarching network logic of my alliance and how does this affect my airport selection and strategy? [ ]

2. What are my main airports’ investment programs and how do they correspond to my perspective capacity, service, and cost requirements? [ ]

3. How can I actively participate and influence airports crucial to my strategic positioning? [ ]

4. How can joint optimization of interfaces benefit my efficiency and service position? [ ]

### Questions for airport operators

1. Which role is my airport realistically going to play in the medium term given its location and key airline(s)? [ ]

2. Do my investment plans accurately reflect this role? [ ]

3. Am I actively cooperating with my main customers? [ ]

4. Can my cost position be optimized? [ ]

### Questions for public authorities

1. What is a viable airport landscape for my region given expected growth rates and trends and are funds distributed accordingly? [ ]

2. Are publicly owned airports sufficiently working to exploit non-aviation revenues and control their cost position? [ ]

3. Should alternative ways of financing airport investments be explored and the expertise of private investors tapped? [ ]

4. Are ways to better coordinate airport development on a supraregional and supranational level being sufficiently explored? [ ]

### Questions for investors

1. Does my investment portfolio account for individual growth prospects and a sober assessment thereof by the respective airport? [ ]

2. Which steps of the airport value chain are most promising as investments? [ ]

3. How far has the airport’s efficiency potential been realized and is the management and ownership committed to delivering returns? [ ]
GLOBAL CONTACTS

Amsterdam
J. F. Kennedylaan 100
3741 EH Baarn
Netherlands
Tel +31 35 548 6800
Fax +31 35 548 6801

Brussels
Boulevard de l’Imperatrice, 13
1000 Brussels
Belgium
Tel +32 2 289 02 02
Fax +32 2 289 03 03

Hamburg
Chilehaus A
Fischertwiete 2
20095 Hamburg
Germany
Tel +49 40 30 99 60
Fax +49 40 33 79 45

London
Devonshire House
Mayfair Place
London W1J 8AJ
England
Tel +44 207 753 5353
Fax +44 207 753 5750

Athens
60 Vassilissis Sophias Avenue, 11528 Athens
Greece
Tel +30 210 727 9213
Fax +30 210 727 9168

Budapest
Váci u. 81
1056 Budapest
Hungary
Tel +36 1 235 90 00
Fax +36 1 235 90 10

Helsinki
Eteläesplanadi 12, 3rd Floor
00130 Helsinki
Finland
Tel +358 9 228 661
Fax +358 9 228 66 911

Los Angeles
355 S. Grand Avenue
33rd Floor
Los Angeles, CA 90071
USA
Tel +1 213 621 2772
Fax +1 213 621 1639

Atlanta
600 Peachtree Street N.E.
37th Floor
Atlanta, GA 30308
USA
Tel +1 404 877 5200
Fax +1 404 877 5201

Auckland
23–29 Albert Street, Level 30
Auckland 1
New Zealand
Tel +64 9 377 2297
Fax +64 9 3070 958

Bangkok
37th Floor, U Chu Liang Building
968 Rama IV Road, Silom
Bangkok 10500
Thailand
Tel +66 2 667 3000
Fax +66 2 655 3123

Barcelona
Arda. Diagonal 640-6’E
08017 Barcelona
Spain
Tel +34 93 363 4700
Fax +34 93 363 4710

Beijing
Unit 902, The Exchange Beijing
No. 118 Jian Guo Lu Yi
Chau Yang District
Beijing, 100022
China
Tel +86 10 6567 5755
Fax +86 10 6567 5799

Berlin
Dricksenstraße 41
10178 Berlin
Germany
Tel +49 30 28 87 10
Fax +49 30 28 09 83 05

Boston
Exchange Place, 31st Floor
Boston, MA 20109
USA
Tel +1 617 973 1200
Fax +1 617 973 1339

Buenos Aires
Bouchard 647-10°
(C1106ABG) Buenos Aires
Argentina
Tel +54 11 4314 2228
Fax +54 11 4314 2229

Chicago
220 South Wacker Drive
27th Floor
Chicago, Illinois 60606
USA
Tel +1 312 993 3300
Fax +1 312 876 0771

Cologne
Im Mediapark 8
Kölnturm
50670 Cologne
Germany
Tel +49 221 5500 50
Fax +49 221 5500 5500

Copenhagen
Amaalgade 15
1256 Copenhagen K
Denmark
Tel +45 77 32 34 00
Fax +45 77 32 34 99

Dallas
500 N. Akard Street, Suite 2600
Dallas, Texas 75201
USA
Tel +1 214 849 1500
Fax +1 214 849 1501

Düsseldorf
Stadttor 1
40219 Düsseldorf
Germany
Tel +49 211 30 11 30
Fax +49 211 13 12 96

Frankfurt
An der Welle 3
60322 Frankfurt am Main
Germany
Tel +49 69 9 15 02 0
Fax +49 69 59 64 793

Hong Kong
34th Floor, Shell Tower
Times Square, Causeway Bay
Hong Kong
China
Tel +852 2506 2111
Fax +852 2506 9084

Istanbul
Suleyman Seba Cad. No. 83
Akaretler, Besiktas 80680
Istanbul
Turkey
Tel +90 212 310 2600
Fax +90 212 310 2666

Jakarta
Level 22, Mashill Tower
Jl. Jenderal Sudirman Kav. 25
Jakarta 12929
Indonesia
Tel +62 21 526 7775
Fax +62 21 526 7776

Kuala Lumpur
Level 26, Menara IMC
No. 8 Jalan Sultan Ismail
50250 Kuala Lumpur
Malaysia
Tel +60 3 2078 5770
Fax +60 3 2078 5784

London
Devonshire House
Mayfair Place
London W1J 8AJ
England
Tel +44 207 753 5353
Fax +44 207 753 5750

Los Angeles
355 S. Grand Avenue
33rd Floor
Los Angeles, CA 90071
USA
Tel +1 213 621 2772
Fax +1 213 621 1639

Madrid
Alcala, 95
28009 Madrid
Spain
Tel +34 91 520 61 00
Fax +34 91 520 62 22

Melbourne
101 Collins Street, Level 52
Melbourne VIC 3000
Australia
Tel +61 3 9656 2100
Fax +61 3 9656 2111

Mexico City
Tamarindos 400 piso 18 A
Colonia Bosques del las Lomas
México, D. F. C. P. 05120
Mexico
Tel +52 55 5258 99 99
Fax +52 55 5258 04 44

Miami
703 Waterford Way
Suite 740
Miami, FL 33126
USA
Tel +1 305 728 6042
Fax +1 305 265 7840

Milan
Via della Moscova 18
20121 Milan
Italy
Tel +39 0 2 65 59 91
Fax +39 0 2 65 59 96 55

Monte Carlo
Vasconcelos 101 Ote – 5°
Col. Residencial San Agustin
Garza Garcia, N. L. C. P.
65260
Mexico
Tel +52 81 8368 6200
Fax +52 81 8368 0808

Miami
703 Waterford Way
Suite 740
Miami, FL 33126
USA
Tel +1 305 728 6042
Fax +1 305 265 7840

Milan
Via della Moscova 18
20121 Milan
Italy
Tel +39 0 2 65 59 91
Fax +39 0 2 65 59 96 55

Monterrey
Vasconcelos 101 Ote – 5°
Col. Residencial San Agustin
Garza Garcia, N. L. C. P.
65260
Mexico
Tel +52 81 8368 6200
Fax +52 81 8368 0808

Mexico City
Tamarindos 400 piso 18 A
Colonia Bosques del las Lomas
México, D. F. C. P. 05120
Mexico
Tel +52 55 5258 99 99
Fax +52 55 5258 04 44

Miami
703 Waterford Way
Suite 740
Miami, FL 33126
USA
Tel +1 305 728 6042
Fax +1 305 265 7840

Milan
Via della Moscova 18
20121 Milan
Italy
Tel +39 0 2 65 59 91
Fax +39 0 2 65 59 96 55

Monterrey
Vasconcelos 101 Ote – 5°
Col. Residencial San Agustin
Garza Garcia, N. L. C. P.
65260
Mexico
Tel +52 81 8368 6200
Fax +52 81 8368 0808
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