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Gateway Airports: Commercial Magnets and Critical Business Infrastructure

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Executive Summary

International gateway airports have moved beyond 20th-century mass transit hubs to become 21st-century strategic business infrastructure. In the process, they are attracting nearly all commercial activities found in urban centers. This has transformed many from what were once “city airports” into urban economic realms in their own right – “airport cities.” Becoming global business anchors and investment magnets, some gateway airport areas now rival the cities they serve for regional economic dominance.

Gateway airports are particularly vital to high-value, time-sensitive firms – those that depend on fast and efficient long-distance transit of executives, clients, and goods. They are also key to cities and regions seeking to diversify their economies, boost exports, attract investment, and draw high-spending leisure travelers. For such travelers and potential investors arriving by air, airports present the area’s first and last impressions. The aeronautical efficiency, passenger experience, and visual impact of airports must therefore be treated as important components of city and regional marketing and airports as critical assets to business success.

Governments in Asia and the Middle East understand this and have prioritized their airports for investment. In doing so, they are aggressively building, expanding, and modernizing their air hubs to achieve global gateway preeminence while providing unique passenger experiences, luxurious goods and services, and architecturally marketing their nations. Airports in the United States are not given the same policy and investment priority. On the contrary, rather than being treated as critical infrastructure assets to compete, they are often maligned as nuisances and environmental threats to be controlled. U.S. airport management efficiency is further hampered by politics. Almost all are run by departments of city governments or politically appointed authorities while many major airports abroad have been corporatized to operate on private-sector principles.

With gateway airports and the strength of their aviation networks increasingly shaping economic winners and losers, the United States cannot be complacent. New global realities call for new government policies that are much more supportive of growing, modernizing, and upgrading U.S. airports and airlines. If we do not act now, high-reaching economic competitors will leverage their continuous mass infusions of capital into airports and airlines to leapfrog the U.S. in capturing tomorrow’s global business.

This paper will accomplish the following:

- Describe the “Fifth Wave” of aviation-driven competitiveness and economic development;
- Examine the commercial anatomy of today’s air gateways, highlighting how business activity energizes each segment from the terminal to the forecourt to surrounding areas to generate revenues and contribute to passenger satisfaction;
- Show how private-sector operational principles are being introduced to manage airport commercial functions more efficiently;
- Provide specific examples of regional economic impacts of airports; and
- Discuss the economic consequences of the U.S. failing to respond adequately to globally high-reaching airport and airline investors abroad.

The Fifth Wave

The best-connected locations have always attracted and been able to grow business. Our world's first major commercial centers evolved largely around seaports. The next wave of significant development took place along rivers and canals, forming the backbones of the industrial revolutions in Europe and the United States. The third wave occurred when railroads opened up landlocked interiors of nations, fostering rapid commercial, industrial, and urban growth outward from their terminals. The expansion of suburban highway systems created a fourth wave of development. Peripheral highways spread people and jobs with their exchanges spawning new commercial development around them just as docks and rail terminals did in prior transit-driven development eras.

We are now well into the fifth wave of transit-oriented development where airports have become primary anchors of urban economic growth. In some cases, airports are relocating the metropolitan center as they and their surrounding areas attract large concentrations of business functions previously confined to central city downtowns.

For instance, more than 1,000 multinational firms have located in the Amsterdam Airport Area (including the world headquarters of ABN AMRO and International Netherlands Group banks, located just six minutes from Amsterdam Schiphol's terminal) in part because of the superb international connectivity this airport provides executives. Similarly, four of the Fortune 500 world headquarters (and nine of the Fortune 1000 world headquarters) are located in Las Colinas, Texas¹, just east of Dallas-Fort Worth International Airport, while Chicago's O'Hare airport area has more office and convention space than many cities. The O'Hare area has risen to become one of the largest Class-A office markets in the U.S. Midwest.²

The Washington Dulles airport region is the second largest retail market in the U.S. (just behind New York City's Manhattan Island) and has become a high-tech business and global consulting hub.³ Hong Kong International Airport, Seoul's Incheon, Memphis International, and Paris Charles de Gaulle are world-leading air cargo and logistics centers, with the first two airports also sustaining, respectively, Hong Kong Disneyland and New Songdo City, an airport edge city the size of downtown Boston.⁴

In the fifth wave, speedy global connectivity is paramount. Airline networks operate as a "physical Internet" (Exhibit 1), moving products and people quickly around the world, analogous to the way the digital internet moves data and information. The routers of aviation's worldwide web are hub airports.

¹ Booming business! Las Colinas. 2013. Available from www.lascalinas.com (accessed December 2013).

² Jones Lange LaSalle, *Chicago Office Outlook Q 1, 2014*

³ Fuller, Stephen. "Dulles Region: Center of the Future." Center for Regional Analysis. George Mason University. 18 November 2008.

⁴ "The City." Songdo IBD. 2014. Available from www.songdo.com (accessed May 2014).

These hubs are the gateways of global flows of everything from biomed, orchids, smartphones, and sushi-grade tuna to international corporate executives, investment bankers, and foreign tourists. This has made hub airports not only magnets of commerce but also critical infrastructure for many firms and places to compete in the 21st-century global economy where economies of speed are as salient as economies of scale and scope.

Exhibit 1: Aviation's Global Physical Internet (59,036 Routes in 2012)



Source: Airline Route Mapper

A number of factors have contributed to the fifth wave:

- Major additions in long-haul, wide-body aircraft connecting people, enterprises, and cities worldwide;
- Modern global supply chain processes where parts and components are manufactured in a half dozen different countries, assembled in a seventh, and then rapidly distributed to a hundred others;
- The dramatic increase of international tourism accompanying rising income levels in large developing nations;
- The growth of advanced business services such as auditing, consulting, corporate law, and international finance that rely on air transport to meet with widely dispersed clients; and
- Our “must have it now” world where, even if people can wait, they will not wait for products they order from far-flung locations via the web.

Mushrooming global e-commerce manifests the coalescing of the net age with the jet age. Since the digital Internet will not move a box, for every smartphone order placed in London, New York, or Sao Paulo an aircraft usually flies it there, typically from China.⁵

And administering these value chain processes remains a “contact sport.” Negotiating, coordinating, and managing international supply chains, even if they are shipped by ground or sea, entails frequent executive air travel.

High-value products and high-value businesspeople routinely travel internationally by air. The upshot is that 35% of the value of today’s world trade in goods moves in aircraft.⁶ The value of business service exports (and international tourism) by air is likely a much higher percentage. Functioning as the concrete interfaces of the global meeting the local, international gateway airports are influencing business location decisions and corresponding centers of economic development. In so doing, they are shaping winners and losers in the 21st century globalization process.

Regarding the above, aviation and airports have created new urban power centers in Asia and the Middle East, challenging the likes of Frankfurt, London, New York, and Tokyo for business. So instrumental is air connectivity to the growth of the commercial, financial, leisure, and logistics sectors of Dubai and Singapore that both places may be described as global aviation hubs with city-states attached. For example, in 2010, 24% of Dubai’s economy was dependent on aviation. By 2020, this percentage is expected to reach 32%.⁷

Economies of Speed

The growing prominence of Dubai and Singapore as international business centers demonstrates that in the aviation-networked economy of the 21st century, it is no longer the big eating the small but the fast eating the slow. Where economies of speed are as important as economies of scale, air connectivity directly translates into both firm and urban competitiveness as gateway airports and their surrounding areas attract businesses seeking to leverage rapid long-distance connectivity.⁸

This is most apparent in the high-tech manufacturing sector, where companies must be able to tap quickly into global networks of different suppliers to obtain the best materials, components and sub-assemblies at the lowest possible price. A ground-to-air shipping network, made possible by proximity to a gateway airport, allows manufacturers to shorten production-cycle times and quickly access novel inputs for custom products that create additional value. Likewise, contract drug and medical testing often requires a 24-hour turnaround from a specimen source to a distant test site with results back to the source, the latter typically done electronically. For such firms, timely access to an airport is essential.

⁵ John D. Kasarda and Greg Lindsay, *Aerotropolis: The Way We’ll Live Next* (New York: Farrar, Strauss and Giroux, 2011)

⁶ <http://www.iata.org/whatwedo/cargo/Pages/index.aspx>

⁷ Oxford Economics. *Explaining Dubai’s Aviation Model: A report for Emirates and Dubai Airports*. June 2011.

⁸ Yossi Sheffi, *Logistics Clusters: Delivering Value and Driving Growth* (Cambridge MA: MIT Press, 2012).

The coalescence of the net age and the jet age in fostering economies of speed is accelerating and altering global consumer demands. Because of growing digital and physical connectivity, international customers are able to see, order, and have delivered quickly an unparalleled variety of products from all over the world. They are able to assess and identify value, and are therefore highly selective in their purchasing. Even customers in emerging markets expect quality, competitive pricing, and predictable delivery. And, as noted, they want these products right away, not in three to four months. For many purchases, three to four weeks is not fast enough; some want them in three to four days. Companies that can detect these changes, design and produce the desired products, and deliver them faster than their competitors capture market share. Since speed also reduces warehousing costs, stock-outs, and remaindered goods, the speed advantage becomes a cost advantage as well.

It is much more than time-critical manufacturers and distributors who rely on gateway airports to achieve economies of speed. Many executives and professionals routinely take to the skies to transfer sophisticated information in a face-to-face manner at distant sites. For them, time is not only cost but also currency. It is not how far but how fast they can physically connect to their dispersed clients, customers, and enterprise partners. Since the shortest time between two distant locations is a nonstop flight, hub airports have taken on heightened importance for air travel-intensive executives and professionals.

Access to hub airports is particularly important for many multinational corporate headquarters. MIT researchers have shown that more than half of Fortune 500 headquarters are located within 10 miles of U.S. hub airports. This compares with 29% of all business establishments.⁹ Related research by Strauss-Kahn and Vives revealed that hub airports have a remarkably strong impact on U.S. firm headquarter relocations. Drawing on an extensive database of approximately 30,000 company headquarters, their research found that the odds of relocating to a metropolitan area increased by 40% if the area offers a small hub airport and increases to 90% if the metropolitan area has a large hub airport. Conversely, it was found that the odds of relocating a headquarters from an area *decreases* by 30% if the area is served by a small hub and by 40% if served by a large hub.¹⁰ Both studies offer empirical support to our general understanding that corporate headquarters rely extensively on airports for their business operations.

The fifth wave has resulted in more employment and greater industry diversity near major airports than many people realize. Research by Appold and Kasarda on employment near the 25 busiest U.S. passenger airports has found that 3.1 million jobs as of 2009 were located within a 2.5-mile radius of these airports (2.8% of total U.S. employment); over 7.5 million jobs were within a 5-mile distance (6.8% of all U.S. employment) and 19 million jobs (17.2% of U.S. total) were within 10 miles.¹¹

⁹ Stilwall, Justin D., and John Hansman. *The Importance of Air Transportation to the U.S. Economy: Analysis of Industry Use and Proximity to Airports*. ICAT-2013-03 Vol. Cambridge, MA: MIT International Center for Air Transportation May 2013.

¹⁰ Strauss-Kahn, Vanessa, and Xavier Vives. Why and where do headquarters move? *Regional Science & Urban Economics* 39 (2): 168-86. 2009.

¹¹ Stephen J. Appold and John D. Kasarda, The Airport City Phenomenon: Evidence from Large U.S. Airports, *Urban Studies*, 50(6): 1239-59. May 2013.

Assessment of total wages and salaries paid in these same 2.5-, 5-, and 10-mile airport radii shows that their respective proportions of national payrolls were 3.4%, 8.2%, and 21.9%. These higher percentages indicate that many jobs near major airports are relatively well paid.

When individual airports were examined, it was found that those located a greater distance from their metropolitan city centers generated significant employment clusters of their own. Fostered by these large employment clusters, Chicago O'Hare Airport has 450,000 jobs within a radius of 5 miles; Dallas-Fort Worth 395,000 jobs; and Washington Dulles almost 240,000 jobs.

Fully 9.3% of all U.S. employment in transport and warehousing were located within 2.5 miles of the 25 airports analyzed. The disproportionately high concentration of these jobs continued outward at least as far as a 10-mile radius of the airport fence.

Even traditional downtown employment sectors such as finance, insurance, and administration are moving to airport areas. Research comparing airport area employment with metropolitan central business district area employment shows that zones within 5 miles of the airport register 55% of the finance and insurance jobs located within 5 miles of the city center and 78% of the administrative and support jobs.¹²

Along with these white-collar sectors, the hospitality sector is likewise responding to the magnetic pull of airports. As leisure and business air travel have expanded, so have airport area hotels. There are 49 hotels within 2.5 miles of Atlanta's Hartsfield-Jackson Airport with the heaviest concentration just 1 to 1.5 miles away. This compares to 51 hotels located within 2.5 miles of Atlanta's city center. The largest concentration of hotel rooms on the entire U.S. West Coast is adjacent to Los Angeles International Airport's fence.

Many airport hotels in the U.S. such as Chicago O'Hare's Hilton, Detroit Metro's Weston, and DFW's Grand Hyatt (Exhibit 2) have become virtual corporate headquarters. Executives and managers from across the country fly in for sales meetings, client contacts, board meetings, and high-level decision-making at these hotels.¹³ The same is true for many airport hotels in Europe and Asia such as the Hilton and Sheraton hotels at Frankfurt and Amsterdam Schiphol airports and the massive Regal Hotel at Hong Kong International Airport.

¹² Ibid.

¹³ John D. Kasarda, "Airport Cities: The Evolution," *Airport World*, pp 24-27, April/May 2013.

Exhibit 2: Dallas-Fort Worth Grand Hyatt Hotel (21st Century Virtual Corporate Headquarters)



Source: Dallas-Fort Worth International Airport

Using hub airport hotels for corporate meetings optimizes the physical connectivity of geographically dispersed executives and managers while minimizing their local ground transport times. It also allows companies to downsize expensive headquarters space by utilizing the business infrastructure and services that larger airport hotels provide.

Airport areas are similarly attracting businesses across a full range of biomedical, consulting and information and telecommunications functions. Sports, recreation and entertainment complexes along with showrooms, exhibition, and convention centers are also gravitating to airport areas. Even Formula 1 auto racetracks are locating near gateway airports. As noted by the International Air Transport Association, “[b]y flying 60 cars and 300 tonnes of equipment to 20 grand prix, in 19 countries, with 500 million avid viewing fans, air cargo keeps Formula 1 on track.”¹⁴

¹⁴ <https://www.iata.org/whatwedo/cargo/sustainability/Pages/benefits.aspx>

In the fifth wave, airports and their surrounding areas are becoming as much destinations as places of departure, spinning the commercial fabric of the new cities they are creating. What does this airport city commercial fabric look like? The following section highlights recent developments in airport commercial form and functions commencing with the passenger terminal and then moving outward to the rest of airport property and beyond.

The Form and Functions of Airport Cities

The spatial and functional core of the airport city is the passenger terminal. In addition to its primary aeronautical infrastructure role, the terminal operates as the airport city's multimodal commercial nexus offering a wide variety of consumer goods and services to air travelers, airport employees, and meeters and greeters.

Terminal City

At the largest international airports, passenger terminals are morphing into luxury shopping malls and artistic and leisure venues as well as locations to exchange knowledge and conduct business. No longer restricted to book and magazine shops, food courts, and duty-free outlets, they now contain gallerias and shopping streets featuring brand name boutiques, specialty retail, and upscale restaurants, along with live music, arts, entertainment, and cultural attractions.

Locally and regionally themed architecture and terminal design contribute to "placemaking" and other forms of location identity. For example, the transit area of Singapore Changi's new Terminal 4 will feature Peranakan shop houses symbolizing "Old Singapore." Cleveland Hopkins International Airport is developing a music-themed tunnel in cooperation with the city's Rock and Roll Hall of Fame and Museum. Adding to a sense of place are locally based merchandise and dining outlets such as Indy 500 (racecar) Authentics in Indianapolis' passenger terminal, and the well-known Memphis barbeque restaurants at that city's airport. Such destination marketing and placemaking not only connect the airport to its broader community but also provide an economic boost to regional businesses and service venues.¹⁵

Concierge-staffed business lounges are sprouting up in the terminals along with the luxury retail shops and concourse-connected four- and five-star hotels noted previously. Hong Kong International Airport (HKIA) is a good case in point. Its main terminal hosts a galleria (The Atrium) with more than 20 high-end designer clothing shops. In addition to operating a gold exchange for international traders, HKIA premiered the world's largest terminal commercial lounge. This 15,000-square-foot full-service business center supports up to 300 users with wireless hotspots, workstations, printers, and meeting facilities

¹⁵ "Character Building," *Passenger Terminal World*, January 2014, pp 33-36.

along with large-screen TVs and advanced videoconferencing systems. When not working, business travelers can enjoy an all-day buffet and an à la carte menu along with such personal amenities as spa-type massages, barber services, and manicures. If travelers desire an overnight stay, the 1,171-room Regal Hotel connected to the passenger terminal provides an even fuller complement of business and service amenities.

Bloomberg LP is taking London City Airport's business infrastructure a step further. This multinational financial services firm operates a technology hub in London City's terminal providing real-time financial data and information along with an analytics help desk. Research showed that 61% of London City Airport's passengers are business travelers and that over half of them use subscription-based financial services.¹⁶

Incheon's new Terminal 2 (T2), currently under construction, will be a mini-city in its own right. Nearly twice the size of Incheon's existing large terminal, T2 will host a shopping district, hotel, sculpture and exhibition areas, and garden areas with waterfalls, indoor streams, and koi ponds. Its retail lifestyle center will feature double-level shopping, currency exchanges, and remote duty-free pickup of purchases from Seoul.

Incheon surpassed Dubai International Airport in 2012 to become the world's leader in airport retail sales, reaching US \$1.7 billion compared to Dubai's US \$1.6 billion. Due in large part to mainland Chinese and Japanese air travelers, Incheon's retail terminal has gone increasingly upscale. Its Louis Vuitton store alone had sales of US \$100 million in 2012 with passenger surveys revealing that many Chinese and Japanese consumers fly to Incheon airport just to visit this luxury store.¹⁷

Along with upscale retail, passenger terminals are increasingly hosting temporary "pop-up" shops for greater variety, to tailor their retail mix to seasonality, and to test or cultivate new brands. London Heathrow, for instance, uses pop-up shops to sell seasonal items such as flip-flops and frozen yogurt in the summer. Copenhagen Airport utilizes pop-up restaurants with well-known Dutch chefs offering specialty dishes and pop-up "Brand Boxes" in its duty-free area. In the fall of 2013, New York's JFK Terminal 5 hosted a three-day Farmer's Market.

Paris Charles de Gaulle Airport became the temporary home of a pop-up IKEA store that featured nine bedrooms where travelers could take a short rest, along with a living room, child's play area, and TV rooms with comfortable sofas.¹⁸ The IKEA pop-up enabled the firm to display its latest products for possible future purchase while providing passengers with a unique airport experience.

¹⁶ Rob Virtue, "City Airport launches Bloomberg hub for passengers," *The Wharf*. May 13, 2014.

¹⁷ Joe Bates, "Incheon Enjoys Record Duty Free Revenues," *Airport World*, February 18, 2013.

¹⁸ "Pop Stars," *Passenger Terminal World*. January 2014.

Passenger terminals are becoming urban social realms in addition to commercial realms, as they increasingly offer leisure, entertainment, cultural, and recreation venues. Singapore Changi Airport has an “Xperience Zone” offering the latest movies and sports on large screens and lush “green oases” including cactus, orchid, and butterfly gardens as well as a four-story high slide for thrills (Exhibit 3). It is developing “Project Jewel” at its Terminal 1 car park, a significant lifestyle destination featuring a 130-foot-high waterfall. Amsterdam Schiphol’s terminal is home to a casino and Rijksmuseum art gallery where passengers can view famous Dutch-Master paintings, while the London Philharmonic periodically plays at Heathrow’s Terminal 5.

Exhibit 3: Singapore Changi Terminal Leisure, Entertainment, and Recreation Innovations

Themed indoor natural gardens



Source: CNN

“Xperience Zone”: Latest Sports and Movies on Large Screens



Source: Singapore Changi International Airport

Four-Story Slide



Source: Singapore Changi International Airport

Making the airport experience more urbane, American hip-hop star Jay-Z is taking his popular New York City lounge and sports bar, the 40/40 Club, to 20 major U.S. airports. The first one opened in spring 2014 in Atlanta Hartsfield-Jackson Airport’s terminal. The club, which is restricted to ticket passengers, includes a glitzy lounge separate from the sports bar, similar to music clubs in city centers. These venues make terminal layovers more pleasant and help reduce air travelers’ stress. Both can be significant factors for attracting additional transfer passengers that can both boost terminal commercial revenues and support more airline connectivity.

Other airports taking on urban service functions include Frankfurt, which has the world's largest airport clinic, serving more than 36,000 patients yearly, and Stockholm-Arlanda Airport, whose chapel conducted nearly 100 weddings in 2013 on a fee basis. Munich International has a terminal-linked, five-star hotel that compares favorably with many of the best downtown hotels in quality of services and guest amenities.

Forecourts and Other Airport Property

Property facing passenger terminals (forecourts) have become valued as business and community centers, as well. Building on the traditional urban "central square" model, the outdoor plaza in front of Munich's terminal has become an event destination for the airport region. In the summer, it hosts a huge artificial ocean wave tank with competitions based on the time that surfers can ride the waves. During the five weeks leading up to Christmas, the plaza becomes a magnificent Christmas market where shops and restaurants stay open until 11:00 PM. A large German beer garden operates throughout the year.

One finds growing numbers of traditionally metropolitan central business district functions in the forecourts and other nearby airport property. There are over 2 million square feet of corporate office space, including the European headquarters of Microsoft, a short walk from Amsterdam Schiphol's terminal.¹⁹ Office space in Schiphol's forecourt area is among the most valued in the Netherlands demanding premium rents.

London Heathrow's Sofitel hotel with direct access to Terminal 5 has become a business hub. In addition to overnight transit passengers, it attracts wealthy international and extended-stay business travelers to its suites, which have rates as high as US \$4,000 per night. With 45 meeting rooms, a 180-seat theater, and a convention center accommodating 1,700 delegates, the airport hotel provides key business infrastructure.

Roissy-pole, at the core of Paris' Charles de Gaulle airport (CDG), is the multimodal central business district of CDG's expanding airport city (Exhibit 4). It hosts 2.5 million square feet of office space and 1,700 hotel rooms. One of its new major office complexes (Continental Square 3) is owned jointly by Aéroports de Paris (60%) and Schiphol Real Estate (40%). There are over 700 firms based on CDG property employing 87,000 people.²⁰

¹⁹ Maurits Schaafsma, Amsterdam Schiphol Airport Senior Urban Planner.

²⁰ Aéroports de Paris, Real Estate Department, April 2014.

Exhibit 4: Paris Charles de Gaulle (Roissypole: CDG's Airport City)



Source: Aéroports de Paris

A centerpiece of Frankfurt Airport City is “The Squire,” which opened in 2011. Just an eight-minute walk to Frankfurt Airport’s check-in counters, this massive 2-million-square-foot, nine-story office and hotel complex stretches 660 m (2,000 feet) long (Exhibit 5). It is served by nearly 200 high-speed intercity trains, which stop underneath it daily, making it one of the best-connected office buildings in the world. International auditing and consulting giant, KPMG, has made “The Squire” its European corporate headquarters occupying over 400,000 square feet.

Exhibit 5: Frankfurt Airport “The Squire” (21st-Century Multimodal Office Hub)



Source: www.thesquaire.com

South Korea’s Incheon International Airport has evolved into an international business center complete with office buildings, a conference and exhibition center, and entertainment and leisure facilities as well as a substantial logistics zone. Among the larger components is a mixed-use commercial complex immediately south of Incheon’s passenger terminal consisting of two four-star hotels with 850 rooms (one containing a casino), four office buildings with 2,500-square-foot business suites and a golf course. A 1-million-square-foot water park is nearby.

Under construction or planned at the airport are a global medical center along with 6.8 million square feet of hotels, office buildings, retail facilities, and additional meeting/exhibition spaces. In 2013, the Paradise Company, in collaboration with Japanese firm Sega Sammy, announced it would build a US \$1.8 billion casino, conference, and luxury hotel complex minutes from Incheon’s passenger terminal.

Canada’s Vancouver Airport has begun construction on a 30-acre luxury designer outlet center in partnership with the McArthurGlen Group, Europe’s leading owner, developer, and manager of designer outlets. The outlet center, providing 350,000 square feet of luxury and lifestyle retail on airport property, is on track to open in spring 2015 with 100 stores.

Hong Kong International's SkyCity (Exhibit 6) is developing in a similar vein with office, retail, entertainment, hotel, and exhibition complexes. SkyCity's first phase opened in late 2006, cornerstoned by SkyPlaza, a multipurpose commercial complex connected to Terminal 2. The lower floors of SkyPlaza provide a 300,000-square-foot retail center, including its 4-D Extreme Screen theatre. Above this podium is Class-A office space with a total gross floor area of another 300,000 square feet. Business people from China's southern coastal cities regularly take a hovercraft to SkyCity to meet with their Hong Kong counterparts without having to go through airport immigration, customs, or security.

Exhibit 6: Hong Kong International Airport's SkyCity Phase 1 (completed)



Source: Skidmore, Owings & Merrill LLP

Adjacent to T2 and SkyPlaza is World Trade Center HKIA, a seven-story Class-A office tower that offers comprehensive one-stop business facilities and services. Its facilities range from individual workstations to fully furnished entire-floor offices providing maximum flexibility; these spaces are available from an hourly to a yearly rental basis. Typical full-floor office space measures just under 20,000 square feet, served by six elevators with 95 parking spaces provided. Business service amenities offered include onsite IT and telecommunications support; reception, secretarial and translator services; mail-collection and forwarding; and high-speed wireless access along with printers, scanners, copiers, and fax machines.

There is also a conference center with five training rooms and two meeting rooms and a “premier” dining club with a 360-degree panoramic view of the airport.²¹

SkyCity’s first phase of development also includes an air-express-train-connected, 750,000-square-foot international exhibition center (Asia World Expo) housing many international trade offices, SkyPier (the China cross-boundary hovercraft ferry terminal), a 650-room Marriott Hotel, and the SkyCity Nine Eagles (nine-hole) golf course. The golf course, serving as a land bank, will eventually be developed into a pedestrian-friendly business park.

Due to their growing commercial infrastructure, an increasing number of gateway airports employ more than 50,000 workers, qualifying them as metropolitan central cities, as defined by the U.S. Census Bureau. When the hundreds of thousands of daily flyers are added – plus those greeting passengers – the consumer populations of many gateway airports are larger than most medium-sized cities. For example, more than twice as many people pass through Atlanta’s Hartsfield-Jackson International Airport each year – nearly 95 million passengers in 2013 – as visited U.S. tourist meccas Disney World, Graceland (the former home of Elvis Presley), and the Grand Canyon, *combined*.

Moreover, given the significantly higher incomes of air passengers, which can be two to four times the national average, and their often massive numbers – 30 million to 95 million people visit large airports each year, compared with 8 million to 12 million for a large shopping mall – it is not surprising that major airport retail sales per square foot are as much as six times greater than those of suburban shopping malls and downtown shops.²²

Beyond the Airport Fence

Progressing outward, major trade, showroom, and conference venues have sprouted up near gateway airports such as Atlanta, Chicago, Frankfurt, and Paris. International Trade Center Paris, for example, is a 1.4-million-square-foot business and conference development near Charles de Gaulle International Airport consisting of a convention center with 3,000 seats, three exhibition halls (45,000 square meters), a 14,000-square-meter showroom, 21,000 square meters of office space, and three four-star hotels. The project, with a budget of €300 million (~US \$400 million), was completed in 2011.

Likewise, Dublin International has planned a 700,000-square-meter, airport-linked commercial complex consisting of 600,000 square meters (6.5 million square feet) of office space targeted to internationally oriented businesses and 100,000 square meters (1.2 million square feet) of hotel, convention, and retail facilities. An automated people mover will shuttle business people and other travelers from the airport city complex to international gates in six minutes.

²¹ <http://www.hongkongairport.com/eng/office/AWTC/index.htm>

²² Kasarda, John D., Shopping in the Airport City and Aerotropolis, *Research Review* 15 (2): 50-56. 2008.

Enterprise zones, free trade zones, and special economic zones are forming around international airports providing important “soft” business infrastructure. In 2010, the UK government established an Enterprise Zone adjacent to Manchester Airport that offers tax incentives, rent relief, and streamlined government procedures geared for attracting investment and facilitating aviation-oriented business growth.

Leveraging this enterprise zone, Manchester Airport Group is partnering with the Beijing Construction and Engineering Company (BCEG), Carillion PLC, and the Greater Manchester Pension Fund to develop areas closest to the airport known as Manchester Airport City. BCEG has committed US \$160 million to construct this US \$800 million airport city, which will offer over 1.5 million square feet of office space, 1.4 million square feet of logistics facilities, and 650,000 square feet of ancillary retail.²³

The world’s largest and most ambitious airport-linked development project is the 415-square-kilometer Zhengzhou Airport Economic Zone (ZAEZ) centered on and around China’s Zhengzhou International Airport (CGO). This modern aerotropolis (see www.aerotropolis.com) consists of three main planning districts:

- A 160-square-kilometer Airport District consisting of CGO and its surrounding core area. This district contains a highly active bonded industrial zone adjacent to the airport and zones for aviation-related industry including aircraft maintenance and assembly, fast-cycle logistics, and trade and exhibition functions, among others.
- A 100-square-kilometer Urban Services District, located north of the airport district, targeted for (1) modern business services such as aviation finance and regional corporate headquarters, (2) scientific and knowledge-intensive functions such as software engineering, (3) cultural, leisure, and education functions, and (4) quality mixed-use commercial/residential areas with urban amenities to house executives, professionals, and knowledge workers.
- A 155-square-kilometer High-End Manufacturing District aimed at advanced and precision manufacturing as well as production of new aerospace equipment materials such as carbon-fiber composites, polymers, and ceramics. The district will also be a center for IT, biomedicine, and pharmaceutical functions.

Massive government spending is taking place on transportation infrastructure to make the ZAEZ highly accessible. This includes:

- (1) Upgrading existing and constructing new roads to the airport and the surrounding ZAEZ;
- (2) Bringing subways, intercity, and high-speed rail to CGO and the ZAEZ;
- (3) Constructing an integrated multimodal ground traffic center connected to its new Terminal 2, scheduled to open in 2015; and
- (4) Adding runways and taxiways to support greater domestic and international air connectivity.

²³ “Manchester Airport City: The Story So Far.” International Airport Review, Vol. 19, No.2, 2014. Also accessible through www.internationalairportreview.com

Similar improvements in regional, national, and global connectivity are making many gateway airports and their nearby areas (especially those in Asia and the Middle East) even stronger magnets for a widening range of commercial functions. Exhibit 7 summarizes those commercial functions most commonly associated with gateway airports based on their typical locations: (1) the terminal; (2) forecourt; and (3) elsewhere or beyond the airport fence. The exhibit further designates these functions by whether they are passenger-oriented activities, aviation-intensive people activities, or goods-oriented activities.

Exhibit 7: The Common Location of Airport City Functions

<i>Function</i>	<i>Terminal</i>	<i>Forecourt</i>	<i>Elsewhere on airport or beyond the airport fence</i>
Passenger-oriented activities			
Restaurants, catering and other food services	★		
International brand and specialty retail shops	★		
Banks and currency exchanges	★		
Duty free shops	★		
Airline lounges	★		
Kiosks of all types	★		
Wedding chapels		★	
Aviation-intensive people activities			
Private meeting rooms with business support services	★		
Hotels and accommodation		★	
Office buildings		★	
Convention and exhibition centres		★	
Cultural and entertainment attractions	★		
Personal and family services such as fitness facilities, spas, and child daycare			★
Medical and wellness facilities			★
Auction, exchange, and trade complexes			★
Factory outlet stores oriented to both air travelers and locals			★
Leisure and recreation venues including golf courses, race tracks, and gaming			★
Goods-oriented activities			
Aviation-related industry such as aircraft maintenance, repair and overhaul			★
Specialized handling, including perishables and cool-chain facilities		★	
Logistics and distribution, including value-adding labeling, testing, kitting, etc.			★
Free Trade Zones, special economic zones and bonded warehouses			★

Source: John D. Kasarda and Stephen J. Appold, Airport City Master Class, Airport Cities World Conference and Exhibition, Memphis, TN, April 2011

Managing Airport Commercial Development

Consistent with their expanding commercial activities, airports are altering their operational units and management structure. Numerous airports (both public and private-sector operated) have established commercial and/or real estate divisions to develop their publically accessible landside areas as well as foster development beyond airport boundaries. They include, among others, Aéroports de Paris (ADP), Amsterdam Schiphol, Dallas-Fort Worth International Airport (DFW), Frankfurt Airport [Fraport], Malaysia Airport Holdings, Singapore Changi, and Spain's Ferrovial Group. To briefly note a handful of management structures:

- ADP established a real estate division to act as the developer, general contractor, and construction project owner and manager of landside commercial properties at Paris Charles de Gaulle and Orly international airports.
- The Airports Company of South Africa (ACSA) has set up a semi-independent property company to develop its airport cities in Johannesburg and Durban.
- China Capital Airport Holdings, a state-owned enterprise that operates much like a private entity, is continuing to proceed with its highly ambitious Beijing Capital Airport City. Working with private-sector partners such as Airport City Development Corporation, Ltd., and adjacent municipalities such as Shunyi, China Capital Airports Holdings has developed major logistics, shopping, entertainment, exhibition, finance, and trade facilities on and around Beijing Capital International Airport. Its Airport City Logistics Park, alone, covers over 2.5 million square feet.
- DFW's management is aggressively expanding its commercial and real estate divisions to lease airport land to a wide variety of commercial tenants. It is also forming public-private partnerships to develop over 5,000 acres of property for office, hospitality, retail, entertainment, and wellness.
- Hong Kong International Airport has likewise established both commercial and real estate divisions to boost its terminal retail and develop its adjacent SkyCity commercial complex along with other airport property.
- Malaysia Airports Holdings Berhad has a special land division to develop Kuala Lumpur International Airport's "Aeropolis," an integrated airport city for shopping, trading, exhibition, leisure, motor sports, and tourism activities.
- Incheon International Airport Corporation is forming a variety of joint ventures with the private sector to develop its "AirCity," encompassing hotels, office buildings, logistics zones, shopping, entertainment, and tourism districts, as well as housing and services (e.g. medical) for airport city workers and residents.

- Dubai Aviation City Corporation (DACC) has been established to develop and manage Dubai World Central (DWC), a 140-square-kilometer, US \$34 billion airport-anchored set of six commercial districts under development 35 miles south of downtown Dubai. Built around the new Al Maktoum International Airport, DWC opened for cargo in 2011 and passenger aircraft in 2013. DWC already includes substantial logistics facilities and office buildings for aviation-related industry with plans for hotels, a megamall, golf course, and housing for up to 900,000 on-site workers. Slowed by Dubai's 2008-2011 real estate and financial crises, DACC's focus was on developing its "Logistics City," but with the emirate's more recent economic resurgence, work is now recommencing on DWC's other commercial districts.
- Amsterdam Schiphol, through its Schiphol Real Estate, has been a key revenue-generating arm of its airport operator, The Schiphol Group. Over 50% of Schiphol Group's profits come from aviation-linked commercial activities.
- The Airports Authority of India has turned to large private-sector conglomerates such as GMR and the GVK Group to lead consortia to operate and expand Delhi International Airport and Mumbai International Airport as well as construct and manage the New Hyderabad International Airport and The New Bangalore (Bengaluru) International Airport.

There is at least partial evidence that private-sector ownership and private sector-oriented commercial divisions improve airport operational efficiency, passenger service quality, and airport revenues.²⁴

The Airport as Enterprise Model

Further extending their corporate reach, a number of airports are buying and/or operating other airports through special investment management divisions. Aéroports de Paris International, Incheon International Airport Corporation, the Schiphol Group, Malaysia Airports Holdings Berhad, Fraport, the Ferrovial Group, TAV (Turkish Airport Holdings), Vancouver Airport Services (now the Vantage Group), as well as Changi Airports International are among those involved in cross-border airport ventures. Private-sector groups such as Macquarie Airports (now MAp) also own interests in and often manage multiple airports around the world that have implemented the airport as enterprise model.

These far-reaching airport business structures, including cross-border ventures, offer additional testimony that airports are evolving from basic aeronautical infrastructure into multi-functional extended enterprises serving both aeronautical needs and profitable commercial development worldwide. For

²⁴ Oum, T., Yan, J., Yu, C. (2008). "Ownership Forms Matter for Airport Efficiency: Results from Bayesian Estimation of Stochastic Cost Frontiers". *Journal of Urban Economics*, 64(2), 422-435.

many not familiar with this reality, the airport as enterprise model might appear to be a deviation from the norm, but it is fast becoming the 21st century way forward for airports in their financial and operational management.

The airport as enterprise model is quite distinct from the more traditional aeronautical systems airport operational model typically managed by government employees who run airports like public utilities or as municipal departments using public-sector principles. The equally important airport enterprise role requires different strategies and operational skill sets driven by private-sector principles fusing innovative management, finance, marketing, and negotiation with logistics and commercial real estate development.

In the airport as enterprise model, airports do business the way businesses do business. Many have found they can more effectively function this way when they corporatize. Corporatization is not privatization, which involves the transfer of control from the public sector to the private sector. Rather, it is a process of transforming government assets and agencies into publically owned, self-sufficient corporations to introduce private-sector management techniques and cultures. Corporatized airports even appear sometimes on national stock exchanges.

Through corporatization, airports are typically able to be more nimble in their investment and operating decisions than most public agencies, which frequently need political approval for even relatively minor decisions. They can also be more customer- and market-responsive.

The move to a corporate organizational form in airport management promises to reduce the role of politics, lessen bureaucracy, and increase operational efficiency. Moreover, the corporate form of organization is much more in line with the airport as a business enterprise, i.e., earning a positive financial return, audited annually, with an obligation to maintain capital while offering consumer services that enhance the passenger experience.

Western Europe has embraced this management form where 80% of its commercial airports have been corporatized.²⁵ The corporatization model has spread in Asia, the Middle East, and Canada, but not yet to the United States. With U.S airports still operating as departments of city governments or by politically appointed authorities, this may be one reason they tend to come up short when international comparisons are made.

²⁵ International Air Transport Association, *Airport Competition*, V.1.2, November 2013. Pg. 11.

Along with management restructuring, a major paradigm shift is required in airport master planning. These plans must be at least as focused on commercial layout and efficiencies as on aeronautical layout and efficiencies. Ideally, the commercial components and aeronautical components are synergized for optimal and mutual reinforcement.

In sum, airports from Amsterdam to Zurich and from Beijing to Seoul are operating as enterprises in commercially developing their passenger terminals, forecourt areas, and other property. This approach has become a pivotal means to financing airport operations while contributing to their profitability, cost-competitiveness in attracting airlines, and passenger satisfaction.

Other international airports, not quite the size of Amsterdam Schiphol or Seoul's Incheon, have given commercial development a high priority (e.g., Athens, Belo Horizonte in Brazil, Brisbane, Calgary, Dublin, Edmonton, Helsinki-Vantaa, Munich, Stockholm-Arlanda, Taiwan-Taoyuan, Vancouver, Vienna, and Zhengzhou to mention only a handful). They, like their larger cousins, are incorporating commercial functions previously reserved for private enterprise and land uses previously reserved for cities. Some are developing the density of highway and rail connections that are usually associated with metropolitan downtowns. This is reinforcing their 21st-century roles as commercial magnets, critical business infrastructure, and drivers of urban development over an extended area. In so doing, their economic impacts are deepening and widening.

Airport and Aviation's Economic Impacts

Take Zhengzhou (China) International Airport as highlighted previously. In November 2011, it opened a 5-square-kilometer, customs-free bonded zone on and adjacent to the airport for high-value, time-critical manufacturing and distribution. Apple's primary contract manufacturer, Foxconn, was immediately attracted to the bonded zone. With strong support from the central, provincial, and municipal government levels, Foxconn constructed a manufacturing campus that employs over 240,000 workers assembling Apple's iPhones and other digital devices.²⁶

In 2013, this assembly complex produced over 96 million iPhones, making the Zone the world's largest platform for smartphone production. Propelled by Foxconn's aviation-dependent global supply chain (Exhibit 8), the Zone's total trade (imports and exports) mushroomed to US \$35.8 billion that year. This more than doubled the value of trade of China's largest province (Henan) in a two-year period.

²⁶ Source: Foxconn on-site interviews conducted by author in May 2014.

Exhibit 8: Global Supply Chain – Apple iPhone 5



As of April 2014, another 14 smartphone manufacturers and suppliers were establishing their base in the broader Zhengzhou Airport Economy Zone (ZAEZ) with 150 million smartphones expected to be manufactured there in 2014. A number of new projects up to US \$1 billion each are currently under construction in the ZAEZ. These include, among others, Amer International Group, Cainiao Networks, Fair Friend Precision Machinery Park, IBM, and Microsoft. In 2013, there were 48 new major projects signed, worth a total of US \$24.3 billion.²⁷

Analogous forms of development have occurred near larger US airports, albeit not on the same scale and mostly in an ad hoc fashion. Economic impact studies show that US gateway airports have annual economic impacts in the tens of billions of US dollars. For example, a 2012 study of the impact of Memphis International Airport showed that the airport contributed nearly U.S. \$30 billion annually to the metropolitan region's economy.²⁸ Over one third of the businesses in the Memphis region said they depended on the FedEx hub for their operations.

A 2013 impact study of San Francisco International Airport (SFO) estimated that its economic footprint in the region represented US \$55.8 billion in business sales, including US \$19.6 billion in payrolls and 288,000 jobs.²⁹ State and local tax revenues generated by SFO were estimated to be US \$2.5 billion in 2012.

²⁷ Zhang Yanming (Director of ZAEZ), "Developing the Airport Economy and Building the Zhengzhou Aerotropolis," keynote speech at the 2014 Airport Cities World Conference & Exhibition, Kuala Lumpur, April 1, 2014.

²⁸ Sparks Bureau of Business and Economic Research/Center for Manpower Studies. (2013). An economic assessment of the impact of the Memphis International Airport. Retrieved August 6, 2014, from http://memphis.edu/sbber/pdfs/impactstudies/mem_economic_impact_2012_executive_summary.pdf

²⁹ Economic Development Research Group, Inc. (2013). 2013 economic impact study of San Francisco International Airport. Retrieved August 6, 2014, from <http://media.flysfo.com.s3.amazonaws.com/default/downloads/reports/SFOEconomicImpactReport2013.pdf>

Looking abroad, a similar 2013 study of Australia’s Sydney airport found that the airport generated US \$27 billion in metropolitan area business revenues in 2012 and 283,700 jobs. Sydney airport represented 6 percent of the gross state product of New South Wales.³⁰

Oxford Economics has conducted a substantial number of studies of aviation’s economic impact on nations in terms of gross value added by their air connectivity. The firm’s 2011 compendium study of 80 countries found that in 2010 aviation directly or indirectly contributed 22 million jobs and US \$1.4 trillion in GDP.³¹ Not included in these figures are broader “catalytic” effects of aviation on economies by making firms more productive or supporting tourism. Adding tourism to the equation, for example, boosts aviation’s global economic impact to 56.6 million jobs and to US \$2.2 trillion in total business revenues.³²

Specific studies of the commercial impact of adding international air routes to a metropolitan area’s economy corroborate these figures. A 2011 assessment of the total annual economic contributions of five potential daily international routes at Denver International Airport estimated that they would add US \$589 million in annual business revenues to the Denver region and support an additional 6,600 full-time jobs.³³ The detailed estimated economic impacts of each of the five routes by market connected, airline, and aircraft type appear in Exhibit 9.

Exhibit 9: Annual Economic Impacts of 5 Potential New Daily International Air Services at Denver International Airport (Once Daily Operations)

Potential Air Service	Airline (Aircraft)	Spending Impacts (\$ millions)	Employment Impact (Person Years)	GDP (\$ millions)
Tokyo	All Nippon Airways (B787-800)	131.9	1,482	79.1
Sao Paulo	TAM Airlines (A330-200)	120.2	1,352	72.3
Paris	Air France (B777-200ER)	120.7	1,345	72.7
Panama City	Copa Airlines (B737-800)	73.2	820	43.6
Dubai	Emirates Airlines (B777-200LR)	142.9	1,604	85.3
Total		588.9	6,603	353.1

Source: Economic Impact Studies of Potential New International Air Services at Denver International Airport, InterVISTAS, March 8, 2011.

³⁰ Sydney Airport Corporation Limited. (2013). *The economic value of Sydney Airport*. Deloitte Access Economics.

³¹ Oxford Economics. 2011. *Benefits of Aviation* studies. Available at <http://www.benefitsofaviation.aero/Pages/download.aspx>.

³² Perovic, J. (2013). The economic benefits of aviation and performance in the travel & tourism competitiveness index. In J. Blanke, & T. Chiesa (Eds.), *The travel & tourism competitiveness report 2013* (pp. 57-61). Geneva: World Economic Forum. Retrieved from http://www3.weforum.org/docs/WEF_TT_Competitiveness_Report_2013.pdf

³³ Economic Impact Studies of Potential New International Air Services at Denver International Airport, InterVISTAS, March 8, 2011.

Succinctly stated, gateway airports are much more than mass transit hubs. They are global business anchors, commercial magnets, and regional economic catalysts with immense impacts. Their roles as strategic infrastructure for business and engines of economic development are becoming more important as the 21st century progresses.

Conclusion

This paper commenced with the observation that the best-connected locations have always attracted and grown business. In our globally networked, speed-driven economy, this means that the best-connected airports (measured by the number of markets served times the frequency of service to those markets weighted by the size of those markets) will bring disproportionate competitive advantages to the firms and metropolitan regions and nations they serve.

Upgrading airports and expanding air routes are vital to cities and regions seeking to diversify their economies, boost exports, attract investment, and draw high-spending tourists. For potential investors and tourists arriving by air, airports are a metropolitan region's business card and final handshake presenting the region's first and last impressions. For transit passengers, the airport may be their only impression of the region. Visual impact and passenger experiences therefore play an important regional marketing role, reinforcing the airport's business infrastructure role.

Government leaders in Asia and the Middle East understand this. They have lofty global commercial aspirations and active strategies to achieve those aspirations based on developing their air gateways into the biggest, best, grandest, and most connected in the world. They have prioritized these gateways as their primary infrastructure to impress, compete, and win in the 21st-century global commercial wars.

Of the US \$385 billion being spent on airports worldwide, US \$115 billion has been committed to new airport construction, expansion, and modernization in the Asia-Pacific region.³⁴ This is 45% more than either the United States or Europe. They are simultaneously pouring multiple billions of dollars into their national airlines to grow their airport connectivity advantages.

Beijing Capital Airport, for instance, is now the second busiest airport worldwide (rapidly catching up to Atlanta). This airport was not even in the top 30 just 10 years ago. Its new Terminal 3 is the second largest in the world (following Dubai's new Terminal 3) and one of the most modern. Nevertheless, the government has already begun constructing a massive state-of-the-art airport on the other side of the city to complement Beijing Capital.

³⁴ Center for Asia-Pacific Aviation, as cited in <http://www.cpifinancial.net/news/post/25714/middle-east-witnessing-massive-airport-developments-to-meet-future-demands>

Singapore Changi is frequently rated the world's top large airport in quality, efficiency, and passenger satisfaction.³⁵ Though still not at capacity, it is adding a new runway and two new terminals that will allow it to expand the number of passengers handled annually from its current 54 million to 135 million by 2025. Terminal 4, under construction, will have a 1,000-foot long shopping mall as its spine, offering every visual, product, and service amenity a passenger could imagine. Terminal 5, which will no doubt match T4 in aeronautical efficiency, quality, and innovative passenger experiences, will be able to handle 50 million passengers alone, the equivalent of New York's JFK.³⁶

New airport development, expansion, and modernization supporting increased connectivity and enriched passenger experiences are reverberating throughout the Asian continent. Countries with limited resources such as Myanmar (Burma) or with other pressing public resource needs, such as India, are turning to the private sector and foreign airport enterprises to construct world-class airports and new terminals using long-term concessions or public-private partnerships. They are likewise turning management over to these private sector-oriented organizations with excellent results in airport efficiency, quality, and passenger satisfaction.

What is taking place in the Middle East may be even more remarkable from an airport quality and hub-expansion standpoint. Dubai's government continues to hyper-inject capital into Dubai International Airport and Emirates Airline, driving this city-state while siphoning passengers and business from airlines, airports, and cities that often do not measure up in air service quality and connectivity.

Dubai, in fact, has become the aviation hub for much of India and Africa while posing a serious challenge to major Western airlines and airports for long-haul traffic. In 2014, Dubai International surpassed London Heathrow to become the busiest global airport in terms of number of international air passengers.³⁷ Its passenger facilities are as grand as their scale, with world-leading duty-free shopping and a magnificent business-class lounge in expansive Terminal 3 that is nearly as large as some midsize U.S. airport terminals.

Seeking to bolster its competitive future, Dubai's enterprising leaders have already opened a new airport on the opposite side of the emirate. Upon build-out, this new airport (Al Maktoum International) will have five runways and modern terminals with a capacity of 160 million passengers annually and 12 million tons of cargo. The current leading air cargo airports, Hong Kong and Memphis, each process just over a third of this volume. Surrounding Al Maktoum International is the US \$34 billion Dubai World Central, a 21st-century aerotropolis consisting of six urban districts, one of which will host World Expo 2020.

Not to be outdone, Dubai's neighbor, Abu Dhabi, is constructing a glamorous US \$6.8 billion midfield terminal to serve its rapidly expanding hub airline, Etihad Airways. This new 7-million-square-foot

³⁵ http://www.worldairportawards.com/main/awards_2014.htm

³⁶ <http://www.nytimes.com/2013/12/31/business/international/singapore-leads-surge-in-airport-construction-across-asia-pacific.html?pagewanted=1& r=0>

³⁷ <http://www.aci.aero/Data-Centre/Monthly-Traffic-Data/Passenger-Summary/Year-to-date> (accessed September 2014)

terminal with a 170-foot tall arched ceiling is designed to give a lasting “wow” impression, internally and externally, to air passengers and other visitors (Exhibit 10).

The terminal’s planners and developers promise it will not only be the largest and most visually striking aerodrome in the world but also the most efficient from an aeronautical and energy standpoint. They are accomplishing the latter by incorporating environmental features of Masdar, the sustainable zero-carbon city under construction nearby.

Exhibit 10: Abu Dhabi’s New Midfield Terminal (Exterior Above, Interior Below)



Source: Kohn Pederson Fox Associates

Doha, Istanbul, Riyadh, and even Oman are competing with Abu Dhabi and Dubai in developing airports fitting the biggest, best, most connected, and iconic architecture categories. Istanbul, for example, has commenced work on its third airport, designed to handle 150 million passengers annually, with the goal of challenging Dubai as the world's main hub connecting Asia to the West and Africa. A consortium of five Turkish firms bid US \$29 billion in 2013 for a 25-year lease to build and operate this new airport. The consortium is initially investing nearly US \$13 billion to develop a world-class facility.³⁸

Asian and Middle Eastern leaders not only comprehend the value of gateway airports to gain commercial advantage, they embrace it and act on it through prioritized investment in constructing and growing them. This is not the case in the United States. While the value of our gateway airports is acknowledged, they are not embraced and prioritized for investment in the same manner. Indeed, rather than treating our nation's airports as primary infrastructure assets to compete and bring economic prosperity, they are often maligned as nuisances and environmental threats to be controlled. In some cases (New York's LaGuardia airport being the most prominent example), they have been neglected for decades. Such malign neglect is a disservice to the image of their cities and has far broader economic consequences.

Of course, there are noise and other environmental challenges that must be addressed. And, in fairness, many of our aging airports have air and ground capacity constraints limiting what can be done in expanding and modernizing them. But that is not an excuse for inaction.

Our relative complacency towards airports comes with considerable economic risk. New economic realities call for new government policies and new stakeholder alignments that are much more supportive of investing in, modernizing, and growing US airports and airlines. Visionary competitors abroad are aggressively doing this to capture tomorrow's global business. The United States cannot afford to be asleep at the aviation infrastructure switch or be like the person who jumps off the Empire State Building and while passing the 43rd floor shouts, "So far so good!"

About the Author

John D. Kasarda is director of the Center for Air Commerce at the University of North Carolina's Kenan-Flagler Business School. He has published more than 100 articles and 10 books on airport cities, aviation infrastructure, urban economic development, and competitiveness. He is frequently quoted in *The Wall Street Journal*, *The New York Times*, *Bloomberg Businessweek*, and international media. Dr. Kasarda has offered numerous executive programs on air logistics, firm siting, global supply-chain management, and airport area development to multinational firms such as Boeing, Airbus, FedEx, Lufthansa, Thai Airways International, Caterpillar Logistics, Parsons Brinckerhoff, Prudential Real Estate, Bank of America, and Deloitte & Touche. He chairs the annual Airport Cities World Conference and Exhibition and also serves as a consultant and advisor to airports and governments around the globe as well as an independent consultant to Parsons Brinckerhoff.

³⁸ Ozbilgin, O. (2013, May 3). Turkish firms win 22 billion euro Istanbul airport tender. *Reuters*. Retrieved from <http://www.reuters.com/article/2013/05/03/us-turkey-airport-idUSBRE9420RL20130503>

Dr. Kasarda received his BS and MBA (with Distinction) from Cornell University and his PhD from the University of North Carolina. He has been the recipient of many grants and awards from such organizations as the International Civil Aviation Organization, the U.S. Federal Aviation Administration, National Science Foundation, National Academy of Sciences, the United Nations Development Program, the U.S. Agency for International Development, and the World Bank. Dr. Kasarda has been elected as a Fellow of the American Association for the Advancement of Science for his research on airport-driven economic development and served as a Senior Fellow and Trustee of the Urban Land Institute. He is considered the leading developer of the Aerotropolis concept (www.aerotropolis.com), defining the roles of aviation and airports in shaping 21st-century business location, urban competitiveness, and economic growth. In 2011, *Time* magazine featured Aerotropolis as one of the “Ten Ideas that Will Change the World.” In 2013, *Future Cities* magazine named Kasarda among “The Top 100 City Innovators Worldwide.” In addition to his university base, Dr. Kasarda is President and CEO of Aerotropolis Business Concepts LLC (www.aerotropolisbusinessconcepts.aero), an airport economy consulting firm. He may be contacted at john_kasarda@unc.edu or kasarda@erotropolisbusinessconcepts.aero.

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