

# The 2004 Global Infrastructure Report

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**Corporate logistics requirements have airport cities morphing into 'aerotropoli'; seaports are deepening channels for tomorrow's superfreighters; and bridge, tunnel and road projects will fix bottlenecks in the movement of people and freight.**

**A**irports have long been economic development engines for local areas and regions, but their potential economic significance is only now being understood by area developers, corporate site seekers and urban planners. Like never before, airports are central to businesses' ability to compete given the heightened role of logistics and distribution in meeting customer and shareholder expectations. Their importance in this respect cannot be overstated.

"Airports will be as important to business location and urban development in the 21st century as automobiles and trucks were in the 20th century, railroads were in the 19th century and seaports were in the 18th century," says Dr. John D. Kasarda, a leading expert on airport-centric development. Kasarda is the Kenan Distinguished Pro-

fessor of Management and Director of the Kenan Institute of Private Enterprise at the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill.

Evidence of airports' heightened importance in global commerce and economic development can be seen in Memphis, Tenn.'s emergence as a world class center of logistics and distribution and Louisville, Ky., too, thanks to the Federal Express and UPS operations in those cities respectively. Countless e-commerce companies have established facilities at or near those cities' airports, enabling them to offer next-day — even same-day — delivery of time-sensitive goods. Such "airport cities" can be found in locations around the world wherever major passenger and air cargo hubs have attracted significant development. But a newly emerging phenomenon could make these hubs pale in comparison.

"Substantial evidence is accumulating that major airports are generating concentrations of commercial activities that are leading to a new,

**Dr. John D. Kasarda**



aviation-linked urban form — the aerotropolis,” says Kasarda, who consults with airport authorities worldwide on logistics and air transportation infrastructure. “Planners and developers who design and build infrastructure and facilities that are consistent with the new form and function of the aerotropolis can contribute substantially to the economic competitiveness of urban areas and to the emerging needs of business.”

Today’s economy is increasingly based on supply-chain-linked business processes, such as just-in-time and custom manufacturing, and the global shipment of goods that Kasarda describes as “small, light, compact and high value to weight.” These include microelectronics, pharmaceuticals, digitized auto parts, medical instruments and perishables. Air cargo and air logistics are making it possible for companies to compete globally and to compete efficiently by delivering product components to manufacturers or finished products to customers when or before they are expected. Even if customers can wait, they won’t wait in many cases.

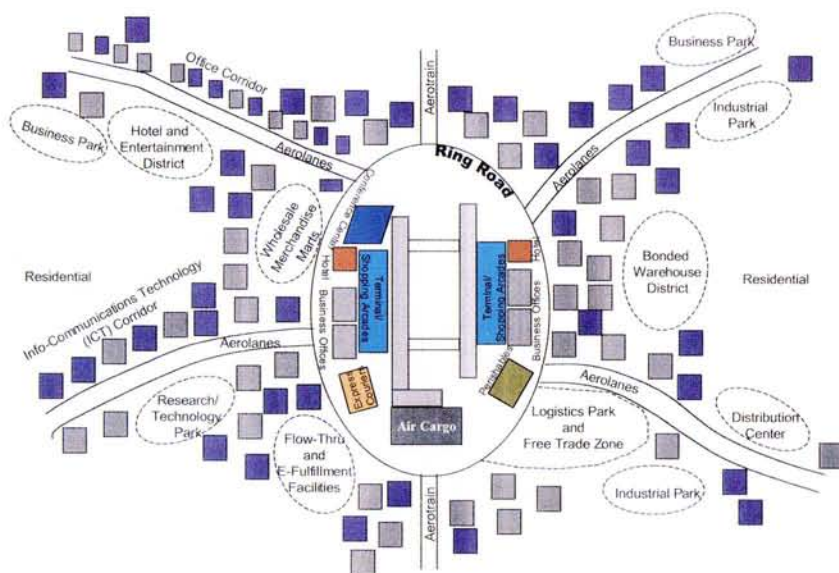
“Logistics has become the major factor in gaining competitive advantage for most firms because today speed and agility are as important as price and quality for manufacturers and other goods producers to compete,” argues Kasarda. “Logistics is now core to the bottom line profits of organizations. It is no longer viewed as a support function whose costs are to be minimized, but rather a core function whose value-adding benefits need to be optimized.”

### Anatomy of an Aerotropolis

The difference between an airport city and an aerotropolis lies in the latter’s resemblance to an actual metropolis, or urban area. The airport and surrounding hotels, retail, distribution centers, light industrial parks and so forth serve as the central business district, employing dozens of thousands of workers. In the case of an aerotropolis, development can extend 10, even 20 miles (16-32 km.) or more away from the center, incorporating additional development, such as office and research parks, districts zoned for specific purposes, foreign trade zones,

Dr. John D. Kasarda, Director, The Kenan Institute of Private Enterprise

## Aerotropolis Schematic



entertainment and conference facilities and even residential developments — all of which is anchored by the airport city.

Although the concept is still new, aerotropolis projects already exist or are under way around the world at both existing airports or airport cities (Denver International, Hong Kong International, Seoul Incheon, Paris Charles de Gaulle and Ontario, Calif.) and those now in planning and development (Suvarnabhumi in Bangkok and the expansion of Beijing’s Capital International Airport).

Amsterdam Schiphol Airport, employing 58,000 people, is perhaps the closest thing to a mature aerotropolis there is. Besides being a major international passenger and cargo facility, it features intermodal transportation, including rail service to downtown Amsterdam and to all major cities in Western Europe.

Retail is a substantial component of the facility’s economic output, with pre-security-screening shopping available on weekends when other stores in the area are closed. Major logistics centers and flower marts are located at Schiphol, as are corporate headquarters and other business centers. Outside the airport city via two motorways are numerous logistics parks, office parks, merchandise marts and hotel and entertainment complexes.

### Things Are Bigger In Texas

One of the clearest examples of an aerotropolis taking shape in the U.S. is the one anchored by Dallas-Ft. Worth (DFW) International Airport, which by itself takes up 18,000 acres (7,300 hectares).

Significant development is under way in Euless, on the southwest side of DFW, and to the east in Irving — particularly at Las Colinas, a major development on I-35 on the way into Dallas. Las Colinas is a 12,000-acre (4,800-hectare) development with 21.2 million sq. ft. (2 million sq. m.) of office space, 8.5 million sq. ft. (790,000 sq. m.) of light industrial space, 1.3 million sq. ft. (121,000 sq. m.) of retail, more than 13,000 single and multi-family homes, more than 3,700 hotel rooms and more than 75 restaurants.

But that’s not all. Just east of Las Colinas is Dallas Love Field, the original airport serving Dallas and the home base of Southwest Airlines. Development of the entire I-35 corridor between DFW and Dallas is booming (much like the growth that has been taking place on the corridor between Dulles International Airport in northern Virginia west of Washington, D.C., and the capital).

Infomart and Market Center are two major merchandise marts on the corridor that draw hundreds of thousands of exhibitors and visitors to the area from



around the world. North of Fort Worth is the Alliance Airport cargo and logistics complex, which serves as a sub-hub to the DFW-based aerotropolis.

Several other U.S. airports are giving commercial, non-aviation related activities a high priority in their development planning. These include the airports in Denver, Colo.; Detroit, Mich.; Las Vegas, Nev.; Minneapolis-St. Paul, Minn.; New York (JFK); and Pittsburgh, Pa.

Internationally — besides the airports already mentioned — such planning is under way at Frankfurt Main in Germany, Barcelona International, Dubai International, Helsinki Ventaa, Singapore Changi, Stockholm Arlanda, Milan Milpensa and others.

“This leads to a very interesting development that is just now being recognized in the siting and location fields,” says Kasarda. “As the airport area develops as a brand — locate at O’Hare or around DFW — it is attracting businesses to be a part of that brand. Airports now have image, which is serving as a magnet. Even though companies locating there may not be directly facilitating movement of passengers or cargo, being located in the airport city or aerotropolis involves branding.”

The effect will likely be an increase in the value of property falling under the brand’s domain, assuming a growing economy and a continuing increase in the volume of world trade and related demand for transportation and logistics services.

The increasingly critical role of logistics, too, is driving up airport site values, which is why AMB Property Corp., a San Francisco-based real estate investment trust, recently acquired the 3.4 million sq. ft. (315,860-sq. m.) portfolio of 37 air-freight buildings of International Airport Centers. The properties are located at seven international airports in the U.S. where air cargo activity is expected to remain strong, including JFK in New York, Los Angeles International and Seattle-Tacoma International.

“The way companies do business today, they need every edge they can get, and logistics is part of that,” says Steve Lueck, AMB’s vice president and

asset manager, airport facilities. “You can have the best product, the best R&D and the best marketing, but if you can’t get your product to the user through the supply chain efficiently, you will lose. So logistics is a key part of the process, which is behind the emergence of the third-party logistics providers, who are among our largest customers. They are a value link in the supply chain, providing more than a way to get a box from here to there. They provide the efficiency that everyone is looking for, and we are benefiting from that.”

### Larger Ships, Greater Global Trade Fueling Seaport Projects

Logistics, transportation and related infrastructure certainly have an impact on seaport location too. Take **Tower Automotive**’s recent decision to locate a new pressed parts plant at the Kablerfeld Logistic Park in Duisburg, Germany. The Port of Duisburg, located at the confluence of the Ruhr and Rhine rivers, is Europe’s largest inland port. Tower will invest \$18.4 million in the facility, which will supply Mercedes-Benz factories in Dusseldorf to



Steve Lueck

the south and Ludwigsfelde far to the east, just south of Berlin.

In the competitive world of global shipping, size matters too, as ship capacities test port capacities in turn.

In July 2004, Samsung Heavy Industries, the South Korean heavyweight in container ship building, delivered the world’s largest container carrier to Seaspan, the largest Canadian marine carrier. The 8,500-TEU (twenty-foot equivalent unit, the international standard measure for containers) super carrier measures 334 m. (1,096 ft.) in length and nearly 43 m. (141 ft.) across. Taking eight months to design and another eight months to build, the colossal ship was put into service immediately on Far East and American routes.

The new ship breaks Samsung’s previous world record for the largest container ship, but its vessels will only get

larger in coming years. The company is developing a 10,000-TEU ship and is also designing a 12,000-TEU container carrier.

Increased global trade and larger ships are prompting expansion projects at ports around the world. The increasing size of container ships requires channels beyond the current depths of most U.S. ports, says Kurt Nagle, president and CEO of the American Association of Port Authorities (AAPA). Only a few ports on the West Coast, such as Los Angeles and Long Beach, have channels deep enough to accommodate the behemoths.

### The Dredge Report From Down Under

Proposed and planned projects in Australia and New Zealand include major efforts to enlarge channels to accommodate larger container ships.

The Port of Melbourne Corporation (PoMC) is proposing a AU\$400 million (US\$280 million) project to deepen the main commercial shipping channels to the port to allow the larger container ships to enter. The current depth means more than 30 percent of container vessels entering and leaving the port cannot load to full capacity. PoMC has released an environmental effects statement, and the project is pending final government approval.

The Port of Melbourne handles AU\$70 billion (US\$48.9 billion) of trade annually and directly and indirectly employs about 80,000. It is planning an AU\$80 million (US\$56 million) development at Victoria Dock to transform a vacant site into a cargo terminal. The project will create about 300 jobs when the terminal becomes operational in 2008.

Westgate Ports Pty. Ltd. will develop the terminal and plans to move at least 50 percent of freight in and out of the terminal by rail. The company also plans to develop an inland port linked to the new dock by existing rail infrastructure. The Victoria Dock development will also include general warehousing facilities.

“The port is vital to our farmers, and to regional Victorians,” said Peter Batchelor, Victoria’s minister for transport. “It handles 85 percent of the nation’s dairy exports, 67 percent of our wool exports and 65 percent of

Australia's rice exports."

Up Australia's east coast, the Port of Brisbane has embarked on a AU\$90 million (US\$63 million) project to reclaim 230 hectares (568 acres) of land from the sea. The reclamation will involve building a 4.5-km. (2.8-mile) seawall and filling the enclosed area over approximately 20 years using material from maintenance dredging. Government officials estimate the new land might generate more than 1,800 jobs as industry expands into the area.

Across the Tasman Sea from Brisbane and Melbourne, the Ports of Auckland is in the midst of a NZ\$55 million (US\$34.5 million) project to deepen the commercial shipping lane into New Zealand's largest container terminal, operated by Axis Fergusson. The first phase of the reclamation project will allow space for an additional 100,000 containers annually and will be completed within three years.

Activity related to the Ports of Auckland supports more than 173,000 jobs in the region, according to Geoff Vazey, Ports of Auckland chief executive.

### Shanghai Port Taking Shape

Shanghai is known for its architectural wonders, but it would be hard to rival the deepwater port project developing southeast of the city. Shanghai has experienced explosive growth at its current port in recent years, but its location at the mouth of the Yangtze is too shallow to accommodate large ships. Despite the constraints, Shanghai has become the world's third-busiest container port.

The first phase of the massive Yangshan port project south of Shanghai continues to move toward a 2005 completion date. The master plans calls for development of 50 container berths by 2020 at the port being constructed on the islands of Xiao Yangshan and Da Yangshan in Hangzhou Bay. Total project cost is estimated at \$16 billion to \$18 billion.

Connecting the mainland to the new port is the 31.5-km. (19.5-mile) Donghai Bridge, set for completion by the end of next year.

### Roads to Somewhere

Continuing to the West, major projects valued in the billions are under way to link Russia to China via both rail

and road infrastructure, mirroring the pipeline activity already apparent in the region. On a bigger scale, 32 countries have agreed to an Asian Highway Network plan, although funding for the 87,000-mile (140,000-km.) network would total nearly \$16 billion. A full 16,000 miles (26,000 km.) of that network would occur in China, and are scheduled to be complete by 2010.

The fast-rising industrial economy of Brazil is seeing an equally large-scale project, the transformation of its 1,097-mile (1,765-km.) BR-163 highway from partially unpaved road to superhighway. While deforestation concerns hover over the project, its completion would not only smooth agricultural exports (trade negotiations notwithstanding), but, according to a report in *The Economist*, reduce annual freight costs for manufacturers in duty-free Manaus by US\$99 million.

Interchange projects are proving as vital as long stretches of highway. The \$290-million Grandview Triangle project in Kansas City, Mo., designed by HNTB, is ahead of schedule in its rehab of a major highway tangle that involves some 540 acres (219 hectares) and one million sq. ft. (9,290 sq. m.) of bridge deck work. When complete in 2008, the interchange's capacity will be increased from 250,000 daily vehicles to 440,000, and the new design has the potential to eliminate the equivalent of one accident per day.

Other road and interchange programs of note include an 18-month, \$100-million improvement plan around the agricultural and transit hub of Decatur, Ill., and a new I-65 interchange near the growing industrial community of Cullman, Ala., which is also on tenterhooks awaiting federal funding.

### Bridges to Prosperity Need to Cross Funding Chasm

The Appalachian Development Highway System inches closer to completion, promising to close the circle of transit and open up new opportunities for this region. One of the next projects in the region is the \$90-million Blennerhassett Island Bridge near Parkersburg, W.Va., which will complete a 300-mile (483-km.) highway corridor from Cincinnati to Bridgeport, W.Va. The ADHS program over-

all would receive some \$2.7 billion in funding under the Bush administration's transportation bill.

Another \$90 million is slated for the \$234-million Hoover Dam Bypass bridge project, where work is projected to begin this fall toward a pushed-back 2008 completion date. Nevada and Arizona officials in June 2004 authorized the use of Grant Anticipation Revenue Vehicle (GARVEE) bonds to keep the project moving forward pending federal action. The current highway that traverses the dam handles 13,000 vehicles a day, but no trucks since 9/11. Instead, that crucial commercial traffic has been making a 23-mile (37-km.) detour, passing costs along to industry and consumers. While work on the span itself is now in the digging phase, the approaches on either side are well under way, with a cumulative value of \$52.4 million.

But the biggest project of all may be the Woodrow Wilson bridge rehab in Maryland, Virginia and the District of Columbia. The bridge itself will cost \$600 million out of an estimated \$2.44 billion to be spent on the whole complex of projects, with \$1.63 billion of that total coming from the federal government. Total work should be winding down by 2008.

SITE

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