



THE AEROTROPOLIS

The Key to Global Competition in the 21st Century

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SYNOPSIS

Logistics infrastructure is a key enabler of global trade. Increasingly, speed and responsiveness have been recognized as essential elements of competitive strategy. As a result, companies have turned their attention from the optimization of the processes inside of their factory walls to the optimization of the supply chains through which raw materials, parts and components are transformed into products and shipped to customers worldwide. We often forget that the ability to move a parts and components around the world is both enabled—and limited—by a network of transportation and logistical infrastructures. Advances such as multimodal logistics, just-in-time manufacturing, and make-to-order products are made possible because a seamless logistical network enables parts and components to flow across the supply chain with a minimum of “red lights.” In this case, we explore a new infrastructure called the aerotropolis that is promising to revolutionize not only logistics but the way we live. In 2011, Time Magazine named the aerotropolis as one of 120 ideas that will change the world. We focus here on the impact that the aerotropolis will have on logistics and supply chains.

BACKGROUND

In order to move products around the world, companies rely on a logistics network of transportation infrastructures, from roads and highways on the ground to air networks overhead. These networks have enabled global trade since the early days of the Silk Road across Europe, Africa and Asia. Extending more than 4,000 miles, the Silk Road got its name from the silk trade that developed between Asia and Europe. The Silk Road was an historical network of interlinking trade routes connecting East, South, and Western Asia with the Mediterranean and European world, as well as parts of North and East Africa. The overland routes dating from the first and second centuries were supplemented by sea routes which extended from the Red Sea to East Africa, India, China, and Southeast Asia. The Silk Road was one of the first multimodal logistics networks.

In the days since the Silk Road, our logistics networks have developed considerably. Speed is now a major competitive advantage. Perishable food products can move seamlessly from remote locations in far flung continents to discriminating customers in major metropolitan areas. New manufacturing strategies such as just-in-time rely on air cargo to enable customers to receive a made-to-order computer virtually overnight. In the view of Jack Kasarda, Director of the Kenan Institute of Private Enterprise and professor at UNC’s Kenan-Flagler Business School, airports represent the "fifth wave" of innovation in transportation infrastructures that have shaped commercial development in the U.S. over the past three centuries. The first wave was the seaports around which cities like Amsterdam and Boston developed. The second, here

in the U.S. was the development of networks of rivers and canals such as those that linked Buffalo, Pittsburgh and Detroit. When the railroads crisscrossed the U.S they opened up inland areas to manufacturing and distribution, followed by the development of the integrated highway system in the 1920's. According to Kasarda, aviation will drive development in the 21st century.

The emergence of new aviation-based logistics infrastructure is changing how we think about the movement of parts, components and products around the world. Increasingly, companies are demanding fast, door-to-door delivery of their products. For many products, especially high value-to-weight products like electronics, this means that air freight is the transport mode of choice. It also means that logisticians must think about how to achieve fast connectivity between multiple modes of transport for faster door-to-door service. Today, the modes of transport are not always seamlessly linked and products often sit waiting to be moved from the freighter to the truck—thereby increasing end-to-end shipment times.

Airports have always been key nodes in global production systems offering speed, agility, and connectivity. To increase the speed with which companies are able to respond to customer orders, many warehouse and distribution companies, as well as logistics companies, have located close to airports. Increasingly, now, manufacturing companies are also locating close to airports to minimize the distance between the place of manufacture and the location of transport. In this way, products can move quickly off the assembly line and onto the freighter. The concentration of these manufacturing activities acts as a magnet to attract other supporting knowledge and service industries.

THE EMERGENCE OF THE AEROTROPOLIS

These connected trends have led to the emergence of a new form of airport-centric commercial development called the *aerotropolis*. This trend has transformed “city airports” into “airport cities.” This trend also positions airports as 21st century drivers of business location, urban economic growth and global economic integration. The aerotropolis are also powerful engines of local economic development, attracting aviation-linked businesses of all types that are attracted by the ability to get their products to customers around the world. Increasingly, these companies include, among others, time-sensitive manufacturing and distribution facilities, as well as hotel, entertainment, retail, convention, trade and exhibition complexes.

In a 2011 book titled *Aerotropolis: The Way We'll Live Next*, authors Jack Kasarda and Greg Lindsay introduce the aerotropolis concept and use evidence from airport development around the world to explore the emergence of this phenomenon. As Kasarda has researched airport

development around the world, he has seen how airports are evolving from transportation and supply chain-focused areas into mixed-use commercial, business and manufacturing centers. In their book, the authors describe the physical characteristics of the aerotropolis—vast complexes stretching up to 20 miles outward from some airports. In much the same way that a traditional metropolis is made up of a central city and rings of commuter-heavy suburbs, the Aerotropolis consists of an airport city and outlying corridors and clusters of aviation-linked businesses and associated residential development.

A number of aerotropolis clusters are emerging especially, in Europe and Asia. These clusters include not only the airport city, but also a region of adjacent business development around the airport core that is referred to as an airport edge-city. For example, in Europe, Amsterdam Zuidas, located six minutes from Schipol Airport, is developing as a headquarters for global companies. Hong Kong's SkyCity is similarly being developed with office, retail and entertainment facilities. Here in the U.S. we can see the aerotropolis developing around cities such as Dallas Fort-Worth, Detroit and Memphis.

Aerotropoli are most prevalent in Europe and Asia and even in the Middle East. In fact, Dubai is the world's largest aerotropolis. Governments in these regions see the aerotropolis as a vehicle for promoting economic growth and trade within and to their countries. In many of these locations, large "greenfield" sites are available so that the aerotropolis can be built from scratch. However, the aerotropolis concept is taking hold in the developed world, especially in U.S. cities such as Atlanta, Detroit, and Philadelphia. These cities are leveraging their airport areas with strategic, multi-use developments. Here in the U.S. Memphis, home of FedEx, is often cited as an emerging aerotropolis.

INCHEON AND NEW SONGDO INTERNATIONAL BUSINESS DISTRICT

One of the best examples of the emerging aerotropolis and an emerging airport-edge city is Incheon Airport in South Korea and the New Songdo International Business District. Incheon has been built on a man-made island connected to New Songdo on the mainland via a 13-mile-long bridge. A plan of Incheon and New Songdo is shown in Figure 1.

The aerotropolis serves as a gateway for global trade. Home to Korean Airlines and Asiana Airlines, Incheon represents a gateway to more than one-third of the world's population in just 3-1/2 hours of flying time. Large commercial tracts are being developed around the aeronautical core—called AirCity. A photograph of the Incheon Airport is shown in Figure 2.

Figure 1: Plan for Incheon and New Songdo



Figure 2: Incheon Airport



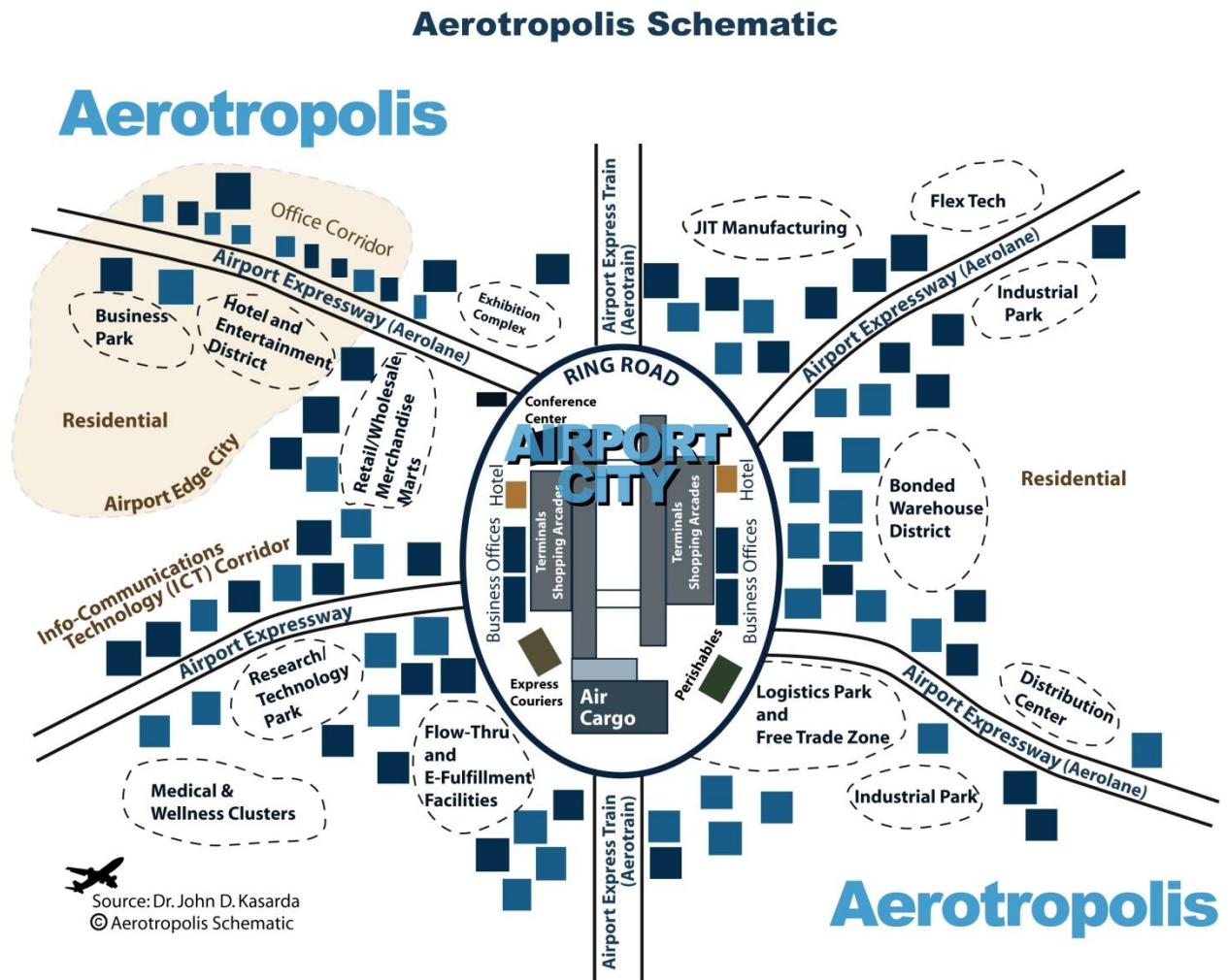
The airport edge-city, New Songdo International Business District, is currently the largest private sector development in the world. New Songdo occupies 1,600 acres—approximately the same size as downtown Boston. Located outside Seoul, New Songdo International Business District bills itself as the world’s smartest, greenest city in the world, with a price tag of \$35 billion. Current development at New Songdo is shown in the photograph in Figure 3. The development is scheduled to be completed in 2015.

Figure 3: Current Development at New Songdo International Business District



The aerotropolis is expected to play a large role in the logistics environment of the future. A schematic of the aerotropolis concept as developed by Dr. Kasarda is shown in Figure 4 below. The figure shows clusters of business parks, logistics parks, industrial parks, distribution centers, information technology complexes and wholesale merchandise marts located around the airport and along the transportation corridors radiating from them. The airport city itself is bounded at the core by a ring road. Figure 4 is a schematic and represents a conceptual plan. The aerotropoli that are being built today may have different expressions, but they all conform to the general principles set out in Figure 4.

Figure 4: Conceptual Plan for an Aerotropolis



Consider the following questions in thinking about the emergence of the aerotropolis and what it means for the logistics networks of the future.

- 1) What are the forces that have caused the emergence of the aerotropolis?
- 2) Can you think of an example of the aerotropolis in your state?
- 3) What are the major benefits of the aerotropolis?
- 4) What are the implications of the aerotropolis for the practice of logistics?
- 5) How do you think the aerotropolis will change the nature of global competition?

REFERENCES

For further information about the aerotropolis, go to www.aerotropolis.com.