

# A KCI Air Logistics Hub and Aerotropolis: Vision, Rationale and Development Guidelines

John D. Kasarda, Ph.D.  
Director  
Kenan Institute of Private Enterprise  
The University of North Carolina at Chapel Hill  
Chapel Hill, North Carolina 27599  
U.S.A.  
Email: [john\\_kasarda@unc.edu](mailto:john_kasarda@unc.edu)

April 2005

---

Study prepared for the Kansas City Department of Aviation and Platte County  
Economic Development Council

## Table of Contents

Chapter 1 Regional Challenges and Strategic Response: The Air Logistics Hub/Aerotropolis Potential .....		4
I. Introduction .....		4
II. Business Rationale for an Air Logistics Hub at KCI.....		8
E-Commerce and Fast-Cycle Supply-Chain Management.....		10
V. Airports as Office, Commercial, and Professional Worker Magnets .....		13
VI. High-Tech and Urban Economic Impacts .....		15
VII. The Rise of the Aerotropolis .....		17
VIII. Aerotropolis Development and Planning Principles .....		19
IX. Emerging Air Logistics Hub/Aerotropolis Examples.....		20
Ontario, California .....		20
Alliance, Texas .....		21
Rickenbacher, Ohio.....		24
North Carolina Global TransPark .....		26
Development History .....		26
Challenges and Hurdles to GTP Progress.....		30
Southern California Logistics Airport .....		31
Asia's Air Logistics Hubs and Aerotropoli Hong Kong International Airport.....		31
Incheon: Korea's Winged City .....		33
Singapore Changi International Airport .....		35
X. European Experiences.....		37
Kansas City Air Logistics Hub/Aerotropolis Potential—Credibility, Viability, and Transferability of Successful Experiences Elsewhere .....		38
Chapter 2 KCI Air Logistics Hub/Aerotropolis Infrastructure and Facilities		
Guidelines .....		52
I. Existing Infrastructure and Facilities.....		52
II. Forming the KCI Airport City and Greater Aerotropolis .....		54

The Site .....	56
Development Potential .....	58
III. Designing the Commercial Driver: A KCI Air Logistics Hub.....	62
IV. Basic ALH Infrastructure Design and Configuration.....	63
Central Cargo Area Design .....	68
Guidelines for Central Cargo Area Design .....	69
Flexibility.....	69
Targeted Mechanization .....	71
Expandability/Phased Growth .....	72
Intermodal Interfaces.....	75
Guidelines for On-Site Transportation Connectivity.....	75
Guidelines for ALH Connectivity.....	76
Guidelines for EDI Design .....	77
KCI ALH Planning Integration Strategy .....	78
Designing for Future Tenant Business Needs.....	80
Chapter 3 KCI Air Logistics Hub Business Plan Guidelines .....	100
I. Introduction .....	100
II. Business Resource Needs .....	100
III. Functional Requirements of the KCI ALH/Aerotropolis.....	103
IV. Critical Success Factors for the KCI ALH/Aerotropolis .....	109
V. Marketing Strategy for the KCI ALH/Aerotropolis.....	112
VII. Conclusion .....	121
Chapter 4 Guidelines and Recommendations for a KCI ALH/Aerotropolis	
Implementation Plan .....	131
I. Introduction .....	131
II. Infrastructure Phasing and Industrial Development Timetable .....	131
Stage I.....	132
Stage II.....	133
Stage III.....	134

Stage IV .....	135
III. Providing Appropriate Investor Incentives .....	135
V. Coordination and Harmonization with Similar Facilities Elsewhere....	138
VI. Institutional and Management Plan for the KCI ALH Development and Operation .....	140
Promoting and Developing the KCI Aerotropolis .....	145
Getting the KCI ALH Started .....	149
VII. Summary Recommendations and Action Steps.....	150



## Chapter 1

### Regional Challenges and Strategic Response: The Air Logistics Hub/Aerotropolis Potential

#### I. Introduction

Platte County and the greater Kansas City metropolitan area are at an economic crossroads. Strategic decisions and development initiatives taken today will determine the future direction the area goes in terms of industrial mix, business competitiveness, job creation, and citizen quality of life.

Critical issues are at stake. Will the County, Kansas City and the greater region continue to transition successfully to “new economy” high-tech, R&D, and information-intensive business services sectors? Will both their traditional manufacturing and newer high-tech and white-collar service industries be able to compete effectively, domestically and worldwide, in the globally integrated, speed-driven marketplace? Will the metropolitan area fully capitalize on its excellent international airport and rich multimodal transportation infrastructure to attract more investment and create high quality jobs? Finally, will commercial development near the airport and throughout Platte County be economically efficient, attractive, and environmentally sustainable, becoming an enduring magnet for workers and residents alike?

All these issues, of course, are inextricably interwoven. Taken together, they will help determine the economic fate of the Platte County, Kansas City and the greater metropolitan area. It is therefore imperative that they be addressed with both strategic vision and coordinated action. This requires, first, a solid understanding of the new drivers of 21<sup>st</sup> century business competitiveness, job creation, and economic development. Second, Kansas City International Airport (KCI) in partnership with the Platte County Economic Development Council, the Kansas City Area Development Council, and other regional government and

business organizations must implement an integrated set of strategies, policies, and programs to harness and leverage these new competitive drivers for the entire region's commercial advantage.

Apropos the above, it is already clear that an increasingly fast-paced, globally networked economy is changing the rules of industrial competition and business location. These rules are being altered by a catalytic convergence of digitalization, globalization, aviation, and time-based competition. Speed, agility, and connectivity have become the mantra of many of the world's most successful firms.

The combined importance of these factors is creating a new economic geography with major commercial airports driving and shaping business location and urban development in the 21<sup>st</sup> century as much as highways did the 20<sup>th</sup> century, railroads in the 19<sup>th</sup> and seaports in the 18<sup>th</sup>. Today, these airports have become key nodes in time-critical manufacturing, distribution, and commercial systems and engines of a local economic development, attracting air commerce-linked businesses of all types to their environs. These include among others, just-in-time manufacturing and distribution, e-commerce fulfillment and third-party logistics firms; hotel, tourist, and exhibition complexes; and office buildings that house regional corporate headquarters and air-travel intensive professionals such as researchers, consultants, auditors, and high-tech industry executives.

As more and more aviation intensive businesses cluster near these airports and along transportation corridors radiating from them, a new urban form is emerging – the Aerotropolis – stretching 15-20 miles outward from the airports. With the airport serving as a multimodal transportation and logistics nexus, strings and clusters of business and technology parks, industrial parks, distribution centers, information and communications technology (ICT) complexes and tourist attractions are forming around the airports and along

connecting surface transportation corridors. Even cities and development zones located as far as 60 minutes drive from some airports are experiencing accelerated economic growth, as will be documented later.

Such development is occurring because of the connectivity and accessibility advantages commercial airports (especially these that have developed as multimodal air logistics hubs) provide to business and business people in the new speed-driven, networked economy. Airport development and economic development are going hand-in-hand throughout the U.S. and around the world.

For three decades, Kansas City International Airport (KCI) has been counted upon to attract business and drive economic development in the northern part of the metropolitan area. Yet, in the eyes of many, results thus far have been disappointing. Airport-linked commercial development has been slow to evolve. Much of the 10,000 acres that fall within KCI's boundaries remains vacant and despite superior highway connectivity, only a handful of distinct KCI-connected business clusters can be identified.

The Kansas City city manager has placed high priority on better leveraging the metropolitan area's transportation assets in general, and KCI in particular, for business recruitment and economic growth. A primary objective is to foster coordinated planning and renewed public-private initiatives to help KCI achieve its full potential as an engine for economic development at and around the airport and throughout the metropolitan area.

With this objective in mind, the Kansas City Department of Aviation and Platte County Economic Development Council commissioned this report to provide the vision, strategic guidelines, and action-specific recommendations for KCI to become a catalyst for business recruitment and local economic development. Pivotal to the vision, strategy and actions, is positioning KCI as a leading multimodal air logistics hub that will drive airport-linked commercial

development on its vast property and substantially beyond airport perimeters, creating a greater KCI Aerotropolis.

Cornerstoning airport property development is the forward-looking 640-acre KCI Business AirPark. Specific attraction will therefore be focused on facilitating its development along with providing strategies and guidelines for broader Platte County and region-wide commercial development.

To set the context for this vision and strategy for a KCI Air Logistics Hub and Aerotropolis, the remainder of this chapter will (1) discuss its underlying business rationale and competitive logic, (2) provide concrete examples of air logistics hub/ Aerotropolis success elsewhere (as well as note some failures), and (3) discuss the credibility and viability of successfully transforming KCI into a successful air logistics hub that drives region-wide airport-linked commercial development.

Following this introductory chapter covering the above issues, three additional chapters offer, in order, the infrastructure, business plan, and implementation plan guidelines to assist those who will design, develop, and manage the air logistics hub at KCI to generate the greatest local and metropolitan-wide economic impact. Critical success factors will be presented as well as target industries specified. To attract newer, high growth, high value-adding industries, it is stressed that the relative importance of traditional tax incentives by government will be superceded by logistical capabilities of the site offering firms quick and efficient access to national and global suppliers and customers.

The report concludes with 25 recommendations and action steps to be followed by public sector agencies responsible for KCI, Platte County, and the greater Kansas City Metropolitan area to successfully develop the air logistics hub and broader aerotropolis. Those recommendations and action steps focus on required hard and soft infrastructure as well as the business and aviation

recruitment strategies to be pursued to provide connectivity, speed, and agility to area firms: the three emphasized factors for their gaining competitive advantage in the 21<sup>st</sup> century. The recommendations also address infrastructure and facility phasing and marketing strategies along with the public and private sector options for developing, operating, and managing a KCI Air Logistics Hub while promoting and coordinating extended KCI Aerotropolis development.

## II. Business Rationale for an Air Logistics Hub at KCI

With increased global competition and rapidly evolving markets, substantial changes are occurring in the way business is being conducted around the world. At the forefront is the emergence of a new commercial environment where price and quality are necessary – but not sufficient – for competitive success. Increasingly, customers in both national and international markets are demanding fast and reliable delivery of products, often with distinctive, customized features. An industrial advantage is being gained by firms that respond flexibly and rapidly to their domestic and global customers, delivering lower cost, high-quality products quickly and efficiently.

Staying on top of the industrial competition also requires fast-cycle supply-chain management. Manufacturers must be able to access regional and global networks of suppliers of raw materials, components and sub-assemblers in order to obtain the best-quality products at the lowest possible price. At the same time, increased flows of information worldwide are leading to rapid changes in market demands. Companies that can detect these changes, design and produce the desired products, and deliver them more quickly than other producers will capture the market. Since speed also reduces warehousing and inventory costs, stock-outs and remaindered goods, the speed advantage becomes a cost advantage as well.

The fast-cycle logistics advantage is being further validated by marketing research which shows that, worldwide, consumer tastes and product demands are changing much more swiftly today than was the case in prior decades. Indications are that such shifts will accelerate even faster in the decades ahead, resulting in situations where products that are “hot” one month may become obsolete just six months later. Such is already happening in the fashion clothing and the computer software industry where delivery time to the retail shelf (or now directly to the customer) frequently separates market winners from losers.

The implications of these trends for new logistics strategies are already evident. Adapting to growing global demands for flexibility and speed, companies such as Boeing, Dell, General Electric, IBM, Nokia, Siemens, Ford, and Wal-Mart are reengineering their sourcing and distribution systems to become much more agile and customer responsive. They now compete not only on price and quality but also on the basis of (1) concept-to-cash cycle time, (2) flexibility, (3) speedy, reliable delivery, and (4) after-sales support (or return) of their products. They manage complex international networks that encompass the entire value chain of suppliers, distributors, and customers across national borders, with speed and agility overarching goals.

Companies will not be able to meet the challenges of such a time-critical environment without dramatic changes in how they organize their flow of information, components, and finished products. This is why they are rethinking the role that logistics plays in their organizations and are reassessing their current strategies in light of the new demands for efficient supply chain management and quick response. It is becoming increasingly clear that new strategies capable of meeting these challenges will require the development of new multimodal air logistics infrastructures which synthesize information and multimodal transportation to speed the delivery of materials and goods from suppliers to manufacturers and from manufacturers to customers, worldwide.

Mandating such changes are rapid and relentless worldwide technological, political, and economic transformations. Modern transportation, telecommunications, and goods-producing technologies have spread throughout the globe. Trade policies are being liberalized and new markets opened. Socialist and former socialist countries such as China, Russia and Poland have entered the capitalist marketplace with vigor. Huge wage differences between advanced industrial and developing countries have resulted in much wider geographic dispersion of component manufacturing sites, places of assembly, and of final sale. With rising workforce skills and rapid cross-border technology transfer, what were previously known as Third World countries in Asia and Latin America have achieved much higher levels of output and now produce sophisticated goods and services. Even white-collar information-processing functions are being out-sourced to countries such as India, Ireland, and the Philippines. Forrester Research forecasts that over 3 million white-collar jobs will be out-sourced by U.S. firms to foreign locations in the next 12 years.

International customers (including those in India, China, Southeast Asia, and Latin America, which many believe pose the best long-term markets for U.S. companies) have also become far more sophisticated and demanding. They have available an unparalleled variety of products from all over the world. They are able to assess and identify value, and are therefore highly selective in purchasing. They expect quality, reliability, and competitive pricing. They also want customization of the products they buy, and they want these customized products right away, not in two to six months. For many purchases, not even two to six weeks is fast enough.

### *E-Commerce and Fast-Cycle Supply-Chain Management*

The rise of e-commerce further heightened time-based competition. As late as 1995, sales through the Internet were essentially zero. By 1999, U.S.

Internet-based business-to-consumer (B2C) sales had grown to nearly \$7 billion, skyrocketing to a \$54.9 billion in 2003, a 30 percent increase over 2002 compared to a 5 percent increase in total U.S. retail sales (U.S. Department of Commerce, 2004). According to Forrester Research, 166 million packages were shipped in 1999 by Internet retailers (e-tailers), with approximately 70 percent going by expedited delivery. By 2003, e-tailers were shipping 1.1 billion packages annually. Despite the death of thousands of dot.coms between 2001 and 2004, it is near consensus among economic and business forecasters that e-commerce will flourish in the future.

Most of this explosive growth is expected to be business-to-business (B2B), supply-chain transactions where materials and components will be ordered through the Internet and quickly shipped to next-stage producers. Manufacturers already are able to electronically access an international network of suppliers in order to acquire the best-quality materials and parts at the lowest possible price. The introduction of e-marketplaces (auctions, aggregators, bid systems, and exchanges) is greatly expanding B2B e-commerce: Forrester Research predicts that e-marketplaces will account for up to two-thirds of B2B supply-chain transactions by 2006, predicated on industry, capturing 42 percent of online industrial trade and an average 28 percent of all business to business trade. Many suggest that with the simultaneous introduction of Enterprise Resource Planning (ERP), these e-figures could go even higher.

The expansion of the B2C e-commerce and direct-to-customer Internet orders has placed a particular premium on speed and reliability in the delivery process. To meet the imperatives of speed and reliability in order fulfillment, e-commerce distribution centers were built near larger airports that have excellent flight networks, a location trend that's sure to accelerate in the decades ahead. This is especially the case at major air express hubs such as Louisville (UPS) and Memphis International (FedEx). Air express hubs actually extend the



business day for e-commerce fulfillment by allowing shippers to take orders for next day delivery as late as midnight. Dozens of e-tailers have thus already located their fulfillment centers near Memphis International Airport to leverage the FedEx air express network. The same story holds for Louisville International Airport and Ontario, California where numerous companies have also sited e-commerce fulfillment centers near these UPS air express hubs.

Complementing airport-linked e-commerce fulfillment centers are flow-through facilities for perishables (either in the physical or economic sense), just-in-time supply-chain and emergency parts provision centers, and reverse logistics facilities for the repair and upgrade of high-tech products such as computers and mobile phones. The clustering of such time-critical goods facilities around airports (often within air logistics parks), is stimulating further expansion of air cargo, air express, less-than-load (LTL) trucking, freight forwarders, and third party logistics providers (3PLs) along major arteries leading into and out of the airports.

Speedy, reliable delivery of products over long distances has become so critical to the new economy that air commerce is quickly becoming its logistical backbone. According to air cargo consulting firm Colography, forty percent of the value of world trade now goes by air, and the percentage is steadily rising. Air logistics, which represented a US\$ 250 billion industry in 2004, is expected to triple in the next 15 years while international air-express shipments are expecting to increase at least five-fold during this period (Boeing Company, 2004).

Already, air cargo and air express are the preferred modes of international shipping of higher value to weight B2B transactions in microelectronics, automobile electronic components, aircraft parts, mobile telephones, fashion clothing, pharmaceuticals, optics and small precision manufacturing equipment, as well as many perishables such as seafood and fresh cut flowers. (See the global supply-chain model of Dell Computer in Exhibit 1.1.) Even lower value to weight

B2B product distribution such as apparel, shoes and toys are becoming time-sensitive and increasingly shipped by air.

The rapidly growing importance of air commerce to the U.S.'s economy is illustrated in Exhibit 1.2. This exhibit shows exports from the United States by transportation mode, and value in 1990, 1996 and 2003. Observe that in terms of value, by 2003 air exports substantially exceeded export by vessel (\$235 billion vs. \$206 billion).

## V. Airports as Office, Commercial, and Professional Worker Magnets

Not only time-sensitive goods-processing and distribution facilities are being drawn to gateway airports. As the world's service economy also shifts into fast-forward, these airports are becoming magnets for regional corporate headquarters, trade representative offices, and professional associations that require officers and staff to undertake frequent long-distance travel. Airport access is likewise a powerful attraction to information-intensive industries such as consulting, advertising, legal and financial services, data processing, accounting and auditing, which often send out professionals to distant customers' sites or bring in their clients by air. Business travelers benefit considerably from access to hub airports, which offer greater choice of flights and destinations, more frequent service, more flexibility in rescheduling.

The accessibility and travel flexibility hub airports offer have become essential to attracting business meetings and conventions, trade shows and merchandise marts. Two U.S. mega-facilities — Infomart and Market Center, both of which are located on the I-35 corridor to Dallas-Ft. Worth International Airport — offer good examples of the latter attraction. Infomart is a huge, ultra-contemporary merchandise display building for information and communication technology (ICT) companies. Market Center — a cluster of six large buildings that contain nearly seven million square feet of display space for fashion clothing and

home merchandise — is the world's largest wholesale merchandise mart. Hundreds of thousands of buyers and vendors fly into Dallas annually to conduct business at Infomart and Market Center. In 2003, Market Center alone attracted buyers and vendors from all 50 U.S. states and 84 countries, who purchased 300,000 airline seats and filled 720,000 nearby hotel rooms while conducting an estimated US\$7.5 billion in wholesale transactions.

High-tech facilities and airports also increasingly reinforce each other. With intellectual capital supplanting physical capital as the primary factor in wealth creation, time has taken on heightened importance for today's knowledge workers. So has the mobility of these workers over long distances. Research has shown that high-tech professional workers, for example, travel by air at least 60 percent more frequently than most other professionals (Erie, Kasarda, McKenzie, and Molloy, 1999).

Some observers have suggested that advances in Internet access, videoconferencing, and other distributed communications technologies will diminish the need for air travel. The evidence indicates that telecommunications advances often promote additional air travel by substantially expanding long-distance business and personal networking.

Others have suggested that prolonged global economic downturns exacerbated by catastrophic events such as 9/11 and the constant threat of terrorism, as well as contagious disease outbreaks such as SARS will permanently diminish air commerce, in general, and business travel by air, in particular. This does not seem likely since the business imperatives giving rise to the growth of air commerce and business travel (speed, mobility and global access) are increasing in importance. Air commerce and air travel should therefore be expected to rebound strongly from their 2001 to 2003 cyclical dip to record levels in the decade ahead.

## VI. High-Tech and Urban Economic Impacts

Nowhere is this more the case than the centerpiece of the new economy – high-tech. With this sector's supply-chains and employees increasingly geared to speed, mobility and global access, extensive air service has become essential to the location of many information and communications technology (ICT) firms and other high-tech facilities. Clusters of ICT and high-tech companies are thus locating along major airport corridors, such as those along the Washington, D.C. Dulles Airport access corridor in Northern Virginia and the expressways leading into and out of Chicago's O'Hare International Airport. Dulles's and O'Hare's experiences are being replicated across the U.S., and throughout the world with centrality in aviation networks becoming a primary predictor of an area's high-tech job growth.

Regarding overall economic development, numerous studies from the U.S. and around the world document the remarkable impact of larger airports on urban economies. To note just a sample:

- Los Angeles International Airport (LAX) is responsible for over 400,000 jobs in the five-country Los Angeles region; 80 percent of which are in LA County, where one in 20 jobs was found to be tied to LAX. The airport currently generates \$61 billion in regional economic activity, which translates to \$7 million per hour.
- Dallas-Ft. Worth International Airport has become the primary driver of Metroplex's fast-growing economy. The number of companies located within the dynamic Las Colinas area, just to the east of the airport, has expanded to more than 2,000 and includes Abbott Laboratories, AT&T, Exxon, GTE, Hewlett-Packard, and Microsoft.
- In the 26-mile commercial corridor linking Washington, D.C.'s two major airports – Reagan National and Dulles International – employment grew from 50,000 in 1970 to over 800,000 by 2000. This represents a 1,500

percent increase: in contrast, overall U.S. suburban employment growth during this period was 61 percent. Among the companies located along the airport corridor are America Online, Computer Associates, Nextel Communications, Cisco Systems, and EDS.

- In the Philippines, Subic Bay Freeport is rapidly expanding around a former U.S. naval air base that was converted to commercial use in 1993. Since FedEx located its Asia/Pacific hub at Subic Bay in 1994, over 200 firms – employing 54,000 workers – have located there, generating almost \$2.5 billion in investment. Between 1995 and 2004 the annual value of exports from Subic Bay jumped from \$24 million to \$1.3 billion. Acer has opened its largest personal computer assembly facility in the world at Subic Bay; the facility relies heavily on air freight for its supply-chain management. Nearer to Manila, the former U.S. Clark Air Base is attracting tens of thousands of ICT and other high-tech manufacturing jobs, as UPS is growing its Asia air express hub there.
- Over 70 percent of the international firms in the region surrounding Amsterdam’s Schiphol Airport cited their dependence on the airport as a primary reason for their location. The airport alone accounts for 1.9 percent of Netherlands’ GNP with forecasts indicating that by 2015, it will generate 2.8 percent – approximately \$14 billion.

The impact of airport-induced job growth on land use in the vicinity of airports is likewise substantial. An analysis of employment growth in the suburban rings of U.S. metropolitan areas showed that areas within four miles of airports added jobs two to five times faster than the overall job-growth rate of the suburban ring within which the airport was located (Weisbrod, Reed and Neuwirth, 1993). While most of the employment was concentrated around the airport or along major connecting highways within 15 to 20 minutes of the

airport, research at Massachusetts Institute of Technology's International Center for Air Transportation documents that much broader region-wide impacts occur with air connections significantly facilitating a region's access to suppliers, markets, ideas and capital (EconSouth, 2003).

## VII. The Rise of the Aerotropolis

Emerging corridors, clusters, and spines of airport-linked businesses are giving rise to a new urban form – the *aerotropolis* – stretching as much as 20 miles from gateway airports. The airports function as the multimodal logistics hub and commercial nexus of this diffuse airport-integrated urban complex, analogous to the function central business districts (CBDs) play in the traditional metropolis (see Exhibit 1.3 for a generic illustration based on 12 major international airports). Indeed, under the rubric of Airport Cities, some of these airports have assumed the very same roles of metropolitan CBDs by becoming regional intermodal surface transportation nodes and significant employment, shopping, meeting and entertainment destinations in their own right.

An excellent example is Amsterdam's Schiphol. Its grounds employ 56,000 people daily – more than the 50,000 resident criteria to attain metropolitan central city status in the U.S. Two major motorways link the airport to downtown Amsterdam and the broader urban area. A modern train station, directly under the air terminal, efficiently connects travelers to the city center, the rest of the Netherlands, and much of Western Europe.

Schiphol's passenger terminal, incorporating modern retail mall design elements, contains expansive, well-appointed shopping and entertainment arcades accessible both to travelers and the general public. Before going through customs, passengers walk through streetscapes of designer shops, boutiques, restaurants, authentic Dutch coffee corners, Internet cafes and even a gourmet supermarket. Another arcade of retail shops called See Fly Buy stores is in the

area after immigration and security. This area also includes restaurants of all varieties, banks, business centers and even private rooms for a sauna, massage, or a few hours sleep. By combining terminal design with mall design, Schiphol has substantially increased revenues through rents and passenger purchases. In fact, the airport often attracts Amsterdam residents who come to shop and relax in its public section, especially on Sundays when most city retail stores are closed.

Directly across from Schiphol's passenger terminal is the World Trade Center with meeting and commercial facilities and regional headquarters of such firms as Thomson-CFS and Unilever. Two five-star hotels adjoin this complex. Within a 10-minute walk is another complex of high quality office buildings housing aviation-related business and internationally-oriented companies in financial and commercial services. The commercial value of this property is reflected in its office rents that command a solid premium in the Amsterdam area. Research by the international real estate firm Jones Lang LaSalle showed office rentals in the immediate airport area in 2000 were averaging 363 Euros (\$320) per square meter per year, compared to 250 in the Amsterdam city center and 226 in other Amsterdam suburban areas. Between 1997 and 2003, lease rates of prime space at Schiphol rose by 65 percent.

Providing further logistical advantage, the A4 and A9 high-speed motorways are within 500 and 1,000 meters respectively of the airport center. Radiating from Schiphol along these motorways are strings and clusters of regional headquarter office buildings and business parks, logistics parks, high-tech industrial parks, distribution centers, information and telecommunication complexes, and wholesale merchandise marts — all of which are airport-intensive users. Exhibit 1.4 illustrates the synergies between Schiphol's Airport City and its broader *Aerotropolis*.

## VIII. Aerotropolis Development and Planning Principles

Reflecting the new economy's demands for networking, speed and reliability, the *Aerotropolis* is optimized by corridor and cluster development, wide lanes, and fast movements. In other words, form follows function.

Although *aerotropoli* have so far evolved largely spontaneously – with previous nearby development often creating arterial bottlenecks – in the future they will be improved through strategic infrastructure planning. For example, at full development, (as illustrated in Exhibit 1.3), dedicated expressway links (*aerolanes*) and high-speed rail (*aerotrains*) will efficiently connect airports to nearby and more distant business and residential clusters. Special truck-only lanes should be added to airport expressways, as should be improved highway interchanges to reduce congestion. Seamlessly connected multimodal infrastructure will accelerate inter-modal transfers of goods and people, improving transport system effectiveness and further influencing nearby land values, business locations, and resulting urban form.

The metric for determining land value and particular business locations will be time-cost access to the airport. Over time, firms of various types will bid against each other for airport accessibility predicated on the utility each gives to the related combination of time and cost of moving people and products to and from the airport and the extensiveness of the airport's flight networks to regional and global markets. Land values, lease rates, and commercial use will no longer be measured by traditional bid-rent functions that decline linearly with spatial distance from the primary node (here, the airport) but by speed to the airport from alternative sites via connecting highway and high-speed rail arteries.

To many, this new land use and structure will appear simply as additional sprawl along main airport transportation corridors. Yet, the aerotropolis is actually a highly reticulated system based on time-cost access gradients radiating outward from the airport. In short, the three "A's" (accessibility, accessibility,



accessibility) will replace the three “L’s” (location, location, location) as the most important business location and commercial real estate organizing principles. Of course, accessibility and location are closely related.

Air commerce clusters and spines are already taking on distinct spatial form around major gateway airports such as Chicago O’Hare, Dallas-Ft. Worth, Miami, New York Kennedy, Washington-Dulles, Hong Kong International, Korea’s Incheon, London Heathrow, Paris Charles de Gaulle and Amsterdam Schiphol. In the United States, even smaller, specialized air-cargo airports – such as Alliance Airport, near Ft. Worth, Texas, and Rickenbacker Airport, in Columbus, Ohio – are generating mini-*Aerotropoli* in the form of low density cluster and spine development. Alliance Airport alone has attracted over US\$4 billion in commercial real estate investments since 1994 to its 16,000-acre development area. I will return to these mid-size airports shortly.

Those in the air cargo industry know that the competitive battle is won on the ground – not the air – with good highway connections key. This is why most of the world’s leading air cargo airports also have excellent on-site or nearby truck cross-docking facilities. These highway-airport cargo synergies are often reinforced by excellent nearby intermodal rail facilities such as at Ontario, California and Alliance Airport in Texas. The following section elaborates the multimodal logistics/ *Aerotropolis* synergies utilizing specific examples of airport-driven commercial development in the U.S., Asia and Europe.

## IX. Emerging Air Logistics Hub/*Aerotropolis* Examples

### *Ontario, California*

Commercial growth surrounding Southern California’s Ontario Airport – an emerging air logistics hub that cornerstones a major urban complex 45 miles east of Los Angeles – offers an excellent contemporary illustration of multimodal synergies. The airport is at the nexus of major east-west and north-south

interstate highways I-10 and I-15, with the Burlington Northern–Santa Fe intermodal rail yards nearby. The ports of Los Angeles and Long Beach are connected by interstate highways and rail lines. Over 25 million square feet of warehouse and distribution space were added in 1999 and 2000 adjacent to the airport and along Interstates 10 and 15 radiating out from it. Between 2000 and 2004, another 40 million square feet were added, led by e-commerce fulfillment and distribution facilities ranging up to 1 million square feet in floor space. With commercial clusters rapidly developing around the airport and outward along I-10 and I-15, Ontario is emerging into a full-fledged aerotropolis (see Exhibit 1.5).

Enhancing Ontario's air logistics and aerotropolis development fulfillment center is the growth of air express transportation services at and around Ontario Airport. During 2003, UPS, whose west coast hub is at Ontario Airport, handled over 700 million pounds of freight while FedEx carried over 100 million pounds. This express service was boosted by another 100 million combined pounds carried by BAX Global, Menlo Worldwide and Airborne (now DHL/ABX) Express. Ontario's development as a multimodal logistics hub has greatly contributed to making its broader "Inland Empire" area the fastest growing major urban region in the United States, where tens of thousands of jobs are being created annually.

### *Alliance, Texas*

Another air logistics hub/aerotropolis example is Fort Worth (Texas) Alliance International Airport, where 15,000 acres (65 square miles) span two counties and includes portions of four cities. Promoted as the nation's first industrial airport by Ross Perot's company, development began in 1988 with the objective of serving business and commercial users rather than passengers. From the beginning, multimodality was emphasized, especially quick and efficient access to regional and national markets via interstate highways and intermodal

rail connections. A major development driver was put in place in 1997 when FedEx opened its southwest regional hub at Alliance. Since then, over 100 major companies (33 from the Global 500 largest) have located at and around Alliance; such as AT&T, Nokia, BFGoodrich Aerospace, Bell Helicopters, Gulfstream, Zenith Electronics, Nestle Distribution, and Dell Computers. Alliance provides a Foreign-Trade Zone, an enterprise zone, a world trade center, state-of-the-art fiber optics and telecommunications, and a special inventory tax exemption as well as efficient U.S. customs services.

As a result of its wide variety of present and expected future tenants and users, such as time-sensitive manufacturers and distributors, third-party logistics providers, retailers, international firms and aviation-related companies, Alliance is partitioned into geographic sectors geared to different tenant needs and requirements. These developments include:

- *Alliance Center*, a 2,600-acre high-density business complex that encircles the airport and is geared primarily towards aviation-related enterprises that require direct taxiway access.
- *Alliance Commerce Center*, a 300-acre business park for manufacturing and high-tech firms, which has served as a starting point for several small and mid-sized companies that have expanded into larger facilities throughout Alliance.
- *Alliance Air Trade Center*, a 52 acre air cargo development with direct access to the Alliance Airport runway system, direct access to Interstate 35W, and nearly adjacent to the BNSF intermodal facility. It has over 250,000 square feet of warehouse space available for intermodal cargo and international air freight companies.
- *Alliance Gateway*, a 2,400-acre distribution, manufacturing and office sector which provides parcels of land for constructing large-scale

facilities such as warehouses and is designed to accommodate large distribution and industrial firms. It also has convenient access to Dallas/Fort Worth International Airport via State Highway 170.

- *Alliance Advanced Technology Center*, a 1,400-acre complex that is becoming one of the nation's premier technology hubs for major companies from around the world.
- *Heritage Reserve at Alliance*, which is integrated into a woodlands greenbelt and offers locations for research and development facilities in a natural setting.
- *Westport at Alliance*, a 1,500-acre industrial and distribution sector located directly adjacent to Burlington Northern Santa Fe Railway's main north/south line and Intermodal Center. It caters to shippers needing rail access and other multimodal transportation options.
- *Alliance Crossing*, a 170-acre retail complex that is designed to accommodate retailers, restaurants and other service-oriented firms needed to service the areas increasing population base as well as employees and visitors of Alliance.

Alliance's commercial success has been attributed to its excellent multimodality, a variety of economic incentives it provides to tenants, its attracting a substantial number of third-party logistics (3PL) providers who offer manufacturers, distributors and retail shippers with value-added services including packaging, labeling, inventory management, transportation and transportation tracking as well as returns management. Alliance also provides educational and technical training facilities for companies located at its complex, including conference and teleconference facilities.

Of particular interest, all firm recruitment and real estate development is managed by a private company, Hillwood Development. Of the US\$4.8 billion invested in Alliance thus far, 97 percent has been from private sources. According to the Alliance website, this translates into over 20,000 permanent jobs at the complex and US\$150 million in property taxes generated.

### *Rickenbacher, Ohio*

The third air logistics hub example, centered at a mid-sized airport, is Rickenbacher International Airport in Columbus, Ohio. A former air force base, Rickenbacher went into commercial service in 1980 as an air cargo airport. Despite being the hub for the air cargo firm, Flying Tigers (now part of FedEx), Rickenbacher did not obtain success until the 1990s when a new public-private management model was put in place and a new marketing strategy developed based on the “Inland Port” concept.

Rickenbacher’s success thereafter rested largely with efficient and cost-effective handling and distribution of supplies and finished goods, in contrast to more costly, less efficient handling at alternative (often larger) airport complexes that lacked multimodality and as efficient logistics operations. The airport is strategically located to serve national markets, has excellent access to major interstate highways and intermodal rail facilities. Like KCI, Rickenbacher operates in a Foreign Trade Zone. It also has special state and federal tax exemptions such as those on inventory, abatement on real estate taxes for improvements to land and buildings as well as a subsidy of US\$3 million per year from local governments. In addition, the State of Ohio has committed US\$65 million in revenue bonds for future facility improvements.

Economic development around Rickenbacher since 1991 has been remarkable. The airport serves as the logistics hub of a 15,000-acre (65 square mile) development zone nearly identical to Alliance, called the Rickenbacher

Area. This area contains over 20 million square feet of state-of-the-art logistics and distribution space, employing 15,000 workers. Despite the national and global downturn in air cargo between 2001 and 2003, Rickenbacher experienced robust air cargo growth. Nearly 50 percent of Rickenbacher's cargo is international.

Rickenbacher provides tenants and users with a 500,000-square-foot cargo terminal, which is being continuously expanded, modern materials handling equipment and logistics services, and direct airfield access to freight forwarders, third-party logistics providers and time-sensitive manufacturers and distributors who are advantaged by airside access. As one example, Excel Logistics, one of the world's largest supply chain management companies, operates a 230,000 square foot one-stop shop facility that includes customs brokerage, airfreight forwarding, intermodal operations, value-adding logistics services, and warehousing. Rickenbacher's logistics and fulfillment firms are undergirded by state-of-the-art fiber optic loops, high-speed data circuits, and teleconference facilities.

As mentioned above, Rickenbacher's development success can be attributed in large part to its management strategy implemented in 1991 with the establishment of the Greater Columbus Inland Port Commission to promote trade through developing and leveraging logistics services and intermodal infrastructure. The Inland Port Commission is an exemplary public-private partnership made up of city, county, state and federal representatives from the public sector and the Greater Columbus Chamber of Commerce and individual manufacturers, shippers, logistics providers, and others from the private sector. Cost-benefit analyses have shown that for every U.S. dollar of public investment in Rickenbacher, three dollars in private investment have resulted with twenty-five dollars in regional economic impact, estimated to be US\$2.8 billion in 2002. This regional impact is forecast to grow to US\$3.8 billion in 2006.

### *North Carolina Global TransPark*

The North Carolina Global TransPark (GTP) is a multimodal business center designed to support manufacturing, distribution, agribusiness, and transportation-related companies. A comprehensive planning effort was completed in 1994 with the objective of fully integrating air, rail, road, and nearby sea transportation capabilities to serve the logistics requirements of industrial and distribution tenants and users.

The GTP encompasses 5,000 acres in eastern North Carolina, 90 miles east of the Research Triangle Park and 40 miles from the Atlantic coast. At full infrastructure build-out (forecasted to be around 2025), the project will have two long-range parallel runways, a state-of-the-art central cargo processing area, a highway-to-rail intermodal terminal, a dedicated system for transporting cargo throughout the GTP, internal road networks, and upgraded connections to regional road and rail systems. Two deepwater ports are located approximately one hour away by rail and highway. Thousands of acres within the GTP are available for private, industrial, manufacturing and distribution facilities, all to be developed in a campus-like environment.

#### Development History

In 1990, this author presented the conceptual outline for a new type of logistics infrastructure, a “Global TransPark” to North Carolina Governor James Martin and state officials.

A number of factors undergirded the concept:

- The rapid shift from national economies to global cooperative commerce
- The emergence of just-in-time, flexible and agile manufacturing practices to reduce inventories for suppliers and customers and to provide quick customer response

- The growing importance of air commerce which includes air cargo and air express
- The need to utilize air commerce, shipment by sea and delivery by trucks and rail in an overall multimodal distribution system
- The need for an advanced multimodal logistics hub in the Eastern United States to provide a gateway to global markets.

Studies at the University of North Carolina's Kenan Institute and the Department of Transportation prompted North Carolina government to seek legislative approval for the concept by establishing the North Carolina Air Cargo Airport Authority (later renamed, Global TransPark Authority) to conduct a feasibility study and produce a master plan for the project. A technical feasibility study was conducted by the state. The Federal Aviation Administration showed considerable interest in the concept from its inception, providing a \$1 million research grant to the Kenan Institute of Private Enterprise to research further the need for and configuration of an air cargo/industrial complex. The FAA also contributed \$300,000 to the state air cargo system plan/GTP technical feasibility study, and it provided \$622,000 towards the cost of the Global TransPark's Master Plan.

The Global TransPark Authority considered 11 site proposals from throughout North Carolina, before selecting an underutilized airport (the Kinston Regional Jet Port) in an economically lagging part of the state as the project site in May 1992. Political realities and the perceived need to stimulate economic development in the state's most impoverished region drove this siting decision.

In 1993, the North Carolina Global TransPark Foundation, a private not-for-profit corporation was established and began a \$30 million campaign for private money to assist development at the Global TransPark. In the same year,



the 13-county regional Global TransPark Commission was chartered by the General Assembly to provide marketing, low-interest loans and grants for economic development in its member counties.

The Global TransPark Authority began its Master Plan for the Global TransPark in late 1992 and completed the plan in 1994. The plan was prepared by a team of internationally recognized professionals, headed by Kimley-Horn and Associates Inc. of North Carolina, Bechtel Engineering of San Francisco, California, and Greiner of Dallas, Texas. Wilbur Smith Associates of South Carolina also contributed. The Master Plan depicted a Global TransPark of eventually 15,300 acres at full development with two parallel runways of 11,500 feet and 13,000 feet.

The Master Plan's original configuration called for a new runway in the first phase of the development. The Global TransPark Authority later modified the plan to extend the existing 7,600-foot runway to 11,500 feet in lieu of constructing an expensive all-new runway. A second runway remains a part of the Master Plan and will to be developed when needed. The Master Plan also identified the road and rail network to serve the Global TransPark and provide distribution links to deep-water ports. It included engineering, design, environmental, and forecast elements.

As part of the Master Plan, the Global TransPark Authority conducted an Environmental Assessment to measure impacts that would result from development of the Global TransPark. The assessment was accompanied by a Conservation Plan, which detailed a number of positive steps to be taken regarding wetlands. An Environmental Assessment is a comprehensive study but is not as detailed as an Environmental Impact Statement (EIS). In May 1994, at the end of the review period for the Environmental Assessment, the FAA requested a full Environmental Impact Statement. The EIS was performed and

the FAA concluded the EIS process with a Record of Decision issued in September 1997.

In the meantime, Mountain Air Cargo/Mountain Aircraft Services Inc. opened a \$8.5-million maintenance hangar and office complex. Mountain Air Cargo, a major contract carrier for FedEx, maintains a fleet of 62 aircraft that serve 30 states, Canada and the Caribbean. A sister corporation, Mountain Aircraft Services, LLC, performs aircraft maintenance for Mountain Air Cargo and other companies.

Mountain Air Cargo's 65,000-square-foot facility was built by the Global TransPark Foundation and is being leased by the company. The Global TransPark Commission also leases office space in the Mountain Air Cargo facility. Mountain Air Cargo employs 300 people at the Global TransPark.

The Global TransPark was designated as a Foreign Trade Zone to allow companies within the Global TransPark to defer, reduce or eliminate payment of some tariffs and duties. It also provides incentives for companies to maintain production facilities in the United States. Companies that are not located within the perimeter of the Global TransPark are eligible to apply for subzone status, giving them the same trade advantages.

In 1997, the Authority requested and received state and federal funding for a \$6.3 million worker training and education center for the Global TransPark. The center was completed in 1999 and has successfully operated since then. Through a cooperative arrangement with the 11 regional community colleges in the Global TransPark Region, the center offers training programs for workers in a wide range of logistics and skilled blue-collar jobs.

Thus far, approximately \$80 million has been allocated from federal and state governments with an expected total investment of \$250 million required for full development.

## Challenges and Hurdles to GTP Progress

Only 700 people are currently employed at the GTP which is disappointing to many. Locational problems have created severe constraints. As noted, the North Carolina GTP Authority purposely selected a relatively isolated low-income region of the state as the site of the GTP to spur job growth, income and overall economic development of the region. This location has posed a number of liabilities. First, the highway system and related transportation and telecommunications infrastructure were not well developed to the site. The GTP is over 40 miles from the nearest interstate highway and developing connectors to the interstate will take years. The lack of interstate highway accessibility dissuaded a number of early targeted manufacturing firms from locating at the GTP. In addition, the runway at the Kinston Jetport (the GTP) was only 8,000 feet long, and therefore unable to handle the take-offs and landings of large cargo aircraft. Securing the environmental approvals and federal and state financing to extend the runway to 11,500 feet took four and a half years. These approvals and financing came in late 1997 and 1998 and the runway extension was completed in late 2002. Without federal environmental approvals (which is an involved and extensive process in the United States) and a sufficient runway length for fully loaded all cargo aircraft to land and take-off, it was impossible to recruit major cargo airlines and therefore the firms that would use them. The lack of a nearby developed industrial base further discouraged a number of air cargo firms. The North Carolina GTP found itself in a chicken and egg situation that is now only beginning to be resolved through transfer of activities and responsibility to a major private sector commercial real estate development firm and private sector development consultants. KCI with its modern airport infrastructure in place, superb interstate highways adjacent and nearby and well developed industrial bases faces none of the critical problems which have delayed progress of the North Carolina GTP. KCI also possesses an in-place air cargo and passenger network that the NCGTP lacks.

### *Southern California Logistics Airport*

Another effort to create an air logistics center that has faced similar difficulties is Southern California Logistics Airport (SCLA) in the high desert, nearly 100 miles northeast of Los Angeles. This converted former air base is considered too isolated for air express activity and its local industrial base is not strong. There is also intense competition from other nearby “Inland Empire” airports, including Ontario, San Bernardino, and March Air Base. Los Angeles International and Ontario have a solid grip on freight forwarders, who are reluctant to move to SCLA, despite major incentives provided. Since freight forwarders account for the vast majority of traditional (non express) air cargo, this has proven to be a liability that SCLA has yet to overcome. Again, KCI is in a much better position with an established aviation network and local industrial base. KCI is also the dominate airport in its region, serving an approximately 200-mile radius while SCLA faces intense competition from air cargo giant LAX and nearby air cargo complexes at Ontario, San Bernardino and Riverside/March airports

### *Asia’s Air Logistics Hubs and Aerotropoli Hong Kong International Airport*

Hong Kong International Airport (HKIA) is one of the world’s exemplary air logistics hub and aerotropolis in evolution. Its 1,258 hectare (2,700 acre) site was created in the mid-1990s by leveling two small islands and reclaiming land from the sea. The airport opened in July 1998 with a total project cost of US\$20 billion, including a 26 miles multi-lane expressway and modern express train to both Kowloon and Hong Kong Island.

Three commercial districts adjacent to HKIA’s terminal and runways are well along in development. The 70 acre South Commercial District is composed of logistics facilities, including (1) Tradeport Hong Kong Ltd., constructed and operated by an international consortium of Asia and European Partners, (2)

HACTL's Super Terminal 1 (the world's largest stand-alone air-cargo and air-express facility with a gross area of 2.7 million sq. ft), (3) Asia Air Freight Terminal, and (4) a 1.4 million sq. ft. mixed-use freight-forwarding warehousing and office complex. DHL has just opened its Asia air express hub in this zone, as well (see Exhibit 1.6).

The 23 acre East Commercial District is being developed as an office park. It will have gross floor area of 3 million sq. ft. targeted to regional corporate offices and air travel-intensive professionals. The 125 acre North Commercial District is the Airport City's signature development zone, known as SkyCity. The 10 million sq. ft commercial development is adjacent to the passenger terminal and served by the airport express train. SkyCity's master planner, Skidmore, Owings & Merrill designed it as a commercial destination for working, shopping, meeting and trading.

SkyCity's first phase will open in 2006 and contain SkyPlaza, a multipurpose commercial complex connected to the passenger terminal and the airport express train station. The lower floors of SkyPlaza will provide a 300,000 sq. ft retail center, including an IMAX 3D theatre. Above this podium will be class A office space with a total gross floor area of another 300,000 sq. ft. SkyCity's first phase development also includes a 1 million sq. ft international exhibition center with full-time trade rep offices, a China cross-boundary ferry terminal, and a 9-hole golf course that will go commercial in future phases. These future phases will consist of a business park, hotels, and leisure and entertainment facilities.

SkyCity will be the multimodal Central Business District of a far reaching Hong Kong Aerotropolis. In addition to its Hong Kong Island connections, it will be linked by the express train and highway to the nearby Disney Theme Park that will open on the airport's island in 2006, about 10 minutes from the SkyCity.

The airport express train connects as well within 10 minutes to Tung Chung, a massive new town built on a neighboring island.

SkyCity will also be seamlessly connected to southern coastal China through high-speed turbo jet ferries to the economically booming Pearl River Delta. These high-speed ferries will shuttle passengers, shoppers, workers, and tourists back and forth between SkyCity and key Delta locations in 30 to 40 minutes, bypassing airport customs and immigration. Such connectivity to the mainland already exists from the South Commercial District where logistics ferries connect the district to the Delta's main manufacturing centers, shuttling parts and finished goods back and forth between the airport and the mainland.

Further integrating HKIA with both Hong Kong and the Delta will be a new expressway and rail bridge and tunnel linking Hong Kong to Macau and Zhuhai on the mainland. This combination express/rail bridge is planned to connect through the airport island (Lantau). It will not only enhance SkyCity's role as a destination for shoppers, tourists, traders and other business people from these catchment areas but also solidify HKIA's role as the multimodal center of a highly expansive and growing Hong Kong aerotropolis.

### *Incheon: Korea's Winged City*

Perhaps the most ambitious effort to develop a multimodal air logistics hub/ Aerotropolis is taking place at and around South Korea's new Incheon International Airport. At its core is Winged City, a multimodal hub being developed with all the features of a modern metropolitan center: retail areas, office blocks, logistics and manufacturing facilities, ICT functions and leisure activities, a conference and exhibition center, as well as a mixed-use new town. Elaborate expressway, bridge and under construction rail infrastructure connects the airport to Seoul (42 miles to the North) and to nearby islands, the latter forming an integrated commercial and residential complex.

The airport property (15,000 acres) is considerably larger than most in Asia. Opened in March 2001, Incheon was immediately among Asia's major airports in passengers and cargo. Its current master plan (with a 15-year horizon) has commercial and residential development evolving through three phases, creating an ever broadening and deepening urban expanse. The first phase (already complete) is an Airport Support Community consisting of airport-related industries (primarily logistics), commercial services, and housing for airport area employees and their families, which total 100,000. The second phase (in process) involves expanding (both spatially and functionally) the Airport Support Community while transforming it into an International Business City. A 360 acre international business center composed of four office complexes, a shopping mall, convention and exhibition facility and two five-star hotels is scheduled to open later this year.

An additional 220 acre commercial project under development is the Airport Free Zone. This international logistics and manufacturing zone is proposed to be fully operational in 2006. Both the international business center and Airport Free Zone are planned to double in space in the ensuing five years with the population of Winged City doubling, as well, to 200,000.

The third and most ambitious stage (The International Free Trade City) is a full-blown aerotropolis tied together by an extended international free enterprise zone (IFEZ). The IFEZ will encompass three islands, connected by expressway bridges (man-made Songdo and Cheongra, along with Yeongjong where the airport is located). A pivotal component in the Republic of Korea's plan to transform the country into the commercial and trading center of Northeast Asia, IFEZ is being promoted as "Pentaport" -- a combined airport, business port, seaport, teleport, and leisure port.

The greater Incheon Aerotropolis has dual urban growth poles. The first, Yeongjong Island, is its Winged City, with development around the airport

focusing on aviation-oriented office functions, logistics, and tourism and leisure activities. Songdo Island will host the aerotropolis' second urban growth pole, New Songdo City, to be created from scratch entirely on reclaimed land.

Phase I of this mega-project is set to commence in 2005 and will include a 1 million sq. ft. retail complex, a 1,000 room hotel, a 65-story trade center, and 2,360 homes. As an incentive to its developers, the Korean government has agreed to construct a six-mile, six-lane bridge from New Songdo City directly to Incheon International Airport.

From the start of Winged City on airport property to the development of New Songdo City miles away, the Korean government is actively soliciting private-sector participation and foreign investment. Tax holidays and other generous financial incentives along with the provision of extensive infrastructure throughout the greater Incheon region are likely to catalyze considerably more private-sector development throughout this emerging Korean Aerotropolis.

### *Singapore Changi International Airport*

Since commencing operation in 1981, Singapore Changi, 16 miles from downtown Singapore, has been considered among the most efficient and aesthetically pleasing airports in the world. The opening of its swank Terminal 2 in 1991 positioned Changi as an Asian leader in infusing passenger facilities with modern commercial, business, and leisure functions. The Civil Aviation Authority of Singapore (CAAS) has invested continuously to upgrade its two terminals and establish them as commercial and leisure nodes of a relatively compact Changi Airport City. A third terminal, costing \$1.8 billion is scheduled to open in 2008, promising to have an even more extensive array of commercial and leisure services.

Branding Singapore and providing a memorable experience to airport users are key objectives to the ongoing modernization of the passenger terminals.



More than 100 retail outlets, many with Singapore or S.E. Asia themes, line Changi's concourses in a free-flow manner. Artwork and waterfalls exhibit a sense of local history and natural beauty. Coffee shops and food outlets also provide a local flavor, modeled after the facades of 1960s Chinatown, while restaurants have open kitchens where passengers can observe cooks preparing Singaporean dishes along with a variety of other international cuisines.

At the same time, Changi's passenger terminals are state-of-the-art technologically and in service amenities. They were among the world's first to offer Wi-Fi access to passengers with laptops and high-quality surround sound lounge seats with plasma and liquid crystal video equipment. Small group movie theaters, sports and news viewing lounges, in-transit passenger sleeping, massage and shower facilities, along with health and fitness clubs round-out terminal commercial amenities. Passengers with a 5-hour layover can even take a 2 ½-hour off-airport tour, including the downtown financial district and a bum boat ride on the Singapore River. More than 60 percent of the airport's revenues come from non-aeronautical activities.

The limited amount of land surrounding Changi's 2,600 acre airport property has constrained landside commercial development. Connectivity to downtown Singapore has therefore been enhanced by a newly opened subway line that transfers travelers to the airport in about 20 minutes and a beautified tropical expressway with excellent taxi service between the airport and the downtown.

As one of Asia's leading tradeports, logistics is big business in Singapore, accounting for 7 percent of the nation's GDP. In 2001, CAAS along with Singapore's Economic Development Board and the local government authority created a 60 acre Free Trade Zone at the airport. Known as Airport Logistics Park of Singapore (ALPS), the zone is being developed to house value-adding third-party logistics providers, firms involved in assembling high-tech products, and

e-commerce fulfillment. With direct airfield access, a considerable number of the world's top logistics firms already have located in the zone, most in multi-story facilities, given the airport's limited developable land.

The airport is minutes away from large wafer fabrication and disk-drive manufacturing facilities that rely on Changi's sophisticated and rapid international air cargo handling. Reclaimed open land lies to the east of the airport and to the west is an industrial park with an aeronautical focus.

Aggressive highway development ensures that all of Singapore's industrial, office, hotel and exhibition space is in quick and easy access to the airport. The most distant industrial estate, for example, is still within 40 minutes of Changi. Because of the great importance of international air passengers and cargo for Singapore's economy, Changi has become the pivotal transportation node in what is essentially an island-wide aerotropolis.

## X. European Experiences

I have already described the evolution of an Aerotropolis around Amsterdam's Schiphol International Airport, with logistics being a primary driver. To a lesser extent similar airport-driven commercial development is occurring around Paris' Charles de Gaulle Airport and London's Stansted.

There are also a number of smaller cargo-oriented airports using air logistics to attract industry. These include Vatry International Airport in the Champagne region of France, about 130 kilometers north of Paris. It has been trying to position itself as a logistics hub and third airport of the greater Paris region. Vatry commenced operations in March 2000 following a seven million euro investment by local authorities and advertised itself as "the first multimodal 100% cargo center in Europe." In 2002, Vatry handled 6,100 tons of freight and had a total of 10,300 aircraft movements. It is near the center of major trucking in Europe linked to the French motorway network (A26 and A4). Prologis, a major

U.S. real estate investment trust focusing on logistics and distribution centers is building a substantial complex at Vatry. Overall, development at Vatry has been slower than many anticipated with the primary reason given as its distance from Paris and paucity of freight forwarders and 3PLs in the vicinity.

A primary cargo airport in Germany at Hahn, about 90 miles from Frankfurt, is likewise positioning itself as a multimodal air cargo complex. This former U.S. airbase has consistently raised its freight tonnage from just 5,500 tonnes in 1997 to over 130,000 tonnes in 2003, the vast majority truck freight, however. Frankfurt AG has taken a major equity stake (73%) in Hahn and the airport has been renamed Frankfurt Hahn. A number of 3 PLs are active at Frankfurt Hahn. The airport features a five-lane road feeder system with integrated truck cross-docking facilities along with complete logistics services including all documentation and processing of special cargo. The airport features 24/7 operation and is the German base of a number of air cargo charter companies, including the Western European hub of Volga-Dnepr Heavy Lift. It also serves as the European hub for Antonov (Russia) and as the German base for low-cost passenger carrier Ryanair. Although growth of real air freight has been sluggish at Hahn, it continues to work with Lufthansa and Fraport to get a major potential boost, if and when a total night flight ban becomes operational at Frankfurt-Main which was negotiated as part of its agreement to add a fourth runway in 2006.

#### Kansas City Air Logistics Hub/Aerotropolis Potential—Credibility, Viability, and Transferability of Successful Experiences Elsewhere

Of course, Kansas City International Airport does not have the same commercial scale nor the international connectivity of a Schiphol, Dallas-Ft. Worth, O'Hare or Hong Kong International. It is closer to an Alliance, Richenbacker, Louisville, and Ontario California absent their extensive air express or all-cargo air services. KCI is much better positioned in terms of overall

air service, industrial base, and surface transportation networks than the North Carolina Global TransPark, Southern California Logistics Airport, or developing cargo airports in Europe.

Kansas City, in fact, emerged and grew as a national logistics and trade processing center which, in my professional judgement, remains a pivotal asset to leverage a 21<sup>st</sup> century KCI air logistics hub driving greater KCI aerotropolis development. Let me elaborate.

Kansas City recently received five stars (the highest ranking possible) by *Expansion Management* magazine's 4<sup>th</sup> annual logistics survey, placing it among the nations top metropolitan areas in terms of:

1. Transportation / warehouse industry size
2. Work force percentage engaged in transportation and logistics
3. The road infrastructure
4. The density, congestion, and safety conditions of the roads
5. The physical state of road conditions
6. The interstate highway network
7. State taxes and fees applicable
8. Railroad network
9. Water port commerce, both ocean and freshwater
10. Air service to and from the MSA

Kansas City International Airport is within 3 ½ hours flying time to every major U.S. City. It is currently served by 12 passenger-cargo combination airlines and 8 all air-cargo airlines effectively linking products and people in a 200 mile radius of the airport to markets across the country and around the world. With three runways exceeding 9,500 feet, KCI does not have the congestion problems

and delays frequently encountered by its larger, more distant competitors and is routinely rated as one of the most user-friendly airports in the United States.

The airport has superior interstate highway access. Three interstate highways (I-29, I-35, and I-70) intersect near KCI with its cargo complex within 1,000 feet of I-29. Six air freight facilities comprising over 300,000 square feet of warehouse and office space are located at the air cargo complex to serve shippers, forwarders, airlines, all-cargo carriers, ground handling agents, trucking companies and support services for the air cargo community. Nearly 1.2 million square feet of ramp space is dedicated to accommodating cargo aircraft and operations. All cargo facilities fall within KCI's Foreign Trade Zone. Moreover the open space in and around KCI provides all cargo carriers with the freedom from noise restrictions found at most other major U.S. airports.

The Aerotropolis was described as evolving best where there are wide lanes and fast, uncongested trucking and automobile mobility. The immediate KCI area is very well situated in this regard. In addition to Interstates I-29, I-35, and I-70 which traverse the KCI area, four other interstate connectors (I-435, I-470, I-635, and I-670) supplement these interstates, along with numerous multi-lane state roads. Kansas City, in point of fact, has more freeway lane miles per capita than any other U.S. city and ranks among the top five major metros on mobility and low traffic congestion indices.

Given the area's strategic geographic location in the center of the United States, truck carriers can reach within one day the entire central U.S., from the northern border with Canada to the southern border of the Gulf. States served under Kansas City's One Day Truck Distribution Service Area include Illinois, Indiana, Michigan, Ohio, Kentucky, Minnesota, South Dakota, Tennessee, Missouri, Kansas, Iowa, Nebraska, Colorado, Alabama, Mississippi, Oklahoma, Arkansas, Louisiana and Texas. As a result, over 100 national less-than-truckload and full-load trucking companies are based in the Kansas City area.

I also noted the importance of rail access and intermodal rail facilities in the successful development of air logistics hubs/aerotropoli in the U.S. Here, Kansas City has unique competitive advantage. The area is generally regarded to be the second largest rail center in the nation. Four of eight Class I rail carriers (Burlington Northern & Santa Fe, Kansas City Southern, Norfolk Southern and Union Pacific), three regional lines (Gateway Western, I&M Rail Link) and a local switching carrier (Kansas City Terminal) serve the area as do Amtrak passenger trains.

Like a number of most successful air logistics hubs and greater Aerotropoli, Kansas City has significant waterborne cargo capability, as well, making the area quadramodal from a logistics infrastructure standpoint. Kansas City adjoins the Missouri River's U.S. Army Corps of Engineers-managed shipping channel, which runs from St. Louis to Sioux City, Iowa. Seven barge lines operate along the Kansas City area of the Missouri River. There are 41 docks and terminal facilities in the Kansas City metropolitan area supporting over 4 million short-tons of freight, according to the U.S. Army Corps of Engineers. A number of those docks are accessible to KCI via truck and potential rail intermodal.

In the following chapters, the importance of telecommunications infrastructure for multimodal air logistics hub/ Aerotropolis development will be emphasized. Kansas City possesses an highly advanced overall telecommunications infrastructure that is reliable, robust, and redundant. As home to Sprint's world headquarters and major SBC and AT&T regional facilities, Greater Kansas City enjoys one of the world's most advanced telecommunications networks. It is a focal point both for long-haul fiber and transcontinental fiber networks. Unique characteristics include:

- Fiber backbone, protected by 60 Sonet rings, including digital access control, connects all central offices. Fiber is virtually universal in all

routes to customers. Fiber optic connections are available from multiple vendors to most major buildings and industrial sites.

- Central offices are equipped with digital switches featuring the latest generic software, signaling system 7 control, and a full array of services throughout the metropolitan area, i.e., ISDN, frame relay, switched digital data, DSL, high band width, etc.
- The newest digital-age services such as SBC Communications' Asymmetrical Digital Subscriber Line (ADSL) and its new Multi-Protocol Label Switching (MPLS) capability which is used to prioritize Internet traffic for avoidance of congestion and failures.
- Sprint's deployment of four large Major Area Network (MAN) rings throughout the metro increases dependability of self-healing capabilities and fiber optic traffic re-routing during common causes of telecom route failures.
- A large pool of telecommunications professionals, knowledge workers, and experienced data center and call center workers is available in the Kansas City Area.

Complementing Kansas City's powerful multimodal transportation and state-of-the-art telecommunications assets are "soft" infrastructure support, including critical commercial and knowledge support. The fact that essentially all of KCI's 10,000 acres are already designated as a Foreign Trade Zone makes the airport a favored multimodal air logistics hub. Moreover, adjoining the property is an extensive Enterprise Zone that provides substantial tax credits and exemptions in return for commercial investment and job creation. This zone is well suited for logistics-related functions as well as time-sensitive manufacturing and distribution since both are located on airport and within minutes of major interstates and other expressways.

KCI is already experimenting with the innovative U.S. Customs automated monitoring system. This allows the airport to offer clearance of imported part and components as well as rapid, paperless processing of exports, providing the area's importers and exporters with a substantial speed advantage.

Economic Development Organizations such as the Platte County Economic Development Council, Kansas City SmartPort, and the Kansas City Area Development Council provide firm recruitment assistance as well as assistance in facilitating licenses, permits, tax abatements and a variety of targeted investment promotion privileges offered by the state and local jurisdictions. This soft infrastructure support also serves as an important networking mechanism for new firms locating in the area to gain quick access to complementary local business leadership and government officials.

Two considerable barriers to successful commercial development of air logistics hubs at the North Carolina Global TransPark and Southern California Logistics Airport are lack of a sufficient pool of educated workers and an advanced economic base near the airports. KCI faces neither hurdle and, in fact, possesses strengths in these pivotal arenas.

Public schools in the Kansas City are highly regarded. Along with dozens of community colleges and four-year institutions of higher education, fifteen institutions within the metro area offer graduate and professional degrees. The Kansas City area ranked 35<sup>th</sup> out of 268 metros in concentration of its workforce in the "creative class," including scientists, engineers, architects, designers, and other professions where creativity is a key factor.

High tech employment is seen as instrumental to successful air logistics hub/Aerotropolis development. According to a study by the Milken Institute, Kansas City ranks 16<sup>th</sup> among larger metros for high tech job growth and ranks 20<sup>th</sup> on high tech location quotient which measures concentration of high tech workers. Kansas City has the third largest number of high tech employers in the



Midwest and ranks number 1 in the Midwest in high tech employment concentration.

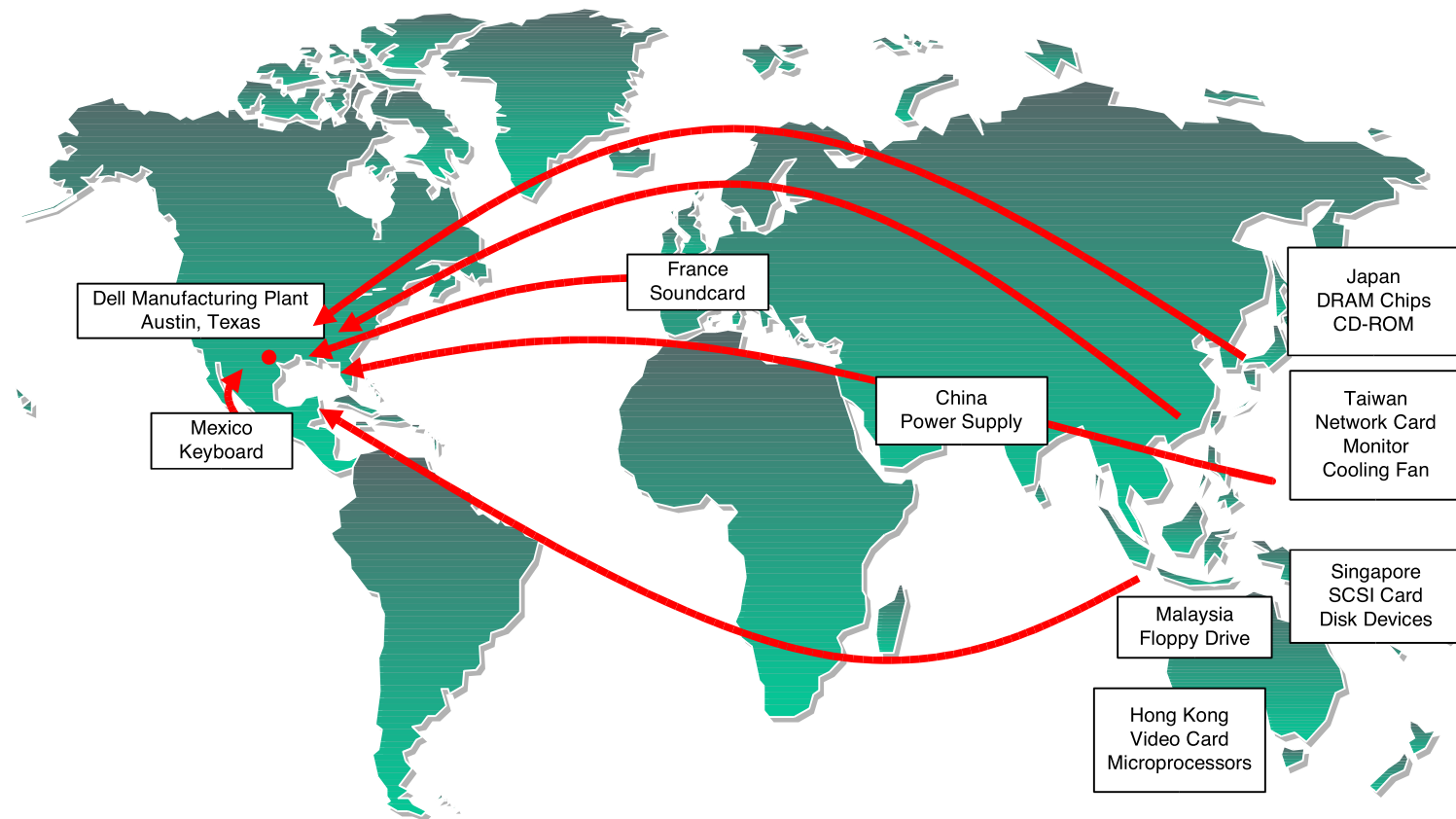
Kansas City's distribution role seems poised to go to new levels as well. Along with its five-star (highest honor) rating among the 100 most logistics-friendly cities, and large number of national trucking companies and railroads, the Kansas City area has in place over 60 distribution centers ranging from 30,000 square feet to 2 million square feet, currently adding totally more than 22 million square feet.

Contrary to some local conventional wisdom, KCI has played a substantial role in much of the metropolitan area's economic development over the past three decades. An economic impact study conducted in 2000 by Wilbur Smith Associates revealed that 1 out of 20 jobs in the metropolitan area are related to KCI and that the airport is instrumental in producing 3.6 percent of the gross regional product. In addition to the 7,500 on-airport jobs (which makes KCI the fifth largest employer in the region), a survey of 3,000+ regional business by Wilbur Smith Associates showed that 122,400 jobs are linked to KCI and the efficiencies it provides. The survey also found that over 60 percent of the responding business surveyed noted that proximity to a large commercial airport was important or very important to the location decision. Moreover, 53 percent of the respondents indicated that they use KCI's air cargo and air express services on a regular basis. In addition to its employment effects, the economic impact study showed that the airport directly or indirectly contributed \$1.5 billion annually in payroll and \$3.2 billion in regional output (i.e., value of goods and services).

These are impressive numbers. However, they represent only a portion of KCI's real potential to drive future economic development in the Kansas City area. To achieve this full potential, the logistics assets of Kansas City must be better integrated with the airport and logistics features of the airport improved.

The next chapter will describe an incremental process for developing a successful air logistics hub at KCI and a surrounding Aerotropolis. The initial catalyst being the development of the 640 acre planned KCI Business AirPark which will be the commercial cornerstone of KCI Aerotropolis development. Successive development steps will be discussed including additional logistics infrastructure and facilities on other parts of KCI's property as well as the integration of the proposed new infrastructure and facilities with area-wide logistics infrastructure and commercial facilities.

Exhibit 1.1  
GLOBAL SUPPLY CHAIN—DELL COMPUTER



Source: Abbey, Twist and Koonmen. 2001

Exhibit 1.2  
 UNITED STATES TOTAL AIR AND VESSEL EXPORTS  
 FOR 1990, 1996 AND 2003 BY VALUE  
 (IN MILLIONS OF US\$)

VALUE			
	1990	1996	2003
TOTAL VALUE	\$261,298	\$417,434	\$441,807
AIR VALUE	\$110,471	\$196,182	\$235,601
VESSEL VALUE	\$150,827	\$221,252	\$206,205

GROWTH			
	1990-96	1996-2003	1990-2003
TOTAL VALUE	59.8%	-0.3%	9.1%
AIR VALUE	77.6%	14.9%	13.3%
VESSEL VALUE	46.7%	-13.6%	36.7%

Exhibit 1.3  
AEROTROPOLIS SCHEMATIC

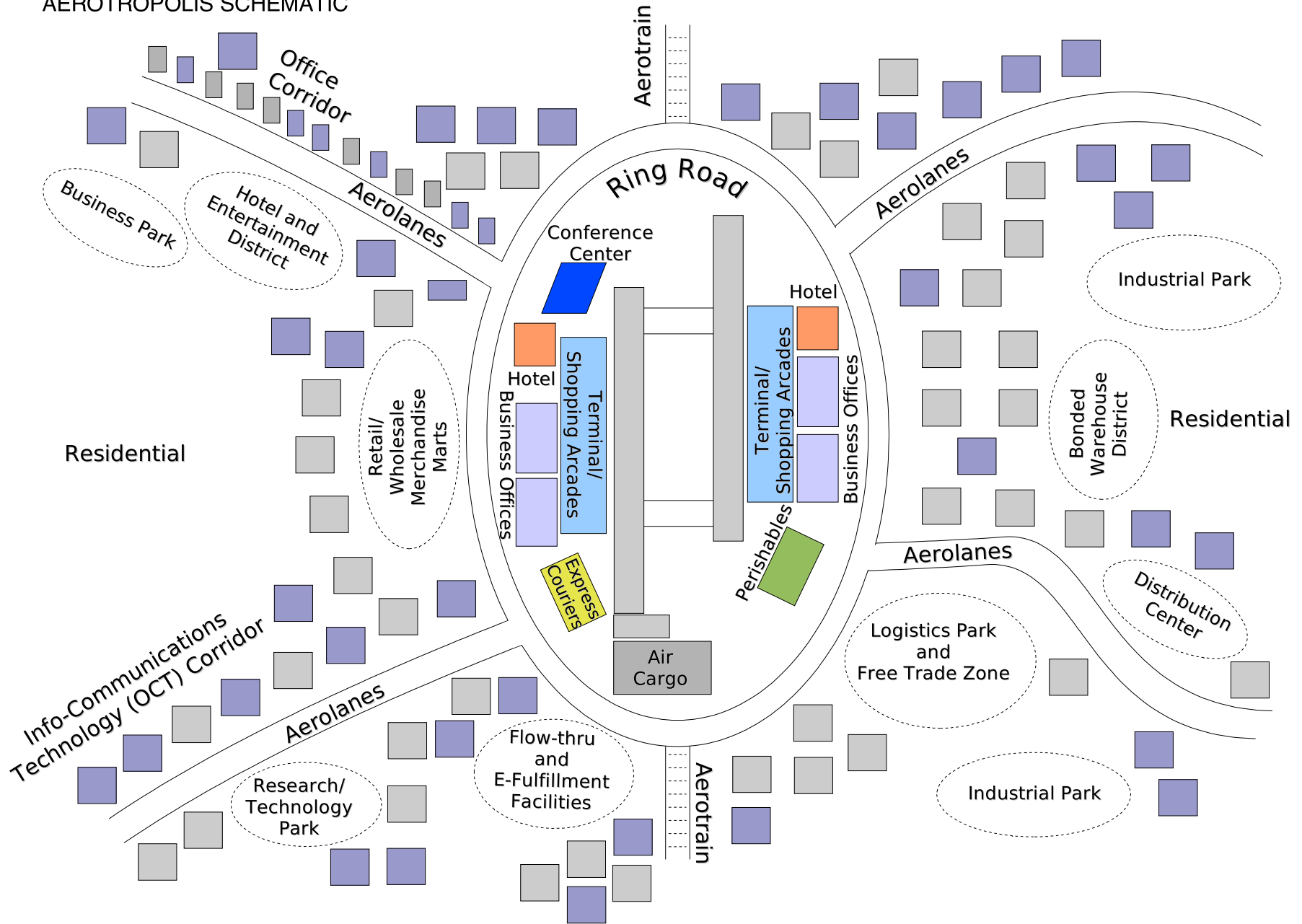


Exhibit 1.4  
AMSTERDAM–SCHIPHOL AIRPORT CITY–AEROTROPOLIS SYNERGIES

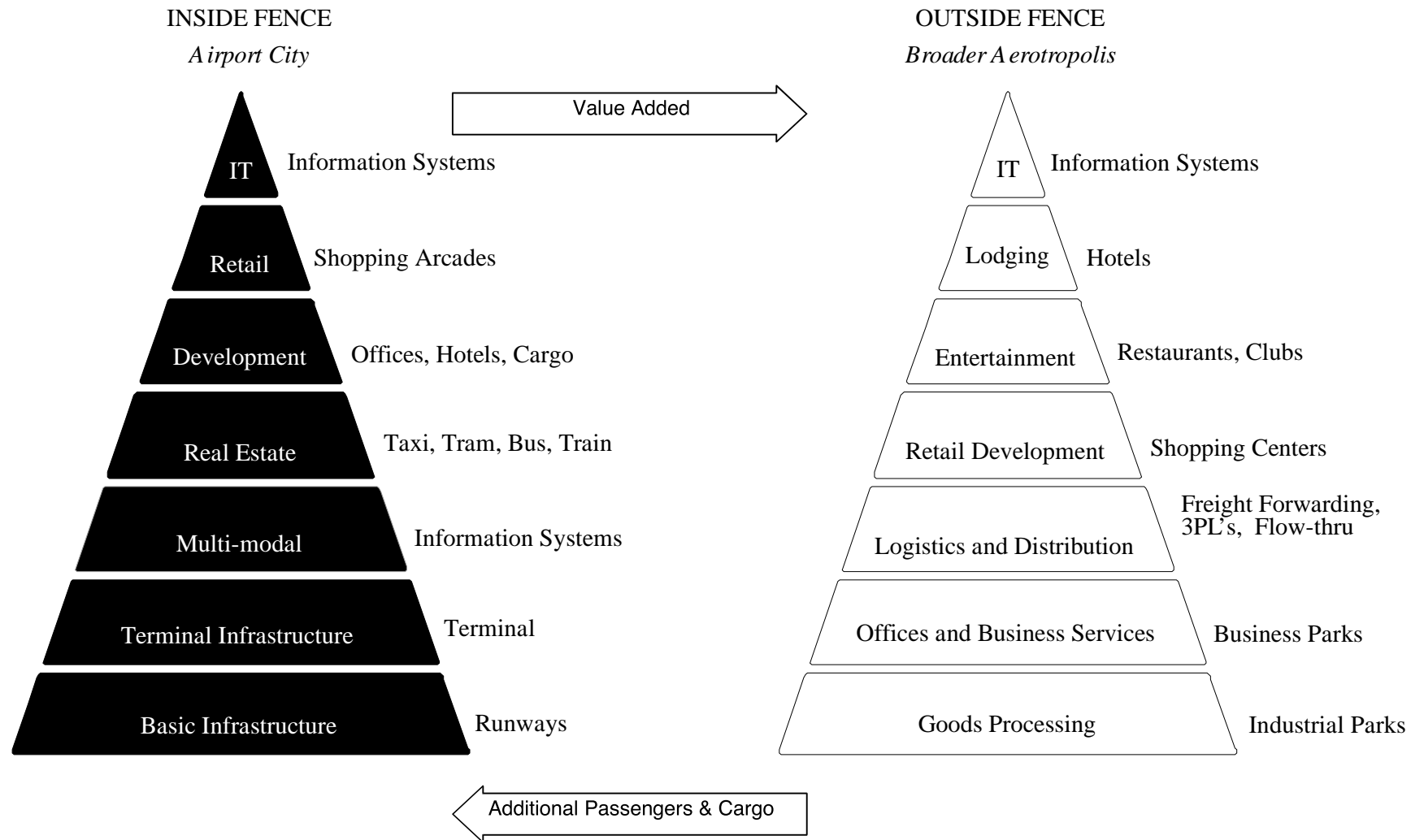
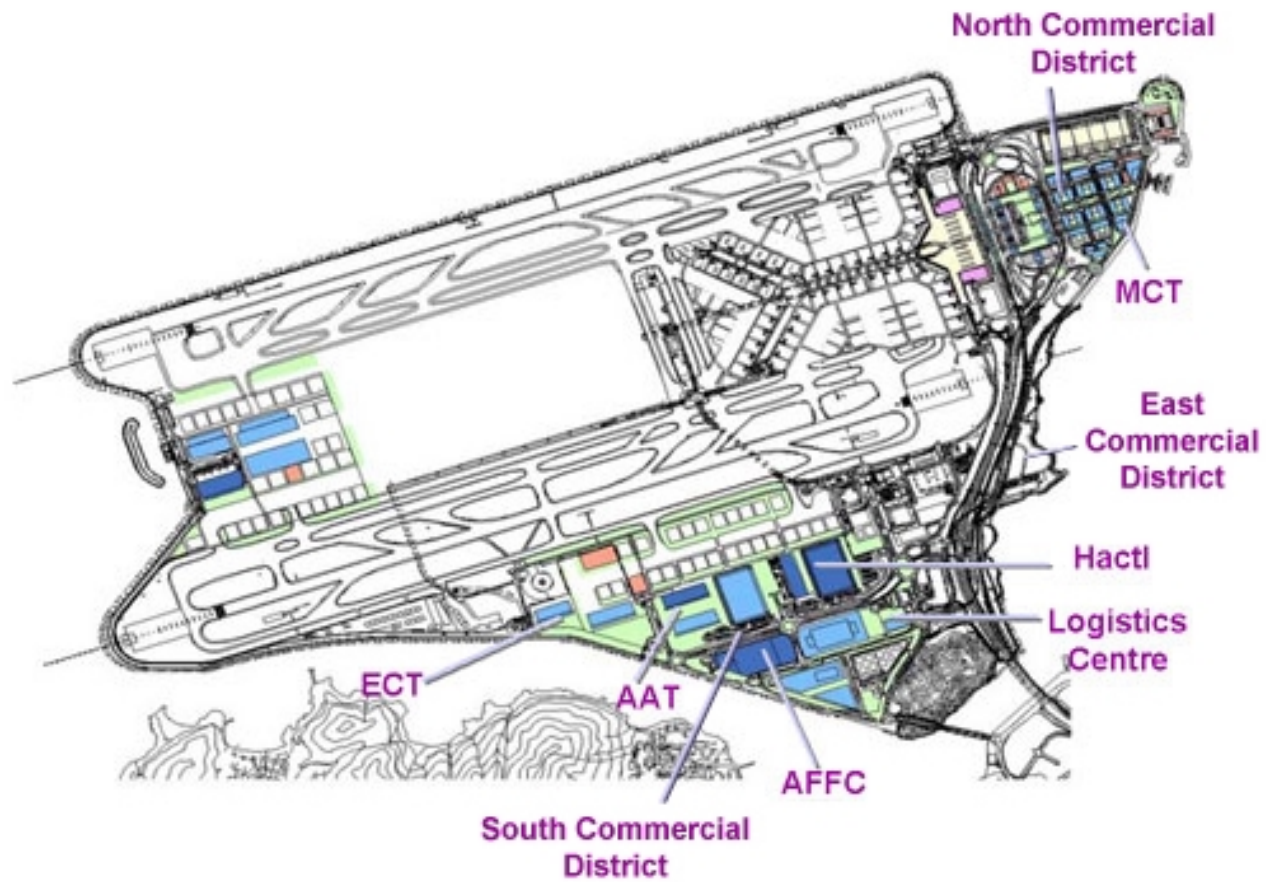


Exhibit 1.5  
ONTARIO, CALIFORNIA



Exhibit 1.6  
HONG KONG INTERNATIONAL AIRPORT





## Chapter 2

### KCI Air Logistics Hub/Aerotropolis Infrastructure and Facilities Guidelines

#### I. Existing Infrastructure and Facilities

Kansas City International Airport (KCI) encompasses 10,200 acres in a low density suburban setting in Platte County, approximately 20 miles northwest of downtown Kansas City. The airport has three long-range runways, two of which are parallel North/South configuration (1L-19R, 10,800 ft. long and 1R-19L, 9,500 ft. long, with a 6,575 ft. separation) and on East/West (9-27, 9,500 ft. long). The runways have all new operating surfaces, including associated taxiways, which can efficiently, and with minimal taxi times, accommodate 139 aircraft operations per hour. Ranking among the lowest in delays of all U.S. airports, KCI congestion in the air and on the ground is almost nonexistent.

As noted in the previous chapter, regional accessibility is outstanding with two major interstate highways (I-29 and I-435) flanking airport property and other high-speed interstate and state highways just minutes away (see Exhibit 2.1). In 2004, there were 9.7 million passengers (up from 3.8 million in 1973, the first full year of operation), while air freight registered 241 million pounds in 2004 ( up from 49 million pounds in 1983, the earliest year for which KCI freight is documented).

KCI is currently served by 20 commercial airlines, including a number of low-cost carriers such as Southwest which keep competition up and prices down. The airport also has a major heavy check aircraft maintenance facility, previously used by TWA to overhaul its MD-80 and B-767 aircraft, as well as six air freight facilities.

Three terminal buildings (Terminals A, B and C) offer 90 gates in recently modernized facilities, including upgraded passenger handling areas, improved concourses, and the latest electronic infrastructure. Numerous other support facilities are located adjacent to KCI's terminals and taxiways, as is shown in Exhibit 2.2 (Gary, please update Exhibit 2.2.)

Over 7,000 undeveloped acres lie to the west and the south of KCI's runways and taxiways (see Exhibit 2.3). Much of this open acreage is ripe for development. What makes this undeveloped property particularly attractive is that nearly all of it is formally designated as a Foreign Trade Zone (FTZ). In fact, of KCI's 10,200 total acreage, 9,535 acres are designated as a Foreign Trade Zone, making it the largest airport FTZ in the U.S. (see Exhibit 2.4).

FTZ designation allows light manufacturing and value-adding logistics functions (e.g., pick and pack, assembly, kitting, sequencing, repackaging, upgrading, repair) to operate in a tax-free environment with minimum bureaucratic or customs delays for international products moving into and out of the Zone. Imported parts, components and assembled goods may enter without customs paperwork, duties, or excise taxes. The merchandise may be stored, tested, repackaged, assembled or otherwise processed. If it is re-exported, no taxes or duties are levied. If, however, the final product is imported into the United States, customs taxes and duties are due only at the time the products leave the zone.

Because the FTZ customs duty paid is the lower of either that applicable to the product itself or its component parts, the zone provides opportunities to realize considerable cost savings. It also provides one of the most flexible methods of quickly and efficiently receiving and processing time-sensitive parts and components.

In addition to KCI's U.S. Department of Commerce-designated Foreign Trade Zone status, the airport FTZ is overlaid with city-designated Enterprise

Zone status. These Enterprise Zones afford occupants the ability to secure enhanced incentives to offset tax liabilities of qualified businesses creating at least two new jobs and \$100,000 new investment. State and local property tax abatement of at least 50% of the improvements made to real property are offered to businesses located in the zone that conduct manufacturing, warehousing, and wholesale distribution. This tax abatement is for at least 10 years or the life of the zone.

The KCI Enterprise Zone extends beyond KCI property to the east side of I-29 as is illustrated in Exhibit 2.5. Three properties in the extended enterprise zone (KCI Expansion Harley Davidson, KCI Satellite and KCI Expansion Satellite Zone) have been “activated.” The white area indentations on the map represent airport property not controlled by the city, but mostly by unincorporated Platte County.

## II. Forming the KCI Airport City and Greater Aerotropolis

The spatial and functional core of the KCI Aerotropolis will be a proposed alignment, combination and expansion of the Foreign Trade Zone and Enterprise Zone to constitute a new zone designated the KCI Business District (see Exhibit 2.6). This business district will operate as an Airport City, requiring careful urban planning and new economic development and business siting incentives, especially those geared to speed, a point I will return to later.

Exhibit 2.6 also illustrates the types of business clusters that would constitute the initial phase of KCI Business District development and additional roadway development. The dark hatched line along the southern edge of airport property represents the required extension of Tiffany Springs Parkway west from its current terminus of just west of Interstate 29 to connect with Interstate 435 completing a future KCI ring road and linking key undeveloped airport property to the two interstates.

With the KCI Business District (Airport City) established, clusters of hotel, retail, office, industrial logistics, and residential units will develop outward from the airport along nearby interstates and state highways. According to Robert V. Hurst, Chief of Citywide Planning for Kansas City, (1) there are approximately 10,400 acres of industrial/office park development (off-airport) in the city's recommended land use plan; (2) development proposals (approved by ordinance) are in place on 3200 acres and these plans provide: 14.5 million square feet of office, 17.8 million square feet of industrial and 2.6 million square feet of retail; (3) slightly more than thirty percent of the planned non-residential land has been zoned with specific site plans; and (4) at classic employment ratios, the approved office and industrial building space would represent a little over 90,000 workers. Build-out of the 10,000 acres could therefore represent over 250,000 employees.

Exhibit 2.7 specifies this type of Aerotropolis development which would be expected to occur near KCI over the next five to ten years. While some of the development already has taken place, what the KCI Airport City and Aerotropolis requires is an airport-anchored core business development, much like a central business district of a metropolitan central city. Such a core business development already has been proposed and substantial efforts taken toward its realization. This is the forward-looking KCI Air Business Park.

The airport-based business park is planned on 640 acres in the undeveloped southeastern sector, adjacent to two of KCI's runways (see Exhibit 2.8). It is designed to simultaneously leverage the aviation and air cargo infrastructure of KCI along with its nearby highway systems to provide time-sensitive manufacturers, distributors, and logistics service providers with unmatched speed and agility in sourcing, production, and distribution. Initial industry targets are high tech (especially semiconductors), aerospace manufacturing, cargo distribution and third-party logistics providers.

A team led by KCI's marketing and engineering divisions and the Kansas City Area Development Council (KCADC) has completed an assessment of the property's pre-development status. The team also created and has begun executing a marketing plan. The plan identifies competitive strengths (and weaknesses) of the site and needed improvements to attract targeted industries. To gain a better understanding of the strengths and weaknesses of the 640 acre tract as well as its development potential, KCI and KCADC retained Shafer, Kline & Warren, Inc. (SKW) to conduct a physical site analysis and provide a conceptual development plan for potential commercial facilities. Below is a summary of SKW's site assessment, findings and conceptual development plan.

### *The Site*

The KCI Business AirPark, located in the southeast corner of KCI's property, is generally bounded by runway 9-27 on the north, runway 1R-19L on the west and North Amity Road on the east. Currently used for agricultural purposes, the site is gently rolling and contains several small intermittent streams. The most critical site development challenges to be addressed are as follows:

- Sanitary sewers are the greatest site limitation. A small wastewater treatment facility is located southeast of the site. This facility might be expanded to serve additional development.
- A major water transmission line runs along the west side of I-29 and can provide water for development on the site. In accordance with Water Services Department comments, a major high intensity water demand on the site may require a large transmission main extension.

- Any future grading will be limited within the existing Williams pipeline easement; additional fill may impair leak detection by the utility company or impact the integrity of the pipeline.
- Given this limitation, the pipeline and its adjacent stream provide a logical line of separation between different uses.
- A number of streams are located throughout the site. Some will be impacted by development, especially in the northwest corner of the site where air based development might occur. There are likely more jurisdictional streams than are indicated on USGS maps. These streams must be determined on-site under Section 404 of the Clean Water Act.
- An area of low depth to bedrock exists near the center of the site. The SCS Soil Report indicates that this bedrock is typically sandstone. If so, this bedrock can be removed. The presence of sandstone doesn't prevent development but may result in additional construction costs if it must be removed.
- A very small percentage of the site contains areas of slopes exceeding 12 percent; these steep slopes appear in two small areas south of Brush Creek.
- No significant woodlands appear on site, although the streambanks and adjacent areas do contain riparian vegetation.
- Existing roadways along this site (North Amity Avenue and NW 104<sup>th</sup> Street) require improvements. Additional new roads will be required.

- A proposed boulevard (Tiffany Springs Parkway) will likely pass through or near the site. It should be noted that truck traffic is discouraged on all Kansas City Boulevards.
- The existing vegetation along Brush Creek provides a visual break. This creek would be a logical separation between different land uses.

### *Development Potential*

SKW concluded that these site issues could be adequately addressed by KCI and went to the next stage and prepared a conceptual development plan for the site (see Exhibit 2.9). This plan was based on the ability of the site to support the proposed development intensity, but does not provide any determination of the market potential or projected timing of development. The conceptual plan represents a large scale, multi-structure and multi-tenant development.

The site is divided into four distinct development areas. The first two (the airfreight and hanger areas) were directly tied to the primary airport functions. As such, they are purposely isolated from other uses to provide a greater measure of security. The other two areas provide for a more standard office distribution and industrial development. The site area and development potential are indicated in the table below:

DEVELOPMENT TYPE	SITE AREA	BUILDING AREA	BUILDING TYPE
Airfreight	300 Acres	2,240,000 s.f.	2 Story
Maintenance/Hanger	65 Acres	462,000 s.f.	1 Story
Office/Distribution/Industrial	207 Acres	1,763,300 s.f.	1 Story
Office	69 Acres	1,254,500 s.f.	2 & 3 Story

Highlights of each of the four areas include:

- Airfreight Distribution Center
- 7 Jet Docks for each building
- Gated access to entrance drive.
- Stormwater wetlands and a retention pond to capture suspended solids and excess nutrients.
- Floorplans may be modified to provide truck docks on a lower level than the jet docks to facilitate loading, storage, and site grading.

#### Aircraft Maintenance Hangars

- Gated access to entrance drives.
- May be developed as an additional Airfreight Distribution Center or as an Office/Distribution/Light Industrial Complex.

#### Office/Distribution/Light Industrial Centers

- Contemporary architecture and a high-quality landscape will support a range of office, distribution, and light industrial uses.
- Promotes single and multiple tenant flexibility.



- Interior roadway network directs truck traffic away from Tiffany Springs Parkway.
- Buildings provide 150 ft. minimum depths, 32 ft. ceilings, ample parking, room for truck maneuverability, and numerous docks for loading.
- Utilizes retention ponds to capture suspended solids.

#### Office Park

- Layout provides a mix of two and three-story buildings,
- A landscaped roundabout on Tiffany Springs Parkway identifies the proposed development.
- Buildings front Tiffany Springs Parkway, while their entrance drives connect to other roadways.
- Natural vegetation along Brush Creek provides a natural separation between the office park and the light industrial and distribution uses to the north.

Whereas SKW's conceptual master plan was designed with multiple users in mind, they also noted the possibility of a single site tenant should also be evaluated. This type of use could reduce site costs associated with roadway development and utility extensions. Such an option was, in fact, pursued by KCI 18 months ago when it was bidding for Boeing's new 7E7 assembly facility. A similar single large-tract use RFP is currently on the street by Airbus Industrie

which will likely be constructing a major aircraft assembly facility in the U.S. in the not-too-distant future.

While access to sanitary sewers and water is adjacent to the site, additional investigation needs to be undertaken to determine sizing and capacity of the infrastructure to support a range of development options.

In earlier sections of this report, I stressed the importance of good road accessibility to commercial development sites. This is a critical shortcoming of the KCI Business AirPark site that must be addressed soon if the project is to succeed as envisioned. The following roadway improvements (including estimated costs) to KCI Business AirPark are as follows:

- Build an extension of Tiffany Springs Parkway west from its current terminus just west of Interstate 29 to the project site. The project is approximately .5 miles and would be a new 4-lane road. Construction cost projections for this project is \$3,000,000.
- Amity Road from MO Highway 152 North to the site. Improve from the current two lane road to four. There is already a full diamond interchange at MO 152 and Amity Road. The project would be 1.31 miles and is estimated to cost \$5,750,000.
- Improvement of the existing I-29 & NW Tiffany Springs Parkway interchange. Anticipated \$20,000,000 improvement cost
- Extend Amity Road from the North to the Site. Current Amity Road terminates at the reservation center. Extend two lane .3 miles and add curb improvements. Estimated cost \$2,000,000.

Exhibit 2.10 shows these roadways improvements to the AirPark site along with the completion of a proposed Ring Road connecting I-29 with I-435 (to be addressed later). Since the site is still in the pre-development stage, it is important that potential tenants be shown renderings of roadway and other site improvements as well as a computerized virtual tour of the site, possibly supplemented by a CD promotional video.

### III. Designing the Commercial Driver: A KCI Air Logistics Hub

Successful development of the KCI Business AirPark, the KCI Airport City, and greater Aerotropolis will require a powerful commercial driver centered at the airport. That proposed driver is a KCI Air Logistics Hub (ALH). Operating at full development as an integrated multimodal transportation and commercial complex, the ALH will enable tenants and firms at and around KCI and throughout the Kansas City region to respond flexibly and rapidly to their domestic and global suppliers and customers. Its logistical infrastructure and business support services should be designed to enhance the speed and agility of manufacturing, distribution and other time-sensitive industries thereby improving their competitiveness and catalyzing commercial growth at the KCI Business AirPark, Airport City and greater Aerotropolis.

To achieve this objective, logistics and commercial synergies as well as multimodal transportation upgrade will be proposed, including the possibility of bringing rail access to KCI property. Ring Road and other roadway and utility improvements noted above for KCI Business AirPark important components of the initial phase of ALH development. I will begin with basic design guidelines for a KCI Air Logistics Hub.

#### IV. Basic ALH Infrastructure Design and Configuration

The KCI ALH will include many proven elements of a modern industrial park. What will set it apart is the fusion of modern manufacturing and distribution facilities with multimodal transportation, advanced telecommunications, efficient materials-handling systems, and commercial support services. Bringing these elements together according to ALH design principles to be outlined herein will substantially improve access and response time of tenants and regional businesses to their domestic and international suppliers and markets.

Exhibit 2.11 describes the initial core design of the ALH supporting the KCI Business AirPark. This infrastructure includes completion of the Ring Road as well as internal roadway improvements to appropriately service the AirPark. In a later phase, as demand dictates, runway 1L-19R would be extended to 12,000 ft., which would handle the world's largest fully loaded air freighters. A new taxiway would be extended from Runway 9-27 to service the air freight distribution center at the KCI Business AirPark.

The AirPark must be fully served by electrical power, natural gas, water and sewer facilities in ground and wide-lane internal roads designed to accommodate both large supplier trucks as well as large volumes of employee vehicles. Fiber optics should be available throughout the site.

It is difficult to specify the time periods for each future development since market demand combined with available resources for infrastructure improvements will set the development timetable. For our purposes, I would estimate ALH Phase I tentatively being in the 2006–2012 time period.

An extended commercial building site is proposed during this initial phase as well that would include a stand-alone air express hub facility providing the most advanced automated customs clearance and express pre-clearance services to attract additional integrated air express service to KCI. A perishables

center is also suggested for this initial phase to provide KCI with unmatched air freight cold-chain and perishables processing in the Midwest. The Ring Road extension, together with initial road improvements, will link the complex in minutes to Interstate 29 and Interstate 435 as well as to local connectors to other nearby interstates and state highways.

It was pointed out that the KCI Business AirPark is located in a Foreign Trade Zone and an near Enterprise Zone. Speed and tax advantages of both should be fully leveraged in industry recruiting efforts. This may not be sufficient, however, from an economic incentive standpoint. A serious limitation of the KCI Business AirPark is that tenants cannot own their property. Early stage marketing efforts by KCI, KCADC and the Platte County EDC revealed that the inability of targeted tenants (especially foreign-based firms) to own their land was a deal-killer that will also likely knock out many potential tenants in the future. It may therefore be necessary for new legislation to be enacted allowing either private firm ownership or long-term (50 to 100 years) renewable and transferable leases) to overcome this obstacle.

A related obstacle is that KCI cannot pay brokerage fees to commercial real estate firms who would bring potential tenants to the AirPark. If this limitation cannot be retracted, other types of incentives must be provided to these commercial real estate firm to have them advocate the KCI site. Innovative financial partnerships with KCI might be explained here.

Another overlooked, but very important soft incentive, is speed of processing building permits. This appears to be serious problem in Kansas City where it can sometimes take a year or more to obtain building approaches. Here I would recommend not only for the KCI Business AirPark but for the broader KCI Business District shown in Exhibit 2.6 that Kansas City and Platte County develop consolidated and streamlined site development plan review and approval procedures. Under these streamlined procedures, site and building

plans may be evaluated and approved within 30 days of receipt of the plans so that investor construction processes can be accelerated.

At the second phase of ALH development (2012–2018) manufacturing, distribution and logistics facilities would be located along the western side of extended Runway 1L-19R (see Exhibit 2.12). Wide-lane road access would be developed to this site. Development of an intermodal rail facility should also be considered for development during this second phase. A number of firms are combining air, rail, highway and water-borne movements in their assembly plans (e.g., Boeing, Airbus, BMW) and KCI needs to be able to respond to compete for such facilities.

In 1991, a preliminary cost study was done that estimated the cost of bringing rail to an airport site would be between \$20–26 million. It was determined that a new rail line rail would have to be added that would run approximately 7 miles from the nearest mainline. The major costs included approximate \$2.5 million for rail structure, \$6.5 million in earthwork, \$1.5 million in bridges, \$4 million “miscellaneous and contingencies,” \$2.5 million in right-of-way and \$3.5 million in engineering/administrative/legal.

Recently, an engineering firm reviewed this report. The firm concluded that the methodology for producing the estimate was sound, although adjustments would be necessary to account for inflation. It was suggested a new estimate should reflect an additional 15% in cost. Factoring inflation, a current best estimate for running a line to the site would be \$24–30 million.

During the third and ultimate stage of development (2018–2030), a third parallel runway would be built (predicated on demonstrated demand and FAA cost/benefit analysis) with time-sensitive manufacturing, distribution and logistics firms to the west of it (see Exhibit 2.13). A live animal holding area may also be reconsidered, although such a proposal did not receive favorable consideration in the past.

In this ultimate development stage, a cargo transfer system (CTS) should be completed to carry materials, components, and finished products throughout the ALH on an internal network of dedicated rights-of-way. This network will link off-ramp tenants to the central cargo area, a state-of-the-art intermodal complex providing access to air freighters, trucks, rail, and materials-handling systems. In addition, the CTS will connect tenants and the central cargo area to the intermodal rail facility (IRF) containing multiple rail sidings, loading platforms, and truck cross-docking. The IRF would be linked not only to a main trunk rail line about seven miles away, but also to port terminals making KCI quadramodal. It will handle primarily bulk products and containerized cargo linked to a national network through new connecting rail lines. The IRF could also serve as an inland port with appropriate truck cross-docking facilities and road links.

Key to the efficiency of the entire operating infrastructure is the ALH's intermodal interfaces. These must be designed to allow seamless and flexible flow of materials among convergent transportation modes and commercial facilities, both in the core and peripheral areas of the ALH.

The hub of the central cargo area and cargo transfer system is the central cargo facility (CCF) located along Runway 1L-19R. The CCF provides off-ramp and off-site factories, warehouses, and distribution centers with automated sorting capability, customs clearance, and air freighter access. Since most KCI ALH tenants will not have the volume of cargo to justify direct air freighter docking, the central cargo facility offers them air access via the cargo transport system and/or direct truck cross-docking at the rear of the facility (See Exhibit 2.14 ALH Central Cargo Facility).

As describe previously, the entire complex will be served by the ring road encircling it (I-29, I-435, extended Tiffany Springs Parkway), providing efficient access to all parts of the ALH to local and regional highway systems and to the

intermodal rail facility. Internal roads will connect the central cargo area and the tenants to the ring road. This will require careful planning now to insure multimodal rail and road accessibility to the center of the complex, given anticipated runway extensions and the new parallel north/south runway.

The KCI ALH must be conceived as more than a multimodal logistical infrastructure, however. Its full potential and ultimate success rest on creating a total business environment that will substantially improve the sourcing, production and distribution activities of its tenants and region-wide users. This business environment will be elaborated in the next chapter. Sufficient to note here that along with its multimodal transportation and cargo-handling systems, the ALH design must support tenants and users with comprehensive advanced commerce capabilities. Electronic data interchange (EDI) and other telecommunications systems using the latest technologies, including broadband fiber optics, WiFi, multimedia networks, an on-site digitized satellite uplinks and downlinks, should offer KCI ALH tenants and users state-of-the-art electronic access to the global commercial world. EDI improves supply-chain management and a variety of other logistical practices as it tracks, coordinates, and controls materials and product flows across both domestic and international transportation modes. Open architecture, plug-in software systems (described later) will allow the ALH's tenants and regional users real-time access to worldwide supplier, distributor, and customer databases.

International air cargo is expected to be a substantial component at KCI in the future. Expedited customs procedures using automated manifest systems and express customs clearance will therefore be essential to facilitate tenant and user import and export activities. Bonded warehouse facilities on the airport site or near the airport will also be needed.

KCI can obtain competitive advantage by emphasizing security in its total supply chain management and logistics processes. By providing a secure shared



infrastructure and operating environment to its tenants and users, substantial industrial recruitment returns may be obtained. Close coordination with TSA and security experts should therefore be emphasized in early stage design of the ALH.

In focus group interviews conducted with potential industrial tenants for other air logistics hubs, targeted workforce skills was always mentioned as a key location factor. As was noted in Chapter 1, the Kansas City area already possesses a skilled, adaptable labor force. To ensure that future tenants have precisely the skills they need, a wide range of worker training, vocational education, and technology-transfer functions should be provided through an on-site education and training center (ETC), in association with local community colleges. A key feature of the ETC should be distance-learning capability, providing tenants and users with real-time audio, video, and tactile worker training customized to their skill needs, from virtually any location in the world. As will be discussed in the next chapter, the creation of an ETC will provide a timely opportunity for the KCI ALH to market and distinguish itself among other competing air logistics sites in the Midwest.

### *Central Cargo Area Design*

The basic design element of the ALH is the Central Cargo Area (CCA) which constitutes a zone of facilities at the operational center of the complex. The CCA includes the Central Cargo Facility (CCF), Perishables Centers (PC) to support in-transit and regional agricultural shipments, and the Customs Clearance Center (CCC). Other primary components of the Central Cargo Area are the Airport Operation Area (AOA), manufacturing and distribution tenant facilities, a possible general aviation passenger terminal, nearby intermodal truck and rail terminals (linked to port facilities), special materials handling and freight forwarder and 3PL facilities, along with a Cargo Transport System (CTS) linking

ALH tenants with cargo processing facilities. Since the CCA is the primary and most important component of the ALH, its development and design guidelines are elaborated below.

### *Guidelines for Central Cargo Area Design*

Three key principles of agility should be followed in the design for the Central Cargo Area: 1) Flexibility; 2) Targeted Mechanization; and 3) Expandability/Phased Growth. Building agility into the processing capability and location of facilities is essential because of: 1) unpredictable longer-term cargo handling demands the ALH; and 2) a dynamically changing and improving technological environment.

### *Flexibility*

A critical design requirement of the CCA is that its development be demand-driven and responsive to changing needs and requirements of ALH tenants and users. A flexible, incremental development approach is highly recommended, given the difficulties of forecasting the exact types and levels of cargo and industrial activity at and around the ALH. Thus, for example, automation of material handling systems or full-scale development of intermodal connectors and interfaces may not be prudent early in the implementation of the ALH. In the design of most processing systems, cost, flexibility of operation, and operational efficiencies demand appropriate compromises at different stages of infrastructure and technology development.

Three realities caution against initial automation of CCA materials handling and processing systems: 1) Kansas City International Airport's Airport Operation Area (AOA) will likely have to accommodate all manner of aircraft and cargo equipment (i.e., standardization of aircraft gauge and related cargo handling equipment for serving an international air cargo market is currently not

possible); 2) non-automated materials handling and accumulation (short-term storage) systems are often more cost-effective and flexible in terms of meeting peak requirements and other unanticipated immediate problems by simply providing more forklifts and manpower to meet unexpected or peak requirements; and 3) longer-term air cargo demand and other transportation mode cargo demand are difficult to forecast in early stages for a newly evolving complex such as the ALH.

Only as actual demands are experienced over time for such a multimodal logistics complex would it be possible to incrementally predict materials handling, equipment, infrastructure, and facility needs, and to gain verification of the estimated industry mix of cargo demands placed on the KCI ALH (e.g., parts and components, manufactured products, fresh cut flowers, seafood and other perishables, retail distribution products, etc.). For these reasons, it is recommended that the KCI ALH commence operations with relatively inexpensive, low-tech systems, to be upgraded over time as the demand and future tenant requirements become better known and the benefits to be acquired through automation become better understood, measured and demonstrated.

One means of attaining processing flexibility, and commonly employed in modern just-in-time (JIT) operations, is to create subsystems that have multiple processing equipment rather than one large processing system. Designing one large system often appears to offer economies of scale (i.e., less cost per unit produced as process equipment size increases). Such “all the eggs in one basket” type of operation, however, typically leads to inflexibility and an inability to shut down part of the total process capability for maintenance, equipment testing, equipment enhancing and even off-line employee training.

To save initial expenses and promote flexibility, mobile equipment is generally preferred to fixed position equipment (e.g., a mobile nose loader/unloader as compared to a fixed-bridge nose loader/unloader). Ideally,

all equipment should be readily reconfigurable and rearrangeable as operations layout requirements change over time. Fixed position equipment (e.g., automated conveyors attached to the floor or hung from the structural system) hinders the “fluid” design concept recommended for the KCI ALH.

### *Targeted Mechanization*

Experiences of air cargo operations and associated materials handling needs at Kansas City International Airport and airports elsewhere do permit initial determination of some targeted modest mechanization in ALH operations essential to efficient cargo handling. Mechanization of standard processing operations such as container consolidation, container breakdown, and conveyors to accommodate x-ray equipment should be included in initial operations. Yet, such targeted mechanization should be provided only when and where it is clearly demand driven and economically justified.

As stressed above, because of the difficulty of predicting material handling demands and a desire to provide flexibility of arrangement which is consistent with 21st century business practices, the ALH facility design should assume that initial material handling operations would be performed with low-tech material handling equipment (e.g., forklifts, motorized tugs, pallet jacks, etc.). This technology is not only far less costly but also “tried and true” time-tested and reliable. At likely relatively low initial levels of manufacturing and supply-chain management demand at the KCI ALH, fully automated materials handling systems, though flashy, simply do not make economic sense.

When demands over time become better known and experienced, one-at-a-time evaluation of potential productivity benefits of automated equipment and facilities can be assessed and enhancements implemented to take advantage of operational improvements. For example, as available Central Cargo Facility (CCF) space fills up over time with increased activity, pallet racks should be

provided to gain better use of the facility cube. Later when sufficient put-away and picking requirements develop, fork-lift use would be discontinued for automated put-away and picking of cargo from racks and replaced by computerized rail-guided picking and put away equipment.

### *Expandability/Phased Growth*

I have been emphasizing that future demands placed on KCI ALH facilities and their resulting space needs are difficult to predict with any confidence. This is why it was proposed that facility development at the ALH encompass flexible, evolutionary and phased growth. Facility requirements should be estimated as accurately as initially possible based on air cargo data currently available, but the KCI ALH must also be allowed to become what it needs to be as requirements reveal themselves over time. Thus, proposed design guidelines are not so much a fixed plan as they are a flexible framework to accommodate a wide variety of tenant industries, regional users, and physical layouts.

The above framework allows for ALH development to be modified as demand, resources, new technologies, and infrastructure advances occur. For example, the central cargo area including commercial facilities should employ a modular layout for maximum flexibility and phased development. Ground transportation designs should incorporate redundant routings and flexible road systems to minimize the impact of congestion or accidents, both within the ALH and in connecting highway systems. Rights-of-way should be sized to allow future expansion without negatively affecting ongoing highway operations. Kansas City International Airport's runways must always be equipped with state-of-the-art navigational aids to allow for growing air capacity demands and eliminate weather delays. Extensive zoning controls in flight paths should be

implemented to minimize potentially conflicting land uses and noise problems that could preclude the optimal 7-day, 24-hour airport operation.

Public sector agencies responsible for KCI and the greater Kansas City region also must be prepared to respond rapidly and creatively to evolving tenant and user needs and an ever-changing business environment; hence, KCI ALH management itself must be agile as it creates or coordinates “one-stop shop” support for tenants and regional users from each logistical or industrial sector. In this sense, local public sector agencies such as the EDC's may not only wish to market the ALH, but also operate as a strategic partner with tenants and area industrial recruits in dealing with other government agencies and in seeking access to a full range of technical, financial, and political resources.

Consistent with ISO 14000 standards (international standards that enable companies to systematize and improve their environmental management efforts), maintaining environmental quality and safety are a fundamental objective of KCI ALH planning and development. The ALH system must provide facilities and procedures for the handling, storage, transportation, and disposal of environmentally sensitive materials as a continuous process. Likewise, modern ALH utility systems must offer high-quality and reliable power, water, natural gas, wastewater treatment, and solid-waste disposal to meet growing tenant needs.

Each potential tenant at the KCI Business AirPark and throughout the ALH should be evaluated for its compatibility with environmental regulations and standards. A KCI management/tenant partnership will address the requirements for operating within acceptable environmental parameters jointly. Innovative site planning and design should ensure visually attractive development with ample landscaping and aesthetic touches. Aging buildings at the airport should be restored or replaced, making the ALH more aesthetically

appealing. Ideally, the KCI Business AirPark and overall ALH should appear more like a university campus than a traditional industrial/logistics park.

Although cost savings remain important in today's industrial location decisions, the ALH system should be designed and developed on the assumption that tenants will pay more for its integrated, high-quality, reliable services and sound environmental planning. Because a delicate tradeoff exists between costs and on-site services, however, the KCI ALH's cost effectiveness will be achieved by the phasing of development to minimize initial investment and location costs for tenants. Development of the overall site infrastructure and facilities should be incremental, demand-driven, modularized, and reconfigurable. Further flexibility will be achieved by oversizing and reserving spacious rights-of-way for future infrastructure and facility expansion. The internal transportation corridors linking the transportation modes and production/logistics facilities also should be oversized to meet increasing traffic levels overtime and to accommodate future developments in vehicles and transport systems. The same corridors should have all the underground utility channels needed for powering and servicing production and distribution facilities. This includes designing corridors with rapid and flexible plug-in telecommunications capability for tenants, as needed.

I've recommended that the Central Cargo Area be designed for low-tech, cost-effective, flexible or expandable facilities with modular and reconfigurable attributes. Such design would allow facilities to grow over time to accommodate ultimate space needs. One way to reserve space initially is to provide excess separation between contiguous facilities, allowing them to grow closer together as increasing space requirements are met over time. Another way is to site selected easy-to-relocate facilities between other facilities with the intention of moving them at a later date to permit the surrounding facilities to grow together

in the space vacated by the relocated facility. All of this is key to agile infrastructure development that should guide the planning at the KCI ALH.

### *Intermodal Interfaces*

A major process element of the ALH is the interconnection and integration of multiple modes of transport (air, truck, rail and river). Ideally, each mode must be able to seamlessly and efficiently connect to any other mode without significant loss of time or high cost. The primary operational ALH connector (the “glue” that connects the various transportation modes) is a cargo transfer system. The transfer system will emanate from the Central Cargo Facility (CCF). The cargo transfer system may be composed of a combination of trucking modes operating on internal roads, or in later phases of development by dedicated automated cargo movement systems (for example, rail or tram) depending on the relative configuration of the elements of the ALH and the level of activity.

### *Guidelines for On-Site Transportation Connectivity*

The CCF would need to interface with the following modes of transportation: 1) air, via KCI's taxiways; 2) truck, with adequate cross-docking at the CCF and other CCA facilities such as the Air Freight Distribution Center at KCI Business AirPark, as required to meet trucking demand forecasts; 3) rail, by first providing a rail access and an intermodal terminal at the ALH, and later providing an interface between the CTS and a rail hub in proximity to the CCF; and 4) river, with truck and rail connections to appropriate riverport terminal. The CTS would also be the primary connector between the CCF and off-ramp ALH production and distribution facilities. These intermodal interfaces are illustrated in Exhibit 2.15.

Because the predominant mode of transportation of products moving to and from KCI locally and regionally would be via highways, truck terminal



facilities and facility cross-docks at and near the ALH along with Ring Road links to I-29 and I-435 would be critical design elements for successful operation of the ALH.

### *Guidelines for ALH Connectivity*

A KCI multimodal logistics system must be able to accommodate a broad variety of transportation origins and destinations to and from the ALH. Flow paths of domestic and international air, water, truck and rail modes are represented in Exhibit 2.16 as they might occur between the ALH and domestic or international origins and destinations at ultimate development. Flow paths of intra-ALH cargo are shown within the boundaries of the ALH in the Exhibit. Truck, rail and air cargo terminal links are included as nodes of the cargo transfer system. Truck and rail terminals, separate from the Central Cargo Facility, may locate near manufacturing or distribution tenants as the ALH develops in later phases.

Regional truck transportation should be available between all major Kansas City commercial nodes and the ALH. Truck shipments consigned to ALH tenants will most likely be delivered directly to those tenants. Deliveries to consignees located further from the ALH will be delivered to the Central Cargo Facility, or to appropriate truck terminals for processing and subsequent delivery to the consignee.

Direct rail transportation lines between the ALH and the Kansas City river terminal will eventually be required if the ALH is to achieve full quadramodality. Also to be considered is the eventual provision of spur rail lines to larger Kansas City area industrial or distribution facilities that may have a high dependence on rail transportation.

Transportation to and from international origins and destinations both through a future ALH-type network linking Kansas City area businesses to the

Americas, Asia, and Europe will be provided by air transport. Some of this will be trucked north and south via the I-35 NAFTA corridor, but more eventually air freighted directly from KCI.

### *Guidelines for EDI Design*

To support 21<sup>st</sup> century business practices of electronic commerce, just-in-time delivery, and supply chain management electronic data interchange (EDI) must be provided as a tool for ALH operators, tenants, logistics service providers, and U.S. Customs. The ALH EDI system will be a network of computers and databases that provide an interface between all parties involved in arranging a shipment. This EDI system must be capable of interfacing with multimodal carrier systems to provide on-line tracking and tracing capability for both the shipper and consignee. A key function of this system should be to interface with U.S. Customs. The ALH EDI network should also have access to global telecommunications networks via satellite transmission. Similarly, the EDI system should be tied to a bar-coding or more advanced RFID systems for shipment identification within the system and in-transit. The general objectives of the KCI ALH EDI system, consistent with the communication vision of 21<sup>st</sup> century business practices are to:

- Build a cost-effective, resilient, and manageable EDI network, throughout the greater Kansas City region.
- Allow all Kansas City area businesses to connect to the KCI ALH via a network backbone at lowest charges possible.
- Ensure connectivity by providing enough fiber optics bandwidth and connection channels.

- Ensure capacity so that the Kansas City regional business community and ALH tenants can connect and not be denied access due to insufficient ports.
- Provide support for all protocols required by the users of the system.
- Allow tenants, users, and logistics service providers with a range of hosts (e.g., workstations with high-speed network access, mobile computing and data exchange via secure WiFi wireless networking) to connect to the KCI ALH's network.
- Allow KCI ALH tenants and the Kansas City user community to access applications (e.g., database inquiries/updates) on a range of different information management systems operated by third-party entities.

Conceptually, the KCI ALH Communications System can be viewed in Exhibit 2.17. This exhibit presents a vision of a possible future global communications system for the KCI ALH.

### *KCI ALH Planning Integration Strategy*

As described in the previous sections, the ALH represents a new kind of logistical center in which information technology, transportation and supply chain activities are operationally integrated to create a seamless business environment. Traditional planning activities do not capture the intersections and linkages that are necessary to create this new environment.

The proposed integrated planning process at and around KCI must differ from traditional planning processes in three respects:

1. Shift from Element Focus to Process Focus. Traditional master planning exercises target individual elements of infrastructure in separate plans. For example, independently produced a master plan for rail, ports, highways, and the airport. Each of these master plans is based on traditional concepts of the role and function of these infrastructures. In a process-oriented plan, the exercise begins with an understanding of the integrated business processes and needs of the tenants and customers. In this new approach, for example, the design concept for an intermodal rail facility or airport should be guided by the desire to create value for the commercial user of the facility rather than to maximize the utilization of designed capacity. This will involve a close coordination and integration of all elements of infrastructure planning for the KCI ALH and Kansas City region.
2. Identify New Elements of the ALH. The KCI ALH will require new elements of infrastructure. In the 21st century, businesses will compete based on how efficiently and creatively they manage information to create competitive advantage. Even Fred Smith, Chairman of FedEx, has described his company as an IT firm that happens to fly airplanes. The provision of information technology therefore is not an afterthought, addressed once the size and function of a building or infrastructure have been designed, but rather an organizing principle around which the identity and function of a building or infrastructure have been designed. In this process planning environment, information technology capabilities must complement and reinforce the development of multimodal transportation and industrial capabilities at the KCI ALH and throughout the Kansas City region.

3. Establish New Linkages Between Infrastructure Elements. The creation of a 21st century business environment at KCI requires new linkages among key infrastructure elements. Uninterrupted flow of products and materials through the KCI ALH require the integration of various modes of transportation. It is therefore necessary to plan the material handling and management systems that will integrate the movement of goods and materials from across these modes regionally and to and from the KCI ALH.

### *Designing for Future Tenant Business Needs*

The ultimate success of the KCI ALH will depend on how well it meets the business needs of future tenants. The real customer for the planning process is not the Kansas City Department of Aviation or any government body, but firms that KCI and other regional development organizations wish to recruit. Therefore, concepts and capabilities targeted to 21<sup>st</sup> century business practices described below should guide and inform the planning process and the required functionality of the KCI ALH and broader Aerotropolis. These businesses need the following:

- Paperless Environment. Companies are moving to a paperless environment in which orders for materials as well as finished goods are transmitted electronically from customers worldwide to their suppliers. Global manufacturers are increasingly requiring that their suppliers communicate electronically, and the availability of access to global communications and information networks will qualify future ALH tenants, large and small, for new commercial opportunities.

- **End-to-End Supply Chain Visibility.** The ever growing imperative for speed and lower costs has caused companies to more closely manage their supply chains. The basis of competition has changed from head-to-head competition between companies to a competition that pits supply chain against supply chain. A weak link anywhere along the supply chain can have a devastating impact on a company's ability to perform. Increasingly companies are requiring end-to-end asset visibility along the entire chain requiring state-of-the-art tracing and tracking information technology.
- **Just-in-Time Delivery.** As companies manufacture in increasingly smaller lots and provide more customization of their products, the need for just-in-time delivery has grown. Not only must small batches of materials be shipped as economically as large batches, but they must be delivered within 24 to 48 hours anywhere in the nation and, indeed, across the globe. Traditionally, manufacturers seek suppliers that are located near the manufacturing site. The availability of an integrated information and transportation infrastructure provides the capability for suppliers, manufacturers, and customers to work across great distances as if they were located nearby.
- **Real-Time Asset Control.** To assure flexible and fast response to changing customer needs, companies must not only be able to trace and track their assets quickly, but also to change their destination, routing or carrier mode as customer requirements change. Only the complete integration of information, transportation and manufacturing can provide this capability. Few, if any companies are able to do this now, but this will be a required standard of doing

business in the near future.

In sum, successful development of the KCI ALH intermodal and information technology systems will require a broad understanding of the basic business processes of tenants, users, and logistics service providers, their current information system capabilities, and future technology/business needs. These include better understanding of the emerging needs of information-rich industries such as 1) software packaging, financial services, transport-related services, 2) intermodal logistics and trading and transshipment, strategic and high-growth industries, 3) aerospace parts, micro-electronics, pharmaceuticals, and telecommunications, and 4) even hospitality industries, such as hotels, tourism, and recreation that will form the service backbone of airport-driven commercial development.

Attracting manufacturers, assemblers, and distribution industries will also require a thorough understanding of modern supply chain management principles and the order-to-delivery process. To offer a truly marketable competitive advantage, the Kansas City Department of Aviation with the assistance of regional economic development councils should bring together experts in logistics and supply chain management, multimodal infrastructure development, and information technology to work to create the design specifications that properly integrate all system elements. Few locations in the U.S. are doing this, so the KCI ALH can have a first-mover advantage in attracting high value-adding industries if it takes the lead in seizing this opportunity.

Exhibit 2.1  
HIGHWAY LINKAGES IN THE KCI AREA

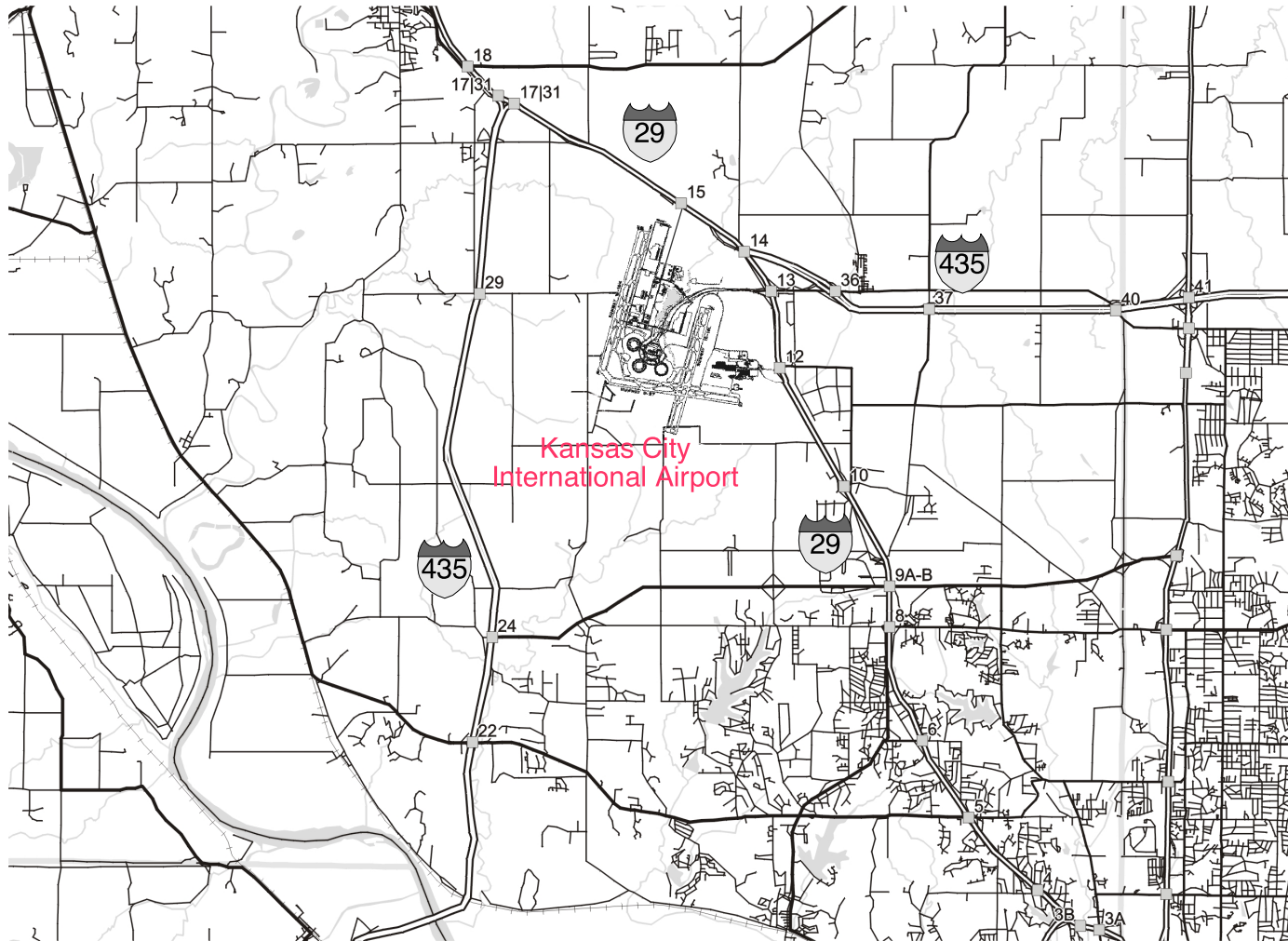
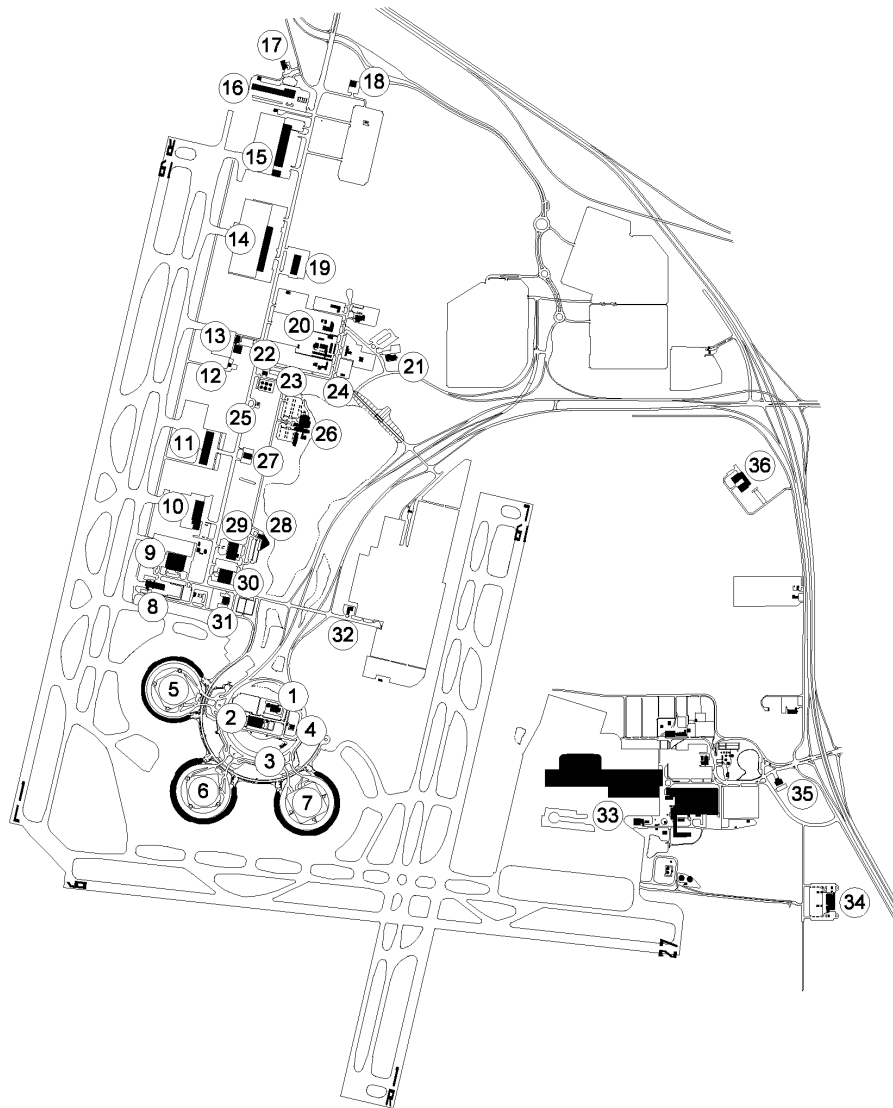




Exhibit 2.2  
KCI AIRPORT PROPERTY WITH CURRENT FACILITIES



Key

1. Air Traffic Control Tower
2. A.C.C./Police Bldg.
3. 3 International Square
4. Taxi Cab Operations
5. Terminal A
6. Terminal B
7. Terminal C
8. A.R.F.F./Safety/Fleet Maint.
9. Post Office-Airport Mail Fac.
10. AERO KC
11. Joint Use Cargo
12. Triturator
13. General Aviation-Exec. Beach
14. KCI Air Cargo-Haith
15. Federal Express
16. Aviation Dept.-Field Maint.
17. Aviation Dept.
18. Aviation Dept.-Sand Storage
19. Haith Cross Dock
20. Car Rental Complex
21. Parking & Bus Operations
22. Ogden Allied Office
23. Fuel Tanks-Ogden Allied
24. MO Pub. Service Sub Station
25. Fuel Tanks-Exec. Beach
26. Marriott Hotel
27. Aviation Dept.-Facilities Maint.
28. Aviation Dept.-Administration
29. In-Flight Kitchen
30. 533 Mexico City Ave.
31. HMS Host
32. Service Station-Conoco
33. American Airlines Overhaul Base
34. 10801 N. Amity Ave.
35. Fire Station No. 16
36. 11930 N.W. Prairie View

Exhibit 2.3  
KCI AIRPORT PROPERTY

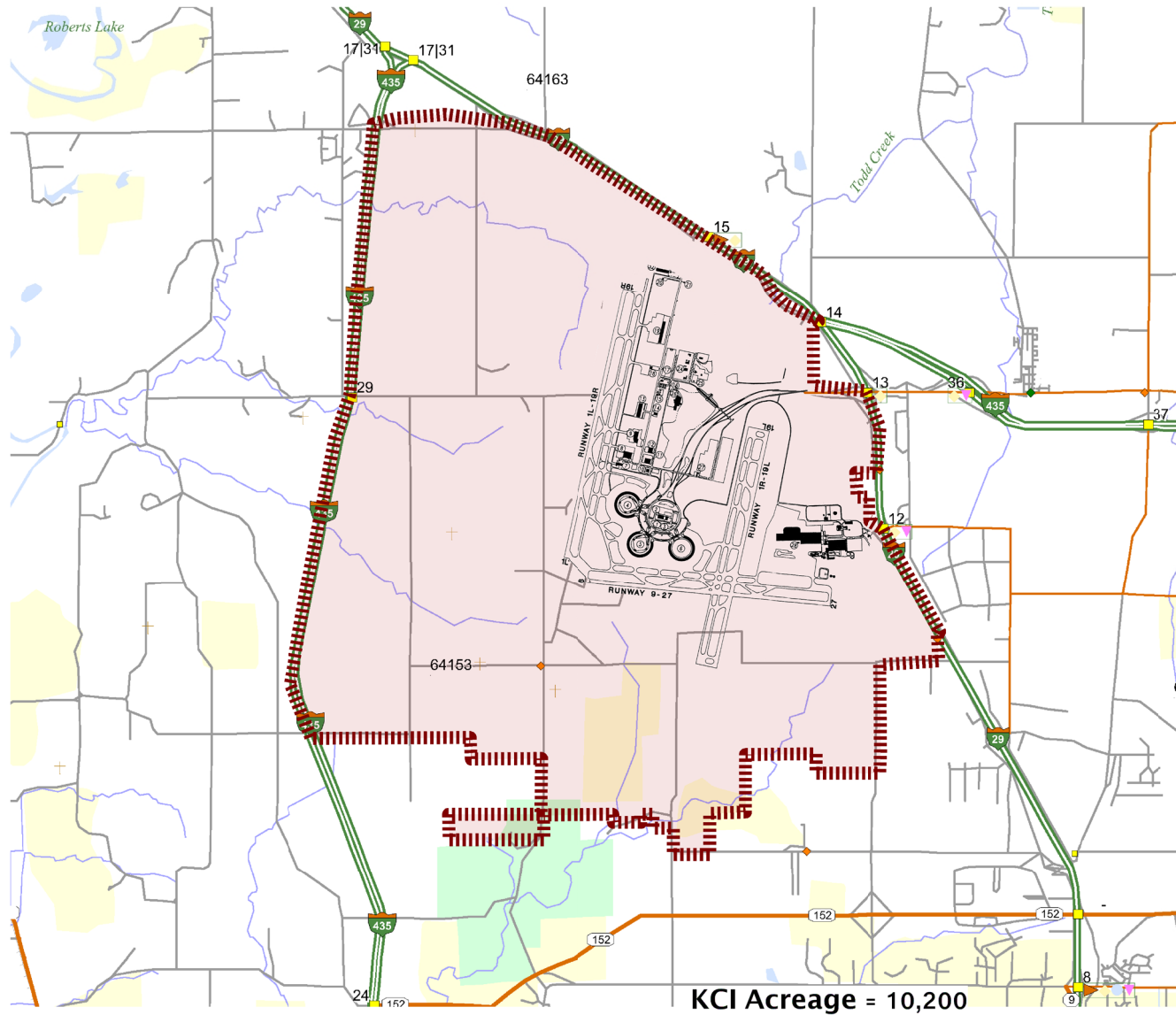
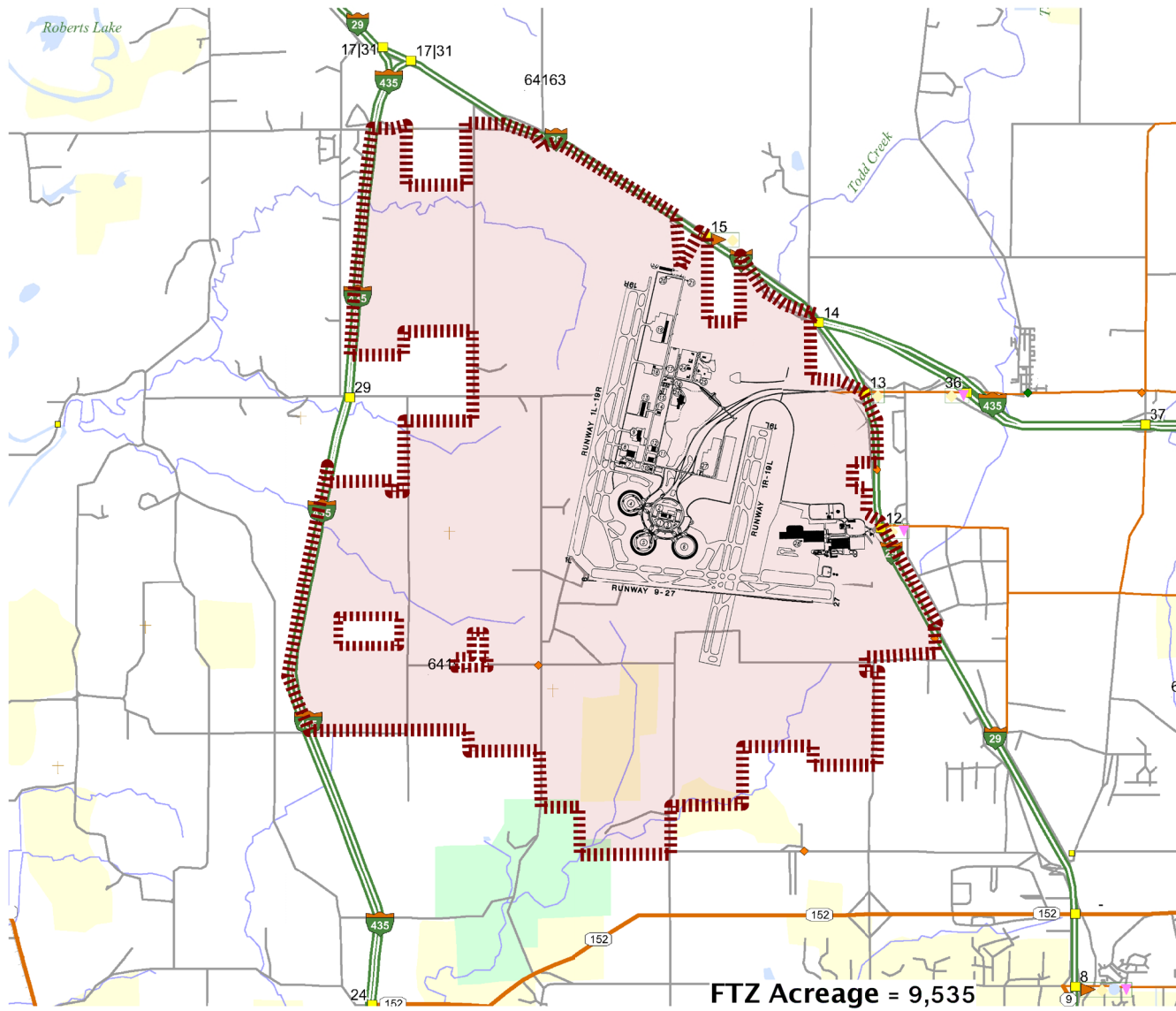
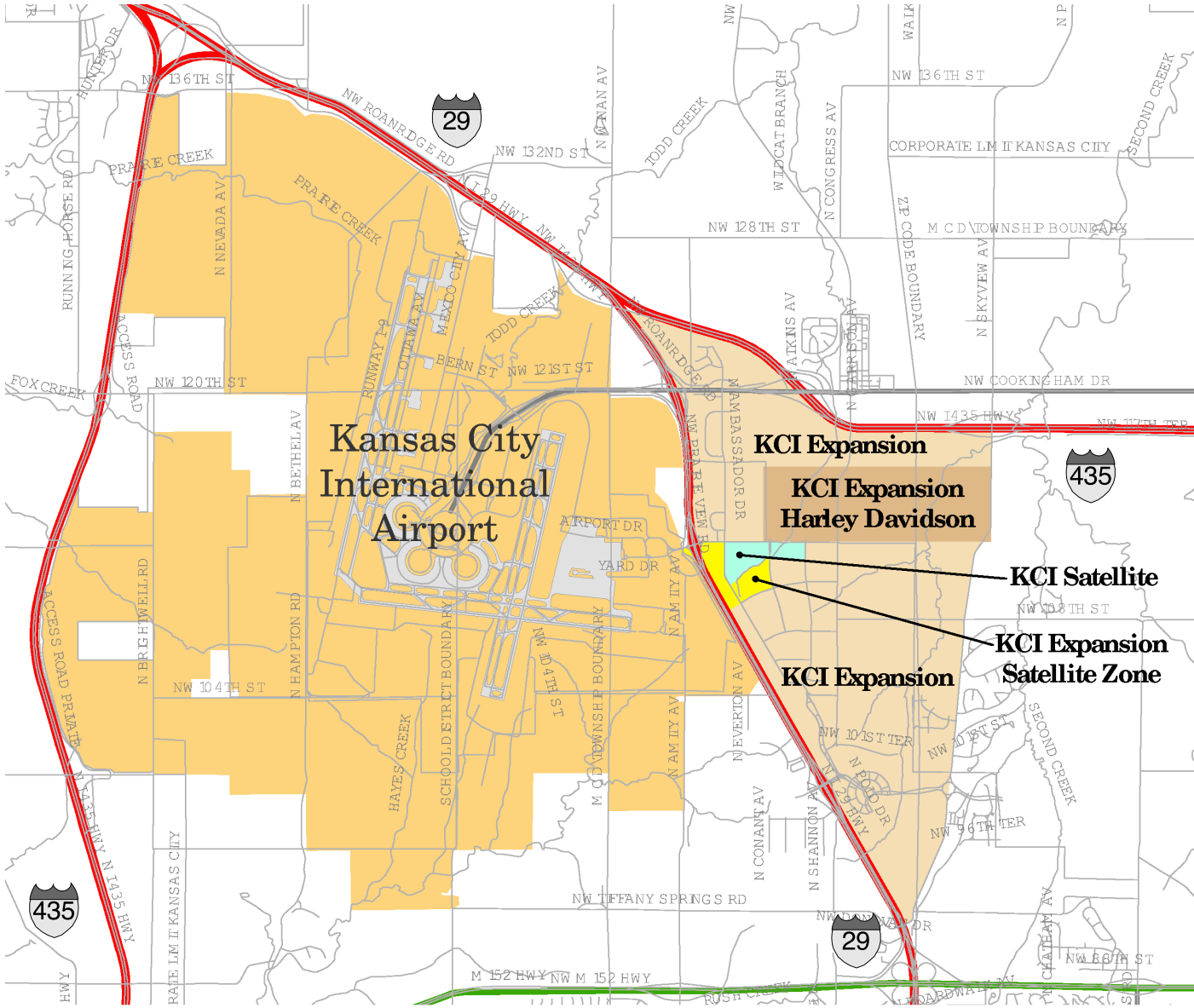


Exhibit 2.4  
AIRPORT FOREIGN TRADE ZONE AREA



## Exhibit 2.5

### KCI ENTERPRISE ZONES



## Exhibit 2.6

## KCI BUSINESS DISTRICT & ECONOMIC DEVELOPMENT INCENTIVES

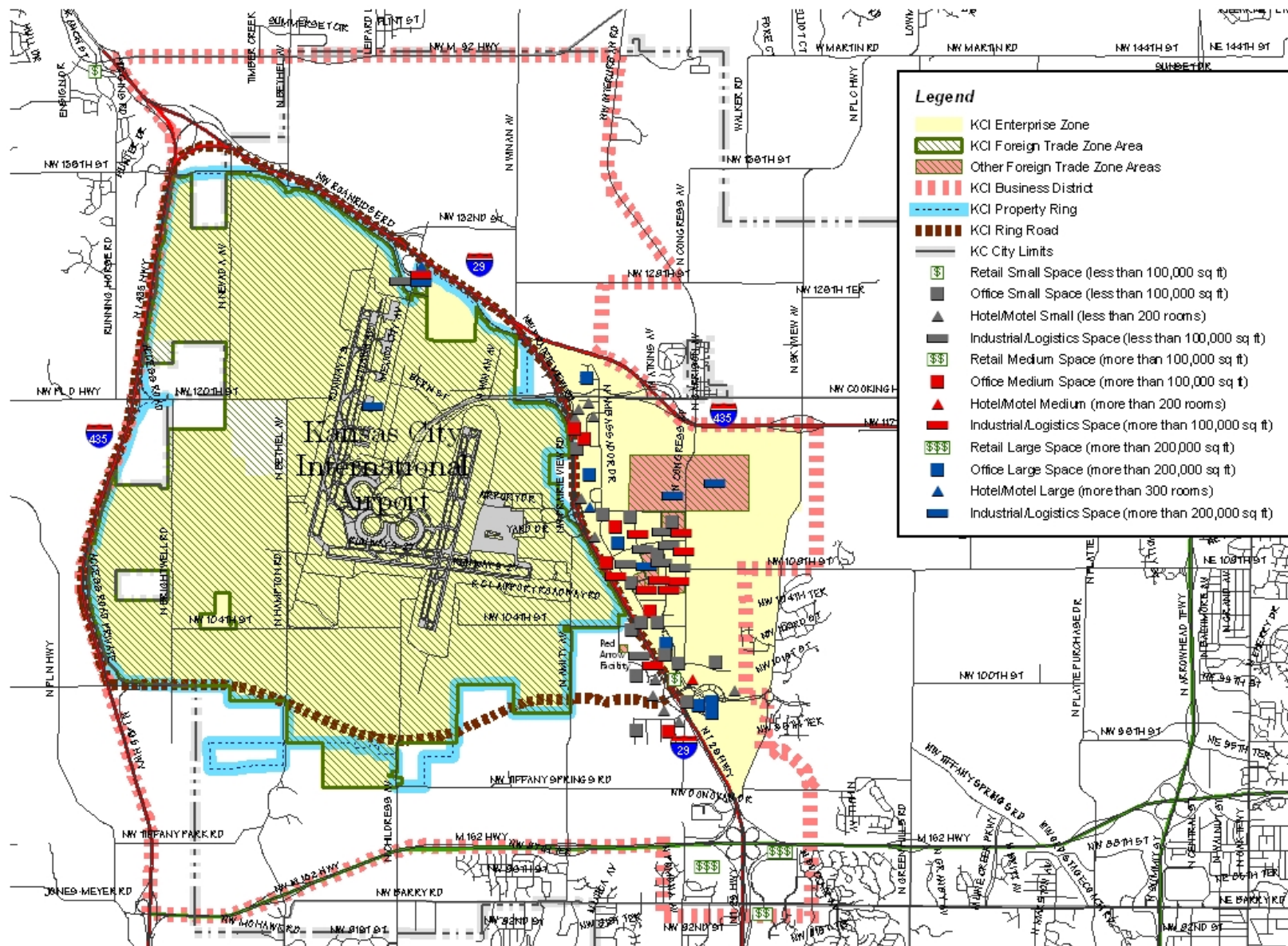


Exhibit 2.7  
AIRPORT PROPERTY AND SURROUNDING AREA WITH PROPOSED CLUSTERS

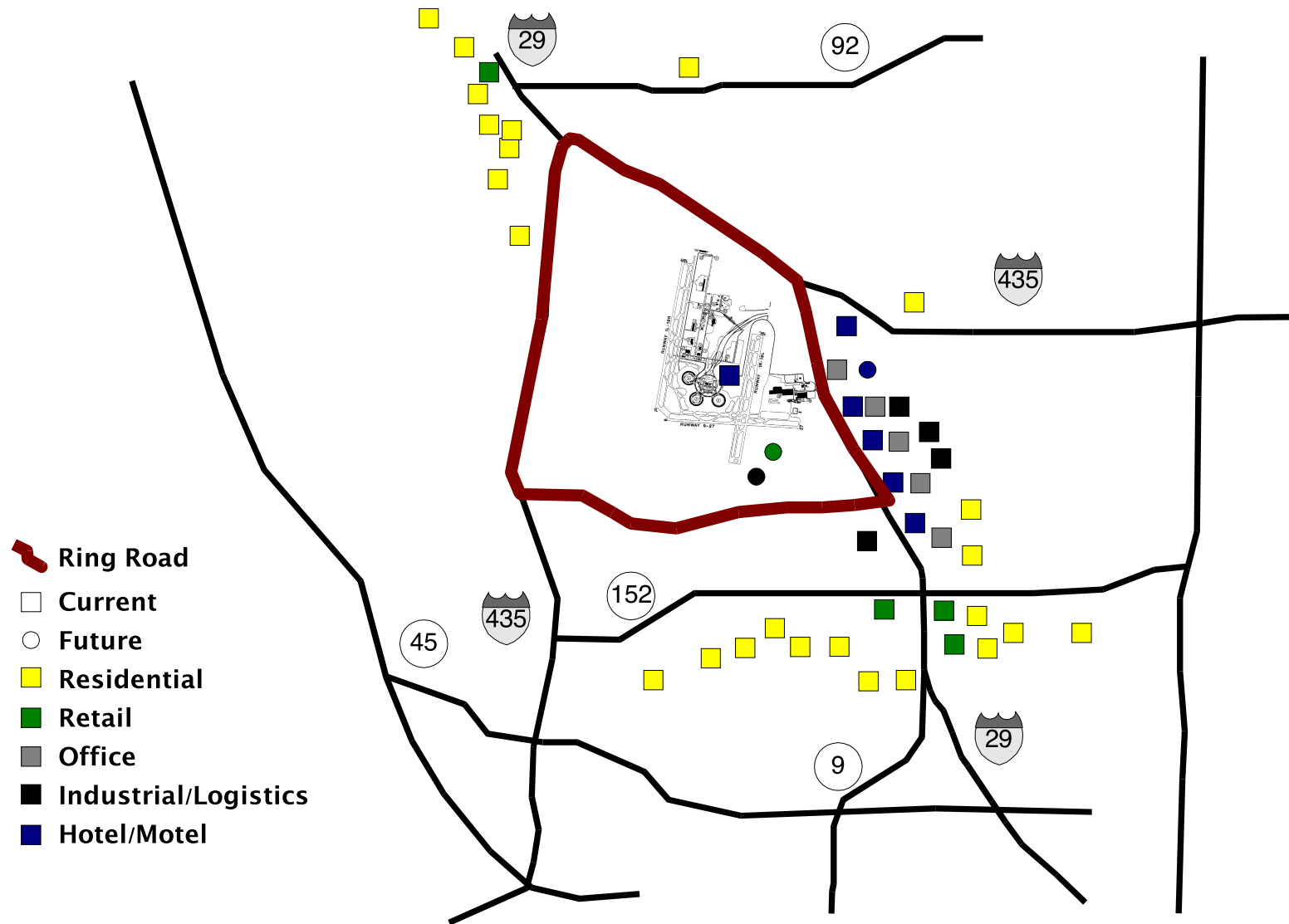
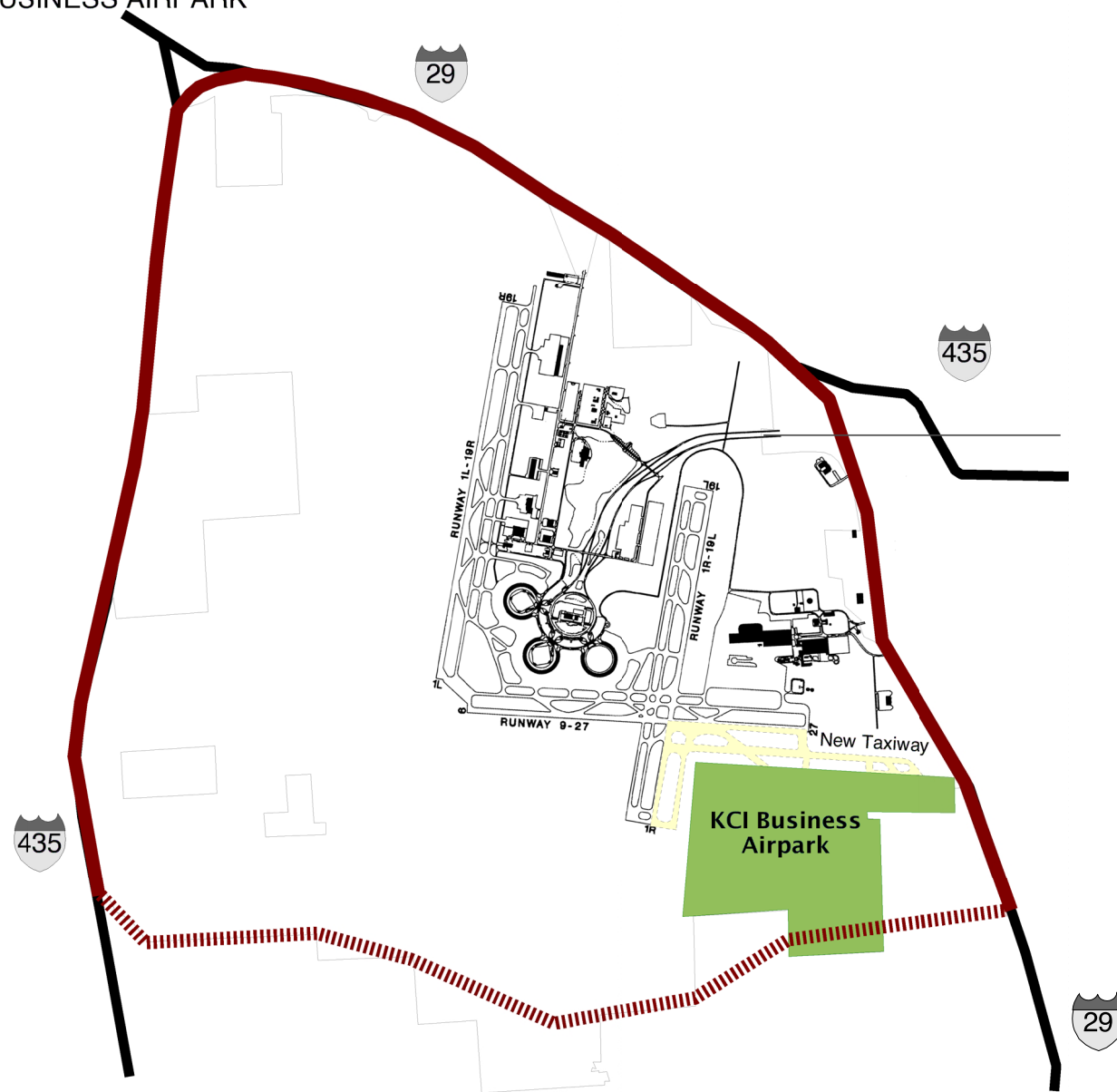




Exhibit 2.8  
LOCATION OF KCI BUSINESS AIRPARK



## Exhibit 2.9 KCI BUSINESS AIRPARK CONCEPTUAL MASTER PLAN



**KCI BUSINESS AIRPARK**  
KANSAS CITY AREA DEVELOPMENT COUNCIL

**CONCEPTUAL MASTER PLAN**  
APRIL 11, 2003  
SCALE (APPROXIMATE): 1" = 400'-0"



SHAFFER, KLINE & WARREN, INC.



### Exhibit 2.10

## ALH PHASE I – ROADWAY IMPROVEMENTS FOR KCI BUSINESS AIRPARK DEVELOPMENT

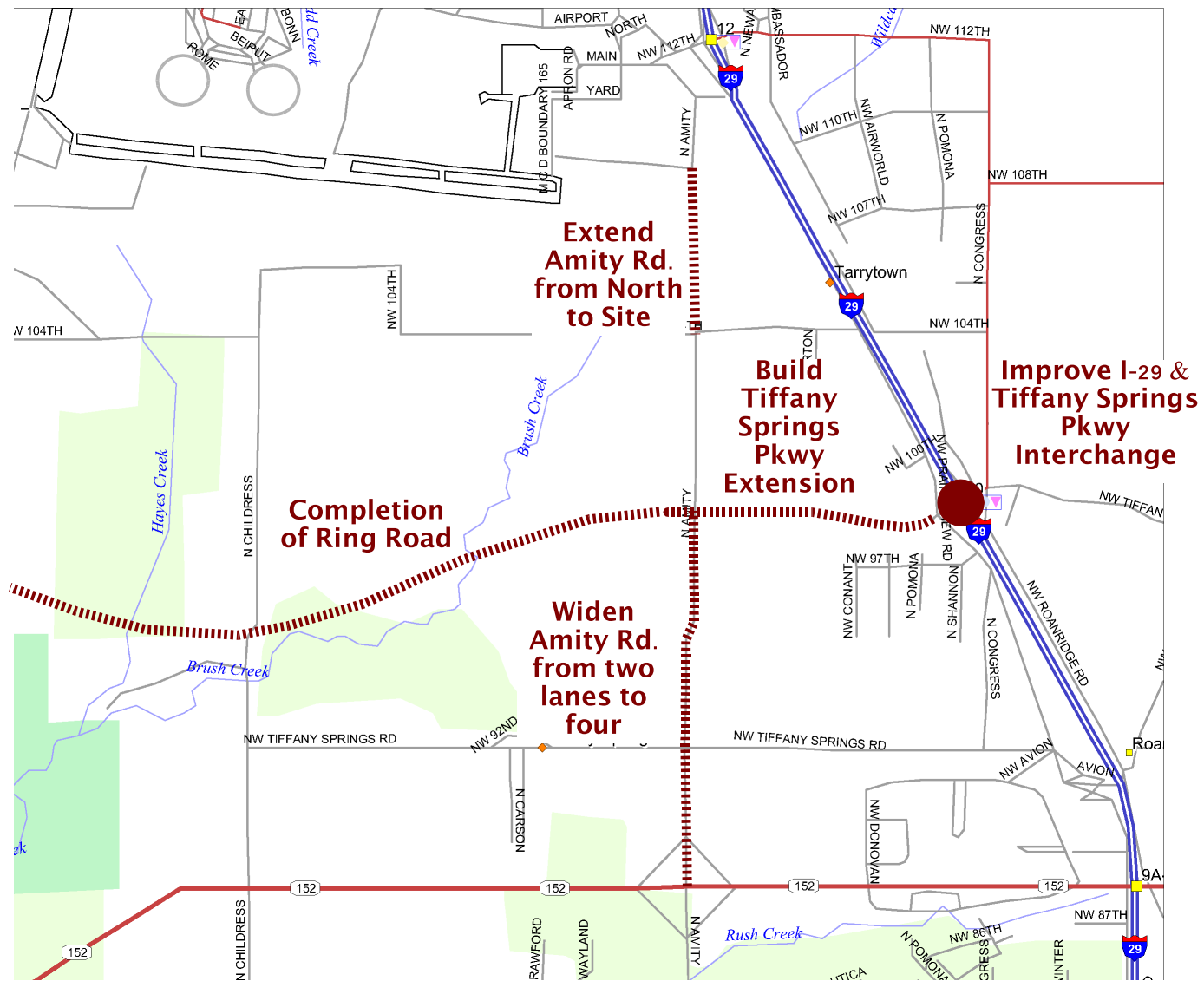


Exhibit 2.11  
KCI AIR LOGISTICS PARK PHASE I (2006–2012)

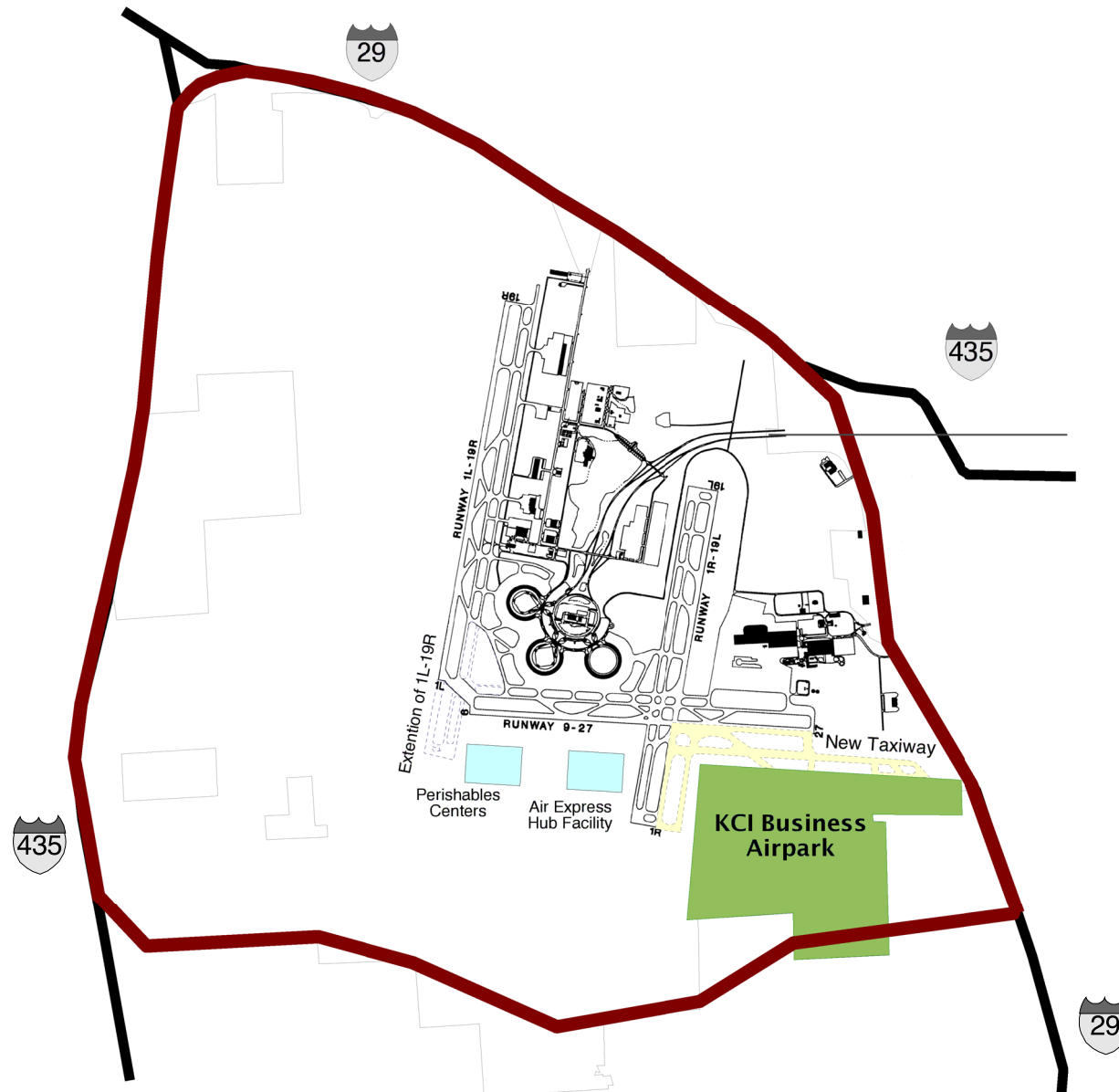


Exhibit 2.12  
KCI AIR LOGISTICS PARK PHASE II (2012–2018)

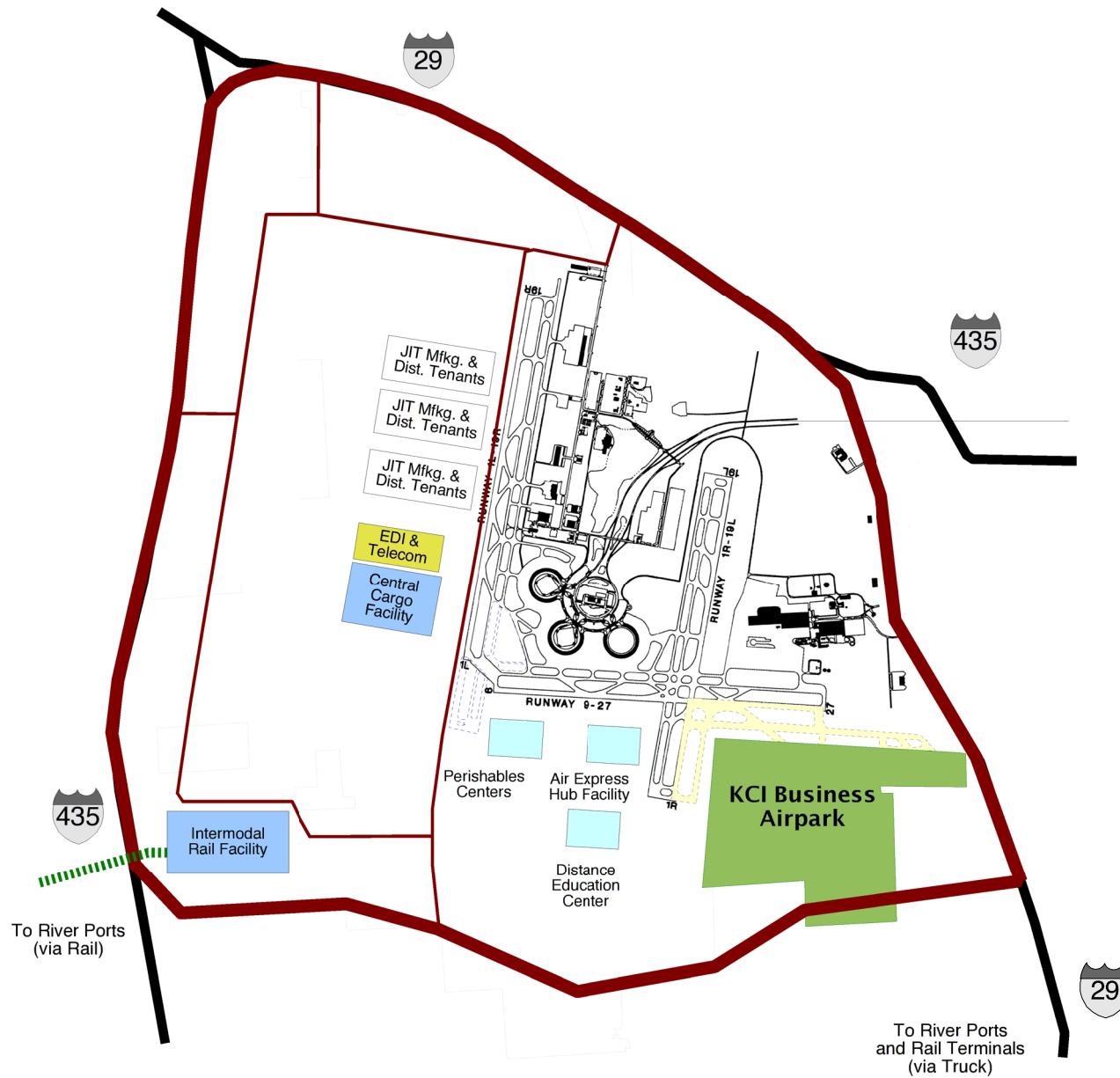


Exhibit 2.13  
KCI AIR LOGISTICS PARK PHASE III (2018–2030)

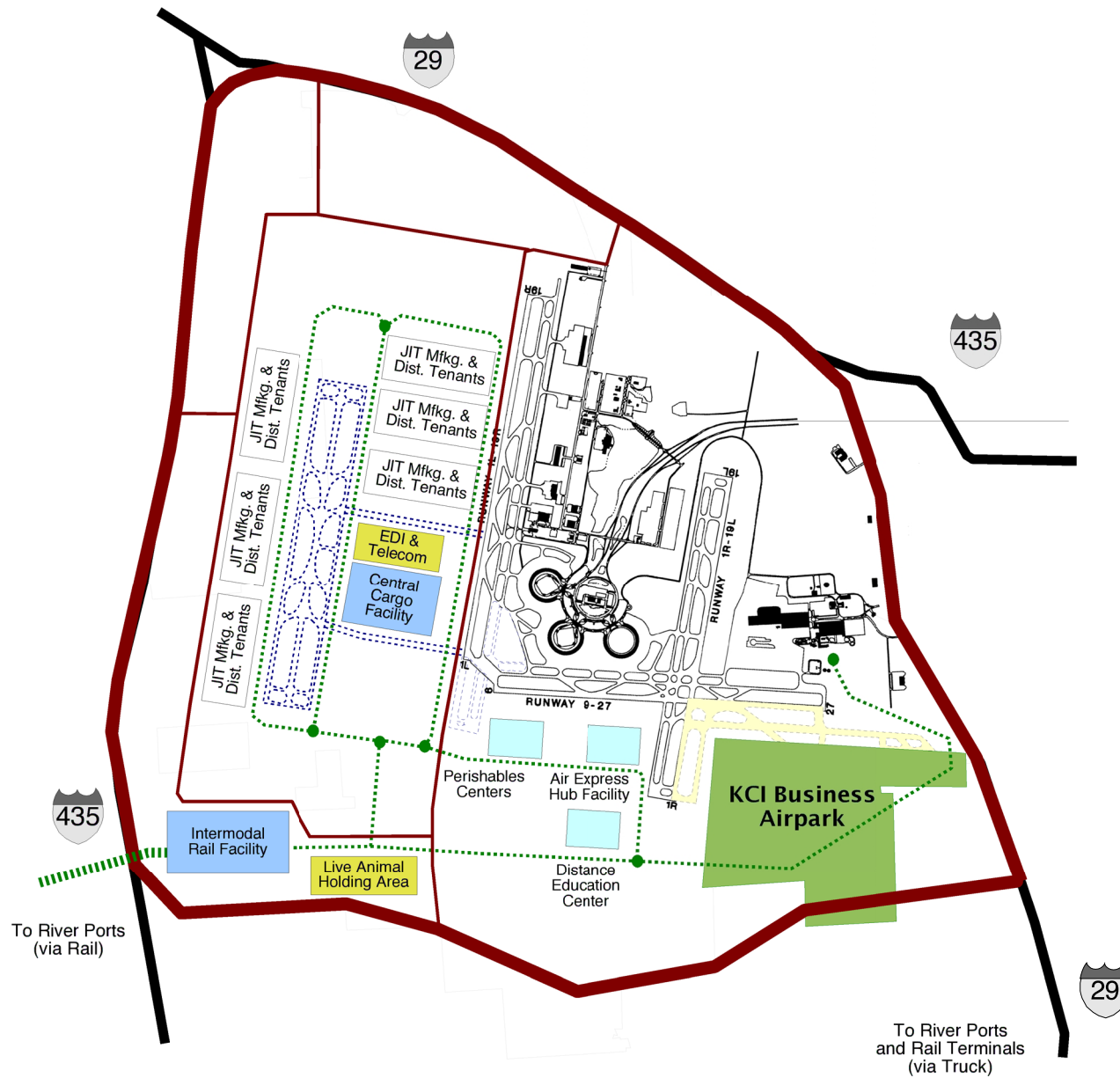




Exhibit 2.14  
KCI ALH CENTRAL CARGO FACILITY

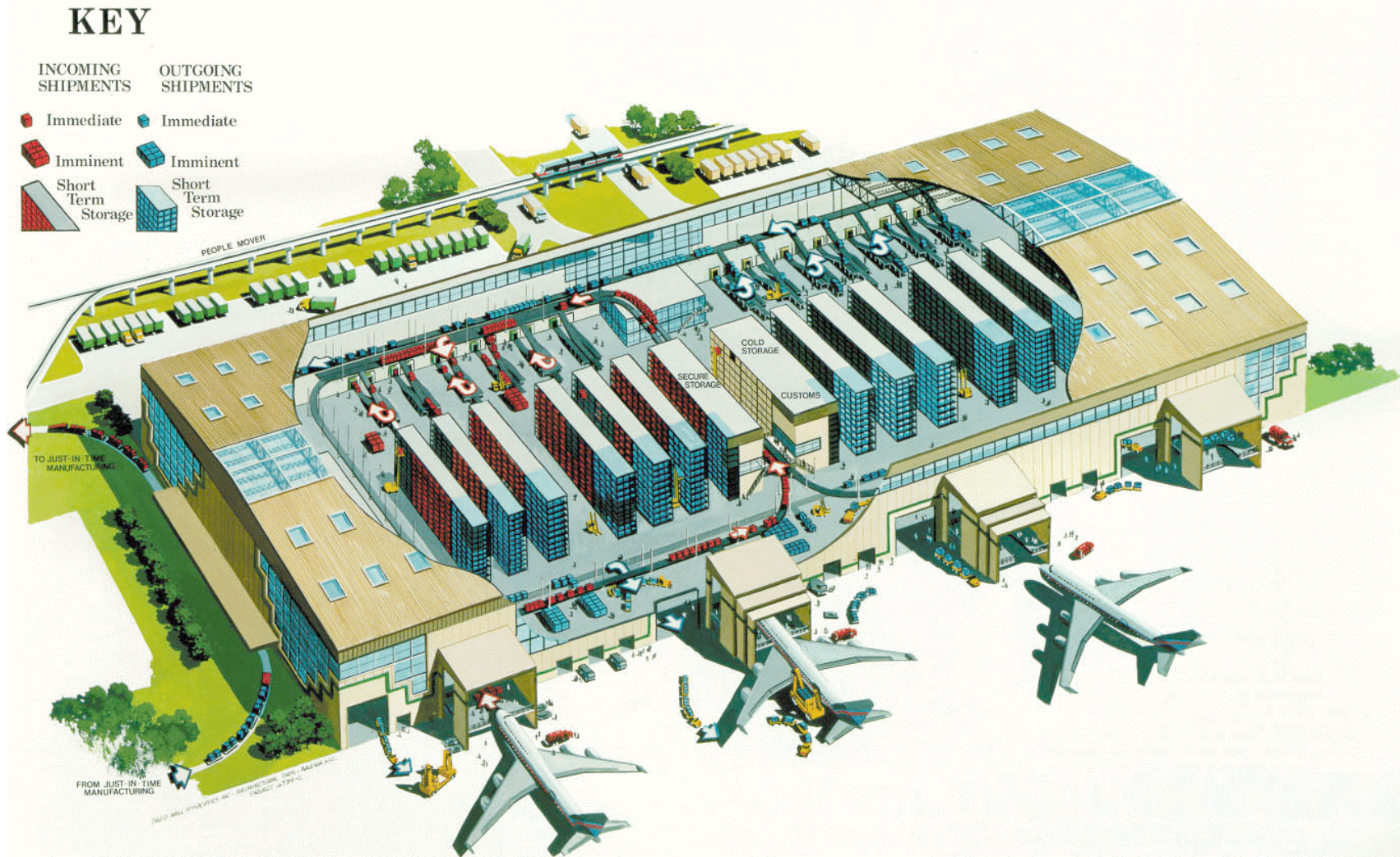


Exhibit 2.15  
INTERMODAL INTEFEACES AT THE KCI AIR LOGISTIC HUB

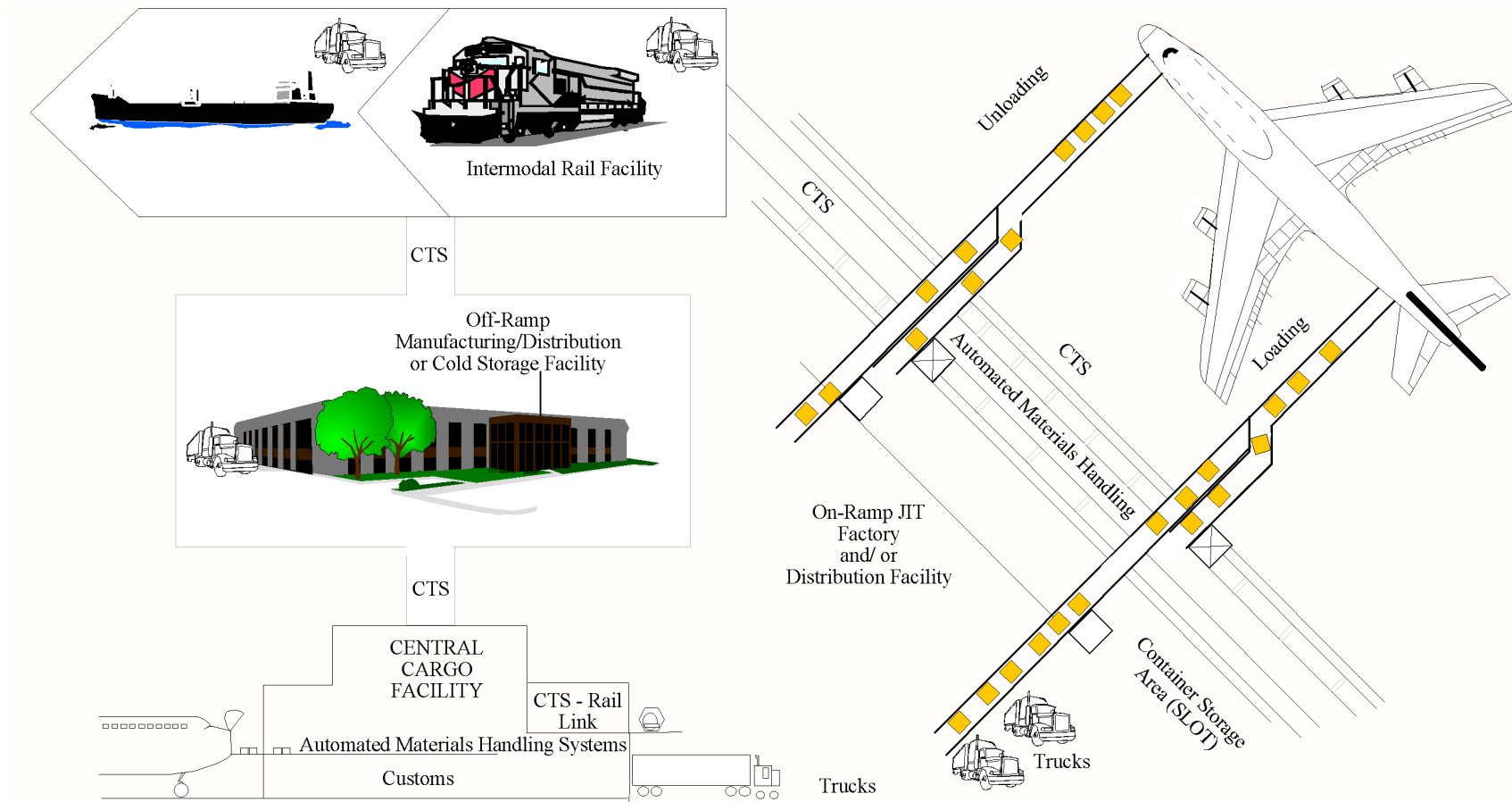


Exhibit 2.16  
TRANSPORTATION LINKAGES BETWEEN  
KCI ALH AND DOMESTIC AND INTERNATIONAL CARGO NETWORK

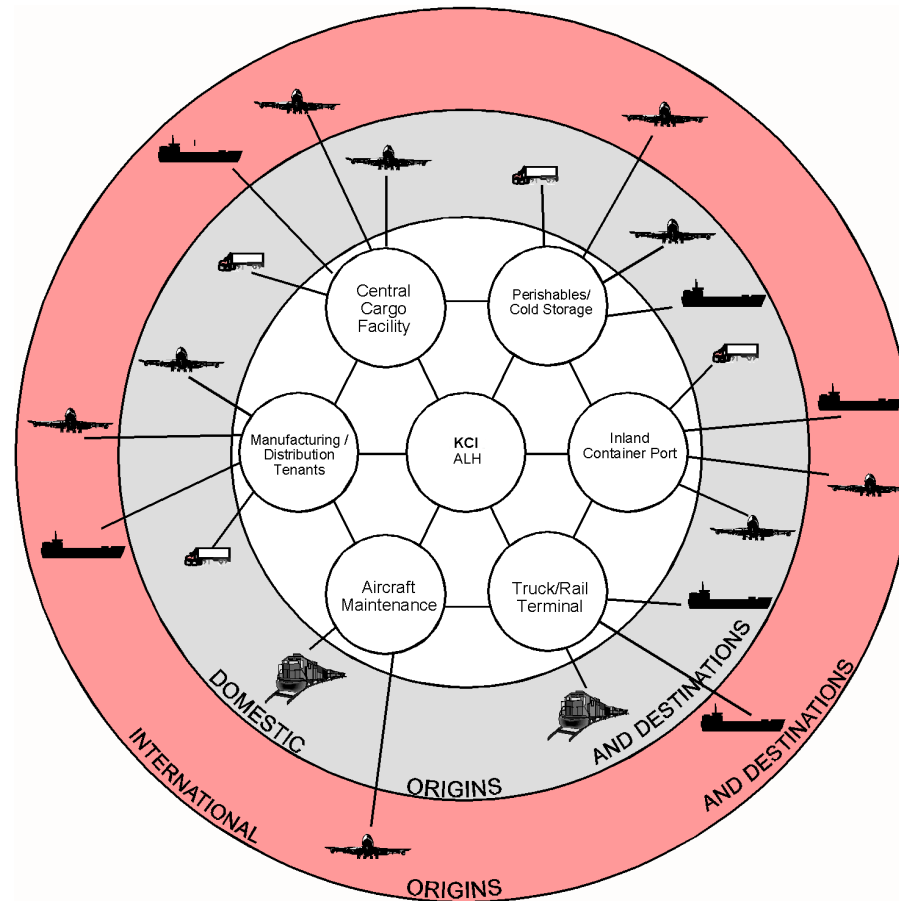
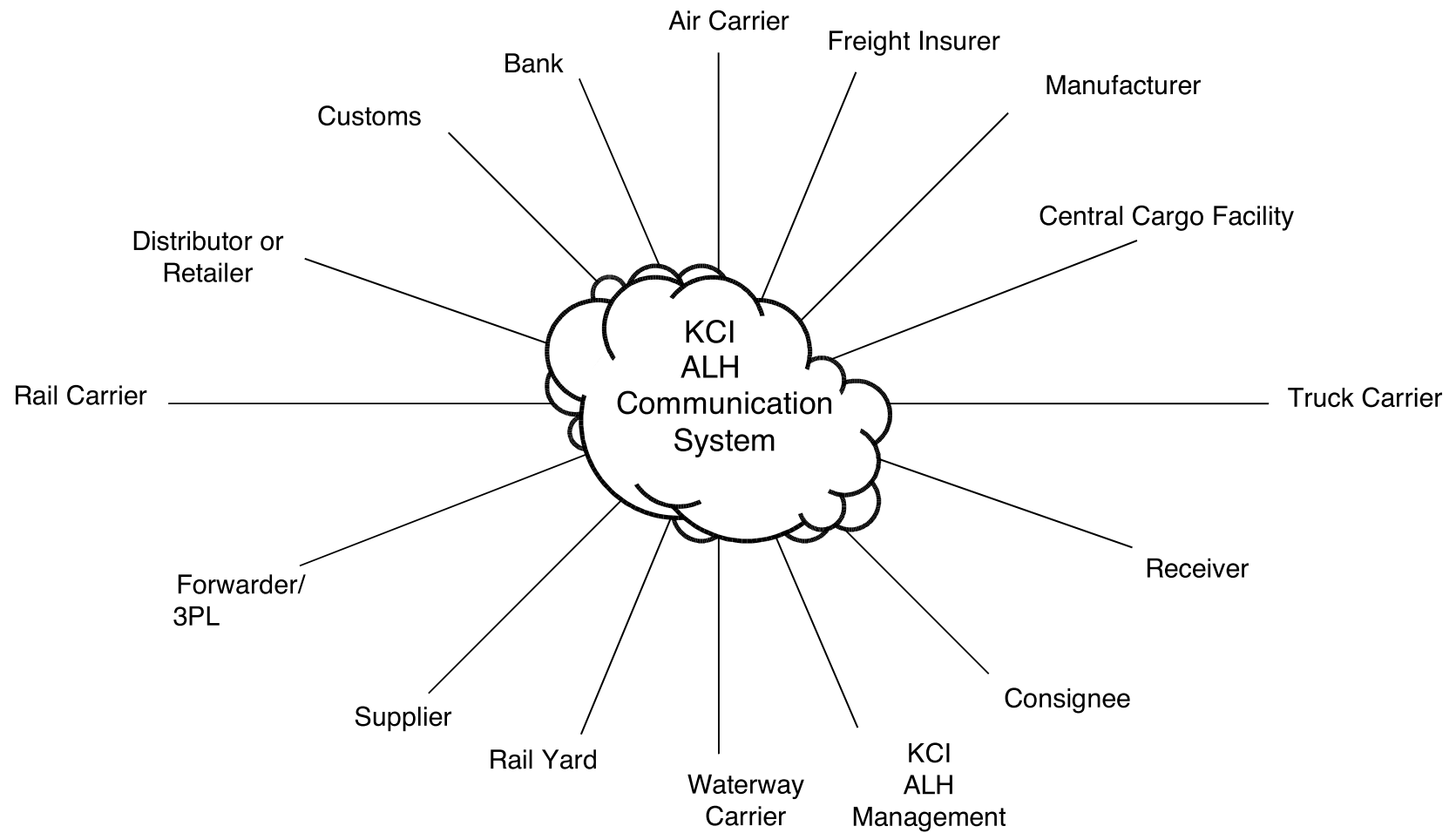


Exhibit 2.17  
OVERVIEW OF THE KCI ALH COMMUNICATION SYSTEM





## Chapter 3

### KCI Air Logistics Hub Business Plan Guidelines

#### I. Introduction

In Chapter 1, I described how speed and agility had become 21<sup>st</sup> century priorities for commercial success. The ability of Kansas City area companies to respond rapidly and flexibly to market opportunities will depend not only on internal management and operational changes but also on the creation of the external business environment that makes new commercial practices possible. Exhibit 3.1 identifies the key resource needs for a competitive business environment at the KCI Air Logistics Hub (ALH) and broader Kansas City region.

#### II. Business Resource Needs

First, logistics success depends on multimodal transportation systems for fast and flexible supply chain management. Seamlessly connected multimodal transportation systems have become a key to efficient business logistics. Raw materials, perishables, manufacturing inputs, and finished products must flow among geographically dispersed firms in a continuous and synchronized fashion. Air cargo facilities that are integrated closely with efficient highways and railways are needed to support the development of logistics parks, industrial parks, distribution centers, and to more efficiently link them to their sourcing, production and customer networks. For example, the ability of agribusiness firms to get fresh produce and meat products to and from distant markets quickly and reliably requires cross-docking facilities that link regional surface transport with aircraft servicing overseas markets. Similarly, manufacturers require cross-docking facilities that bring raw materials, parts, components, and

semifinished goods efficiently to production sites, and facilitate the rapid shipment of assembled products to customers, nationally and globally.

The automotive industry (an important industrial cluster for Kansas City region) is a good example of how the proper convergence of local logistical networks and river and air routes can attract a major industry. Heavy metal components would arrive via rail and river terminals. At the same time, smaller high-value digitized parts and custom components, often made by local and regional suppliers, must be delivered on a just-in-time basis to the assembly facility. These may arrive from local suppliers by truck and from long-distance suppliers by air. The newly assembled automobiles are then trucked or transported by rail to domestic markets and to ports for shipment to international markets.

Another example of multimodal supply chain convergence is a target industry of KCI and the region -- aerospace manufacturing. Both Boeing and Airbus are now requiring linkages among all four modes of transport in their site selection competition for new commercial aircraft assembly facilities.

Second, the KCI ALH and regional logistics system require an integrated telecommunications network (as described in the previous chapter) to obtain information on markets and orders, trace, track and manage materials and inventory, and control movements of goods to customers. Such a network is also essential to attracting more sophisticated transportation-related and third-party logistics (3PL) companies and 4PLs (advanced telecommunications logistics support firms) to the Kansas City area that will provide state-of-the-art logistics services to its air logistics hub users and tenants. The KCI ALH telecommunications system should feature information technologies served by fiber optics loops, RFID, WiFi, and GPS satellite linkages that connect companies in the airport area and throughout the region to their suppliers and customers and to their own branches, offices, and partners around the country and the

world. A teleport with advanced information and telecommunications management systems will serve customer premise equipment, including rapid worldwide communication, electronic data interchange (EDI) systems, B2B exchanges, and video conferencing equipment through broadcasting and communications satellite networks. Operations research is showing that telecommunications infrastructure external to a firm now heavily influences the effectiveness and efficiency of internal firm processes.

As international air commerce evolves at KCI, this telecommunications system must also support express customs clearance and efficient trade data processing. As discussed in Chapter 2, automated, paperless customs clearance is a key attribute of the ALH concept. KCI should be used as a laboratory for new expedited customs clearance procedures and electronic data interchange to achieve high-speed, barrier-free international flows of agricultural products, parts and components, and manufactured goods. In the future, to speed customs clearance, the ALH should build upon KCI's automated customs environment and to accelerate inspections and, through joint determination with U.S. Customs of appropriate technology, procedures, and staffing levels, it should take the lead in creating the nation's most efficient and effective express customs clearance, 24 hours a day, 7 days a week. The mantra of the KCI ALH will be speed and agility in moving high value to weight products to and from the region, providing a major competitive edge in fast-cycle logistics.

Third, the new business environment requires modern commercial services support. Globally-linked manufacturers, assemblers, and distributors must have access to foreign trade zones and in-transit bonded warehouses at and near the airport, financial institutions, marketing, sales and employment agencies, legal services, and trade and exhibition centers. As noted above, expedited customs procedures are required to streamline and accelerate the import of raw materials, parts and components and the export of finished goods.

One-stop government service centers (combining federal, state, and local agency requirements) are also necessary to expeditiously provide foreign investors with all required licenses, permits, and investment promotion privileges. Trade and exposition facilities are needed to display and market products of the region's and nation's firms. In addition, investors' ability to attract professional managers and highly-skilled younger workers requires a full array of community amenities including modern housing, quality public schools, good shopping and restaurants, nightlife, recreational, and cultural facilities, much of which is readily available in the Kansas City area.

Fourth, many high-tech and other new economy industries must be located near or have access to knowledge resources that can generate or stimulate innovation and provide a reliable source of trained workers and managers. Among the most important knowledge-based organizations on which global businesses depend are top-notch colleges and universities providing well-educated professionals and research capacities, and consultancy organizations that help commercialize technology, develop new products, and service local and multinational firms more effectively. Such knowledge resources well represented in the Kansas City area, have proven to be a strong asset in meeting these objectives as well as attracting technology clusters geared toward the development of export products. Likewise, a KCI distance education and training facility drawing on the ALH's telecommunications network could provide real-time audio, video and tactile worker training on-site (or distributed education and training to facilities throughout the greater Kansas City region) from training centers in distant headquarter firm locations around the world.

### III. Functional Requirements of the KCI ALH/Aerotropolis

The KCI ALH/aerotropolis vision represents integrated responses to the business resource needs described above. To succeed, it must incorporate six

broad functional capabilities targeted to these needs. For each functional (business) requirement, examples of key infrastructure elements are noted. Refer back to Chapter 2 for more detailed discussion and design/location of these elements.

1. *Multimodal Transportation System with Access to Local, National and Global Transportation Networks*

On-site terminals and inland ports with efficient intermodal capability must link to Kansas City's interstate highway and rail systems and with global sea and air transportation networks. Primary integration capability for the KCI ALH/ Aerotropolis must provide a seamless interface between transportation modes and between local firms and major air cargo and ocean shipping routes so that goods and materials can flow uninterrupted through the area quickly, at low cost, and with a minimum of human handling. Efficiently bringing together all the various modes of transportation is important to establishing a competitive infrastructure at the ALH and to attracting commercial investment.

Examples of infrastructure needs at the KCI ALH:

- Upgrades of internal KCI roadways and an intermodal rail facility with truck cross-docks connecting to national rail and highway systems.
- Intermodal integrators for seamless connections between alternative modes
- Electronic tracking capability from mode to mode for total asset visibility and real-time control

## 2. *On-site Cargo Processing Capability*

At the core of an air logistical hub must be a cargo processing facility with advanced material handling that can accommodate the needs of a variety of aircraft and industries. Flexibility in both the processing capability and location of material handling activities is essential because of nonstandard aircraft and ground cargo-related equipment, and because of a dynamically changing cargo processing environment. Targeted mechanization at the KCI ALH for cargo operating processes, as discussed in Chapter 2, can be provided when it is productivity-driven and demand-justified.

Examples of key infrastructure elements include:

- Central Cargo Facility (CCF) with advanced material-handling systems (MHS)
- High-velocity flow-through facilities with airside cargo access and truck cross-docking
- Automated express customs clearance procedures and facilities
- In-bound breakdown and delivery staging areas
- Cargo inspection, security, and holding areas
- Facilities for value-added service provision, such as temperature-controlled storage.

## 3. *On-site Cargo Transport System*

A third need is a cargo transport system that connects the ALH with all transportation modes and terminals (air, road, rail and river), with each mode to the other, and with the regional manufacturing and distribution facilities, as well as logistics support facilities. These systems can be fully

automated, semi-automated or manual depending on traffic flow profiles (cargo demand) and the specifics of the site.

Examples of such infrastructure elements include:

- Both low-tech and advanced materials handling capability
- Internal road and cargo tram network
- Automated storage/retrieval systems
- RFID tagging and tracking technologies and sortation systems

#### 4. *Shared Communications System with Transparent User Interface*

Computer-to-computer information transfer between companies (Electronic Data Interchange and B2B e-commerce) are increasingly replacing paper and fax transmissions and ever most traditional face to face supply chain transactions. This electronic interchange of information and data requires message standards, translation software and transmission capability. Recent technology developments have created new opportunities to enhance inter-company and inter-industry communications with more powerful work stations, improved data transportation mediums, global communications networks and faster routers for electronic transmissions. These capabilities and new technologies will greatly facilitate seamless relationships among KCI ALH/aerotropolis tenants, their suppliers and customers, regionally, nationally and worldwide. The net effect is to accelerate materials handling, customs processing and product transfers among commercial facilities, aircraft, trucks, rail cars, and river barges, as well as to other U.S. and global airports. A key planning challenge, as described in Chapter 2, is to design a communications system that is flexible enough to support the majority of KCI ALH and Kansas City area users, that offers rapid

connection to regional, national and global networks, that maximizes functionality, and that allows for continuous improvement and innovation.

Examples of key electronic commerce elements include:

- Electronic data interchange (EDI) interoperability across transportation modes
- Fiber optic and satellite networks
- Wide-area broadband
- Web-based open architectures and message standards

5. *Access to On-site and Remote Services for Commercial Support, Vocational Education and Worker Training*

In the new speed-driven economy, businesses are demanding access to a variety of support services that reduce the time and cost of logistical transactions. Desirable commercial support services noted earlier include a variety of legal, financial, and government services such as the securing of permits, customs clearances, and export licenses. Some of these services can be provided electronically. Co-location of these services at the KCI ALH or at a strategic point in the KCI Aerotropolis can provide a “one-stop-shop” support for Aerotropolis companies and ALH tenants.

Similarly, electronic access to education and training facilities throughout the country and the world can provide substantial value to KCI ALH/Aerotropolis tenants. The proposed distance education facility at the ALH would provide agile support for custom training the local labor force by offering tenant and area companies real-time audio, video, and tactile access to knowledge and training resources from around the world.



For example, if Rolls-Royce wanted to locate a jet engine production facility at KCI or elsewhere in the Kansas City area, worker training could be conducted on site, via simultaneous audio, video, and tactile instruction from its European production headquarters.

Examples of such key infrastructure elements:

- Broadband two-way video capability
- RFID intelligent information access technology
- Wide area broadband information exchange
- On-line interactive and/or automated support of negotiations and contracting
- Education and training center with distance-learning capabilities

#### 6. *Arterial Movements Unencumbered by Congestion*

Success of the KCI Aerotropolis requires speed and agility of movement on local highway systems. As the area develops the potential for congestion rises. Planning must begin now to insure that people and product movements remain fast and flexible throughout the greater KCI Aerotropolis.

Examples of key infrastructure elements include:

- Additional lanes in high-volume traffic areas
- Intelligent highway system technologies
- Truck-only lanes on certain routes
- Clusters as opposed to strip commercial development

#### IV. Critical Success Factors for the KCI ALH/Aerotropolis

Effective planning requires not only vision but also an appropriate strategy. Guiding the development of a business plan for the KCI ALH/Aerotropolis should be a set of overarching themes that, if followed, will greatly facilitate its ultimate success. Realizing these critical success factors will provide KCI and the Kansas City area with a major competitive edge in attracting business and industry over most other sites in the U.S.

##### *Critical Factor #1*

##### *The KCI ALH/Aerotropolis Must Be Designed Around Emerging 21st Century Business Practices*

Beginning with our frequently repeated fundamental point, planning of the KCI ALH/Aerotropolis must reflect the business practices and processes of 21st century global companies. I noted that dramatic changes are occurring in how companies transact their business, and especially in how today's most successful mega-retailers, manufacturers and logistics providers move goods and materials around the country and the world. Infrastructures can no longer be designed and built as isolated civil engineering investments or that reflect more traditional business practices. New business practices require new infrastructures. These must be geared to modern supply-chain management that fuse multimodal transportation, advanced telecommunications, sophisticated materials handling systems, and state-of-the-art business support services to offer unmatched speed and agility to KCI tenants and users from throughout the Aerotropolis.

### *Critical Factor #2*

#### *Development Plans for the KCI ALH/Aerotropolis Must Give High Priority to Quality of Life Considerations*

Unlike most other air logistics complexes around the world, the KCI ALH/ Aerotropolis should be developed as a multi-functional zone and region that will support not only manufacturing and distribution activities, but also white-collar service functions, so important to the Kansas City economy. This raises the importance of quality of life considerations with respect to their broader built environment. By balancing industrial, commercial and environmental factors, the KCI ALH/ Aerotropolis can provide benefits not only to the companies that locate there, but also to nearby residents, as well.

### *Critical Factor #3*

#### *Master Plans for the ALH/Aerotropolis Must Be Flexible and Reconfigurable.*

I stressed in Chapter 2 that planning for a KCI ALH should not be viewed solely as detailed site and civil engineering plans to guide construction and development. Rather, the master plans for both the ALH and surrounding Aerotropolis should be developed as a flexible framework that can accommodate a wide variety of commercial facilities, tenants, and physical layouts. In order to create a sustainable future, Master Planning must look to the long-term, with a design that is both environmentally and economically sustainable and can adapt to new business needs and incorporate new technologies and infrastructure advances. A basic planning principle is that the KCI ALH/ Aerotropolis itself be designed as a flexible infrastructure system that can be adapted to current and future business requirements. While the features of the competitive landscape for the near term are clearly in focus, competitive strategies will undoubtedly change over time and the KCI ALH/ Aerotropolis must be able to respond quickly to these new logistical needs and infrastructure requirements. A 15 to 30 year development horizon is not unreasonable to build milestones on.

***Critical Factor #4***

***The ALH/Aerotropolis Must Establish Synchrony with Other Infrastructure Projects Around the Country and the World.***

We are moving into an era in which networks of firms compete rather than individual companies. In this new commercial environment, Kansas City area companies and KCI ALH tenants must be able to access their partners quickly and effectively. This requires synchrony with other air cargo systems around the country and the world and with harmonized communications systems and surface/sea transportation networks. Major air logistics firms such as FedEx, Lufhansa, UPS, and DHL, are racing to set up efficient and seamless international networks. By aligning and integrating more closely into their networks, KCI and areas businesses will be able to participate more quickly and efficiently in the rapidly growing global economy that these firms are increasingly driving.

***Critical Factor #5***

***The KCI ALH/Aerotropolis Must Emphasize the Importance of Logistics-Based Capabilities in Attracting Globally-Oriented Businesses.***

As companies search around the world for quality parts and components at competitive prices, and as customers demand quick response and fast delivery, access to multimodal air logistics hubs will be a major criterion for industrial location. Companies will certainly continue to require traditional economic incentives, such as local investment offsets for land or facilities, tax abatements and workforce training. However, as the competitive priorities of speed and efficient consumer response predominate, the relative importance of these traditional factors will lesson. Increasingly, investment decisions will be made as much on the basis of the logistical capabilities of the site and access to

national and global networks, as on government incentives. This could be Kansas City's trump card.

#### *Critical Factor #6*

#### *Master Plans Must Demonstrate Regional and Statewide Benefits of the KCI Air Logistical Hub and Aerotropolis.*

In order for the KCI ALH to obtain popular and governmental support, development must be positioned as a vehicle for greater Kansas City regional economic growth. The creation of an air logistical hub at KCI that will attract commercially successful companies to the airport environs is a primary goal of this plan. But, ultimately, the success of the ALH will depend on how its capabilities can leverage businesses throughout extended Kansas City region. In this regard, it is critical that KCI ALH planning recognize and highlight the growing integration of its primary commercial and transportation centers and develop an integrated logistics system plan that builds synergies among regional and state-wide commercial sites.

### **V. Marketing Strategy for the KCI ALH/Aerotropolis**

Let me now offer some guidelines for a marketing strategy to help KCI attract commercial investors and service providers to the ALH. We assume that for the immediate future, KCI as well as KCADC (in particular the Kansas City and Platte County EDCs) will continue to have the lead role and responsibility for promoting the concept of the ALH and for identifying and attracting viable tenants to the complex. In the next chapter, I will make recommendations regarding potential future organization and management of the KCI ALH. Here, I will raise the prospect that within the next three years, a private-sector firm would be entrusted with the task of developing and operating the KCI Business AirPark and possibility even the entire KCI ALH on a long-term concessionary basis. This may well require new enacting legislation or an innovative financial

partnership with the Kansas City Department of Aviation. Among the core functions would be the promotion of the KCI Business AirPark and ALH, from the creation of a marketing program for the complex, complete with public relations, advertising and publicity brochures and materials, to the identification, contact and “sales” effort with potential tenants and users. If a commercial site developer is feasible and chosen for the KCI ALH, it would be expected to have its own approach and techniques to marketing the project. The reason for this suggestion is simple. The core business of the Kansas City Department of Aviation is aviation, not commercial real estate development.

In view of these assumptions, in the present section I first concentrate on the immediate marketing strategy tasks that fall to KCI and KCACD for the period prior to the possible involvement of a private-sector developer and operator. However, it is also understood that KCI may retain responsibility indefinitely for the ALH project. Recognizing this possibility, I also address longer-term marketing goals and issues for the ALH that would be relevant either to a private-sector developer/operator or to the Kansas City Department of Aviation should the latter continues to be the entity to promote and to develop the ALH for the life of the project.

### *1. PHASED MARKETING THEMES*

The ultimate objective of the KCI ALH is to serve as a major national multimodal hub and airport-driven commercial complex offering tenants and users state-of-the-art logistics, knowledge resources, and commercial support. Based on experience with similar multimodal centers elsewhere, achievement of this goal will mean the ALH will likely evolve through a series of phases. In each phase, the marketing effort should be designed to attract a nucleus of facility users, which in turn serves as a catalyst to pull additional complementary companies to the complex and the airport

environs. The kinds of tenants likely to be attracted to the KCI ALH will vary with each phase of the complex's development. Marketing activities should be planned to match these anticipated development stages and tailored to the kinds of tenants that are most suitable to each stage, and not outrun development headlights.

*a. Near Term*

The near term represents a period from the present through the next 1 to 6 years. Based on interviews and surveys of potential users at air cargo airports, the near-term marketing strategy should build on the strong previous efforts by KCI to attract internationally networked air cargo carriers, especially the integrated air express carriers (e.g., UPS, FedEx, and DHL). Though substantial efforts to date by the Aviation Department have shown how difficult this can be, the international air express industry is growing rapidly (averaging 16.4 percent over the last decade and is expected to lead international air cargo expansion in the future. All of the integrated air express carriers are operating a number of regional as well as national hubs. DHL, for instance, recently announced that it will be setting up as many as 19 regional hubs in the U.S. over the coming decade. These international air express firms can operate at KCI without major infrastructure modification.

It is important to reiterate that, during the near term period, marketing efforts should correspond to infrastructure development and other improvements at the KCI Business AirPark site. If marketing gets ahead of these improvements, credibility will be lost and the targeted tenant will become disenchanted.

*b. Mid-Term*

The mid-term for KCI ALH development represents roughly the years 6 through 12 with some earlier overlay with near-term activity. This period's marketing strategies should be designed to further boost the air cargo demand at KCI and then to expand this demand by progressively widening and deepening the nature of activities located at and around the airport. These strategies are:

- attracting additional charter air cargo service providers to the KCI;
- targeting industrial and commercial users of those air services;
- encouraging improved logistics management; and
- Facilitating the integration of production and logistics.

While these strategies are broadly sequential, there would naturally be an overlap from one stage to another in implementing them. Most important, the impact of this marketing will be cumulative, with efforts in one stage preparing a network of contacts and a KCI ALH operating reputation to make it possible to begin moving the complex toward its next phase of evolution.

*(1) Attracting charter air cargo service providers (years 3 to 12)*

For the KCI ALH to attract additional point to point (airport to airport) air cargo service providers, a critical mass for air cargo demand (load) is necessary on a regular basis. Previous surveys have indicated that charter air cargo operators (e.g., Atlas Air, BAX Global, Cargolux, Evergreen, and Polar) serve airports where they can be assured of a significant volume of airfreight. The key to building a critical mass of cargo demand will be to focus on promoting the KCI ALH to all industries within a 200-mile radius



that are airfreight dependent. The intent here will be to persuade the firms not necessarily to relocate to the Kansas City MSA, but to use the KCI ALH rather than trucking their freight to O'Hare, DFW, or other mid-American airports. I have not seen regional KCI air cargo leakage statistics to other airports, but my hunch is that this leakage is substantial. To capture a significant portion of regional air cargo-leakage may require closer working relationships with major freight forwarders and third-party logistics service providers.

Initial marketing targets should focus on 3PL's, freight forwarders and shippers of time-sensitive products in the 200 mile radius of KCI. The latter include microelectronics companies, pharmaceutical firms, fresh produce, and seafood, and other high value to weight export products. Marketing strategies geared to shippers, freight forwarders, 3PL's and air cargo firms should emphasize the value-added that the KCI ALH can mean in terms of lower cost and more efficient shipment services. During this phase of development, the KCI ALH will become a much more significant air cargo airport, featuring highly efficient cargo handling and transshipment capabilities.

*(2) Attracting Air-Intensive Commercial Users to KCI and the KCI Aerotropolis (years 3 go 12)*

As KCI's air cargo service capability expands significantly, reciprocal marketing should focus on attracting shippers (i.e., manufacturers and assemblers of export products) and more national forwarders and third party logistics providers (3PLs) to locate at and around KCI. The goal will be to begin generating on-site origin/destination cargo shipments in terms of in-bound raw materials and components and out-bound intermediate and final goods flowing to and from the time-sensitive manufacturers and

distributors that operate at or near KCI. Again, the emphasis should be on demonstrating a set of real cost, speed, and service quality advantages to firms locating near KCI that are compelling to shippers, forwarders, and 3PLs.

*c. Longer Term*

The longer term (years 10 to 25 and beyond) will focus on developing a full-scale KCI ALH logistical complex and attracting the necessary complement of manufacturers, logistics managers and service providers to accomplish ultimate ALH objectives.

*(1) Improved logistics management (years 10 to 16)*

Once a core of air cargo firms, shippers, forwarders or 3PLs have located and successfully operated at and around the KCI ALH, the marketing emphasis will shift to promoting an extension of the range of value-added logistics management services the ALH offers. From its inception the KCI ALH will have both Foreign Trade Zone and Enterprise Zone status that should be extended to full KCI Business District (Airport City) as illustrated in Exhibit 2.6 . Pointing to the importance of these features for cost-effective logistics, plus the record of efficiency that KCI will have established for its tenants and users to that date, marketing programs will begin to focus more on the advantages of the ALH in overall logistics management. The marketing emphasis will be on helping industrial and commercial shippers and 3PLs find opportunities at the ALH to coordinate the movement of materials and finished goods so that they can rapidly and flexibly respond to customer's needs as well as to cut costs and increase supply-chain management efficiency. The possibilities of performing value-added logistics functions such sequencing, pick and

pack, packaging, product labeling and assembly of knock-down product kits will be stressed. The marketing targets during this phase will be the companies already located in the 200 mile radius of KCI, plus the whole spectrum of major freight forwarders and third-party logistics providers that serve shippers globally. The KCI ALH's later capabilities in automated warehousing/distribution, electronic data interchange, and electronic tracing-tracking will be underlined for these logistics specialists. The KCI ALH's sales proposition during this phase will not only emphasize cost and quality of service advantages, but also the enhancements to the speed and agility of supply chain operations that the KCI ALH could provide shippers and 3PLs.

*(2) Integration of production and logistics (years 15 to 30 and beyond)*

Once the KCI ALH has developed a reputation for world-class cargo handling and logistics management, a final stage of ALH marketing can begin. The emphasis at this stage would be essentially an intensification of the "improved logistics management" marketing theme set forth above, whereby the marketing program will concentrate on supporting shippers and 3PLs to find ways to integrate production and logistics so as to substantially reduce inventories and further improve manufacturers' supply chain management. Promotional materials will seek to differentiate KCI and its environs from other industrial-commercial-logistics locations as sharply as possible in terms of the price, quality, speed and agility benefits that it offers. The KCI ALH and greater aerotropolis will at this point be marketed internationally to the most sophisticated shippers and 3PLs as a site where airfreight dependent manufacturers fully coordinate their supply chains and overall manufacturing capacity with customer demands. The marketing message

will also stress the ALH's world-class standards in total logistics management practices including fusion of all transportation modes (air, road, rail and river), integrated telecommunications, sophisticated materials handling systems, and state-of-the-art commercial and knowledge support services.

## *2. TARGET INDUSTRIES*

At every stage of marketing, the KCI ALH/ Aerotropolis promotional strategy should be grounded in solid business research and planning. This will involve market research of a generic nature on likely ALH tenants and users, given its stage of development, as well as market research specific to the greater Kansas City region. Research on commercial shippers from around the world points to five generic types of shipments where air transport is the consignees' mode of first choice. These are when:

- Flexible and customized production is the norm
- The high value of the product compared to its weight justifies the extra cost of airfreight
- The product is perishable – either in the physical or economic sense
- Short production cycles and/or “just-in-time” inventories require fast delivery
- Immediate delivery of spare parts, time sensitive documents or products is required

Target industry analysis for air logistics hubs conducted by UNC's Kenan Institute of Private Enterprise identified eleven industrial groups that are

most likely to utilize the facility. Most of these would no doubt also be the best target industries for the KCI ALH, as well. They include:

- Logistics service providers
- Semi-conductor and computer chip manufacturers
- Pharmaceuticals and contract biotech and pharmaceutical lab testing facilities
- Computer and electronic sub-assembly manufacturers
- Aircraft assembly, aircraft parts suppliers and aircraft maintenance services
- Garments and fashion accessory suppliers
- Specific elements in the scientific or medical industrial supplies business, particularly those supplying small volumes of high value products, for example aromatics
- Optics and small precision equipment manufacturers
- Suppliers of perishable products – for example, fresh seafood, live animals, fresh fruit and flowers
- Digital automotive component manufacturers and spare part suppliers
- Jewelry and watch manufacturers

Exhibit 3.2 provides a list of potential target firms in these industries. In targeting these firms and others in the industries, noted above, there are a number of services that need to be highlighted in a marketing plan for the KCI ALH and its aerotropolis environs. Many have already been discussed and some already exist, but let me provide a summary list of the

key support services to be implemented and leveraged in marketing the KCI ALH and surrounding aerotropolis.

- Expedited customs clearance and pre-clearance procedures
- Full electronic data interchange capability
- Foreign Trade Zone and in-transit bonded status for re-exports
- New roadway and rail access to the ALH and with port connectors
- State-of-the-art materials handling services
- Reliable utility services (e.g., electricity, water, sewer)
- Industrial support services such as repair and maintenance and machine shops
- Quality of life – good housing, schools, recreation, nightlife
- Knowledge and education support, including a distance education and worker training facility at the KCI ALH
- Enhanced one-stop servicing for foreign investors
- Expedited site and building permit approvals

All of the above need to be woven into both the business plan and the implementation plan for the KCI ALH and surrounding aerotropolis.

They are not only essential to the marketing effort, but also to developing a successful multimodal air logistics hub and aerotropolis network.

## VII. Conclusion

This chapter summarized the main elements that should guide development of a full business plan for a KCI ALH and surrounding aerotropolis highlighting pertinent findings from related studies. Emphasis was on creating a competitive business environment at the ALH, business resource needs, critical

success factors, marketing strategies and target industries. Key to this competitive environment will be based capabilities at and around the ALH and a region-wide integrated logistics network that provides advantages of speed and agility to goods-processing firms throughout a 200 mile radius of KCI. In the final Chapter, I will focus on key elements of an ALH/ Aerotropolis implementation plan and a set of recommendations, and action steps to design, develop, manage, operate, or otherwise move the opportunity forward.

Exhibit 3.1  
PROPOSED BUSINESS ENVIRONMENT FOR A KCI AI LOGISTICS HUB AND AEROTROPOLIS

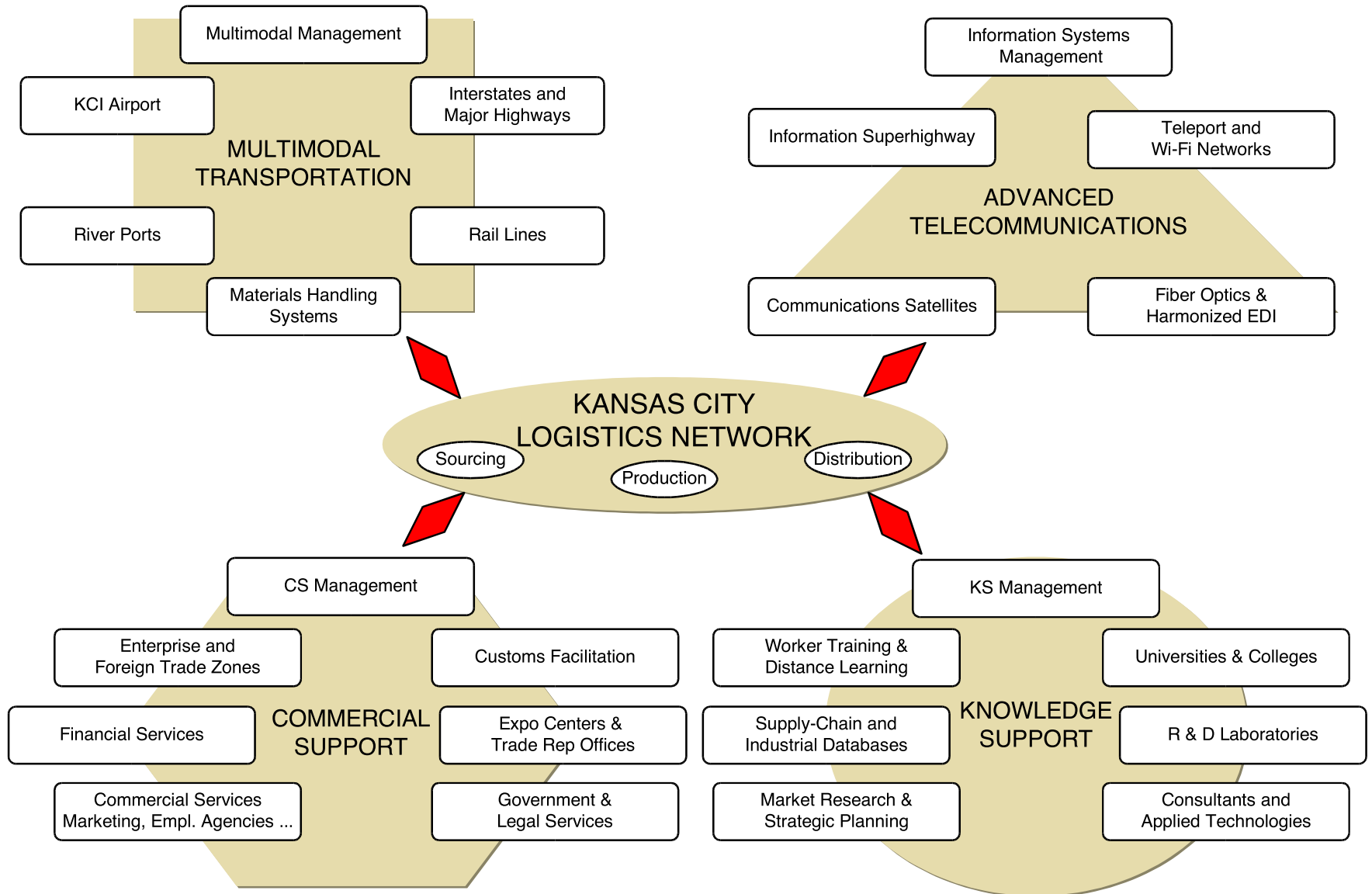




EXHIBIT 3.2  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
3Com	Networks	<a href="http://www.3com.com/">http://www.3com.com/</a>
ABB Asea Brown Boveri	Electronics, Electrical Equipment	<a href="http://www.techrepair.com/abb.html">http://www.techrepair.com/abb.html</a>
Abbott Laboratories	Pharmaceuticals	<a href="http://www.abbott.com/">http://www.abbott.com/</a>
ABX Logistics (USA) Inc	Logistics	<a href="http://www.abxusa.com">www.abxusa.com</a>
Acer	Computers & Semiconductors	<a href="http://www.acer.com">http://www.acer.com</a>
Advanced Micro Devices (AMD)	Computers & Semiconductors	<a href="http://www.amd.com">http://www.amd.com</a>
Airbus Industrie	Aerospace	<a href="http://www.airbus.com">http://www.airbus.com</a>
AIT Worldwide Logistics	Logistics	<a href="http://www.aitworldwide.com">www.aitworldwide.com</a>
Alcatel	Telecommunications	<a href="http://www.alcatel.com/">http://www.alcatel.com/</a>
AlliedSignal	Aerospace	<a href="http://www.honeywell.com/">http://www.honeywell.com/</a>
Amazon.com	E-Commerce	<a href="http://www.amazon.com">http://www.amazon.com</a>
American Home Products	Pharmaceuticals	<a href="http://www.ahp.com/">http://www.ahp.com/</a>
Americold Logistics	Logistics	<a href="http://www.americold.net">www.americold.net</a>
AMH Corp.	Logistics	<a href="http://www.amh-corp.com">www.amh-corp.com</a>
AMP	Networks	<a href="http://www.amp.com/">http://www.amp.com/</a>
Analog Devices	Networks	<a href="http://www.analogdevices.com/">http://www.analogdevices.com/</a>
Anam Group	Telecommunications	<a href="http://www.anam.ie/">http://www.anam.ie/</a>
APL Logistics	Logistics	<a href="http://www.apllogistics.com">www.apllogistics.com</a>
Apple	Computers & Semiconductors	<a href="http://www.apple.com/">http://www.apple.com/</a>
Applied Materials	Computers & Semiconductors	<a href="http://www.appliedmaterials.com/">http://www.appliedmaterials.com/</a>
Arnold Logistics	Logistics	<a href="http://www.arnoldlogistics.com">www.arnoldlogistics.com</a>
AstraZeneca	Pharmaceuticals	<a href="http://www.astrazeneca.com/">http://www.astrazeneca.com/</a>
AT&T	Telecommunications	<a href="http://www.at&amp;t.com">http://www.at&amp;t.com</a>
Averitt Express	Logistics	<a href="http://www.averittexpress.com">www.averittexpress.com</a>
Barnes & Noble	E-Commerce	<a href="http://www.bn.com">http://www.bn.com</a>
BAX Global Supply Chain Management	Logistics	<a href="http://www.baxglobal.com">www.baxglobal.com</a>
Baxter	Medical Products	<a href="http://www.baxter.com/">http://www.baxter.com/</a>
Bekins Worldwide Solutions	Logistics	<a href="http://www.bwslogistics.com">www.bwslogistics.com</a>
BigDogLogistics	Logistics	<a href="http://www.bigdoglogistics.com">www.bigdoglogistics.com</a>
Bigwords	E-Commerce	<a href="http://www.bigwords.com/">http://www.bigwords.com/</a>
BMW	Motor vehicles and Parts	<a href="http://www.bmw.com">http://www.bmw.com</a>
Boeing	Aerospace	<a href="http://www.boeing.com/">http://www.boeing.com/</a>
Bombardier	Aerospace	<a href="http://www.aerospace.bombardier.com/">http://www.aerospace.bombardier.com/</a>
Breitling	Watches	<a href="http://www.breitling.com/">http://www.breitling.com/</a>
Bristol-Myers Squibb	Pharmaceuticals	<a href="http://www.bms.it">http://www.bms.it</a>

EXHIBIT 3.2—Continued  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
C.H. Robinson	Logistics	<a href="http://www.chrobinson.com">www.chrobinson.com</a>
Cable & Wireless	Telecommunications	<a href="http://www.cwplc.com">http://www.cwplc.com</a>
Cabletron Systems	Networks	<a href="http://www.cabletron.com/">http://www.cabletron.com/</a>
Canon Inc.	Electronics, Electrical Equipment	<a href="http://www.canon.com">http://www.canon.com</a>
Cardinal Logistics	Logistics	<a href="http://www.cardlog.com">www.cardlog.com</a>
Cartier	Apparel & Accessories/Watches	<a href="http://www.cartier.com">http://www.cartier.com</a>
Caterpillar Logistics Services Inc.	Logistics	<a href="http://www.catlogistics.com">www.catlogistics.com</a>
Cendian	Logistics	<a href="http://www.cendian.com">www.cendian.com</a>
China Telecom	Telecommunications	<a href="http://www.cthk.com/">http://www.cthk.com/</a>
Ciena	Networks	<a href="http://www.ciena.com/">http://www.ciena.com/</a>
Cisco Systems	Networks	<a href="http://www.cisco.com">http://www.cisco.com</a>
Comapny	Industry	Website
Commodity Logistics	Logistics	<a href="http://www.commoditylogistics.com">www.commoditylogistics.com</a>
Compaq	Computers & Semiconductors	<a href="http://www.compaq.com">http://www.compaq.com</a>
Compuware	Networks	<a href="http://www.compuware.com">http://www.compuware.com</a>
Concentrek Inc.	Logistics	<a href="http://www.concentrek.com">www.concentrek.com</a>
Continental Traffic Service	Logistics	<a href="http://www.contraf.com">www.contraf.com</a>
Con-Way Logistics	Logistics	<a href="http://www.con-way.com/logistics">www.con-way.com/logistics</a>
Corporate Traffic	Logistics	<a href="http://www.corporate-traffic.com">www.corporate-traffic.com</a>
Crowley Logistics	Logistics	<a href="http://www.crowley.com">www.crowley.com</a>
DaimlerChrysler	Motor vehicles and Parts	<a href="http://www.daimlerchrysler.com/">http://www.daimlerchrysler.com/</a>
Dana	Motor vehicles and Parts	<a href="http://www.dana.com/">http://www.dana.com/</a>
Data General	Networks	<a href="http://www.dg.com/">http://www.dg.com/</a>
DDD Company	Logistics	<a href="http://www.dddcompany.com">www.dddcompany.com</a>
Dell Computer	Computers & Semiconductors	<a href="http://www.dell.com">http://www.dell.com</a>
Deutsche Telekom	Telecommunications	<a href="http://www.dtag.de">http://www.dtag.de</a>
DHL Worldwide Express	Logistics	<a href="http://www.dhl.com">www.dhl.com</a>
Disney Stores Distribution	E-Commerce	<a href="http://www.disney.com">http://www.disney.com</a>
EDS	Networks	<a href="http://www.eds.com/">http://www.eds.com/</a>
EGL Eagle Global Logistics	Logistics	<a href="http://www.eaglegl.com">www.eaglegl.com</a>
Electrolux	Electronics, Electrical Equipment	<a href="http://www.electrolux.com/">http://www.electrolux.com/</a>
Eli Lilly	Pharmaceuticals	<a href="http://www.lilly.com">http://www.lilly.com</a>
Embraer	Aerospace	<a href="http://www.embraer.com/">http://www.embraer.com/</a>

EXHIBIT 3.2—Continued  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
Emerson Electric	Electronics, Electrical Equipment	<a href="http://www.emersonelectric.com">http://www.emersonelectric.com</a>
Ericsson	Telecommunications	<a href="http://www.ericsson.com">http://www.ericsson.com</a>
Esprit	Fashion Clothing	<a href="http://www.esprit.com">http://www.esprit.com</a>
E-Toys	E-Commerce	<a href="http://www.e-toys.com">http://www.e-toys.com</a>
Exel plc	Logistics	<a href="http://www.exel.com">www.exel.com</a>
FedEx Supply Chain Services	Logistics	<a href="http://www.fedex.com">www.fedex.com</a>
Flextronics	Computers & Semiconductors	<a href="http://www.flextronics.com/">http://www.flextronics.com/</a>
Ford Motor	Motor vehicles and Parts	<a href="http://www.ford.com">http://www.ford.com</a>
Fujitsu	Computers & Semiconductors	<a href="http://www.fujitsu.com/">http://www.fujitsu.com/</a>
Gap Inc.	Fashion Clothing	<a href="http://www.gap.com">http://www.gap.com</a>
Gateway 2000	Computers & Semiconductors	<a href="http://www.gateway.com">http://www.gateway.com</a>
GENCO	Logistics	<a href="http://www.genco.com">www.genco.com</a>
General Electric	Electronics, Electrical Equipment	<a href="http://www.ge.com">http://www.ge.com</a>
General Motors	Motor vehicles and Parts	<a href="http://www.gm.com">http://www.gm.com</a>
General Warehouse & Transportation	Logistics	<a href="http://www.gwtlogistics.com">www.gwtlogistics.com</a>
Geodis Logistics	Logistics	<a href="http://www.geodis.com">www.geodis.com</a>
GeoLogistics	Logistics	<a href="http://www.geo-logistics.com">www.geo-logistics.com</a>
Glaxo Wellcome	Pharmaceuticals	<a href="http://www.glaxowellcome.com/">http://www.glaxowellcome.com/</a>
GTE	Telecommunications	<a href="http://www.gte.com">http://www.gte.com</a>
Hewlett-Packard	Computers & Semiconductors	<a href="http://www.hp.com/">http://www.hp.com/</a>
Hitachi	Electronics, Electrical Equipment	<a href="http://www.hitachi.com/">http://www.hitachi.com/</a>
Honda Motor	Motor vehicles and Parts	<a href="http://www.honda.com">http://www.honda.com</a>
Honeywell	Electronics, Electrical Equipment	<a href="http://www.honeywell.com/">http://www.honeywell.com/</a>
Hub Group Inc.	Logistics	<a href="http://www.hubgroup.com">www.hubgroup.com</a>
IBM	Computers & Semiconductors	<a href="http://www.ibm.com">http://www.ibm.com</a>
InSite Logistics	Logistics	<a href="http://www.insitelogistics.com">www.insitelogistics.com</a>
Integrated Device Technologies	Computers & Semiconductors	<a href="http://www.idt.com/">http://www.idt.com/</a>
Intel	Electronics, Electrical Equipment	<a href="http://www.intel.com">http://www.intel.com</a>
Isuzu Motors	Motor vehicles and Parts	<a href="http://www.isuzu.com/">http://www.isuzu.com/</a>
J.B. Hunt Dedicated Contract	Logistics	Services ( <a href="http://www.jbhunt.com">www.jbhunt.com</a> )
Jacobson Companies	Logistics	<a href="http://www.jacobsonco.com">www.jacobsonco.com</a>
Johnson & Johnson	Medical Products	<a href="http://www.jnj.com">http://www.jnj.com</a>
Kane Is Able	Logistics	<a href="http://www.kaneisable.com">www.kaneisable.com</a>

EXHIBIT 3.2—Continued  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
Kenco Logistic Services	Logistics	<a href="http://www.kencogroup.com">www.kencogroup.com</a>
Keystone Dedicated Logistics	Logistics	<a href="http://www.kdlog.com">www.kdlog.com</a>
Kuehne & Nagel	Logistics	<a href="http://www.kn-portal.com">www.kn-portal.com</a>
Landstar Logistics	Logistics	<a href="http://www.landstar.com">www.landstar.com</a>
LG Electronics	Electronics, Electrical Equipment	<a href="http://www.lge.co.kr">http://www.lge.co.kr</a>
Liz Claiborne	Fashion Clothing	<a href="http://www.lizclairborne.com">http://www.lizclairborne.com</a>
Lockheed-Martin	Aerospace	<a href="http://www.lockheedmartin.com">http://www.lockheedmartin.com</a>
LogiMax	Logistics	<a href="http://www.e-logimax.com">www.e-logimax.com</a>
Logistics Management Solutions	Logistics	LMS ( <a href="http://www.lmslogistics.com">www.lmslogistics.com</a> )
LSI Logic	Electronics, Electrical Equipment	<a href="http://www.lsilogic.com">http://www.lsilogic.com</a>
Lucent Technology	Networks	<a href="http://www.lucent.com/">http://www.lucent.com/</a>
Maersk Logistics Inc.	Logistics	<a href="http://www.maersk-logistics.com">www.maersk-logistics.com</a>
Marubeni	Electronics, Electrical Equipment	<a href="http://www.marubeni.co.jp/home/english/">http://www.marubeni.co.jp/home/english/</a>
Matsushita Electric Industrial	Electronics, Electrical Equipment	<a href="http://www.panasonic.com">http://www.panasonic.com</a>
Mattel	Toys	<a href="http://www.mattel.com/">http://www.mattel.com/</a>
MCI WorldCom	Telecommunications	<a href="http://www.wcom.com/">http://www.wcom.com/</a>
Menlo Worldwide Logistics	Logistics	<a href="http://www.menlolog.com">www.menlolog.com</a>
Merck	Pharmaceuticals	<a href="http://www.merck.com">http://www.merck.com</a>
Meridian IQ	Logistics	<a href="http://www.meridianiq.com">www.meridianiq.com</a>
Micron Technologies	Pharmaceuticals	<a href="http://www.microntech.com/">http://www.microntech.com/</a>
Mitsubishi Electronic	Electronics, Electrical Equipment	<a href="http://www.mitsubishi.com">http://www.mitsubishi.com</a>
Mitsubishi Motors	Motor vehicles and Parts	<a href="http://www.mitsubishi-motors.co.jp">http://www.mitsubishi-motors.co.jp</a>
Mitsui	Electronics, Electrical Equipment	<a href="http://www.mitsui.com">http://www.mitsui.com</a>
Motorola	Telecommunications	<a href="http://www.mot.com">http://www.mot.com</a>
Movado	Watches	<a href="http://www.movado.com">http://www.movado.com</a>
nAL	Logistics	<a href="http://www.nalworldwide.com">www.nalworldwide.com</a>
National Distribution Centers	Logistics	<a href="http://www.ndc-nfi.com">www.ndc-nfi.com</a>
National Semiconductor	Computers & Semiconductors	<a href="http://www.national.com">http://www.national.com</a>
NCR	Electronics, Electrical Equipment	<a href="http://www.ncr.com/">http://www.ncr.com/</a>
NEC	Electronics, Electrical Equipment	<a href="http://www.nec.com">http://www.nec.com</a>
Nestle	Food Products	<a href="http://www.nestle.com/">http://www.nestle.com/</a>
Network Equipment Technologies	Networks	<a href="http://www.net.com">http://www.net.com</a>
New Breed Inc.	Logistics	<a href="http://www.newbreed.com">www.newbreed.com</a>

EXHIBIT 3.2—Continued  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
Newgistics	Logistics	<a href="http://www.newgistics.com">www.newgistics.com</a>
Nextel	Telecommunications	<a href="http://www.nextel.com/">http://www.nextel.com/</a>
Nike	Apparel & Accessories	<a href="http://www.nike.com">http://www.nike.com</a>
Nippon Telegraph & Telephone	Telecommunications	<a href="http://www.ntt.com">http://www.ntt.com</a>
Nissan Motor	Motor vehicles and Parts	<a href="http://www.nissan.com">http://www.nissan.com</a>
Nokia	Telecommunications	<a href="http://www.nokia.com">http://www.nokia.com</a>
Nortel Networks	Networks	<a href="http://www.nortel.com">http://www.nortel.com</a>
Novartis	Pharmaceuticals	<a href="http://www.novartis.com">http://www.novartis.com</a>
Novell	Networks	<a href="http://www.novell.com">http://www.novell.com</a>
NT Logistics Inc., Logistics Division	Logistics	<a href="http://www.ntlogistics.com">www.ntlogistics.com</a>
NYK Logistics	Logistics	<a href="http://www.nyklogistics.com">www.nyklogistics.com</a>
Odyssey Logistics and Technology	Logistics	<a href="http://www.odysseylogistics.com">www.odysseylogistics.com</a>
OMNI Logistics	Logistics	<a href="http://www.omniez.com">www.omniez.com</a>
Oracle	Telecommunications	<a href="http://www.oracle.com">http://www.oracle.com</a>
Ozburn-Hessey Logistics	Logistics	<a href="http://www.ohlogistics.com">www.ohlogistics.com</a>
P&O Nedlloyd	Logistics	<a href="http://www.ponl.com">www.ponl.com</a>
Pacer Global Logistics	Logistics	<a href="http://www.pacerglobal.com">www.pacerglobal.com</a>
Packard Bell NEC	E-Commerce	<a href="http://www.packardbell.com">http://www.packardbell.com</a>
Panalpina	Logistics	<a href="http://www.panalpina.com">www.panalpina.com</a>
Patek Philipe	Watches	Web site is under construction
PBB Global Logistics	Logistics	<a href="http://www.pbb.com">www.pbb.com</a>
Pegasus Logistics Group	Logistics	<a href="http://www.pegasuslogisticsgroup.com">www.pegasuslogisticsgroup.com</a>
Penske Logistics	Logistics	<a href="http://www.penskelogistics.com">www.penskelogistics.com</a>
Pfizer	Pharmaceuticals	<a href="http://www.pfizer.com">http://www.pfizer.com</a>
Plant Site Logistics	Logistics	<a href="http://www.plantsitelogistics.com">www.plantsitelogistics.com</a>
Polo Ralph Lauren	Fashion Clothing	<a href="http://www.polo.com/">http://www.polo.com/</a>
Qualcomm	Telecommunications	<a href="http://www.qualcomm.com">http://www.qualcomm.com</a>
R.R. Donnelley Logistics	Logistics	<a href="http://www.rrdonnelly.com">www.rrdonnelly.com</a>
Rambus Inc.	Computers & Semiconductors	<a href="http://www.rambus.com">http://www.rambus.com</a>
Raytheon	Aerospace	<a href="http://www.raytheon.com/">http://www.raytheon.com/</a>
RMX Global Logistics	Logistics	<a href="http://www.rmxglobal.com">www.rmxglobal.com</a>
Robert Bosch	Motor vehicles and Parts	<a href="http://www.robertbosch.com/">http://www.robertbosch.com/</a>
Roche Holding	Pharmaceuticals	<a href="http://www.roche.com/">http://www.roche.com/</a>

EXHIBIT 3.2—Continued  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
Rolex	Watches	<a href="http://www.rolex.com">http://www.rolex.com</a>
Royal Philips Electronics	Electronics, Electrical Equipment	<a href="http://www.philips.com">http://www.philips.com</a>
Ruan Transportation Management	Logistics	Systems ( <a href="http://www.ruan.com">www.ruan.com</a> )
Ryder System Inc.	Logistics	<a href="http://www.ryder.com">www.ryder.com</a>
Saddle Creek Corp.	Logistics	<a href="http://www.saddlecrk.com">www.saddlecrk.com</a>
Samsung Electronics	Electronics, Electrical Equipment	<a href="http://www.samsung.com">http://www.samsung.com</a>
Sanyo Electric	Electronics, Electrical Equipment	<a href="http://www.sanyo.com">http://www.sanyo.com</a>
SBC Communications	Telecommunications	<a href="http://www.sbc.com">http://www.sbc.com</a>
Schenker Inc.	Logistics	<a href="http://www.schenker.com">www.schenker.com</a>
Schneider Logistics	Logistics	<a href="http://www.schneiderlogistics.com">www.schneiderlogistics.com</a>
Seagate Technology	Networks	<a href="http://www.seagate.com/">http://www.seagate.com/</a>
Seiko	Watches	<a href="http://www.seiko.com/">http://www.seiko.com/</a>
Seiko Epson Corp.	Electronics, Electrical Equipment	<a href="http://www.epson.co.jp/epson/e/ae/">http://www.epson.co.jp/epson/e/ae/</a>
SEKO Worldwide	Logistics	<a href="http://www.sekoworldwide.com">www.sekoworldwide.com</a>
ServiceCraft Logistics	Logistics	<a href="http://www.servicecraft.com">www.servicecraft.com</a>
Sharp	Electronics, Electrical Equipment	<a href="http://www.sharp.com">http://www.sharp.com</a>
Siemens	Electronics, Electrical Equipment	<a href="http://www.siemens.com">http://www.siemens.com</a>
Silicon Graphics	Computers & Semiconductors	<a href="http://www.sgi.com">http://www.sgi.com</a>
Smithkline Beecham	Pharmaceuticals	<a href="http://www.sb.com">http://www.sb.com</a>
Sony	Electronics, Electrical Equipment	<a href="http://www.sony.com">http://www.sony.com</a>
Standard Corp.	Logistics	<a href="http://www.standardcorp.com">www.standardcorp.com</a>
Stonier Transportation Group Inc.	Logistics	<a href="http://www.stonier.com">www.stonier.com</a>
Sumitomo	Electronics, Electrical Equipment	<a href="http://www.sumitomo.com">http://www.sumitomo.com</a>
Sun Microsystems	Networks	<a href="http://www.sun.com/">http://www.sun.com/</a>
Swift Transportation Co.	Logistics	<a href="http://www.swifttrans.com">www.swifttrans.com</a>
Technical Transportation Inc.	Logistics	<a href="http://www.techtrans.com">www.techtrans.com</a>
Tektronix	Electronics, Electrical Equipment	<a href="http://www.tek.com">http://www.tek.com</a>
Tellabs Operations	Networks	<a href="http://www.tellabs.com">http://www.tellabs.com</a>
Temic Semiconductor	Computers & Semiconductors	<a href="http://www.temic-semi.de/nt/corp/">http://www.temic-semi.de/nt/corp/</a>
Texas Instruments	Telecommunications	<a href="http://www.ti.com">http://www.ti.com</a>
The Bender Group	Logistics	<a href="http://www.bendergroup.com">www.bendergroup.com</a>
Tibbett & Britten Group plc	Logistics	<a href="http://www.tbgameiras.com">www.tbgameiras.com</a>
Timex	Watches	<a href="http://www.timex.com/">http://www.timex.com/</a>

EXHIBIT 3.2—Continued  
POTENTIAL TARGET FIRMS FOR THE KCI ALH AND AEROTROPOLIS

Company	Industry	Website
TMSi	Logistics	<a href="http://www.tmsilog.com">www.tmsilog.com</a>
TNT Logistics North America	Logistics	<a href="http://www.tntlogistics.com">www.tntlogistics.com</a>
Toshiba	Electronics, Electrical Equipment	<a href="http://www.toshiba.com/">http://www.toshiba.com/</a>
Total Logistic Control	Logistics	<a href="http://www.totallogistic.com">www.totallogistic.com</a>
Toyota Motor	Motor vehicles and Parts	<a href="http://www.toyota.com">http://www.toyota.com</a>
Transfreight	Logistics	<a href="http://www.transfreight.com">www.transfreight.com</a>
Transplace	Logistics	<a href="http://www.transplace.com">www.transplace.com</a>
Transport Logistics Inc.	Logistics	<a href="http://www.translogistics.com">www.translogistics.com</a>
Tranzact Technologies	Logistics	<a href="http://www.tranzact.com">www.tranzact.com</a>
TSI Logistics	Logistics	<a href="http://www.tsilogistics.com">www.tsilogistics.com</a>
Tucker Company Inc.	Logistics	<a href="http://www.tuckerco.com">www.tuckerco.com</a>
Tyco International	Electronics, Electrical Equipment	<a href="http://www.tyco.com">http://www.tyco.com</a>
Unisys	Networks	<a href="http://www.unisys.com/">http://www.unisys.com/</a>
UPS Supply Chain Solutions	Logistics	<a href="http://www.ups-scs.com">www.ups-scs.com</a>
US Worldwide Logistics Inc.	Logistics	<a href="http://www.usworldwidelogistics.com">www.usworldwidelogistics.com</a>
USCO Logistics	Logistics	<a href="http://www.usco.com">www.usco.com</a>
USF Logistics	Logistics	<a href="http://www.usflogistics.com">www.usflogistics.com</a>
Volkswagen	Motor vehicles and Parts	<a href="http://www.vw.com">http://www.vw.com</a>
Volvo	Motor vehicles and Parts	<a href="http://www.volvo.com">http://www.volvo.com</a>
Wagner Industries Inc.	Logistics	<a href="http://www.wagnerindustries.com">www.wagnerindustries.com</a>
Walmart Stores Distribution	E-Commerce	<a href="http://www.walmart.com">http://www.walmart.com</a>
Warner-Lambert	Pharmaceuticals	<a href="http://www.warner-lambert.com">http://www.warner-lambert.com</a>
Weber Distribution	Logistics	<a href="http://www.weberdistribution.com">www.weberdistribution</a>
Whirlpool	Electronics, Electrical Equipment	<a href="http://www.whirlpool.com/">http://www.whirlpool.com/</a>
Xerox	Electronics, Electrical Equipment	<a href="http://www.xerox.com">http://www.xerox.com</a>
Xilinx	Computers & Semiconductors	<a href="http://www.Xilinx.com">http://www.Xilinx.com</a>

## Chapter 4

### Guidelines and Recommendations for a KCI ALH/Aerotropolis Implementation Plan

#### I. Introduction

In the previous two chapters, guidelines were provided for ALH infrastructure and facility design and for the development of a KCI ALH/Aerotropolis business plan. Building on these two chapters, this chapter will present guidelines for an implementation plan, including (1) needed institutional and jurisdictional changes; (2) elaboration of infrastructure and marketing phasing; (3) incentives to attract and leverage appropriate air cargo service providers and industry; (4) coordination and harmonization with multimodal logistics hubs elsewhere; and (5) alternative governing mechanisms for financing and managing KCI ALH development and operation. I will also discuss public/private sector institutional approaches to developing the KCI Business District and broader aerotropolis. The chapter concludes with 25 recommendations for the Kansas City Department of Aviation, KCADC and local EDCs to improve prospects for successful development of the proposed KCI Air Logistics Hub and greater aerotropolis.

#### II. Infrastructure Phasing and Industrial Development Timetable

Whereas the KCI ALH/Aerotropolis is conceived ultimately as a fully integrated multimodal transportation, telecommunications, manufacturing, and logistics support complex, the reality is that it will likely evolve over a 5- to 25-year-period through a series of overlapping development stages. Understanding this is necessary for marketing and to making prudent investments in infrastructure timed to industry demand. Below I summarize key stages of an institutional, infrastructure and facilities implementation plan.



## *Stage I*

Stage I will be when the appropriate government units establish the institutional and legal environment that will affect future KCI ALH and greater aerotropolis development. This includes regulatory issues, land and facility ownership, leasing and concessionary rights as well as exploring a third party developer structure. A number of issues will be elaborated in a moment and others later in this chapter.

During Stage I, which can last up to four years, site improvements should be made at and near the KCI Business AirPark including utilities and internal and external highway development as described in Chapter 2. Airport site plans should be initiated for grading and soils issues. Initial tenants will be recruited and basic aviation-related infrastructure addressed, including FAA approvals for eastward extension of the Runway 9-27 taxiway. All approvals should also be obtained for extending Tiffany Springs Parkway west to Interstate 435 so that the KCI Ring Road can be completed in Stage II.

Boundaries of the foreign trade zone and the enterprise zones should be aligned. At present, these boundaries are haphazard and difficult to explain to industrial prospects. Ideally, all these business promotion zones should be brought together under a general “KCI Business District” (Airport City) as was illustrated in Exhibit 2.6. The menu of business development incentives should also be clearly defined. It would be especially helpful if special development incentives were provided that would be unique to the KCI Business District such as a 30 day maximum site and building approval process.

KCI jurisdictional boundaries should be aligned, as well. Some property at KCI is owned by the Kansas City Department of Aviation yet jurisdictionally is controlled by unincorporated Platte County. To avoid potential inconsistent development on the KCI-owned property, the City of Kansas City, Missouri, should annex these small parcels owned by KCI Airport.

Some zoning issues also need to be addressed during the next three years. Residential encroachment at KCI has been historically limited. However, as residential development continues to grow in the KCI Aerotropolis market, effort must be made by policy makers to ensure that this residential development does not adversely impact future Aerotropolis land-use optimization in the KCI Business District.

### *Stage II*

Stage II (estimated to be a 2 to 5 year period following commencement of Stage I) will involve the expansion of integrated air express and commencement of international air cargo service at KCI, a critical step to the development of a successful ALH. Service providers would include air express carriers (e.g., FedEx, UPS, and DHL) and international heavy-lift charter cargo carriers (Atlas Air, Polar Air, Cargolux, Evergreen, etc.) along with freight forwarders supporting cargo airlines and shippers. At this stage, the ALH would serve primarily as a regional air express sort facility, cargo handling and perishables transshipment center, with limited on-site pick and pack, consolidation and break-down, kit assembly, and cold storage.

The KCI ALH can move beyond a basic passenger and air cargo airport once a number of requisites are implemented during Stage II to attract new businesses and industry. These include completion of the KCI Ring Road, expedited customs clearance and pre-clearance procedures, in-transit bonded facilities and improved interstate exchanges near the airport, a fully developed internal road system, and fully operational KCI Business AirPark.

One of the critical paths to attracting new manufacturing and distribution tenants to the KCI ALH will be by offering tenants and users quicker, cheaper and more efficient site plan and building approvals, state-of-the art electronic data interchange (EDI) support, as well as high quality but rapid cargo security

clearance. The KCI ALH must have a fully active foreign trade zone for export processing with an aligned enterprise zone for full-impact of promotional privileges.

As noted, improving surface connectors is critical to moving the ALH to the fast-cycle logistics and time-critical manufacturing-assembly stage, so further infrastructure and materials handling improvements should be implemented during Stage II. These include new or a upgraded exchanges at I-29 and I-435 and upgraded state highway links. Containerization should be standardized to allow quick and efficient transfer among modes and handling by automated equipment at the ALH and other intermodal sites.

### *Stage III*

During Stage III (at least six years and possibly as much as twelve years from project commencement) An inland container yard, and intermodal rail/truck facility should be developed. Other facilities to be implemented during Stage III include a cold storage/perishables center, a separate air express facility, and an a state-of-the-art distance education and worker training facility allowing specific skills transfer to firms locating at or near the ALH from virtually any location in the world. It is during this stage that third party logistics providers (3PLs) will set up operations at the ALH to serve growing cargo movements to and from and through the ALH. Internal roads and utility connections will be developed or extended throughout the entire ALH (the automated cargo transfer system described in the ultimate ALH development stage will not likely be justified at this stage based on its high cost). The Ring Road and all surface transportation links should be completed, including those to the intermodal rail facility and river port terminals.

## *Stage IV*

Stage IV (the full-scale ALH) will be reached when sufficient manufacturing and distribution tenants and multimodal transportation and third party logistics providers reach a critical convergent mass so that production and logistics becomes fully integrated. At this stage, estimated to be in the 15- to 25-year time frame, all the elements of the ultimate ALH will be put in-place, including a fully functioning central cargo facility, intermodal rail yard and inland container port with road and rail connections to the KCI intermodal rail facility and truck connections to the Central Cargo Facility providing off-ramp and off-site manufacturers and distributors with efficient air freighter access. A third parallel long-range runway will likely be needed at some point during Stage IV with additional on-site time-sensitive manufacturers, distributors, and third-party logistics providers located to the west of this runway. Toward the end of this stage, the automated cargo transfer system will likely be justified linking all logistics, manufacturing, and distribution facilities in the ALH.

As the ALH evolves through its Stages, it will drive greater and greater amounts of commercial and industrial development on site and throughout in the greater KCI aerotropolis. This outside-the-fence development, in turn, will generate increased volumes of cargo and passengers at KCI in reinforcing airport-aerotropolis synergy.

## **III. Providing Appropriate Investor Incentives**

Since the KCI ALH will be designed to attract and grow industry, outside as well inside airport property, incentives will play an important role. To date, Kansas City and the State of Missouri have provided financial incentives for airport property development through enterprise zones where investors enjoy tax advantages and certain promotional privileges. Virtually, all states and local areas are in the incentives game, though, so the relative advantage in attracting

major industry is declining. New incentives to attract and grow industry must be pursued. The ALH, itself, can be one of the most powerful incentives. This is because operational incentives will be at least equally important, and in the longer term likely even more significant, than tax incentives in attracting goods-processing and distribution industries.

What the ALH is meant to accomplish is to provide Kansas City area industry with speed and agility in their supply chain management, unmatched at other locations. Of first-order importance on the international commerce front is customs, as exporters and importers across the U.S. and around the world have consistently argued. Components of products assembled in the United States are often manufactured in several other countries and imported on a just-in-time basis. Likewise, international orders for these products are also increasingly time-definite requiring that assembled goods flow out rapidly and efficiently. At many large international airports, massive amounts of freight arrive from abroad, are broken down, sorted, or consolidated, then often again shipped abroad quickly and seamlessly.

According to the US-ASEAN Business Council, "The productivity and profitability of a manufacturing plan depends in large part on cycle time – that is, its ability to process inputs into outputs as quickly as possible. Decreased cycle time leads to lower inventories, with correspondingly lower inventory costs. In order to support world-class manufacturing, customs clearance time must be measured not in weeks, or even days, but in hours. Any customs administration that can provide reliable, timely customs clearance, or immediate release based on pre-clearance, creates an enormous competitive advantage in attracting manufacturing."

As stage II in the ALH development cycle progresses, expedited, paperless customs procedures must be put in place. The KCI ALH must not only

have fully implemented its automated customs environment, but also, as noted previously, have in place a quick and efficient cargo security system.

At the federal level KCI should support open skies agreements for air cargo and lobby for two other government incentives to attract air cargo service providers to KCI. These are change of gauge rights and co-terminal rights. Unlimited change of gauge rights will permit foreign-owned cargo aircraft of any size to fly into KCI and for cargo to continue its journey on smaller aircraft of the same airline. For maximum effectiveness, there must be no limits on the number of flights, the timing between arrivals and departures, aircraft gauge, or the cargo carried. Unrestricted change of gauge rights are particularly important to international hub and spoke logistics operations that the ALH would be eventually suited to serve.

Unlimited co-terminal rights would permit foreign carriers to stop at any point in the U.S. to drop off shipments which originated outside the U.S. or to pick-up shipments for points outside the U.S. In order to maximize payload and in order to effectively operate an international air logistics hub, it is important that foreign carriers be given such rights without restriction. This fully liberalized environment at KCI and other U.S. airports would be reciprocated for U.S. carriers in the countries of the foreign-based carriers.

Finally, it is important that KCI maintain its low landing fees for air cargo carriers. Air freight is a highly cost-competitive industry and such an incentive could be a differentiating inducement for an air express or major air cargo firm to select KCI as its Midwest hub.

Once a critical mass of air express and air cargo service is provided at KCI, it operates as a magnet for time-sensitive industries, as numerous prior experiences have shown. As just one example, FedEx has transformed the once-sleepy Memphis into a center of international business, attracting billions of dollars in investment in manufacturing and distribution facilities in the vicinity

of its airport. More than 200 foreign-owned firms from 22 countries employing over 20,000 workers have been drawn to Memphis since the 1980s. Companies such as Nike, Apple Computer, SquareD, Disney Stores, and Starter Corporation, among many others, have similarly established new manufacturing and distribution centers near Memphis International airport. Nearly all these companies pointed to the FedEx hub as a key attraction.

Similar patterns of industrial attraction hold where other air express and air cargo hubs have formed around the world, as I described in Chapter 1. The message is clear, increasing air express linkages is a powerful magnet in its own right that will draw many modern high value industries to the vicinity. KCI's efforts to increase such service should continue.

## V. Coordination and Harmonization with Similar Facilities Elsewhere

If parts, components, and finished goods are to flow rapidly and seamlessly between KCI and other transportation facilities within Kansas City region and facilities abroad, it is essential that their information technologies and materials handling systems be harmonized. This requires using standardized EDI messages with compatible, open architecture software systems, as described in the prior chapter.

Containerization, as noted, must also be standardized across shipping modes so, for example, that containers arriving at KCI's proposed future intermodal rail facility can be transferred efficiently by truck to the inland container yard at the ALH. Since at a future point, some of these containers may also be air freighted via heavy-lift aircraft from KCI, they must also be made compatible with materials handling equipment for loading on all-cargo aircraft. Multimodal materials handling harmonization will require close coordination between the KCI ALH and other modal points.

When purchasing material-handling equipment, and building key infrastructure such as the central cargo facility or the inland port, careful consultations should be made with major air cargo, sea cargo, and surface cargo handlers throughout the U.S. and, indeed, the world. It would be a terribly expensive mistake not coordinates design of facilities at the KCI ALH with the predominant technologies, materials handling equipment and space utilization standards at major ports and airports which will serve as Kansas City's trading partners.

In terms of recruiting additional air cargo service providers to KCI, it is recommended that the Kansas City Department of Aviation officials and KCADC representatives work with major freight-forwarders, 3PLs and visit major air cargo hubs at Memphis, Louisville, Ontario California and Alliance, Texas, to examine systems being put in operation there. Through the latter, an excellent vision can be obtained of the direction that air cargo handling is taking with a variety of automated and semi-automated cargo operations as well as other processes and procedures being implemented at these airports to speed the flow of goods through the airport.

It should also be noted that air express companies like FedEx have their own facility design firms. Contact should be made with these companies and advice received before any such facility development contracts are signed. As a special incentive to a prospective air express or air cargo firm locating at KCI ALH, the Kansas City Department of Aviation or other local public agency may wish to offer to build a cargo facility to suit with a long-term lease-back contract. For example, Amsterdam Schiphol Airport attracted Polar Air Cargo Inc. by offering to build a permanent warehouse facility to house the airfreight carrier's transshipment needs.



## VI. Institutional and Management Plan for the KCI ALH Development and Operation

Considerable thought and work has been done to date on appropriate institutional and management plans for developing and operating a multimodal air logistics hub. One approach is to create a special public authority to develop, market, and operate the ALH. For KCI, such an organization might be chaired by a senior executive likely to be recruited from among the EDCs or greater Kansas City area public and private-sector leaders. This organization would be autonomous and have authority to control and coordinate all planning, infrastructure development and facility construction to ensure timely completion of the project. The Authority could also negotiate building service contracts needed to manage the day to day facility infrastructure requirements, as are regularly used by the private sector.

The advantages of this institutional option (Option 1) include the following:

- A single organization such as an ALH Authority should be better able to coordinate and manage all aspects of the development of the project.
- A single line of authority would perform agency coordination, contact with engineers, designers, construction contractors, construction contractors, tenants, users and suppliers to the KCI ALH.
- The development of the project could be constructed in a series of phases which reflect market demands with limited multiple organizational conflicts.
- The organization would closely coordinate with all public agencies on work accomplished to date.

- The creation and hiring of staff and management positions can be flexible according to need, recognizing that some political clout will be necessary to accomplish all Authority objectives.

The disadvantages of this option include the following:

- Adding another layer of government bureaucracy will likely be resisted.
- Special enabling legislation may be required to set up the new organization that could take some time.
- The new organization might be staffed by recruiting qualified personnel away from other agencies; and the stewardship role of the Kansas City Department of Aviation would be compromised.
- There is no element of privatization, other than some private-sector representatives, and government funds would be utilized for most shared infrastructure and facility development.

*Option 2: Private Enterprise Builds, Operates then Transfers the ALH to the Kansas City Department of Aviation.*

A private enterprise could build and temporarily operate the KCI ALH for a stipulated concessionary period (say 30 years) then, in accordance with an agreement with appropriate public sector agencies maintain concessions but transfer ownership of the ALH back to KCI. This option would eliminate the requirement for the Kansas City Department of Aviation to undertake the initial construction with its own or borrowed resources. The Department would provide an exclusive contract with a private enterprise to design, build and operate the ALH complex for a given period of time.

In this option, the private sector could develop the air logistics hub using private-sector financing with or without government involvement. They would operate the complex, collect income from the operation and pay a limited concession fee to KCI for a determined period of time before transferring the ALH back to the Kansas City Department of Aviation.

With Option 2, onsite construction would be performed by the private sector and offsite infrastructure (i.e., highways, electricity lines) and utilities (i.e., water lines, telecommunications services) would be provided by the appropriate government agencies. This may require a mandate from local governments to the selected firm in this build, operate and transfer (BOT) approach to provide full cooperation to the project.

The advantages of Option 2 include the following:

- The project would be implemented by private enterprise, which may be more efficient, flexible, responsive and productive than government agencies.
- The timing of the development of the project could be accelerated to meet market demand.

- No new organization would have to be established.
- There would be no requirement for local public sector or other government financial resources to the project other than to support the provision of offsite services and external infrastructure.

The disadvantages of Option 2 include the following:

- New legislation would be required to enable private sector BOT.
- The private sector could have difficulty securing adequate financing for development and operating cash flow due to the size and complexity of the project.
- The private sector would expect to make an adequate return on its investment prior to the transfer back of the complex, leading to high service fees and long concessionary periods.
- Local jurisdictions might not be able to provide adequate offsite infrastructure to facilitate the operation of the complex.

### *Option 3: Public Sector Builds and Transfers to Private Enterprise*

This option is a reversal to the previous alternative. The Kansas City Department of Aviation would be responsible for the construction of the project and would then transfer it to a private enterprise for operation and maintenance. Government resources finance initial development of the project but would then utilize the market-driven expertise and related financial strength of a private enterprise to market and operate the ALH.

The advantages of Option 3 include the following:

- Public resources can be used to immediately jump-start construction of ALH facilities, commencing with KCI Business AirPark infrastructure.

- No special legislation would be needed and no new organizational structure would have to be established.
- The private sector would not be required to secure significant financing for the construction phase of the project.
- The specific expertise of local public agencies such as the Kansas City Department of Aviation would be employed in the design and construction phase.
- These agencies would have only limited responsibilities for marketing or operating the ALH, which would be done mostly by the private sector whose core competency relates to commercial real estate development.

The disadvantages of Option 3 include the following:

- Extensive up-front public resources would have to be allocated to the project.
- An appropriate public agency beyond the Kansas City Department of Aviation might have to be organized and prepared to coordinate and manage the planning, design and construction of the ALH.
- It would be difficult to construct the project as a phased development. There could eventually be conflict between the private developer and the public agency if construction continued after transfer.
- The need for close and significant coordination during the design and build phase between the private developer and public agencies could create delays and added costs, which in turn could create problems during the transfer process.

- The efficiency, flexibility, relative high productivity and responsiveness of the private enterprise are utilized only during the operating phases of the project.

### *Promoting and Developing the KCI Aerotropolis*

An aerotropolis will inevitably emerge around KCI in the coming decades. The critical question is: will it form and grow intelligently, achieving the full benefits to Kansas City area residents, businesses and communities discussed in prior chapters or in a spontaneous, haphazard, less than efficient manner that has characterized much airport-related development elsewhere in the U.S.

The limited development on KCI property and areas near the airport has been lamented by many over the past three decades. This paucity of investment to date may, in fact, turn out to be a longer-term development advantage for KCI and Platte County. Nowhere in the country is there a major airport with such a vast area of inside the fence property and property within a 15-20 minute radius that stands ready for development based on 21<sup>st</sup> century airport city and aerotropolis principles.

Intelligent development built on airport assets and its rich surrounding multimodal transportation infrastructure needs to be planned and implemented. The stakes are high for Kansas City, Platte County and the entire region. Delay in commencing with an aerotropolis planning process such as I will outline below could likely preclude the city, county and greater region from realizing the full economic potential that KCI and its nearby multimodal infrastructure offers.

Aerotropolis master planning should therefore commence as soon as feasible. Already, I noted a number of residential projects have been encroaching on nearby land far better suited for commercial development, and a number of commercial projects that are highly unlikely to be leveraged by their proximity to the airport have been completed or are underway. In short, no effort is being

made to assess if developments in the airport environs are consistent with or inconsistent with airport-area land-use optimization.

Apropos the above, before the opportunity to plan and develop a KCI Aerotropolis is lost, it would seem prudent that Aerotropolis strategic planning group be formed and that the prospects of creating an Aerotropolis Development Authority be considered. This Authority could work hand-in-hand with KCI, KCADC, and the EDCs of Kansas City and Platte County to insure coordination and integration of inside and outside the airport fence development.

Not only is this type of integration lacking today, but also landside development beyond airport perimeters is rarely coordinated since the territory frequently crosses numerous jurisdictions. In absence of Aerotropolis-wide coordination and planning, the efficiency and true functional integrity of the Aerotropolis area is compromised, limiting businesses and communities from achieving their full competitive and positive development potential.

There are lessons to be learned by Kansas City from some innovative development approaches elsewhere. For example, recognition by local jurisdictions in the Netherlands that Amsterdam Schiphol Airport was at the center of an expanding territorial complex of airport-linked industrial and commercial development led to the establishment of a public-private partnership to oversee the development of available sites near the airport. This organization – the Schiphol Area Development Corporation (SADC) – directly manages some of these projects while coordinating all of them. It operates like a quasi-development authority for the broader Schiphol Aerotropolis. It is suggested that KCI, KCADC, and the EDCs take a close look at this model.

While creating such an inter-jurisdictional authority would be favored to coordinate and optimize airport-driven development in the airport area, it is recommended that interim measures be implemented to improve chances of this outcome. One would be to institute periodic working sessions with local

jurisdictional officials and planners in the KCI Aerotropolis area to inform them better about the nature of airport-linked development and explore how their specific jurisdiction might complement and leverage this new form of development. A larger picture view of the KCI Aerotropolis and their role in its evolution could reduce local jurisdictional competition for entering businesses, encourage more effective and mutually beneficial place marketing and branding for business recruitment, and lead to more coordinated actions to address airport-induced problems and realize more beneficial development outcomes.

Related to this would be periodic convening of all land-use decision-makers within the KCI Aerotropolis area (including airport executives, planners, developers, and local community officials) for transparent discussions and information exchange on each other's real and perceived needs and goals to prevent (or at least reduce) future conflicts and improve prospects for sustainable KCI Aerotropolis development. Potential arterial congestion, pollution, noise, unsightly construction, and other disamenities negatively impacting the quality of life of nearby residents and the image of the Aerotropolis must be addressed. Architecturally appealing, high-quality building construction, improved site planning, green-space, signage regulation, attractive thoroughfare lighting, and other "image" or impression-making features need to be incorporated into consistent development structures. Aerotropolis gateways, defining the project area, should be planned and designed with appropriate signage and corridors beautified through aesthetic lighting, themed electronic art, and landscaping that include screenage of large parking areas and unsightly buildings. Consistent with Aerotropolis principles, cluster rather than strip development should characterize commercial land-use planning, with maintained green-space between clusters.



One of the most promising institutional models for promoting Aerotropolis development is the DIA (Denver International Airport) Partnership. The DIA Partnership (DIAP) is a consortium of public, private, and community leaders dedicated to promoting economic opportunity and quality of life in the Denver International Airport District includes portions of Denver and Aurora as well as the communities of Brighton and Commerce City and includes portions of Adams, Arapahoe and Denver Counties.

Priority areas of the DIA Partnership are:

1. Making the DIA District a premier business location
2. Leveraging business and investment
3. Promoting quality community development

Represented by the airport district's most visible and influential business people and government officials, DIAP is exceptionally well networked, informed and can be an effective advocate for new business prospects. The Partnership offers assistance with

- Economic and demographic information
- Incentive possibilities
- Regulatory Approvals
- Master-planned location options within the District
- Design/build considerations
- Relocation services
- Metro area business practices and requirements

The Partnership works closely with DIA to develop complementary efforts locally and regionally to maintain and support DIA's strategic business plan and air service, development objectives (e.g., the completion of a new on-airport hotel, cargo development, retail, hospitality, and the development of non-passenger airline business). Along with encouraging both on-airport and off-airport development, DIAP pursues headquarters operations related to the airport.

In addition to its development objectives, the DIAP works with the airport to recruit cargo and passenger service. For example, last year, it helped develop action plan to optimize air cargo development at DIA, improved local infrastructure in support of cargo development and promoted the use of incentives directed towards attracting international cargo flights.

DIAP has an annual budget of approximately \$1.2 million with \$850,000 derived from membership fees (75% private, 25% public), \$150,000 from events, and \$200,000 in-kind. Guided by a board of directors, and an executive committee (both of which meet bi-monthly) and fulltime president, DIAP represents the region at national and international trade shows, with government and the media, with prospective investors, and with site selection consultants strongly advocating the merits of DIA and the DIA region. Exhibit 4.1 shows the basic organizational structure of the DIA Partnership.

### *Getting the KCI ALH Started*

As initial steps the Kansas City Department of Aviation should conduct an appropriate feasibility study which would includes assessing the merits and liabilities of contracting with a third party to build and operate the ALH. The Aviation Department would prepare the Terms of Reference and supervise the feasibility study. Assuming the ALH was found feasible and development recommended, the Commission would do the following:

- Prepare and issue Terms of Reference necessary for KCI ALH design.
- Draft bid and tender documents for the design.
- Market the procurement opportunities.
- Select the KCI ALH design consultant.
- Negotiate and award a contract to the consultant.
- Initiate dialogue and, if appropriate legislation enacted, possibly put out to bid for potential private sector developers and operators of the KCI ALH.
- Create and approve the arrangements for private sector and Department of Aviation participation predicated on the development and management options selected.
- Tender the proposals for KCI ALH development and operation.
- Select a successful tenderer.
- Prepare finalist contracts and concessionary arrangements.

As the primary governing organization, the Kansas City Department of Aviation must determine the best public, private or public-private venture structure to build, operate, and manage the KCI ALH as well as work local governments to create effective logistical synergies throughout Platte County and the greater Kansas City region.

## VII. Summary Recommendations and Action Steps

Let me conclude by presenting a set of recommendations and action steps for the Kansas City Department of Aviation, the Platte County and other business and government organizations in the Kansas City area to consider to meet 21<sup>st</sup> century business needs and draw the type of commercial development

to and around KCI that has been sought since its opening three decades ago. I will begin with strategic recommendations for the proposed Air Logistics Hub and aerotropolis, then move to more focused operational and management issues.

1. It will be increasingly difficult in the future for KCI, Platte County and the greater Kansas City region to attract new industry and generate quality job on cost factors and traditional government incentives. Competitive advantage will come through strategic foci on connectivity, speed, and agility. These should become the KCI's and the region's new competitive weapons.
2. Competitive advantage fostering connectivity, speed and agility requires a new economic engine. The engine recommended is an air logistics hub (ALH) at KCI that will cornerstone and help drive a Kansas City regional fast-cycle, high-value logistics network. This multimodal logistics hub should integrate air, highway, rail, and waterborne transportation modes with advanced telecommunications, sophisticated materials handling systems, and state-of-the-art support services to provide tenants and users unmatched capability to respond rapidly and flexibly to changing markets nationally and worldwide.
3. Just as today's most successful business are innovative, flexible, and rapidly responsive, so too must infrastructure and facility planning and design at the KCI Air Logistics Hub (ALH). The ALH thus should not be so much a fixed physical plan as it is a flexible framework for accommodating a wide variety of tenants, users, facilities and layouts that can be modified when new technologies, industries, and infrastructure emerge.
4. The KCI Business AirPark can provide a propitious jumpstart to the KCI ALH. Yet, the KCI ALH must be planned as much more than a

multimodal logistics infrastructure supporting the AirPark. Its full potential and ultimate success rest on creating a total business environment that will substantially improve sourcing, production, and distribution activities of all its tenants and users. This includes an enhanced automated customs environment operating 24/7 with open architecture electronic data interchange (EDI) capability, and an on-site distance education and worker training facility, one-stop-shop investment support, and high quality road infrastructure and utilities throughout the ALH.

5. Planning for the KCI ALH in general and the KCI Business AirPark, in particular, should give high priority to aesthetics and environmental sustainability. KCI must support not only logistics activities but also leisure and business air travelers. To the extent possible, logistics, manufacturing, trucking, and cargo handling should be physically separated from flows of business and leisure travelers. High quality design standards should be maintained at and surrounding the ALH for buildings, landscaping, and site improvement. Entrance ways and signage should be aesthetically pleasing. Since first impressions are often enduring, physical appearance is extremely important. Therefore, to the degree feasible, the KCI Business AirPark and immediate surrounding areas should be designed to look more like a university campus or research park than a traditional industrial or logistics park.
6. Strong efforts must continue to attract additional passenger and air cargo service to KCI, including international flights. Airlines must be viewed not just as companies, but more as basic transportation infrastructure, no different from roadways and rail. Airlines, like public infrastructure, are shared by all (business, tourists, etc)

providing “highways in the sky” that rapidly connect the region to the world. These highways in the skies are “public good” infrastructures that do not have to be maintained by public money as do roadways and much other public infrastructure. Public support for the KCI’s relatively low charges to airlines must be maintained to attract more air service and additional incentives should be considered, as well.

7. To compensate for its lower airline fees, the Aviation Department should explore further non-aeronautical revenue sources. Following *airport city* and *aerotropolis* principles, KCI must be thought more in terms of a multifunctional commercial entity. This would involve developing more revenue generating activities in the terminal ala Pittsburgh, Detroit, Amsterdam Schiphol or London Heathrow, possibly bringing in a private-sector operator such as BAA to promote and manage on-site and commercial real estate development, and generating other non-aeronautical revenues. Innovative revenue-generating relationships might also be developed with off-site businesses and industries that would substantially benefit from expanded passenger and air cargo airline service.
8. The Aviation Department has routinely tried to convince an integrated air express carrier (e.g., FedEx, UPS, DHL) to set up a regional hub or mini-hub at KCI. This is wise since air express accounts for 70 percent of U.S. air cargo and such service would provide the region’s time-sensitive goods-processing industries with a marked speed advantage. These efforts must continue since KCI’s strategic location at the midpoint of the U.S. has a good chance of paying off here. Lacking success though, an alternative strategy recommended would be to get all major air express carriers to expand their non-stop service from KCI

to their primary U.S. hubs for rapid one-stop distribution virtually anywhere in the country and much of the world.

9. Marketing of the KCI ALH should emphasize the importance of its logistics-based capabilities in attracting time-sensitive goods-processing businesses. Such businesses will certainly continue to seek traditional investment incentives such as tax relief, investment offsets for land or facilities and workforce training. However, as noted above, as the competitive priorities of connectivity, speed and agile market response grow in importance, the relative power of traditional government incentives will lessen. Increasingly, firm siting decisions will be made at least as much on the basis of logistical capabilities of the site and access to global networks as on traditional government incentives. Such logistics-based marketing must be based in development realities of the KCI ALH, though, and phased, predicated on its stage of logistics capabilities. In each phase, the marketing effort should be designed to attract a targeted segment of ALH tenants and users based on capabilities offered at the phase which, in turn, would serve as a catalyst to attract additional complementary firms to the complex and surrounding airport region.
10. Attracting time-sensitive manufacturing and distribution industries will also require a thorough understanding of modern supply chain management principles and the fast-cycle logistics. To offer a truly marketable competitive advantage, the KCI Department of Aviation, with the assistance of local economic development councils, should bring together experts in logistics and supply chain management, multimodal infrastructure development and information technology to help design specifications that would properly integrate and leverage all ALH elements for fast-cycle logistics. Few locations in the U.S. are

doing this, so the KCI ALH can have a first-mover advantage in attracting high tech and other time-critical industries if it takes the lead in seizing this opportunity.

11. The Department of Aviation and EDCs should establish a close working relationship with major corporate relocation and site selection consultants, making them aware of the KCI ALH's and region's assets and regularly updating them on development progress. In most cases, large companies looking to expand or relocate rely on site selection specialists to provide them with a short-list of potential locations to choose from, along with their strengths and weaknesses. Likewise, major commercial real estate firms such as Colliers International, CB Richard Ellis, Hines, and Jones, Lang, Lasalle and REIT's such as Prologis and AMB properties often work closely with corporations in their site selection and eventual commercial development. As will be addressed shortly, though, no mechanism exists to provide commissions on brokerage fees to these for profit entities, without which this approach is virtually to a non-starter.
12. It is recommended that a good part of the initial marketing focus on attracting "big name" or "trophy" logistics service provider as KCI ALH tenants. Once a couple of these are landed, it sends out a market signal to other 3PLs and freight forwarders that the ALH is a choice location. Since smaller fish tend to like big fish as neighbors, landing a big fish will be a significant long-term marketing advantage for the ALH in its own right.
13. Because entry appearance, project architecture and other symbols also send an important message, all KCI ALH gateway entrances should receive special emphasis in design and image appearance. These entries must set the tone for the development within which the ALH's



identity will be reinforced through distinctive building architecture, signage, landscaping, and roadway configuration. New electronic art technologies with laser lighting designs might be used to project the airport's and region's image in a futuristic, but non-gaudy manner. Design standards need to be incorporated into surrounding local communities' plans as well as the ALH's site design standards. This "image-making" or branding is a pivotal marketing strategy.

14. There are lessons to be learned by the KCI Department of Aviation and Economic Development councils from commercial development approaches around Amsterdam Schiphol Airport and Denver International Airport. For example, recognition by local jurisdictions in the Netherlands that Amsterdam Schiphol Airport was at the center of an expanding territorial complex of airport-linked industrial and commercial development led to the establishment of a public-private partnership to oversee the development of available sites near the airport. This organization – the Schiphol Area Development Corporation (SADC) – directly manages some of these projects while coordinating all of them. It operates like a quasi-development authority for the broader Schiphol airport city. Likewise, as was described previously in this chapter, a public-private partnership has been established to foster economic development at and around Denver International Airport (the DIA Partnership). It is recommended that the Department of Aviation and local economic development councils take a close look at these models.
15. Whereas creating an inter-jurisdictional development organizations such as SADC and DIAP may not be well received in an area already served by a number of regional development councils, it is recommended that a non-bureaucratic alternative be implemented to

improve chances of coordinated efforts. One would be to institute periodic working sessions with local jurisdictional officials and planners in the Kansas City area to inform them better about the nature of airport-linked development and explore how their specific jurisdiction might complement and leverage this new form of development. A larger picture view of the KCI Air Logistics Hub and their community's role in its evolution could reduce local jurisdictional competition for entering businesses, encourage more effective and mutually beneficial place marketing and branding for business recruitment, lead to more coordinated actions to address airport-induced problems, and realize more beneficial development outcomes.

16. The boundaries of the city enterprise zone and the foreign trade zone should be aligned and extended under a broader airport-area business benefit zone herein designated as the "KCI Business District" Development incentives in the District need to be presented in a clear and reinforcing fashion for potential investors. Special development incentives not available elsewhere in the city or Platte County should be added to those already provided by foreign trade zone and enterprise zone status. Accelerated permitting and building approvals was one such suggestion.
17. KCI Business Airpark development will only occur if infrastructure and developable sites are in place. In the meantime, all infrastructure and utilities (both on-airport property and off airport) should be pre-planned with a "virtual" development plan that would include costs and timetables to bring infrastructure to the sites. This could help address a reservation made at a focus group meeting that even though a prospect/developer is less than a mile from the airport they feel they are "way out there" and that realistic development could be a decade

away. With such a plan you can show the prospect where the infrastructure will be and when it will be put in place.

18. Kansas City and Platte County public and private leadership should convene and produce an action plan with necessary resources committed to guide and assist both the near-term and longer-term development of the KCI area. One of the biggest failures in the past has been a lack of a comprehensive multi-year plan that clearly defines roles and who carries them out, along with providing the necessary short and long-term organizational funding.
19. KCI Business District and Aerotropolis planning should involve close cooperation of not only all jurisdictions affected, but also include local and regional utility planners. Focus group comments by utility executives indicated that most communities don't share their comprehensive plans with the utilities and therefore preclude more efficient ways to achieve desired development results. Such sharing would also be helpful to the utilities for their internal planning/budgeting purposes and potentially save some major future headaches for the communities and their new investors.
20. Immediate priority should be given to developing the 640 acre KCI business AirPark, which offers a propitious opportunity to jump and start the ALH and KCI Business District. In addition to providing all infrastructure and utilities need, new approaches to marketing and developing the AirPark must be pursued that will provide incentives to the real estate and investor community. At present, KCI cannot pay commissions to private sector realtors or site selection consultants for investment they bring to airport property. Very few for-profit entities are willing to promote someone else's project without remuneration. Likewise, most potential investors want to own their property and this

is not possible at KCI. New legislation or very innovative ways to address these current constraints are required for the AirPark to develop in a timely manner. In addition to being able to pay commissions to realtors and site selection consultants, KCI property investors should be given 50 to 100 year renewable and transferable leases should they not be able to own their site.

21. If speed and agility are going to be a trump card for the KCI ALH and Aerotropolis, local governments will have to move quickly and flexibly when a tenant comes along. Often prospective tenants cannot afford to wait a year or more (or even six months) to get their site plan and building permits approved. Again, it is highly recommended that the city and county establish an accelerated site and building plan approval process for the ALH and KCI Business District that can be completed in under 30 days from application.
22. The Kansas City Department of Aviation is still a city department focused on improving KCI's aeronautical infrastructure and service. Their core competency is not commercial real estate development. Ideally, the city would bring in a private-sector master developer for the Business AirPark and entire KCI ALH in the form of a public-private sector development partnership.
23. A number of parcels of property at KCI owned by the Kansas City Aviation Department are currently zoned as unincorporated Platte County. To avoid potential inconsistent development on those parcels it is recommended that the City of Kansas City Missouri annex the parcels owned by KCI Airport.
24. For internal KCI operating efficiencies, it is recommended that the Commerce Division of the Kansas City Aviation Department be allowed to negotiate building service contracts needed to manage the

day to day facility infrastructure requirements. They would thus be able to operate essentially in the same way that the private-sector operates for services (electricity, plumbing, painting, etc) so that tenants receive their facility services needed on a timely basis.

25. The Aviation Department and local EDCs may wish to take a bold step by immediately “branding” the KCI ALH and aerotropolis. To some extent, the media is the message. Such branding could be instrumental in creating “buzz” in marketing to potential outside investors, developers, tenants, and users. It will also provide an excellent framework for local organizations to promote the greater KCI airport region and its competitive future.

Exhibit 4.1  
ORGANIZATIONAL STRUCTURE OF DIA PARTNERSHIP

