

# Urban Land Institute (ULI) Europe Summer Conference – Airport and Rail Centres: Emerging Property Development Opportunities



## **THE AEROTROPOLIS:** *Airport-Driven Commercial Development*

*Presented by*

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20 June 2002  
Amsterdam, The Netherlands





# Transportation Accessibility & Commercial Development

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*Changes in Transportation Infrastructure Have Always  
Shaped Commercial Location & Urban Development*

First Wave: Seaports

Second Wave: River and Canal-Based Development

Third Wave: Railroads

Fourth Wave: Highways

Fifth Wave: Airports



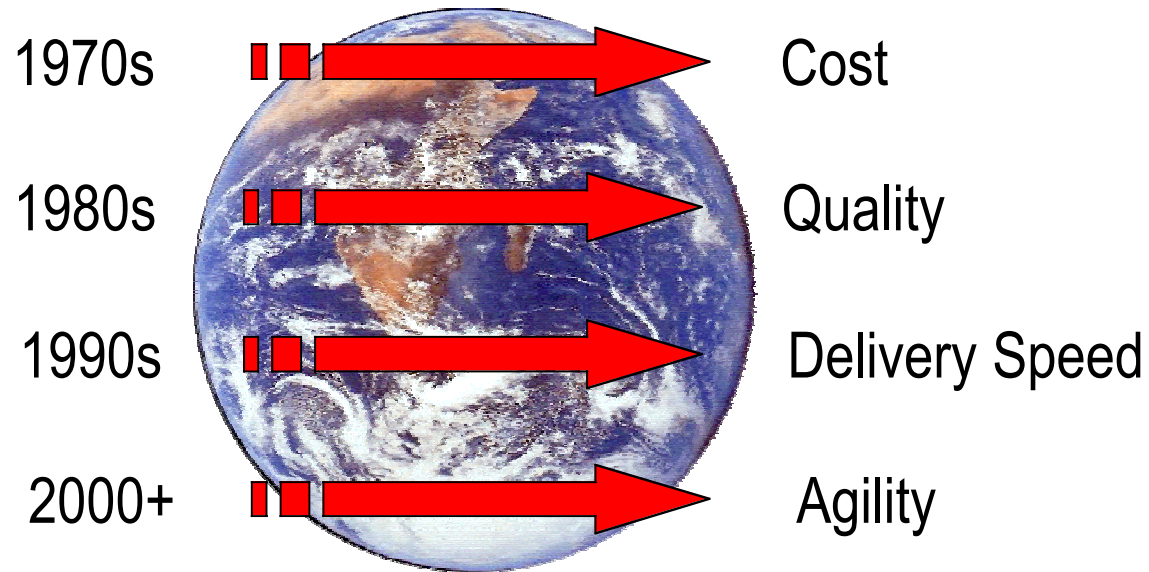
# FIFTH WAVE: Basic Drivers

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- Large, High-Speed Jet Airplanes
- Advanced Telecommunications
- Globalization (*Sourcing and Sales*)
- New Supply-Chain Management Systems (*Networks as Competitive Units*)
- Time-Based Competition
- Production Flexibility & Mass Customization
- Perishability (*Economic as well as Physical*)
- Survival of the Fastest and Most Agile



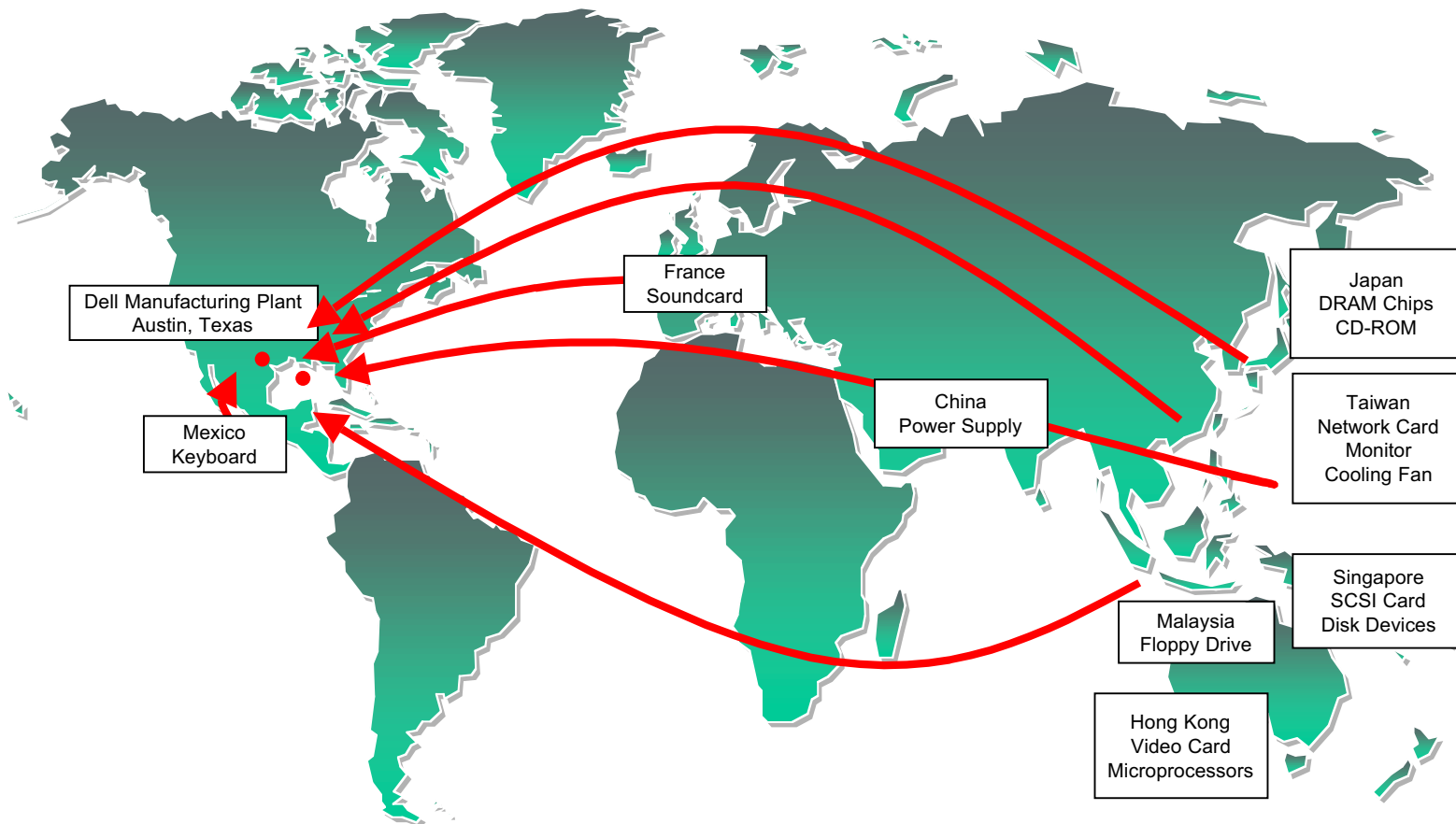
# Changing Competitive Priorities of Firms



## Logistics and Business Location



# Global Supply Chain - Dell Computer



Source: Abbey, Twist and Koonmen. 2001

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# The New Business Realities

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- Speed and Agility Become as Important as Price and Quality to Compete
- Businesses Can Sell to Anyone, Anywhere in the World
- People Want Customized Products and Want Them Quickly
- Demand and Supply Conditions Change Rapidly and in Unpredictable Ways (Market Turbulence and Uncertainty)
- *E-commerce Will Change Everything (It Already is!)*



# E-commerce & Air Logistics

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- Don't Confuse the Death of Dot.coms with Death of E-Commerce
- B2B Transactions Forecasted to Increase from U.S. \$500 Million in 2000 to U.S. \$6 Trillion in 2005
- E-Commerce and Air Logistics are Inextricably Linked
- More than 70% of All Goods Sold Through the Internet are Shipped Via Express (24 - 72 hour) Delivery
- E-Commerce Fulfillment Centers are Clustering Around Airports
- Blue-Collar Internet is Key – The Web Can't Move a Box
- Air Logistics is Already a U.S. \$200 Billion/Yr Industry



# Air Commerce Facts

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- 40% of the Value of World Trade Already Goes by Air (vs. Under 2% by Weight)
- 65% of All Air Cargo in the U.S. is Express (Nearly 20% Average Annual Growth, Past 20 Years)
- World Air Cargo Traffic is Expected to Triple Over the Next 18 years (International Air Express 3 Times Faster)



## United States Total Air and Vessel Exports for 1990, 1995 and 2000 by Value *(in millions of US\$)*

### EXPORTS

	1990	1995	2000
<b>TOTAL VALUE</b>	\$261,298	\$397,001	\$483,425
AIR VALUE	\$110,471	\$181,194	\$284,356
VESSEL VALUE	\$150,827	\$215,907	\$199,069

### GROWTH

	90-95	95-00	90-00
	51.9%	21.8%	85.0%
	64.0%	56.9%	157.4%
	43.1%	-7.8%	32.0%



## Germany Exports To and Imports From the United States for 1990, 1995 and 2000 by Value

(in millions of US\$)

### IMPORTS (from U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$15,699	\$20,076	\$25,121	27.9%	25.1%	60.0%
AIR VALUE	\$9,053	\$12,917	\$17,567	42.7%	36.0%	94.0%
VESSEL VALUE	\$6,646	\$7,159	\$7,554	7.7%	5.5%	13.7%

### EXPORTS (to U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$26,135	\$33,124	\$51,059	26.7%	54.1%	95.4%
AIR VALUE	\$7,651	\$11,546	\$17,948	50.9%	55.4%	134.6%
VESSEL VALUE	\$18,484	\$21,578	\$33,111	16.7%	53.4%	79.1%

### COMBINED (THROUGH PUT)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$41,834	\$53,200	\$76,180	27.2%	43.2%	82.1%
AIR VALUE	\$16,704	\$24,463	\$35,515	46.4%	45.2%	112.6%
VESSEL VALUE	\$25,130	\$28,737	\$40,665	14.4%	41.5%	61.8%

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## Holland Exports To and Imports From the United States for 1990, 1995 and 2000 by Value

(in millions of US\$)

### IMPORTS (from U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$11,346	\$13,999	\$19,813	23.4%	41.5%	74.6%
AIR VALUE	\$4,125	\$5,906	\$11,949	43.2%	102.3%	189.7%
VESSEL VALUE	\$7,221	\$8,093	\$7,864	12.1%	-2.8%	8.9%

### EXPORTS (to U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$4,504	\$5,666	\$8,787	25.8%	55.1%	95.1%
AIR VALUE	\$1,321	\$2,233	\$3,529	69.0%	58.0%	167.1%
VESSEL VALUE	\$3,183	\$3,433	\$5,258	7.9%	53.2%	65.2%

### COMBINED (THROUGH PUT)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$15,850	\$19,665	\$28,600	24.1%	45.4%	80.4%
AIR VALUE	\$5,446	\$8,139	\$15,478	49.4%	90.2%	184.2%
VESSEL VALUE	\$10,404	\$11,526	\$13,122	10.8%	13.8%	26.1%

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## France Exports To and Imports From the United States for 1990, 1995 and 2000 by Value

(in millions of US\$)

### IMPORTS (from U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$11,978	\$13,023	\$17,977	8.7%	38.0%	50.1%
AIR VALUE	\$8,076	\$9,167	\$14,127	13.5%	54.1%	74.9%
VESSEL VALUE	\$3,902	\$3,856	\$3,850	-1.2%	-0.2%	-1.3%

### EXPORTS (to U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$11,503	\$14,347	\$22,807	24.7%	59.0%	98.3%
AIR VALUE	\$5,402	\$7,304	\$13,668	35.2%	87.1%	153.0%
VESSEL VALUE	\$6,101	\$7,043	\$9,139	15.4%	29.8%	49.8%

### COMBINED (THROUGH PUT)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$23,481	\$27,370	\$40,784	16.6%	49.0%	73.7%
AIR VALUE	\$13,478	\$16,471	\$27,795	22.2%	68.8%	106.2%
VESSEL VALUE	\$10,003	\$10,899	\$12,989	9.0%	19.2%	29.9%

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## United Kingdom Exports To and Imports From the United States for 1990, 1995 and 2000 by Value

(in millions of US\$)

### IMPORTS (from U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
TOTAL VALUE	\$18,562	\$25,365	\$35,347	36.7%	39.4%	90.4%
AIR VALUE	\$12,236	\$17,371	\$25,725	42.0%	48.1%	110.2%
VESSEL VALUE	\$6,326	\$7,994	\$9,622	26.4%	20.4%	52.1%

### EXPORTS (to U.S.)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
TOTAL VALUE	\$17,982	\$24,128	\$39,110	34.2%	62.1%	117.5%
AIR VALUE	\$8,809	\$12,304	\$21,800	39.7%	77.2%	147.5%
VESSEL VALUE	\$9,173	\$11,824	\$17,310	28.9%	46.4%	88.7%

### COMBINED (THROUGH PUT)

	1990	1995	2000	GROWTH		
				90-95	95-00	90-00
TOTAL VALUE	\$36,544	\$49,493	\$74,457	35.4%	50.4%	103.7%
AIR VALUE	\$21,045	\$29,675	\$47,525	41.0%	60.2%	125.8%
VESSEL VALUE	\$15,499	\$19,818	\$26,932	27.9%	35.9%	73.8%

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# Combined\* Country Exports To and Imports From the United States for 1990, 1995 and 2000 by Value

(\*Germany, Holland, France & UK)

(in millions of US\$)

## IMPORTS (from U.S.)

				GROWTH		
	1990	1995	2000	90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$57,585	\$72,463	\$98,258	25.8%	35.6%	70.6%
AIR VALUE	\$33,490	\$45,361	\$69,368	35.4%	52.9%	107.1%
VESSEL VALUE	\$24,095	\$27,102	\$28,890	12.5%	6.6%	19.9%

## EXPORTS (to U.S.)

				GROWTH		
	1990	1995	2000	90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$60,124	\$77,265	\$121,763	28.5%	57.6%	102.5%
AIR VALUE	\$23,183	\$33,387	\$56,945	44.0%	70.6%	145.6%
VESSEL VALUE	\$36,941	\$43,878	\$64,818	18.8%	47.7%	75.5%

## COMBINED (THROUGH PUT)

				GROWTH		
	1990	1995	2000	90-95	95-00	90-00
<b>TOTAL VALUE</b>	\$117,709	\$149,728	\$220,021	27.2%	46.9%	86.9%
AIR VALUE	\$56,673	\$78,748	\$126,313	39.0%	60.4%	122.9%
VESSEL VALUE	\$61,036	\$70,980	\$93,708	16.3%	32.0%	53.5%

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# Air Commerce Drivers

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- Higher value to weight product ratios
- Just-in-time manufacturing and delivery
- Global sourcing and sales
- Customization (built to order)
- Today's customers can't or won't wait
- Time is money for business travelers



# Spatial Impacts of Air Logistics

## *Airport-Linked Business Clusters*

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- Freight Forwarding and Third-Party Logistics
- E-Commerce Fulfillment Centers
- Transformation (Kitting, Subassembly, Sequencing) and Flow-Through Facilities
- Just-in-Time Manufacturing
- Perishables and Cold-Chain Centers
- High-Technology Industries
- Business Services and Regional Headquarters Offices



# Economic Impacts of Airports

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- Los Angeles, California
- Dallas-Fort Worth, Texas
- Washington D.C., Northern Virginia
- Subic Bay, Philippines
- Amsterdam, Netherlands



# Los Angeles

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- LAX Responsible for 400,000 Jobs in 5 County Region
- 1 in 20 Jobs in LA County Directly or Indirectly Tied to LAX
- LAX Generates \$60 Billion Annually in Regional Economic Activity
- Translates to \$7 Million Per Hour



# Dallas-Ft. Worth Airport

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- Driver of the Fast-Growing Metroplex
- Las Colinas Now Has 2000 Companies (Abbott Labs, AT&T, Microsoft, Hewlett-Packard, etc.)
- Infomart (ICT Merchandise Mart)
- Market Center
  - World's Largest Wholesale Merchandise Mart
  - 7 Million Sq. Ft. of Display Space for Fashion Clothing and Home Furnishings
  - In 2000, Attracted Buyers and Vendors from All 50 States and 84 Countries
  - Purchased 300,000 Airline Seats
  - Filled 720,000 Hotel Rooms
  - \$7.5 Billion in Wholesale Transactions

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## Washington D.C./Northern Virginia

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Along 26 Mile Corridor Between Dulles International Airport and Reagan National Airport

- Employment Grew from 50,000 in 1970 to 600,000 in 1996
- 1,100 Percent Increase Compared to 59 Percent U.S. Suburban Employment Growth
- Dulles Airport Connections Include: AOL, Nextel, Cisco Systems, EDS, Computer Associates, etc.
- El Toro (Orange County) Survey Showed High Tech Workers Travel by Air 40 Percent More Than Other Professionals
- Nerd Birds



# Subic Bay, Philippines

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- FedEx Locates Asia Hub in 1994
- 1995 – 2000:
  - 150 New Firms Locate Around Airport
  - \$2.5 Billion in Commercial Real Estate Investments
- Exports Increase from \$24 Million to \$599 Million  
Annually



# Amsterdam, Netherlands

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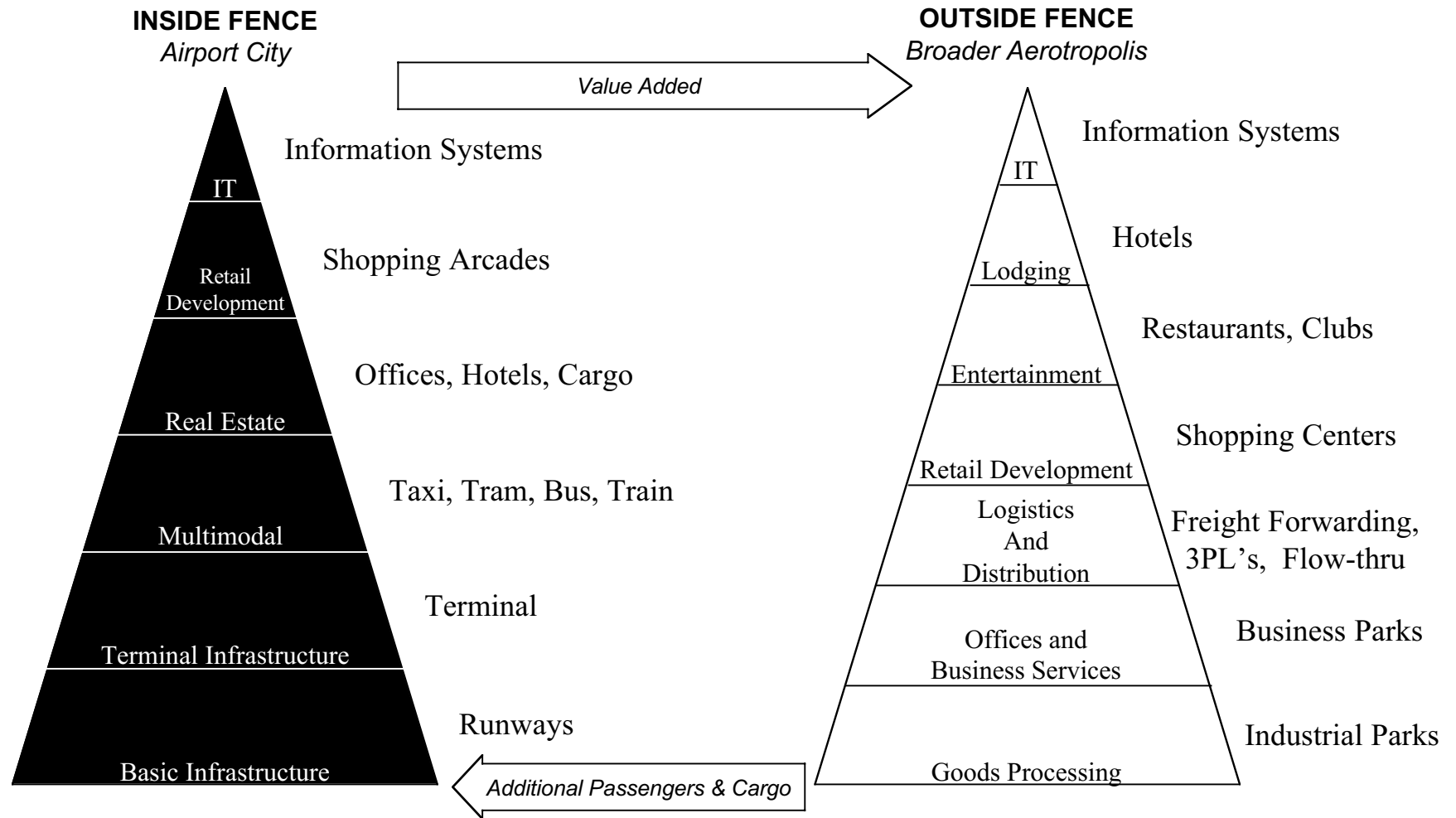
- Airport City Forms at Schiphol (Airport as Destination)
- From City Airport to Airport City
  - Shopping Arcades
  - Internet Cafes
  - Theme Restaurants
  - Office Buildings (Inside Fence)
    - Ernst & Young
    - RR Donnelly
    - Solomon Brothers International
    - Unilever
    - Heineken Export Group
  - 2 First Class Hotels
  - Cargo City
- 54,000 Workers Inside the Airport Fence Daily

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# Amsterdam-Schiphol Airport City – Aerotropolis Synergies

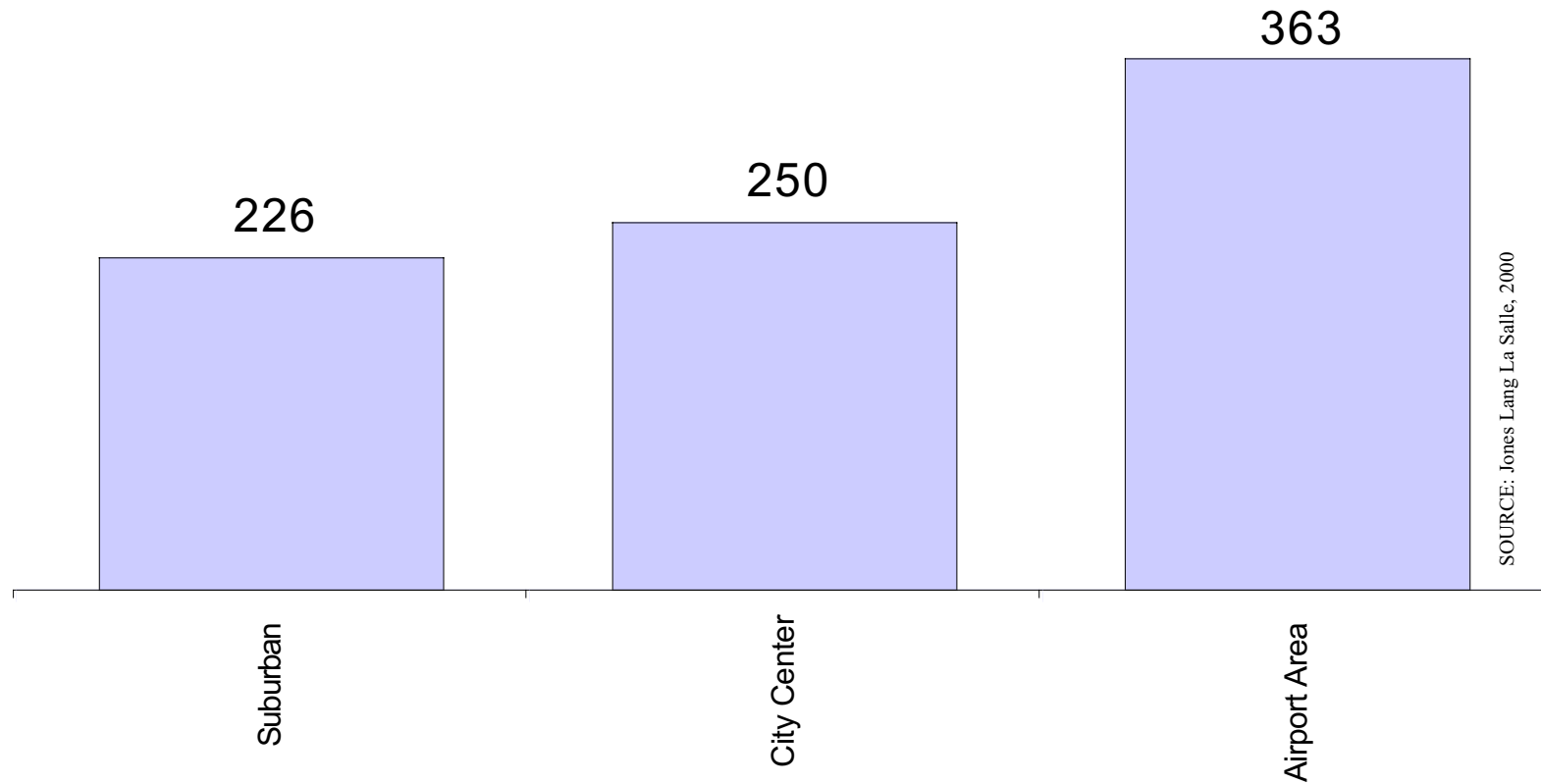


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# Amsterdam Comparative Office Rentals Eu/m<sup>2</sup>/yr



SOURCE: Jones Lang La Salle, 2000



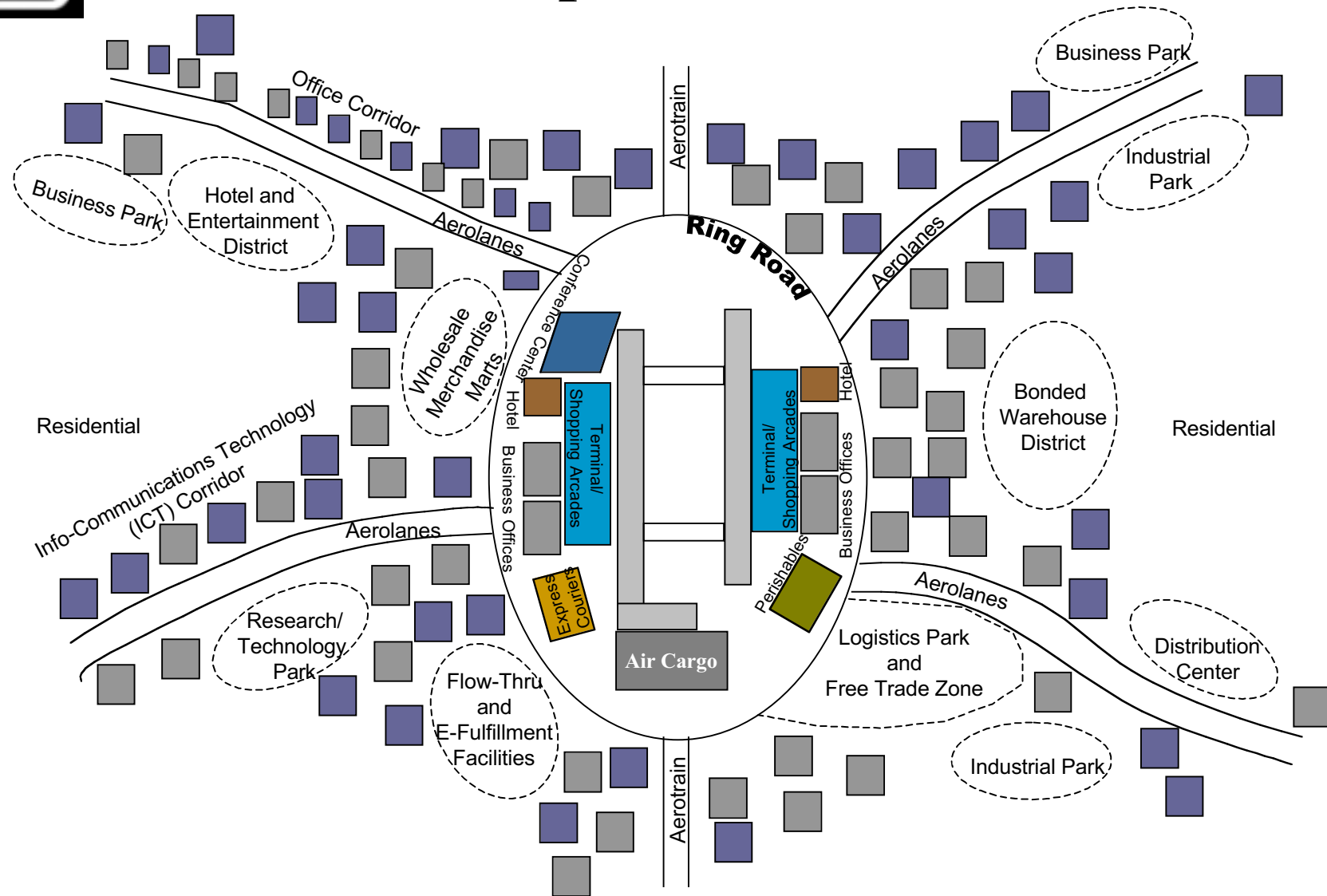
# The Aerotropolis: Emerging Urban Form

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- Distinct Clusters and Spines of Aviation-Linked Business Radiating Outward from Airport
- Aerolanes (Dedicated Expressways), Aerotrains (Dedicated Fastrail), Intermodal Interfaces
- New Metric for Determining Land-Value is Time and Cost of Moving People and Goods to and from the Airport (not Distance)
- The Three “A’s” (Accessibility, Accessibility, Accessibility) Replace the Three “L’s” (Location, Location, Location) as the Most Important Commercial Real Estate Organizing Principle
- Cluster Development, Wide Lanes, and Fast Movements are Optimal (Aerotropolis Form Follows Function)



# Aerotropolis Schematic



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# New & Planned Aerotropoli

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- Ontario, California
- Dallas-Ft. Worth
- Detroit, Pinnacle
- Paris, Roissy (CDG)
- Campinas, Brazil (outer Sao Paulo)
- Hong Kong's Lantau Island
- Seoul, Korea



# Ontario, California



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# Dallas-Ft. Worth Airport





# Las Colinas (Adjacent to Dallas-Ft. Worth Airport)



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# Las Colinas Facts at a Glance

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- 12,000-acre airport-linked community
- 21.2 million square feet of office space
- 8.5 million square feet of light industrial space
- 1.3 million square feet of retail space
- 13,300 single and multi-family homes
- 3,700 luxury and business-class hotel rooms
- 75-plus restaurants



# New Urban Center Being Developed

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- Designed by RTKL Associates
- Mixed-use Entertainment District
- Mixed-Use Transit Mall
- Dedicated Light Rail to DFW Airport and Downtown
- 1 \_ Miles of Internal Dual Lane Track Connecting Las Colinas Commercial Nodes



# Las Colinas





# Hong Kong International Airport





# Hong Kong SkyCity Master Plan



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# Incheon International Airport (Seoul, Korea)





# Manila, Philippines (Proposed)





# The Pinnacle Aeropark: Wayne County's New Image-Builder

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# Aerial View of the Pinnacle Aeropark

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# Break-Through Planning and Design

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- 19 million sq. ft. of high-quality office, technology, industrial and retail development
- Visually appealing architecture
- European-style traffic circles
- Integrates open space and active recreation
- First impression image-builder for greater Detroit area



# Amenities and Services

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- Business class hotel properties
- Conference & Meeting Center
- An upscale retail mix
- 18-hole Championship golf course
- Biking and jogging trails



# Permanent Jobs and Spending

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- A total of 25,712 full-time jobs
  - 12,974 office, research and technology
  - 7,461 warehouse/logistics
  - 4,277 retail/commercial
- Equivalent of 4 auto assembly plants
- Annual payroll of \$534 million
- Local spin-off spending (shopping, etc) from full-time wages will total \$432 million a year



# Concluding Remarks

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- Aviation, Digitization, Globalization, and Time-Based Competition are Converging
- Air Logistics is Creating New Aviation Linked Urban Forms (Aerotropolis)
- Airports Will Drive 21<sup>st</sup>-Century Urban Development as Much as
  - Highways in the 20<sup>th</sup> Century
  - Railroads in the 19<sup>th</sup> Century
  - Seaports in the 18<sup>th</sup> Century
- Multimodal Surface Transportation Links Key
- European Aerotropolis Development Actions



# Aerotropolis Development Actions

- Position gateway airport and its surrounding area as a regional and global center of air commerce through appropriate planning of multimodal infrastructure, physical facilities and trade-related services
- Develop airport-driven urban planning guidelines that will positively impact the business, aesthetic and social development of a broader Aerotropolis
- Examine existing and proposed future surface transportation linkages to the airport, including potential dedicated aerolanes and aerotrains to improve multimodal synergies and efficiencies
- Identify and describe changes needed in regional, national and local government policies to improve prospects for successful Aerotropolis development and recruitment of private sector developers and investors.



# Aerotropolis Development Actions

## *(Continued)*

Create a master plan that incorporates a business and land-use development strategy addressing, among others:

- A. Broader Aerotropolis planning area
- B. Business resource needs
- C. Management and marketing principles
- D. Targeted investors, developers and business locators
- E. Infrastructure and commercial facility phasing
- F. Financing options



# Aerotropolis Development Actions

## *(Continued)*

Develop the overall project concept, design and land-use criteria, and physical layout schematics for both inside and outside-the-fence commercial facilities. These should include at a minimum:

- A. Inside the fence developments
  - 1. Retail arcades and restaurants
  - 2. Hotels and entertainment facilities
  - 3. Office structures and business services
  - 4. International conference and exhibition center
  - 5. Cargo and goods handling facilities
  - 6. Car park buildings
  - 7. Intermodal interfaces

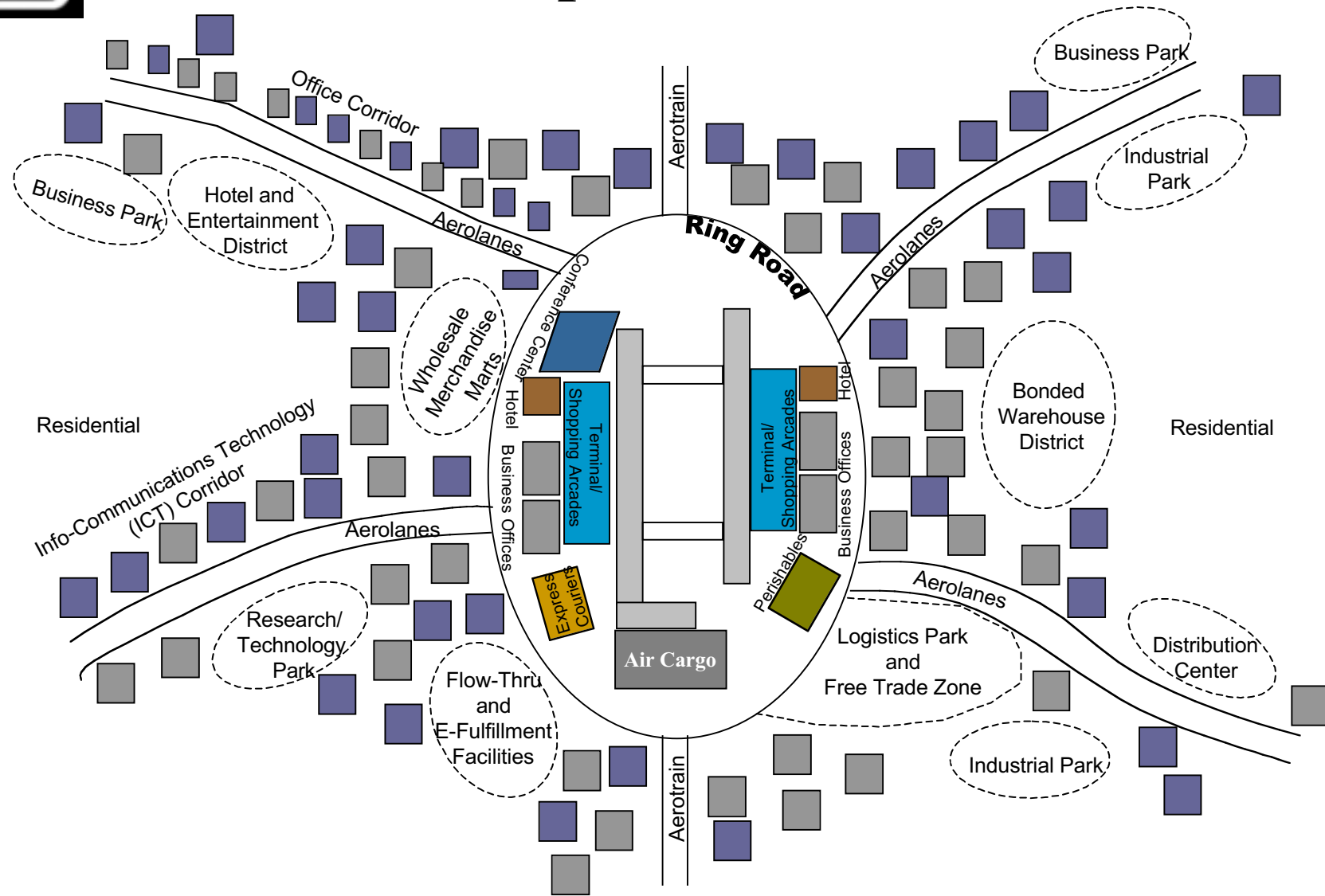


# Aerotropolis Development Actions (Continued)

- B. Outside the fence developments
  - 1. Business (office) parks
  - 2. Industrial parks
  - 3. Research and Science parks
  - 4. Information and communications technology (ICT) corridors
  - 5. E-commerce fulfillment and distribution centers
  - 6. Bonded warehouse areas
  - 7. Logistics parks and free trade zones
  - 8. Hotel, entertainment and recreation clusters
  - 9. Wholesale merchandise marts
  - 10. Shopping centers and restaurants
  - 11. Residential development projects and zones



# Aerotropolis Schematic



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# Aerotropolis Development Actions

## *(Continued)*

- Conduct a market needs (demand) assessment for all inside the fence and outside the fence commercial facilities to assess market viability and likely financial returns. Land costs, construction costs, and lease rates should be broadly determined to give first-order magnitude estimates of likely total investment required and financial returns.
- Prepare Terms of Reference, pertinent land development and concession agreements, and other required documents for inviting the private sector to participate in development and management of Aerotropolis subprojects.



# Thank you

Email follow-up to:  
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