

The Airport of the Future A Cargo Perspective

Air Cargo 2017



Orlando, Florida



June 6th, 2017



Where Will Today's Issues Take Us in 20 Years?

- Security consciousness
- Shift to wide-body passenger aircraft
- Expedited clearance
- E-commerce
- Perishables and Pharma
- Changing Distribution and Retail Patterns
- Competing Modes
- Technology advancements

Intervening Variables to Consider Over 20 Years

- The price of fuel will change
- There will be at least one incident that impacts security
- A political conflict will slow or reverse growth for several years
- Technology enhancements will impact the volume, mode, and speed of traditional goods movement
- Modal shifts will continue to affect pricing
- Mergers, acquisitions, and new business growth will continue
- Environmental issues will impact operations growth
- Potential traditional airport cargo markets will approach saturation

Putting Things in Context.....

- 1997 – How many text messages did you get 20 years ago?
1997 – A select few had cell phones - today there are more cell phones than people in the U.S.
- 1997 – Phone e-mails – zero
- 2009 - I-Pads – zero
- 2010 – 3D Printers - zero

The Impact of 2% Annual Growth - 2040

<u>Airport Code</u>	<u>Airport Name</u>	<u>Passengers</u>		<u>Cargo Tonnage</u>		<u>Operations</u>	
		<u>CY2016</u>	<u>CY2040</u>	<u>CY2016</u>	<u>CY2040</u>	<u>CY2016</u>	<u>CY2040</u>
MIA	Miami	44,584,603	↗ 71,711,536	2,014,206	↗ 3,239,724	414,461	↗ 666,635
LAX	Los Angeles	80,904,777	↗ 130,130,257	1,998,778	↗ 3,214,909	697,138	↗ 1,121,303
ORD	Chicago O'Hare	78,327,479	↗ 125,984,835	1,810,134	↗ 2,911,487	867,635	↗ 1,395,536
JFK	New York Kennedy	58,873,386	↗ 94,694,147	1,273,185	↗ 2,047,838	448,354	↗ 721,149
ATL	Atlanta Hartsfield	104,171,678	↗ 167,553,607	648,601	↗ 1,043,234	898,356	↗ 1,444,949
SFO	San Francisco	53,099,157	↗ 85,406,662	479,146	↗ 770,676	450,618	↗ 724,791
YYZ	Toronto	44,358,684	↗ 71,348,160	450,000	↗ 723,797	456,624	↗ 734,451
SEA	Seattle - Tacoma	45,736,700	↗ 73,564,612	365,349	↗ 587,641	412,170	↗ 662,950
BOS	Boston	36,288,042	↗ 58,367,038	290,317	↗ 466,957	391,222	↗ 629,256
YVR	Vancouver	22,275,132	↗ 35,828,152	265,680	↗ 427,330	315,528	↗ 507,507
SAN	San Diego	20,740,936	↗ 33,360,494	171,306	↗ 275,535	197,132	↗ 317,074
SAT	San Antonio	8,618,582	↗ 13,862,448	107,109	↗ 172,278	164,211	↗ 264,123
BDL	Hartford	6,055,016	↗ 9,739,113	115,418	↗ 185,643	94,842	↗ 152,547
PIT	Pittsburgh	8,309,754	↗ 13,365,718	82,816	↗ 133,204	141,630	↗ 227,803
YEG	Edmonton	7,026,918	↗ 11,302,357	50,000	↗ 80,422	165,000	↗ 265,392

The Main Issues From an Airport Perspective

- Passenger Terminal Demand – will be the top priority of Airport Management
- Landside Capacity – some airports are fine – others will be challenged
- Landside Access – will be a major problem at gateways and many midsize airports
- Air Space Capacity – will be a major problem at gateways and many midsize airports
- Runway Capacity – will be a concern for many airports of every size



Passenger Growth - Implications

- Terminal expansion – more land will be required which will compete with other aviation business segments
- Increased landside traffic will impact airport access
- Congestion on the terminal frontage
- Congestion at terminal gates
- More belly cargo requiring more time to transfer to the cargo facilities
- Shortage of cargo capacity



Operations Growth - Implications

- Runway capacity - approximately 250,000 operations per year. If you have the space - add a runway. If not.....
- Air Space is critical – what happens at airports where the air space is already an issue?
- The need to upgrade aircraft size will help slow the growth in operations numbers but for some airports the implication might be a longer runway that they can't afford, or won't fit.
- Prioritizing air business segments – will it be service or dollars. How will airports prioritize general aviation, low cost carriers, and all freighter operations?



Cargo Growth - Implications

- The physical capacity of facilities will be strained
- Increased use of narrow body freighters for e-commerce creating apron requirements
- The physical capacity of the airport will create conflicting land requirements
- Shift to larger trucks where possible, but there will be more trucks
- Extreme landside congestion
- Competing demand for on-airport locations or airport proximate space
- Vertical development
- Overload on federal agencies



May Lead to.....

- Reallocation of Cargo Flights
- Unmet Demand for Freighter Parking
- Dedicated Cargo Airports and the Emergence of Secondary Airports
- Evolving Technology for Tracking, Transport, Handling, and Clearance
- Staffing challenges for Federal Agencies
- Concentrated Logistics Operations
- Truck Consolidation and Distribution Centers
- Continuing Modal Shifts

The New Silk Road – The China Belt Way

- A rail link from London to Yiwu in central Zhejiang Province China
- Makes the 7,500 mile trip in 18 days,
- Passes through nine countries, including France, Belgium, Germany, Poland, Belarus, Russia and Kazakhstan.
- The cost is lower than both air and ocean freight, and twice as fast as ocean transport
- 70% lower cost than air and 16 days faster than ocean.



Vertical Development

- Addresses land constraints
- Limits proximate freighter positions
- May present construction issues
- Expensive to build
- Expensive to lease
- Requires about 500,000 tons annually to justify financially



Hactl – Hong Kong



- The best known example in vertical development
- Capable of processing three million tons
- Limited adjacent aircraft parking. There are 25 proximate positions.
- Expensive to build and operate
- Height can create line of sight issues and flight constraints

Drones: Short Range Delivery

- Up to 100 miles
- Up to 50 pounds
- Linked to production and manufacturing
- Launched from a prime or mobile base
- Will require air space monitoring
- Commercial airports have limited viability



Drones: Mid Range Delivery



- 100 -1,000 miles
- Focused on domestic distribution
- Linked to key fulfillment initiatives
- Reduces delivery costs
- Part of a comprehensive modal delivery system

Drones: Long Range - The Nautilus (A California Based Company)

A New Shipping Alternative – Transporting 200,000 pounds from Los Angeles to Shanghai

Boeing 747	11 hours - \$260,000
Ocean-borne	20 days - \$ 61,000
Drone	30 hours - \$130,000

The Aircraft will be water-based and could launch from an inland lake



Hybrid Airships

- No airport infrastructure requirement
- Heavy payload delivery to virtually anywhere.
- Opens new markets to air delivery.
- Range – 2,000 miles
- Payload - 20-50 tons
- Speed – 100 mph
- Flight duration – five days



3D Printing



- Eliminates fuel, transportation, labor, and security costs
- Focus on specialty items
- Provides unusual/expensive materials
- Enables multiple order fulfillment
- Integrated with drone and truck short-range distribution

The New Logistics Paradigm

E-Commerce



- Amazon
 - USA
- Alibaba
 - China
- Flipkart
 - India
- Modern Logistics
 - Brazil

Dying Retail - The American Malls

- Death by distribution – the impact of e-commerce on retail
- Home delivery based on speed, cost, and convenience.
- Shifting trucking requirements away from long-haul.
- Loss of 7,000,000 jobs predicted



The Concept of “Value Added” Logistics Support Center

Warehouses

Distribution Centers

Support Centers



The Concept of the “Value Added” Logistics Support Center

Automated Warehousing and Picking

- Expedited throughput
- Accurate shipment tracking
- Voice activated search and retrieval
- Enhanced electronic linkage to Customs
- Increased capacity for existing facilities
- Reduced staffing requirements



Integrated Logistics



- Manufacturing and Assembly
- High speed fulfillment
- Medical Kitting
- Value added services
- Packing and Packaging
- Electronics Repair
- High Value Specialty Items

Truck Distribution Center

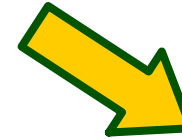
- Focuses on consolidation and backhaul
- Increases load factors in both directions
- Lowers trucking costs
- Helps address driver shortages
- Lowers carbon footprint
- Speeds delivery



Truck Service Center

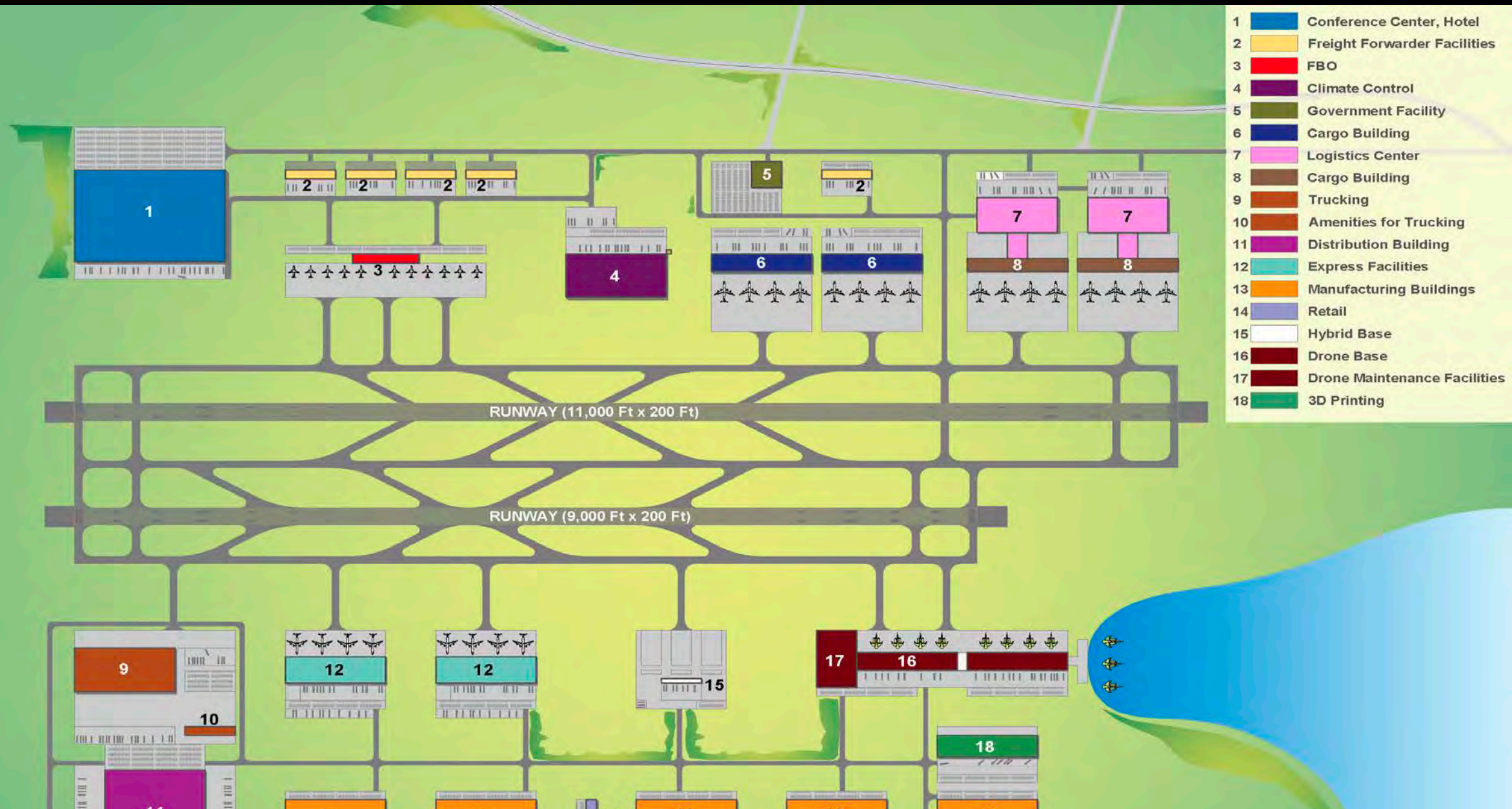


- Low Cost Accommodations
- Modest retail
- Parts and Maintenance
- Tire Sales



- Greater recognition of landside operating requirements
- Increased Airport Revenues

Aviation Logistics Center 1



Any Questions?

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