Current Status of the Airport / Airline Industry

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Current Status of the Air Transport Industry

- **Objective: To define**
  - ✈ **current situation and major new factors**
- **Major Event: The crisis!**
- **Major Trends:**
  - **Loss of Legacy Airlines**
  - **Rise of New Carriers: Southwest, Fedex, Ryanair**
  - **Loss of Transfer Hubs: St Louis, Pittsburgh, Milan**
  - **Rise of Second A/P: Frankfurt/Hahn, London/Luton**
  - **Technology: Electronics ; Low Cost Terminals**
- **Airline and Airport Rankings**

The Crisis

World passenger traffic dropped in 2008

Compare to 10 year average ~ 2.5% / year

Global passenger traffic -1% versus 2007

International pax +2%; domestic -3 %

In December 2008, passenger traffic fell by 6 % compared to the same period in 2007.

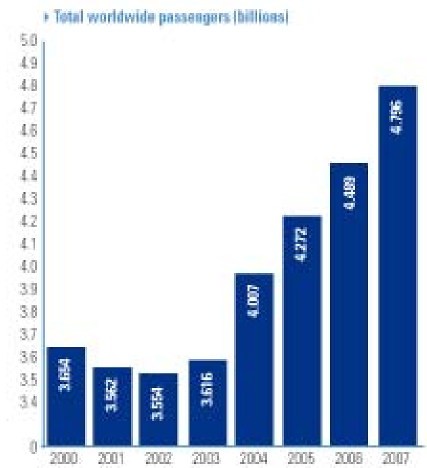
Source: ACI (Airports Council International), Feb. 2009

Note: IATA (International Air Transport Association) World Air Transport Statistics WATS (based on members only) gives different numbers

Graphically

Source: ACI Feb 2009

But in perspective…



Source: ACI Feb 2009

Airports welcome record 4.8 billion passengers in 2007.

Total worldwide passenger traffic reached an all time high, increasing by 6.9 % over 2006.

Final reports from 1200 ACI member airports confirm that they processed 4.8 billion passengers, 88.5 million metric tonnes of cargo and 76.4 million aircraft movements.

ACI, Summer 2008

World Traffic, (Pax-Km x 10^9) World and IATA

Year	Pax-km, Billions		IATA	Annual Growth %	
	IATA	World	share, %	IATA	World
2006	3426	3914	87.5	4	5
2005	3275	3708	88.3	6	0
2004	3082	3722	82.8	13	13.6
2003	2704	3236	83.5	(0.4)	1
2002	2770	3196	86	(1)	(1)
2001	2652	2912	91	(4)	(4)
2000	2757	3018	91	4	(2)
1999	2657	3074	86	6	6
1998	2514	2888	87	7	4
1990	1600	2186	73	18	8
1987	1042	1763	59	9	8
1982	712	1263	56	4	4
1977	600	1036	58		

Source: IATA WATS. Data basis changed in 2003.

In 2008, IATA carried 3,578 or about 80% of World

Non-IATA Members

- **Many airlines, typically "low cost", in top 50 worldwide are not in IATA**
  - Southwest, AirTran, Jetblue, Hawaiian, Spirit, American Eagle, Atlantic Southeast, Comair, Frontier, Mesa, Pinnacle (all US)
  - Ryanair (Ireland), easyjet (UK)
  - Westjet (Canada); Gol (Brazil)
  - Kingfisher (India)
  - Condor (Germany)

Source: IATA WATS for 2008, Table 4.2

Trend: Loss of Legacy Airlines

- **Disappearance of Major Airlines**
  - **Swissair, Sabena, TWA, Northwest**
- **Mergers National + Domestic**
  - **TAP + Portugalia (07); Air France + Air Inter; JAL and JAS (2002); Air India + Indian;**
  - **Gol + Varig (2007); Lufthansa + Swiss (2005) Air France + KLM (2004);**
  - **Delta + Northwest (09) ; American West + US Airways (06);**
- **Major Bankruptcies… and recoveries**
  - **United, US Airways, Delta, Air Canada,**

Trend: Rise of New Carriers

- Low-Cost
  - ✈ Southwest, jetBlue, Air Tran (US)
  - ✈ Westjet (Canada)
  - ✈ Ryanair, easyjet (UK)
  - ✈ Air Asia, Kingfisher (India)
- Chinese
  - ✈ Cathay Pacific, China Airlines, EVA
- Integrated Cargo
  - ✈ Fedex, UPS, DHL

Trend: Rise Second Airports

- Low-Cost
  - ✈ Miami/Fort Lauderdale; Dallas/Love
  - ✈ London/Stansted; Frankfurt/Hahn
  - ✈ Barcelona/Girona; Brussels/Charleroi
- Cargo
  - ✈ Memphis (Fedex); Louisville (UPS)
  - ✈ Cologne (Fedex hub)
- Now ~ 75 Multi-airport systems worldwide (cities with 2 or more significant airports)

Trend: Size of Aircraft stable

- Average seats per aircraft on IATA scheduled flights has stayed constant over decade: ~ 190 seats/aircraft (IATA WATS Table 3.4)
- Impacts sales of new aircraft. As of Aug 09
  - 200 orders for very large Airbus A380 (525 to ~850 pax in all-economy). Range > 10,000 km
  - 850 net orders for smaller Boeing 787 “Dreamliner” (210 -330 pax). Range > 15,000 km
  - Source: wikipedia for A380 and Boeing 787
- Demand is for smaller aircraft that can link distant airports bypassing connecting hubs

Principal drivers of air transportation industry

- Long-term annual decrease in air fares:
  - Driving comparable annual worldwide traffic growth – aircraft size, engines, composite materials
- Low-cost carriers
  - Southwest, AirTran, Jet Blue, Westjet, Ryanair, easyjet, AirAsia
  - New business practices – efficiency, changed work rules…
- Commercialization:
  - market economy management replaces… government ownership and economic regulation
- Globalization:
  - transnational airline alliances and airport groups
- Technical innovation:
  - e-commerce, satellite-based navigation

Cost Trends

- **Over past decade and more…**
  - Yields (revenues/unit distance) dropped ~20%
  - While inflation has risen ~50%
  - So real costs halved (0.8/1.5 ~ 0.5)

  - Meanwhile traffic doubled
  - Implying price elasticity about -1.3 > -1.0
  - So total revenues grow as price drops

Recent Major Airport Projects

Atlanta, Toronto	Airport Makeovers
(Bangkok), Kobe	Major New Airport
Osaka/Kansai; Tokyo/Haneda	Runway landfills
Singapore	Massive new Terminal
Shanghai/Pudong	New Runway, Terminal
Paris/de Gaulle; DFW	Pax Buildings, APM
London/HRW	Terminal 5 ($8 billion)
Frankfurt	A380 base (and T3?)
Madrid ; Miami/Intnatl	Runway, Buildings
Doha (Qatar); Dubai	Major Projects

Thought Questions

- ✈ **Which are the biggest airlines?**
- ✈ **Which are the biggest airports?**
- ✈ **How do we measure big?**

Airline Rankings 2008 (Passengers, millions)

Airline	Passengers Millions
Southwest	102
American	93
Delta	72
United	63
China Southern	58
Ryanair	58
US Airways	55
Lufthansa	55
Air France	50
Northwest	50
Continental	47
All Nippon Airways	47
Japan Airlines	47
easyJet	45
Qantas	38

Source: IATA WATS 2009 Table 4.2

Airline Rankings 2006 (Passengers, millions)

Airline	2006	2004	2003	2002	1995	1992	Annual % 02-06
American	100	92	89	94	80	86	1.6
Southwest	96	81	66	64	*	28	12.5
Delta	74	87	84	90	87	83	(4.4)
United	69	71	67	69	79	67	0.0
Northwest	56	56	53	54	49	44	0.9
Lufthansa	51	48	44	44	33	27	4.0
Air France	49	45	44	43	*	14	3.5
ANA	49	46	43	44	38	35	2.8
JAL	49	52	34	34	29	24	11.0
China Southern	49	39	*	21	*	*	33.3
Continental	47	41	38	40	35	38	4.4
Ryanair	41	28	23	21	*	*	23.8
US Airways	36	42	41	47	58	55	(5.9)
British	36	35	35	34	32	25	1.5
China Eastern	35	21	*	*	*	*	
easyjet	28	22	22	21	*	*	8.3
Air China	31	24	*	*	*	*	
Iberia	28	26	25	24	*	*	4.2
SAS	25	20	20	23	19	14	2.2
Alitalia	24	22	22	22	21	20	2.3
Qantas	24	24	24	24	*	*	0.0
Air Canada	23	21	20	23	*	*	0.0

Source: IATA WATS

Airline Rankings 2006 (Pax-Km, billions)

Airline	2006	2004	2003	2002	1995	1992	Annual % 02-06
American	224	209	193	196	165	157	3.6
United	189	184	167	176	180	149	1.8
Delta	159	158	144	153	137	130	1.0
Air France	123	107	99	99	50	37	6.1
Continental	123	101	91	91	57	69	8.8
Northwest	117	118	110	116	101	94	0.2
British	115	106	100	99	94	72	4.0
Lufthansa	115	109	97	94	62	49	5.6
Southwest	108	87	77	71		22	13.0
JAL	89	95	76	83	70	55	1.8
Singapore	88	77	64	74	48	37	4.7
Qantas	79	74	69	73	52	31	2.1
Emirates	74	*	*	*	*	*	
Air Canada	72	66	59	69	*	*	1.1
KLM	72	63	57	59	44	31	5.5
Cathay Pacific	71	57	43	49	*	*	11.2
China Southern	69	54	*	*	*	*	
USAirways	60	65	61	64	61	56	(1.6)
Air China Ltd	60	*	*	*	*	*	
ANA	58	55	52	54	43	38	1.9
Thai	55	51	45	*	*	*	NA

Source: IATA WATS

Airline Rankings 2006 (Pax-Km, billions)

Airline	2006	2004	2003	2002	1995	1992	Annual % 02-06
American	224	209	193	196	165	157	3.6
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Delta	159	158	144	153	137	130	1.0
Air France	123	107	99	99	50	37	6.1
Continental	123	101	91	91	57	69	**8.8**
Northwest	117	118	110	116	101	94	0.2
British	115	106	100	99	94	72	4.0
Lufthansa	115	109	97	94	62	49	5.6
Southwest	108	87	77	71		22	**13.0**
JAL	89	95	76	83	70	55	1.8
Singapore	88	77	64	74	48	37	4.7
Qantas	79	74	69	73	52	31	2.1
Emirates	74	*	*	*	*	*	
Air Canada	72	66	59	69	*	*	1.1
KLM	72	63	57	59	44	31	5.5
Cathay Pacific	71	57	43	49	*	*	**11.2**
China Southern	69	54	*	*	*	*	
USAirways	60	65	61	64	61	56	(1.6)
Air China Ltd	60	*	*	*	*	*	
ANA	58	55	52	54	43	38	1.9
Thai	55	51	45	*	*	*	NA

Source: IATA WATS

Airline Rankings 2008 (Size of Fleet)

Airline	Aircraft in Fleet	
	Wide Body	Total
Federal Express	284	635
Japan Airlines	163	212
American	151	669
Emirates	126	126
Cathay Pacific	122	122
Lufthansa	119	422
All Nippon Airways	118	210
British	118	245
Singapore	114	na
United	114	409
Delta	111	451
Air France	108	401
Korean	101	130
Qantas	83	225
Saudi Arabian	83	155

Source: IATA WATS 2009 Table 4.3

Source: IATA WATS

Airline Alliances

Star Alliance -- United, Lufthansa + Swiss, Air Canada, US Airways, Thai, ANA, Singapore, LOT, SAS, TAP, Austrian, bmi, Turkish, Egyptair, Air New Zealand, South African, Asiana,, Shanghai, Spanair, Air China

oneworld American, British, Finnair, Iberia, Malev Qantas, Japan Airlines, Cathay Pacific, Lan Chile, Royal Jordanian

SkyTeam Air France + KLM, Alitalia, Czech, Korean, Continental, Delta + Northwest, Aeromexico, Aeroflot, China Southern

Source: IATA WATS 2009 Table 4.4

Alliances' Market Shares 2008

Alliance or Airline	Pax- km Billions	% of IATA	% of World
Star	1,002	28.6	23
Sky Team	837	23.9	19
One World	700	20.0	16
Emirates	101	2.9	2.3
China Eastern	53	1.5	1.2

Source: IATA WATS 2009 Table 4.4

Airports by millions of pax

- **Big changes in recent years**
- **Big increases in**
  - Big Hubs – Madrid, Paris/de Gaulle; Munich, Philadelphia
  - Medium Hubs – Dubai, London/Stansted,
  - Secondary airports – Frankfurt/Hahn
  - Asia: Thailand, Dubai ; especially China
- **“Close” of old hubs**
  - Pittsburgh (US Airways shrunk to Philadelphia)
  - St Louis (TWA merged out of existence)
  - Zurich (collapse of Swissair)

Airports, top 15 by Pax 2008

Airport	Passengers Millions	Movements Thousands
Atlanta	90	979
Chicago/O’Hare	69	882
London/Heathrow	67	479
Tokyo/Haneda (domestic a/p)	67	340
Paris/de Gaulle	61	560
Los Angeles/International	60	623
Dallas/Fort Worth	57	656
Beijing	56	432
Frankfurt/Main	53	486
Denver	51	616
Madrid	51	470
Hong Kong/Chep Lap Kok	48	310
New York/Kennedy	48	436
Amsterdam	47	447
Las Vegas	44	579

Source: IATA WATS 2009 Table 1.7

Airports, top 15 – ACI 07

Rank	City	Code	Total Passengers	% Change
1	ATLANTA GA	ATL	89 379 287	5.3
2	CHICAGO IL	ORD	76 177 855	(0.1)
3	LONDON	LHR	68 068 304	0.8
4	TOKYO	HND	66 823 414	1.1
5	LOS ANGELES CA	LAX	61 896 075	1.4
6	PARIS	CDG	59 922 177	5.4
7	DALLAS/FORT WORTH TX	DFW	59 786 476	(0.7)
8	FRANKFURT	FRA	54 161 856	2.6
9	BEIJING	PEK	53 583 664	**10.1**
10	MADRID	MAD	52 122 702	**13.9**
11	DENVER CO	DEN	49 863 352	5.4
12	AMSTERDAM	AMS	47 794 994	3.8
13	NEW YORK NY	JFK	47 716 941	**11.9**
14	HONG KONG, CHINA	HKG	47 042 419	7.3
15	LAS VEGAS NV	LAS	46 961 011	3.2

US Airports, top 15 – FAA 07

	Locid	City	Airport Name	2007 Total	2006 Total	% Change
1	ATL	Atlanta	International	86.5	82.7	4.6%
2	ORD	Chicago	O'Hare	73.0	73.7	-0.8%
3	LAX	Los Angeles	International	60.2	58.7	2.6%
4	DFW	Dallas	Fort Worth	57.0	57.3	-0.5%
5	DEN	Denver	International	48.2	45.6	5.7%
6	JFK	New York	Kennedy	46.8	42.1	11.1%
7	LAS	Las Vegas	International	45.1	44.1	2.3%
8	PHX	Phoenix	International	41.6	41.2	1.0%
9	IAH	Houston	Intercontinental	41.5	41.0	1.4%
10	EWR	Newark	Liberty	36.3	35.6	2.0%
11	MCO	Orlando	International	35.2	33.6	4.8%
12	DTW	Detroit	Metropolitan	35.0	35.0	0.1%
13	SFO	San Francisco	International	34.6	32.5	6.4%
14	MSP	Minneapolis	St Paul	33.9	34.4	-1.3%
15	CLT	Charlotte	International	33.2	29.5	12.4%

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US Airports, next 15 – FAA 07

16	MIA	Miami	International	32.4	31.3	3.4%
17	PHL	Philadelphia	International	31.3	30.8	1.7%
18	SEA	Seattle	Tacoma	30.8	29.4	4.9%
19	BOS	Boston	Logan	27.6	27.1	1.8%
20	LGA	New York	La Guardia	25.1	25.9	-3.1%
21	IAD	Washington	Dulles	23.6	22.1	6.7%
22	FLL	Miami	Fort Lauderdale	22.2	20.4	8.6%
23	SLC	Salt Lake City	International	21.1	20.6	2.6%
24	BWI	Washington	Baltimore	21.0	20.6	1.9%
25	HNL	Honolulu	International	20.8	19.7	5.5%
26	TPA	Tampa	International	18.6	18.4	1.3%
27	SAN	San Diego	International	18.3	17.4	4.7%
28	MDW	Chicago	Midway	18.3	17.8	2.4%
29	DCA	Washington	Reagan	18.1	17.9	0.7%
30	CVG	Cincinnati	International	15.5	16.0	-3.2%

Airports, top 15 by Cargo 2008

Airport	Cargo Tons Millions
Memphis	3.7
Hong Kong/Chep Lap Kok	3.7
Shangha/Pudong	2.6
Seoul/Incheon	2.4
Anchorage	2.3
Paris/de Gaulle	2.3
Frankfurt/Main	2.1
Tokyo/Narita (International)	2.1
Louisville	2.0
Singapore	1.9
Dubai	1.8
Miami/International	1.8
Los Angeles/International	1.6
Amsterdam	1.6
Taipei	1.5

Source: IATA WATS 2009 Table 1.7

Cargo Airports, top 15 – ACI 07

Rank	City	Code	Total Cargo (tonnes)	% Change
1	MEMPHIS TN	MEM	3 840 491	4.0
2	HONG KONG	HKG	3 773 964	4.5
3	ANCHORAGE AK*	ANC	2 825 511	0.6
4	SHANGHAI	PVG	2 559 310	**18.0**
5	INCHEON	ICN	2 555 580	9.4
6	PARIS	CDG	2 297 896	7.9
7	TOKYO	NRT	2 254 421	(1.2)
8	FRANKFURT	FRA	2 127 646	8.4
9	LOUISVILLE KY	SDF	2 078 947	4.8
10	MIAMI FL	MIA	1 922 985	5.1
11	SINGAPORE	SIN	1 918 159	(0.7)
12	LOS ANGELES CA	LAX	1 884 317	(1.2)
13	DUBAI	DXB	1 668 505	**11.0**
14	AMSTERDAM	AMS	1 651 385	5.4
15	NEW YORK NY	JFK	1 607 050	(1.9)

Cargo Airports, next 15 – ACI 07

Rank	City	Code	Total Cargo (tonnes)	% Change
16	TAIPEI	TPE	1 605 681	(5.5)
17	CHICAGO IL	ORD	1 533 606	(1.6)
18	LONDON	LHR	1 395 905	3.9
19	BANGKOK	BKK	1 220 001	3.2
20	BEIJING	PEK	1 192 553	**15.9**
21	INDIANAPOLIS IN	IND	998 675	1.1
22	NEWARK NJ	EWR	963 794	(0.6)
23	LUXEMBOURG	LUX	856 741	13.8
24	TOKYO	HND	852 454	1.8
25	OSAKA	KIX	845 976	0.5
26	BRUSSELS	BRU	747 434	**11.3**
27	DALLAS/FORT WORTH TX	DFW	724 140	(4.1)
28	ATLANTA GA	ATL	720 209	(3.5)
29	COLOGNE	CGN	710 244	2.8
30	GUANGZHOU	CAN	694 923	6.4

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Electronic Ticketing

- **Big Savings – up to $3 billion for air transport industry**
  - Less staff, less space, less rent…
  - $1 per E ticket vs. ~$10 per paper ticket
- **Status**
  - As of Jan 09, nearly all tickets worldwide
  - Some airlines at 100%: Southwest, Jetblue, Ryanair

Source: IATA WATS 2009, section 3.7

Bar Coded boarding passes Common Use Kiosks

- **2D Bar Coding**
  - Estimated savings: $3.50 per ticket, or about $2.5 Billion/year for 100% use
  - IATA Goal: 100% by 2010. Over 200 airlines using by Jan. 2009.
- **Common Use Kiosks**
  - Estimated Savings $ 2.50 per check in
  - 49 airports had CUSS by 2007 (no recent data)
  - Many more have airline proprietary kiosks

Source: IATA WATS

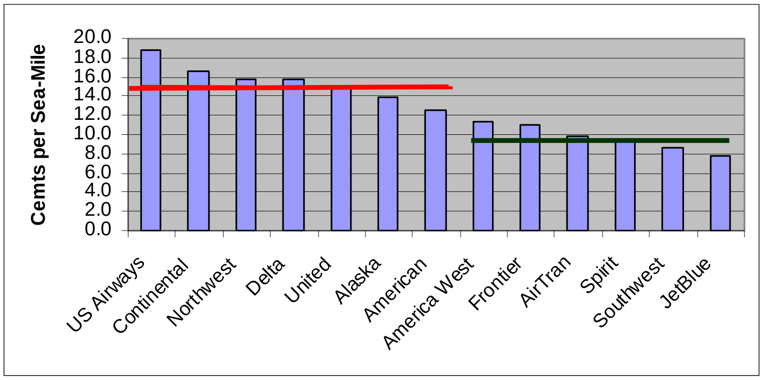
New Types of Airlines

- **Cargo Integrators**
  - UPS, Fedex, DHL
- **Low-Cost Carriers**
  - Point-to-point: Southwest, Jetblue, Ryanair, Air Asia, Gol (Brazil)
  - "Network": easyjet, AirTran
  - Quasi-Network: Southwest??
- **The innovators are the most profitable and valuable airlines**

Challenge to Traditional Network Carriers

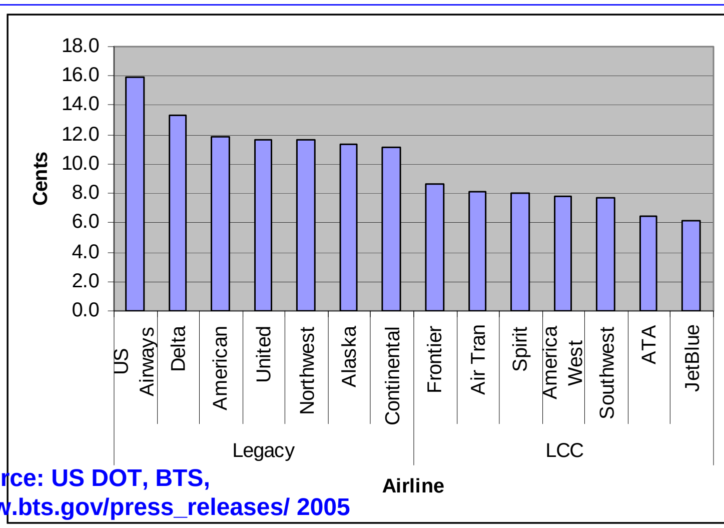
- **Is their business model working?**
  - Will people pay enough for convenience of
    - **easy connection at hubs; travel agents**
    - **big expensive passenger buildings**
- **If not, what will they do?**
  - Squeeze out costs? (wages, standards)
  - Refocus on international? (Most US airlines)
  - Manage by having "cheap" partners?
    - **Delta -- Song; United -- Ted… (hasn't worked)**
  - Disappear? TWA, Sabena, Swissair…
  - Merge? KLM, America West, Japan AS…

Airline Seat-Mile Costs, 06 Q1



Source: US DOT, BTS, www.bts.gov/press_releases/ 2006

Airline Seat-Mile Costs, 05



Source: US DOT, BTS, www.bts.gov/press_releases/ 2005

Effect of Low-Cost Carriers

- **Market Share becoming dominant**
  - US: About 45%
  - Europe: 12% + 20% charters = 1/3 of total
  - Inter-Asia: only 6% as of summer 2004
- **Real Yields have dropped by 1/3 in past decade**

Source: IATA WATS and McKinsey and Co.

Southwest compared to Leading Domestic Competitors, 2006

Airline	Domestic Traffic (millions, 2006)	Average Aircraft Age (years)	Fleet Size		Change %
			2006	2007	
Southwest	96.3	9.8	445	491	+ 10
American	76.3	14.1	699	672	- 3
Delta	63.4	13.3	434	428	- 3

Sources US FAA, Bureau of Transportation Statistics and Airfleets. net

Southwest compared to Leading Domestic Competitors, 2008

Airline	Millions of Passengers	
	Domestic	Total
Southwest	102	102
American	72	93
Delta	59	72

Source: IATA WATS 2009 Table 4.2

Compared to 2006, Southwest grew domestically by about 6%, while American and Delta each shrank by about that amount. Southwest increasingly dominates US domestic market.

Consequences for Traffic

- **Cheaper travel will increase traffic**
- **Where will it go?**
  - To traditional hubs of legacy majors?
  - To/from leisure locations and homes?
    - **Yucatan, Malaga, Bali, etc**
  - To secondary airports?
    - **Miami/Ft. Lauderdale, Los Angeles/Ontario, London/Stansted, Frankfurt/Hahn, Rome/Ciampino, etc.**
- **Airport customers are demanding new locations, cheaper facilities**

Consequences for Airports (1)

- **"Low cost airlines" are causing the development of "low cost airports"**
  - Secondary airports: Boston/Providence, Miami/Fort Lauderdale, London/Luton
  - Inexpensive terminals, designed for new ways of handling passengers – such as Jetblue facility at New York/Kennedy
    - **Compare Boston Delta and Jetblue facilities:**
    - **Pax per gate about 500,000 pax for Jetblue, about half for Delta**

Consequences for Airports (2)

- **Struggle of "low cost" and "legacy" airlines extending to competition between "low cost" and traditional main airports**
  - Boston/Providence vs. Boston/Logan
  - Miami/International vs. Miami/Ft Lauderdale
  - London/Heathrow vs. London/Stansted
  - Bangkok/Suvarnabhumi vs. B/Don Muang

Bottom Line ...

- **The nature of the Airport Business is changing dramatically**
- **Not clear that airport professionals fully recognize full implications**
- **Strong professional tensions …**
  - ✈ Some examples (not for publication)