Aviation Industry Overview

Prepared for:
ASCE Air Transportation Group
20th Annual Conference
April 5, 2017

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Eric Toler
ICF (formerly SH&E) is a full-service global aviation consultancy

- 54 years in business (founded 1963)
- 100+ professional staff
  - Dedicated exclusively to aviation and aerospace
  - Blend of consulting professionals and experienced aviation executives
- Specialized, focused expertise and proprietary knowledge
- Broad functional capabilities
- More than 10,000 private sector and public sector assignments
- Backed by parent company ICF International (2016 revenue: US$1.19 billion)
- Global presence — offices around the world

New York • Boston • London • Singapore • Beijing • Hong Kong
Our client base spans the aviation sector, giving us a holistic view of the industry

- International and regional passenger airlines
- Major and regional airports
- National, regional and local governments
- International development agencies
- Tourism agencies
- Air cargo, express and integrated logistics operators
- IT, equipment, and service providers
- Airframe, engine, and avionics suppliers
- Leasing companies
- Investors and financial institutions
- Booking, distribution, and travel services
- Maintenance, Repair, and Overhaul industry
- Corporate and business aviation
ICF offers a global airline client list and network of airline contacts
ICF is especially strong in international air service experience and support.
Global Trends and Outlook
INDUSTRY OVERVIEW

World air traffic growth has outpaced GDP growth, and this trend is expected to continue into the future.

*World Traffic grew 1.9x GDP from 1970-2015, and is forecast to grow 1.7x through 2035*

Driven by low fuel costs and consolidation, the global airline industry achieved record profitability in 2016.

*Rising fuel and labor costs will contribute to a decrease in profitability in 2017.*

**Global Airline Profitability**

1997 - 2017F

- **1997:** $9B
- **1999:** $8B
- **2001:** $4B
- **2003:** $5B
- **2005:** $15B
- **2007:** $17B
- **2009:** $8B
- **2011:** $9B
- **2013:** $11B
- **2015:** $33B
- **2017F:** $36B

**Regions:**
- **North America:** $18.1B
- **Asia Pacific:** $6.3B
- **Europe:** $5.6B
- **Middle East:** $0.3B
- **Latin America:** $0.2B
- **Africa:** ($0.8B)

Sources: IATA, ICF Analysis

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However, record profitability has been largely limited to carriers in North America and many carriers continue to struggle.

**Global Airline EBIT Margin by Region**

<table>
<thead>
<tr>
<th>Region</th>
<th>2008</th>
<th>2012</th>
<th>2017F</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>3%</td>
<td>5%</td>
<td>13%</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>-2%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>Europe</td>
<td>1%</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Latin America</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Middle East</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Africa</td>
<td>-4%</td>
<td>-1%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Sources: IATA, ICF Analysis
IATA forecasts a 3.7% annual average growth in global air passenger journeys – differing by region.

2015-2035 Traffic CAGR and Increase in Annual Passenger Counts by Region

1.9 times the number of air passenger journeys in 2035 compared with 2017

**North America**
- 535 M
- 2.8% CAGR

**Europe**
- 566 M
- 2.5% CAGR

**Middle East**
- 245 M
- 4.8% CAGR

**Asia Pacific**
- 1,831 M
- 4.7% CAGR

**Latin America**
- 192 M
- 3.6% CAGR

**Africa**
- 189 M
- 5.1% CAGR

Source: IATA
Airlines have found the art of “capacity discipline” in recent years, though this commitment may be tested in 2017.

Global Passenger Traffic / Capacity Growth

Year-Over-Year Percent Change

Sources: IATA Air Transport Market Analysis (2017) and Economic Performance of the Airline Industry (Dec 2016)
Fuel prices bottomed out in early 2016, and have risen in the last 12 months.

Source: EIA, ICF International analysis

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Aircraft production and delivery rates have increased to meet backlogs, though orders have recently fallen.
The current commercial air transport fleet consists of 28K aircraft; over half are narrowbody.

By Aircraft Type:
- Narrowbody Jet: 54%
- Regional Jet: 13%
- Turboprop: 14%
- Widebody Jet: 19%

By Global Region:
- Europe: 28%
- North America: 30%
- Middle East: 7%
- Latin America: 5%
- Africa: 5%
- Asia Pacific: 7%

27,957 Aircraft

Source: CAPA 2016
The 787/A350 have been deployed by airlines around the world to open long-haul, medium-demand routes

Most 787/A350 aircraft at NYC airports are deployed on existing routes

New Long-Haul Markets Launched by B787/A350 Aircraft
As airline strategy continues to evolve, a new long-haul, low cost model has emerged

March 2013

March 2017

• 108 737 MAX on order
• 45 787-9 Dreamliners on order
• 9 long-haul destinations added

Sources: Innovata, CAPA  Note: Aircraft includes those place by operator and by lessors assigned to operator
Norwegian is advancing its long-haul, low-cost strategy with 10 new routes from the Northeast U.S. to Europe

- **737 MAX**: Efficient, long-range narrowbody makes far, thin routes feasible
  - Potential to disrupt legacy, full-service carriers operating widebody aircraft
  - Q2 2017 delivery in support of a June 2017 service launch
  - Ambitious growth plans with 108 737 MAX aircraft on order

- **Promotional non-stop Fares**: As low as $65-$99 one-way
  - Additional fees for seat assignments, carry-ons, food, drinks, etc.

Source: CNN, BBC, BoardingArea
Other long-haul low cost airlines are being launched in response to Norwegian

- **IAG launching Level Airlines**
  - Los Angeles and San Francisco to Barcelona via A330 beginning in June 2017

- **Lufthansa expanding Eurowings**
  - New A350 flights from Cologne, Germany to Seattle, Orlando, Miami, and Las Vegas in July 2017

- **Long-haul low cost challenges:**
  - “Hidden costs” – catering, turnaround times, crew overnight
  - Utilization – long hours but fewer cycles
  - Expectations – more services, comfort on long-haul
  - Fewer advantages – traditional fuel and seat density advantages vs. mainline carriers eroded on long-haul service
Hybrid low cost carriers are blurring the line between full service carriers and pure low-cost carriers

*New hybrid model: combination of cost savings methodology of pure LCCs with the services, flexibility, and routes structure of full service carriers*

- **Ultra Low Cost Carriers**
  - Point-to-point
  - No codesharing
  - Direct Sales
  - Few aircraft types
  - Unbundled fares

- **Low Cost Carriers**
  - Hub and spoke
  - Codesharing/Alliances
  - GDS distribution
  - Mix of aircraft types
  - Bundled Fares

- **Hybrid Carriers**

- **Full Service Carriers**
Global airline alliances have reached maturity, representing more than 50% of global capacity and generating more than $380 billion in revenue annually.

Source: Airways Magazine
However, fault lines are beginning to emerge as airlines increasingly form partnerships across alliances.
Tactical, partner-specific models outside the three major alliances are flourishing

- **Equity stakes/alliances**
  - Cross-alliance
  - Etihad model

- **Joint Ventures**
  - Latin America and Asia partnerships key focus for U.S. airlines

- **Non-aligned carriers**
  - e.g. Alaska, JetBlue, Emirates, Icelandair
Example: JetBlue has an extensive network of 40 global partners
Example: Alaska Airlines generates $850 million in code share revenues resulting from its network of partnerships

Source: Alaska Airlines, Airways Magazine
Outlook

- Government policy will have a significant impact on industry performance
  - Travel ban, personal device ban
  - Investment in airport infrastructure and ATC
  - Liberalization

- Traffic growth continues to outperform GDP growth
  - Air traffic continues to prove its resilience to slow economic growth by outperforming global GDP
  - However, the industry is still subject to exogenous shocks, e.g. terrorist events, natural disasters, oil prices, government policy

- Supply and demand factors will contribute to robust growth in 2017
  - Asia, Middle East, and Africa will grow the fastest, driven by growth of the middle class
  - Low-cost carriers and Ultra low-cost carriers continue to expand aggressively and promote air travel accessibility
  - Delivery of new aircraft, including fuel efficient and next gen aircraft, will open new service opportunities

Source: IATA, Boeing CMO, Airbus GMF, Air Cargo World, South China Morning Post
U.S. Trends
Significant consolidation has occurred in the U.S. airline industry in the past decade, and 2016 closed with yet another merger.

- **2003**: US Airways and Aloha file for bankruptcy
- **2004**: Delta and Northwest file for bankruptcy
- **2005**: US Airways-America West merger
- **2006**: US Airways files for bankruptcy
- **2007**: Delta-Northwest merger
- **2008**: Aloha ceases operations
- **2009**: United-Continental merger
- **2010**: American-US Airways merger
- **2011**: American Airlines files for bankruptcy
- **2012**: Southwest-AirTran merger
- **2013**: Alaska-Virgin America merger
- **2016**: Alaska-Virgin America merger
Virgin and Alaska are building up their West Coast presence, recently announcing an aggressive route expansion.

New Alaska/Virgin Nonstop Service from SFO and SJO

Virgin America Operated
Alaska Operated

Source: World Airline News
With the help of low fuel prices, U.S. airlines have achieved elevated profits in the last two years.


*Note: YE 3Q 2016*

Source: U.S. DOT Form 41

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Revenue weakness and increasing expenses contributed to a small reduction in U.S. airline profitability in 2016.

**INDUSTRY OVERVIEW**

Sources: A4A, analysis of airline financial reports

### % Change in Operating Revenues

<table>
<thead>
<tr>
<th>Component</th>
<th>2016 vs. 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pax Traffic</td>
<td>3%</td>
</tr>
<tr>
<td>Pax Yield</td>
<td>-5%</td>
</tr>
<tr>
<td>Cargo Revenue</td>
<td>-10%</td>
</tr>
<tr>
<td>Other Revenue</td>
<td>-1%</td>
</tr>
<tr>
<td>Total</td>
<td>6%</td>
</tr>
</tbody>
</table>

### % Change in Operating Expenses

<table>
<thead>
<tr>
<th>Component</th>
<th>2016 vs. 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>9%</td>
</tr>
<tr>
<td>Fuel</td>
<td>-17%</td>
</tr>
<tr>
<td>Maintenance</td>
<td>3%</td>
</tr>
<tr>
<td>Airports</td>
<td>2%</td>
</tr>
<tr>
<td>Aircraft</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>1%</td>
</tr>
</tbody>
</table>
Labor has replaced fuel as airlines’ largest cost item, and will continue to rise in the coming years.

Share of Operating Expenses by Type, U.S. Airlines (2006 vs. 2016*)

- Fuel
- Labor
- Ownership
- Maintenance
- Other

*Note: YE 3Q 2016
Source: U.S. DOT Form 41

Southwest Pilots Approve Contract That Boosts Pay Almost 30%
by Mary Schlangenstein
November 7, 2016, 1:45 PM EST Updated on November 7, 2016, 2:30 PM EST

Delta Agrees to 30% Raise for Pilots After Nine-Month Standoff
by Michael Sasso
September 30, 2016, 4:13 PM EDT Updated on September 30, 2016, 5:20 PM EDT

American Airlines stock plunges on rising labor costs

AEROSPACE & DEFENSE | Fri Jan 27, 2017 | 12:46pm EST
Although ULCCs account for only 6% of domestic capacity, they are growing at a much faster rate than network carriers and traditional LCCs.

ULCCs have a limited presence at NYC airports with a 2% share of domestic capacity.

Source: Innovata Schedules

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U.S. legacy carriers have introduced bare-bones “basic economy” fares in response to ultra-low-cost-carrier pressure.
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INDUSTRY OVERVIEW

Domestic load factors have consistently increased since 2001, now reaching 85%

Average load factors in 2016 at NYC airports matched the national average of 85%


Source: U.S. DOT T100
West Coast airports in particular have seen the largest capacity gains in the last 5 years, while many rust belt airports are among the biggest losers.

NYC airports saw a 13% gain in seat capacity between 2011-2016.

Source: Innovata Schedules
Revenue from baggage and other ancillary products has become a key element in the airlines’ ability to achieve top-line growth.

*Note: YE 3Q 2016
Source: U.S. DOT Form 41
U.S. airlines have robust aircraft orders, supporting fleet renewal and expansion
Airlines are investing profits in improving the passenger experience and operational performance

- New or refurbished aircraft, larger overhead bins for luggage
- Increased availability of power/USD outlets, wifi, and inflight entertainment
- Improved design of airport check-in areas and departure lounges
- Investment in improving security screening process
- Continued development of mobile apps and kiosk functionality
- Improved operational reliability
- Enhanced tools (e.g. tablets) for customer-facing employees

Source: A4A
**U.S. airlines have seen continual operational improvements over the last several years**

<table>
<thead>
<tr>
<th>Flight Completion Factor (2016)</th>
<th>On-Time Arrival Rate (2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2016</strong></td>
<td><strong>2016</strong></td>
</tr>
<tr>
<td><em>Best since 1992</em></td>
<td><em>Best since 2012</em></td>
</tr>
<tr>
<td>98.8%</td>
<td>81.4%</td>
</tr>
<tr>
<td><strong>2015</strong></td>
<td><strong>2015</strong></td>
</tr>
<tr>
<td>98.5%</td>
<td>79.9%</td>
</tr>
<tr>
<td><strong>2014</strong></td>
<td><strong>2014</strong></td>
</tr>
<tr>
<td>97.8%</td>
<td>76.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Properly Handled Bag Rate (2016)</th>
<th>Oversales per 10,000 Customers (2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2016</strong></td>
<td><strong>2016</strong></td>
</tr>
<tr>
<td><em>Best ever recorded</em></td>
<td><em>Best ever recorded</em></td>
</tr>
<tr>
<td>99.73%</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>2015</strong></td>
<td><strong>2015</strong></td>
</tr>
<tr>
<td>99.68%</td>
<td>0.76</td>
</tr>
<tr>
<td><strong>2014</strong></td>
<td><strong>2014</strong></td>
</tr>
<tr>
<td>99.64%</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Source: A4A
NYC airports seat capacity has grown faster than the national average in the last 5 years, and new routes will support continued growth.

**Average Annual Seat Capacity Growth (2011-2016)**

![Graph showing seat capacity growth](image)

**New 2017 Routes (through August)**

- **JFK**
  - Delta – Glasgow and Bangor
  - Xiamen Airlines – Fuzhou

- **Newark**
  - United – Sacramento, San Jose
  - Alaska – San Jose
  - Southwest – Oakland
  - LOT Polish – Warsaw
  - Allegiant – Ft. Walton Beach

- **Stewart**
  - Norwegian – Edinburgh, Dublin, Shannon, Belfast, Bergen (83% increase in summer capacity)

Source: Innovata Schedules
Thank you!