Episode 1: Industry Status

Wed. September 15, 2021
7:30-9:30am EDT
• This session is **recorded**.

• Your mic is automatically **muted**.

• **Poll**: Click on Submit once you have selected your answer

• Use the **Q&A feature** on the right side of your screen to submit your questions to our panelists

• **Competition Law Guidelines**
Competition law guidelines

Do not discuss:

- Any element of prices, including fares or service charges
- Commissions
- Allocations of customers or markets
- Marketing plans, commercial terms or any other strategic decision
- Group boycotts
- Your relations with industry stakeholders
- Any other issue aimed at influencing the independent business decisions of competitors
Opening Remarks

Our host today:

Chris MARKOU
Head, Operational Cost Management – IATA
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- Role of the MCC
- MCTG Data collection – www.iata.org/mctg
- Poll and Q&A
Next Episodes

Episode 2 – Sept 22
(7:30am EDT or 1:30pm in GVA or 7:30pm SIN)
• IATA/Rolls Royce agreement

Episode 3 – Sept 29
(7:30am EDT or 1:30pm in GVA or 7:30pm SIN)
• Digital Aircraft Operations

Episode 4 – October 6
(7:30am EDT or 1:30pm in GVA or 7:30pm SIN)
• Operating in the post pandemic

Visit www.iata.org/mcc to register
Agenda

• Speaker introductions
• Poll
• Impact of COVID on the industry
• State of the airline industry and outlook
• Fleets & Utilisation
• Aviation Restart, Safely Managing Aircraft Return to Service
Our Speakers

Adam PILARSKI
Senior VP - AVITAS

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Michael MOOSBERGER
Senior Economist – IATA

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Andrew DOYLE
Senior Director, Market Development – Cirium

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Keith FERNANDES
Manager, Fleet Engineering – Virgin Australia
MCTG Vice-Chairman

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Poll
When will demand for travel be back to 2019 levels? (Results from 2020 & 2021 polls)

- 6-12 months: 9% (2020) vs 14% (2021)
- 12-24 months: 26% (2020) vs 28% (2021)
- 2-3 years: 36% (2020) vs 39% (2021)
- 3 years+: 24% (2020) vs 26% (2021)

Ep 1 - Industry Status

15 September 2021
Impact of COVID on the industry

Adam Pilarski
SVP – Avitas
Impact of COVID on the industry

IATA 17th Maintenance Cost Conference

Adam Pilarski,
Senior Vice President, AVITAS, Inc.
September 15th, 2021
Not Good!!!
Some general thoughts
Short term considerations
Long term considerations
Accept the reality that there is a power greater than you.
Best guess for return to 2019 levels

2024
What we know

- Domestic travel ahead of international
- Direct ahead of hubs
- Narrowbodies do better than widebodies
- The worst may still be ahead of us, at least financially
Long Term Questions

- Future of business travel
- Future of leasing
  - Provides financing to airlines
  - Impact on orders but even on the design of airplanes
- Role of Governments
Future of Forecasting

- Traditional models do not work right now
- Times of experiments
- New airlines, new airplane types, new fuels
Thank you for listening!
Please be safe and sane

Adam Pilarski

Gurudude@AVITAS.com
Questions?

Adam Pilarski
SVP – Avitas
State of the airline industry and outlook

Michael MOOSBERGER
Senior Economist – IATA
COVID-19
Update on the state of the airline industry and outlook
Michael Moosberger
Senior Economist
15th September 2021
Survival cost - a huge rise in airlines’ debt by end-2020

$220bn rise in airline debt as a result of govt aid and market issues

Government
- 430
- 58
- 14
- 24
- 78
- 39
- 8
- 651

Banks, capital markets, lessors

Airline industry financials are improving but still negative
Operating losses reduced to 20% of revenues by Q2 of 2021

Source: IATA Economics using data from the Airline Analyst
Transition to cash flow generation but uneven North America and China ahead of others with strong domestic recovery

Source: IATA Economics using data from the Airline Analyst

Net cash flow from operating activities (darker colour) and free cash flow (lighter colour) in Q2 2021*, % of revenues

North America: 40% Net cash flow, 30% Free cash flow
Asia Pacific: 12% Net cash flow, 12% Free cash flow
Europe: 12% Net cash flow, 12% Free cash flow
Latin America: 24% Net cash flow, 12% Free cash flow
Industry: 24% Net cash flow, 12% Free cash flow

*sample of 40 airlines
Air travel rebounded in July, but risks are rising. Global RPK recovery may stall after the rebound in Northern summer.

Source: IATA Economics using data from IATA Statistics and DDS ticketing data.
International air travel recovery based on few markets
Within Europe and North-Central America routes have improved

Source: IATA Economics using data from IATA Statistics
Domestic markets are vulnerable but rebound quickly. Setback in China but recovery continues once outbreak is under control.

Source: IATA Economics using IATA Monthly Statistics and DDS ticketing data.
Domestic load factors much stronger than international
Domestic load factors close to pre-crisis levels, international improving

Load factors on domestic and international markets

Source: IATA Economics using data from IATA Statistics
Air cargo volumes (CTKs) on strong upward trend
Seasonally adjusted CTKs 4.5% above pre-crisis peak by mid-2021

Source: IATA Economics using data from IATA Monthly Statistics. Data is adjusted for seasonality.
Consumers have accumulated savings to spend. In some markets, consumers’ ‘excess’ savings exceed 10% of GDP.

Source: Oxford Economics/Haver Analytics
New COVID-19 cases are rising in most regions
New variants have meant virus control much harder than expected

Source: IATA Economics using data from European Centre for Disease Control
Vaccine rollout creates differences in recovery paths
High income countries + China to recover first, but many will lag behind

Source: IATA using data from Airfinity (23rd July)
International travel restrictions remain high
Asia remains most stringent, Latin America and Europe improve

Source: IATA Economics using data from Oxford University
There is substantial pent-up demand but it is fragile. Surge of bookings from the UK to Portugal reversed in a month.

Forward bookings, UK - Portugal travel

% change vs the same period in 2019, 7-day MA

May 7th: UK announce Portugal to be added to green list.

June 3rd: UK announce Portugal to be removed from green list.

Source: IATA Economics using data from DDS
Full recovery of air travel will still take several years
Downside risks linked to virus variants and border policy

Global passenger departures, billions per year

Source: IATA/Tourism Economics APF, July 2021
Rapid recovery in domestic but international lags
Domestic above 2019 level by next year. International not until 2024

Source: IATA Economics using data from Tourism Economic/IATA Air Passenger Forecast, July 2021
Losses forecast to be reduced to USD38bn in 2021
Regions with large domestic markets to lead improvement

Source: IATA Economics

[Graph showing net profit and EBIT margin from 2007 to 2021.]

% of operating revenues
USD billion
-140 -120 -100 -80 -60 -40 -20 0 20 40 60

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Fleets & Utilisation

Andrew DOYLE
Senior Director, Market Development – Cirium
FLEETS & UTILISATION UPDATE

September 15, 2021
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"We allow data to flow fluidly, making it available how, where and when it is most needed, regardless the systems and services where it was created or will be consumed."

Accelerating Digital transformation
The Cirium Core forms the heart of our business

- A unique mix of proprietary technologies, skills, and processes. The foundation of our business from which all our work and services are derived.

- Ingesting millions of pieces of data every day from every corner of the aviation and travel sector and transforming them for real-world use.

- Providing an endless combination of practical datasets helping you make informed decisions to shape an intelligent future for your business and our industry.
The in-service passenger jet fleet has been growing steadily since February
The top 10 passenger jet storage locations have also seen inventories decline.
However, recent improvements in tracked daily passenger jet flight numbers may be levelling off, with international volumes still at half of pre-pandemic level.
Number of passenger jets tracked daily with Chinese operators is almost back to 2019 levels, but the rest of Asia Pacific is lagging.
Fleet activity for past 90 days shows stark impact of travel restrictions by region.

Daily flights tracked per MSN (90 days up to and including September 12)
Meanwhile in-service passenger jets are on average flying almost two hours less per day compared with 2019.

*7-day averages
Top 30 global carriers by fleet size flew majority of their aircraft at least once during seven days to September 12...
...but this was not the case for some Asia Pacific operators
For certain legacy aircraft series, less than half of fleet was tracked in flight during seven days to September 12...

![Proportion of total fleet Tracked in flight vs. Parked / not tracked](chart.png)

- **Tracked in flight**
- **Parked / not tracked**

(7 days to September 12, 2021)
...and high proportion of in-active passenger jets were pre-2004 build
Some latest-generation engine series are achieving higher average daily flight hours than in 2019.

*Excludes LEAP-1B due to impact of 737 Max return to service

% change in tracked 7-day average flight hours vs 2019, at September 12 2021
Daily estimated block fuel/CO$_2$ has declined more than flight volumes as operating patterns change and airlines favour newer-generation passenger jets.

*Assumes constant passenger/cargo load factors
Scenarios derived by Ascend by Cirium, using Cirium Schedules data and Cirium Fleets Analyzer as the key data sources for monthly capacity and in-service fleets.

Capacity (ASKs) factored using IATA's published global passenger load factor to derive monthly traffic for Jan 2019 to Feb 2020.

Initially, three forward demand & capacity scenarios outlined, corresponding to differing severity of demand impact, and time to recover to 2019 traffic levels:

- **Scenario 1**: Three month ‘hibernation’ phase, followed by gradual traffic recovery. 2019 traffic level reached by Q3 2021.
- **Scenario 2**: Three month ‘hibernation’ phase, followed by faster recovery. 2019 traffic level reached by Q1 2021.
- **Scenario 3**: Up to six month ‘hibernation’ phase, followed by slower recovery. 2019 traffic level not reached until 2023.

Subsequently, two additional scenarios constructed in September 2020, which included assumptions for separate domicile regions:

- **Scenario 4**: Traffic stagnates over winter 2020/2021, then gradual traffic recovery from Q3 2021. 2019 traffic level reached by 2023-2025, dependent on region.
- **Scenario 5**: as per Scenario 4, but faster rebound from Q3 2020.

Input assumptions on load factor, single-aisle/twin-aisle capacity split, and aircraft productivity.

Outputs are monthly global RPKs, ASKs, and in-service fleet numbers.

**Definition & data sources**
Passenger fleet in service is increasing ahead of more optimistic recovery scenario (S5)

Source: Cirium Fleets Analyzer, Ascend by Cirium analysis
Global aviation recovery is happening, but at a snail’s pace

August 9, 2023

How can aerospace firms (OEMs, MROs and supply chain), financial institutions and leasing companies stay ahead of the changing landscape of air travel?

in the latest Cirium LAVE: Market status and recovery outlook webinar, Bob Moria, global consultant, Max King, aerospace senior consultant, and George Bierkoff, head of value at Ascend by Cirium - the consulting arm of the business - shared the insights to take or anticipate future market supply and demand.

To view the full Cirium LAVE virtual event click here.

The dynamic is positive, the trajectory is positive

It’s no surprise that recovering from the impact of the pandemic will be difficult as we saw capacity down 52% cumulatively in 2020 over 2019. In fact, capacity remained down by 97% at the end of March 2023 over 2019, with the global airlines schedule projecting a recovery to 72% by 2025 and 90% by the end of July respectively.

IATA’s recent forecast predicted capacity growth in 2023 at 21.4%, which equates to daily down over 20%, according to the latest Cirium scheduled data, capacity is projected to be down only 40% this year over 2019. Among the remaining plenty of scope for revenue here given the delays to the year remain in outlook in the schedule. For now, this is a slightly more positive outlook that IATA, looking at the seven-day average trend for global capacity scheduled this year worldwide, we were 45% down over the 2019 equivalent at the end of July.

The key point is the dynamic is becoming more stable and the trajectory is more positive. For example, the current projection for the global schedule for August shows further recovery to 70% down over 2019 by the end of the month.

Airlines are still making revisions on a weekly basis and typically removing capacity from the schedule; however, it is less impactful than previously seen.

New IATA forecast and Ascend baseline scenario 4 both assume strong rebound in traffic in 2022, implies strong recovery in active fleet & utilisations

Source: IATA: NR: 20/2023 estimated

IATA Global RFPs | Ascend Scenario 4 | Ascend Scenario 5

2023: IATA assumes 70% RFP growth, Scenario 4 = 55% growth
Questions?

Andrew DOYLE
Senior Director, Market Development – Cirium
Aviation Restart, Safely Managing Aircraft Return to Service

Keith FERNANDES
Manager, Fleet Engineering – Virgin Australia
MCTG Vice-Chairman
AVIATION RESTART

SAFELY MANAGING THE AIRCRAFT DE-PRESERVATION PROCESS

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15 SEPTEMBER, 2021
SAFELY MANAGING AIRCRAFT RETURN TO SERVICE

1. Risk Based approach
   - Unexpected Change and identifying risks

2. Continuing Airworthiness during Parking
   - Program Adjustments

3. Return to Service Strategies
   - Phased pathway to safe & efficient return to service
## Continuing Airworthiness during Parking – preserves C of A / protects valuable assets

<table>
<thead>
<tr>
<th>ELEMENTS</th>
<th>DETAIL</th>
<th>ACTIONS</th>
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</table>
| 1 Unexpected Change             | • The pandemic created conditions of global grounding of worldwide fleet resulting in aircraft instantly parked/stores at locations in as-is conditions  
• Inability to enter aircraft into Parking/Storage programs in a suitable environment  
• Inability to quickly transition aircraft into Parking programs due to high volume  
• Non-availability of consumables / materials to preserve aircraft | Identify associated Risks and introduce effective controls  
Update internal processes and associated work instructions to manage rapid change |
| 2 Continuing Airworthiness Management | • Follow ICAs including OEM approved deviations  
• Monitor Program changes - AMM / Temporary Revisions / Service Letters / TAs  
• Ensure effective tracking controls – inspection consistency, transitions in/out of parking, repeat maintenance intervals | Resource to monitor, validate, and ensure compliance with the latest ICA revisions, re-work of existing task cards |
| 3 Program Adjustments           | • Optimize maintenance frequencies  
  o Engine/ APU run  
  o Operate aircon packs to ventilate cabins & manage relative humidity  
  o Fuel testing / treatments / Biocide – effectively control microbiological growth  
  o Defect Management - early identification and rectification impedes deterioration  
  o Corrosion (e.g., Engine Lip Skin), Bird & Insect Nesting preventions  
  • Parking / Storage location environmental considerations | Customise to local conditions to manage environmental deterioration, damage, defects |
| 4 Communication                 | • Communicate on key status updates and changes to Parking Programs  
  o Deviations/Extensions as published by OEMs  
  o Identified program issues, adjustments  
  o Introduced Optimisations | Establish regular update protocols with key stakeholders (Regulatory Authorities, CAMO, AMO) |
KEY CONSIDERATIONS

Return to service

**Risks**
Consideration of all identified risks/hazards/treatment measures captured in the initial and regular Risk Assessments

**Configuration**
Configuration controls, compliance with the allowable configuration and actions to address existing gaps – hardware & software configurations
Address any aircraft components / parts removed for off-wing maintenance or storage or robberies (cannibalization)

**Maintenance**
COVID impacts to AMO - Performance of non-familiar tasks
- Training & re-certification
Transport constraints - Material lead times & shipping delays
Lessons Learnt post RTS - Analyse post operation defects and introduce preventative actions
- Heavy Maintenance – Corrosion (e.g. Spoiler Cables)
- Landing Gear Scraper rings (Leaks)
Establish a **Safe and efficient pathway for return to service**

1. **Scheduled maintenance**
   - Acquit scheduled maintenance
   - Mandatory Instructions for Continuing Airworthiness (AD / ASB)
   - Overdue Maintenance / deviations \(\rightarrow\) OEM Justification & Regulatory Approvals

2. **De-Preservation**
   - De-preservation maintenance instructions per AMM / Service Letters
   - Open Defects acquittal; robbed parts
   - Loadable Software updates – NDB, Terrain DB..
   - Part power engine runs (80%)

3. **Optimise**
   - Operational checks – Engine Cowl Thermal Anti-Ice /Bleeds / Isolation & Pack Valves
   - Lights – Internal/External/Cockpit/Emergency
   - Cabin readiness; Deep Clean, carpets, furnishing, galley equip, lavatories
   - External wash

4. **Validate**
   - Maintenance Provider capabilities
   - Primary & Secondary flight controls incl. Spoilers, Speed brakes, Flaps, Slats
   - Extensive pre-flight checks – Critical systems & Alternate/Standby systems
   - Full Thrust Take-off
   - Verification (shake-down) non-revenue flight
SUMMARY

- Comprehensive Risk Assessments to manage unexpected change & de-preservation
- Effective Continuing Airworthiness Controls during Parking / Storage / Restoration
- Detailed analysis of maintenance requirements - pathway to safe & efficient return to service
- Introduce effective monitoring of post RTS reports

IATA Document – Guidance for managing Aircraft Airworthiness for Operators during and Post Pandemic

- Input from operators based on experience includes Best Practices and Lessons Learnt
- The Safety Risk Assessment template provides a sample of the most common hazards, risks and mitigation actions.

Thank you.
Questions?

Keith FERNANDES
Manager, Fleet Engineering – Virgin Australia
MCTG Vice-Chairman
Useful links

- Maintenance Cost Technical Group
  www.iata.org/mctg
- Technical Operations Working Group
  www.iata.org/tog
- Safely Restarting the Aviation Industry
Thank you!

For more information, please visit www.iata.org/mcc

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