IATA AVIATION DATA & DIGITAL WEBINAR SERIES

EPISODE 3 (PLAN RECOVERY)

* LIVE WEBINAR WILL START SHORTLY … *

Wednesday 13 May 2020
15:30 – 17:30 CEST

#StayStrong #WeAreAviation #StrongerTogether
Aviation Data & Digital **Webinar Series**

For more information & Registration go to: [iata.org/addws](http://iata.org/addws)
IATA AVIATION DATA & DIGITAL WEBINAR SERIES

EPISODE 3 (PLAN RECOVERY)

LIVE PRESENTATION IN PROGRESS

Keynote: Welcome and Opening

Charles De Gheldere
Director Aviation Data, IATA
**Webinar Synopsis:** It is difficult to know when the recovery will start for airlines and the wider aviation and travel industries. Data and analytics can provide insights associated with the various scenarios, demand and buying behavior. This webinar will focus on data & technology in the context of the COVID-19 crisis.

**Moderator:** Houman Goudarzi, Head of BI & Industry Engagement, IATA

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Keynote: COVID-19’s impact on passenger demand, scenario analysis, and the expected recovery.

Brian Pearce
Chief Economist, IATA
COVID-19
Outlook for air travel in the next 5 years

Brian Pearce
Chief Economist
13th May 2020
Air travel may recover more slowly than most of economy

Global RPKs recover 2019 levels in 2023, 2 years behind GDP recovery

Source: IATA/Tourism Economics, Air Passenger Forecasts, April 2020
Governments have provided unprecedented support. Wage subsidies, grants and loans should allow strong GDP rebound.

Source: IATA Economics using data from the IMF’s World Economic Outlook, April 2020.
Central banks have also injected cash into economies. The US Federal Reserve has added cash equivalent to 12% of US GDP.

Source: IATA Economics using data from Refinitiv Datastream.
Business confidence has rebounded in China
As lock-down relaxed in China ‘V-shaped’ rise of business confidence

Source: IATA Economics using data from Markit
Solving health challenge critical for international travel
Until vaccine, opening borders to travel requires fall in COVID-19 risk

New COVID-19 cases, % of total cases, 7-day moving average

Source: IATA Economics using data from the World Health Organization (WHO)
China domestic air travel lagging business confidence
Rise in flights with return to work & VFR, but discretionary travel weak

China domestic flights, COVID-19 new cases

Source: IATA Economics analysis based on WHO data, and data provided under license by FlightRadar 24. All rights reserved.
International RPKs will lag domestic air travel markets

International air travel may not recover 2019 levels until 2023-24

Global domestic and international RPKs, indexed 2019=100

Source: IATA/Tourism Economics, Air Passenger Forecasts, April 2020
Average trip length will fall sharply
Domestic markets open first and initial preference for short-haul trips

Source: IATA/Tourism Economics, Air Passenger Forecasts, April 2020
Long-term drivers for expanded demand remain. Populous emerging markets are still likely to want more air services.

Source: IATA/Tourism Economics, Air Passenger Forecasts, April 2020
Return to growth post-COVID but at a lower level
Global RPKs forecast to be 32%-41% below expected levels in 2021

Source: IATA/Tourism Economics, Air Passenger Forecasts, April 2020
Contacts

economics@iata.org

www.iata.org/economics
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Brian Pearce
Chief Economist, IATA
EPISODE 3 (PLAN RECOVERY)

LIVE PRESENTATION IN PROGRESS

Audience: Live Poll (Relevant Data Sources)
ANALYTICS ON DEMAND & BUYING BEHAVIOR DURING & AFTER THE COVID-19 CRISIS

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**Sébastien Texier**
CEO, winglet.io

**Moderator:** Sébastien Touraine, Head Dynamic Offer, IATA

**Nina Wittkamp**
Expert Associate Partner, McKinsey & Company

**Yanik Hoyles**
Director Distribution, IATA
LIVE PRESENTATION IN PROGRESS

**Keynote:** Insights from KLM on how to maneuver during these uncertain times

Frederik van Essen
Commercial Director, Digital Operation, KLM
Acting upon The Great Aviation Reset
KLM and BCG Partnership
Joint teams develop AI-driven tools for the operation of airlines, which are launched as a service to the aviation industry.
Agenda: Data & digital in post-COVID recovery

**Virus evolution & govt. response**
National government action for citizens with specific impact on travel
- Virus severity and spread
- Specific travel restrictions
- Announced or expected duration of restrictions
- Conditions for reopening (for example, health screening)

**Demand recovery scenarios**
Consumer sentiment and behavior
- Overall, by segment (business vs. leisure and short-haul vs. long-haul) and by market
- Impact of COVID-19 on megatrends, such as ways of working and sustainability
- Level of trust and safety concerns

**Market structure scenarios**
Financial health of airlines at onset and actions taken to manage through the crisis (for example, liquidity management)
Level and type of financial support by governments, banks, investors
M&A, joint ventures, and partnerships

**Flight plan to emerge stronger**
Design for the new normal
- Optimizing/restructuring network and fleet
- Whole-airline transformation using a zero-based approach
With vision for end state in mind, prepare for rebound

**Digital & data capabilities**
Demand recovery scenarios

Photo: Marco Spuyman
Five possible airline demand scenarios in a highly uncertain future

As of mid April

**Scenario**

**V-shape**
- Likelihood: Very unlikely
- Reduction in rev. vs 2019: Very unlikely
- Return to 2019 level: ~6 months
- Virus severity and spread: Quick containment (rapid drop in new cases and deaths)
- Government action for citizens: Successful containment; relax policies and reassure public
- Consumer sentiment and behaviors: Leisure and business traffic bounce back quickly

**U-shape**
- Likelihood: Very unlikely
- Reduction in rev. vs 2019: Very unlikely
- Return to 2019 level: ~10-18 months
- Virus severity and spread: Gradual decrease in rate of new cases and deaths
- Government action for citizens: Lockdown for ~2 months; borders gradually reopen
- Consumer sentiment and behaviors: Consumer confidence returns quickly

**Prolonged U-shape**
- Likelihood: High likelihood
- Reduction in rev. vs 2019: High likelihood
- Return to 2019 level: ~24 months
- Virus severity and spread: Slow, gradual decrease in rate of new cases and deaths
- Government action for citizens: Lockdown for several months; travel discouraged; borders reopen slowly
- Consumer sentiment and behaviors: Consumer confidence does return - slowly

**L-shape**
- Likelihood: High likelihood
- Reduction in rev. vs 2019: High likelihood
- Return to 2019 level: ~48+ months
- Virus severity and spread: Slow, gradual decrease in rate of new cases and deaths
- Government action for citizens: Lockdown policies in place and limitation on non-essential travel for rest of 2020
- Consumer sentiment and behaviors: Consumer confidence does return - slowly

**W-shape**
- Likelihood: Medium likelihood
- Reduction in rev. vs 2019: Medium likelihood
- Return to 2019 level: ~48+ months
- Virus severity and spread: Spread of virus decreases but then rapidly increases (new strain)
- Government action for citizens: Policies relaxed then rapidly reinstated at sign of resurgence
- Consumer sentiment and behaviors: Confidence returns only to be hit once more, for a more prolonged period, as safety concerns persist

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1. Return to 2019 level is the first month of a forwarding looking twelve month rolling window where monthly average RPKs are at or above 2019 monthly average RPKs
Tracking selected indicators key to determine which scenario is most likely and where in the recovery we are

**Key questions**
- How does COVID-19 evolve in hubs and outstation countries?
- What are government restrictions; how and when are they softened?
- For both leisure & business consumers:
  - Are they optimistic about the current economy?
  - Are they interested in traveling again?
  - Are they planning to fly?

**Key indicators to track**
- COVID-19 Development (by country)
- Government travel restrictions between countries
- Economic sentiment (by region)
  - Consumer sentiment (by region)
    - Change vs previous survey
    - vs. other categories
- GDS search data (ARC & 3 Victors)
  - By POS/O&D
- Web traffic data (by country)
  - vs. other industries
  - Changes vs. previous period
- Transaction data (by country) (e.g. booking, refunds)
  - Changes vs. previous period
- OAG schedules
  - By O&D
  - Changes vs. previous period
  - Impact of market structure changes
Signals that will point to airline industry recovery: TRIP tool

FREE link on: AirlineOperations.ai
Market structure scenarios
Flightplan new normal

photo: sacha de bruin
**Digital & data will play a key role in the new normal enabling better, more granular, integrated decisions from planning-to-execution**

1. **Start with determining target size and shape**
   - **Reset and resize Network & Fleet**
     - Adjust based on expected demand recovery & sequence (business/leisure, short/longhaul) and market structure scenarios
     - Adjust fleet strategy for efficiency, e.g. less types, smaller and more efficient gauges
     - Optimize for free cash flows/ profit

2. **Stimulate demand to drive top-line recovery**
   - Address shifting traveler needs and behaviors (e.g. health & safety and sustainability; new shopping/booking behaviors)
   - Use advanced analytics to boost performance (e.g. personalization, next gen RM, marketing effectiveness)
   - Revisit distribution strategy: increase focus on digital channels; re-size re-shape and re-purpose sales force
   - Pursue new partnership and M&A opportunities—within the core and beyond
   - Drive sustainability as a core business objective to stimulate demand and achieve competitive advantage, e.g. integrate into metrics across business

3. **Apply zero-based design for lean, flexible operations**
   - Design and implement “at scale” health and distancing measures in customer and employee journeys and practices
   - Resize operations and fundamentally shift to more variable staff and operations, e.g. with different labor contracts
   - Leverage AI and bionic opportunities to maximize resource utilization, flexibility, efficiency from planning-to-execution
   - Prepare to rebound and adjust quicker than competitors; build capabilities to deal with more frequent, extreme disruptions

4. **Implement the organization to deliver**
   - Rebuild more agile and digitally enhanced organization; e.g. cross-functional and cross-hierarchical teams, new ways of working
   - Embrace diversity and protect top talents, ensure to avoid "last-in first-out" as a standard mechanism to reduce workforce
   - Drastically reduce technology budget by radical shift to value-based technology approach incl reducing legacy IT systems, costs
   - Strengthen focus on free cash flow and liquidity throughout the recovery including digital procurement

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**Digital**
Digital & data will play a key role in the new normal
two examples

- Start with determining target size and shape
- Stimulate demand to drive top-line recovery
- Implement the organization to deliver
- Apply zero-based design for lean, flexible ops
Prescriptive solutions go beyond predictive

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<tr>
<th>Function</th>
<th>Use Cases</th>
<th>Business Value</th>
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<tr>
<td>Travel Recovery Indicator Portal (TRIP)</td>
<td>Dashboard that supports demand predictions</td>
<td>Define demand scenarios</td>
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<tr>
<td>Zero Based Scaling (ZBS)</td>
<td>Optimizer that defines routes to fly with what aircraft and how often</td>
<td>Optimize profit / free cash flow</td>
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<td>KLM-BCG Digital Ops Suite</td>
<td>Suite of decision support tools for airline operations</td>
<td>Scenario Planning</td>
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**Zero Based Scaling for post-COVID rebound**

- Resource planning
- Optimized line of flight / tail allocation
- Day of ops disruption mgmt
- Maximize utilization
- Optimize OTP
- Minimize Non-performance cost
Zero-based scaling | Digital network design for the new normal

Objective

Rapidly defines what the routes to fly, with what aircraft and how often based on constantly evolving world demand forecast aiming for optimal profitability/free cash flow

Focus on multiple months before DoO

Overview of key features/use cases

Demand forecasts to develop multiple scenario’s

Assessment of schedule viability

Adjust schedule to maximize network planning and fleet management

Value

Increased flight profitability through lower variable operating costs & higher captured revenues

Enhanced customer benefits through avoiding schedule changes & enhanced employee benefits through assistance in scheduling process
Digital Operations
Integrated, quantified decision making across silos and planning horizons

WE APPLY A HOLISTIC FRAMEWORK...

... TO DRIVE INTEGRAL DECISION MAKING

Covering 3 planning cycle horizons including feedback loops between them

1) **Strategic:** ~12-4 months before Day of Operation
2) **Robustness:** ~3 months until day before DoO
3) **Execution, managing disruptions:** DoO

Covering all contributors needed to deliver every day, every flight

a) Commercial planning, network and info to passengers
b) Flight crew
c) Fleet and maintenance
d) Ground crew and equipment
KLM’s digital OPS transformation

From start-up to scaleup: the market forces us to be the best

Build in-house Operations Decisions Support team and capabilities

Think big, start small mentality to build credibility and fund the journey;

Fully embraced by CEO/ COO/ OPS management

Vision of integral decision making

~20-30% improvement in operational KPIs

10-20-70

The real value is the business transformation

Agile Way of working and rigorous focus on frontline adoption and impact to manage the change

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Keynote: Insights from KLM on how to maneuver during these uncertain times

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**ADDWS 2020 Series 1, Episode 3**
EPISODE 3 (PLAN RECOVERY)

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OAG CHANGING SCHEDULES IN A COVID-19 WORLD
The pace of change in capacity has never been more dramatic.

To date, 489,000 flights scheduled to operate in January have been dropped by airlines.

Some 76.5 million seats that were to have been operated since January have been dropped.

We’ve tracked everyone of those schedule changes, capacity changes, timing changes and distributed them around the globe.

### Weekly Capacity

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<th>“Then” (20th January)</th>
<th>“Now” (11th May)</th>
</tr>
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<tbody>
<tr>
<td>Weekly Capacity</td>
<td>106.4m</td>
<td>29.8m</td>
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### Weekly Flights

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<th>“Then” (20th January)</th>
<th>“Now” (11th May)</th>
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<tr>
<td>Weekly Flights</td>
<td>712,871</td>
<td>226,005</td>
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### Number of Airlines Flying

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<th>“Now” (11th May)</th>
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<td>Number of Airlines Flying</td>
<td>709</td>
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### Number of Airport Pairs

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<td>Number of Airport Pairs</td>
<td>47,756</td>
<td>25,237</td>
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### Schedule Files Deleted

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<th>Schedule Files Deleted</th>
<th>2019</th>
<th>2020</th>
<th>% Change</th>
</tr>
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<tr>
<td>January</td>
<td>193,534</td>
<td>208,293</td>
<td>7.6%</td>
</tr>
<tr>
<td>February</td>
<td>202,250</td>
<td>324,133</td>
<td>60.2%</td>
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<tr>
<td>March</td>
<td>214,801</td>
<td>849,362</td>
<td>395%</td>
</tr>
<tr>
<td>April</td>
<td>223,544</td>
<td>750,521</td>
<td>335%</td>
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Source: OAG Schedules Analyser
NO TWO AIRLINES ACT AT THE SAME TIME....

Many of the major global airlines file schedule changes everyday, some on multiple occasions.

And every airline has a different way in handling schedule changes.

- Some want their flights removed straight away
- Some want to re-protect passengers first
- Some want to continue showing the flight but close out sales via the GDS’s
- Some want to wait until their codeshare partners services are aligned
- Some want to make adjustments well in advance
- Some want to make adjustments at the very last minute in case sudden demand occurs

Last Saturday Delta Air Lines made some **89,000** schedule changes in one filing submitted to OAG

Diving into the COVID-19 event has seen huge with unprecedented levels of schedule change.

Coming back out we expect to see even more changes as airlines seek a way forward.
A US MARKET EXAMPLE....

» DL & UA started adjusting schedules on the 23\textsuperscript{rd} March.
» AA on the 30\textsuperscript{th} March
» WN on the 6\textsuperscript{th} April
» Every major US carrier has made multiple changes to their schedules in the last eight weeks as they work through what’s happening.

But schedule changes only tell half of the story.
DRAMATIC CANCELLATION SPIKE ACROSS US DOMESTIC NETWORKS

- Cancellation rates reached 40% in late March as airlines grappled with schedule changes, network adjustments and falling demand.
- Only in the last week have we seen cancellation rates back at near normal levels.
- We could see similar rates of cancellations if too much capacity is added back too quickly such is the careful balancing required in the next few months.

Source: OAG Schedules Analyser
Panel: Insights to track demand rebound: how to leverage various data sources (schedule, shopping, pricing, customer behavior, social media etc.) to plan recovery?
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<td><strong>Fireside Chat:</strong> Insights from a data guru, former Head of Data Science at easyJet.</td>
<td>Alberto Rey Villaverde, Chief Data Officer, JUST EAT</td>
</tr>
<tr>
<td>16:40 – 17:10</td>
<td><strong>Panel:</strong> Insights to track demand rebound: how to leverage various data sources (schedule, shopping/pricing, customer behavior, social media etc.) to plan recovery?</td>
<td>Nina Wittkamp, Expert Associate Partner, McKinsey &amp; Company</td>
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<tr>
<td></td>
<td>Moderator: Sebastien Touraine, Head Dynamic Offer, IATA</td>
<td>Phil Callow, CEO, OAG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nils Gelb-j-hansen, CEO, Infare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sébastien Texier, Co-founder &amp; CEO, ForwardKeys</td>
</tr>
<tr>
<td>17:10 – 17:30</td>
<td><strong>Keynote:</strong> Air Travel Pulse, a new tool McKinsey &amp; IATA have developed in partnership that will provide unique insights in demand rebound.</td>
<td>Nina Wittkamp, Expert Associate Partner, McKinsey &amp; Company</td>
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<td>Yanik Hoyles, Director Distribution, IATA</td>
</tr>
</tbody>
</table>
Keynote: Air Travel Pulse, a new tool McKinsey & IATA have developed in partnership that will provide unique insights in demand rebound.

Nina Wittkamp
Expert Associate Partner, McKinsey & Company

Yanik Hoyles
Director Distribution, IATA
Air Travel Pulse includes a selection of leading indicators for air travel demand rebound

**Dashboard description**

**Summary: Recovery Scorecard**
Overview of leading indicators, demand and capacity trends

**Sentiment and Web Analytics dashboard**
View of COVID-19 developments and travel interest using Google search trends as a proxy

**Search and booking trends dashboard**
Searches and bookings by country/region and their corresponding trends

**Air travel capacity dashboard**
Comparison of current air travel demand and supply

**Sample questions addressed by page**

**Sentiment and Web Analytics dashboard**
- Where along the COVID-19 curve is a certain region/country standing on?
- How much have travel-related Google searches increased/decreased over time?
- What travel search terms are people looking for (hotel, car rental, etc.)?

**Search and booking trends dashboard**
- Which countries/regions are seeing the greatest demand in searches?
- Are people booking domestic or international travel?
- What kind of travel are people searching for/booking (one-way, weekend, etc.)?

**Air travel capacity dashboard**
- How much has capacity been cut across different countries/regions?
- How have countries/regions adjusted their capacity relative to shifts in demand?
- Is there high/low saturation in a particular market?

SOURCE: Air Travel Pulse by IATA and McKinsey & Company
Recovery scorecard captures selected leading indicators along the demand funnel.

<table>
<thead>
<tr>
<th>Region</th>
<th>New COVID-19 Cases per 10K People (Last Week Avg)</th>
<th>Travel Prohibited from x% of Countries</th>
<th>Travel Interest Index</th>
<th>Flight Interest Index</th>
<th>Flight Search Index</th>
<th>Flight Purchases Index</th>
<th>Flight Capacity Index</th>
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</thead>
<tbody>
<tr>
<td>Africa</td>
<td>0.2</td>
<td>81%</td>
<td>37.9</td>
<td>33.6</td>
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<td>31.1</td>
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<td>Central America</td>
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<td>38.4</td>
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<tr>
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<td>56%</td>
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<tr>
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<td>8.7</td>
<td>14.9</td>
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SOURCE: Air Travel Pulse by IATA and McKinsey & Company
Recovery scorecard captures selected leading indicators along the demand funnel.

Please choose the index:
- Pre-crisis (First week of 2020)
- Previous week

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<td>70.9</td>
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SOURCE: Air Travel Pulse by IATA and McKinsey & Company
Europe is interesting since summer holiday destinations get ready for inbound tourism

Market Pulse - Demand Rebound Tracking Model: Sentiment Analysis
(Powered by: Google, IATA, JHU)

State of the Pandemic: New Cases per 100K persons vs. Total Cases 10K persons (Source: JHU)

Phase of the Pandemic: (Total) Cases per 10K vs. (Daily) New Cases per 100K (Source: JHU)

Public Sentiment: COVID-19 vs. Travel and Changes in Trends (Source: Google)

Travel Demand Rebound Signal: Opportunities for Demand Rebound Based on Sentiments and Flown Passengers (Source: IATA, Google)

SOURCE: Air Travel Pulse by IATA and McKinsey & Company
Europe is interesting since summer holiday destinations get ready for inbound tourism
In the short-term, we observe a high number of cancellations of cross-border flights.
Bookings in Europe start to pick up slightly for travel during summer holiday season
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Nina Wittkamp
Expert Associate Partner, McKinsey & Company

Yanik Hoyles
Director Distribution, IATA
For more information & Registration go to: iata.org/addws
Thank you, and see you soon!