Drones / RPAS - Commercial opportunities for airlines

Tobias Wentzler
Enterprise Business Development Manager EMEA
DJI Enterprises
OUR FOCUS

SAFE
SECURE
RELIABLE
ACCESSIBLE
OUR FOCUS

SAFE

ACCESSIBLE

SECURE

RELIABLE
> 279 People Rescued by Drones Around the World
120,000
US Commercial Pilots

420,000
Global Commercial Pilots
A PLATFORM TO SUPPORT THE INDUSTRY

<table>
<thead>
<tr>
<th>Platform</th>
<th>Ecosystem</th>
<th>Industry</th>
</tr>
</thead>
</table>
| DJI      | System Integrators  
|          | Policy Makers      
|          | Drone Service Providers  
|          | Software Developers   | Turnkey Solutions  
|          |                        | Airspace Infrastructure  
|          |                        | Scalable Services  
|          |                        | Data Integration   |
AIRCRAFT INSPECTION WITH DRONES
NEXT GENERATION
WORKFLOW - SETUP

- Import Aircraft Models
- Define Inspection Zones
- Specify Takeoff Points
- Add Individual Aircraft
WORKFLOW - INSPECT

- CHOOSE INSPECTION ZONES
- INITIALIZE UAV
- POSITION UAV
- FLY MISSION
WORKFLOW - SETUP

1. CHOOSE INSPECTION ZONES
2. INITIALIZE UAV
3. POSITION UAV
4. FLY MISSION
WORKFLOW - ANALYZE

UPLOAD DATA

AUTOMATIC DEFECT PROCESSING

VISUALIZE AND ANNOTATE

UPLOAD TO MRO SYSTEM
WORKFLOW - ANALYZE

UPLOAD DATA
AUTOMATIC DEFECT PROCESSING
VISUALIZE AND ANNOTATE
UPLOAD TO MRO SYSTEM
Airline CEOs on the spot – interviews

Anton Grove  
VP People Performance & Development  
IATA

Bogi Nils Bogason  
CEO  
Icelandair

Christina Foerster  
CEO  
Brussels Airlines

Martin Gauss  
CEO  
airBaltic

IATA Wings of Change Europe, Berlin, 19-20 November 2019
Cargo – Maximizing airline profit through digitalization and innovation

Ludwig Hausman
Partner
McKinsey

Peter Gerber
CEO
Lufthansa Cargo AG

Miguel Gomes
Global Chief Cargo Officer
TAP Air Portugal

IATA Wings of Change Europe, Berlin, 19-20 November 2019
What’s happening NEXTT – When innovation facilitates growth

Harald Sieke
Head of Aviation Logistics
Fraunhofer IML

Christiaan Hen
Chief Customer Officer
Assaia International AG

Marieke Smit
Manager Group Strategy
Royal Schiphol Group

Michael Urbaner
VP Sales Europe
SITA

IATA Wings of Change Europe, Berlin, 19-20 November 2019
NETWORKING COFFEE BREAK
A.I. - buzzword or critical for survival?

Houman Goudarzi
Head of BI Projects & Industry Engagement
IATA

Christian Langer
Vice President Digital Strategy, Innovation & Transformation
Lufthansa Group AG and Managing Director
Lufthansa Innovation Hub
AI buzzword or critical for survival?

Fireside Chat

Dr. Christian Langer
Vice President Digital Strategy, Innovation & Transformation
Lufthansa Group AG and
Managing Director Lufthansa Innovation Hub

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

20 November 2019
Processing Power Comparison
iPhone 6 vs. Apollo 11 AGC

- 130,000 times more transistors
- 32,600 times faster clock frequency
- 81 Million times faster instructions/sec
- 120 Million times faster overall performance
Exponential Growth

Moore’s Law
Every 12-18 months, processing power of microprocessors doubles
Digital Technology Spectrum

MACHINE LEARNING AI

BLOCKCHAIN TECHNOLOGY DLT

DRONE & UAV TECHNOLOGY

IMMERSIVE & MIXED REALITY

CRYPTO CURRENCIES

BIOMETRICS & DIGITAL IDENTITY

AUTONOMOUS ROBOTICS & VEHICLES

5G & EDGE COMPUTING

5G
AI impact on Airline Capabilities

CUSTOMER TOUCH-POINT CAPABILITIES
- INTELLIGENT BOTS
- DYNAMIC RESOURCE ALLOCATION
- PERSONALIZED FULFILLMENT
- DISRUPTION DAMAGE CONTROL
- COMPLAINTS & CLAIMS MANAGEMENT

OPERATIONAL CAPABILITIES
- OUTCOME & IMPACT PREDICTION (OCC)
- DATA CORRELATIONS (WEATHER, EVENTS)
- AGILE AND ADAPTABLE OPERATIONS
- TURNAROUND MANAGEMENT

SUPPORT & MANAGEMENT CAPABILITIES
- VALUE CHAIN RISK MGMT (SELLERS)
- MAINTENANCE & SAFETY CHECKS
- SUPPLY CHAIN RISK MANAGEMENT

Source: IATA AI in Aviation White Paper 2018
Fireside Chat

AI buzzword or critical for survival?

Dr. Christian Langer
Vice President Digital Strategy, Innovation & Transformation, Lufthansa Group AG and Managing Director Lufthansa Innovation Hub

Houman Goudarzi
Head of BI Projects & Industry Engagement, IATA
(Moderator)
A Traveler-Centric Approach to Improving Network Planning and Schedule Optimization

Bayram Annakov
Chief Executive Officer & Founder
App in the Air

IATA Wings of Change Europe, Berlin, 19-20 November 2019
approach to network planning & scheduling

Bayram Annakov, App in the Air
Mat Velloso @matvelloso · Nov 22
Difference between machine learning and AI:

If it is written in Python, it's probably machine learning

If it is written in PowerPoint, it's probably AI
1. AI makes prediction cheap
more predictions
Increases value of “complements”

data $\rightarrow$ prediction $\rightarrow$ judgement $\rightarrow$ action
2. Route planning predictions
Cross-airline booking behavior

“not the average Joe”
id# 6623825155588096
Total Flights: 97
Reconstructing traveler's decision-making

“Not the average Joe’s” flight history

- SEA – SFO 10/01
- SFO – LAX 10/05
- LAX – SFO 10/05
- LAX – SEA 11/19
- SEA – SFO 11/21
- ANC – SJC 11/29
- SEA – SFO 11/29

Price sensitivity
- $ $ $$

Brand preferences
- JetBlue
- American Airlines
- Delta
- United

Time preferences
- High
- Medium
- Low

... and more
Market Simulation
Cross-airline booking data enables to improve

- Network expansion
- Network optimization
Dedicated Flyers

Airline AIR’s DF
- Always fly AIR
- Within AIR network

Other airlines’ DF
- Sometimes fly other airlines
- Outside AIR network
- Were AIR’s DFs
- Weren’t AIR’s DFs

Optimization ideas
Dedicated Flyers

Airline AIR’s DF
- Always fly AIR
- Within AIR network

- Sometimes fly other airlines
- Outside AIR network

Other airlines’ DF
- Were AIR’s DFs
- Within AIR network

- Weren’t AIR’s DFs
- Outside AIR network

Expansion ideas
Increase/Add Capacity
## Increase/Add Capacity

<table>
<thead>
<tr>
<th>Route &amp; departure time</th>
<th>Confidence</th>
<th>Median Price</th>
<th>Add'l Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>City 1 - City 2, 11-16</td>
<td>High</td>
<td>524</td>
<td>2.62M</td>
</tr>
</tbody>
</table>
City 2

frequency reduction

Before

After

ms

cs
### Share of Wallet

<table>
<thead>
<tr>
<th>Traveler 1</th>
<th>LAX-JFK</th>
<th>SFO-SEA</th>
<th>SFO-JFK</th>
<th>SFO-LAX</th>
<th>AIR1</th>
<th>AIR1</th>
<th>AIR1</th>
<th>AIR1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traveler 2</td>
<td>LAX-JFK</td>
<td>SFO-SEA</td>
<td>SFO-JFK</td>
<td>SFO-LAX</td>
<td>AIR2</td>
<td>AIR2</td>
<td>AIR1</td>
<td>AIR3</td>
<td>0.25</td>
</tr>
</tbody>
</table>
Intuitive Example

AIR reduces frequency

<table>
<thead>
<tr>
<th>Share of wallet = 0.7</th>
<th>stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of wallet = 0.1</td>
<td>switch</td>
</tr>
<tr>
<td></td>
<td>Predicted</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td>stay</td>
</tr>
<tr>
<td>stay</td>
<td>34%</td>
</tr>
<tr>
<td>switch</td>
<td>16%</td>
</tr>
</tbody>
</table>
Improving route planning predictions
3. Changes strategy?
purchase prediction
What fixes in aviation are consequences of poor prediction?
Thank you!
Airline retail journey – what are we not seeing?

Stephan Copart  
Head Projects & Innovation  
IATA

David Doctor  
Executive VP Strategy  
Amadeus

Peter Glade  
Chief Commercial Officer  
SunExpress

Jürgen Krumtünger  
Executive Director Prologis

Jörg Troester  
Head of Corporate Strategy, Industry and Government Affairs  
Hahn Air

IATA Wings of Change Europe, Berlin, 19-20 November 2019
Sustainability Through Innovation

Stephan Copart
Head Projects & Innovation, IATA
WHAT A HACKATHON IS?
AIR
Airline Industry Retailing
HACKATHON

HOSTED BY

30 years
SunExpress

FRANKFURT
11 - 13 OCTOBER 2019
Scope of the challenges:

1. **#1. CONTENT & UI** | how to implement (plug and play) the carbon offset functionalities - including a carbon calculator - to the booking process in a seamless way to an airline’s website or via a travel agent. The objective is to increase passenger awareness on CO2 compensation and consequently increase today’s low offset uptake of 1%

2. **#2. TRANSPARENCY** | how to better inform travelers on the different schemes currently available (e.g. offset standard, location, benefits), price of offset and where the money goes

3. **#3. PAYMENT** | how to make the payment of carbon offset simple and flexible (i.e. cash or part cash/part miles or miles)
Place holder for the video
When innovation meets sustainability – developing solutions for a widespread benefit

Kit Brennan
Hackathon Winner
Team Thrust

IATA Wings of Change Europe, Berlin, 19-20 November 2019
80% of people want to go green when purchasing their next flight

survey of passengers at Frankfurt Airport, 2019
... yet your customers do not fly green...

... why?
customer problem: don't want to pay too much & feel unincentivised

business problem: integrating carbon offsetting initiatives is costly & complex
introducing thrust
key benefits

integrate in as few as 3 lines of code

local & relevant offset options

uses nudge theory to drive commitment
Fraport Solar Construction
Fraport Solar is an initiative by Frankfurt Airport to place solar panels on all of its roofs. 2/3rds of all airport CO2 is emitted by heating and cooling, and Frankfurt aims to be the first airport to go 100% carbon neutral.

€1 or 150 Avios

Netherlands Methane Recovery
Methane recovery is the act of capturing agricultural biogas, one of the world’s top ten polluters. Each time biogas is used, the world has to take less gas out the ground through environmentally damaging methods such as drilling or fracking.

€1 or 150 Avios

Bethel Wind Farm
Bethel consists of 120 wind turbines manufactured by General Electric Renewable Energy. Each turbine is mounted on top of an 80-meter-tall tower and has a 116-meter, three-blade rotor connected to a generator.

€1 or 150 Avios
Hi Greta,

A year ago you purchased a carbon offset with SunExpress. Today, we want to tell you a little more about where your money went.

You supported the Netherlands Biogas project. Your support enabled the ongoing capture of 1.83 tonnes of CO2 or - to think of it another way - your seat on your flight, and the seat of the person next to you.

You Champion,
The SunExpress Green Team

SunExpress via Thrust Carbon Ltd
Unsubscribe - Unsubscribe Preferences
“my purchasing practices (despite morals & values) are driven by convenience, so this is brilliant!”

“I always think about offsetting at checkout... this is so simple & straightforward, I love it!”

“I have always wanted to offset, but never found the time to do my research. This would be perfect!”
projections
let’s launch a pilot together

1. we believe we can achieve a 5x increase in carbon offset purchases, compare to current solutions

2. first mover advantage will enable providers to convert environmentally minded millennials into loyal customers
progress so far
we presented in Frankfurt 6 weeks ago

1. completed our first integration with AwesomeTrip
2. in discussions with 4 major airlines, 1 GDS, and a top 10 travel agency
working with us

let’s shape the growth of green travel

1. industry leading advisors
2. select airline partners
3. strategic investors
kit brennan
CEO AwesomeTrip
system architect & adventurer

mark corbett
CIO AwesomeTrip
innovator, designer, explorer
join us, and let's thrust carbon offsetting into the future

kit brennan
kit@awesometrip.com
+44 (0)282 003 2078
Closing remarks

Rafael Schvartzman
Regional Vice President Europe
IATA
NETWORKING DRINKS
THANK YOU