Aviation Data Symposium
15–16 November 2017
Miami, USA
Passenger Distribution and Sales
Welcome & Introduction

Aleks Popovich
SVP Financial Distribution Services, IATA

Mike Premo
President & CEO, ARC
Breaking down my journey

Hometown: Pittsburgh, PA

Career

- U.S Airways
- American Airlines
- DCA -> PHX -> DFW

Departments

- Sales Operations
- Sales Planning & Analysis
- US Airways Vacations
- Distribution Strategy
- Revenue Management
- Finance
How Sales uses data

Sales
Programs

Market
Analysis

Performance Reporting

Booked
Ticketed
Flown
Combining data sources to form a single source of truth
• Shift from raw data to reference tables with central management is critical
• No longer dependent on one person’s query to categorize information
Sales reporting used to be straightforward

Booking and Ticketing → Flown Performance → Sales Reports
Early disruptions to Industry data

- Distribution Fragmentation
  - Indirect Sales
  - Direct Sales

- Low-Cost and Ultra-Low Cost Carrier Growth

• Stimulated the need for new data sources, including carrier-contributed data
Expanding networks increase complexity
Industry volatility forced changes to product and data

Trend of Oil Prices ($USD)
Evolving reporting demands requires better data
New ways to tell the story

Descriptive (Past)  Predictive (Present)
Yesterday’s $1,000 ≠ Tomorrow’s $1,000

Example: JFK-LHR

Past

• $1,000 Fare
• Economy
• Point of Sale

Present

• $1,000 Fare
• Premium Economy
• Point of Sale
• Bag Fee
• Admirals Club
• Wifi
• Flight Change
• Flexibility
• Priority Boarding

Future

• $1,000 Fare
• Premium Economy
• Point of Sale
• Bag Fee
• Club Access
• Wifi
• Flight Change
• Flexibility
• Priority Boarding
• New Distribution Capability (NDC)
• One Order
• Airline Bundles
Challenges Ahead – the next disruptors

- Future initiatives potentially turn airline data opaque and messy
- Will create both new challenges and opportunities for aggregating industry data
- Coordinated efforts by industry leaders will be critical to frame future data
Thank You

Brett Berman
Managing Director Sales Operations
American Airlines
Brett.Berman@aa.com
Master Your Own Data and Jump in the Driver’s Seat

Rogier van Enk
VP Distribution, Commercial Excellence & Data Science
Finnair
IATA Aviation Data Symposium:

The mistakes we made while building a world-class analytics team

Rogier van Enk
VP Distribution, Commercial Excellence & Data Science
Three important things about our industry
The airline industry is rooted in history

Why 26 price points?
The airline industry is complicated

Our network:
7000 origin destinations
50 points of sale
26 price points
2x corporate products
2x codeshare choices
8x agent types
7x payment types
13x distribution systems

~ 46 billion combinations
Traveling by air is cheaper than ever

SOURCE CRUDE OIL PRICE: US Dept of Energy
We need to be smart in order to **WIN**

So let’s invest in “analytics” and “data science”
1. FOR US, DECENTRALIZING WORKED
IT and DW Development
Ensure availability and quality of data

Analytics
Drive complex decisions
Speak business and IT

Salesmen/women
Basic self-service
Implement recommendations

IT Knowledge

Business Knowledge
2. FIX YOUR DATA/REPORTING FIRST
Fixing your data is a lot of work...

**BUSINESS INTELLIGENCE**
- Power BI
- SQL Server

**CUSTOMER COMMUNICATION**
- Email
- WWW
- Bunde
- BPM

**CUSTOMER TOUCHPOINTS**
- Check-In
- On-Board
- Call-Center

**FINNAIR NEXT GEN DATABASE & CUSTOMER INTELLIGENCE PLATFORM**
- Generation of unified customer profile, customer scores/value...

**INTELLIGENCE SERVICES**
- Real-time service for customer level data calls for profile info

**MEMBER SERVICES**
- Real-time service for app

**MY FINNAIR**
- Real-time service for light login

**LOGIN ID**
- Real-time service for light login

**ORIGINAL DATA SOURCES**
- Revenue Accounting
- PSS
- Loyalty
- DDS
- DCS
- RM
- Customer Surveys
- AND MORE...

**FINNAIR NEXT GEN DATABASE & CUSTOMER INTELLIGENCE PLATFORM**
- Redshift S3 bucket database
- Batch Analytics
- Modeling on EC2 instances
- Real-time analytics
- Cold storage

**BUSINESS INTELLIGENCE**
- Dynamo DB
- Dynamo DB & EMR

**CUSTOMER COMMUNICATION**
- Dynamo DB

**CUSTOMER TOUCHPOINTS**
- Dynamo DB

**REAL-TIME SERVICES**
- Highest security level due to PII data
- Highest security level because of profiling
- Cannot be inside any network

**DATA, PROFILES & SCORING**
- Data, profiles & scoring

**ET**
- Data, profiles & scoring

**API**
- Profiles & scoring

**HIGHEST SECURITY LEVEL BECAUSE OF PROFILING**
- BPMbox & BPM

**REAL-TIME SERVICE FOR LIGHT LOGIN**
- Real-time service for light login

**HIGHEST SECURITY LEVEL DUE TO PII DATA**
- Cold storage

**REAL-TIME SERVICE FOR CUSTOMER LEVEL DATA**
- Real-time service for customer level data calls for profile info

**COLD STORAGE**
- High security level due to PII data

**HIGH SECURITY LEVEL DUE TO PII DATA**
- Customer communication

**IN-MEMORY MODELING**
- Real-time analytics
- In-memory modeling

**REAL-TIME ANALYSES**
- Dynamo DB

**REAL-TIME SERVICE FOR LIGHT LOGIN**
- Dynamo DB

**COLD STORAGE**
- COLD STORAGE

**CUSTOMER COMMUNICATION**
- Dynamo DB

**BUSINESS INTELLIGENCE**
- Dynamo DB

**CUSTOMER SURVEYS**
- Customer surveys

**AND MORE...**
- Fixing your data is a lot of work...
Introducing “clusters” of analytics

Executive Dashboard

Automated reporting and analysis

Cool Data Science

Ad-hoc analytics requests

Data & IT systems for Analytics
Our first step towards advanced analytics

<table>
<thead>
<tr>
<th></th>
<th>Product &amp; Customer</th>
<th>Pricing</th>
<th>Distribution</th>
<th>eCommerce</th>
<th>Network &amp; Relative Performance</th>
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<tr>
<td><strong>DAILY</strong> (some on TV Screens)</td>
<td>Market News</td>
<td>Yesterday’s Performance</td>
<td>Yesterday’s Sales</td>
<td>Yesterday’s Performance</td>
<td>Yesterday’s Performance</td>
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<td>Flight Report</td>
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<tr>
<td><strong>WEEKLY</strong></td>
<td>Summarized Market News</td>
<td>Route KPI Report</td>
<td>Sales Channel KPI &amp; POS KPI</td>
<td>Network KPI</td>
<td>Summarized Performance</td>
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<tr>
<td></td>
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<td>Flight Report</td>
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<tr>
<td><strong>MONTHLY</strong></td>
<td>Relative Performance Monthly</td>
<td>Route Results &amp; Outlook</td>
<td>Sales Channel and POS Results &amp; Outlook</td>
<td>Network Results &amp; Outlook</td>
<td>Results &amp; Outlook</td>
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<td><strong>QUARTERLY</strong></td>
<td>Fair Share Monitoring</td>
<td>Fair Share Tracking &amp; Monitoring</td>
<td>Fair Share Monitoring</td>
<td>Fair Share Monitoring</td>
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</table>
Next Gen: Moving towards real-time, mobile-first, touch-based analytics
FINLAND IS THE SMARTEST COUNTRY IN THE WORLD
What Makes Finnish Kids So Smart?

Finland’s teens score extraordinarily high on an international test. American educators are trying to figure out why.

By ELLEN GAMERMAN
Updated Feb. 29, 2008 12:01 a.m. ET

Helsinki, Finland
4. BUT HIRE OUTSIDERS
This rarely works
Introducing the two backbones of the Commercial Strategy and Data Science team

Strategy Consultant

Data Scientist

Both roles can be described as “Socially Talented Nerds”
Employing the best...

- MSc. in a relevant technical field
- Analytical with strong numerical capability
- Strong project management skills
- Capable of translating complicated trends and data into useful conclusions and recommendations
- Ability to make and communicate fact-based and structured decisions in a hectic environment
- Speaks business and IT
- Goal and fact oriented
Employing the best...

- Ph.D. in Natural Sciences, Engineering, Econometrics or similar
- Highly analytical with strong numerical capability
  - Capable of translating complicated trends and data into useful conclusions and recommendations
- Strong background in numerical simulation and data science
- Speaks business and IT
- Goal and fact oriented
5. USERS SHOULD CHOOSE THE TOOLS
Simple view of BI

Centralized

Enterprise Tool

Integrated Data

Business Specific Tools (SAS, R, SPSS)

Your data lake/warehouse

Customer

Factory

Website

Our mantra:
Let the people that use the tools decide which tools to use
Non-analytical business decision making

1. Notice poor performance
2. Extract some data
3. Mix of ‘gut’ and ‘numbers’ decision
4. Hit and miss success
Academic process

- New evidence
- Extract some data
- Build and run a model
- Write a paper
Completing the chain

Notice poor performance

Extract some data

Build and run a model

Implement in the business

This is the most crucial and difficult step
6. KEEP STAKEHOLDERS HAPPY
Build a service oriented culture

• Regular stake holder meetings – **understand our customer**

• **Resource the team** so that we don’t have to excessively choose/prioritize

• “Pairing up” – form **lethal** data scientist/strategy consultant **pairs** that **destroy** analytical and strategic projects

• Use **free, open-source** tools everywhere **except for the visualization and interaction layer**
...and finally....

7.

FINNAIR’S GOT TALENT!
The advantages of nurturing talent in strategy and data science teams

• Excellent analysts and project managers who know Finnair data and our tools
• Well rounded individuals
• Understand airline jargon and lingo
• Less expensive
Rewarding quality and career paths...

- **Business Analyst**
  - Practiced system user
  - Added value track-record in several clusters

- **Business Developer**

- **Data Scientist**
  - Mastered most systems
  - Proven significant (scientific) added value in several clusters

- **Senior Business Developer**

- **Senior Data Scientist**

- **Principal Business Developer**

- **Chief Data Scientist**
  - Key resource for the company
  - Leads our most important projects
  - Provides ground-breaking scientific advances

- **Two year maximum**
Thank you!

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https://www.linkedin.com/in/rogiervanenk/
The Cycle of a Passenger Transaction: The Hidden Value within the Value Chain

Moderator

Bryan Wilson, Former BA Director of Information Management and Former IATA CIO & Director of Industry Architecture

Panelists

Jonathan Boffey, SVP, Business Development, Triometric
Mark Drusch, VP, Aviation Commercial Advisory, ICF
Rogier van Enk, VP Distribution, Commercial Excellence & Data Science, Finnair
Eric Nordling, COO, RMS An Accelya Group Company
Networking Coffee Break
Thank you to our Sponsor

INFARE
Just a Passenger or a Holistic End-to-End Customer View?

Joerg Hochapfel
Lead, Analytics Center of Excellence
Lufthansa
How Digitalization is Re-Defining the Customer Experience in the Connected-Age

Jörg Hochapfel, Deutsche Lufthansa AG

Analytics Lead Customer Data Asset
What are the Key Drivers for this Change?

- Commoditization
- Understanding Customer Needs
- Success of other Digital Players
SURPASS MY INDIVIDUAL LUFTHANSA EXPERIENCE

By understanding our customer, we drive the organization. SMILE connects the dots.

OUR MISSION

OUR OBJECTIVES

1. Personalize customer experiences along the journey
2. Develop an insights driven organization
3. Create new revenue opportunities
SMILE core disciplines

Data Management
“Setup customer data management and provide IT foundations for Analytics.”

Customer Experiences
“Provide personalized products, communication and services along different touchpoints.”

Analytics & Insights
“Build up analytical capabilities (methods, models, operating model and talent).”
Data is the new oil.

Wow. But who in this room ever used crude oil?
...so we need the whole data value chain in order to act effectively
Data is building the foundation to focus on advanced analytics

Standardized tables reduce effort for data preparation significantly

Historically Dispersed Data Sets

- PNRs
- Tickets
- M&M
- Ops

Business Rules

Singular Affinities

Basic Reporting

data prep & joins

Centrally Integrated and Clean Datasets

- PNRs
- Tickets
- M&M
- Ops

Recommendation Systems

Affinities

Attribution

Dissatisfaction

Data Preparation*Analytics

* Forbes 2016: “Data preparation accounts for about 80% of the work of data scientists”
Ethical Use of Data goes Way beyond Data Privacy

1. Do not perform any type of analytics discriminating people
2. Transparency is key to establish trust in any data analytics solution
3. Whenever applicable apply methods of “Privacy Preserving Data Mining”
4. Ensure that the producer of data (e.g. customers) benefit from the analytical results as well
5. Keep data safe. Focus on designing data processing architectures with security in mind
6. Clearly ask for permission (opt-in) for storing and analyzing personal / customer generated data
7. Establish Governance Boards to ensure data privacy and data security
Recommendations along the customer journey…

Where do I want to travel next?

How satisfying was my flight experience with LHG?

Should I buy an upgrade for my return flight?

Where should I travel to these summer holidays?

Which ancillaries do I want to add to my flight?

Which services can I use during the flight?

Do I want to spend some time in the lounge?
...and at different touchpoints
The SMILE Approach: “Decision as a Service”
The tough bit: Decision Making

- Prediction of customer preference with machine learning models \( p = f(x) \)
- Ranking of offers according to customer preferences, margin, etc.

\[ \Omega_t(s_t, m_t(p), s_{rt}, ...) \]
- Optimization of Recommendation

- Data Permission
- M&M Status in (BASE, FTL)

Random assignment to test/control groups

- Booking in Class in (K,L,E,T)
- Departure within next 3 days
- ...

- Realtime Context Data

Touchpoints
- Web
- Email
- Mobile

Data

Analytical Base Tables

Model Output

Eligibility Rules

Testing Rules

Decision Making Rules

Availability/Price

Product Catalog

• Tracking Data
• Realtime Context Data
The SMILE Approach: “Decision as a Service”
Analytics Masterplan // Stone by stone

CREATE LASTING BUSINESS IMPACT

ENGAGING DATA STORYTELLING

ACCESSIBLE ANALYTICS

PRIVACY, PERMISSIONS & REACH

EXPERIENCE ARTIFICIAL INTELLIGENCE

PUSH DATA DRIVEN DECISIONS

ESTABLISH AN OPERATING MODEL

DEVELOPING THE CUSTOMER DATA ASSET

DELIVER ANALYTICS AT INDUSTRY GRADE

LEVERAGE SMART SOURCING AND TALENT
Just a Passenger or a Holistic End-to-End Customer View?

Chris Bruce
VP Corporate Development
Journera
Who wins in a data-driven world?

Chris Bruce
VP, Commercial

Journera
The goals of airlines

Revenue generation

• Acquire customers
• Inspire loyalty

• Improve ancillaries offerings
How do you achieve those goals?

The answer of the day – personalization

And how do you personalize?

• Delivery mechanisms (NDC, direct channels)
• More (and better) data
• Capability to use the data
The big picture

Who wins in an world where data is the differentiator?

• Airlines have a lot of data

• Others have more...
The consumer perspective

• Journeys, not flights

• Desire seamless experiences

• Desire new innovations

Automatically changing hotel + car when flight changes

- Somewhat or very useful: 86%
- Would use app more: 50%
- Would fly that airline more: 36%
So what do you do?

• Seek more data

• Build out your data capabilities

• Take the traveler perspective (experiences), not the airline perspective (transactions)

• Find your opportunities for innovation
Just a Passenger or a Holistic End-to-End Customer View?

Philippe Garnier
VP Distribution and Partnerships
Hilton
THE HOTEL INDUSTRY IS FRAGMENTED… AND SO IS ITS DATA

November 2017
MORE THAN ONE IN FIVE HOTEL ROOMS UNDER CONSTRUCTION GLOBALLY DESTINED FOR HILTON BRANDS

EXPANDED GLOBAL FOOTPRINT TO 104 COUNTRIES AND TERRITORIES
WE PROVIDE LEADING BRANDS ACROSS CATEGORIES

<table>
<thead>
<tr>
<th>Luxury &amp; Lifestyle</th>
<th>Full Service</th>
<th>All Suites</th>
<th>Focused Service</th>
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<tbody>
<tr>
<td>Waldorf Astoria</td>
<td>Hilton</td>
<td>Embassy Suites</td>
<td>Hilton Garden Inn</td>
</tr>
<tr>
<td>Conrad</td>
<td>Curio</td>
<td>Homewood Suites</td>
<td>Hampton</td>
</tr>
<tr>
<td>Canopy</td>
<td>DoubleTree</td>
<td>Home2</td>
<td>Tru</td>
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<tr>
<td>Tapestry Collection</td>
<td>Tapetstry</td>
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These brands offer a range of services from luxury and lifestyle to focused and all-suite options.
A FEW KEY NUMBERS

**AMERICAS**
- Rooms: 652k+
- Pipeline: 181k+

**EUROPE**
- Rooms: 78k+
- Pipeline: 29k+

**ASIA PACIFIC**
- Rooms: 62k+
- Pipeline: 90k+

**MIDDLE EAST + AFRICA**
- Rooms: 24K+
- Pipeline: 30K+
WHO SAID DISTRIBUTION IS EASY?
3 KEY TRENDS

• Servicing: We’ll be happy to make sense of our current data first

• Collaboration: Key topic is channel mix

• Opportunity: Greater data is about increasing efficiency
Sharing is Caring: A Case for Value Chain Collaboration

Slido.com #ADSPAX

Moderator

Paul Tilstone, Managing Partner, FESTIVE ROAD

Panelists

Joerg Hochapfel, Lead, Analytics Center of Excellence, Lufthansa
Chris Bruce, VP Corporate Development, Journera
Elisa Henry, Partner, McMillan
Philippe Garnier, VP Distribution and Partnerships, Hilton
Charlie Kimes, Director of Data Products and Insight, American Express
Rock Blanco, SVP Product Innovation, Cornerstone Information Systems