Innovation

Aviation Data Symposium
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Things to look at

Digital Trust
- Blockchain
- Biometrics
- Cryptocurrency
- Tokens

Platform Economy
- Self booking tools
- Dev Portal
- Open APIs
- Patents
- Uberization (Sharing Economy)

Business Intelligence
- Big Data
- Cloud computing
- Meta-searching
- IoT
- AI

Digital Customers
- Millennial consumer
- Social Media
- Mobile
- Gaming
- Apps
- Wearables & internet of things

New Travel
- Inter-modality
- Speed of sound flights
- Low cost models
- 3D printing
- Parabolic flights

Intelligent Vehicles
- Electric Vehicles
- Drones
- Sensors
- Autonomous Vehicles
- Renewable Energies

OPEN INNOVATION ECOSYSTEM
Ongoing projects
Things we do around data

- Aviation Data Model
- Promoting acceptance
- Open APIs
- Governance & Control
THANK YOU!

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Overview

→ GmbH since January 2015

→ Team:
  End of 2014:  8 employees
  Today:    21 employees

→ Mix of externals and internals:
  Combination of entrepreneurial know-how with years of Lufthansa experience and airline expertise
What's happening in travel & Mobility tech and why is it relevant to Lufthansa?
Technological progress is changing daily life

2005 | $99

Conclave Pope Benedict XVI.

2013 | $99

Conclave Pope Francis
Today’s economy is tech-dominated!

2011-2017: Largest Companies by Market Cap

Top-10 largest companies by market cap grouped by industry affiliation

- Oil Companies
- Other Industries
- Tech Companies
The speed of innovation within Travel & Mobility Tech is skyrocketing

Note: 8-Year graph based on available data on disclosed funding rounds
Source: LIH analysis in cooperation with Pitchbook (as of Feb 15, 2018)
Forming a few of today’s most valuable private companies in the world

Source: LIH analysis in cooperation with Pitchbook (as of Feb 15, 2018)
WHAT’S THE ROLE OF THE LIH IN THIS CONTEXT?
Our mission is to quickly explore new digital opportunities for Lufthansa Group and convert them into businesses.
Strategic fields of action

**Build**
Develop and build our own digital products & services.

**Partner**
Foster selected partnerships between digital players and Lufthansa Group.

**Invest**
Educate and support Lufthansa Group at strategic venture capital investments in startups.
Partner: LIH initiates collaborations with Travel & Mobility Tech startups

Strong focus in 2014/2015
Build: LIH validates business model innovations

Strong focus since 2015

We entirely focus on customer needs.
(starting point = painpoints of the traveler)

We quickly act using prototypes
(Fail fast)

We use validated data to improve products
(Data beats opinion)

- Value hypothesis
- Growth hypothesis
Every product starts as a “Minimum Viable Product“
PRODUCT EXAMPLES
AirlineCheckins.com

Automatic check-in assistant for more than 200 airlines worldwide
The current state of airline online check-in

- **How passengers check-in today**
  - 46% Face-to-face at airport
  - 39% Online check-in
  - 15% Self-service terminal at airport

- **How passengers are expected to check-in in 2020**
  - 26% Face-to-face at airport
  - 56% Online check-in
  - 18% Self-service terminal at airport

Online to become the most dominant check-in channel within next 2 years

Share of online check-ins today vs. 2020
Lufthansa Open API – developer.Lufthansa.com

Programming interface opening up the Lufthansa data world to external and internal developers

LATEST NEWS BY TODAY

BOOKING CAPABILITY VIA THE OPEN API AVAILABLE!
Investment Fleet Logistics

First ever startup investment by Lufthansa Cargo

The LIH supported throughout the whole process – from screening the Cargo Tech market to the closing of the investment
We design the happy journey of tomorrow
For more insight follow our Travel & Mobility Tech Radar

lh-innovationhub.de/radar/
THANK YOU!
Innovation Jam:
IATA Hackathons - Innovation in Action

Ursula Silling,
CEO, XXL Solutions & India Hackathon Jury Member

Juan Oliver
Manager, FDS Business Intelligence Projects
Challenge: Personalization
Winner Team: RMS

Challenge: Ancillaries Cross-Sell
Incuation Phase
IATA Hackathons

India

23-25 February 2018
IBS Software Offices, Kochi, India
After 28 hours on non-stop coding...

Winners of the IATA NDC Hackathon “DATA Corporate Prize” held in Kochi, India on February 2018:

Revenue Management Systems

Travis Lewis
Fabian Widyadri
Michael Peters
Our inspiration...

Start of Commerce
- Tickets sold via sales agents.
- No price differentiation
- Product priced as airfare

Age of distribution
- Focus on wider distribution
- Introduction of GDS
- First data structures created
- Introduction of different fares

Age of information
- Focus on predictive analysis
- Transformation from product-centric to customer-centric
- Introduction of CRM systems

Age of customer
- 100% customer-centric
- Dynamic pricing
- Data Intelligence; AI and ML

Stage I
- Targeted On Customers

Stage II
-Responsive To Customers

Stage III
-Engaged With Customers

Stage IV
-Inspired By Customers

1950-1975
1975-2000
2000-2015
2015-20xx
Our inspiration...

- Base Product Offer
- Upsell Offer
- Cross-sell Offer
- Payment
The idea pitch

Airlines using NDC can improve their sales conversion by having a better process around customer profile recognition. Our challenge is to identify the customer profile, their willingness-to-pay and offer interests by help of micro-segmentation.

By help of AI we can identify the customer profile, optimize the product shelf by bundling the base offer, upsell offer and cross-sell offer in the most effective manner with the ultimate goal to improve the conversion of the customer throughout the sales funnel.

Our process will establish an active feedback port with the revenue management system which can recommend flight re-optimization by help of actual demand insights versus demand forecast (using only historical bookings).
Can we focus on better offer and order management so the product shelf is not a distraction?

Can we provide added value or a favorable position by offering services for convenience?

What can we improve to ensure that the customer fly us again, or better, recommend us to others?

Can we identify the customer in the stage where it is orienting for a ticket, and ‘help’ him to look at you?

When a booking is made, can we offer the right price at the right moment in time without dilution?

Can we focus on better offer and order management so the product shelf is not a distraction?

Can we provide added value or a favorable position by offering services for convenience?

What can we improve to ensure that the customer fly us again, or better, recommend us to others?
Why join an IATA Hackathon?

Knowledge Mining
The ‘Next-Gen’ of RM evolves around commerce. NDC will likely play an important role in that. We need to tiptoe the knowledge pool and get exposure in the field.

Time Management
A sense of urgency created by time and competition creates an environment which steers for creativity impossible to recreate in a true business environment.

Be innovative
A hackathon is all about innovation. Validate our ideas, compiling data to put decisions in the right context, determine scalability, and so on.

Networking
Understand the ‘state of the technology’ and meet with the industry innovators which are involved with the marketing, practices and concepts development of NDC.

Breaking routines
Sometimes, we can be a little full of ourselves that we forget to share with and learn from others. Hackathons is a place where we can realize our strengths and weaknesses.

Having fun
Get a positive vibe from an environment where people are passionate to innovate, disrupt the status quo, pass boundaries and are highly ambitious.
Some impressions
Corporate Executives
Frequent business and first class travelers

Reluctant travelers
Do not enjoy travel and have it as convenient as possible

Quality vacationers
See travel as part of the holiday experience

Mile Accumulators
Go out of their way to take flights that result in tier status

Corporate Troopers
Fit a corporate travel policy which defines travel behavior

Tour Takers
Want everything arranged for them

Schedule Optimizers
Must fit a specific time schedule without flexibility

Frugal flyers
Seek out the best value for money experience

Travel seekers
Love to travel and seek out new experiences

AirshopperRQ API variables
Origin - Destination - Departure Date - Length of Stay - Advance Booking Date - Number of passenger - Cabin of Service (- Loyalty)
segment: Corporate Troopers
WTP: $473.78
After the NDC Hackathon, the first challenge was to test the data on real airline data. In iterations of 2 weeks, we test over a dozen airlines and measure our classification accuracy. The regression accuracy is related to the success of our ability to match the correct classification profile on a Shopping Request. We are still in a experience of big data shifts.
Thank You!
The Twelve Labors of mastering Big Data

an Amadeus experience

Pascal Clément
Head of Airlines Data Unit
Amadeus
Where do we start?

January, 2013
Data Silos

Where the problems start
Data Access Governance

Analytical vs. Transactional

Bringing analytics in a world mastering transactions
You quickly realize that storage and computation goes far beyond what you think.
Speed & Agility

Analytics and Big Data needs much more speed and agility than legacy
The Budget Problem

How do you manage financing experimentation vs. plan?
Build Data Science Capabilities

A Data Science capability needs much more than data scientists
Data preparation & Quality

Data is NOT ready for analytics

PREPARATION IS KEY
Industrialization
Operation. Security

Needs to be built for thousands of users all over the world
Keeping Data Scientists Happy

They receive a job offer every day
Real time

It’s becoming critical
Automation

The ultimate Big Data Goal
Conclusion

5 years of real life experience

You can benefit from our experience through a 2 weeks assessment on *Big Data Maturity*
Big Data Maturity Model

Data Platform and Architecture

Lead Time for Resources
Readiness for new project

Storage

Data Retrieval
(Input into platform)

Cohesiveness

Programming Framework

Here, you appear level 1.
Too much in Silos with its own technologies. No Share. Let's see the next steps to reach level 2 then 3.

Here, you appear level 1.
Batch & Relatively small data only. Let's see the next steps to reach level 2 then 3.

Here, you appear level 2.
Let's see the next steps to reach level 2 then 3.

Here, you appear level 1.
Timing > 1 month. Let's see the next steps to reach level 2 then 3.
Yeah baby!
Thank you!
How Airlines can harness and leverage data

Rodrigo Ramos
Managing Director, Sabre Iceland
Product Head of Intelligence Exchange

20 June 2018
Key challenges for airlines to leverage data

1. The PSS is not designed for custom business process and sense and respond actions.

2. Complexity of bringing together disparate, data sets to achieve digital transformation.

3. A customer-centric business requires non-core systems to have customer data.

4. There is a huge need for airlines to leverage more data and a DWH is not enough.

12% of enterprise data is typically utilized for analysis.

29% of the IT budget is now generated by business unit investment rather than IT.
“IT application development time is highly correlated with IT’s impact on business performance…”

“The speed... to convert mass amounts of customer data into insights, and insight into action is now a critical differentiator.”

Forrester Research
Intelligence Exchange: the open airline enterprise agility platform

- Apps and processes
- Sense and respond
- User experience
- System of reference
- System of record
An ecosystem of micro-apps built on the Intelligence Exchange Platform

https://vimeo.com/274572139/50f82f670e
What is a Micro-App?

Business process templates
75% standard / 25% configurable
Take action across enterprise systems
Deploy fast to save time and money

marketplace.sabre.com/IX
Solve **PERVASIVE BUSINESS CHALLENGES** across the customer journey

- **Earn incremental revenue**
- **Enable customer centricity**
- **Prevent revenue leakage**
- **Streamline airline operations**
- **Personalized Trip Promotions**
- **Top Tier Auto Upgrades**
- **Fare Error Detector**
- **Real Time Flight Analysis**
Last Minute Upgrades checks for upgrades and automatically notifies qualified customers based on tier or other criteria.

On the day of departure, WorldWide Air identifies that they have unsold seats in a particular cabin.

In order to fill that cabin, WWA decides to offer promotions to qualifying customers to encourage upgrades.

Based on rules in the Micro-App, promotions are sent to customers and front-line agents.
Imagine if… you could automatically manage **seat swaps** in real-time based on customer data

**Tailored Opt-In Message**
- Customer can opt-in to receive a better seat on their existing flight

**Seat Swap Notification**
- If two or more customers are matching candidates, assign seat swap

**Successful Seat Swap**
- Customer is automatically notified of a successful seat swap

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Use implicit and explicit customer data to determine optimal re-seating.
Imagine if... you could automatically manage **ancillary integrity** to increase incremental revenue
Sabre Intelligence Exchange will continue to support engagement with our customers and drive performance for our business.

Shane Tackett
Vice President, Revenue and Ecommerce

Goal
- A seamless experience for their elites, where they can either be automatically upgraded to the existing first class product, or to the new premium class product
- Manage all the logic of upgrading elite members with flexible rules around multiple flight, value, and profile attributes
- Continuously evaluate new bookings across the same criteria

Solution
- Implemented Sabre Intelligence Exchange in 2016
- Partnered with Sabre to develop Elite seat upgrade app
- App was completed at a low cost and on-time by leveraging the IX platform

Results
- The most flexible and user-friendly elite upgrade process in North America
- Added optionality upgrade options based on tier status, date and time, and inventory
- Improved retention of premium tier customers
Differentiating the customer experience through seamless upgrades

- **At Booking**: Upgrade to Premium or Cabin
- **3 Days before Departure**: Upgrade to Premium or Cabin
- **During Check-in**: Prioritize Upgrade List (re-check-in)
- **5 Days before Departure**: Upgrade to Premium or Cabin
- **1 Day before Departure**: Upgrade to Premium or Cabin

Improved customer experience
Increased revenue

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How Intelligence Exchange Solves The Problem?

Identify
Leverage IX
Integrated Cross Domain Data

Prioritize
Enrich and analyze data to create prioritization of Elite Members

Execute
Business Rule Engine with actioning capabilities to execute upgrades

Clear expectations to Elite members on upgrade availability

Incremental Revenue • Customer Experience • IT Cost Savings
POC - Fast time to market

1 Programmer
3 Days
200 Lines of Code
Intelligence Exchange: A growing and thriving community

Sabre Intelligence Exchange community

**60+ airlines**

**Americas**
- Aerolineas Argentinas
- Aeromar
- Aeromexico
- Air Canada
- Alaska Airlines
- American Airlines
- Aserca
- Azul Linhas Aereas Brasileiras
- Bahamasair
- Canadian North
- Cayman Airways
- COPA
- Frontier
- Hawaiian Airlines
- JetBlue
- LATAM Chile
- Ravn Alaska
- SBA Santa Barbara Airlines
- Southwest Airlines
- Sun Country
- Virgin America
- Volaris
- WestJet

**EMEA**
- Adria Airways
- Aegean Airlines
- Aeroflot
- Afriqiyah
- Air Berlin
- Air Serbia
- Air Seychelles
- Alitalia
- Atlantic Airways Faroe Islands
- Austrian Airlines
- Avior
- Belavia
- British Airways
- Comair/Kulula
- Croatia Airlines
- Emirates
- Ethiopian Airlines
- Etihad
- Etihad Regional
- Gulf Air
- Icelandair
- JetAirways
- JetKonnect
- Kuwait Airways
- Norwegian Air Shuttle
- Oman Air
- Pakistan International
- Royal Jordanian
- Saudi Gulf
- Virgin Atlantic Airways

**APAC**
- Air Niugini
- Air Tahiti Nui
- Angkor Air
- Bangkok Airways
- Cathay Pacific
- Dragon Air
- PAL Express
- Philippine Airlines
- Vietnam Airlines
- Virgin Australia

Regular interactions, conferences and user workshops around the world
The power of the industry-only Intelligence Exchange platform

- Integration with 5 reservation systems
- In production at more than 25% of global bookings
- Over 60 airlines
- Over 60 micro apps in production
- Over 8 data domains