Technology

Thank you to our Sponsor

Amadeus
Welcome ! ;)

Juan Ivan Martin
Head, Innovation
IATA
What is Possible for AI and BI Tools

Rob May
CEO
Talla
AGENDA

• Who Am I?

• Why You Need A.I. ASAP

• Why Is This Happening Now?

• The PAC Framework
  • What you should think about in your company
  • What tools you can use to make this happen
ABOUT ME

• CEO and co-founder Talla
• Former CEO of Backupify
• Venture partner at Pillar
• 35 A.I. related angel investments
• The world’s most popular A.I. newsletter [http://inside.com/ai](http://inside.com/ai)
A BRAIN TEASER

• You start with a single lily pad on an otherwise empty pond. The surface area of the lily pad doubles every day, such that in 30 days it will cover the entire pond. At what point does it cover half the pond?
DAY 20
DAY 29 1/2
DAY 30
REASON #1: A.I. IS ACCELERATING
A.I. PROJECTS AT GOOGLE

Artificial Intelligence Takes Off at Google
Number of software projects within Google that uses a key AI technology, called Deep Learning.

Source: Google

Note: 2015 data does not incorporate data from Q4
HISTORY OF MACHINE VISION
THIS IS ABOUT TO HAPPEN TO YOUR BUSINESS

THIS IS WHY YOU AREN’T PREPARED

REASON #2: A.I. IS A FLYWHEEL
GET A.I. ASAP
HOW CAN A.I. HELP YOU SCALE?
THINGS A.I. CAN HELP YOU DO

- Get the right information to the right person at the right time.
- Extract valuable insight from data - automatically
- Assist with decision support
- Amplify productivity through task automation
THE PAC FRAMEWORK

• Three key areas to consider
  • Customers
  • Product
  • Operations
THE PAC FRAMEWORK

• The three ways to use A.I.
  • Predict
  • Automate
  • Classify
FUNCTIONAL USE CASE: RECRUITING

• Predict - Who will be successful? Who is ready to jump to a new job?

• Automate - Setting up interviews, collecting feedback about those interview

• Classify - Bucket resumes as they come in.
## THE FULL FRAMEWORK

<table>
<thead>
<tr>
<th>Automate</th>
<th>Customers</th>
<th>Product</th>
<th>Operations</th>
</tr>
</thead>
</table>
|          | • Lead generation  
|          |   • Sales  
|          |   • prospecting  
|          |   • Call follow up |  • Onboarding and training  
|          | |   • Bug resolution workflow |  • Common monotonous workflows |

<table>
<thead>
<tr>
<th>Classify</th>
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</thead>
</table>
|          | • Which customers are most profitable? |  • Customer Input  
|          | |   Bug classification |  • Information and expertise |

<table>
<thead>
<tr>
<th>Predict</th>
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</table>
|          | • Which deals will close?  
|          |   • Which customers will churn? |  • What does your customer want to do next? |  • Shortfalls  
<p>|          | | |   Employee Attrition |</p>
<table>
<thead>
<tr>
<th></th>
<th>Customers</th>
<th>Product</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automate</td>
<td></td>
<td></td>
<td>• Information gathering before meetings</td>
</tr>
<tr>
<td>Classify</td>
<td>• Highest value users</td>
<td>• Autocreate groups for sharing</td>
<td></td>
</tr>
<tr>
<td>Predict</td>
<td>• Highest value, based on initial usage</td>
<td>• Pre-select new filters and tools a user might like</td>
<td>• Next steps in employee training</td>
</tr>
</tbody>
</table>
QUESTIONS TO ASK

• What’s the ROI?
• Do we have the data?
• Does the data set drift?
• What tools do we use?
TOOLS TO CONSIDER

- Machine Intelligence Landscape 3.0, from Shivon Zillis
WHERE TO START: FLYWHEEL
WHERE TO START: UNIQUENESS

UNIQUE
JUST BECAUSE YOU ARE UNIQUE DOES NOT MEAN YOU ARE USEFUL
IN SUMMARY

• Get started now so that you build an understanding of A.I. before we hit the knee of the curve
• Look for your highest value applications
• Find your flywheel
QUESTIONS?

• @robmay

• rob@talla.com

• sign up for inside.com/ai
My First AI Project - Where to Start

Conrad Lennard
Executive, Featurespace

Juan Ivan Martin
Head of Innovation, IATA
- My first AI project -
Intro

► Spectrum of intelligence
Intro

Spectrum of intelligence
Intro

► Spectrum of intelligence
AI in aviation Industry
IATA projects around AI

1. Customer Service
2. Autonomous vehicles
3. Publications/training
4. Fraud/default prevention
5. Remittance Holding Capacity
6. TIP
1. Customer Service

A.I. + propose

+ automate answers
2. Autonomous vehicles

OFF-AIRPORT ACTIVITIES
Flexibility in what can happen before and beyond airport.

ADVANCED PROCESSING
Increasing use of digital identity management, automation and robotics.

INTERACTIVE DECISION MAKING
Linking everything together with trusted, real-time data throughout the journey.
3. Publications/training

Transport policies:
- Dangerous goods regulations
- Commercial policies
- Military goods restrictions
- Export restrictions

Training

Compliance supervision

Compliance warnings

Hyperledger permissioned blockchain

Watson – Cognitive Engine

COI
PL
DGD
HWB
AWB
4. Fraud and default prevention

- Default
- Fraud
5. Remittance holding capacity
Who We Are
We are world leaders in adaptable behavioural analytics for fraud detection.
Company Overview | ARIC™ Machine Learning Platform

Our core technology is built, deployed and providing decisions in authorisation streams

Adaptive, self-learning models

Real-time decisions

Individual monitoring at event level

Change point detection spots anomalies

Delivery: on premise or cloud hosted

Integration at lowest cost and in minimal time
> Real-time transaction monitoring

> Data models to identify bust-outs and other changes in behaviour early

> Alerts for Remittance Holding Capacity (RHC) – by agent and parent entity

> Firm grounding around core business rules

> System to be live by the end of 2017
£1.9m above RHC
6. TIP
Deliver Transparency in Payments (TIP)

Safeguard Airlines against expensive alternative payment methods (APMs) and Virtual Account Numbers (VANs)

Monitor payments in real-time to identify APMs and VANs

Use Adaptive Behavioural Analytics to identify changes in APM and VAN usage

Give Airlines options to accept or reject APMs and VANs
Risk Management Engine

WATCHLIST

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<th>Time</th>
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THANK YOU!

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A Major Airline Case Study on Artificial Intelligence Implementation and Benefits

Rogier van Enk,
VP Distribution, Commercial Excellence & Data Science, Finnair

Jonathan Newman
Commercial Director, Caravelo
Finnair’s NDC Journey & Caravelo’s Chatbot

IATA Aviation Data Symposium

Rogier van Enk
VP Distribution, Commercial Excellence & Data Science

Jonathan Newman
Commercial Director, Caravelo
Four 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.
Liikennekaari (Transport Code) – open APIs become mandatory in Finland

First phase
• All transport modes: Opening of essential information
• Road and rail: Compatibility and openness of distribution
• Public procurement (=Hansel) only allowed from transport companies with compatible and open distribution systems.

Second phase
• Aviation included
So we need an API!
And not just any API; but the NDC API

1. it’s open
2. it’s flexible
3. it will spur innovation
4. it’s rich in content
5. it’s bringing airline distribution to an internet age
Successful implementation of facilitated booking flows through Skyscanner – technology works, expected to be a multi-million € channel for us

Launch of Finnair chatbot “Finn” – our adorable cloud

We worked together with a startup on this – easy, fun, innovative, fast

Many more in the pipeline
Top 5 things that will accelerate in a NDC world
1 Attribute shopping becomes easier

- They know the customer
- Personalized deals
- View on the discount received
- Reviews and user scores
- Filter by differentiating factors
- Sort by many parameters
- Filter by differentiating factors
- View on the discount received
- Reviews and user scores
2. Increased investments in CX

We are making flying great
For the agent: Improved ancillary processes

- All airline content becomes available in a fast and efficient way
- Easy access to sell ancillaries or fare up-sell
- Rich Content
- Easy and transparent access to product information
- Better ability to cater different customer needs: product quality, service level, schedules and price
- Increase customer satisfaction and retention
For the buyer: Same control on your spend, but dynamic fares & bundling to reward your travelers for their business.

- Added services onboard
- Free welcome drink
- Personalized
- Free lounge access
Startups, innovation, hackathons

Finn – our lovely chatbot

NDC Hackathon
Silicon Valley
California 25-27 August at LinkedIn Offices

Taking airline retailing to the next level
Bringing airlines and customers together

IATA Data Symposium: Miami, November 2017
Old airline IT Systems

50’s

70’s

80’s
New customer requirements

Personalized Retailing
Actual Loyalty
Real time interaction
New customer channels

Fallible
Available 8 hours a day
Expensive to recruit, train and retain
Sometimes gets grumpy

Infallible
Available 24 hours a day
Relatively cheap to build or buy
Is the perfect personification of your brand

Still requires training
New Airline Systems
How our bots come to life

**User Interface**
- Natural Language Understanding (NLU)
  - Multi-NLU
  - Airline domain
- Dialog Engine
  - Multi-messaging platform
  - Multi-language

**Biz Layer**
- Functional Bundles
  - Industry specific
  - Customizable by airline

**LINK**
- Integration / Gates
  - Airline systems (PSS, loyalty, etc)
  - Generic systems (SAP, Payments, etc)
  - Caravelo systems (Locations, etc)

**BI**
- Reporting system
  - Data & analytics
  - Long-term storage
  - Audit
A.I. in Bots is about understanding

Machine learning
Specific airline model created
Human training

We have trained 250 intents:
25,000 utterances, machine learning (ML) does the rest
Understanding drives Scale

80% Key intents with rich interactions

15% Semantic search Knowledge base

5% Human agent hand-off
Understanding drives Utility
Understanding drives Insight

Imagine a one on one conversation with potentially every customer you serve.
The future

More understanding, more utility, more insight

More languages, more platforms

What can bots do for internal customers?

Utilize the power of personalization
We turn messenger platforms into a channel for **servicing** and **retail**
Predicting Disruptions Using Deep Learning: Lessons Learned

Wayne Matrose
Senior Business Development Consultant
SITA
PREDICTING DISRUPTIONS USING DEEP LEARNING AI
LESSONS LEARNED

November 16, 2017
Wayne Matroise
FRAMING OUR CONVERSATION

• Research & Discovery Mission
• Project Motivation
• Project Approach
• What We Found
• What Needs To Change
• Summary & Close
RESEARCH & DISCOVERY
SITA RESEARCH & DISCOVERY

DRIVING INNOVATION

• SITA Lab: Harnessing the power of emerging IT
• Committed resource and funding for the industry’s future
• Investing around 5% of revenue for R&D
• Innovation ecosystem of partners

“By working in partnership with our customers, SITA Lab is revolutionizing the passenger experience.”

Jim Peters, CTO, SITA

• Big data, business intelligence and predictive analytics
• Beacons
• Wearable computing
• Holographic GUI
• Biometrics & Identity Management
• Social booking & check-in
• API platform for air transport: developer.sita.aero
• Mobile boarding pass API
• Cabin crew tablets
• iPad kiosks
• Near Field Communication
• 2017 FTE Supplier Innovation for ControlBridge Hololens (Helsinki Airport)
• 2017 FTE Supplier Innovation for Mobile Application integration with US CBP (Miami Airport)
• 2015 FTE award for Easyjet Host (SITA APIs)
• Winner: 2014 Wearable Conference (with Virgin)
• 2014 FTE 2 awards (with Virgin and AA)
• IT Company of the Year – Air Transport News 2013 Awards
• Aviation IT Service Provider of the Year – Africa (African Airlines Association) 2013
• Winner: 2013 PMI Atlanta Chapter Project of the Year Award
• Airport IT Solutions Provider of the Year, Frost & Sullivan, Asia Pacific 2011
• 2011 Global Customer Value Enhancement Award in border control
• SITA and Malaysia Airlines scoop CAPA IT innovation award
• Best IT Services Provider Emerging Markets Airports Awards (EMAA) 2010 & 2011 & 2013
• Tnooz THack Gold Medal 2011
OUR INDUSTRY ISSUE

- 26 million flights in total
- $25Bn global cost of delay
- 76.2% global OTP
- $3,971 per delayed flight
- 51 mins average flight delay time

Data from the 2017 SITA report, “The Future is Predictable”
Flying on without a delay is highly unlikely... Always delayed. One reason I have not flown with them nearly as much this year!
PROJECT MOTIVATION

- Limited visibility on arrivals
- A-CDM not implemented
- Aircraft not visible until entering ATC-controlled area
- Notification 20 – 60 minutes before touchdown
PAST PERFORMANCE IS NOT A GUARANTEE OF FUTURE RESULTS

BUT WHAT IF DEEP-LEARNING ARTIFICIAL INTELLIGENCE DOES “THE MATH”?

“IT’S TOUGH TO MAKE PREDICTIONS, ESPECIALLY ABOUT THE FUTURE.”
—Yogi Berra
APPROACH
APPROACH TO DATA SCIENCE

- Full-Stack Programmers & Data Engineers
- “Beautiful Mind” Mathematicians
- Extensive ATI Domain Knowledge
- Communications & Visualization Expertise
- Innate Curiosity
- Full-Blown DEVOPS – Rapid Deployment & Continuous Integration
UNDERSTANDING WHERE THE DIFFICULTY LIES
IT’S ABOUT APPLYING THE RIGHT APPROACH TO THE MATH

• Estimate which STAR will be used
  – Easy: Simple Calculation
• Current position to STAR-entry:
  – Moderate: Simple Calculation
• STAR-entry to touchdown:
  – Difficult: Machine Learning
• Runway direction/configuration change:
  – Extremely difficult: Machine Learning
Deep-Learning AI can make an appreciable dent in this ATI challenge

Feature engineering is of paramount importance with AI

Accuracy of and gaps in real-time situational awareness data can be a challenge

Don’t assume to know what data is important to the AI

Black swan events will continue to be a challenge
WHAT NEEDS TO CHANGE
A COMPREHENSIVE SOLVE

98% Operating common or well integrated systems
98% Disruption management best practices in place
97% Sharing data quality and analysis
95% Improving data quality and analysis
93% Setting standards to enable better systems
76% Implementing sophisticated techniques to predict disruption

% of airlines stating priority factors to enhance disruption management capabilities

Data from the 2017 SITA report, “The Future is Predictable”
CHANGE PROGRAMME COMPONENTS

OPERATIONAL MODEL

WORK PRACTICE CHANGE MANAGEMENT

WORK ENVIRONMENT

TECHNOLOGY
SUMMARY
LET’S SUM UP

• We are at the precipice of a new chapter in ATI operational performance
• Deep-Learning AI will play a significant role
• Advancement in tools will get us only so far
• SITA stand committed and ready to do our part
THANK YOU
Networking Coffee Break
Thank you to our Sponsor

mcmillan

Aviation Data Symposium 2017
The Data Revolution Requires a New Mindset

Pascal Clement
Head of Travel Intelligence
Amadeus IT Group
The data revolution requires a new mind-set

Aviation Data Symposium

Pascal Clement
Head of Travel Intelligence
Amadeus IT Group
15 / 16 November
It’s a data revolution!
Differentiate or lose out to competition

- **Data-driven strategies** are now key to competitive differentiation

- **Innovative technology** is providing **competitive value** all along the customer journey

- Now Airlines must employ **data-driven approaches**
  - for more sophisticated Personalization, Intelligent Merchandising, Improved Operations, etc..

- Successful Airlines will harness **data analytics**
  - for their operational and customer experience transformation
Airlines must focus on value as a starting point

Example: Schedule Recovery

Use of data to intelligently predict outcomes is proving to be really valuable to airlines involved in recovering schedules.

Schedule Recovery uses computational capabilities to automate many actions making decisions faster and better, with a direct impact on the bottom line.

"Improving our operations with Schedule Recovery has been enormously successful from a competitive point of view for us, which translates into market share and dollars."

Paul Fraser
Head of Operations, Qantas

*Figures show QF performance using Amadeus Schedule Recovery vs main Australian competitor

Sunday 62% vs 48% OTP
Saturday 86% vs 74% OTP

3.4% vs 22% cancellations
Moving towards continuous re-optimization

With a data-driven process, Airlines can replace ad-hoc processes that “fix” a situation through marginal changes.

Using data analytics, airlines can pinpoint re-schedule conflict with crew regulations, resulting in a smoother and quicker coordination between Ops Control and Crew Control.
Combining multiple data sources to great effect

...Imagine mapping **Passenger shopping behavior profiles** against highest spending passenger to define where you sit them in order to maximize revenue!

...or Product design, packaging offers to customers shopping for travel, or refining the *passenger experience* based on social media sentiment analysis.

The biggest value will come from **combining multiple data sources** to find correlations. This requires a **global Data Infrastructure**!
A profound transformation is needed
5 steps to help you move to a data-driven approach

1. Business experts profiles to include analytical skills

2. Re-think where data can modify, create or replace the processes

3. Usage of data will be for everyone not just the data team

4. Management drive is key so that data models yield better decisions

5. Traveler engagement must be re-thought
Connecting technology and data towards a competitive advantage

Our vision is to help our customers harness the power of data

Providing a **platform-as-a-service model** that frees you to build what you need quickly.

We **co-innovate with customers** using data and analytics creating new models.

Predicting the future is difficult as it is an experimentation journey. But with our insight, technology and experience, we can help airlines through this transformation and **succeed together**.
Thank you!

Find out how to get more value for your business from Data Analytics at our Travel Intelligence Kiosk at the Technology Track.
Customer Flow & Data

► **Jeff Hickey**  
Software Engineering Manager, Alaska Airlines

► **Matt Hahnfeld**  
Software Engineering Manager, Loyalty & Revenue Management, Alaska Airlines
Customer Flow and Data

Creating Remarkable Moments for Alaska’s Guests

Jeff Hickey, Engineering Manager
Matt Hahnfeld, Engineering Manager
What up Alaska?
Our Purpose.

Create an Airline People Love.

A

Digital

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“Traditionally, analysts spent a lot of time developing reports for management to show them the things they already know. Big Data is all about using the company’s information to solve problems.”

– Alaska Analyst
Remarkable guest experiences.
Remarkable guest platform.

- Campaigns
- Inspire
- Book
- Arrive
- Lounge
- Fly
- Leave
- Share

- Real-Time Guest and Airline Context
- Real-Time Guest and Airline Context
- Real-Time Events
- Real-Time Events
- Real-Time Learnings
- Real-Time Learnings

- Marketing Assets
- Ads
- Offers
- Rewards

- Guest Profile

- Decision Making and Personalization Engine

- Analytics & Learning
- Structured
- ML Models

- Data Lake

- Source Systems

- APIs

- Social & Clickstream
- Streaming
- FTP/API

- External Data
**TRAINING MODE**

Rodriguez, Jose
Not Checked In
- Seat: 12C
- Group Code: AG3
- Companions: 12A, 12B

Carrol, Don
Checked In
- Seat: 12D
- Group Code: --

Flight Information:
- Aircraft Type: 737-900ER
- Tail Number: N276
- Duration: 2h 27min
- Capacity: 184
- Departure: 2:00 pm
- Arrival: 4:29 pm
- Flights:
  - PHX
  - LAX

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Thank you.

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matt.hahnfeld@alaskaair.com
Moderator
- Juan Ivan Martin, Head, Innovation, IATA

Panelists
- Didier Mamma, Global Head of Commercial for Travel Intelligence, Amadeus IT Group
- Rob May, CEO Talla
- Brendan McKittrick, CTO Accelya
- Ramki Ramaswamy, VP IT, Jetblue
- Matt Hanhfeld, Software Engineering Manager, Alaska Airlines
- Pierre-Yves Bénain, Portfolio Head e-Aircraft, Strategy & Marketing, Sitaonair

Aviation Data Symposium 2017
Wrap-up and Closing

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Networking Lunch