Aviation Data
Symposium

15–16 November 2017

Miami, USA

Welcome Address

Aleks Popovich
SVP, Financial and Distribution Services
IATA

Aviation Data Symposium

15–16 November 2017

Miami, USA

Thank you to our Sponsors

IATA

jetBlue®   **FINNAIR**

accelya   **AMADEUS**   **Deloitte.**

FlightAware Live Flight Tracking   **Rockwell Collins**   **SAFRAN**   **SAFETY LINE** Big Data applied to Aviation   **TRIOMETRIC**   **VariFlight** live on time

MIA100   **MIAMI-DADE BEACON COUNCIL** The Official Economic Development Partnership

INFARE   **ICF**   **mcmillan**   **OAG** connecting the world of travel   **SITAONAIR**

AIRLINES   **ALN AEROLATIN NEWS**   民航资源网 **CARNOC**.com   **Ground Support** WORLDWIDE   **MRO** TODAY

Aviation Data Symposium 2017

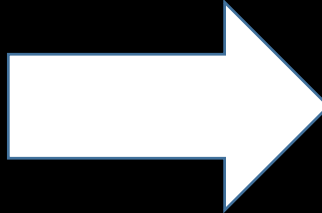# THE BIG QUESTION IS……………..

HOW TO UNLOCK THE VALUE OF BIG DATA?

UNLOCKING THE VALUE OF BIG DATA
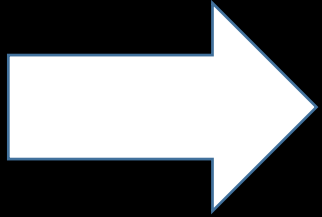
➡ SAFE

➡ SECURE
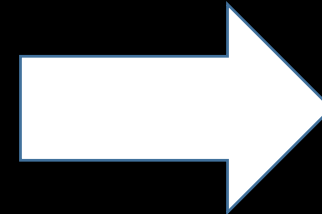
➡ PROFITABLE

IATA Aviation Data Symposium

Emilio T. González
MIA Airport Director

November 15-16, 2017

Miami-Dade Aviation Department

MIA BY THE NUMBERS
Economic Powerhouse · Industry Leader · International Brand

1 *MIA's ranking among U.S. airports for int'l freight*

1 *MIA's ranking among U.S airports in total carriers - only U.S. airport to offer passenger and cargo service on 106 different carriers*

3 *MIA's ranking among U.S. airports for int'l passengers*

31.5 *MIA's economic impact measured in billions of dollars*

37.5 *Number of direct jobs at MIA measured in thousands*

40 *Percentage of Florida's total international trade value handled through MIA*

57.3 *Value of MIA's imports and exports in billions of dollars*

44.6 *MIA's passenger total measured in millions – 7th consecutive record year*

65 *Percentage of int'l visitors to FL who travel through MIA*

96 *Percentage of Miami visitors who arrive by air*

271 *Number of direct and indirect jobs supported by MIA measured in thousands*

GLOBAL ROUTE NETWORK
Economic Powerhouse · Industry Leader · International Brand

169 Passenger Destinations
107 Freight Destinations

MIA 2017 – NEW AIRLINES & ROUTES

Economic Powerhouse · Industry Leader · International Brand

|	
Qatar Airways Cargo – South America / Europe / Middle East	February, 2017
Volaris – Mexico DF / Guadalajara	February, 2017
First Air – Mount Hope, Ontario Canada	February, 2017
WOW Air – Reykjavik, Iceland	April, 2017
Avianca Brazil – Sao Paulo, Brazil	June, 2017
American Airlines – Omaha, Nebraska	July 2017
TACA Peru (New All-Cargo service) – South America	August 2017
Aer Lingus – Dublin, Ireland	September, 2017
SAS – Stockholm, Sweden	October 2017
Frontier – Buffalo, New York Islip, New York Milwaukee, Minnesota Providence, Rhode Island Trenton, New Jersey	Fourth Quarter 2017
Amazon Prime Air	October 2017
EL AL – Tel Aviv, Israel	November, 2017

- **Global Entry**

- **Automated Passport Control Kiosks:**

- **Mobile Passport Control**

- **MIA Mobile APP**

- **Beacons**

- **One-Stop Immigration / Customs**

- **E-FIS**
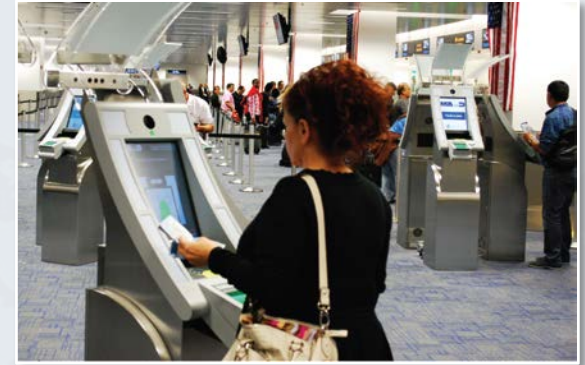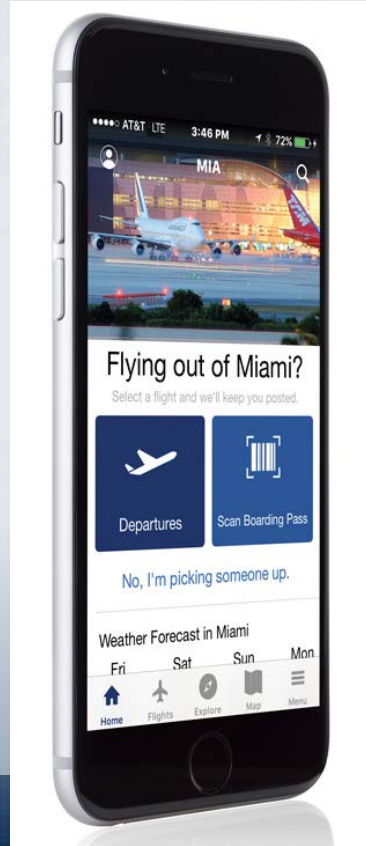
MIA – AWARDS & ACCOLADES

Economic Powerhouse · Industry Leader · International Brand

Freighters World Awards - *Best Freighter Hub 2017*

2017 Future Travel Experience (FTE) - *Best Immigration Initiative*

J.D. Power 2017 N.A. Airport Satisfaction Survey –
Best Food, Beverage & Retail Airport in North America

ACI-NA - *Airports Council International-North America Inclusion Champion*

AAAE *- American Association of Airport Executives' Airport Innovation Award*

USA Today 10 Best Readers' Choice Awards
Best Airport for Shopping

American City Business Journals – *Top 10 best-run airport in America*

ACI-NA – *Environmental Achievement Award for Sustainability Project*

Value of Data and the Internet of Things

Economic Powerhouse · Industry Leader · International Brand

All things that can be connected will be connected

- **Improve** customer service

- **Grow** revenues

- **Streamline** operational efficiency

- Customer Expectations

- Technology

- Lack of Holistic Approach

- Legal and Regulatory Compliance

- Fear of Cyber Attack

- Gain a 360-degree view of the customer experience

- Correlate customer value to experience

- Create journeys designed to drive value growth
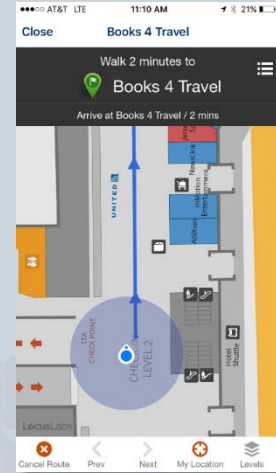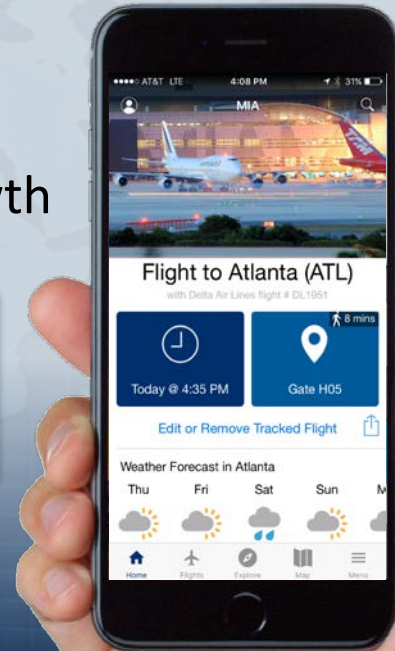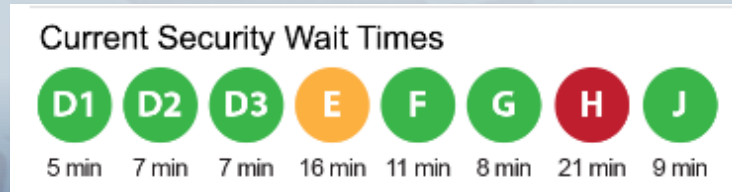
ECONOMIC POWERHOUSE • INDUSTRY LEADER • INTERNATIONAL BRAND

THANK YOU!

Host Airline Remarks

Ramki Ramaswamy
VP IT, Technology & Integrations
JetBlue Airways

The Age of Data:
Becoming a Data Driven Business

↗ **Angelo Impoco**
   VP, Global Merchant Services & Loyalty Risk Management, American Express

↗ **Oguz Ozsahin**
   VP & Chief Risk Officer, Global Merchant Services and Head of Airline Center of Excellence, American Express

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The Age of Data:
Becoming a Data Driven Business

AXP Internal

Airline Center of Excellence

Business Decisions In The Digital Age

Marketing

Amex Offers

Acquisition and Marketing

Risk Management

Fraud Prediction

Credit Prediction

Servicing

Consumers

Businesses

Merchants

Centralize Data

Demonstrate Value

Modular Design

Align & Train Organization

Building And Deploying A Big Data Ecosystem

Machine Learning Capabilities

Big Data Technology

Spark

APACHE STORM™

hadoop

Use Cases and Features have grown exponentially

2018 and beyond

2017

2012
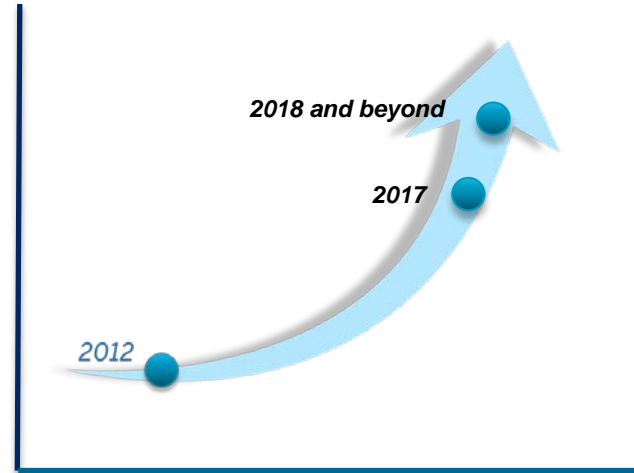
Modular Platform Design

Basic Users   **Advanced Users**   **Use Cases**   **Channels**

Modeling and Execution

Data Lake and Warehouse

Data Ingestion

Demonstrate Business Value With Big Data Capabilities

360° Customer View

Machine Learning

Real-Time Decisioning

Prioritize revenue generation and customer experience

Platforms and Data

Training

Use

Decentralized

Data Needs To Be Centralized And Easily Accessible

How We Solved For It?
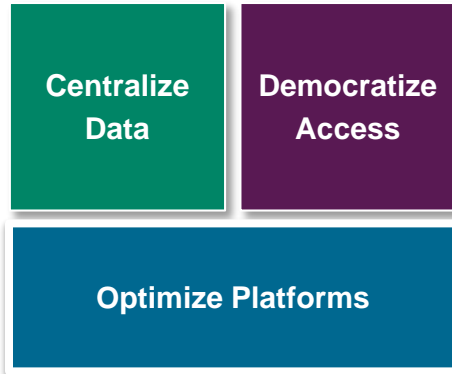
Centralize Data

Democratize Access

Optimize Platforms

Business Outcomes

Acceleration in Revenue Growth

Industry leading Credit & Fraud loss control

Customer Experience and Servicing

Centralize Data

Demonstrate Value

Modular Design

Align & Train Organization

What others see?

Issuers see the customer

PAYMENT ISSUER

- ✓ Customer Data (Name, Address)
- ✓ Transaction Amounts
- ✗ Granular Merchant Data

Networks see how the customer spends

- ✗ Customer Data (Name, Address)
- ✓ Transaction Amounts
- ✗ Granular Merchant Data

Acquirers see where the customer spends

MERCHANT ACQUIRER

- ✗ Customer Data (Name, Address)
- ✓ Transaction Amounts
- ✓ Granular Merchant Data

We See The Whole Picture

✓ **Customer Data (Name, Address)**

✓ **Transaction Amounts**

✓ **Granular Merchant Data**

Unique Intelligence on Routes & Customers

Insights on segments & routes

Customer-level behavior

Identify growth opportunities

Actionable Insights for <u>All</u> Customers

Predictive insights

American Express Card Members

Airline Customers

Broader Populations

Airline Enhanced Authorization

Enhanced Authorization (EA) leverages additional transaction details to improve authorization decision

Card Member Information

Cardmember Name

Email

IP Address

Travel Details

19
Travel Date

Traveller Name

Route

in Party

Class of Fare

Questions?

Oguz Ozashin,
VP and CCO Global Merchant Services and
Loyalty, Treasury, Counterparty and Vendor
Global Head, Airline Center of Excellence

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The Distribution of Big Data

Nawal Taneja

Airline Business Strategist,
Published Airline Business Author
The Ohio State University

The Big Data Challenge:
Balancing Innovation with Regulations

Éric Vallières

Partner

McMillan

The Future is Now:
Understanding the Trends that are Revolutionizing the Industry

David F. Hoppin
SVP, DIIO
Flightglobal

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Why is FlightGlobal talking about data?

FlightGlobal is part of RELX Group
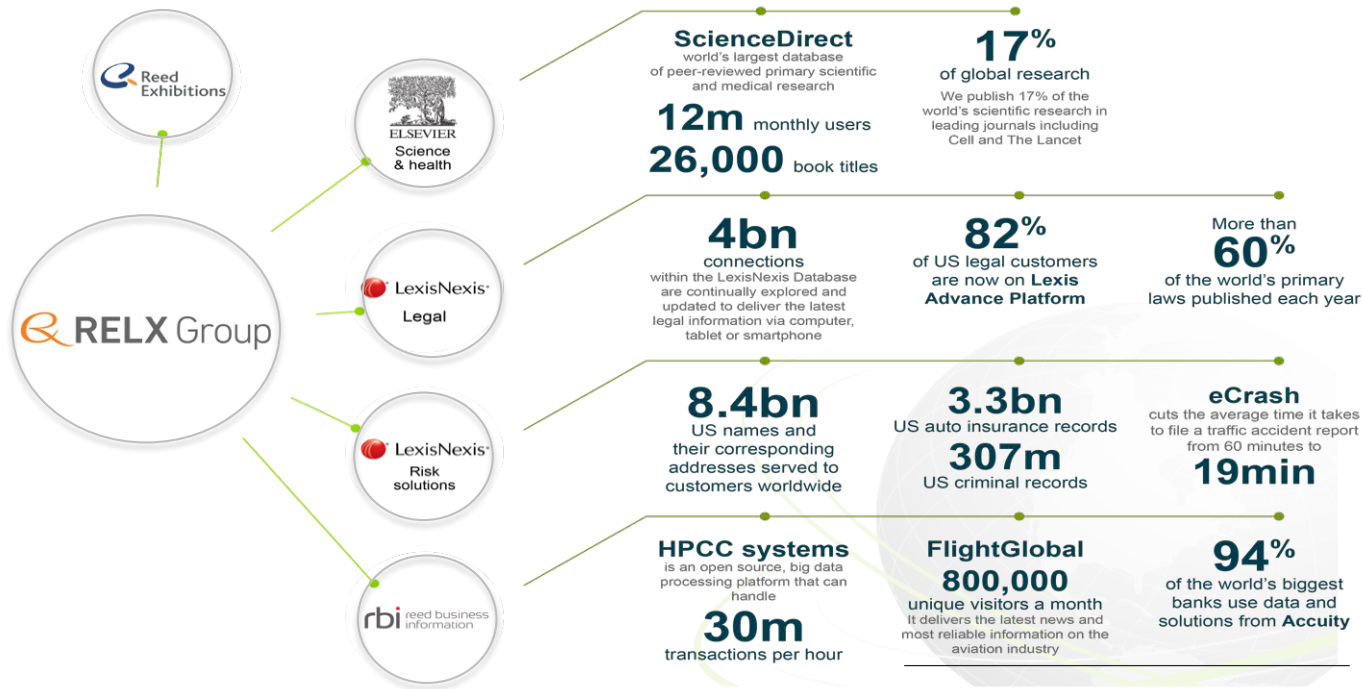
Aviation generates lots of data, much of it locked in siloes

Aerospace
- OEMs
- MROs

Aircraft Finance
- Lessors
- Banks
- Insurers

Traveler Services
- Agency channel
- Disruption alerting
- Corporate sales
- Online sales direct / OTA

Airline Operations
- Air Navigation
- Flight Operations & IROPS
- Ground Operations

Commercial Planning
- Reservations
- Passenger Service Systems [PSS] *Includes ticketing, fares, DCS, inventory etc*
- CRM Loyalty
- Market Planning Market/ Destination/ Network
- Revenue Management [RM]
- Airports

Cargo Services
- Cargo offers & planning
- Freight forwarding
- Cargo handling/tracking

FlightGlobal

Airlines face particular "Big Data" challenges

- Often highly siloed organizations

- Must conform to multiple and very different regulatory regimes (e.g., antitrust, flight operations, maintenance, privacy…)

- Legacy IT investments in many cases

- Wide geographic scope of operations

Data & analytics challenges are probably greater for an airline than most other companies of equal size

FlightGlobal

What is the value of Big Data?

- Transactions
  - Good: revenue
  - Bad: fraud, parts failures, etc.

- Lead time to manage transactions
  - Add lead time by monitoring behavior (whether customer clickstream data or engine EGT behavior)
  - Behavior data can be anywhere from 10x-1000x transaction data

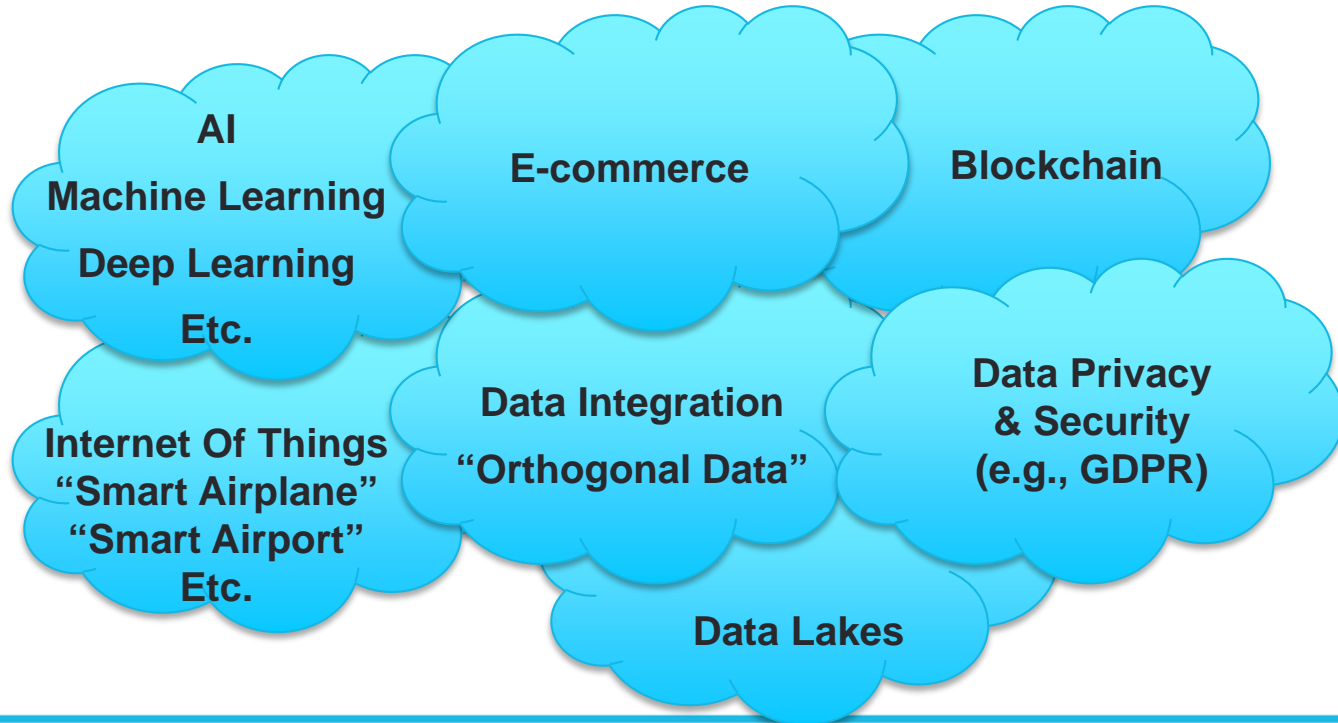**It's relatively easy and cheap to start collecting Big Data… and quite another to leverage it**

FlightGlobal

Key trends are hiding in a fog of buzzwords

Some Personal Favorites…

AI
Machine Learning
Deep Learning
Etc.

E-commerce

Blockchain

Internet Of Things
"Smart Airplane"
"Smart Airport"
Etc.

Data Integration
"Orthogonal Data"

Data Privacy
& Security
(e.g., GDPR)

Data Lakes

FlightGlobal

How did "BI" buzzword work out for airlines?

Promise

- Single version of truth accepted across the organization

- Capture data at the level of detail generated by the business (no aggregation)

- Make relevant data available to improve thousands of small decisions as well big ones

Current reality

- People still argue about the numbers and underlying allocations

- Increasingly done, but not leveraged

- Hard to break down internal barriers to data sharing

- "Data lakes" can turn into "data swamps" without careful governance

FlightGlobal

Most important trends change "real life"

How the possible becomes reality

- Technical Feasibility ("works in the lab")
  - Proven but not yet commercially viable

- Financial Feasibility ("works in a spreadsheet")
  - Commercially viable if market responds as hoped

- Human Feasibility ("works in real life")
  - Regulators approve
  - Humans accept (and change behavior to use new technology!)

FlightGlobal

So what are the most important trends?

My picks for top 3 data/analytics trends driving change in next five years:

- Sensors everywhere

- Rise of data analytics

- True data integration / data fusion

FlightGlobal

Sensors everywhere

- Proliferation of sensors is unleashing a data flood – for example:
  - Near-real time tracking of bags, freight and passengers
  - In-flight reporting of aircraft and engine condition

- No lack of use cases, and much value still to be captured with better and faster answers to key questions
  - What's going on right now?
  - What exactly caused an event/problem in the past?
  - What should we do?

FlightGlobal

Rise of data analytics

- Data analytics has been talked about for years, but it turns out to be much easier said than done

- Often hard to justify near-term expense for hard-to-quantify future benefit…

- …But now many businesses realize they can't afford to ignore data analytics so investments are being made
  - Financial capital in systems and especially people with right skills
  - Political capital to break down internal barriers and drive change

FlightGlobal

True data integration / fusion

- The promise of integrating disparate datasets to create high-value insights is widely acknowledged

- Finally becoming a reality thanks to real investment in data analytics

- Example: FlightGlobal is meshing flight status data and fleet data to:
  - calculate exact seats by cabin
  - identify which "hard product" (seats/IFE/etc.)
  - track hours and cycles on engine types
  - estimate flight-specific cargo capacity
  - … and more

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So what data should exist, but does not?

Selected Examples

	Existing	**Emerging**	**Dreaming**
Passenger	• Booking & ticketing	• Personalized offers	• Firm link between shopping and buying
Cargo	• A2A cargo tons and revenue	• Tons and revenue by transport product (e.g., temp.-sensitive)	• True O&D data (shipper to consignee)
Operations	• Historical flight delays and reasons	• Robust forecasts of flight-specific delays	• Delay/cancel forecasts that can be used in schedule design

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Market will not pay or wait for perfection

When dreaming about data that should exist, consider:

- Exactly which information would most improve the decision at hand?

- What level of precision is required to make the right decision most of the time?

- How fast/timely does the information have to be?

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What do we often overlook?

- Critical importance of "data cleaning"
  - Humans are still involved in much data collection which means much potential for error
  - Inconsistent data definitions impede meaningful analysis

- Human ability to cope with data flood
  - Despite excitement about AI/ML/DL, humans are still central to every significant decision
  - Available data can overwhelm human analysts – "can't see forest for the trees" is not unusual

- Need for business translators as well as data scientists
  - Business translators combine data savvy with business and functional expertise

FlightGlobal

Real value is in joining together disparate data

Overview of Adaptris STRIKE Technology
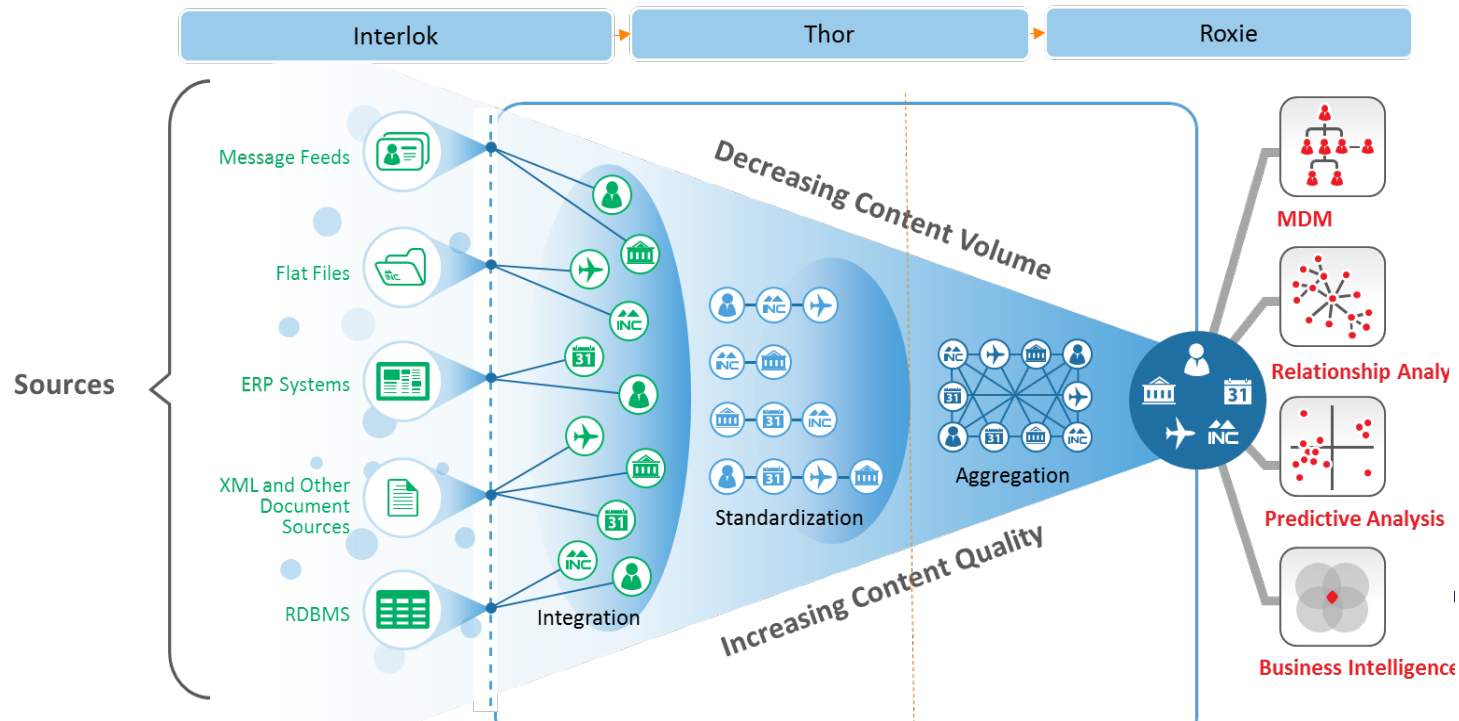
- There is a lot of data

- Real value lies in joining up disparate datasets

- Don't forget the poor humans who have to make sense of the data flood!

Networking Coffee Break
Thank you to our Sponsor

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Aviation Data Symposium

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Legal Brief

Marie Claude Simard

Assistant General Counsel
IATA

If We Could TURN Back Time

Angela Marano

Senior Director, Corporate Strategy Data Science
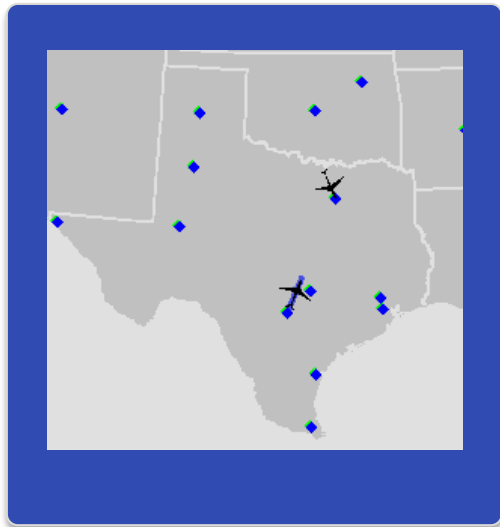and Continuous Improvement
Southwest

IF WE COULD TURN BACK TIME

Angela Marano – Sr. Director, Data Science and Continuous Improvement
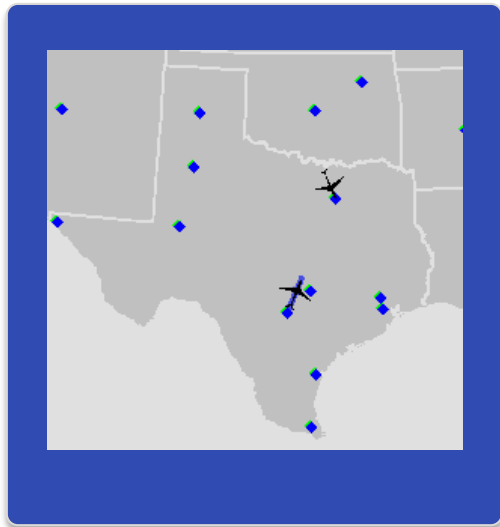
THE EARLY DAYS OF SOUTHWEST AIRLINES

3 AIRCRAFT

3 CITIES

200 EMPLOYEES

THE EARLY DAYS OF SOUTHWEST AIRLINES

3 AIRCRAFT

3 CITIES

200 EMPLOYEES

TODAY AT SOUTHWEST AIRLINES

687 AIRCRAFT

99 CITIES

55,000+ PEOPLE

IF YOU DON'T HAVE THE DATA – CREATE DATA!

Video analytic capabilities have been developed to capture data currently not available to Southwest in real-time

Currently, data is being generated to create insights and recommendations related to turn time

Insights and recommendations will drive actions to optimize turn time and improve ontime performance for Southwest
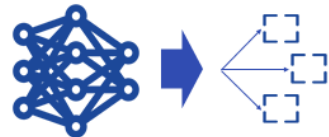
AN INSIDE LOOK AT VIDEO ANALYTICS

Video is captured

Video is converted to images

Images are pre-processed

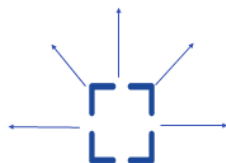**Images are detected for humans and bag objects**

Data on classified objects counts and pace captured

Images are tagged to train the model.

Classified objects are tracked across a perimeter

Objects are classified into categories

TURN OPPORTUNITIES INTO IMPROVEMENT

Southwest
LUVLines
The Employee Magazine | June 2017

Operational Reliability:

Running an Efficient and Reliable Operation

Crew Change, Dual Door Deplaning, Flight Close Standardization, and Last Off–First On

How the Operational Agility Team is working to improve operational reliability

Crew Change

How we execute crew changes is a critical part of the turn. Data told us we have opportunity to improve.

Operation: Flight Close

The process for closing a flight (last scan to door close) is highly variable. This variation impacts our On Time Performance.

Provisioning Process

Provisioning our aircraft is important to ensure Customers have what they want on each flight. We are working to eliminate transportation waste identified in this process.

ENSURE FRONT-LINE EMPLOYEES ARE INVOLVED

"It's powerful having folks from different workgroups being able to talk in a neutral environment about the process."

As a Flight Attendant, I never realized how detailed Ops' responsibilities were in getting each flight pushed.

"After the kickoff I knew this project was a big deal!"

IN SUMMARY

Leverage and integrate all data available to you

Create data where you don't have data

Let the data be your guide for improvement

Engage People to round out the story

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Aviation Leaders on the Grill

The Aviation Industry Challenges in the Data Age: Where are we Now?

Moderator

↗ **Tanya Beckett**, Anchor, BBC World News

Panelists

↗ **Dickie Oliver**, VP & CIO, ARC

↗ **Maurice Jenkins**, CIO, Miami International Airport

↗ **Nawal Taneja**, Airline Business Strategist, Published Airline Business Author, The Ohio State University

↗ **David F. Hoppin**, SVP, DIIO at Flightglobal

↗ **Bilal Munir Sheikh**, CCO, Pakistan International Airlines

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Industry Data and ADS Highlights

Charles de Gheldere

Director, Travel Intelligence

IATA

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Big Data is transforming our Industry

- New aircrafts are data centers

- Passengers are connected

- Artificial Intelligence is here

- Data-driven organizations will take this Industry to the next level – sky's the limit

Passenger Distribution and Sales Data

Safety and Operations Data

Airfreight Data

Technology

2 Plenaries

4 Specialized Tracks

AND

Fantastic Networking Opportunities

HAVE FUN!

THANK YOU!