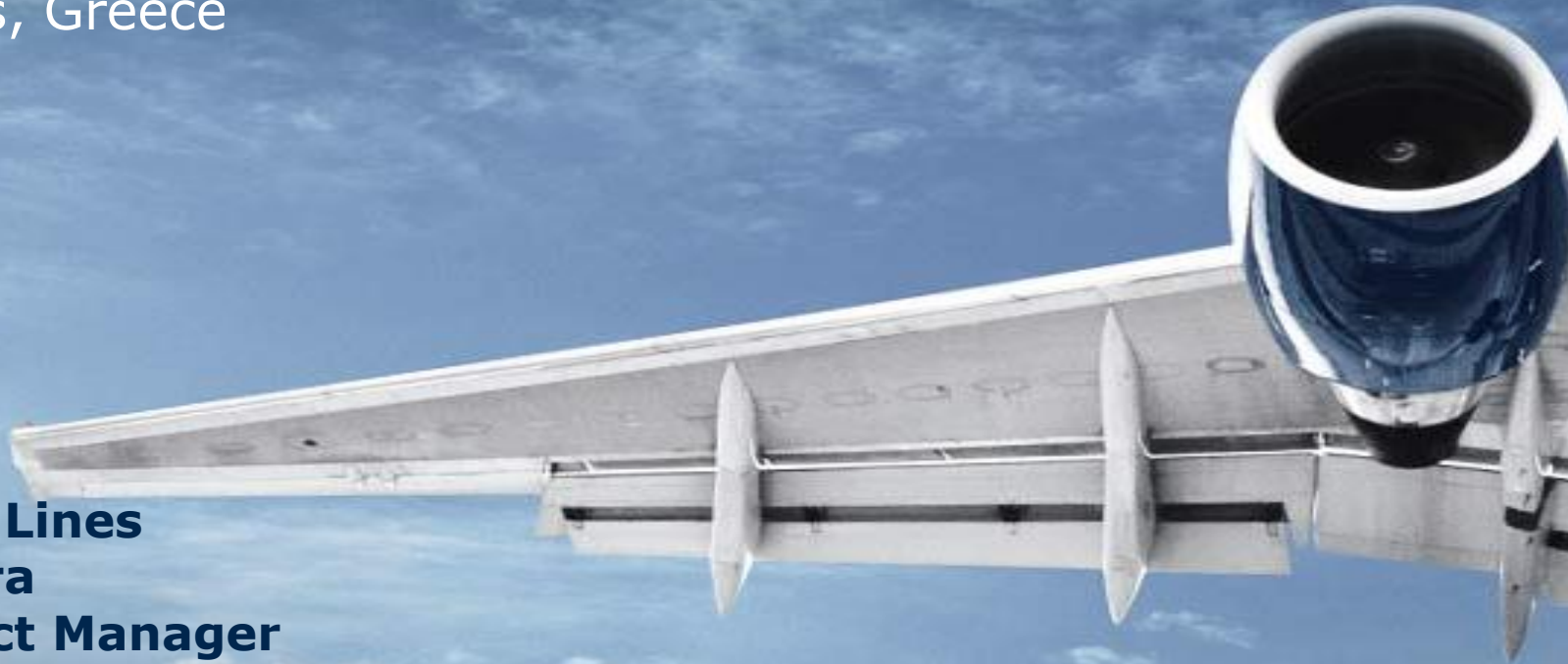


# Lessons From the Data

---

15<sup>th</sup> IATA Maintenance Cost Conference  
at Athens, Greece

**Delta Air Lines**  
**Eri Hokura**  
**Sr. Project Manager**



# Delta Air Lines

## Who We Were:

- Headquarters: Atlanta, GA, USA
- 750+ Mainline Aircraft
- 16 Fleets, 20+ Configuration

## Who we are:

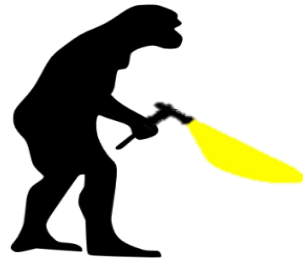
- Headquarters: Atlanta, GA
- 923 Mainline Aircraft
- 20 Fleets, 61 Configurations



~ 2013

Crawling on hands and knees!

Pre-RFID



2014 ~ 2016

Inspect and harvest data

Transition Phase to RFID



2017 ~

Scanning away

Post-RFID

# RFID by the Numbers

- # of RFID Enabled Active A/C: 923 tails (Phase1 & 2 Completed)
- # of RFID Enabled Stations: 57 Stations
- # of RFID Users: 5,800+ users
- # of RFID tagged Equipment types: 55+
- # of Active Configuration LOPA Drawings: 61 (350/5 yrs.)
- # of RFID Tags flying: 348,000+ tags
- # of RFID tagged Expiring Equipment: Average 1,300/mon.
- # of types of RFID equipment: Smart phone and Tablets in Android, iOS, Windows, RFID Scanners, RFID BT Readers

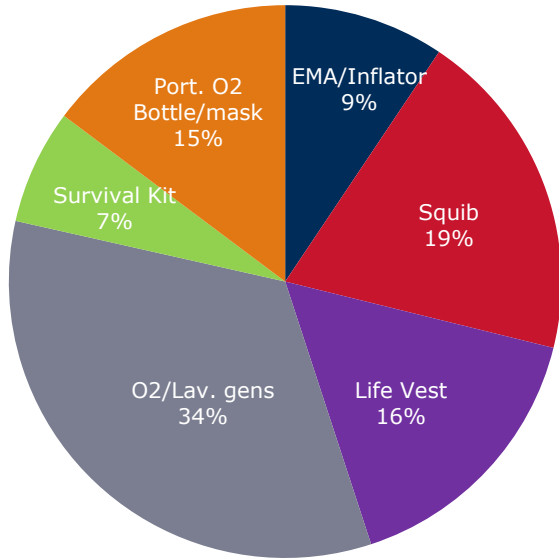
# Why RFID

→ Expectations going in...

- Improve compliance
- Improve material green time
- Improve efficiencies



# Compliance Improvements



## Common Issues Found

- De-mod AC during Config. Change
- Incorrect dates were tracked
- Configuration differences within fleet

**RFID helped visualize quantifiable data**

# Root Cause of Errors

## *Identifying key dates*

**LAST SHOP VISIT**

MFG's P/N \_\_\_\_\_

Serial Number 1207

Overhaul Date 14 Aug 2018

Next Overhaul Due 14 Aug 2019

**LAST SHOP VISIT**

MFG's P/N \_\_\_\_\_

Serial Number 2366

Overhaul Date 10/15/18

Next Overhaul Due 10/15/21

**LAST SHOP VISIT**

MFG's P/N \_\_\_\_\_

Serial Number 0441

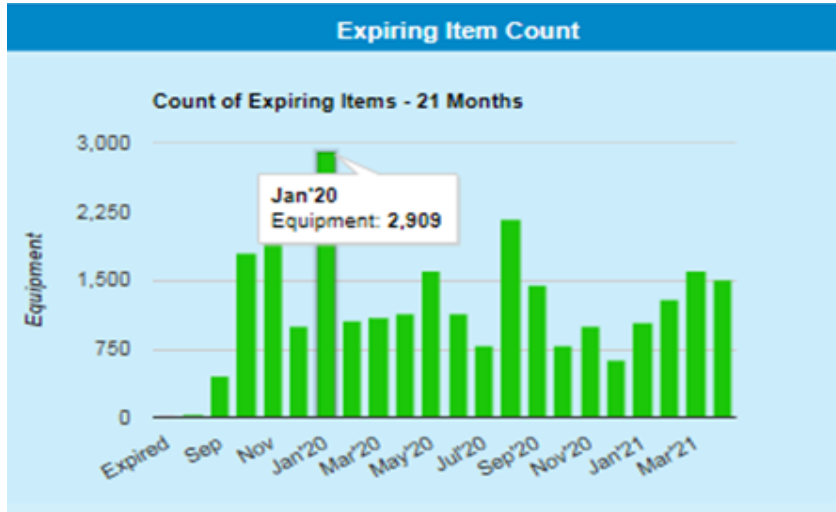
Overhaul Date 10/1/2018

Next Overhaul Due 10/1/2021



**OEM needs to eliminate confusing variables**

# RFID Data = Business Intelligence

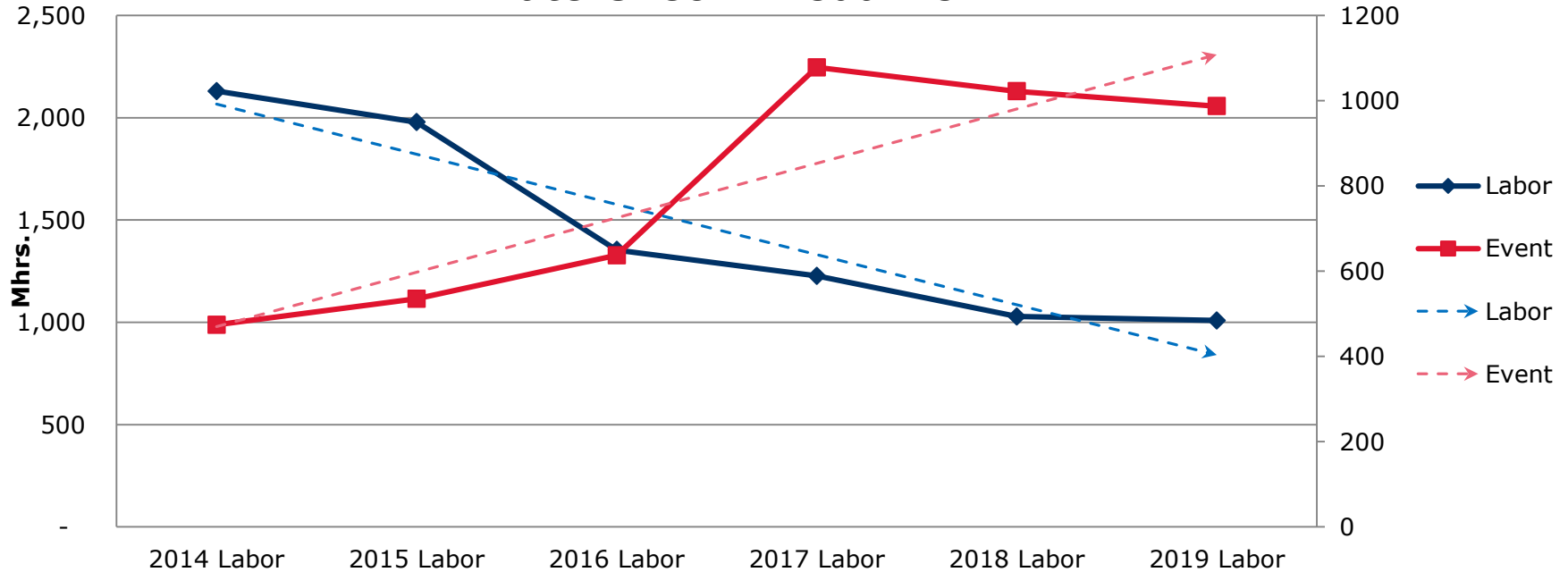


- Visual forecasted demand
- Labor / Material capacity management
- Pre-plan work packages

**Importance of getting rid of the noise**

# Efficiencies and Compliance Improvements

## Date Check: Visual vs. RFID



50%+ efficiency gain between 2014 vs. 2018



# Lessons Learned

## → Expectations going in...

- Improve compliance
- Improve material green time
- Improve efficiencies

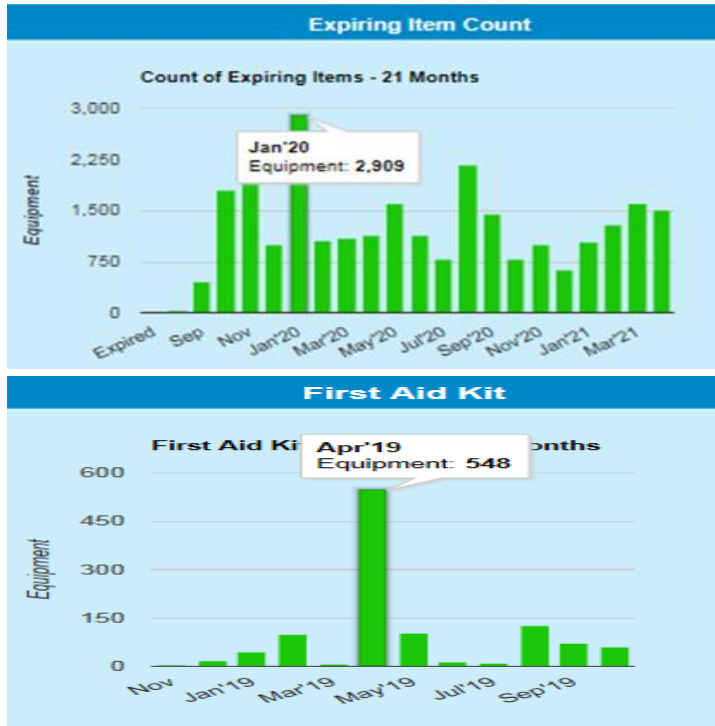


## → Upon Accomplishment...

- Able to gain reliability data
- Demand, schedule, plan
- Visualize configuration differences
- Improve incoming inspection accuracy and efficiencies
- Same SW, HW, and Cabin LOPA can be used for other purposes

Importance of focusing on “to provide”

# RFID Data = Business Intelligence



- Visual forecasted demand
- Labor / Material capacity management
- Pre-plan work packages
- Strategically adjust overhaul timing to support OEM
- Routine vs. Non-routine
- Just in time vs. Just in case

**Data provides flexibilities**


# Can You Sp


1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

- 52C2205F0460005
- 52C2205F0460006
- 52C22S5A0460005
- 52C22S5A0460006
- 52C2205A0460005
- 52C2205A0460006
- 53C2205F0460005
- 53C2205F0460006
- 63C2205B0460005
- 63C2205B0460006
- 63C2205Q0460005
- 63C2205Q0460006
- 64C2205B0460005
- 64C2205B0460006
- 65C2205B0460005

2	33	34	35	36	37	38	39	40	41	42	43
---	----	----	----	----	----	----	----	----	----	----	----

CONTAINER ASSY, CHEM. OXY.


**PNR 53C2205A0460006**  
**SER A9580E003**


 MFR D1379  
 DMF 122017

CONTAINER - TYPE:  $\nabla$

QC

Not all configuration differences are easily recognizable

# Configuration Challenges

FLEET	SU	LAV QT	LOC	MODULE #	EFFECTIVE	CMM	Faucet #	CMM	F	Ite	Strip Info Cabin	CMM	F	Ite	Strip Info	CMM
A330	333	8		R425401108-014	3301-3302	25-41-52	AR9013-5W1D102	25-41-52	22B	10A	A425400421-540	25-41-52	62C	40C	A425400502-392	25-41-52
FLEET	Lav. MODULE #		EFFECTIVE													
A330	R425401108-014		3301-3302													
	R425401108-016		3303-3305													
	R425401108-018		3306													

- A330-300: 1FL Lav. Module alone has 9 configurations between 41 AC
- Identifying correct Lav. Module P/N = Identifying correct CMM/AMM
- Reduce Lav. Lock Out duration

Speed → Opportunity → WIN

# Lessons Learned Beyond Expected

- There are more configuration differences than expected
- Data can confirm what you thought you knew
- Data can reveal what you didn't know
- Data can provide opportunities for growth
- Even if newer aircraft comes with smart technologies, fundamental of needing good data will never change



STATISTICS.....are like bikinis. What they reveal is suggestive, but what they conceal is vital.

Aaron Levinstein, Business Professor at Baruch College

# New Initiatives - Compliance Program

## → Receiving/Pre-installation/Tracking Scan

- Collaboration with selected OEM

## → NHA/Multi-date Tracking

- Parent-Child Relationship
  - AED: Pad & Battery Expiration
  - ELT: Manufacture date of unit & Battery expiration
  - Bottles: Life limit & Hydro Static Due
  - Slides: Life limited subcomponents

## → Auto Sign-off

- Synchronizing data within multiple systems to streamline process

# Thank you & Questions?



For more Information

Please contact:

Eri Hokura

[eri.hokura@delta.com](mailto:eri.hokura@delta.com)

DELTA AIR LINES, INC.