Benefits of RFID

Transparent Data Collection®

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IATA Paperless & RFID Conference
Montreal, 14 November 2017
We Have a Data Problem:

Ever seen characters like this?

Your interpretation?
We have other Problems:

- Last Century’s thinking:
  - Written-to-Paper data typed into computers
  - Data mistakes - GIGO
  - People can’t be better and go faster (but technology can)

The Solution:

- **Transparent Data Collection®**
  - Data collected with little, if any, human involvement
  - Most data should be collected automatically/transparently
  - Data comes from - and needs to go back to - the worker
  - You need: Digital Data, Wireless Communications, Standards
  - Some call this the Internet of Things - IoT
What the Industry Needs

- **Simplicity** – people can make sense of many simple things
- **Flexibility** – allows the business to change as needed
- **Visibility** - of parts and processes
  - Transparent Data Collection® provides this automatically

With visibility, people can solve or avoid most problems
Why Use **Transparent Data Collection**?

**Avoid Errors!**

Errors follow the Iceberg Principle

What you see

What you don’t see!

(this will hurt you!)
A New Focus is Occurring

- Airframers led RFID effort for first decade – thankfully!
  - Airlines are now taking the lead to meet their MX needs

- For the first decade the focus was on high memory tags
  - Now focus is on low memory tags and quick ROI

- Airlines have figured it out - RFID is not new, and it is not hard to implement with an experienced team – **ROI in 3 months**.
Transparent Data Collection®: Basics

- **Digital Data** – no more paper
  - Gather data at the source in digital format

- **Wireless Communication**
  - Take people out of the ‘sending’ process

- **Industry Standards**
  - We have to know what the data means
  - ATA Spec2000
    - CSDD – Common Support Data Dictionary
    - Chapter 9-4 (barcode, SSN), Chapter 9-5 (RFID)
    - Chapter 9-6 (Traceability)
**Spec2000 CSDD: Example**

**DEFINITIONS**

<table>
<thead>
<tr>
<th>Class</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific</td>
<td>The design activity or industry standard identity for the subject part, assembly, kit or material item. It is used to identify a given configuration. The Original Part Number is unique within a business entity.</td>
<td>2000</td>
</tr>
</tbody>
</table>

**APPLICATION IN SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Source</th>
<th>Context</th>
<th>Key (e.g., Tag or TEI)</th>
<th>Type</th>
<th>Properties</th>
</tr>
</thead>
</table>
| 2000   | TEI     | PNO                    | Data Element   | Data Type: AN  
Min Length: 1  
Max Length: 15  
Decimals: 0  
1. The format of this data element will match those of Part Number (PNR)  
2. A given part number will only be used for parts with the same configuration.  
3. Original Part Numbers are controlled by the cognizant design activity. Normally this is Engineering.  
4. This data element shall only be used:  
   - in conjunction with the Sequential Part Serial Number (SEQ)  
   - when there is a need to maintain the Original Part Number on the part for the life cycle of the part. |

**Usages:**

Chapter 9
### Functional and Data Architecture

#### Advance Forecasting & Planning
- Inventory Control
  - Delivery Configuration Data
    - Serial Number Tracking
    - Purchasing
    - Invoicing
    - eA/C Xfer Record
    - Suspected Unappvd Parts
    - e8130 Electronic Documentation
    - Warranty
    - Repair
    - Exchange Parts
    - Loan/Borrow
    - Cost-to-Repair
- Traceability/Authentication of Parts
- Permanent Bar Code/RFID Identification of Parts

#### Maintenance Cost Analysis
- Reliability Data
  - Shop Tear Down Report
  - Line Removal Data
  - Schedule Interruption Data
  - Pilot, Cabin, & Maint. Log
  - Flight Hours & Landings

#### Spec 2000 Common Data

**Legend:**
- Existing Standards
- ‘In-Process’ Standards
- Future Standards
Transparent Data Collection®: Basics

- **Barcode** reading meant ‘no typing’ – that’s good, but…
- **RFID** means ‘no seeing, no touching, and no typing!’
- An item’s location can be known without even seeing it

**THAT** is Transparent Data Collection®

And there are no data mistakes!
How are customers using RFID data?

- Presence checks of emergency equipment
  - easily stay in compliance
- Expiration date checks
  - never overfly a part
  - never waste time on items that are still OK
- Tool and calibration tracking
- Plan ahead to avoid AOGs
- MEL equipment checks
- Maximize green time on life limited parts
- Configuration control of part numbers
- Track part movements
- Track portable equipment – GSE, galley carts

We have ~600,000 parts tagged, flying and tracked - and growing each day
Material Cost savings can be Significant

$O_2$ GENERATOR LIFECYCLE

For a 12 or 15 year Generator Lifetime

Manual Tracking

ON SHELF
>15%

ON AIRCRAFT
70% useful life

REPLACE
>15%

With RFID
Transparent Data – on-aircraft

B767-300 installed life vest check – cockpit, F/A seats, First, Economy, Spares

Hardware POV
User’s POV

254 installed vests in 35 seconds! All present and none going to expire.
Transparent Data – on-ground

- 82 wheels
- 20 seconds
- No touching!
Transparent Data – tool tracking
Transparent Data Collection®:

- Changes the paradigm
  - Collect detailed data where it wasn’t possible before
  - Collect data transparently, without human intervention
  - Make regular maintenance tasks almost disappear

- Saves 99% of the check time
  - B777 - 13 man-hr O2 Gen date check now 45 sec. (1000x faster)
  - A320 – 45 min. life vest check now takes 30 sec. (100x faster)
  - B767 – 254 vest date check now takes 35 sec. (2000x faster)

- More data, better data, faster data
  - Data on all expirations = manual checking is unnecessary
Benefits of **Transparent Data Collection®**

- Maintenance tasks are reduced to close to zero
- Airline gets full yield on every component’s life
- Accuracy – RFID is a 1 million X more accurate than typing
- Visibility – of all assets
- Simplicity – of interaction with computer data
- Flexibility - in your Maintenance Planning
- Savings - Purchase planning – AOGs and safety stock reduced
Where is the industry going with RFID?

The goals are:

- to make the safety compliance issue go away
- To make TSA aircraft security sweep issues go away
- To avoid data mistakes using Spec2000 barcode or RFID everywhere

- We predict 12 more airlines will go live with RFID solutions in the next 6 months plus 8 more suppliers

Where will your company be when so many others are gaining advantage with RFID solutions?
Thanks for your attention!

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