



# Aviation RFID in Perspective

**Don't Manage the Problem... Make it Transparent !**

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# We have a Problem:

- **Last Century's thinking:**
  - Era of big company, top-down approach is coming to an end
  - Can't solve today's problems with last century's tools
  - People can't go faster (but technology can)

# The Solution:

- **Digital Technologies - Data & Wireless Communications**
  - Big solutions that work came from little solutions that work
  - Data comes from, and needs to go back to, the worker
  - Most data needs to be collected automatically/transparently

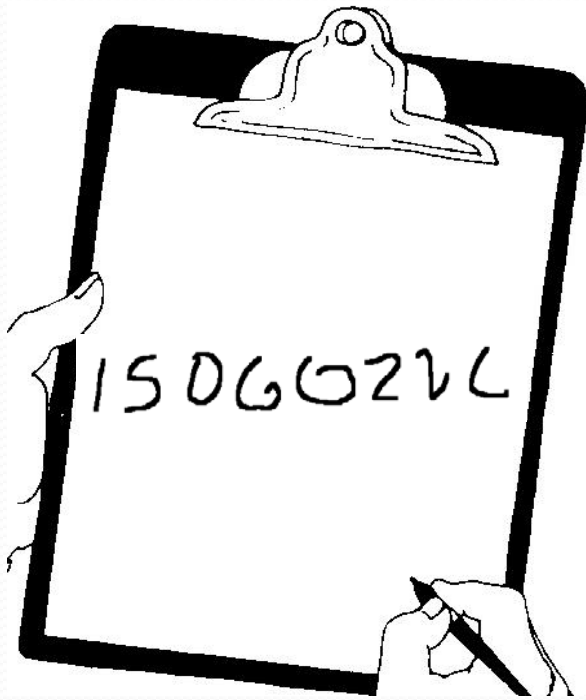
# What the Industry Needs

- **Visibility** - of parts and processes
  - transparent data collection provides this automatically
- **Simplicity** – people can make sense of many simple things
- **Flexibility** – allows the business to change as needed

**With visibility, people can solve or avoid most problems**

**The Problem: wasted data collection efforts**

**Ever seen characters like this?**



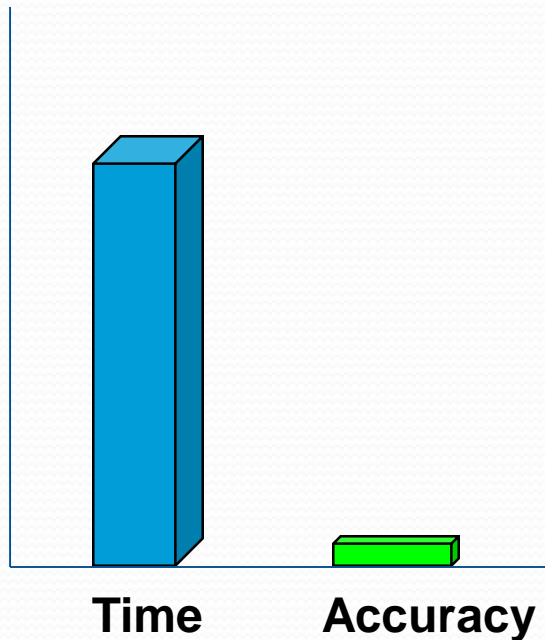
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*Your interpretation?*

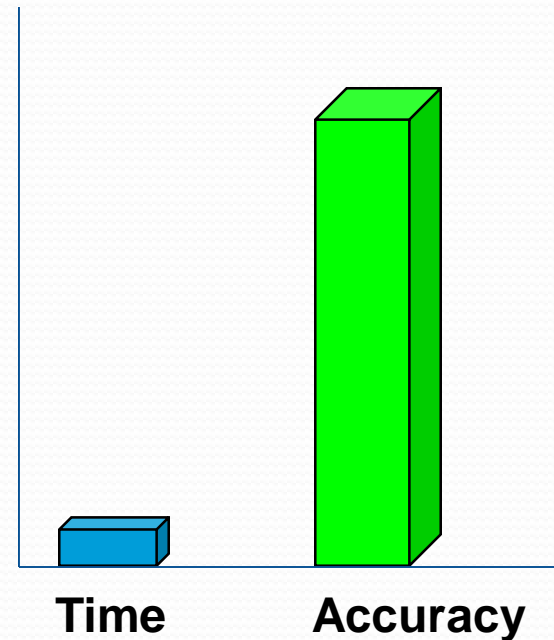
# Why Use AIDC ?

**Accuracy !**

Manual Data Entry



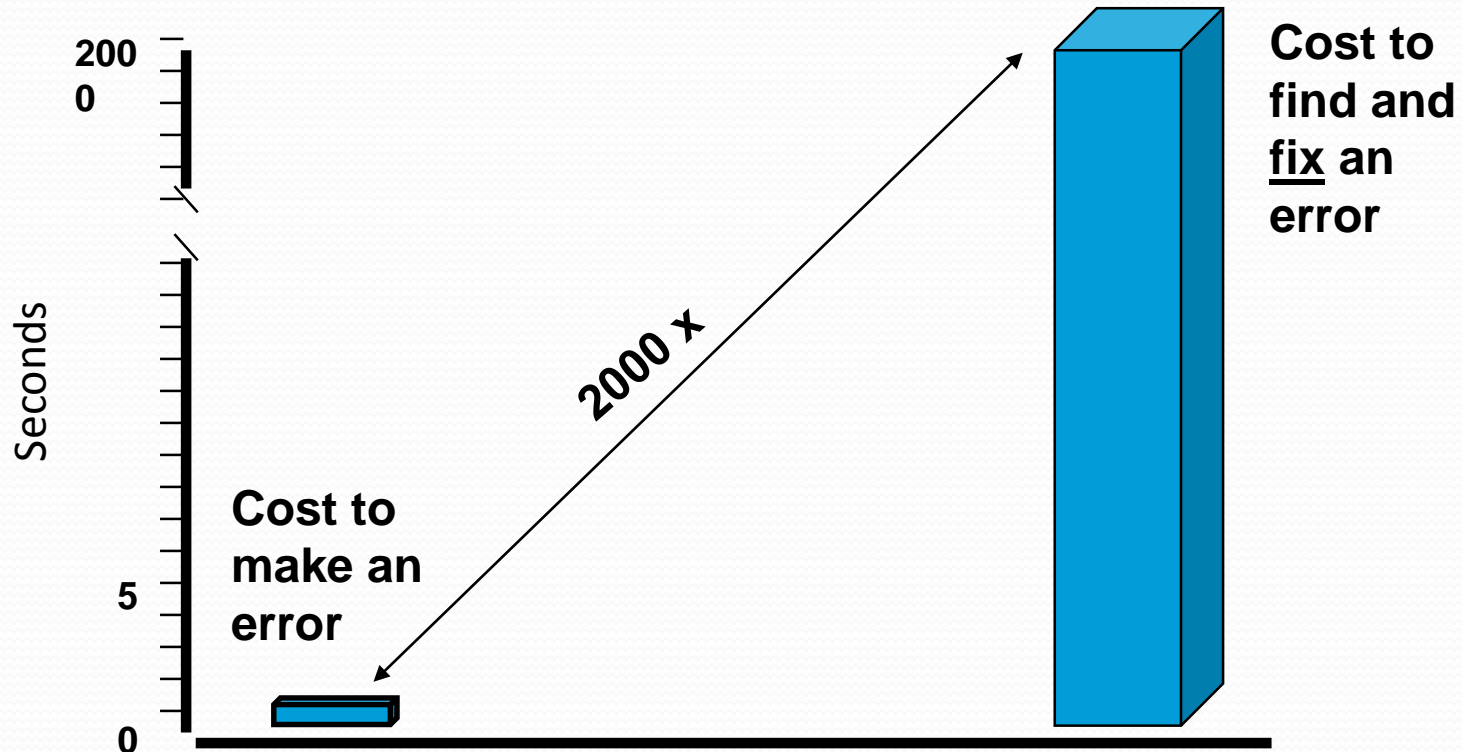
RFID/Bar Code Data Entry



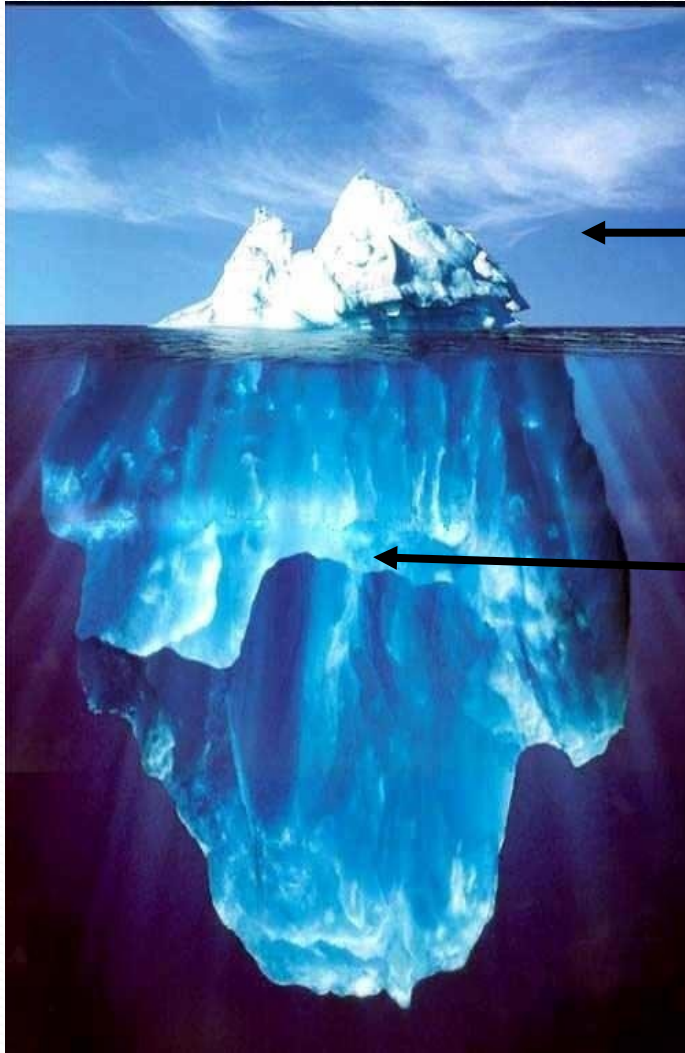
- 1) Touch typists average 1 error every 30 characters ←
- 2) Bar code readers average 1 error every 3 Million characters !
- 3) RFID is much more accurate than that – 100,000x improvement

Exactly how many touch typists do you hire in production ?

# How much improvement comes with accuracy?



# Why Use AIDC ? Avoid Errors !



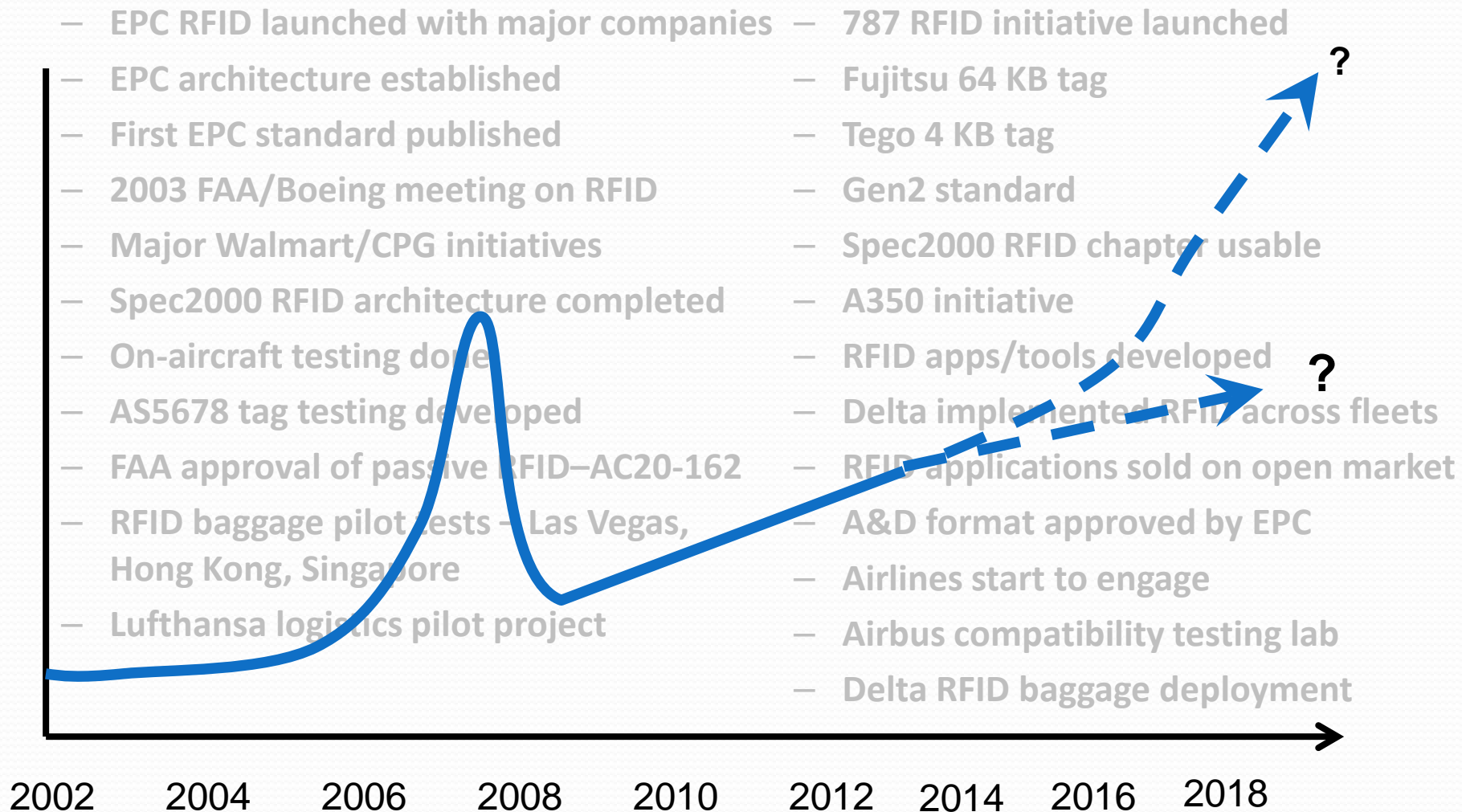
Errors follow the Iceberg Principle

← What you see

← What you don't see !

(this will hurt you!)

# Brief History of Aviation RFID

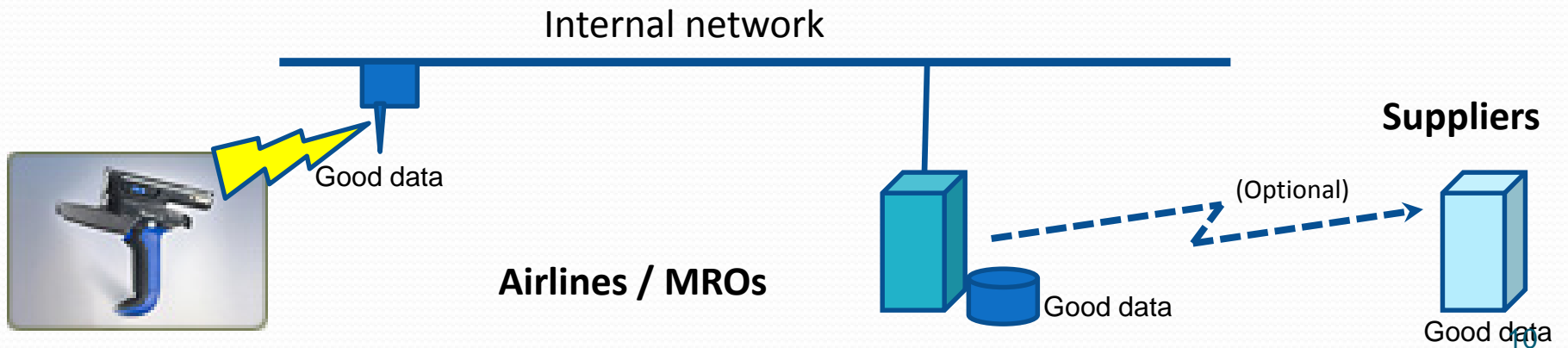
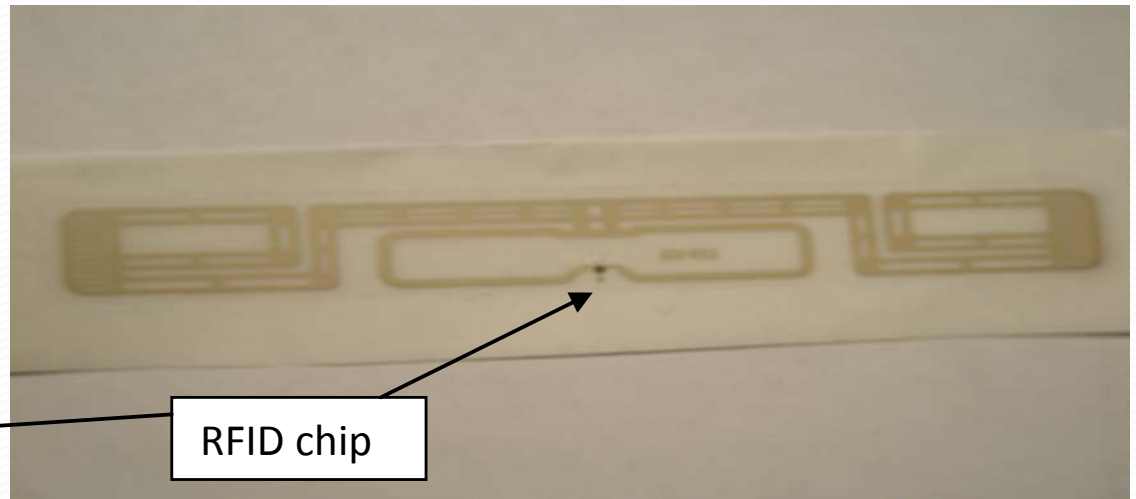




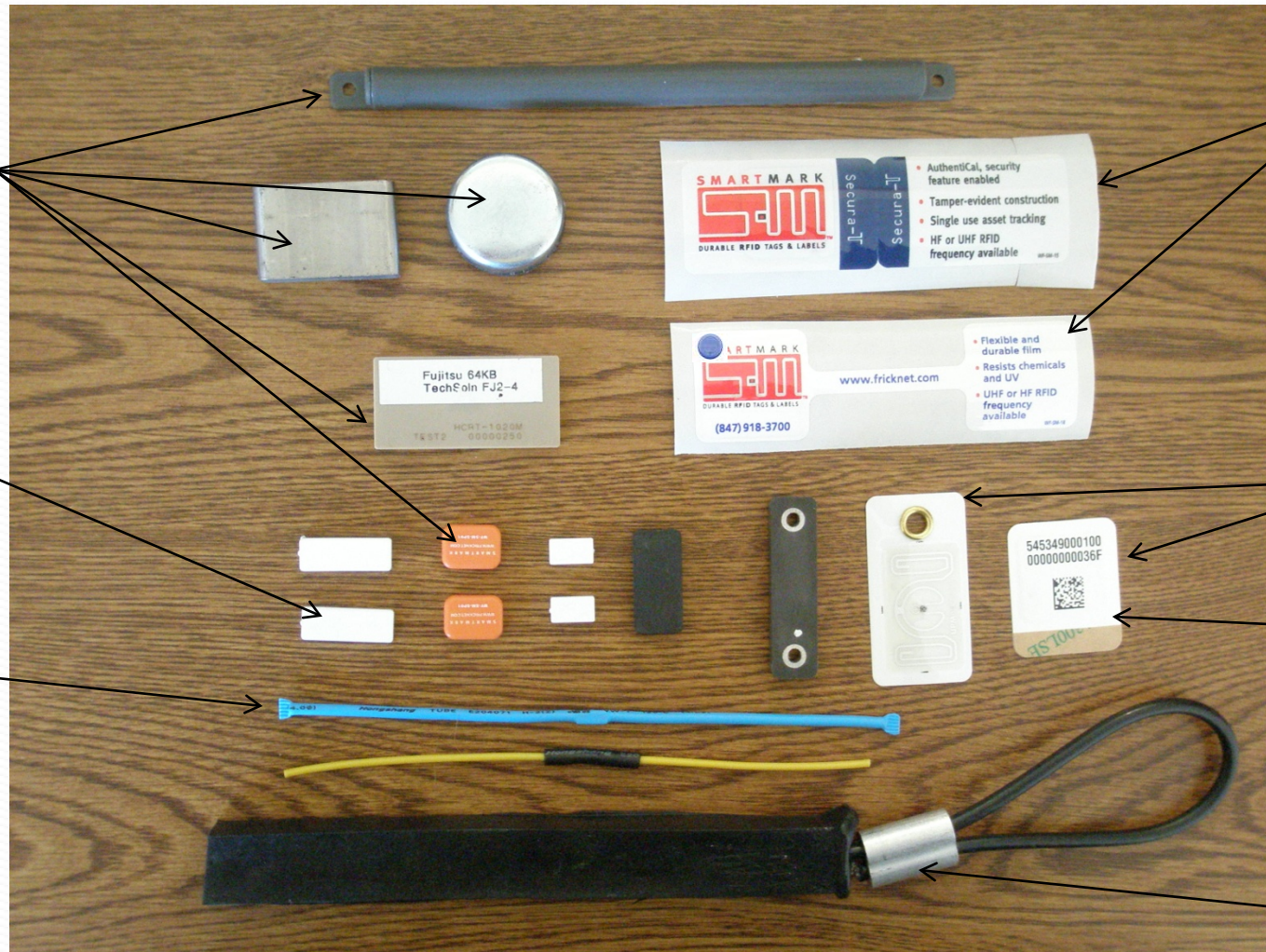
# A New Focus is Occurring

- Airframers led RFID effort for first decade
  - **Airlines are now taking the lead to meet long term MX needs**
- Monday was the 3<sup>rd</sup> Airline meeting to share with the Airframers what they want
  - **Longer read distance**
  - **Delivered aircraft RFID data before Aircraft delivery**
- For the first decade the focus was on high memory tags
  - Now focus is on low memory tags and quick ROI for airlines
  - Currently – maybe 3 low memory tag providers (with certified tags)
    - This is where airlines are investing
- Airlines have figured it out - RFID is not new, and not hard to implement

# The Amazing Little RFID Chip !



# Variety of RFID Tag Shapes and Sizes



Metal-mount

Polyester

Embed in fabric

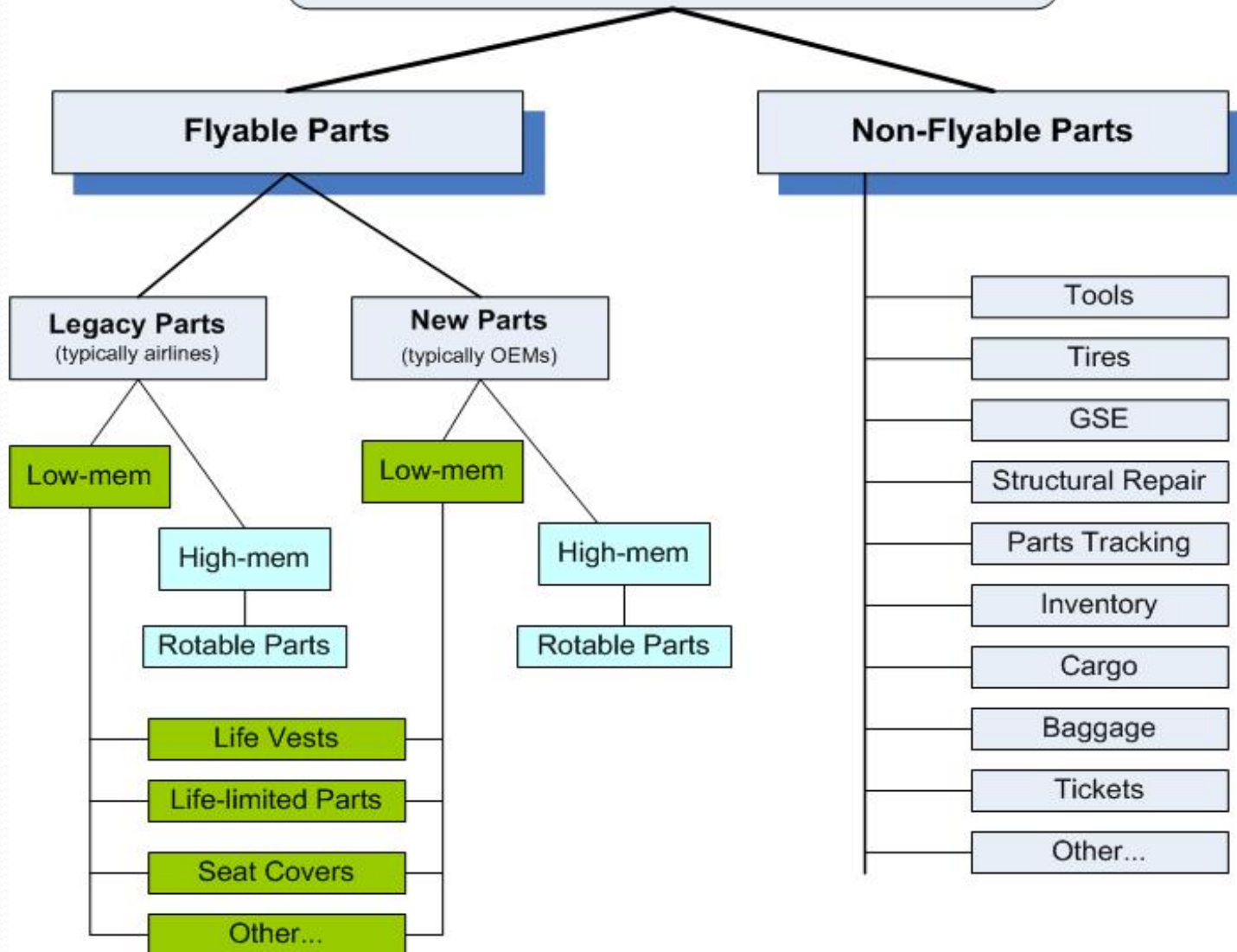
Plastic

Wire

IT Assets

Heavy Duty Rubber

# Aviation RFID Solutions



# How are airlines using RFID data?

- **Presence checks of emergency equipment**
  - stay in compliance easily – digital data records
- **Expiration date checks**
  - never overfly a part
  - never waste time with items that are OK
- **Plan ahead to avoid AOGs**
- **MEL equipment checks**
- **Maximize green time on life limited parts**
- **Configuration control of part numbers**
- **Track part movements**
- **Check inventory**
- **Wheel tracking**
- **Tool Tracking**
- **Track portable equipment – GSE, hangar, galley carts**

# How good is the technology?

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

Computer's Perspective



User's Perspective



**254 installed vests in 35 seconds! All present and none going to expire.**

# With RFID technology we can:

- **Change the paradigm**

- collect detailed data where it wasn't possible before
- Collect data transparently, without human intervention
- Make regular maintenance tasks disappear

- **Save 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)

- **Get more data and better data**

- Having data on expiration dates means checking is unnecessary

# Who is using RFID production?

- **20 airlines** – Delta, Austrian, United, Eurowings, Flydubai, Easyjet, Swiss, Norwegian, AirBerlin, Qantas, British Airways, Air New Zealand, Fiji, other major European and Middle East airlines
- **Suppliers** – Air Cruisers (multiple installations for vests, rafts, slides), Regent Aerospace(vests), EAM(vests), Medaire(medical kits), BE Aerospace (O2 Generators), various seat manufacturers, Switlik(vests), Aerazur(vests), vest/slide/raft repair agencies around the world.



# What are airlines tagging?

Adult Life Vests

Infant Life Vests

Crew Life Vests

Oxygen Generators

Crash Axe

Wheelchair

Wheelchair storage strap

Seatbelt Extension

Portable Oxygen Bottle

Supplemental Oxygen Bottle

Halon Fire Extinguisher

Water Fire Extinguisher

Radio Beacon / Emergency Locator Transmitters (ELTs)

Medical kits

First Aid Kit

Automated external defibrillators (AEDs)

Enhanced Emergency Medical Kit (EEMKs)

Flashlight

Megaphone

Polar Gear

Slide/Raft Inflation Assembly

Portable Breathing Equipment / Smoke Hood (PBEs)

Equipment Furnishing Manual

Demo Equipment Pouch

Baby Bassinet

Slide/Raft Assembly

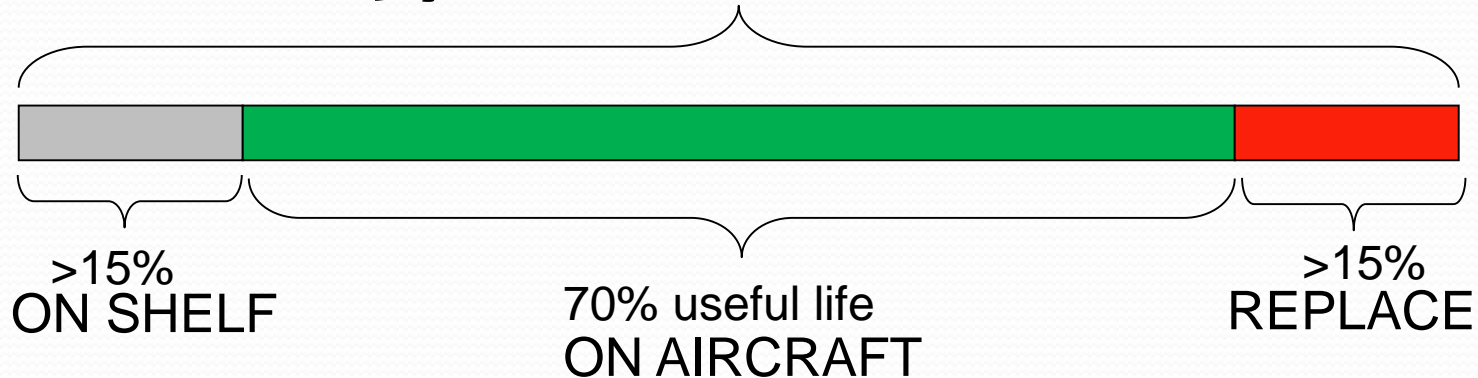
Slide/Raft Lighting System Battery

Survival Kit

# Material Cost savings can be Significant

## Emergency Equipment Lifecycle

- 12 or 15 year Generator Lifetime



With RFID data, we can stretch the green time to more than 90%

# Where is the industry going with RFID?

- 90% of RFID expansion will be on-aircraft life limited parts
  - The other 10% will be in:
    - Aircraft TSA security checks
    - Unattended toolroom tracking of check out/in
    - Seat cover cleaning tracking
    - Hangar equipment tracking
    - GSE tracking
    - Galley cart tracking
    - Battery Voltage measurement
    - Flame cabinet chemicals
    - Expense bin consumables
    - Structural repair tracking

# Where is the industry going with RFID?

- The goals are:
  - to make the safety compliance issue transparent – a non-issue
  - To make the aircraft security sweep issues go away
  - To avoid data mistakes by using barcode or RFID everywhere
- We predict 8 more airlines will go live with RFID solutions in the next 6 months and 8 more suppliers
- New frontiers are: RFID sensor tags, RFID antennas mounted on aircraft, and active tags on the aircraft (AS6023 standard)

**Where will your company be when so many others have an early start with RFID business solutions?**



# Thanks for your attention!

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