ATA e-Business Program
IATA RFID Think Tank

Ken Jones – 22 Feb 2012
ATA Standards/Specifications - History

- **Beginning – late 1950s**
  - Spec 100 – Technical Data Standards
  - Spec 200 – Materiel Data Standards (IBM Punch Cards)

- **Standards Evolved and Expanded**
  - Changing business needs
  - Technological advances

- **Today**
  - Broad list of standards and data definitions
  - Long list of adopters
  - Standards deeply embedded in industry systems and processes
ATA e-Business Program

- The current standards development process is done through the ATA e-Business Program
- Membership Agreement to protect intellectual property
- Cost spread over community
- Each participant has a say on the content and direction of the standards.
- Collaborative web site for documents, ballots, group emails, rosters, calendar
- To join visit: www.ataebiz.org
ATA e-Business Specifications

- Spec 2000 – Suite of standards
  - Materiel Management, AIDC/Traceability Reliability Data, eLogbook, Regulatory Data standards
- iSpec 2200 / S1000D – Technical Information Standards
  - Illustrated Parts Catalog, Maintenance Manuals, Service Bulletins, Wiring Manuals, etc.
- Spec 2300 – Flight Operations Data
- Spec 42 – Digital Information Security
- Common Support Data Dictionary
  - Definitions, characteristics, tags/identifiers for all data.
- World Airlines & Suppliers Guide
Functional / Lifecycle Scope

- Design
- Production
- Operation
- Maintenance

- Configuration Management
- Maintenance Planning
- Maintenance Procedures

- Part Identification, Traceability, RFID
  - Initial Provisioning
  - Delivery Configuration
  - Reliability Data
  - Industry Performance Metrics

- Supply Chain Management / e-Procurement / Repair Order Administration / Warranty

- Electronic Regulatory Documentation
  - Flight Operations Data
  - Electronic Aircraft Logbook

- ATA Aviation Marketplace

- Digital Data Security

- Spec 2000
- Spec 42
- iSpec 2200 / S1000D
- Spec 2300
Spec 2000 – Chapters

Chapter 1 – Provisioning
Chapter 2 – Procurement Planning
Chapter 3 – Order Administration
Chapter 4 – Customer Invoicing
Chapter 5 – Inventory Consumption
Chapter 6 – Communication Commands
Chapter 7 – Repair Order Administration
Chapter 8 – Repair / Overhaul Planning

Chapter 9 – AIDC / RFID / Traceability
Chapter 11 – Reliability Data Exchange
Chapter 12 – Surplus Parts Database
Chapter 13 – Industry Performance Metrics
Chapter 14 – Warranty Processing
Chapter 15 – Delivery Configuration
Chapter 16 – Regulatory Documents
Chapter 17 – Electronic Logbook

Common Support Data Dictionary

Definitions of all terms, data elements, data formats and structures, vocabulary and other items used in the above specification along with iSpec2200
Current Activity

- **Electronic Regulatory Data**
  - FAA approved use of FAA Spec 2000 Chapter 17 as electronic 8130-3
  - Subsequently, EASA approved and TC OK
  - Waiting for FAA release of “Harmonized” order 8130.21H (2012 Q1/Q2) one aim of which is to make the 8130-3 form consistent with similar EASA Form 1, TC Form 1. Upon release Chapter 17 will be updated

- **Electronic Logbook**
  - Releasing version 3.0 for Electronic Logbook XML
  - Current focus is on interoperability transactions
Current Activity

■ Reliability Data Exchange
  ➢ Delivery Configuration Data format XML recently approved
  ➢ QPA record in review
  ➢ Focus on Aircraft Reliability Metrics

■ Electronic Repair Order
  ➢ New team to create XML messages for repair transactions
  ➢ Also will finalize Electronic Teardown Report

■ Supply Chain
  ➢ Warranty XML
  ➢ Improve legacy to XML conversion for Procurement
Current Activity

- World Airlines and Suppliers Guide
  - New release expected in 2012

- Digital Security Working Group
  - Developing Use Cases for Security Implementations
  - Spec 42 version 2012.1 in final review

- S1000D Technical Data
  - Cooperating with AIA and ASD in development of next generation technical information standards

- Flight Operations
  - Recently released Spec 2300 version 2011.2
Spec 2000 Data Format

Optional area that may be used for company name, address, or additional bar coded data

Typical
7 3/8" (card stock)
8 1/2" (std paper)

Spec 2000 Receiving Label

Same Spec 2000 data formats as in Purchase Order, Electronic Shipping Notice, Electronic 8130-3, RFID

Electronic Shipping Notice

<ShipNoticeHeader>
  <CIC>CNA</CIC>
  <SPL>81205</SPL>
</ShipNoticeHeader>

<ShipNoticeDetails>
  <CPO>BS56877</CPO>
  <PNR>HLT8100-13-91</PNR>
  <SHQ>1</SHQ>
  <UNT>EA</UNT>
  <PSN>PS789254</PSN>
  <NSN>1234128679632</NSN>
  <SHD>2004-09-30</SHD>
</ShipNoticeDetails>
Examples – RFID, Part Marking

FedEx Pilot Project – integrated RFID

Very Small Direct Part Mark w/o RFID
(Spec 2000 compatible MFR/SER only)
AIDC/RFID - Data Structure

Permanent

- EPC/ISO Data
- Birth Data
- Current Rewriteable
- End User Scratchpad

Header Information to ensure compatibility with EPCglobal and ISO standards

- Part History/Action Log 1
- Part History/Action Log 1
- Part History/Action Log 1
- Etc.
AIDC/RFID - Data Structure

**Permanent**

<table>
<thead>
<tr>
<th>EPC/ISO Data</th>
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<th>Current Rewriteable</th>
<th>End User Scratchpad</th>
</tr>
</thead>
</table>

"Identity Plus"

Manufacturer CAGE Code, Serial Number, Original Part Number, Manufacture Date, Description, ESD, Customs / Export Info, Software Part Indicator, etc.

| Part History/Action Log 1 | Part History/Action Log 2 | Part History/Action Log 3 | Etc. |
# AIDC/RFID - Data Structure

<table>
<thead>
<tr>
<th>EPC/ISO Data</th>
<th>Birth Data</th>
<th>Current Rewriteable</th>
<th>End User Scratchpad</th>
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<tbody>
<tr>
<td><strong>Current Part Number, Modification Status, Condition, Airline Part Numbers, Expiry Date, etc.</strong></td>
<td><strong>Misc text, Mechanic’s comments, etc.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Part History/Action Log 1**
- **Part History/Action Log 2**
- **Part History/Action Log 3**
- **Etc.**
### AIDC/RFID - Data Structure

<table>
<thead>
<tr>
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</tr>
</thead>
</table>

- **Record “important” part status changes or traceability information**
- **e.g. – part removals/installs, service bulletins worked, repairs performed, “no fault found”, ownership changes, etc.**

<table>
<thead>
<tr>
<th>Part History/Action Log 1</th>
<th>Part History/Action Log 2</th>
<th>Part History/Action Log 3</th>
<th>Etc.</th>
</tr>
</thead>
</table>

*Permanent*
RFID - Data Structure

Table of Contents (Appendix 11)

- The International RFID community (EPC, ISO) didn’t adequately support large user memory. Thus, ATA RFID Technical Team developed “TOC”
- Describes “records” for storing the data on the tag including the “type” of record and CRC
- Describes stored contents (e.g. location, size, timestamps)
- Further information in
  http://www.ataebiz.org/forum/2011_ata_e-biz_s1000d_forum/1-UnderstandingRFID_Hamlin.pdf
Reliability Data

- Aircraft Status Change
- Aircraft Hours and Landings
- LRU Removals / Installs
- Shop Findings / Piece Parts
- Events / Delays / Logbook
- Scheduled Maintenance
- Service Bulletin / Mods
8130-3 / Form 1 - Schema
<Block2>
  <CETx FVI="ISSUE 1">EASA Form 1</CETx>
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  <SPL>U1598</SPL>
  <TDN>UK0000149960</TDN>
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    <ADL>New Filton House</ADL>
    <ADL>Golf Course Lane</ADL>
    <CIY>Filton</CIY>
    <ZIP>BS99 7AR</ZIP>
    <CNT>GB</CNT>
  </IssuerDetail>
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Questions

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ATA e-Business Program
IATA RFID Think-tank

Additional Background Information
Airlines for America (A4A)

- Airline trade association – Previously Air Transport Association (ATA)
- Not-For-Profit
- Based in Washington D.C. - ~80 Employees
- Address non-competitive issues
- Membership:
  - 9 Passenger Carriers
  - 5 All-Cargo Carriers
  - 1 Associate/International Airlines
  - 53 Industry Members/Partners
- 90% Cargo/Passenger Traffic in the U.S.
Vision: To be an agile, cost effective, global commercial aviation industry enabled through effective & efficient information sharing.

Mission: Establish a global commercial aviation industry information framework that facilitates improved business agility, reduces costs, increases speed of business, and maintains the highest level of safety.

For Commercial Aviation Companies that Produce, Consume and Exchange Data...

- Produce Standards That...
  - Reduce Costs (C1)
  - Improve Business Processes (C2)
  - Maintain Safety and Compliance (C3)

For Commercial Aviation Companies that Produce, Consume and Exchange Data...

- Operate to Lifecycle Plan (P1)
- Ensure Quality Standards (P2)
- Leverage Existing Standards (P3)
- Identify Business Opportunities (P4)
- Provide Project and Program Oversight (P5)
- Increase Speed of Standards Development (P6)

- Increase Standards Adoption (P7)
- Reduce Barriers for Adoption (P8)
- Encourage 3rd Party Product / Solutions Dev. (P9)
- Provide Support for Standards Implementation (P10)
- Market the Standards (P11)

What must we do internally to meet our customer objectives?

- Be Self Supporting (B1)

What must we do internally to meet our customer objectives?

What must we know to perform the processes?

- Understand Business (L1)
- Maintain Awareness of Emerging Technologies (L2)
- Know the Standards and How They are Implemented (L3)

Building the Community

- Establish Effective Participation (P12)
- Maintain Open & Consensus-Based Work Environment (P13)
- Provide Networking Opportunities (P14)
- Increase Membership (P15)
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<td>Satair A/S</td>
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<td>Jeppeesen</td>
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<td>warp it AG</td>
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Putting it all together - Line

Chapter 17

Airplane Fault

Update E-Logbook

Notify Maint Control

Remove Parts

Install Parts

Plan Corrective Action

Preposition Parts

Take Corrective Action

Pull Parts

Chapter 1

Chapter 9

Chapter 9
Putting it all together - Repair
Putting it all together - Reliability

Aircraft Fault
Update E-Logbook
Aircraft Arrives
Flight Hours & Landings

Event
Reliability Data
Logbook

Scheduled Maintenance
Service Bulletin / Mod

Shop Findings
Piece Part

Shop Repair

Event
Removal

Remove Parts
Logbook

Install Parts
Take Corrective Action

Aircraft Service Changes
Status Change
Value to Industry

- Creates common business & IT language - Allows standardization of business processes among airlines and their suppliers
- Drives down costs
- Increases accuracy, quality (e.g. Part marking, delivery configuration data, etc.)
- Facilitates safety (part marking, traceability, electronic 8130-3)
- Facilitates data analyses (e.g. Initial provisioning data, reliability data, etc.)
- Enables inventory reduction (inventory collaboration, surplus, initial provisioning)
- Participative process
- Widely used among major industry players