



ATA e-Business Standards Overview

Jun 2022, Ken Jones, ATA e-Business Forum



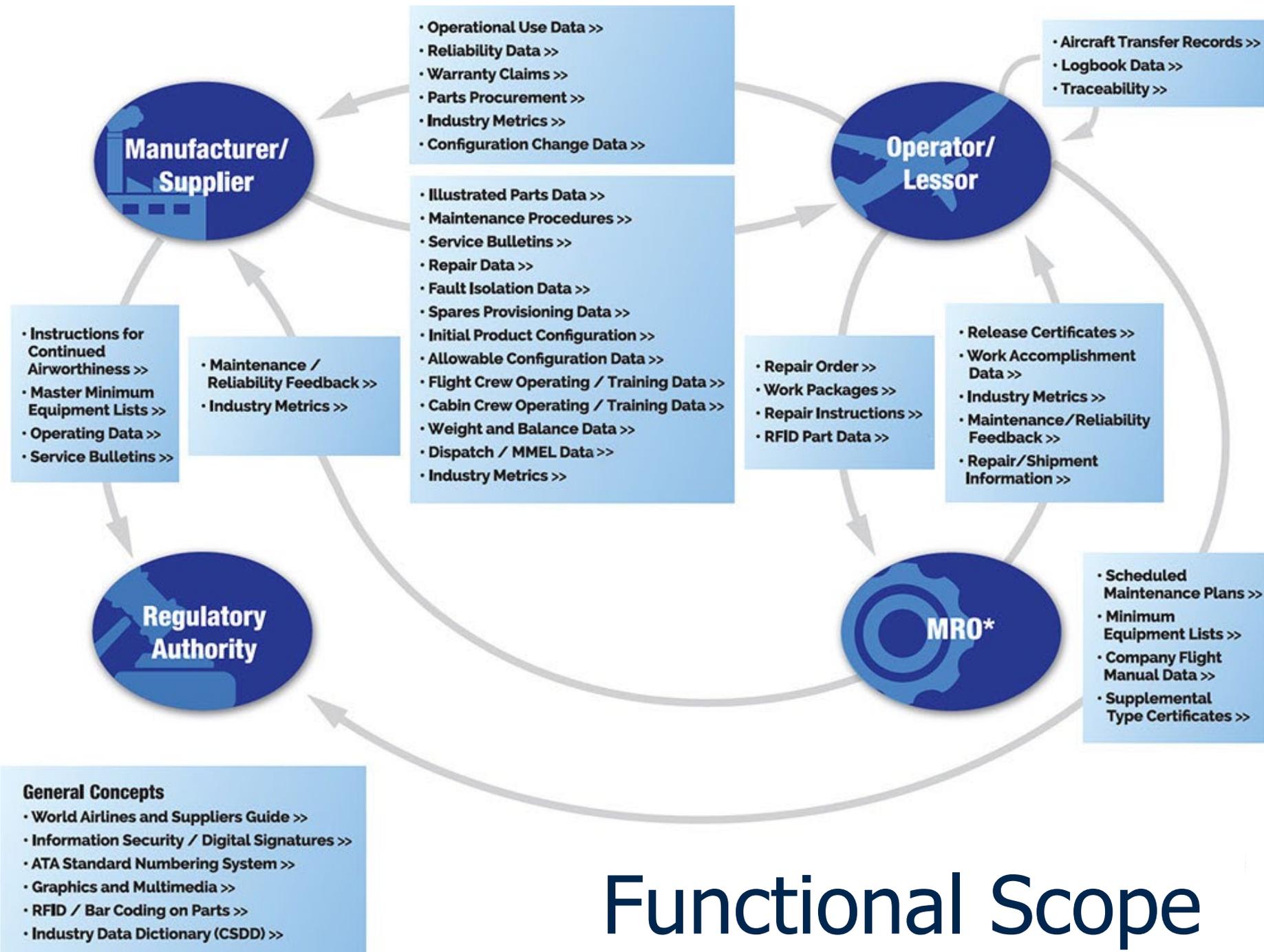
What we are are trying to do

■ Vision

- Enable the seamless **exchange** and availability of **digital** information throughout the civil aviation industry.

■ Mission

- Provide the aviation industry with benchmark information standards in support of aircraft maintenance and operations.
- We are committed to evolving shared standards and promoting implementation to contribute to **increased business agility** and **reduced costs**, while maintaining the highest levels of safety.



Functional Scope



ATA e-Business Standards

Common Support Data Dictionary (CSDD)

iSpec 2200 - Information Standards for Aviation Maint.

iSpec 2200 Extract – ATA Standard Numbering System

**S1000D, International Specification for Tech.
Publications**

Spec 1000BR - Civil Aviation S1000D Business Rules

Spec 2000 – Gen 2 Procurement

Spec 2000 – Provisioning (ch. 1)

Spec 2000 – Procurement Planning (ch. 2)

Spec 2000 – Materiel Management (ch. 3 – 4, 6)

Spec 2000 – Repair Order Administration (ch. 7)

Spec 2000 – Automated ID & Data Capture (ch. 9)

Spec 2000 – Reliability Data Collection and Exch. (ch. 11)

Spec 2000 – Industry Metrics (ch. 13)

Spec 2000 – Warranty Claims (ch. 14)

Spec 2000 – Authorized Release Certificate (ch. 16)

Spec 2000 – Electronic Logbook (ch. 17)

Spec 2000 – Work Package (ch. 18)

Spec 2300 – Data Exchange Standard for Flight Ops

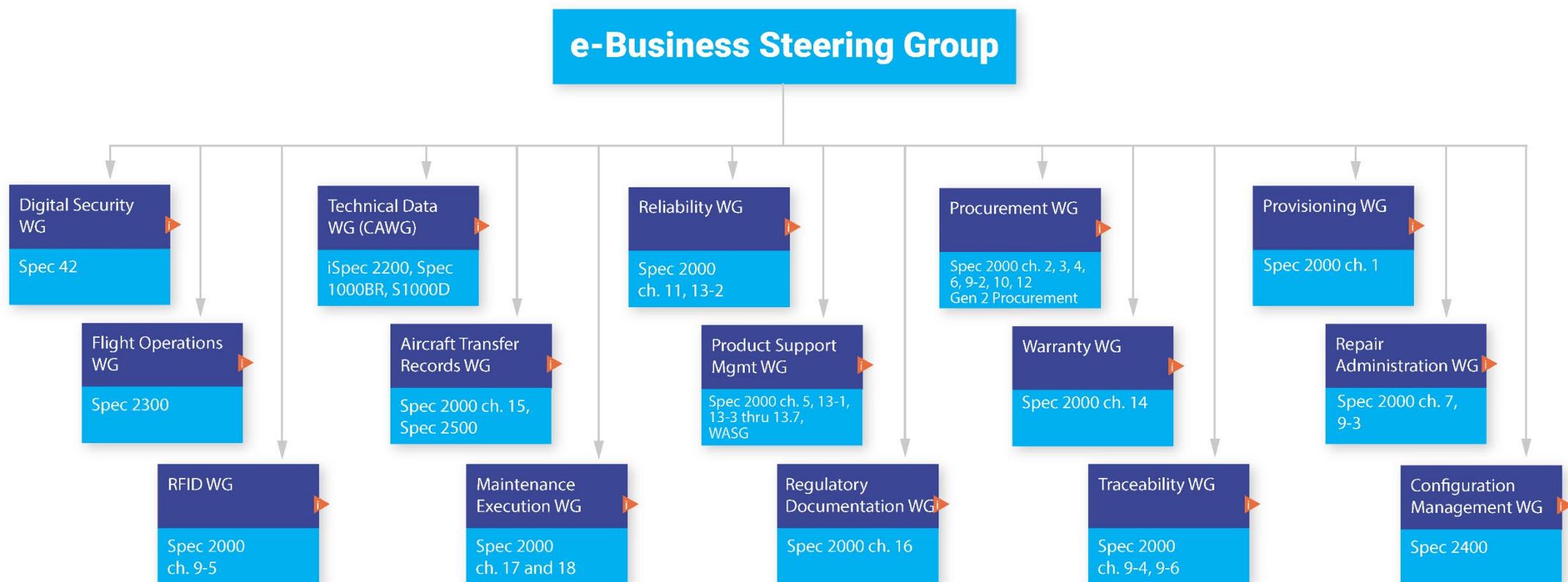
Spec 2400 – Allowable Configuration Data

Spec 2500 – Aircraft Transfer Records

**Spec 42 – Aviation Industry Stds for Digital Info. Security
World Airlines and Suppliers Guide (WASG)**



Working Groups





■ **ATA e-Business Program**

- **More detailed look at the specifications**



Typical ATA e-Biz Standard?

- Describes content for business information exchange
 - Part numbers, dates, procedures, conditions, status, etc.
- Describes the “business rules” for a function
 - Information that must always be provided
 - information that must be provided if certain conditions exist
 - Information that may be provided
 - Uses CSDD to define fields to minimize misuse
- Describes the structure/ formats
 - XML, flat file, CSV, etc. (perhaps JSON)
 - Messages (PO), Large Files (Provisioning, IPC, AMM, etc), ID data (bar-code, RFID, etc.)



Common Support Data Dictionary

■ CSDD

- Definitions of Terms used across all specifications
- Specific Usage Information – which message, Schema, File, etc. the data
- Tag/Field Names, sizes, characteristics
- Over 4200 entries, with 4500 Definitions covering nearly 4900 usage elements
- Harmonization activities continue, due to integration of legacy data
- Full update to be released in 2nd half of 2022



World Airlines & Suppliers Guide (WASG)

- Referenced in Product Support Agreements (PSA)
- How to do business together
 - Defines support expectations
 - Establishes common policies consistent with these expectations
 - Helps fill in the gaps when a PSA isn't specific
 - Helps encourage consistency between different organizations' product support agreements
- Update to be released in 2nd half of 2022



Spec 2000 Specifications

- Began in the 1960s as Spec 200 related to materiel management.
- Migrated to Spec 2000 in the late 1980's
- Spec 2000 Provisioning (ch. 1)
 - Determine spares / inventory levels
 - Plan to survey community to determine how to update
- Material Management (ch. 2-4)
 - Procurement Planning (ch. 2)
 - Parts Order Management (ch. 3)
 - Invoicing (ch. 4)



Spec 2000 Specifications

- Spec 2000 Gen 2.0 Procurement
 - Newest XML Procurement Specification
 - Adapted the 50+ year old specification to current business practices
 - Meeting in July to work on updates based in initial implementation activities
- Component Repair Management
 - Repair Order Management, Invoicing, Teardown (ch. 7)
 - Updating to develop XML messages and adapt to newest business practices
 - Expect to issue first version in 2nd half of 2022 (Repair Order, Repair Order Status, Updated Shipping Notification, Material Receipt)



Spec 2000 Specifications

■ Automated Identification & RFID (ch. 9)

- Bar-coded shipping/receiving labels
- Permanent parts ID (bar-code, data matrix)
- RFID on parts
- Part Traceability
- 2022 version coming soon
 - RFID shipping labels
 - Updated to better align part marking with RFID, update symbology usage



Spec 2000 Specifications

- Reliability Data Collection (ch. 11) – Operational and Maintenance data feedback
 - Aircraft Hours / Landings / Cycles
 - Events / Delays / Cancelations / Logbook Data Collection
 - LRU Removals (and installs)
 - Shop Findings (NFF, Fault Confirmed, detailed analysis)
 - Scheduled Maintenance Data / Findings
 - Service Bulletin / Mod Data / QPA
 - Out of Service Data
 - Flight Records
 - Engine Removals
 - Coming soon – small ch. 11 updates, New Engine Shop Findings



Spec 2000 Specifications

- Industry Metrics (ch. 13)
 - Parts Delivery, Repair Process
 - Warranty, Reliability
 - Technical Resolution, Product Support Data
 - Coming soon – updated Reliability Metrics to include Prognostics / Health Monitoring
- Warranty Processing (ch. 14)
 - Electronic Warranty Claim submittal
- Electronic Airworthiness Release Certificate (ch. 16)
 - FAA 8130-3, EASA Form 1, Transport Canada Form 1, CASA Form 1



Spec 2000 Specifications

- Electronic Logbook (ch. 17)
 - Information exchange between Electronic Logbook Systems and Maintenance Systems
 - Includes Flight and Journey Logs
 - Maintenance Logs (Squawks, Defects, etc.)
 - Maintenance Actions (Closing defects, part replacement, maint release, etc.)
 - Service, Fueling Logs
 - [Minor update in August/September version 5.1](#)



Spec 2000 Specifications

■ Work Package (ch. 18)

- Electronic Information exchange between Operator maintenance systems and MRO Systems
- Work Scope, Work Packages, Work Orders
- Related Tasks, Jobs, Steps
- Response from MRO on work accomplished, Findings, new Work Orders raised, Deferrals
- Summary of work accomplished / Maintenance Release
- Major Update in Aug/Sep 2022 updating to include full transactional capability
- Continue work on “Executable Task” definition. Hope to have a full face-to-face workshop to make progress in Sep / Oct 2022



- **Visualizing the Standards with Tagged Data**
 - **Identification of a Manufacturer's Part Number**



Spec 2000 - Tagged/Formatted Data

Spec 2000 Legacy EDI order

CAM
 S1BOOKED/OF2/81205/USD/1/BNO 3/
 341/EOIJ1234567/HLT8100-13-1/1/EA/25.20/15077

Spec 2000 Receiving Label (data matrix)

ABC Distributor, 123 Main St.,
Miami, FL, USA 31005

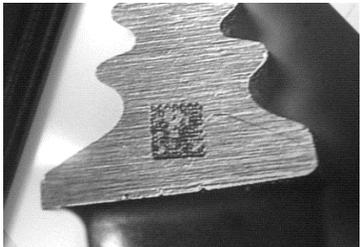
SPL	81205
BOX	12345
CPO	BS56877
PNR	HLT8100-13-91
SHQ	1
UNT	EA
PSN	PS789254
NSN	1234128679632

Same Spec 2000 data
 formats in Purchase Order,
 Electronic Shipping Notice,
 Shipping Label, RFID,
 Data Matrix, etc.

MFR 81205*SER AB123
***PNR HLT8100-13-91**

RFID

Direct
 Part
 Mark



```

<ShipNoticeHeader>
  <CIC>CNA</CIC>
  <SPL>81205</SPL>
</ShipNoticeHeader>
<ShipNoticeDetails>
  <CPO>BS56877</CPO>
  <PNR>HLT8100-13-91</PNR>
  <SHQ UNT="EA">10</SHQ>
  <SHT>AMD</SHT>
  <SHD>2004-09-30</SHD>
</ShipNoticeDetails>
    
```

Electronic Shipping Notice (XML)



iSpec 2200 – Information Standards for Aviation Maintenance

- Provides SGML Document Type Definitions (DTDs) for 18 technical manuals, including:
 - Aircraft, Engine, and Component Maintenance Manuals (CMM, CMM, EM)
 - Aircraft and Engine Illustrated Parts Catalogs (AIPC, EIPC)
 - Fault Reporting / Fault Isolation Manuals (FRM/FIM)
 - Service Bulletins (SB)
 - Wiring Manuals (WM)
 - Structural Repair Manual (SRM)
- ATA Standard Numbering System
 - aka ATA “Chapters” or ATA “Numbers”
 - Organizes technical data by System, Subsystem, Sub-Subsystem, and Component
- Status – Revision 2018.1



Spec 1000BR - Civil Aviation Business Rules for S1000D

- Provides standard business rules for implementation of S1000D in the Civil Aviation industry
- Addresses all S1000D Business Rule Decision Points (BRDPs)
- Separate Spec 1000BR publications for S1000D issue 4.1 and 4.2
- Uses a layered approach
 - General Civil Aviation business rules
 - Specific rules for Component Maintenance Publication (CMP) and Scheduled Maintenance Data (SMD)
- Includes Business Rules Exchange (BREX) DM files



Spec 1000BR - Civil Aviation Business Rules for S1000D

■ Current Status

- Current revision – 2021.2
- Planning to publish 2022.1 revisions to ATA Spec 1000BR_4.1 and Spec 1000_BR_4.2 in November this year, including:
 - Revised General Civil Aviation and CMP data business rules
 - General improvements to the CMP Layout Guide
 - BREX updates



Spec 2300 – Flight Operations

- Provides industry standard for management, configuration, and exchange of digital flight operations technical data
- XML, Data Module Paradigm
- Covers data pertaining to:
 - Flight Crew Operating and Training Manuals
 - Cabin Crew Operating and Training Manuals
 - Weight and Balance Manual
 - Master Minimum Equipment List / Dispatch / Deviation Data
 - System Descriptions
 - Phase of Flight Definitions



Spec 2300 – Flight Operations

■ Current Status

- Current revision – 2021.1
- Planning to publish revision 2022.1 in November this year, including:
 - A new Policy Repository for Compliance Policy Standard Reporting
 - A new Common Repository for reusable data types such as Phase of Flight, Tech Labels, Units of Measure, and Publishing Targets
 - A new chapter and schema for General Operations to cover topics included in operators' Flight Operations Manuals
 - Revision History
 - Updates to XML schemas, ATA Common Support Data Dictionary, and data samples



Spec 2400 – Allowable Configuration Data Exchange

- Describes Allowable Configuration in such a way as to allow automated comparison with actual configuration.
- Allowable Configuration in Parts
 - A set of Function Positions in an operator's aircraft fleet, including the list of Part Numbers which may be installed at each Function Position and under which Conditions.
- Allowable Configuration in Modifications
 - A listing of modifications in an operator's aircraft fleet, which includes Modifications, Service Bulletins, Supplemental Type Certificates (STCs), and other miscellaneous types of documented configuration changes and non-configuration instructions.



Spec 2400 – Allowable Configuration Data Exchange

■ Current Status

- Current revision – 2021.1
- Planning to publish a 2023.1 revision next year. Topics are still being identified and include:
 - Reliability-based information for Allowable Configuration in Parts
 - Configuration validation report
 - Improved mapping between ATA Spec 2400 and ARINC 843



Spec 2500 – Aircraft Transfer Records

- Provides a CRATE which allows metadata to be applied to all major records which are exchanged during major asset exchanges (Aircraft, Engines, APU, Landing Gears)
 - Aligns with ICAO 9760, IATA Lease Return Guidelines
 - Facilitates more standardized approach to a fully electronic aircraft transfer or lease return
 - Two primary use cases: Transfer of historic operational and maintenance records, as well as transfer of current status
 - Can be used not only for aircraft, but for engines, APU's, Landing Gears



Spec 2500 – Aircraft Transfer Records

- Also provides current status reports of all major tracked activity. This facilitates entry into receiving operator's M&E IT systems
 - AD Status
 - Installed Component Status
 - Repair / Damage Status
 - Last Done / Next Due Maintenance Status
 - SB / Modification / STC Status
 - Asset Status
 - Major Event List (transitions, maintenance events, lessor review, etc.)



Spec 2500 – Aircraft Transfer Records

- **New Revision to be released soon**
 - Changes to address issues found during initial implementation activities
 - Addition of major event list (e.g. inspections, maintenance events, etc)
- **Soon to follow**
 - Full Life Limited Part (LLP) History (all removals, installs, change in operations)
 - Daily Flight Summary
 - Possible restructure XML to facilitate easier conversion to JSON
 - Begin development of Component “Passport” / Back to Birth traceability



Spec 42 – Digital Information Security

- Provides industry standard for:
 - Authenticating the senders and receivers of digital data
 - Verification if data has been altered
 - Traceability of data to their source (non-repudiation)
- Based on Public Key Infrastructure (PKI)
- Includes Certificate Policies – describe the comprehensive procedures and controls for management of digital certificates and signatures:
 - Identity proofing and vetting
 - PKI Key management
 - Credential assurance level recommendations
- **Current Status – 2020.1**

Pay Attention Blockchain
Organizations



Change Requests



ATA CHANGE REQUEST HOME [SUBMIT A CHANGE REQUEST](#) [CONTACT](#)

ATA e-Business Program Change Requests

ATA e-Business Program specifications are revised regularly to incorporate new features, updates, and corrections. This web page is provided for submission and management of ATA e-Business Program Change Requests (CRs). The online CR form is used to summarize the proposed changes and provide justification. Supporting documents to provide change request details or rationale may be uploaded. Any interested party may submit a CR by clicking the link below.

CRs are assigned to the ATA e-Business Working Group (WG) responsible for the specification or technical subject covered in the CR. The WG will review the CR and determine if it should be approved. If necessary, a sub-team may be launched by the WG to further develop the requirements and specification changes. Upon completion of its review, the WG will provide a recommendation to the ATA e-Business Steering Group (ESG) for final review. CRs which are approved by the ESG will be incorporated into an upcoming revision of the impacted specifications.

[Submit A Change Request](#)

Recommended browsers: Google Chrome or Microsoft Edge. Full functionality may not be supported by other browsers. [Technical Details](#)

Change Requests

The following table lists Change Requests which have been submitted for ATA e-Business specifications.

Open Closed All

Show entries

Search:

■ New Change Request Tool allows online submittal

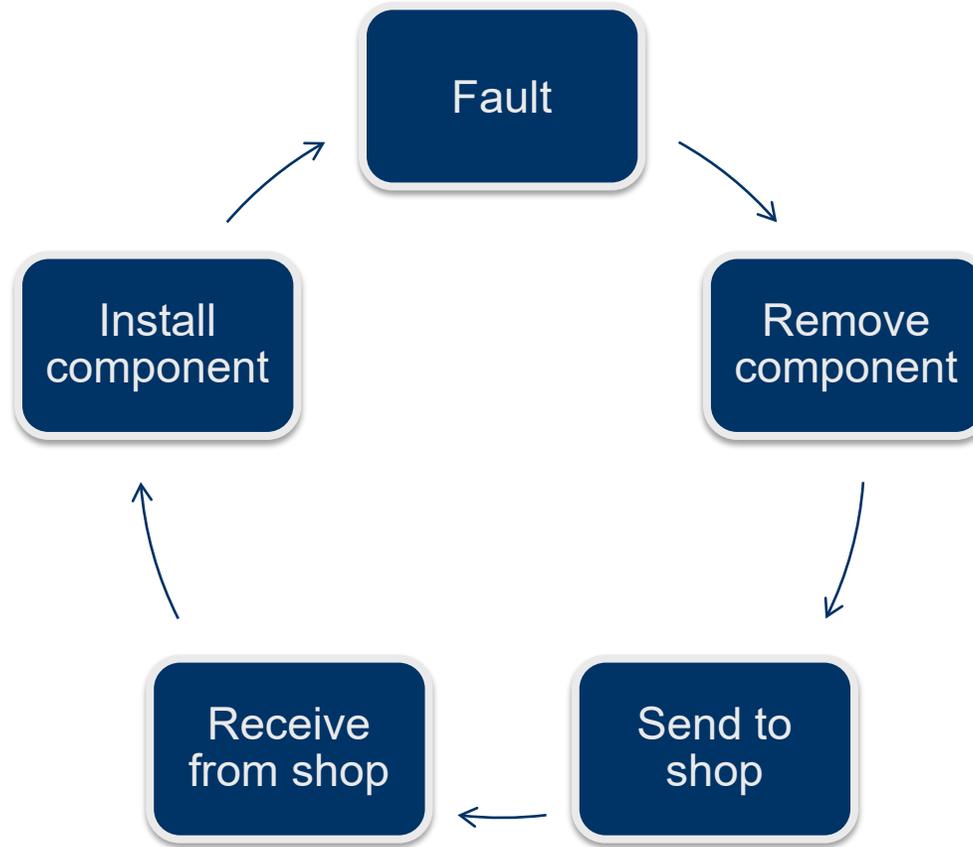


- **Visualizing some of the issues**



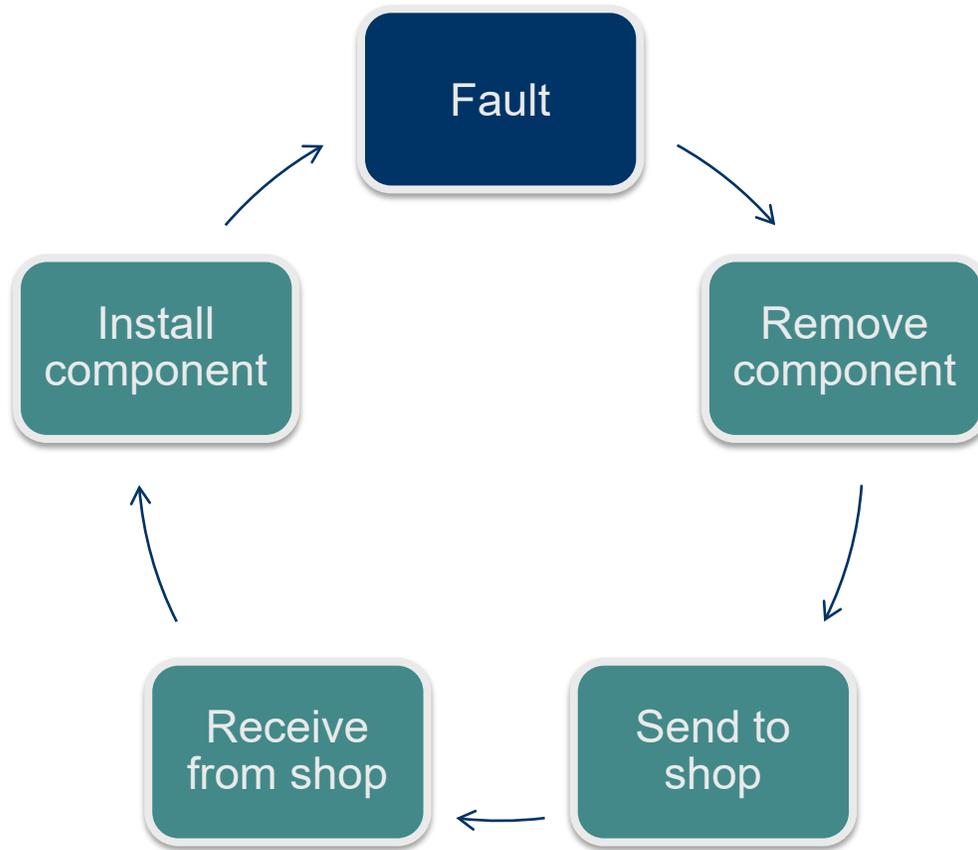
Component Removal / Repair

Note: Airline Perspective shown





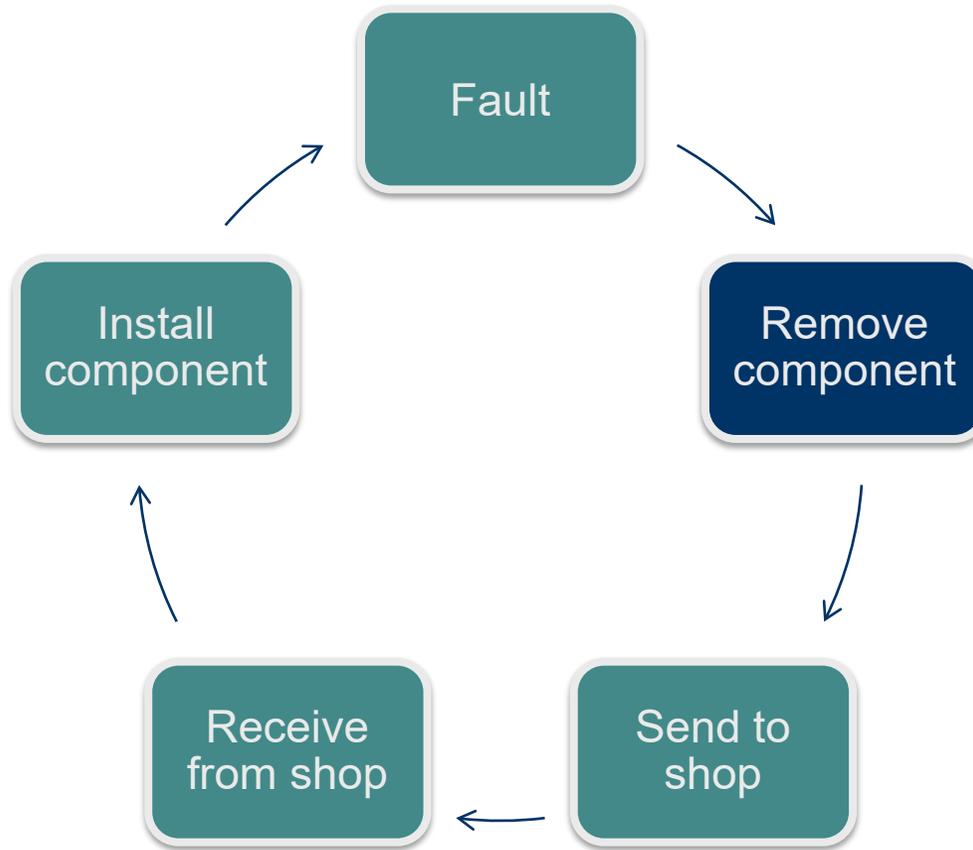
Selected Information Flow



- Record Fault in Logbook
- Record situational information (flight, time, altitude, other noticed issues, fault codes, maint codes, etc.)



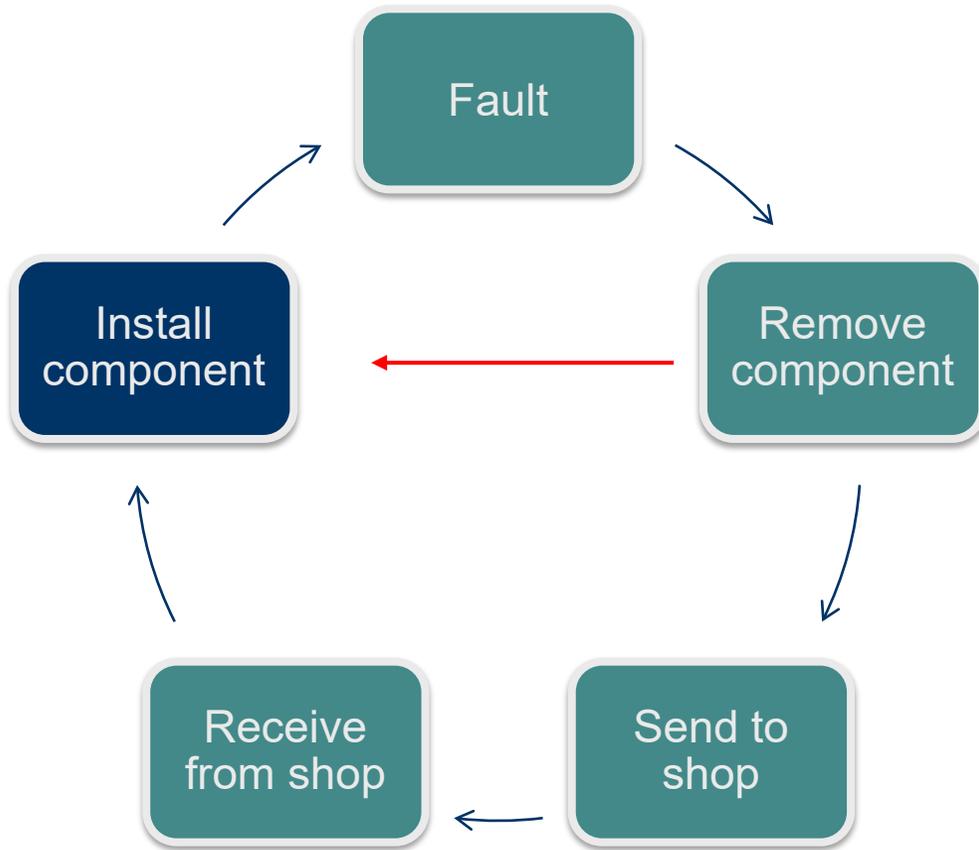
Selected Information Flow



- Review troubleshooting options
- Review maintenance documentation, configuration documentation
- Remove part and tag unserviceable
- Record part number, serial number, identify reason for removal
- Record flight hours, cycles, etc.
- Update logbook appropriately



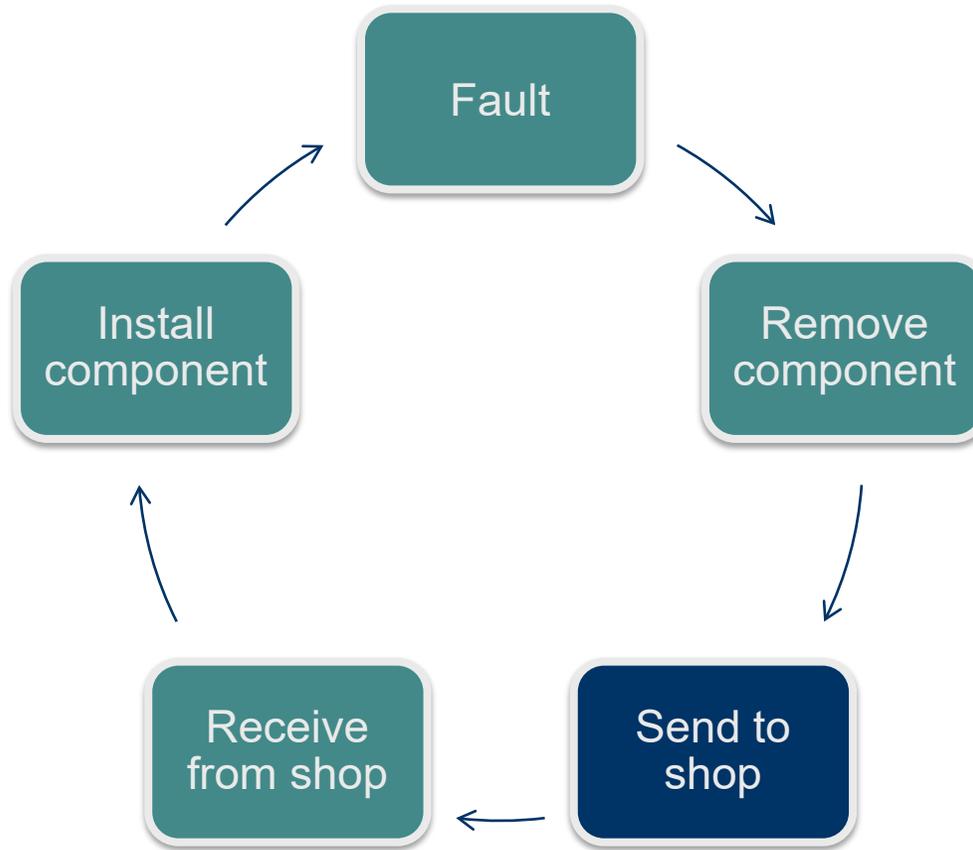
Selected Information Flow



- Review configuration
- Review maintenance documentation
- Record part and serial number
- Record flight hours, cycles, etc.
- Update inventory system
- Close logbook entry



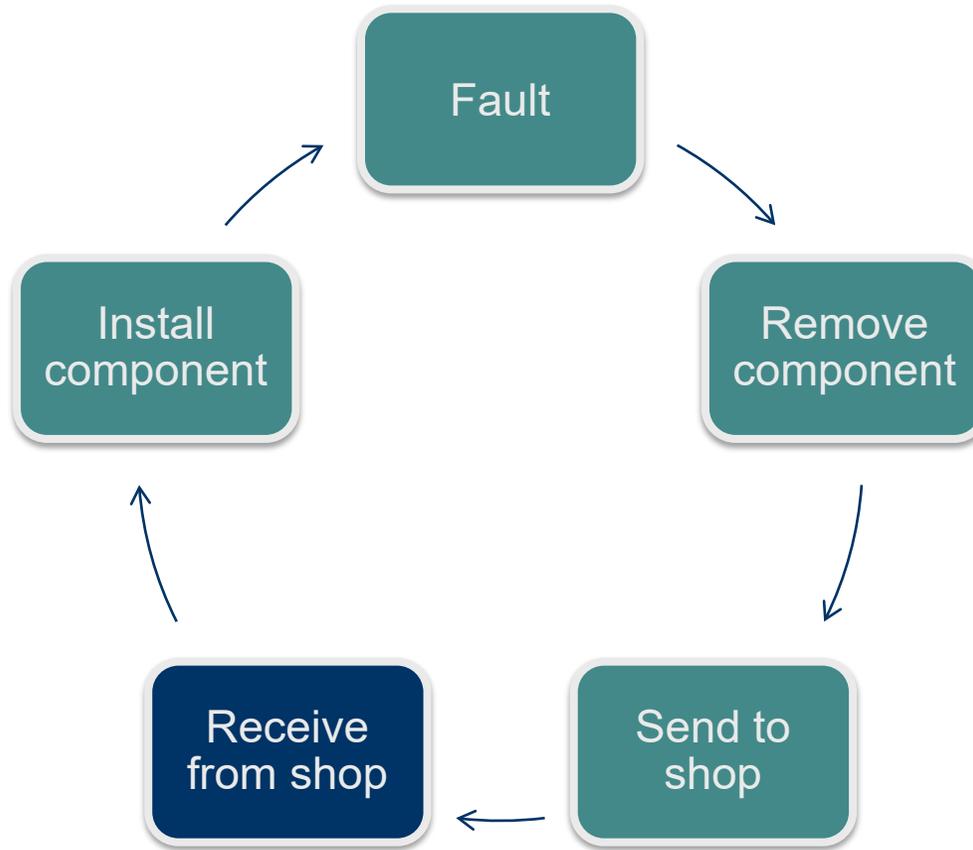
Selected Information Flow



- Prepare Purchase Order with appropriate part number, serial number, commercial info
- Prepare Work scope for shop
- Provide shop reason for removal and other info to be confirmed
- Pack part
- Possibly provide CMM, etc.
- Send part shipped notice
- Respond to shop quotes, etc.



Selected Information Flow



- Receive shipment information
- Compare part serial number, part number to outgoing order
- Examine part for problems
- Review regulatory forms
- Close out commercial process (e.g. approve for invoice, process warranty)
- Return to shelf
- Update inventory system
- Send shop records to archival process

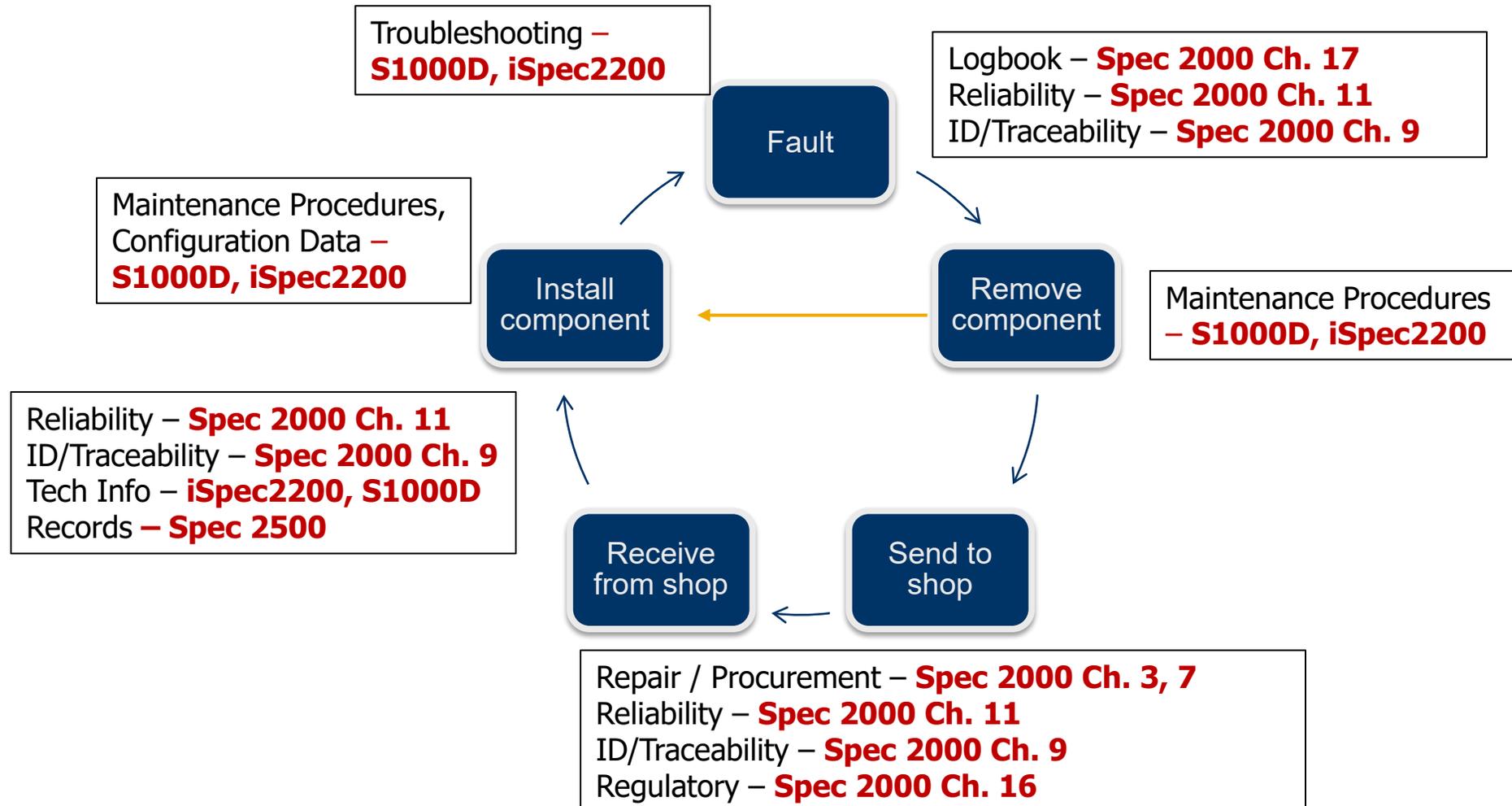


So what does it mean?

- Rapid changing environments at the operator – the need to **manage change**
- New systems / old systems – the need to **integrate**
- More partners – the need to **share**
- More information – the need to **distill**
- Less experience / labor shortages – the need to **improve efficiency**
- Same old cost pressure - the need for **reduced cost**
- **THE NEED TO STANDARDIZE**



Component Life Revisited





So what can you do?

- Actively **participate** in standards development
- Encourage staff to participate in standards development
- Encourage internal development projects to **implement** and **adopt** information exchange standards
- Encourage system providers to become **standards compliant**
- Evaluate the system providers to understand what they really can do if they say they are standards compliant



Questions



ATA e-BUSINESS PROGRAM

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