



ATA e-Business Standards Overview

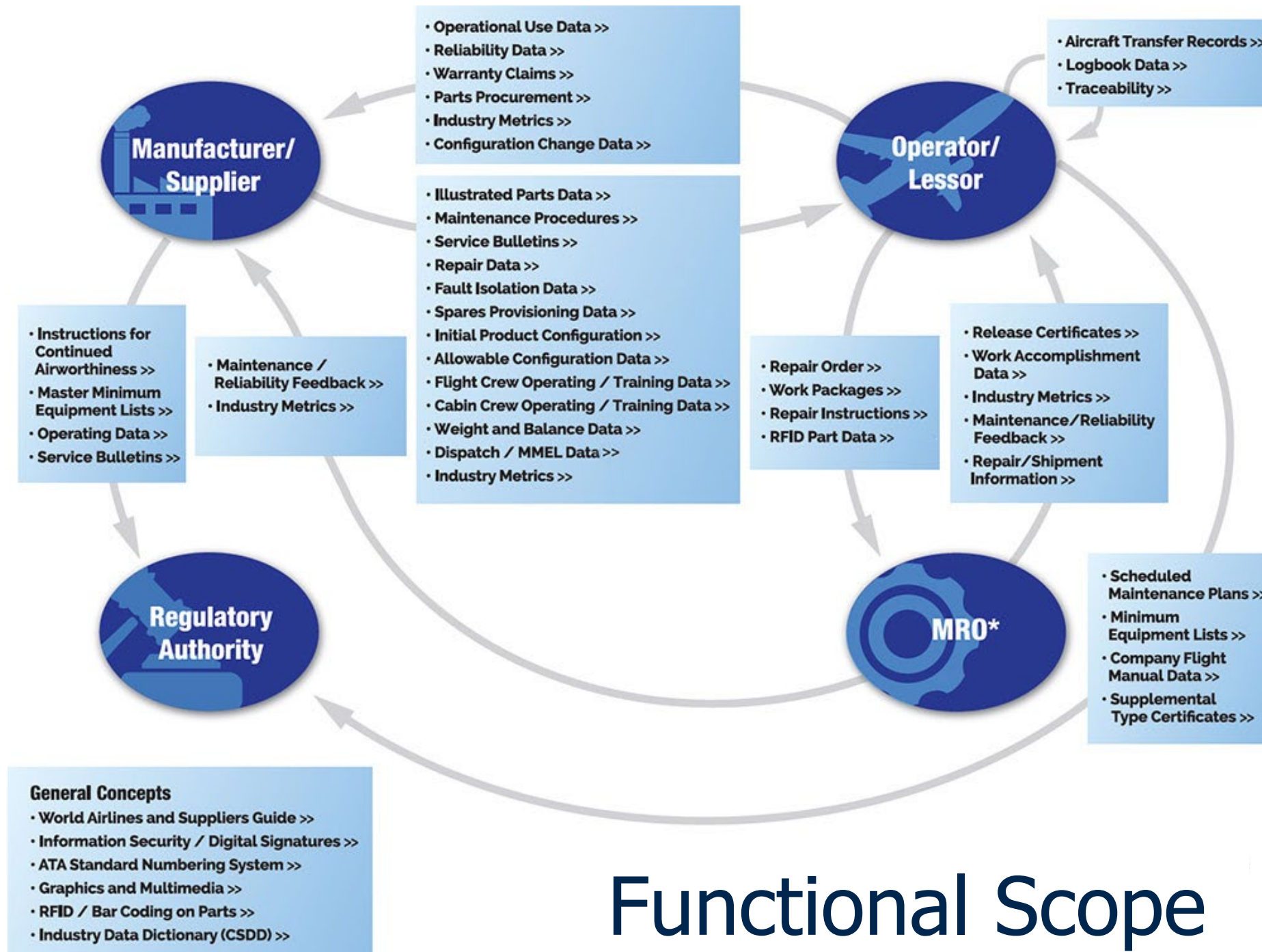
Ken Jones, October 2025



ATA e-Business Program



- International standards program for information exchange to support engineering, maintenance, materiel management and flight operations.
- Open membership
 - 75+ companies in 18 countries
 - Over 1500 individual participants
- Neutral, consensus-based
- Collaborative web site: www.ataebiz.org for documents, balloting, calendars, email





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.



ATA e-Business Standards

Common Support Data Dictionary (CSDD)

iSpec 2200 - Information Standards for Aviation Maint. Spec 2000 - Warranty Claims (ch. 14)

iSpec 2200 Extract - ATA Standard Numbering System Spec 2000 - Aircraft Transfer Parts List (ch. 15)

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

Spec 2000 - Industry Metrics (ch. 13)

Spec 2000 - Warranty Claims (ch. 14)

Spec 2000 - Aircraft Transfer Parts List (ch. 15)

Spec 2000 - Authorized Release Certificate (ch. 16)

Spec 2000 - Electronic Logbook (ch. 17)

Spec 1000BR - Civil Aviation S1000D Business Rules

Spec 2000 - Work Packages (ch. 18)

Spec 2000 - Gen 2 Procurement

Spec 2300 - Data Exchange Standard for Flight Ops

Spec 2000 - Provisioning (ch. 1)

Spec 2400 - Allowable Configuration Data

Spec 2000 - Procurement Planning (ch. 2)

Spec 2500 - Aircraft Transfer Records

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

**Spec 42 - Aviation Industry Stds for Digital Info.
Security**

Spec 2000 - Repair Order Administration (ch. 7)

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

World Airlines and Suppliers Guide (WASG)

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

Spec 100 - Manufacturers Technical Data

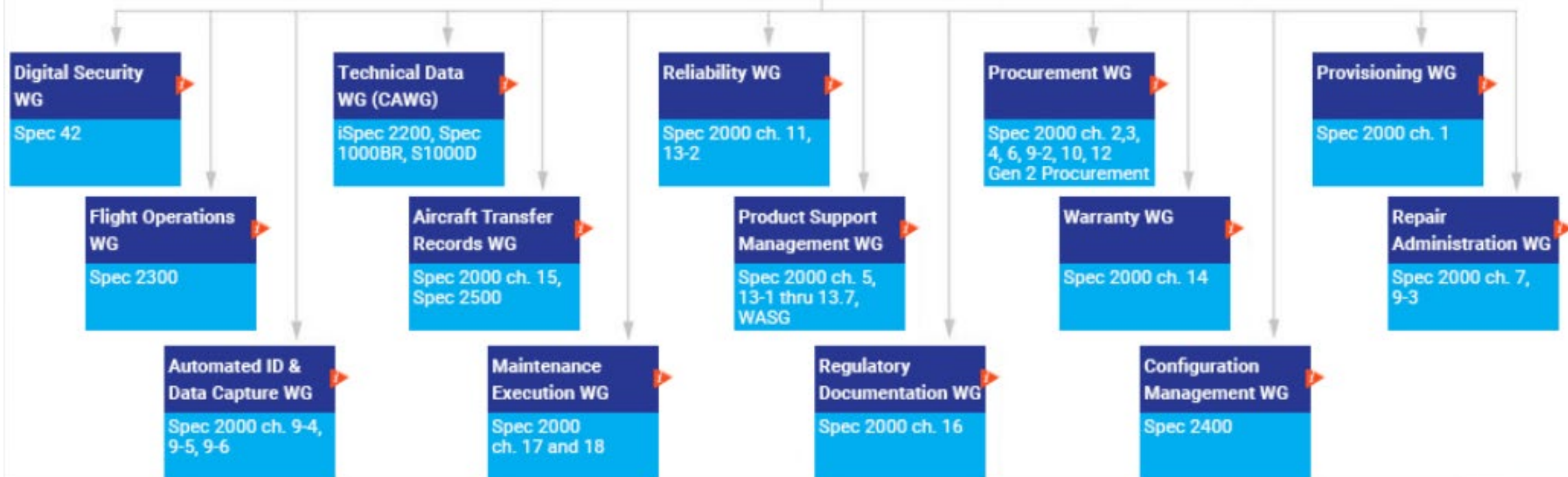
**Spec 2000 - Airline Inventory Redistribution System
(ch.12)**

Spec 101 - Ground Equipment Technical Data



Working Groups

e-Business Steering Group





Typical ATA e-Biz Standard?

- Describes content for business information exchange often for specific use cases / business processes
 - Part numbers, dates, procedures, conditions, 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.
 - Messages (PO), Large Files (Provisioning, IPC, AMM, etc), ID data (bar-code, RFID, etc.)



Why XML?

- XML helps us to separate the structure from the content.
- Separate the formatting from the content
- Make the data application neutral
- Allow additional format validation using parsers, based on Schemas
- Allows hierarchy / relationships to be better depicted
- Easier to support from corporate databases



World Airlines & Suppliers Guide (WASG)

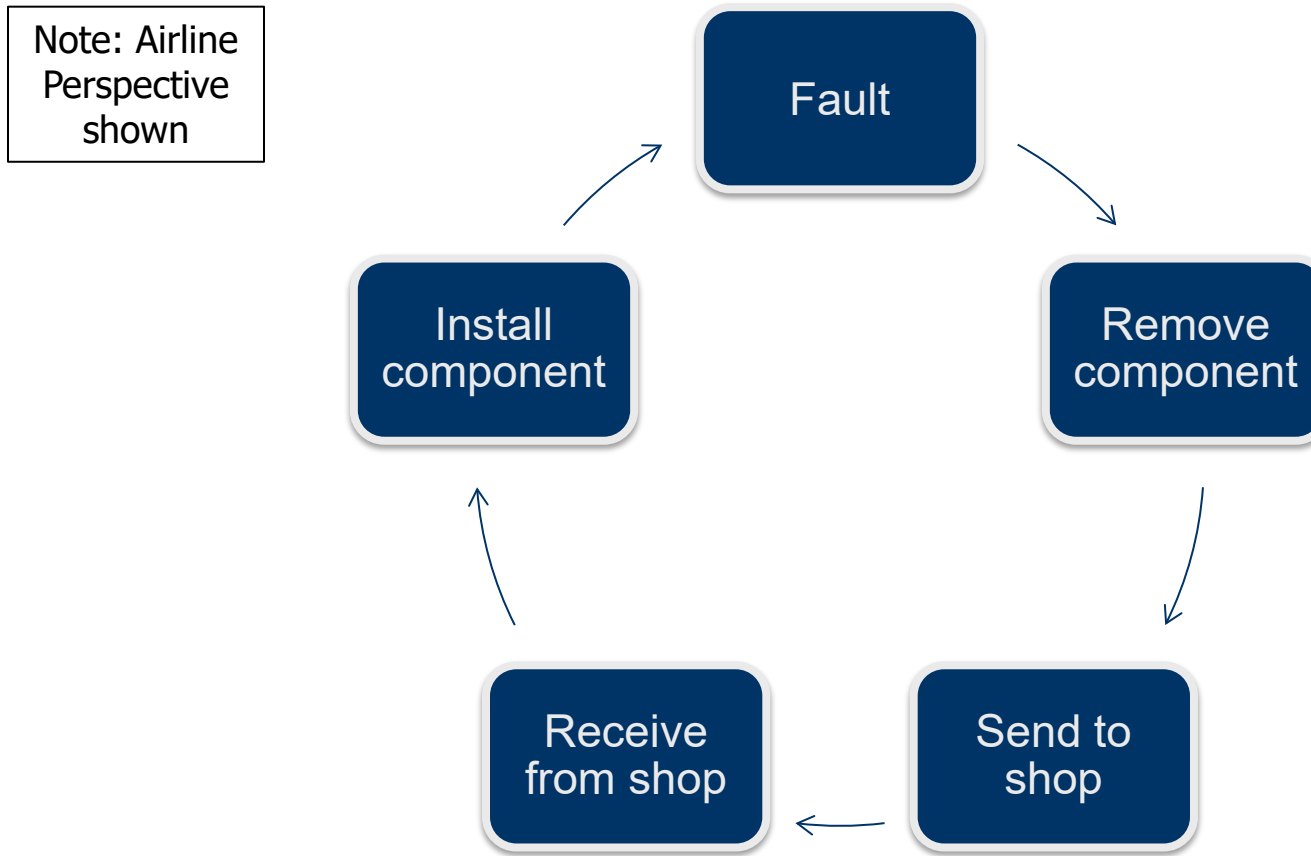
- Referenced in Product Support Agreements (PSA)
- How to do business together
 - Defines support expectations
 - Establishes common policies consistent with these expectations
 - Helps fill in the gaps when a PSA isn't specific
 - Helps encourage consistency between different organizations' product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



- **Visualizing some of the issues**

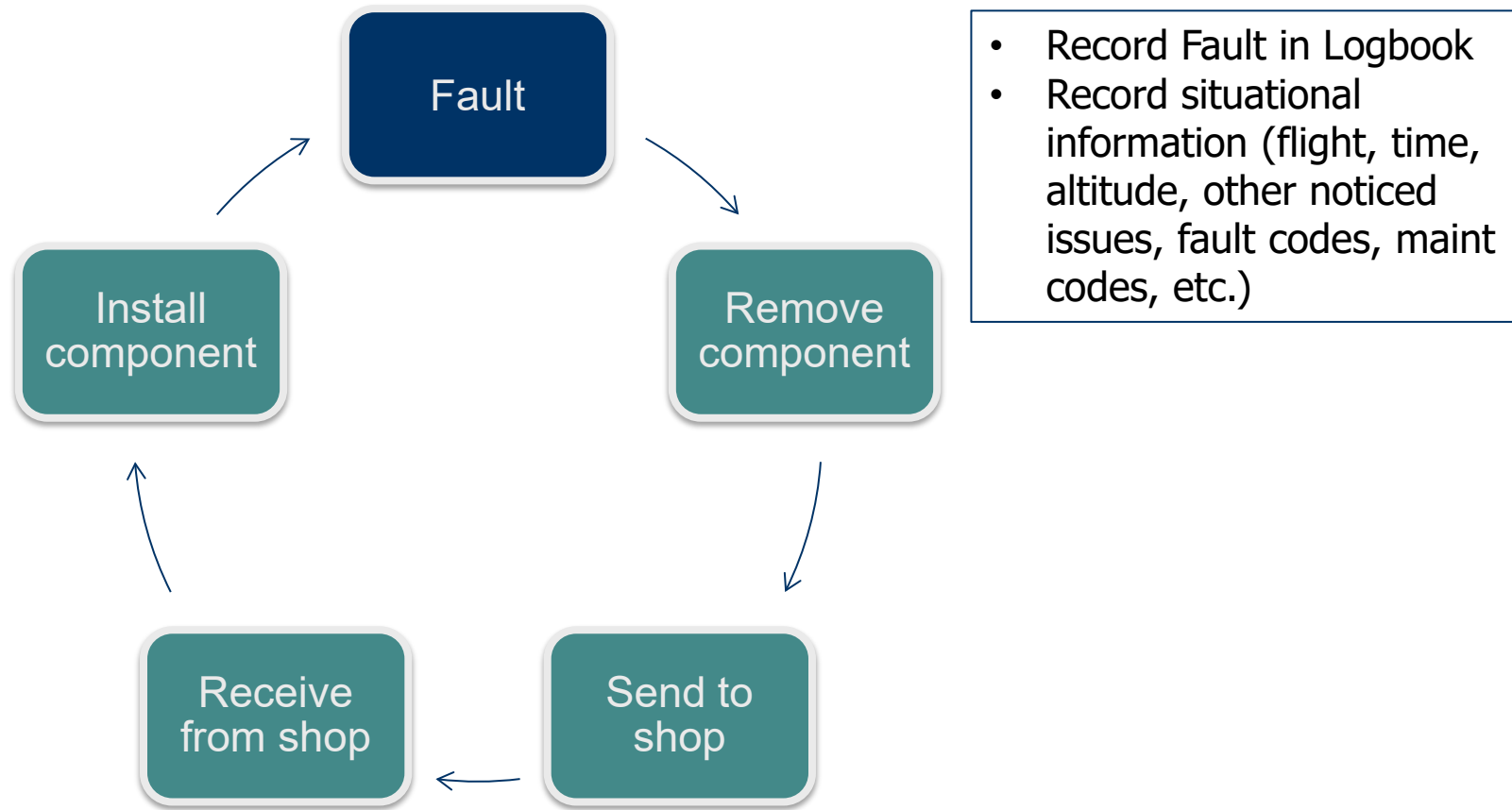


Component Removal / Repair



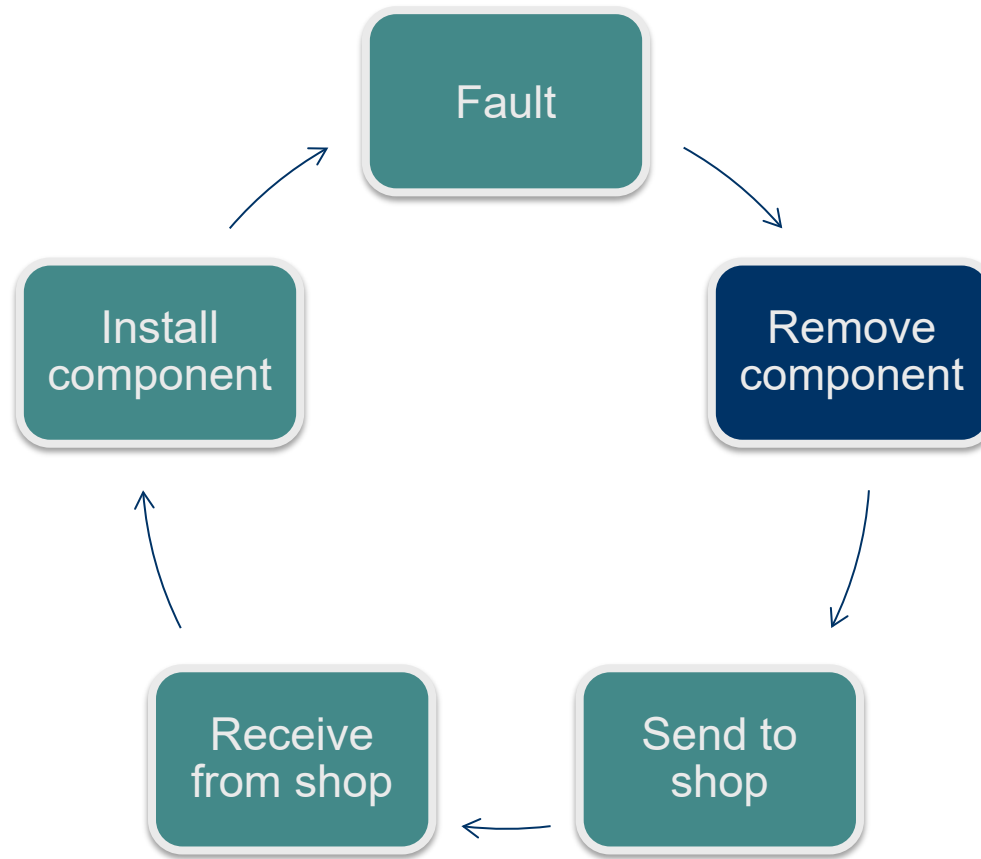


Selected Information Flow





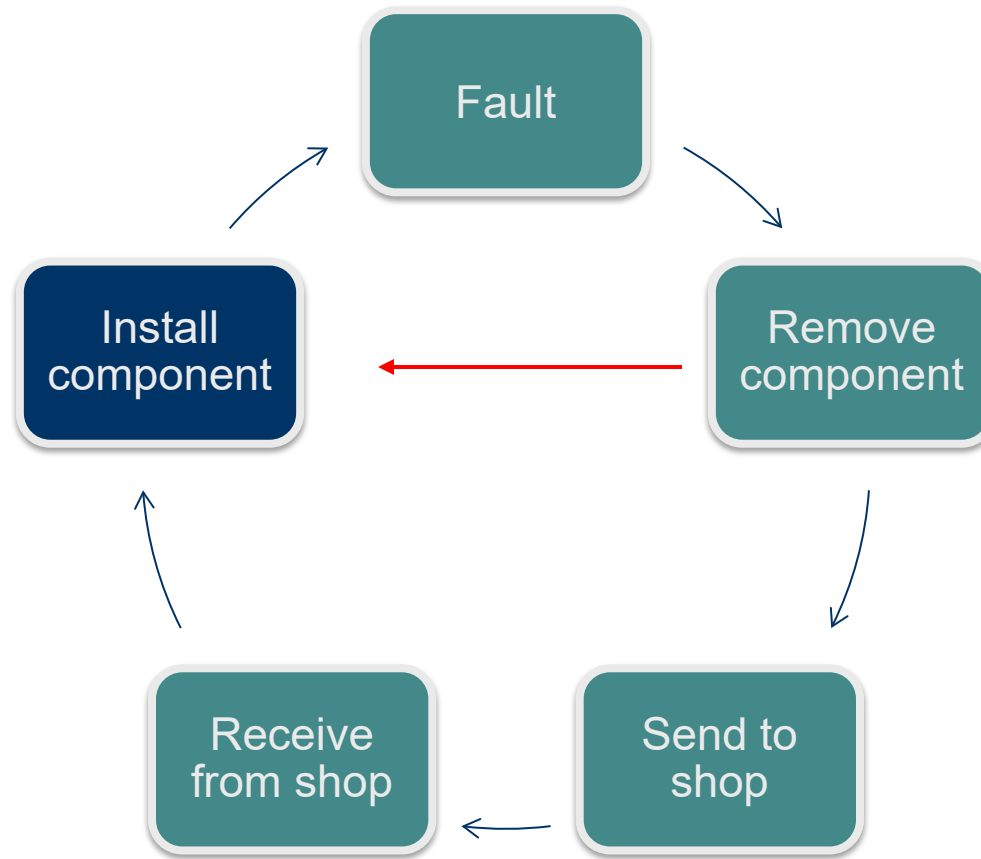
Selected Information Flow



- 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



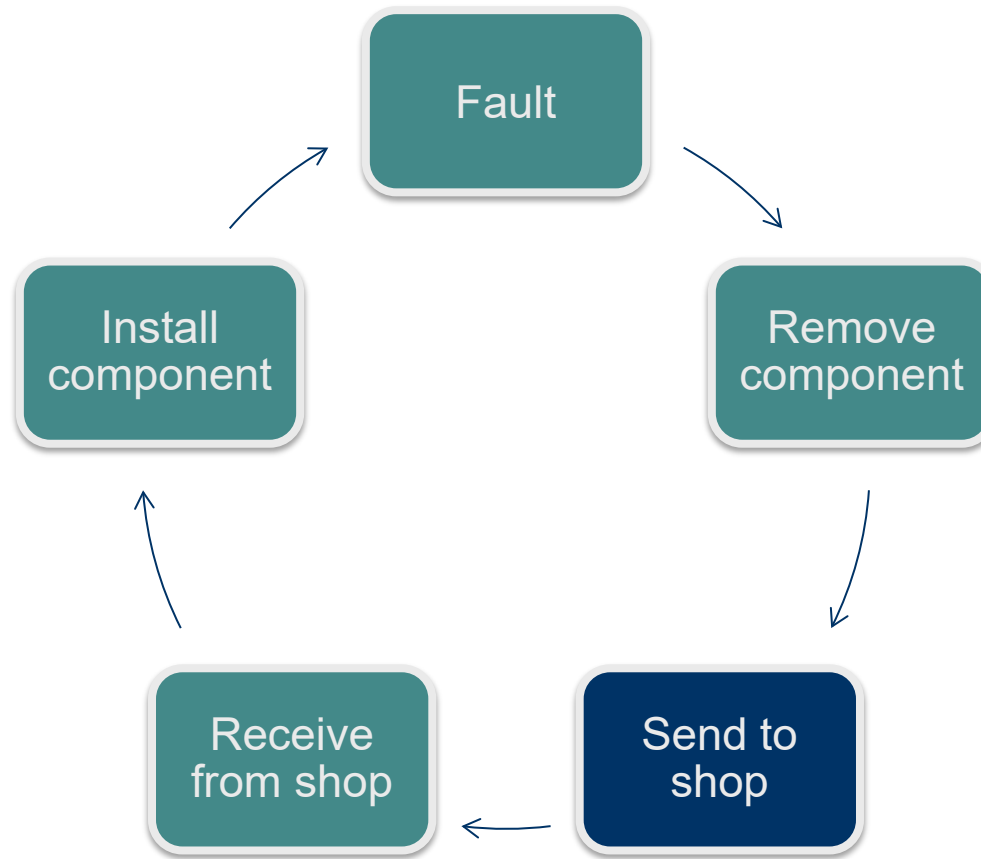
Selected Information Flow



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



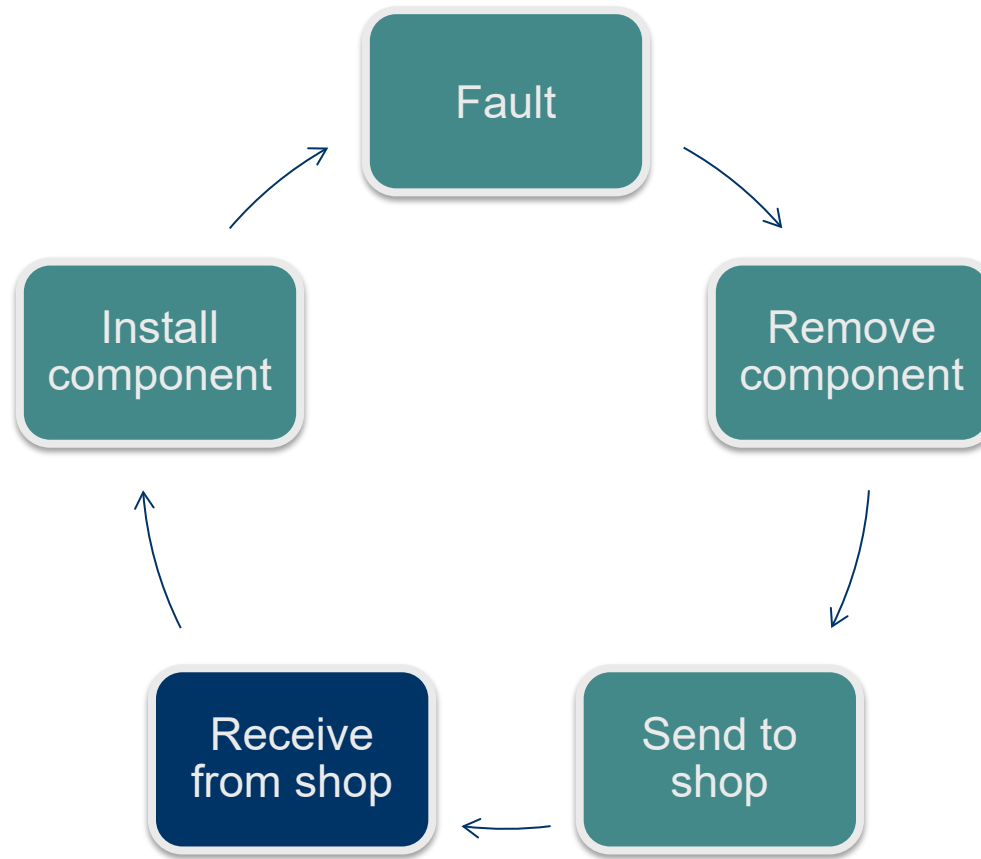
Selected Information Flow



- 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 order
- Examine part for problems
- Review / archive 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 & possibly to manufacturer



■ The Specifications



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

Name	Repair Status Code	Mod	2009
------	--------------------	-----	------

DEFINITIONS		
Class	Definition	Source
Specific	Specifies a status for a part or component at a given stage in the repair process. The Repair Status Code is providing status information in response to an inquiry from a repair agency to the owner/operator of the part or component.	2000,

APPLICATION IN SPECIFICATIONS				
Source	Context	Key (e.g., Tag or TEI)	Type	Properties
2000	MSG	RSC	Data Element	Data Type: N Min Length: 2 Max Length: 2 Cobol Picture: 9(02) Decimals: 0 Permitted Value List: Repair Status Codes Usages: Chapter 7 Command R1CPORSP, R1EXCMT, R1PNRRSP, R1SPLSH

PERMITTED VALUES List Name: Repair Status Codes		
Permitted Value	Default Value	Description
00		Repair Process Not Started. Order received. Material not received.
04		Repair Process Not Started. Return Unserviceable



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)
 - Used for OEM's to provide underlying data to help determine spares / inventory levels.
 - Information such as expected Unscheduled Removal Rates, pricing data, essentially, total quantities, recommended spares quantities, etc.
 - Legacy formats S-files (Line maintenance parts), T-files (Shop maintenance parts), V-files (combination)
 - The PWG sees benefit of developing an XML version of Recommended Spare Parts Lists (RSPLs). More volunteers needed, especially operators



Spec 2000 Specifications

■ Material Management (ch. 2-4)

- Widely used legacy EDI formats for managing the parts purchasing process
- Procurement Planning (ch. 2) – Online Price Catalog Data, Quotation process, stock requests
- Parts Order Management (ch. 3) – Purchase Orders, PO Revisions & Status, Advanced Shipment Notices
- Invoicing (ch. 4)



Spec 2000 Specifications

- Spec 2000 Gen 2.0 Procurement
 - Newest XML Procurement Specification
 - Adapted the 50+ year old legacy specification to current business practices
 - Includes multi-line Purchase Orders, acceptance / rejection of Supplier proposed changes to Purchase Orders, more precise information about shipping, including using third parties, better management of order splits, etc.
 - It is currently being updated, and the working group is updating the specification as implementation needs dictate.
- Component Repair Management
 - Repair Order Management, Invoicing, Teardown (ch. 7)
 - Needs additional work to make a robust XML specification. Volunteers needed.



Spec 2000 Specifications

- Automated Identification & RFID (ch. 9)
 - Bar-coded shipping/receiving labels
 - Permanent parts ID (bar-code, data matrix)
 - RFID on parts
 - RFID shipping labels
 - Part Traceability guideline



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

CSDD

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.

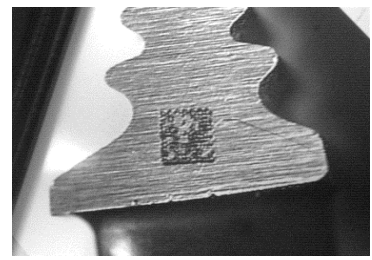
MFR 81205*SER AB123
***PNR HLT8100-13-91**

RFID

```
<ata:Contents><ata:CustomerOrderNumber>P012345678</ata:CustomerOrderNumber>  
<ata:CustomerOrderLineNumber>1</ata:CustomerOrderLineNumber><ata:FulfillmentLineNumber>1</ata:FulfillmentLineNumber>  
<ata:SuppliedPartNumber>  
<ata:PartId><ata:PartNumber>HLT8100-13-1</ata:PartNumber>  
<ata:GlobalTradeItemNumber>1600043989</ata:GlobalTradeItemNumber></ata:PartId>  
</ata:SuppliedPartNumber>
```

**Electronic Shipping Notice
(Gen 2 XML)**

**Direct
Part
Mark**





Spec 2000 Specifications

- Reliability Data Collection (ch. 11) – Operational and Maintenance data feedback
 - Feedback from Operators (primarily) and MROs back to manufacturers to analyze product performance and improve products over time.
 - Widely used from Operators to Airframe OEMs, and from Component Manufacturer's MROs to Airframe OEMs
 - Lesser but increasing usage from MROs back to operators, from operators directly to MROs and from Operator's to Engine Manufacturers and back
 - Used as a basis for KPI / Metrics and various industry dashboards



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 / Engine Shop Findings



Spec 2000 Specifications

- Industry Metrics (ch. 13)
 - Parts Delivery, Repair Process
 - Technical Resolution, Product Support Data, Warranty performance
 - Reliability (Dispatch, Component Removals, Aircraft Availability, etc.)
 - Coming soon – updated Reliability Metrics to include Prognostics / Health Monitoring and more robust Aircraft Availability metrics
- Warranty Processing (ch. 14)
 - Electronic Warranty Claim submittal
- Electronic Authorized 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
- Accepted by regulators



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
- Need – executable task, but need more participation. Volunteers needed.



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



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, [Issue 6 recently published](#)
- 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 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 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
 - Describes modifications/Service Bulletins which can be incorporated into an operator's aircraft fleet, including conditions



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
 - New use cases being developed with incorporating parts into a system, status for lessors, etc.



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.)
 - Updating coming soon with Daily Flight Summary, other changes to support implementation



Spec 2500x – Part History

- New sub-team developing “Component Passport” / Part History
 - Digital structure to provide “back-to-birth” traceability
 - Record of events that happen to parts during their life and data associated to those events including references to documents (or corresponding digital records) where appropriate
 - Will support direct data exchange and/or storing data on various blockchains in an industry standard format
 - Includes Removable Structural Components, Life Limited Parts (LLPs), Other Components
- First release expected in early 2026

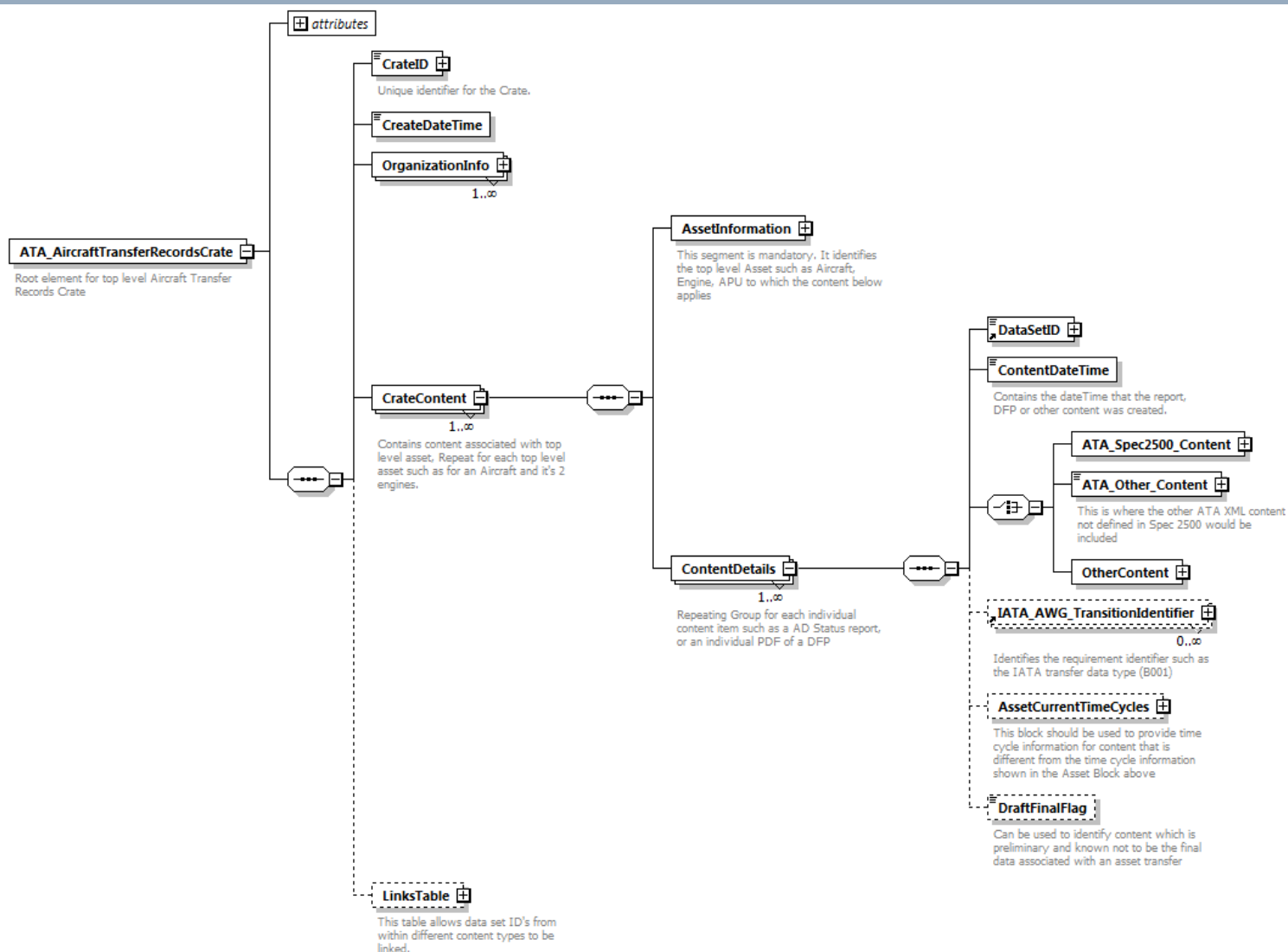


■ Spec 2500

➤ Schema and sample data

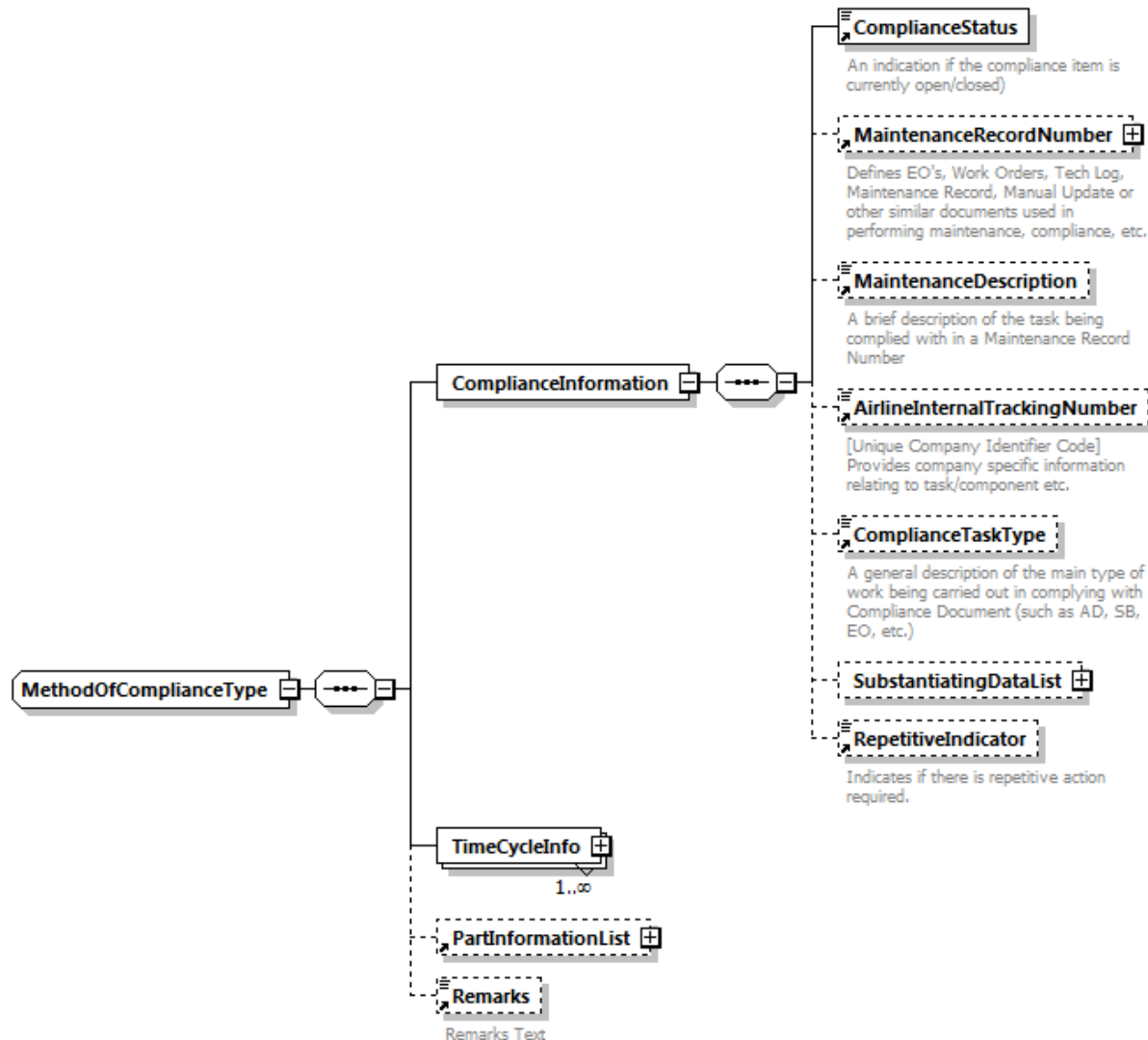


Spec 2500 Excerpt - Crate





Spec 2500 Excerpt - MOC





Sample XML

```
ATA_AircraftTransferRecordsCrate .....\Schemas\ATA_AircraftTransferRecordsCrate.xsd">
  <CrateID source="Asset Management System">EX3</CrateID>
  <CreateDateTime>2016-09-15T00:00:00Z</CreateDateTime>
    <OrganizationInfo>
      <OrganizationName>ABC Airlines</OrganizationName>
      <OrganizationCode OrganizationCodeType="CAGE">12345</OrganizationCode>
      <OrganizationalRole>Lessee</OrganizationalRole>
      <ContactName Role="Deliveries">
        <Name>John Smith</Name>
        <PostalAddress>
          <AddressLine>ABC House</AddressLine>
          <AddressLine>Gatwick Park</AddressLine>
          <AddressLine>London Road</AddressLine>
          <City>Crawley</City>
          <Municipality>West Sussex</Municipality>
          <State></State>
          <PostalCode>RH10 9UY</PostalCode>
          <Country>United Kingdom</Country>
        </PostalAddress>
        <Email>john.smith@aviation.com</Email>
        <Phone>+441234123123</Phone>
      </ContactName>...
```



Sample XML

```
<MethodOfCompliance>
  <ComplianceInformation>
    <ComplianceStatus>Open</ComplianceStatus>
    <MaintenanceRecordNumber>
      <DocumentNumber>EO 32-12345R1</DocumentNumber>
      <DataSetID source="Maintenance System">AD5</DataSetID>
      <TypeOfDocument>EO</TypeOfDocument>
      <CAGE_Code>9V238</CAGE_Code>
      <Company>American Airlines</Company>
      <Model>767-300</Model>
    </MaintenanceRecordNumber>
    <MaintenanceDescription>Replace the aft pressure bulkhead at Station 1582 of Section 48 with the
aft pressure bulkhead, and perform all applicable related investigative and corrective actions, in accordance with the
Instructions of Boeing Alert Service Bulletin 767-1B1234, Revision 1, dated August 4, 2016</MaintenanceDescription>
    <AirlineInternalTrackingNumber>27-987876-33</AirlineInternalTrackingNumber>
    <ComplianceTaskType>Part Replacement</ComplianceTaskType>
    <SubstantiatingDataList>
      <SubstantiatingData>
        <DocumentNumber>XB101</DocumentNumber>
        <DataSetID source="20-05-2015">AD6</DataSetID>
        <TypeOfDocument>SB</TypeOfDocument>
        <CAGE_Code>81205</CAGE_Code>
        <Company>Boeing</Company>
        <Model>767-300</Model>
        <RevisionNum>13</RevisionNum>
        <RevisionDate>2016-08-14</RevisionDate>
      </SubstantiatingData>
    </SubstantiatingDataList>
    <RepetitiveIndicator>true</RepetitiveIndicator>
  </ComplianceInformation>
  <TimeCycleInfo>
    <Threshold EarlierLaterOf="LaterOf">
      <TimeCycleList>
        <TimeCycleDetails>
          <Date>2020-07-20T00:00:00Z</Date>
        </TimeCycleDetails>
      </TimeCycleList>
      <TimeCycleList>
        <TimeCycleDetails>
          <Cycles>20000</Cycles>
        </TimeCycleDetails>
      </TimeCycleList>
    </Threshold>
  </TimeCycleInfo>
</MethodOfCompliance>
```

AD Compliance is Open

Ref to Substantiating SB

Due before 20,000 Cycles



Same XML rendered in html

ATA Spec2500 Content		ATA_AD_Status	
AD Status for Aircraft Serial Number: 30999			
ATA_AD_Status Schema Version: 0			
AD Item 1 of 3 - AD Number: 2016-25-07			
Regulatory Authority	FAA		
AD Number	2016-25-07		
DatasetID / Source	AD1 / Asset Management System		
AD Title	This AD was prompted by an evaluation by the design approval holder (DAH) indicating that the aft pressure bulkhead at Station 1582 is subject to widespread fatigue damage (WF		
Effective Date	2017-02-07		
Product Type	Airframe		
FAA Amendment Number	39-18733		
Related ADs	Authority	AD Number	Data Set ID / Source
	FAA	2004-05-16	AD2 / Asset Management System
	FAA	2004-14-19	AD3 / Asset Management System
	FAA	2009-06-19	AD4 / Asset Management System
Supersedes ADs	Authority	AD Number	Data Set ID / Source
	FAA	2004-05-16	AD2A / Asset Management System
AD Remarks	Example of a paragraph-based AD		
AD Status	Open		
AMOC Flag	false		
	Paragraph Reference	2016-25-07 PAR (G)	
	Paragraph Status	Open	
	Compliance Task Type	Inspection	
	Paragraph Description	To detect and correct discrepancies in the aft attach lugs of the elevator tab control mechanism group 1 a/c	
	Paragraph Remarks	Note also requirement for paragraph H	

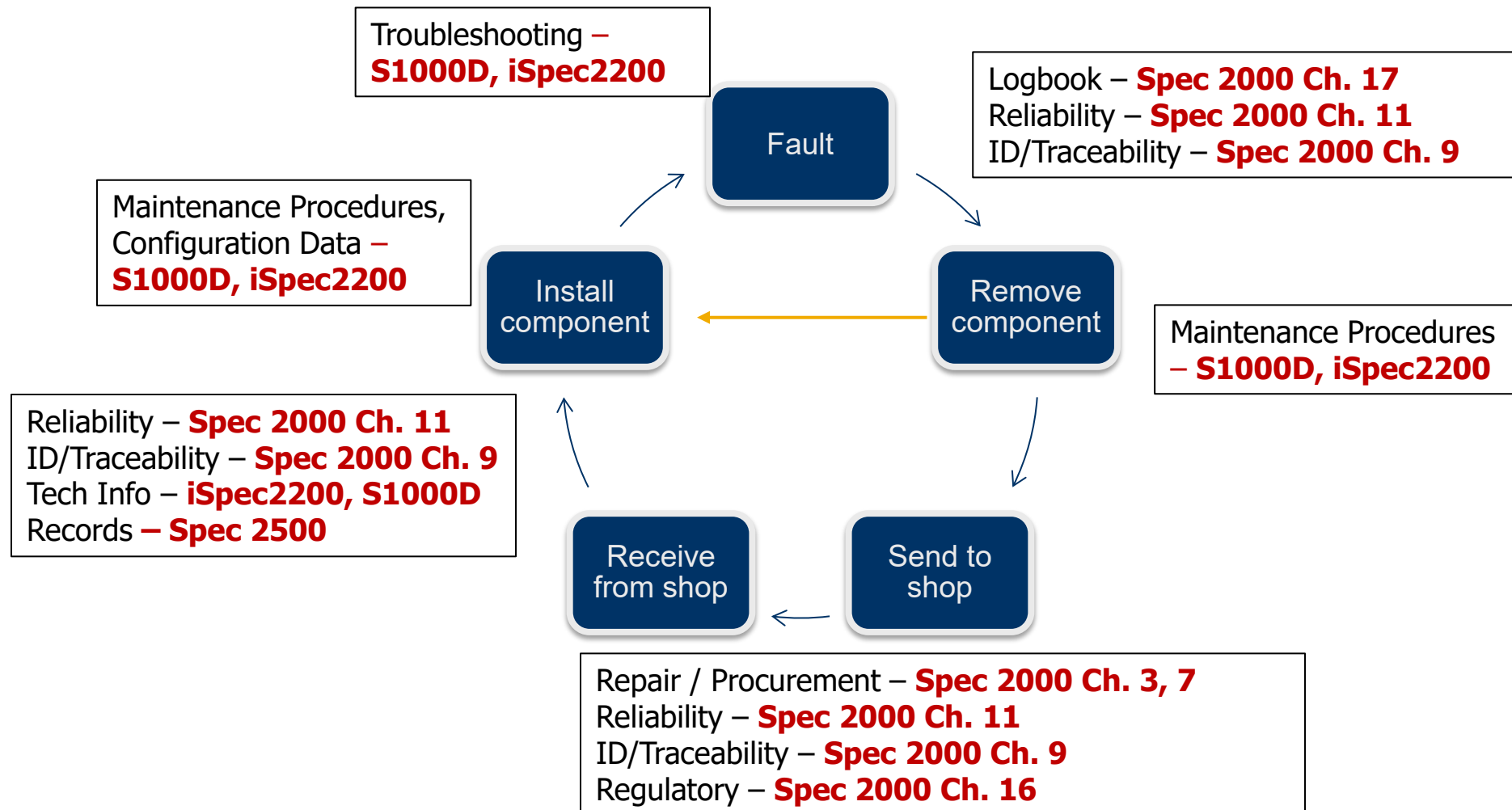


Spec 42 – Digital Information Security

- 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



Component Life Revisited





So what can you do?

- Actively participate in standards development / working groups
- Encourage colleagues to participate, particularly where your company is not represented
- Encourage internal development projects to adopt these information exchange standards, with a particular focus on field names / definitions
- Encourage your system providers to implement AND stay up-to-date with revisions
- Evaluate system providers to ensure they really can do what they say they can in the area of standards implementation.



Questions



ATA e-BUSINESS PROGRAM

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