

# ATA e-Business Standards and Blockchain

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# Welcome..



## And your first calls to action

Take advantage of the sessions offered at this forum – and **collect** lots of business cards!

Follow up by contacting the **ATA eBusiness Program** to learn more about industry standards and how to purchase publications



## and Blockchain

### Standards

The following is a list of specifications developed and maintained by the ATA e-Business Program. Member of the ATA e-Business Program can gain immediate and complimentary access to all these specifications by visiting the [member download page](#).

- Common Support Data Dictionary (CSDD)
- iSpec 2200 - Information Standards for Aviation Maintenance
- iSpec 2200 Extract - ATA Standard Numbering System
- S1000D, International Specification for Technical 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 - Information and Data Exchange (ch. 5)
  - Spec 2000 - Repair Order Administration (ch. 7)
  - Spec 2000 - Repair/Overhaul Planning (ch. 8)
  - Spec 2000 - Automated Identification and Data Capture (ch. 9)
  - Spec 2000 - ASC X12 Implementation Guide (ch. 10)
  - Spec 2000 - Reliability Data Collection and Exchange (ch. 11)
  - Spec 2000 - Airline Inventory Redistribution System - AIRS (ch. 12)
  - 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)

It's mostly about the standards.....

Understand how SITA **relies on ATA e-Business standards** for the SITA MRO Blockchain. This will include the motivation factors and highlight specifications that will be implemented and supported by Blockchain.

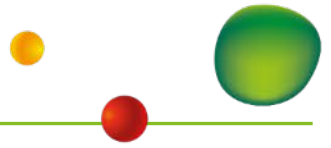
...and a bit about blockchain (and smart contracts)





# Agenda

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- Introduction to SITA
- Very brief introduction to Blockchain and the SITA MRO Blockchain
- Brief history of the SITA MRO Blockchain initiative
- The importance of industry standards
- Standards of specific interest to the SITA MRO Blockchain
- Q&A (you're off mute)





# A Few Words About SITA and Blockchain





# A world leading provider 100% dedicated & at the forefront of air transport

Technology solutions, services and expertise at airports, at borders and for aircraft

## SITA AT AIRPORTS



For **airlines, airports** and **ground handlers** at the airport

Spanning **operational and business processes**, baggage and passenger management

### Focus:

- Smarter, more **collaborative** and **efficient data-driven** airports
- Better **on-time** performance, streamlined processes and **greater capacity**
- A **seamless and safe automated** passenger journey

## SITA AT BORDERS



For **governments** and **border management agencies**

Spanning **border management, operations & automation**

### Focus:

- Striking the **balance** between **security** and **facilitation**
- Making travel **safer** and **easier** across and within borders, and building **trust** in travel
- Making borders digital, **smarter, more secure** and more **seamless**

## SITA FOR AIRCRAFT



For **airlines, airframers, MROs, OEMs, business jet owners & ANSPs**

Spanning **aircraft & flight ops, data management, aircraft comms**, and **inflight connectivity**

### Focus:

- **Sustainable aircraft operations**, through digitalization & data
- **Efficient** and **agile** operations, onboard, in-flight, on the ground
- **Safer, more efficient, sustainable** and enjoyable flying experiences

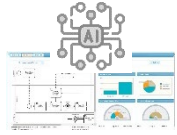




# Why MRO Blockchain is appropriate, ... (1/2)

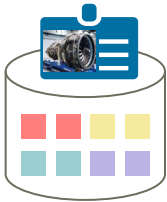
As **modifying ERPs is almost impossible**, we leverage blockchain and act **at middleware level** to make the industry evolve

## Elements of the MRO blockchain solution



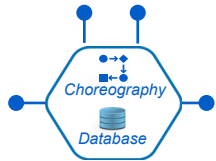
### Smart Application

Connecting your IT/ APIs



### Digital thread

Data privacy and distribution  
Record management



### Smart contract

Business Process digitization, Digital consensus



### Neutral ecosystem

Membership and partner management

## Where SITA acts

### Trust and control at business process level

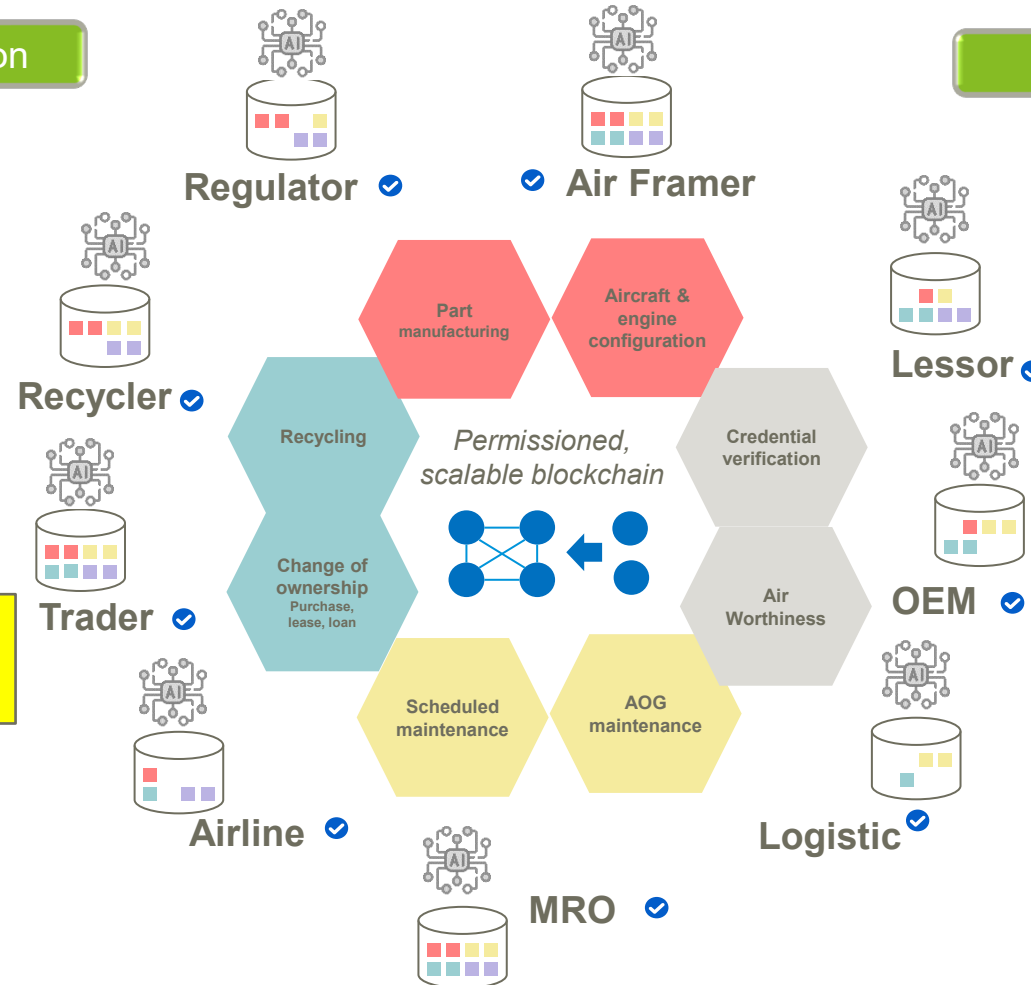
Notarize your data

### Ease transactions using standards

ATA Spec 42, Spec 2000, Spec 2500, ...

### At low IT costs

Integrate your ERP as is

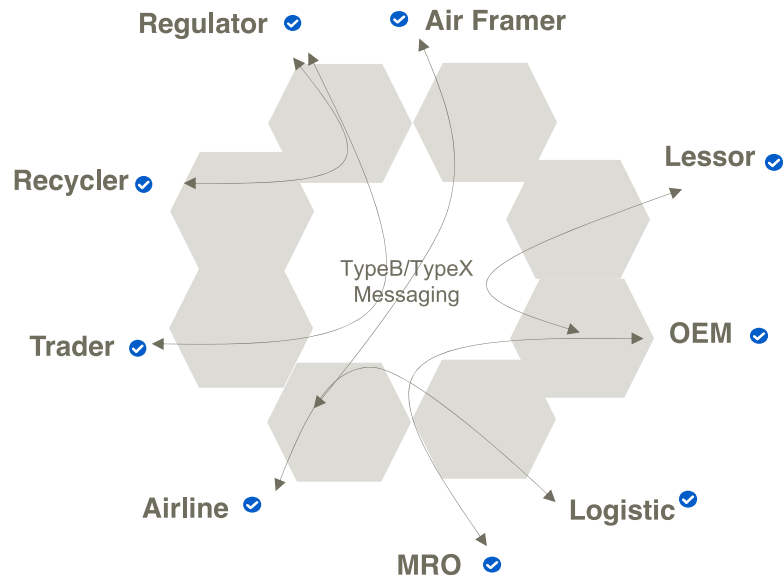




# Why MRO Blockchain is appropriate, ... (2/2)

SITA solution leverages Type B/Type X messaging foundations to extend end to end ecosystem business consensus and orchestration and move up the aircraft life cycle value chain

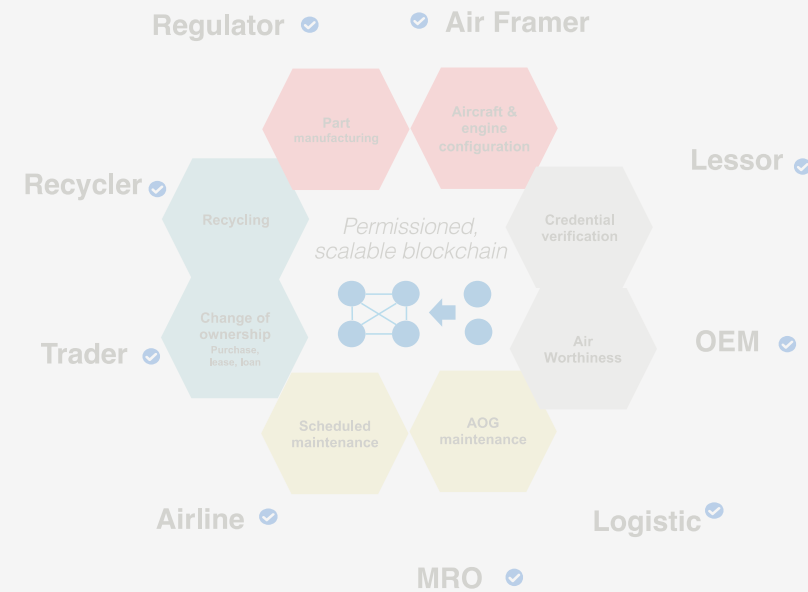
## Traditional Ecosystem



- Point to point exchanges between stakeholders
- Limited electronic data exchange beyond spare parts purchase and sale

Traditional Ecosystem

## Blockchain-based Ecosystem



- Business process orchestration – end to end consensus
- Schemas for transactions and certificates
- Confidentiality, data ownership, trust, full transparency
- All processes touching aircraft life cycle

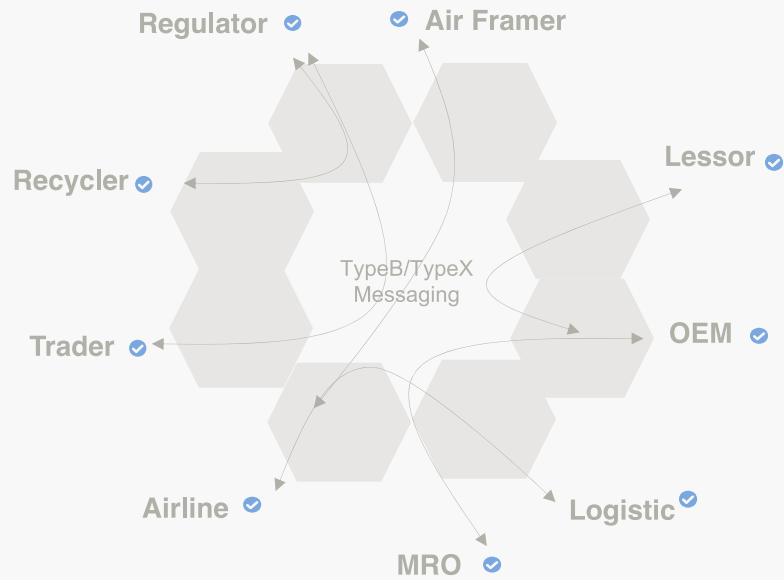
Blockchain Ecosystem



# Why MRO Blockchain is appropriate, ... (2/2)

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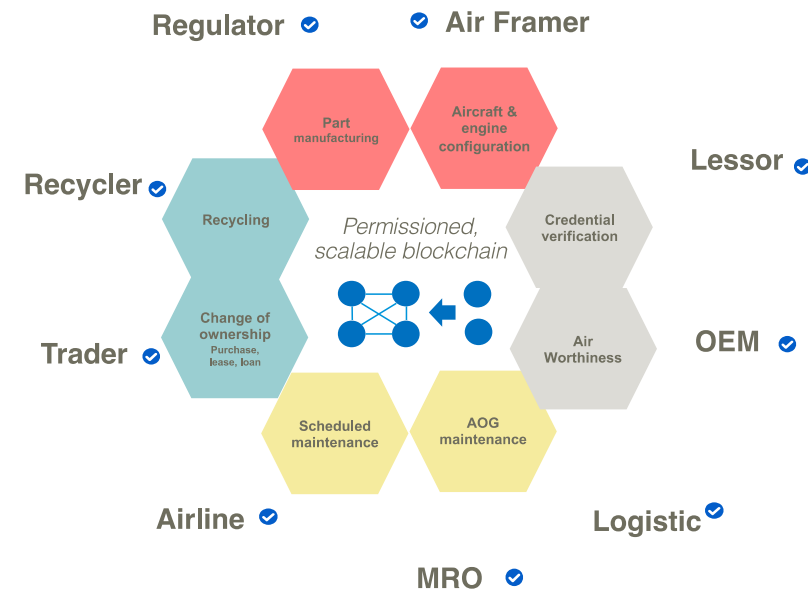
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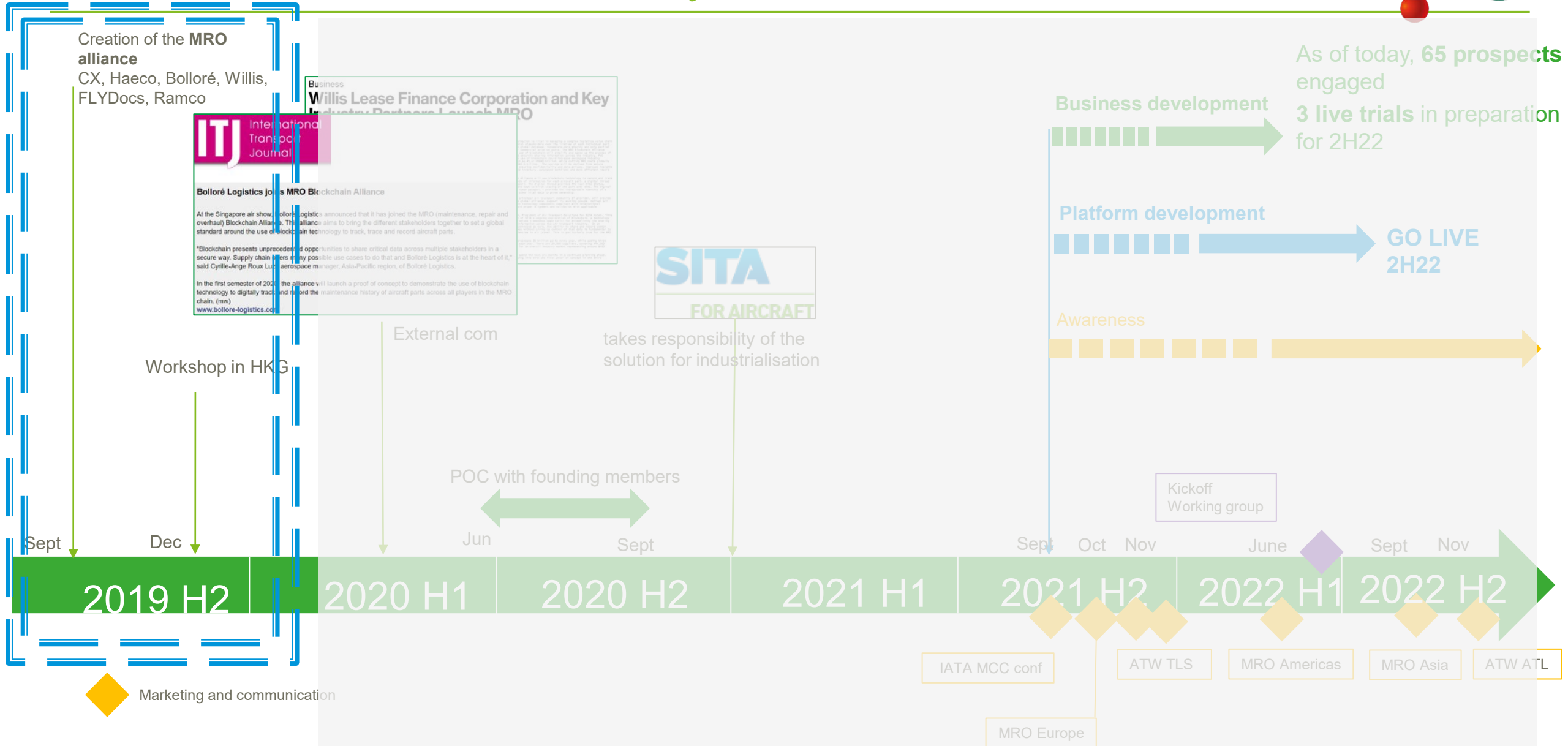


But how did we get  
here?



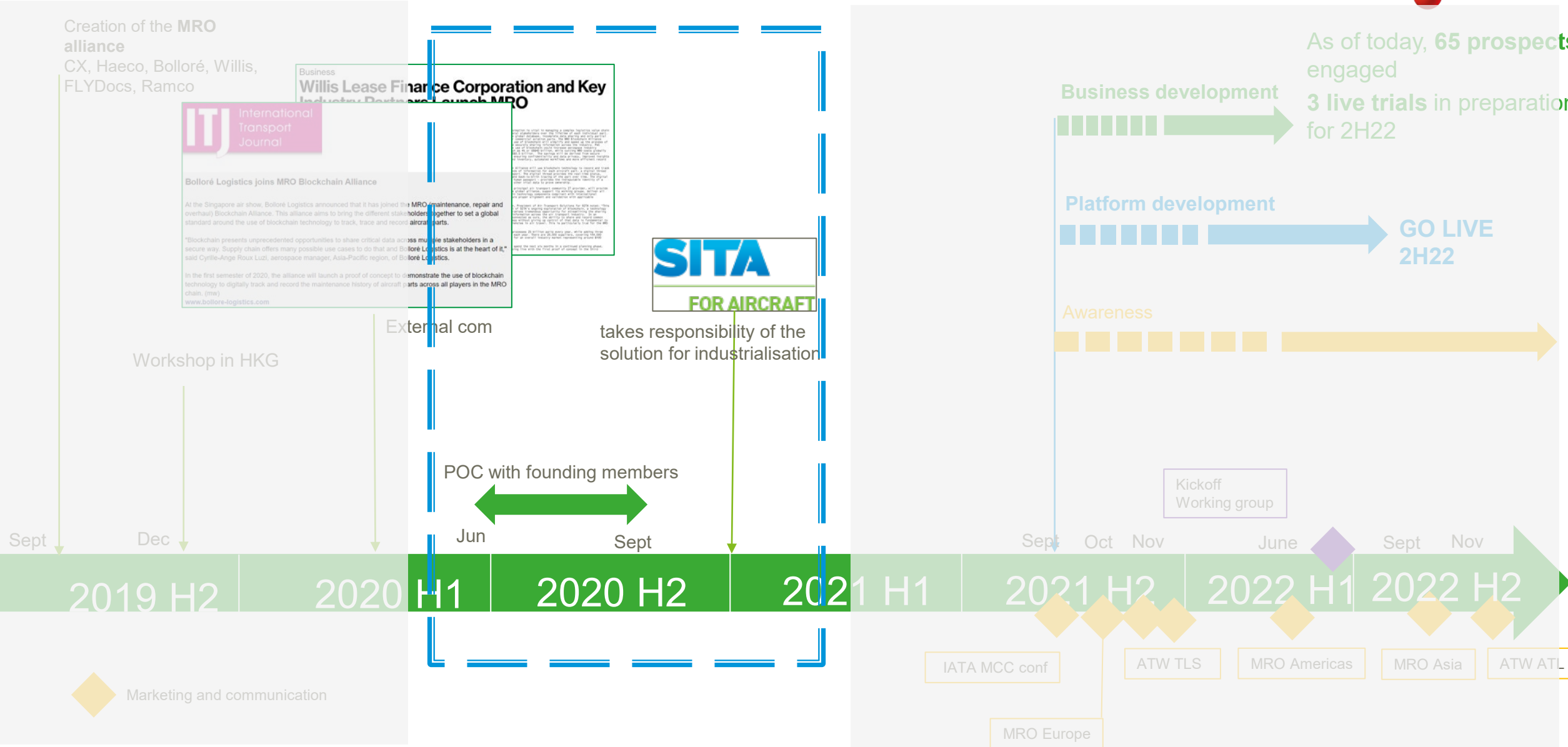


# MRO Blockchain Alliance history and timeline





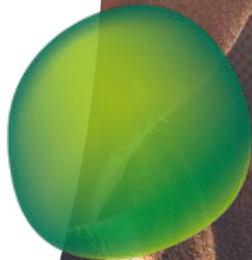
# MRO Blockchain Alliance history and timeline





# Standards and Chapters of Significance to Blockchain

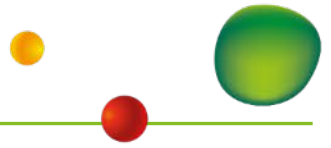
Presented in Order of Importance





# Why Industry Specific Standards?

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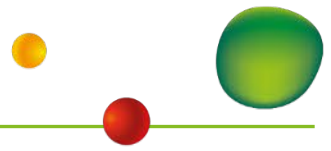


“Industry standards are the foundation for enabling business around the world to exchange information, especially when each uses different software solutions and different computing platforms.”

***John Pawlicki, Overview of the Key Websites & Marketplaces Which Facilitate the Trading of Aircraft Parts***



# Regulations and standards

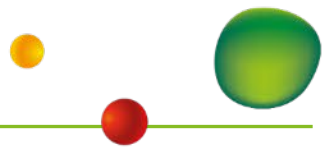


The SITA solution considers all industry standards – but implementation is based on ATA eBusiness standards

Standard organisation	Perceived relevance For MRO Blockchain	Benefits to MRO Blockchain users
ATA e-business	H	Standardized message and file formats are repeatable, transaction and information is predictable
SAE G-31	L	Ensure is SAE aligned with ATA and the needs of SITA MRO Blockchain users
AIA	L	AIA started a Blockchain initiative. SITA is observer
ASA	M	Incorporate best practices in the standardisation of industry forms (Certificates of compliance,...)
IATA Guidance for Digital Maintenance	H	Objectives of IATA materials complement the objectives of SITA MRO Blockchain users. However, they don't offer any standard XML message and file formats (only Excel files). IATA points to ATA to create related standards.  Compliance with IATA best practice will remove potential roadblocks to wider adoption of SITA MRO Blockchain solutions
IATA LLP best practices	H	
IATA Aircraft lease best practices	H	
IATA SIS (Simplified Invoicing and Settlement)	H	Spec 2000 does not provide for invoice settlement; Adoption of IATA SIS will remove potential roadblocks to wider adoption of SITA MRO Blockchain solutions on electronic Supply Chain transactions



# Which ATA eBusiness Standards?

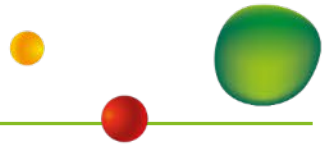


## ATA eBusiness Standards for the MRO Blockchain

- **Spec 2000**
  - Chapter 2 – Procurement Planning
  - Chapter 3 – Order Administration
  - Chapter 4 – Customer Invoicing
  - Chapter 7 – Repair Order Administration
  - Chapter 14 – Warranty
  - Chapter 16 – Electronic Product and Part Regulatory Documentation
  - Chapter 18 – eWork Package
  - Spec 2000 Gen2 Procurement
- Spec 42 – Aviation Industry Standards for Digital Information and Security
- Spec 2500 – Aircraft Transfer Records
- Common Support Data Dictionary (CSDD)
- Life Limited Parts (LLP) History Schema\*

\*To be developed





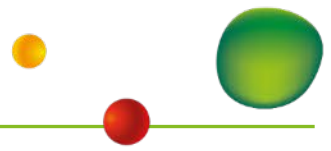
### What is the **CSDD**?

- Provides standardized names, definitions and descriptions for use within the air transport industry.
- Defines and provides semantic details for concepts and data objects
- Applicable to all eBusiness Standards

### Importance to Blockchain

- The CSDD is the **foundation** upon which all data exchanges are built





## Chapter 16 - Electronic Product and Part Regulatory Documentation

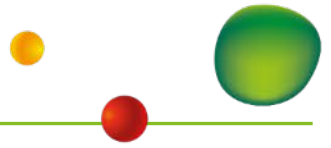
What is Chapter 16?

- A standardized set of data formats (schemas) and implementation guidelines for the electronic exchange of regulatory documentation for aircraft products and parts, such as:
  - **FAA 8130-3**
  - **EASA Form One**
  - **Transport Canada (TC) Form One**
- And many other CAAs (Civil Aviation Authorities)
  - Collectively known as eARCs (electronic Authorized Release Certificates)
- Schemas conform to the same basic data requirements as paper forms

Importance to Blockchain

- The data on these forms provide the traceability that buyers – and regulators - need
- But blockchain needs this data in a **secure digital format**
- The schemas make this data available in an approved electronic format
- **Regulatory approval** allows us to use the electronic format
- Supporting Ch 16 (and Spec 42) allows blockchain users to “hit the ground running”





## Spec 42 - Aviation Industry Standards for Digital Information and Security

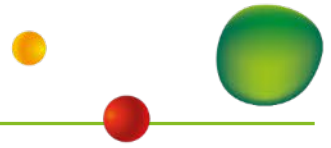
What is **Spec 42**?

- Spec 42 provides recommendations on standardized methods for digital security
- Spec 42 is approved for use to sign electronic Authorized Release Certificates
  - **FAA**
  - **EASA**
  - **TC**
  - **Other CAAs**

Importance to Blockchain

- Provides an approved means for the community to digitally secure any digital data
- Critically important to **eARCs**
- Also allows us to “hit the ground running”





## Spec 2000 Next Gen

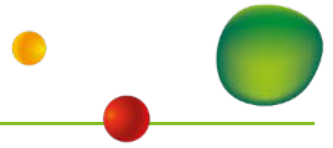
What is **Spec 2000 Next Gen**?

- A **new specification** to facilitate system-to-system electronic procurement of aircraft parts
- Enables and supports **modern** business practices and data exchange messages
- Documents the business requirements and **XML schemas** for
  - Message Receipt
  - RFQ Process
  - Purchase Order Submittals
  - Purchase Order Response/Status
  - Parts Shipment Messages.

Importance to Blockchain

- The concepts and data flows in Next Gen are aligned with the principles of blockchain and smart contracts
  - Permission to make changes
  - Synchronous processes
  - Complex purchase orders
- Blockchain and smart contracts need **digital data – not paper**
  - Next Gen will encourage digital adoption





What is Ch 3?

- This chapter defines the automated methods for spare parts procurement
  - Order placement
  - Order exception routines (supplier generated)
  - Order status inquiry and response
  - Shipping notices

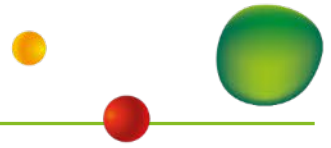
Importance to Blockchain

- Although these are extremely simplified messages, they are widely used today

Continues the theme of “**hit the ground running**”

- Provide the basic inputs for SLA management
- Smart contracts can enhance and further define the processes





What is **Ch 7**?

- This chapter defines the automated methods for Repair Order Administration
  - Order placement
  - Order exception routines (supplier generated)
  - Order status inquiry and response
  - Shipping notices

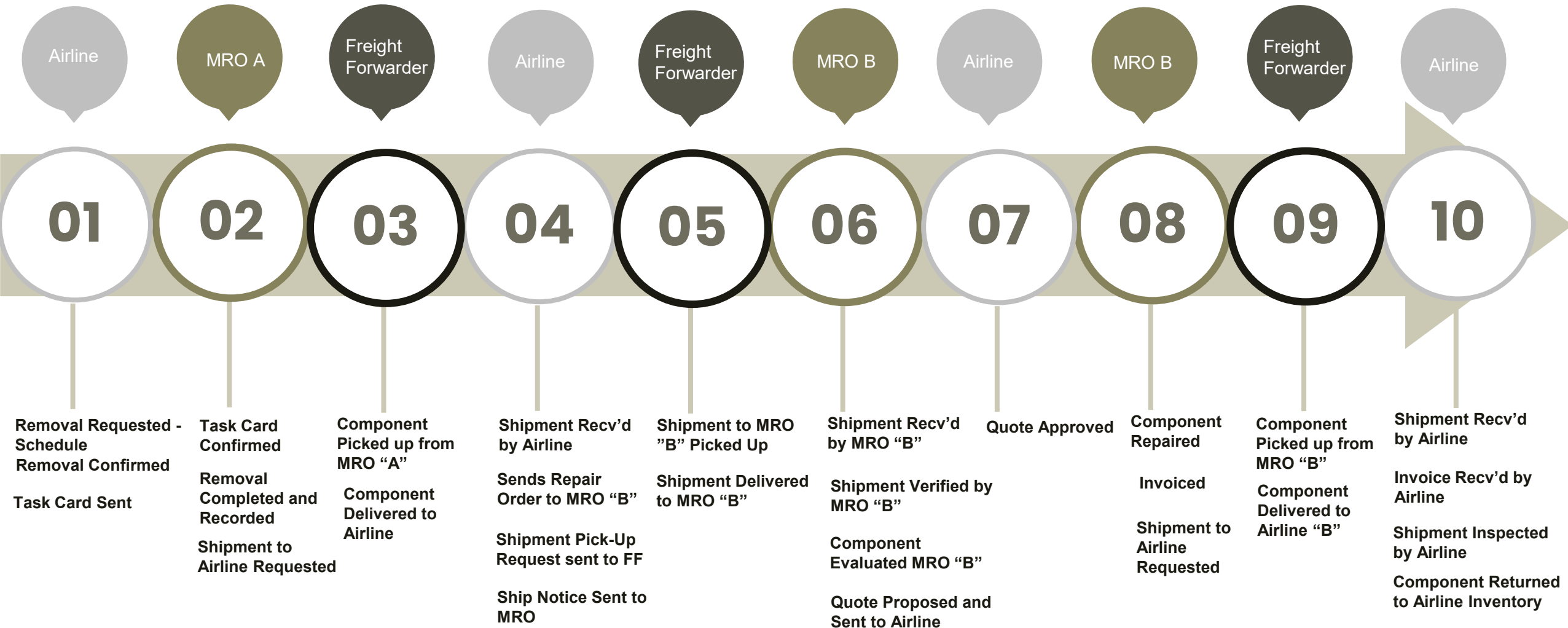
Importance to Blockchain

- Our members want to **automate their repair order processes**
- They made it clear they want Spec 2000 message schemas for this
- But, Chapter 7 is a legacy standard, built for Type B
- A working group is actively building new schemas that are very similar in many ways to the very modern Spec 2000 Next Gen
- In other words, not just an XML version of the old Type B formats



# Removal, Repair and Return to Stock

## Establishing the digital thread for Track & Trace





# Removal, Repair and Return to Stock

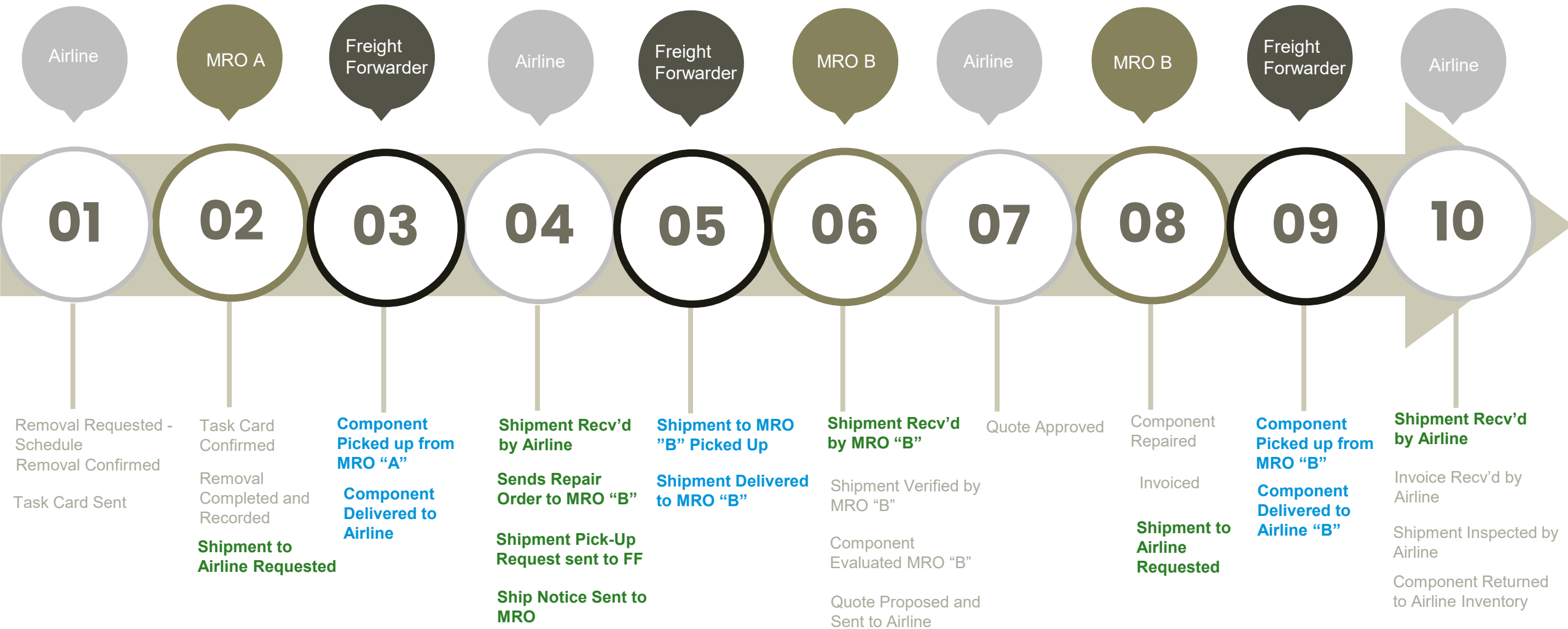
## Trading partner interactions



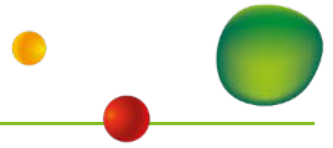


# Removal, Repair and Return to Stock

## Integrating the Freight Forwarder into the Digital Thread







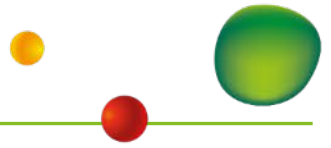
### What is **Ch 18**?

- Specifies an industry standard for **electronic work package data exchange** between computing systems
- Defines the composition of Extensible Markup Language (XML) instance documents exchanged among systems that process or store maintenance planning and execution data
- Covers work requested and work completed
- Future iteration will support task card exchange

### Importance to Blockchain

- Chapter 18 describes work package data in the digital format **needed to enable track & trace**
- Allows an MRO to **ingest work** more quickly and accurately
- Allows an operator/owner to **electronically audit** work upon completion – even before the material is on dock!





## Spec 2500 – Aircraft Transfer Records (but not just aircraft – parts, too)

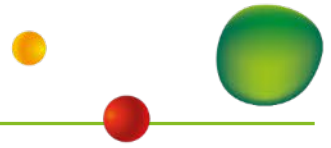
### What is **Spec 2500**?

- Assists in standardizing the process by which owners, operators, lessors and lessees **exchange operational and maintenance data** during transition of assets
- Spec 2500 seeks to address and mitigate the high costs, complexity and risk normally associated with **asset transfers**

### Importance to Blockchain

- SITA MRO Blockchain seeks to speed the asset transfer process through automation
  - This is one of the key objectives of the community
- Spec 2500 provides an **agreed upon industry standard** data format to support automation





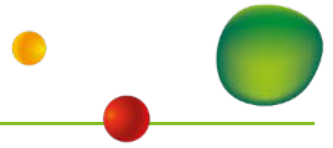
### What is **Chapter 2**?

- The Procurement Planning chapter identifies the automated methods for the exchange of data related to sourcing of spare parts for purchase including
  - Online messaging (e.g. RFQ)
  - File transfer (i.e. eCatalogues)

### Importance to Blockchain

- **RFQs and eCatalogues** are often the “source documents” for price details that go into a purchase order
- Spec 2000 RFQ activities will be recorded and tracked for consistency across the transaction lifecycle
  - Source to Invoice





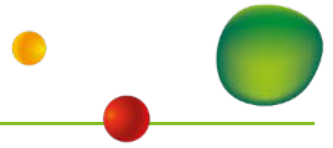
What is **Ch 4**?

- The **invoicing process** defines the automated method for the billing of purchase orders. This chapter establishes standards designed to expedite and simplify the transmission of invoices.

Importance to Blockchain

- This closes the loop on a purchase or repair transaction
  - Until we link payments
- Smart contracts can **match the invoice details to the order details** (and the order details to the RFQ details)





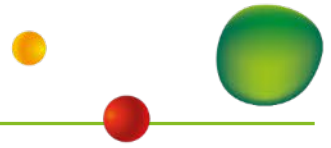
What is **Ch 14**?

- Chapter 14 describes the transactions necessary to support **electronic warranty claims**.

Importance to Blockchain

- Smart contracts will have the ability to manage warranty claims
- This is a “roadmap” item, but we can say right now that Spec 2000 Chapter 14 will **inform our development work**





## LLP History (Sheet) Schema – Future eBusiness Schema

### What is an **LLP History Sheet**?

- Defined by IATA
- Tracks the back-to-birth history of Life Limited Parts
- Data entry is triggered by
  - Production
  - Installation
  - Removal
  - Change of Operator
  - Change in Operational Parameters
- Transforming the spreadsheet into a standardized electronic form will be led by **A4A/ATA e-business group** - *Guidance Material and Best Practices for Life-Limited Parts (LLPs) Traceability 5.3.3.3*

### Importance to Blockchain

- LLP history sheets play an important role in on-going asset monitoring by lessors
- LLP history sheets are carefully scrutinized at time of lease return or other asset transfer
- An LLP history schema would facilitate **automatic LLP status verification** by the smart contract



## Conclusion





# Three takeaways...



## And a call to action

1. The industry needs and uses standards and seeks to **avoid proprietary schemas**
2. **ATA eBusiness Program** is the umbrella organization that manages development and publication of these standards
3. SITA developed its **MRO Blockchain framework** following ATA standards

**Contact me** to learn more about how standards are implemented by the MRO Blockchain to help the industry address the pains of the aircraft lifecycle



Q&A





# Removal, Repair and Return to Stock

## The complexity of a repair event

