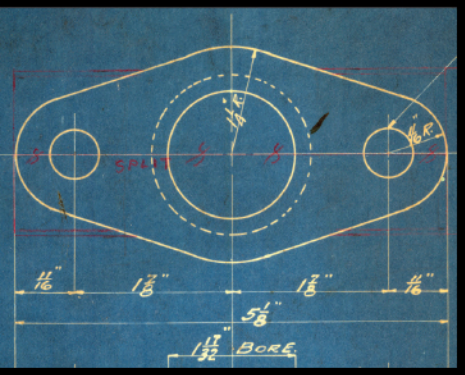
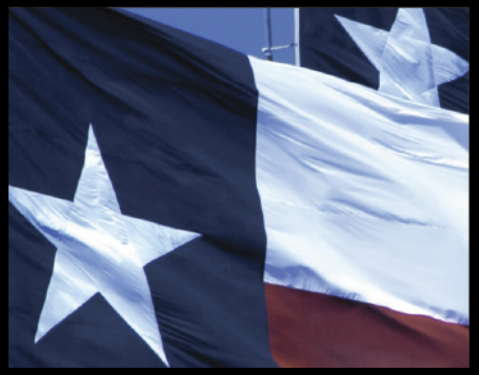
The right solutions, **right now.**™

jana





TECHNICAL DOCUMENTATION DEVELOPED, MANAGED AND DELIVERED.

Spec 2500 & Blockchain

May 22, 2019 · ATA e-Business Forum · Henderson, NV

Outline

- Who is JANA
- Specific challenges of Aircraft Records
- What does Spec 2500 solve? What's missing?
- Historical Context
- Business needs for the transfer for Aircraft Records
- How does Blockchain address the business needs?
  - Is Blockchain a viable solution?
- Solutions in development
- Advantages and hindrances
- Summary
- Resources

Who is JANA

Don Bridges

- Manages JANA's Consulting business
- In the XML industry for 20 years

JANA, Inc.

- Privately held company founded in 1973
- Technical Writing and XML Consulting
  - Over 130 technical writers & graphic illustrators

Aircraft Records Transfer

- Critical information passes from lessor to operator:
  - Configuration
  - Usage and maintenance information
- Exacerbated by various tracking systems:
  - Paper (or PDF)
  - Excel™
  - Maintenance tracking software
- No historical ‘industry’ agreement on:
  - what to track (content and format)
  - how to transmit the data

Spec 2500 Solves Half of the Puzzle

- Definition of what data should be transferred
- Definition of what format the data should be in (XML)

- What's missing: how to transfer and access the data

Options for Transfer of Aircraft Records

Period	Format	Transmittal
Historical (pre 90s)	Paper	Physical delivery of copy
Historical (pre 00s)	PDF (from Paper)	E-Mail or other eTransfer
Current	Various[1]	E-Mail or other eTransfer
Spec 2500	XML	Undefined

[1]based on Maintenance Tracking software utilized

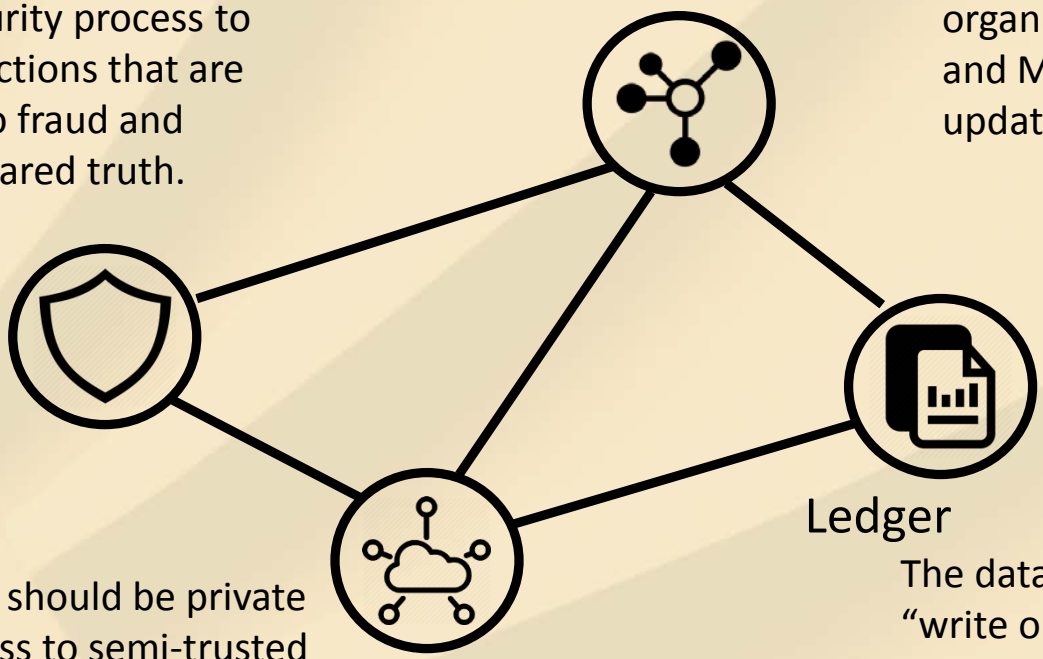
Business Needs for Data Transfer

Secure

Use high security process to create transactions that are impervious to fraud and establish a shared truth.

Shared

Multiple authorized organizations (e.g., Operator and MROs) should be able to update the records.



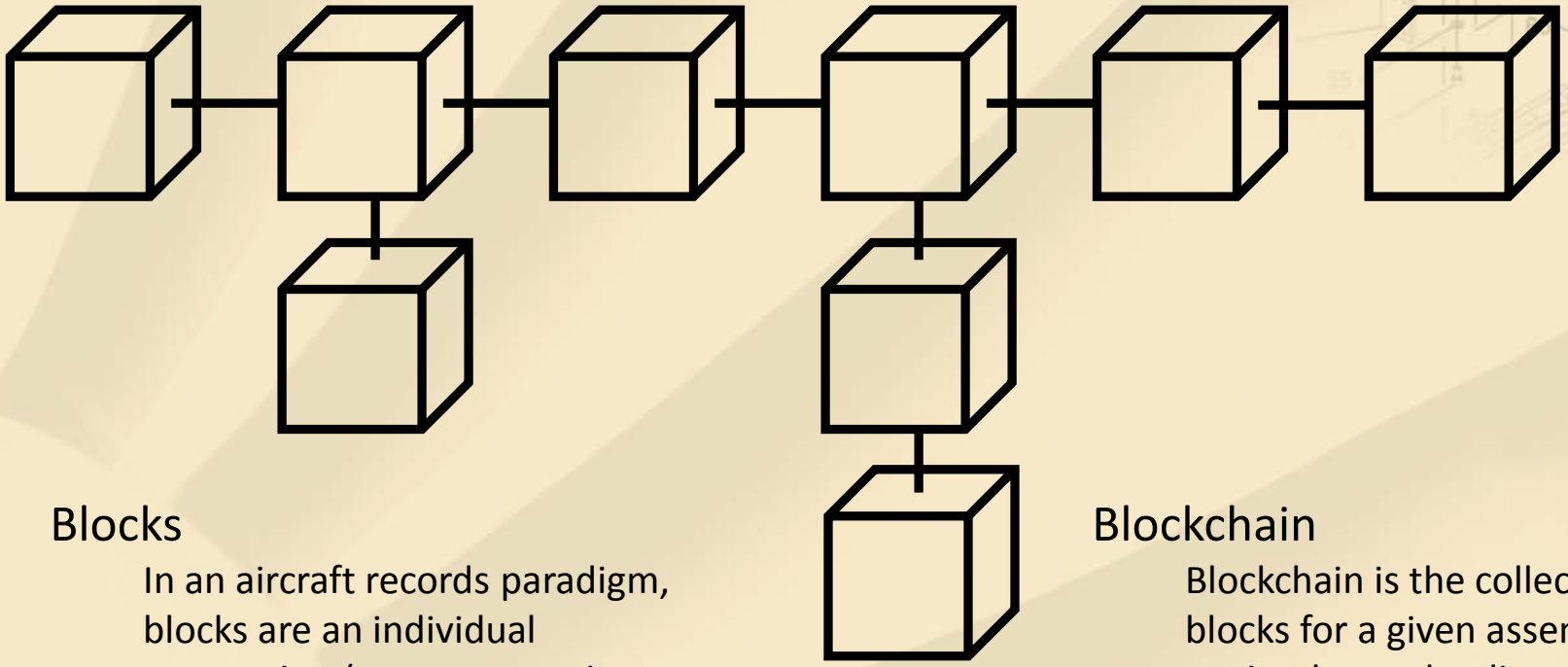
Authenticated

The network should be private (limited access to semi-trusted partners) and have authentication capability.

Ledger

The database should have “write once” records so that each event that is entered is immutable.

Fundamentals | Blockchain



Blocks

In an aircraft records paradigm, blocks are an individual transaction (e.g., an entry in a maintenance or flight log) documenting the status of a part or assembly.

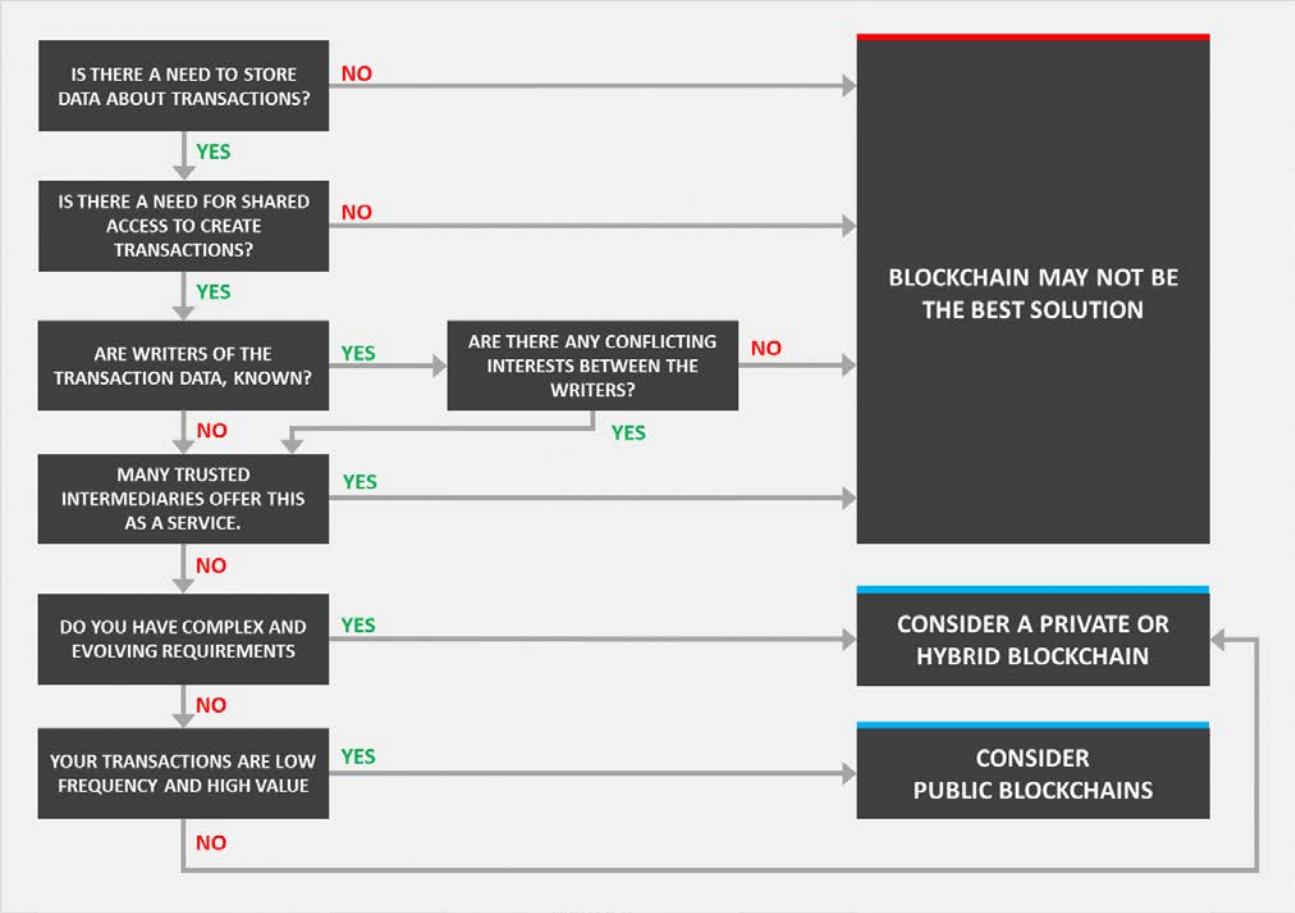
Blockchain

Blockchain is the collection of blocks for a given assembly – as simple as a landing gear assembly or as complex as an aircraft.

Blockchain for A/C Transfer Records

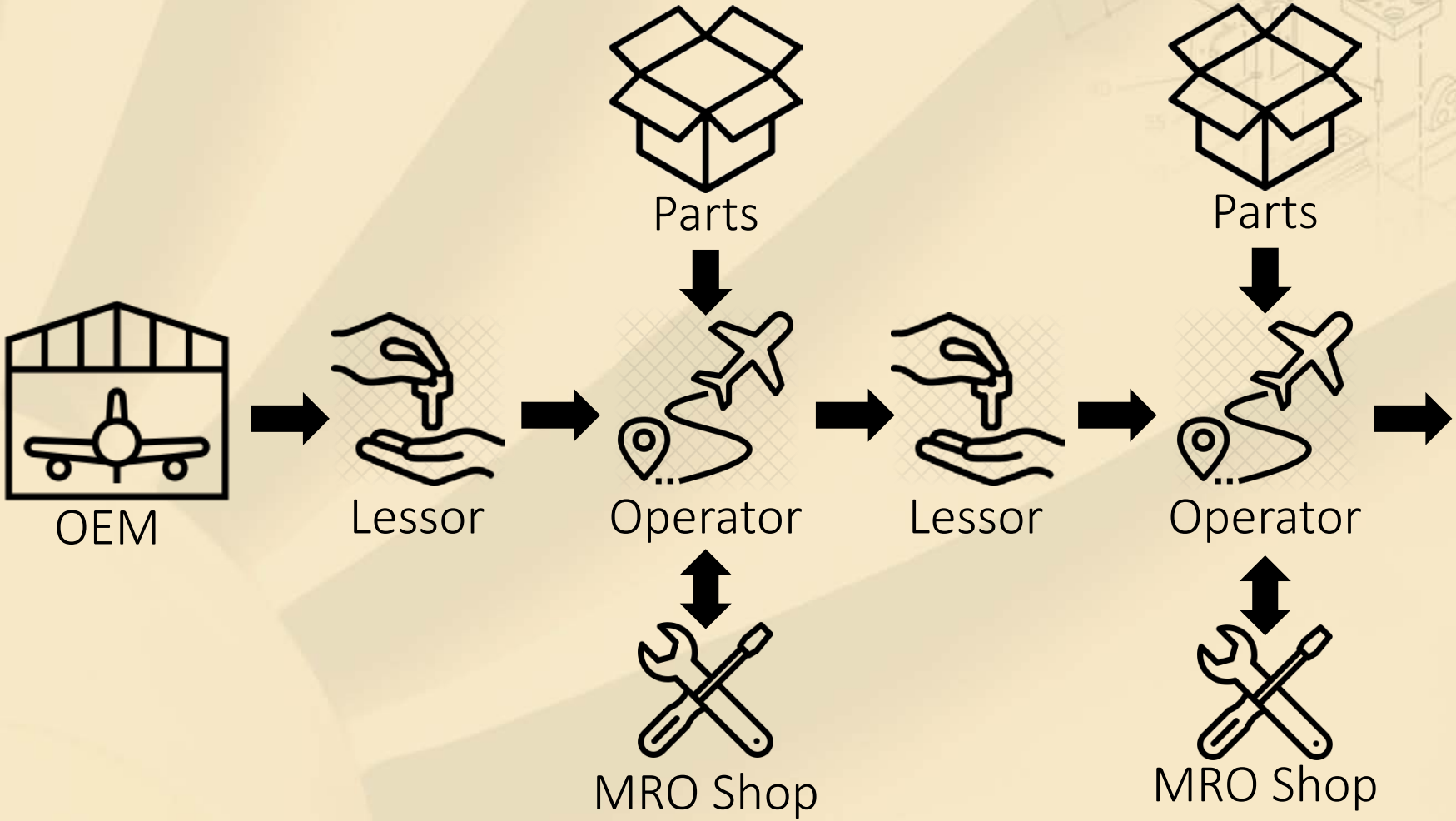
- Semi-trusted partners create blocks:
  - Operators with operational data
  - Operators with maintenance data
  - MRO facilities with maintenance data
- Blocks are:
  - “Write-once” (uneditable once entered)
  - Secure
  - Non-proprietary

Does Blockchain Fit?

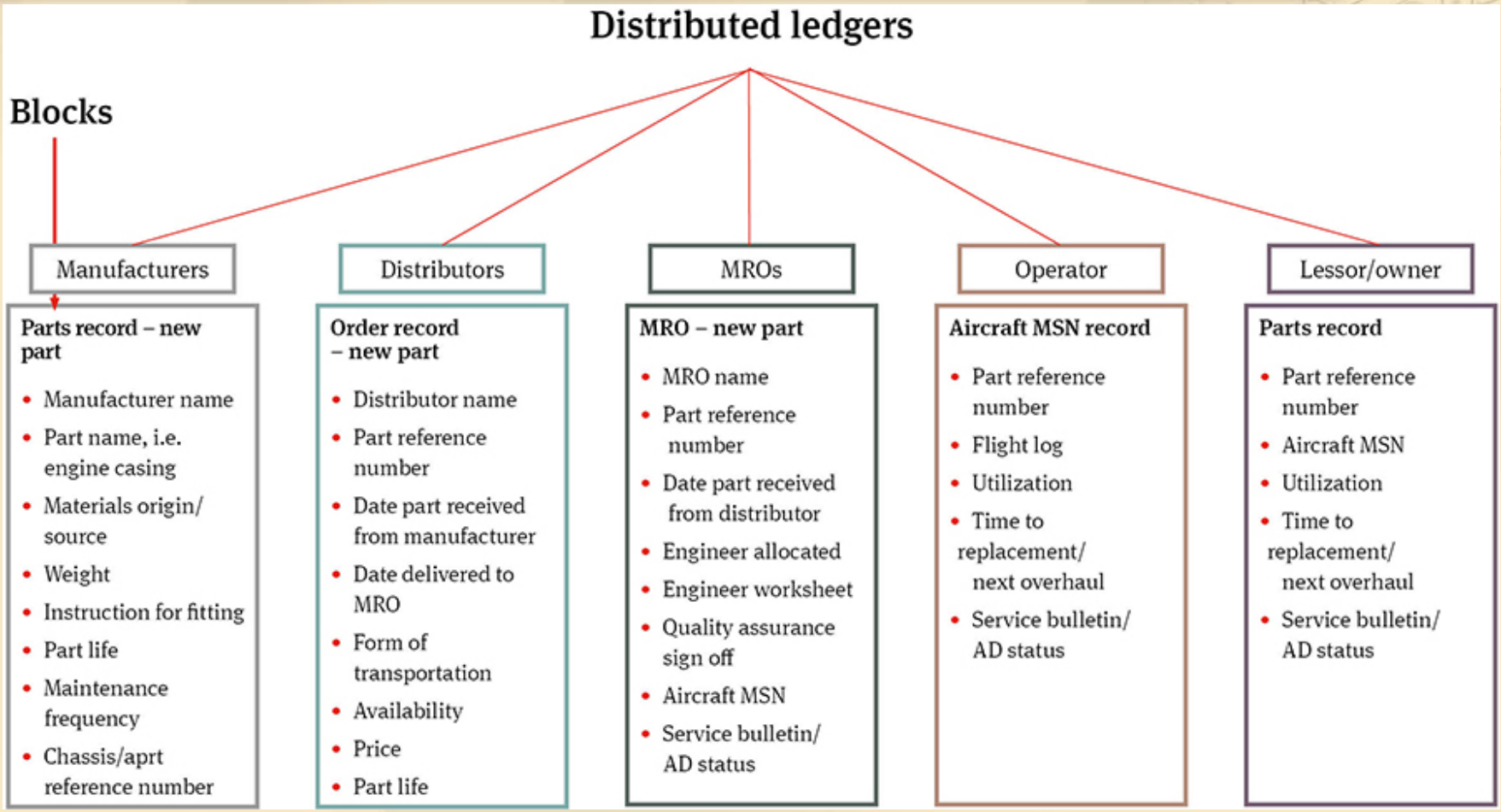


Source: "BLOCKCHAIN IN AVIATION" IATA Whitepaper, Oct 2018

(typical) Aircraft Lifecycle

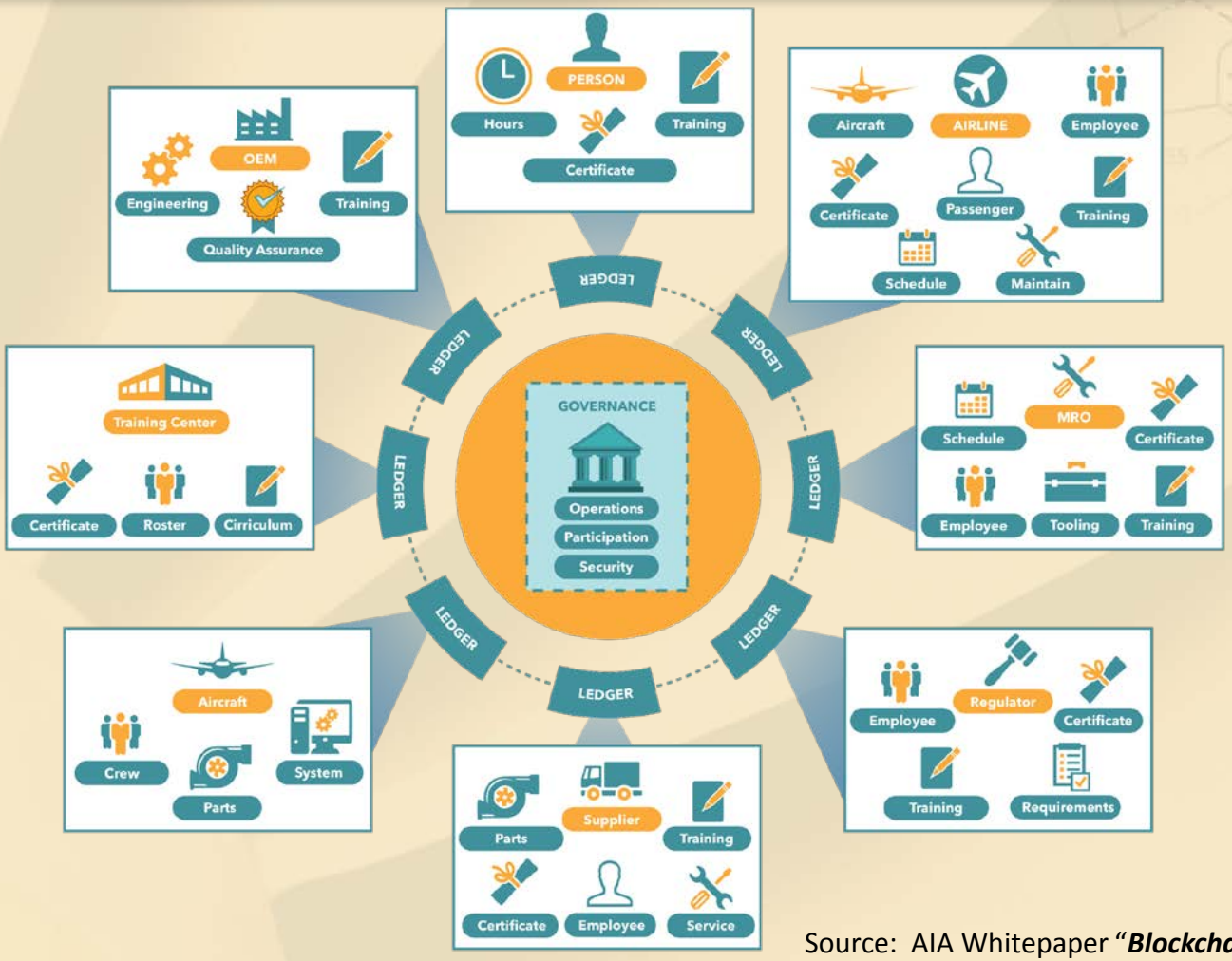


Potential Block Contributors



Source: https://www.nortonrosefulbright.com/en/knowledge/publications/53482ee6/blockchains-and-distributed-ledger-for-aviation

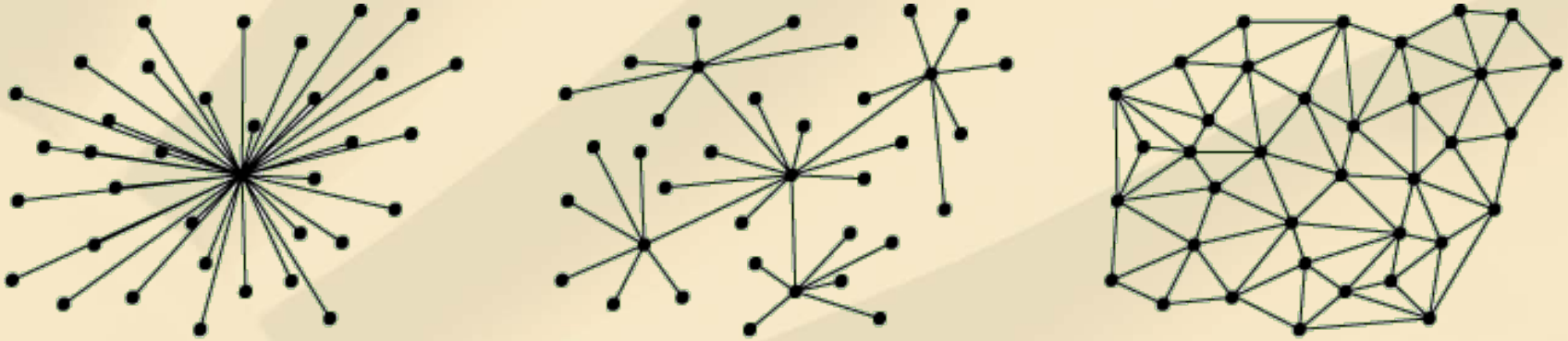
Blockchain Ecosystem



Source: AIA Whitepaper "***Blockchain in Aerospace & Defense***"

Blockchain Networks

- Distributed networks with multiple nodes provides the most secure data
  - Each member verifies the authenticity



“Parts” Blockchain Solutions In-Dev

Accenture & Thales

https://bctechreport.com/accenture-partners-with-thales-to-launch-blockchain-for-the-aerospace-industry/

Deloitte Digital

https://www2.deloitte.com/us/en/pages/energy-and-resources/articles/blockchain-in-aerospace-and-defense.html

FlyDocs & Willis Lease

https://www.mro-network.com/big-data/flydocs-willis-lease-developing-independent-blockchain-solution

GE Aviation & Microsoft

https://www.coindesk.com/codename-truengine-ge-aviation-and-microsoft-reveal-aircraft-parts-certification-blockchain

Hyperledger & Honeywell

https://www.ledgerinsights.com/honeywell-blockchain-aircraft-spare-parts/

IBM

https://www.ibm.com/blogs/industries/irregular-operations-are-the-new-norm-heres-what-airlines-are-doing-about-it/

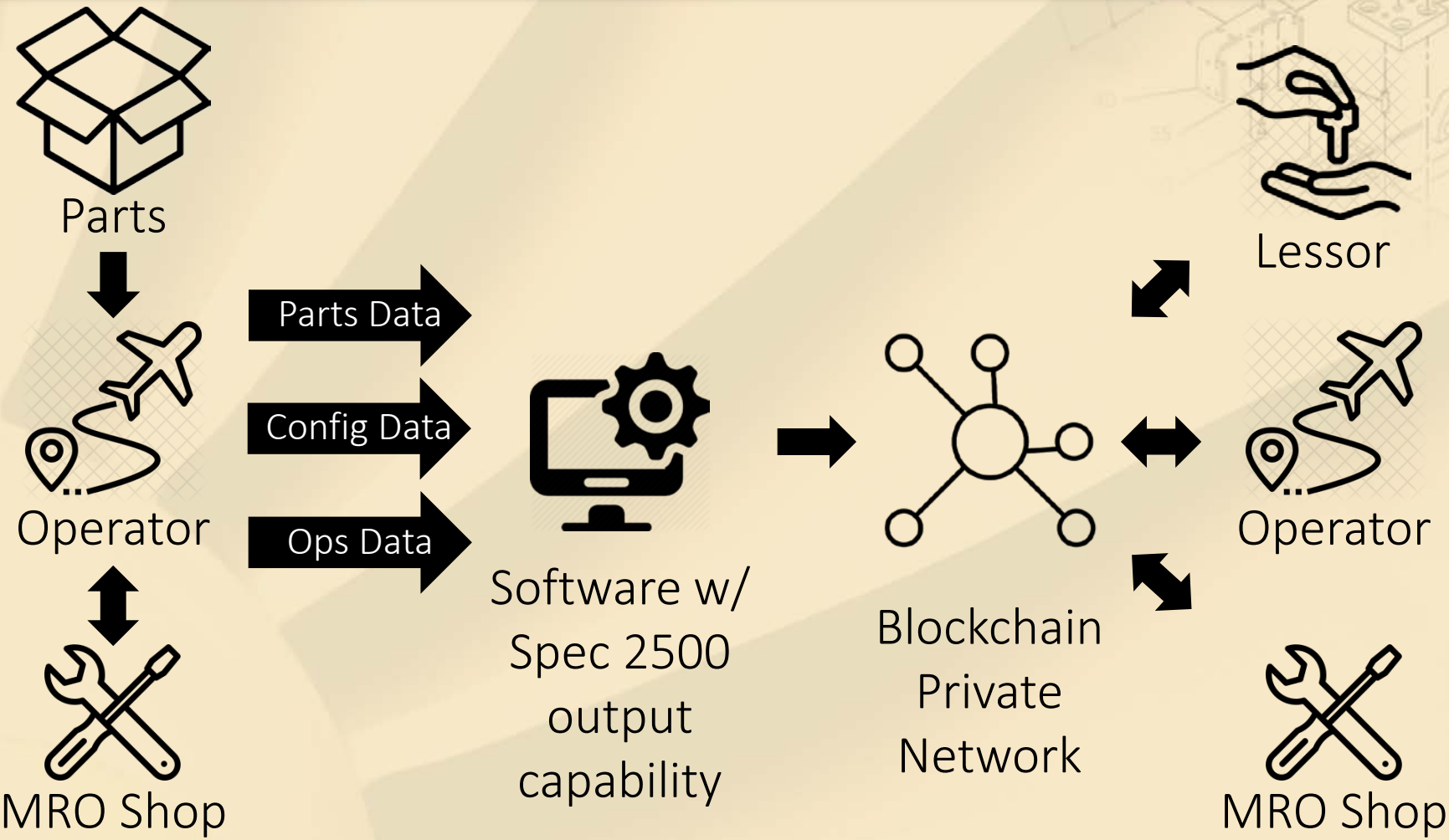
Lufthansa Industry Solutions

https://www.lufthansa-industry-solutions.com/de-en/solutions-products/aviation/

Parts Pedigree

https://blog.satair.com/applications-of-blockchain-in-aviation

How it Could all Work Together



Advantages of Blockchain Records

- Data more searchable
- Data more accessible to partners
- Reduced risk of fraud
- Faster records review
- Automated data entry

Hindrances to Blockchain Adoption

- Paper
- Agreement on:
  - what data should be captured
  - how data should be captured

  } Spec 2500
- Reluctance of ecosystem players to adopt Blockchain
- Regulatory buy-in
- Legal uncertainty

Summary

- Spec 2500 defines data, data model and format for aircraft transfer records.
- Blockchain provides **a possible option** for access to and storage of this data. Blockchain meets business needs and offers advantages but faces headwinds.
- Many solutions are in development – **all** announced in the last 12 months. All are early in development..
- Industry will define the winners.

Resources – Blockchain & Aerospace

Blockchain in Aerospace & Defense (AIA Whitepaper)

https://www.aia-aerospace.org/report/blockchain-in-aerospace/aia-blockchain-whitepaper/

“Blockchain in Aviation” (IATA Whitepaper)

https://www.iata.org/publications/Documents/Blockchain-in-aviation-white-paper.pdf

“Secure Aircraft Maintenance Records Using Blockchain”

https://commons.erau.edu/cgi/viewcontent.cgi?article=1378&context=edt

“All aboard the Blockchain train” (AIAA ***Aerospace America*** article)

https://aerospaceamerica.aiaa.org/departments/all-aboard-the-Blockchain-train/

“Blockchain for Dummies” (IBM Edition – free download)

https://bertrandszoghy.files.wordpress.com/2017/05/ibm-Blockchain-for-dummies.pdf

Questions

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