

# AGENDA

- 1. Parker Aerospace**
- 2. Why Share Parts Data?**
- 3. What we're doing**

# PARKER AEROSPACE + MEGGITT



**\$5.2 billion\***  
annual sales



**12 divisions**



**Five**  
joint ventures



**12,200+**  
employees





# SERVING THE WORLD'S AEROSPACE LEADERS



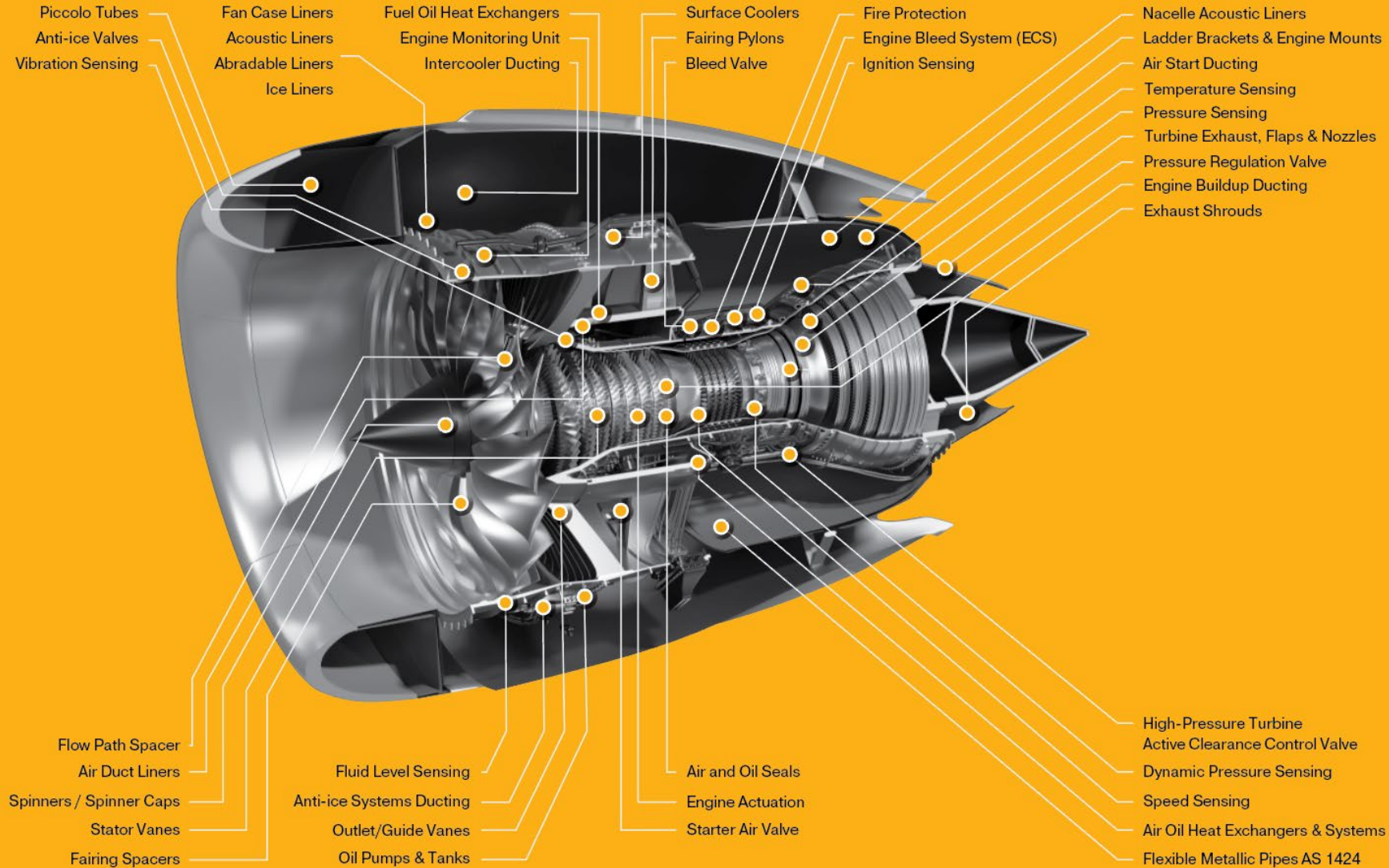
# NOSE TO TAIL

An expanded portfolio of products and services

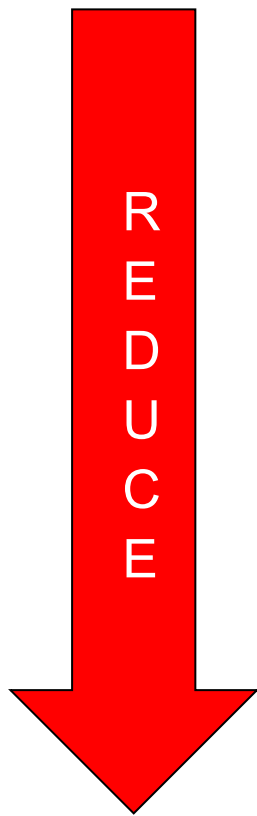


# COWL TO CORE

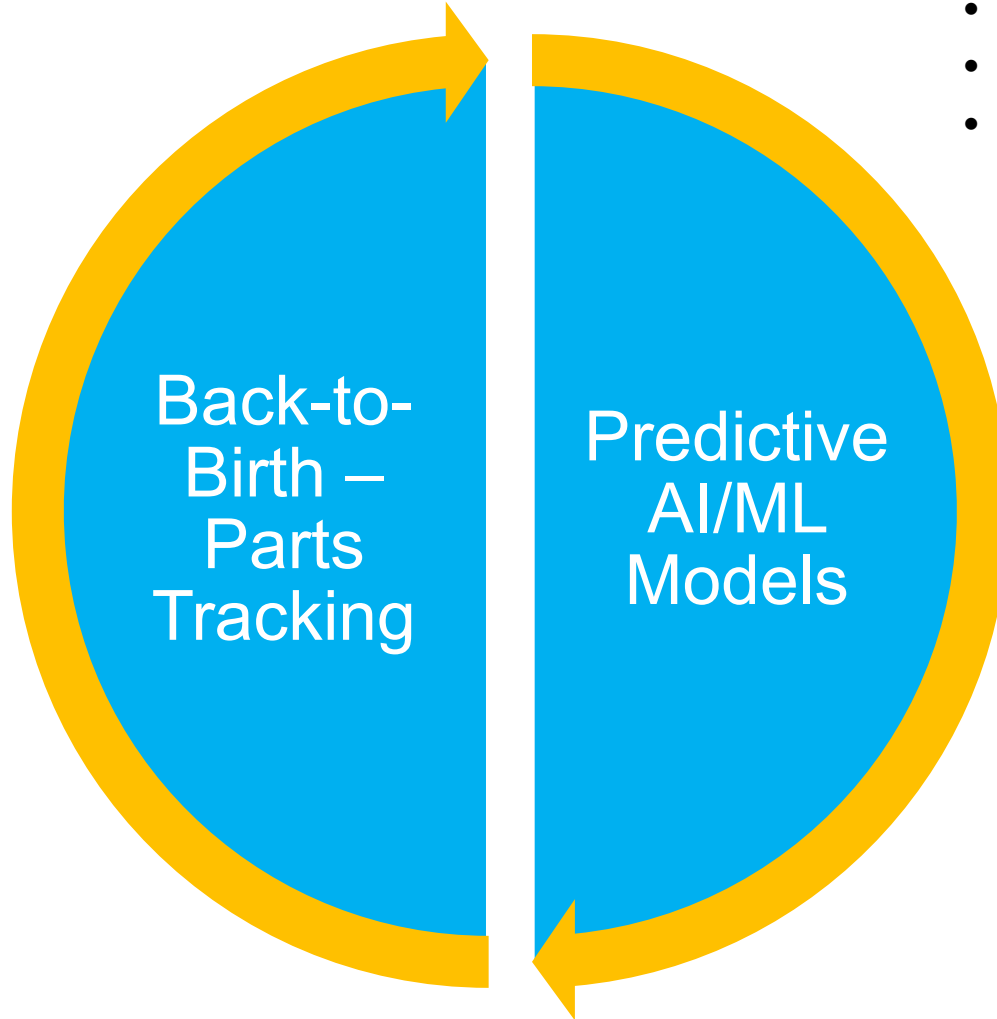
Innovative solutions powering the future of flight



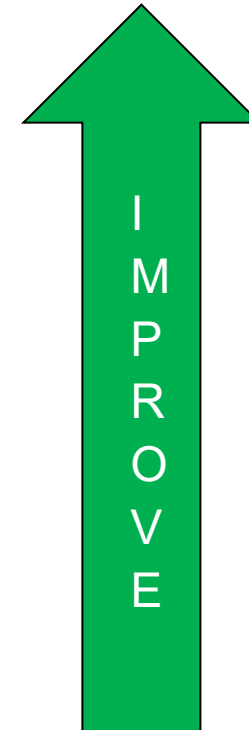
# Our Digital Product Strategy



- NFF
- TAT
- AOG



- Reliability
- Performance
- Customer Experience



# Why Share Parts Data?

# F.A.A. Investigating How Questionable Titanium Got Into Boeing and Airbus Jets

The material, which was purchased from a little-known Chinese company, was sold with falsified documents and used in parts that went into jets from both manufacturers.



By **Mark Walker**  
Reporting from Washington

Share full article 951

June 14, 2024



A Boeing manufacturing facility. The company has been under intense scrutiny after a series of recent mishaps and safety issues. Logan Cyrus/Agence France-Presse — Getty Images

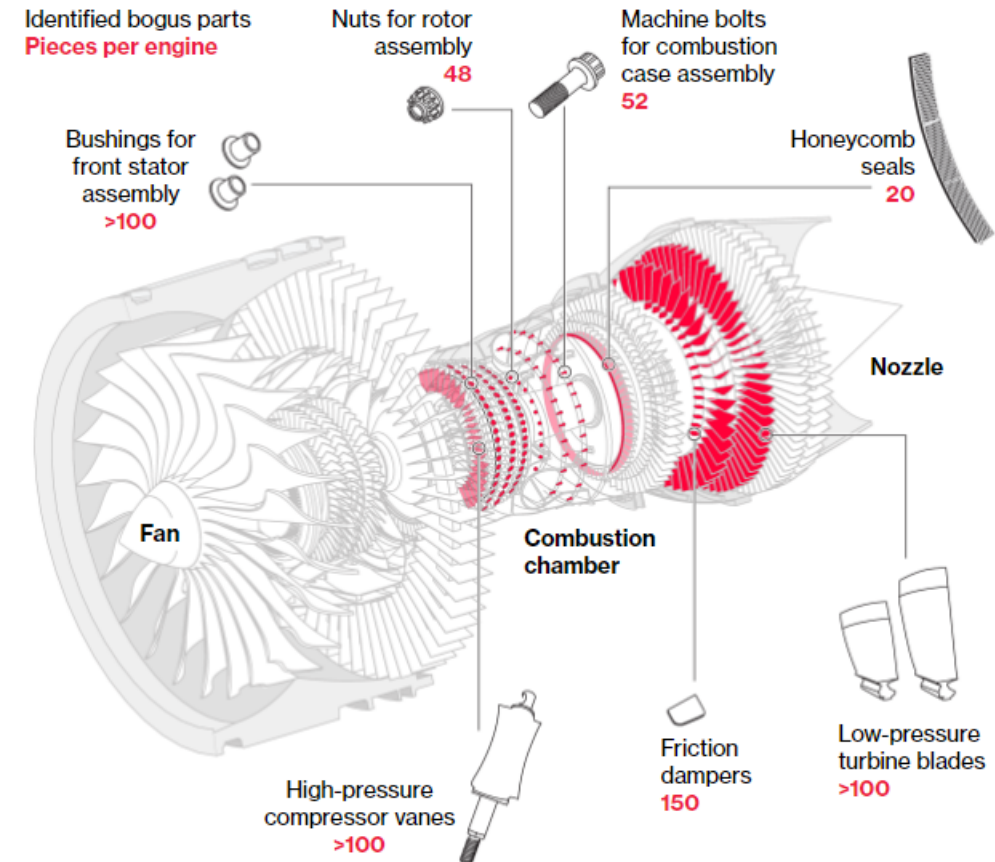
# FAA issues warning over AOG Technics fake parts as scandal grows

Oct. 12, 2023

## Bogus Parts in the World's Most Widely Flown Engine

Exposed to extreme temperatures, some parts are spinning at more than 10,000 rpm

Identified bogus parts  
**Pieces per engine**



# Aviation Supply Chain Integrity Coalition

FINAL REPORT AND RECOMMENDATIONS  
TO PREVENT UNAPPROVED PARTS IN THE AVIATION SUPPLY CHAIN

**AIRBUS**

American Airlines 

 **BOEING**

 **DELTA**

 GE Aerospace

 **SAFRAN**

  
**StandardAero**

**UNITED** 

# RECOMMENDED ACTIONS

## VENDOR ACCREDITATION

### SHORT TERM

Promote Industry Use of Suppliers that Meet FAA and EASA Standards

Establish Feedback Loop Between Parts Installers and Accreditors

### MEDIUM TERM

Establish Industry Oversight Body of Accreditation Organizations

### LONG TERM

Establish Database of Accredited Vendors to Verify Identities and Quality Management Standards

## DOCUMENT TRACEABILITY & VERIFICATION

### SHORT TERM

Expand the Use of Digital Authorized Release Certificates (ARCs) and Increase the Use of Digital Authentication Tools

### MEDIUM TERM

Establish Industry Standard Documentation Requirements to Ensure Consistency Across the Industry

Digitize Existing and Past Parts-Related Documents

Develop and Adopt Industry-wide Use of Software Database to Verify Key Authorized Release Certificate (ARC) Fields

### LONG TERM

Establish Voluntary Industry Database of Back-to-Birth Parts Documentation

## NON-SERIALIZED PARTS TRACEABILITY

### SHORT TERM

Further Strengthen Training Materials, Programs, and Best Practices

Verification and Auditing of Scrap Material and Recycling Vendors

### MEDIUM TERM

Improve Real-Time Data Sharing to Identify Unapproved Parts

### LONG TERM

Development of New Technological Solutions to Improve Parts Traceability



# EASA

European Union Aviation Safety Agency

## **VIRTUA — Blockchain for airworthiness in aviation – Developing Solutions and Strategies for Integrating Blockchain in Airworthiness Management**

The detailed analysis of these blockchain use cases can be consulted in deliverable D3.1 (Changes required to regulatory materials and implementation roadmap)

<https://www.easa.europa.eu/en/research-projects/virtua-digital-transformation-case-studies-aviation-safety-standards>

34

In-depth interviews

WAYS OF WORKING

TECHNOLOGY ADOPTION

BLOCKCHAIN

SECURITY

REGULATION

CHANGE

450

Workshop participants

CHALLENGES

OPPORTUNITIES

BLOCKCHAIN

INSIGHTS

# Listening to Industry Expertise



## Gathering Insights Through Interviews and Workshops

The VIRTUA project has been committed to gathering diverse perspectives from across the aviation ecosystem. We believe that successful implementation of blockchain requires a collaborative approach, drawing on the knowledge and experience of those who work with aircraft parts and airworthiness management every day.

### MAIN STAKEHOLDERS

LESSORS

AUTHORITIES

MRO

OPERATORS

OEMs

# Nine Key Use Cases for Enhanced Airworthiness Management

Use case	Description
Aircraft parts back-to-birth traceability and airworthiness management	<ul style="list-style-type: none"> <li>Ability to <b>track-and-trace the entire lifecycle of aircraft parts</b> from manufacture to disposal.</li> </ul>
Real-time pre-screening and smart contracts for audits	<ul style="list-style-type: none"> <li><b>Real time pre-screening</b> by cross-checking the authorization of an <b>EASA Form 1 signatory person</b> with the information available in the EASA Form 1 issuing organization database.</li> <li>Ability to automate data audits using smart contracts capacities of blockchain, ensuring EASA Form 1 status updates and compliance with regulatory standards.</li> </ul>
Maintenance and operational history for efficient life limit utilisation	<ul style="list-style-type: none"> <li>Ability to <b>monitor LLPs configuration, operational and maintenance history</b>, thanks to better cross-stakeholders' data transmission. This represents a valuable service offering significant benefits for airlines.</li> </ul>
Registration systems	<ul style="list-style-type: none"> <li>Ability to track a variety of data such as pilot and mechanic's license's, experience or status of medical reports and share it across stakeholders.</li> </ul>
Warranty adjudication	<ul style="list-style-type: none"> <li>Ability to <b>automate and validate warranty claims</b> automatically using smart contracts and oracles.</li> </ul>
Pre-screening for Suspected Unauthorised Parts (SUP) and facilitation of aircraft inspections	<ul style="list-style-type: none"> <li><b>Pre-screening of Suspected Unauthorised Parts (SUP)</b> by cross-checking that the transacted part (as defined by P/N, S/N or other attributes of the respective part) is not under the incidence of an unapproved part notification issued by a Regulator and reflected in the corresponding regulatory database.</li> <li>Ability to combine physical and digital inspections to provide comprehensive oversight of an aircraft's condition, thanks to the facilitated audit trails generated by blockchain, could aid in the prevention of Suspected Unapproved Parts (SUP) cases, and ensuring up-to-date control status.</li> </ul>
Configuration control	<ul style="list-style-type: none"> <li>Blockchain can benefit configuration control by providing a transparent and immutable record of changes, configurations, and the current state of aircraft components. For example, it can help when a configuration-based action is released (AD, SB), the operators can assess instantly the fleet's compliance (the same would work for OEMs and Authorities doing impact assessment)</li> </ul>
Parts scraping	<ul style="list-style-type: none"> <li>Ability to monitor and share across stakeholders all part scraping data.</li> </ul>
Real time pre-screening of an EASA Form 1 and its issuing organisation	<ul style="list-style-type: none"> <li><b>Real time pre-screening</b> by cross-checking the identity of an <b>EASA Form 1 issuing organization</b> with the information available in Regulator's List of valid Part-145 organisations. The depth of this pre-screening could be extended to a full validity check of the issuers' credentials vs the EASA Form 1 actual use instance if real time access to the Part-145 Certificate with corresponding terms of approval (I.e. class/rating/limitations) would be achievable. A similar path could be applied for the use of the EASA Form 1 for production purposes (I.e. Part21 organizations).</li> </ul>

# 1

## Nine Key Use Cases for Enhanced Airworthiness Management

### Aircraft parts back-to-birth traceability and airworthiness management

#### Use case description

- Ability to track-and-trace the entire lifecycle of aircraft parts from manufacture to disposal.

#### Main driving considerations for blockchain use

##### **Authenticity, Immutability, and Integrity**

- Blockchain guarantees the authenticity, immutability, integrity, non-repudiation, and regulatory-required completeness of a part's documented status throughout its lifecycle.
- Only documents conforming to regulations enable block addition, ensuring these attributes are intrinsic to the blockchain construct.

##### **Regulatory and Commercial Information Hosting**

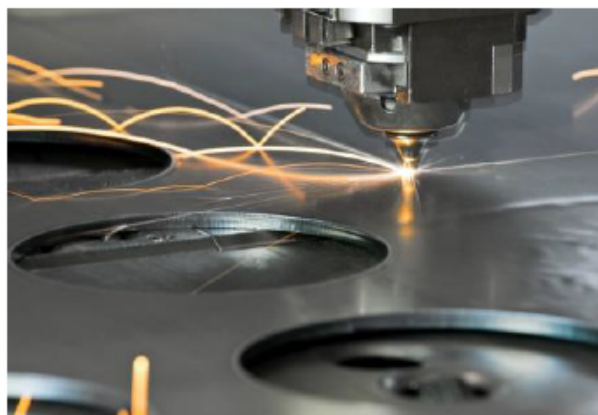
- The blockchain-documented lifecycle of the part can host information based on regulatory requirements and commercial expectations.
- Includes airworthiness-relevant physical events (e.g., production, installation, removal, repair, SB embodiment) and transactional events with commercial implications (e.g., selling, acquisition, relocated spare/inventory).

##### **Lifecycle Documentation**

- Blockchain documents the start and end of an aviation part's life beyond any reasonable doubt.
- Covers the part's entry into and exit from the aviation ecosystem, marking the birth and decommissioning/demise of the part.

##### **Pairing/Bridging Proof Storage**

- Potentially stores a "pairing/bridging proof" between the physical part and blockchain-hosted documents.
- Validates the "pairing" between the document and the part at each block addition.
- Feasible for uniquely serialized and accordingly marked parts, but challenging for others.



#### Benefits for stakeholders

##### **Regulators**

- Enhanced data integrity and security for trustworthy records.
- Facilitated regulatory compliance with transparent documentation.
- Simplified verification processes, reducing the risk of counterfeit parts.
- Facilitated audits and inspections with accessible and reliable records.

##### **OEMs, Operators, CAMOs, MROs, Lessors**

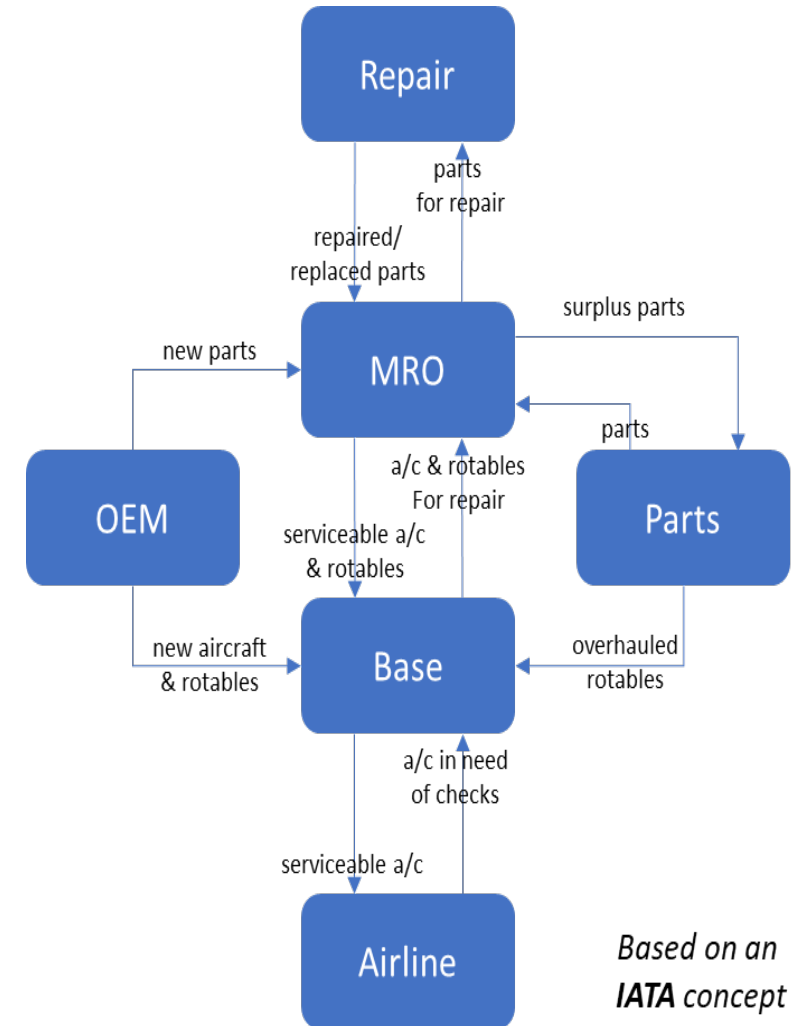
- Enhanced data integrity and security for reliable records.
- Facilitated regulatory compliance through transparent documentation.
- Improved lifecycle documentation, aiding in maintenance planning and lifecycle management.
- Streamlined verification processes, reducing counterfeit parts risk.
- Enhanced traceability for tracking performance and compliance.
- Facilitated audits and inspections with reliable records.
- Increased operational efficiency, reducing downtime and improving maintenance scheduling.
- Increased trust through transparent and reliable data sharing.

# Independent Data Consortium for Aviation (ICDA)

Currently working on three use cases:

- ✓ Parts tracking from birth to disposal
- ✓ Aircraft on Ground (AOG) servicing
- ✓ Diagnosing technical problems common to all operators using data analytics & AI.

[www.dataforaviation.org](http://www.dataforaviation.org)





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# B787 Parts Tack & Trace

# JULY 2024 – BEING IMPLEMENTED



**AFI KLM E&M and Parker Aerospace Group reach major milestone in deploying SkyThread's Blockchain-Based aircraft Parts Track and Trace platform for 787 fleet**

**Schiphol-East, July 25<sup>th</sup>, 2024** – Air France Industries KLM Engineering & Maintenance and Parker Aerospace Group (Parker) have achieved the first roll out of a revolutionary back to birth track and trace of aircraft parts, leveraging the groundbreaking SkyThread for Parts data sharing platform.



# Digital Thread Illustration

Examples of pain points/blind spots

Stakeholder



Kalamazoo, MI, USA

Schipol/Amsterdam, NL

Physical Part Life



Digital Thread



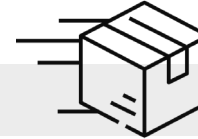
Birth PART



1



Request to source spare part



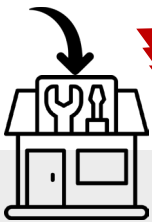
Fulfill order, ship PART



2



Receive PART at MRO



8



What is coming and when  
Reason(s) for removal  
Hours and Cycles?



Search part history & who "touched" it



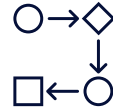
9



Repair & ship PART

# PARKER AND KLM E&M **JOINT** USE CASE DEPLOYMENT

## CAPTURING VALUE IN OUR SUPPLY CHAIN



### Pool Operations

- Exchange part information in digital, **secure way** vs paper “with the part” tribal knowledge
- Information available **before** the part arrives at facility

- Create **digital** secure **history** of parts with complete lifecycle traceability
- **Reduce** administration **time** and quarantine checks for out/inbound components and core exchanges



### Part Authentication

- Visibility of birth certificate for all manufactured parts, allowing **easy and quick** control upon purchasing used parts

- **Reducing risk** of counterfeit documentation/parts entering the flow
- **Warranty** adjudication and processing

# HARVESTING STRANDED VALUE FROM DATA **TOGETHER**

AIRLINES, OEMs AND MROs ARE JOINING.

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## Digital Thread

**Single-source-of-truth:**  
data comes from **source**  
**systems**



## Reliability

**On-demand data** for parts  
reliability and performance  
assessment



## Demand Planning

Improve supply chain  
performance, **reduce**  
**TAT**

