



# Digitalization of LEAP fuel nozzles

**Enabling OEM-operator collaboration, transforming  
maintenance from reactive to proactive**

Jeff N Smith – Head of Digital Product Programs

Parker Aerospace



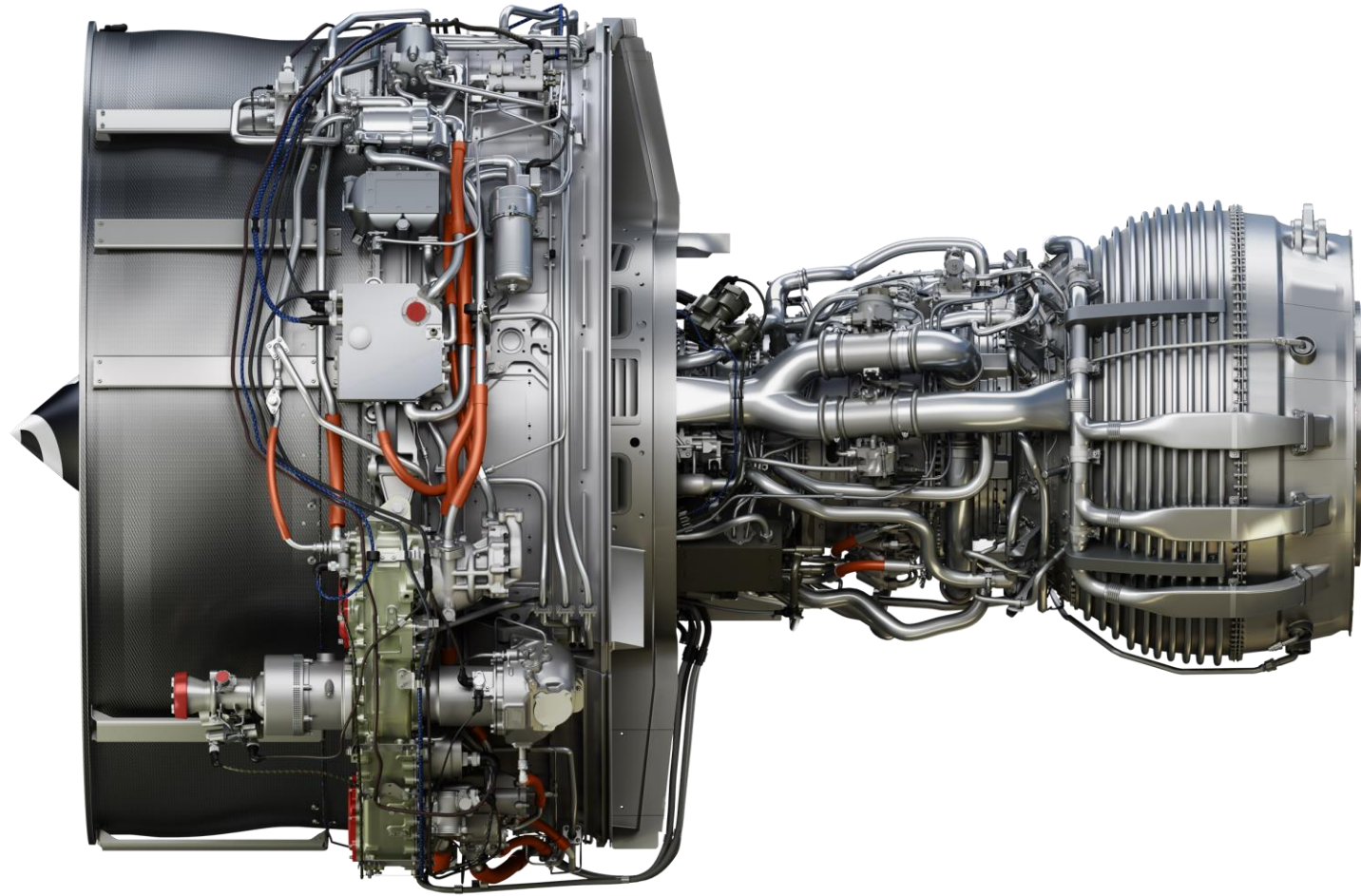
## What we make



# What we make



# What we make





Hubert  
Inventor for  
owner of  
Cavender Roof

Days 1000  
Cavender  
2010  
10/10

Thorchtthess Instruktion  
to the  
to the  
to the



10/10  
Cavender  
2010  
10/10

10/10  
Cavender  
2010  
10/10

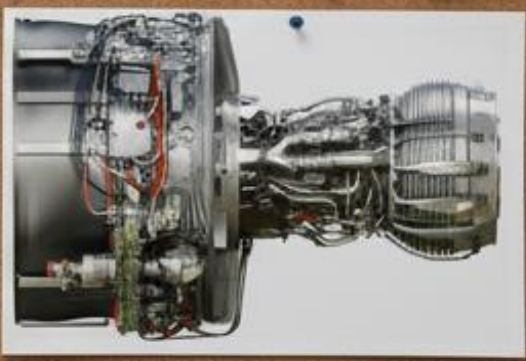
10/10  
Cavender  
2010  
10/10

10/10  
Cavender  
2010  
10/10

10/10  
Cavender  
2010  
10/10



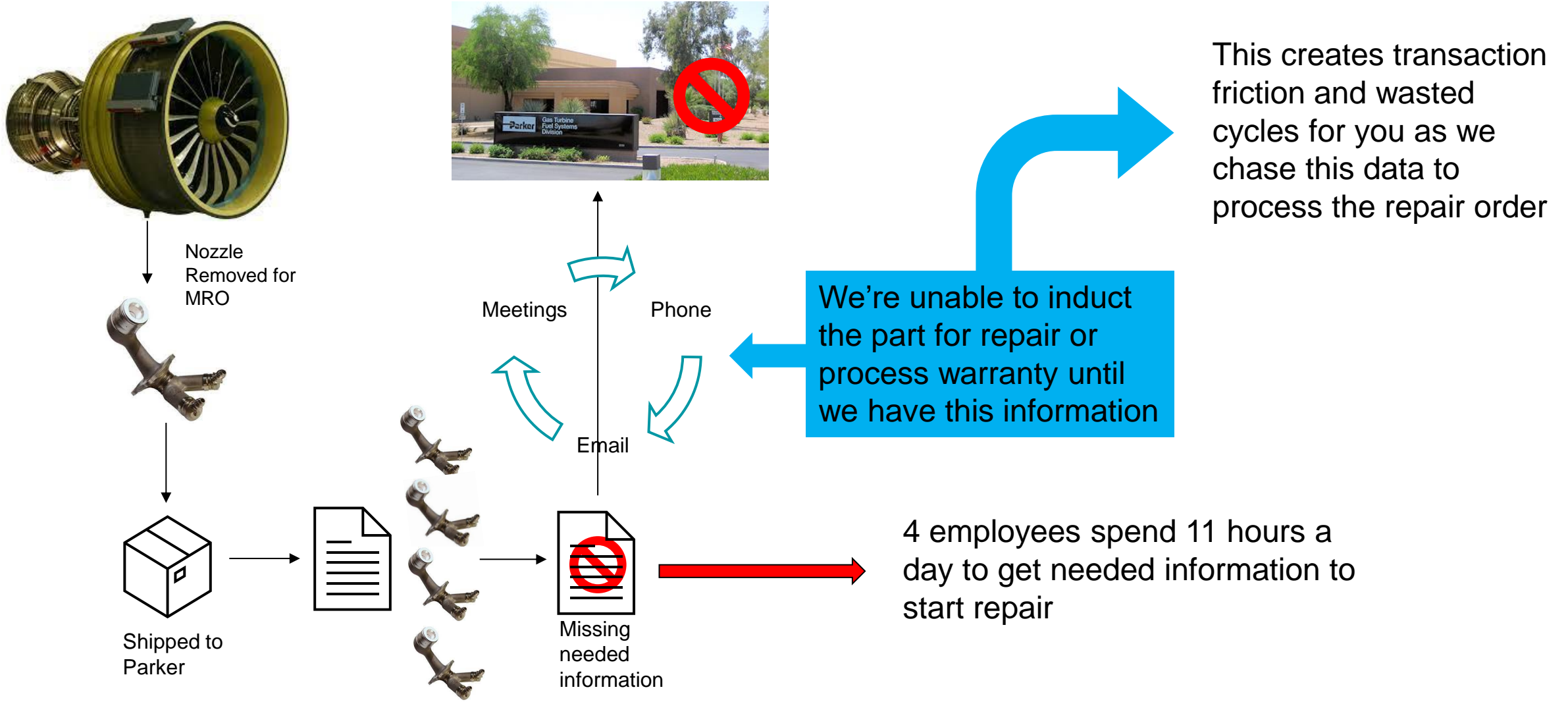
10/10  
Cavender  
2010  
10/10



# Problems to Solve for.....

1. Reliability
2. MRO Induction
3. Spares Forecasting
4. Customer Experience

# Current Process Flow

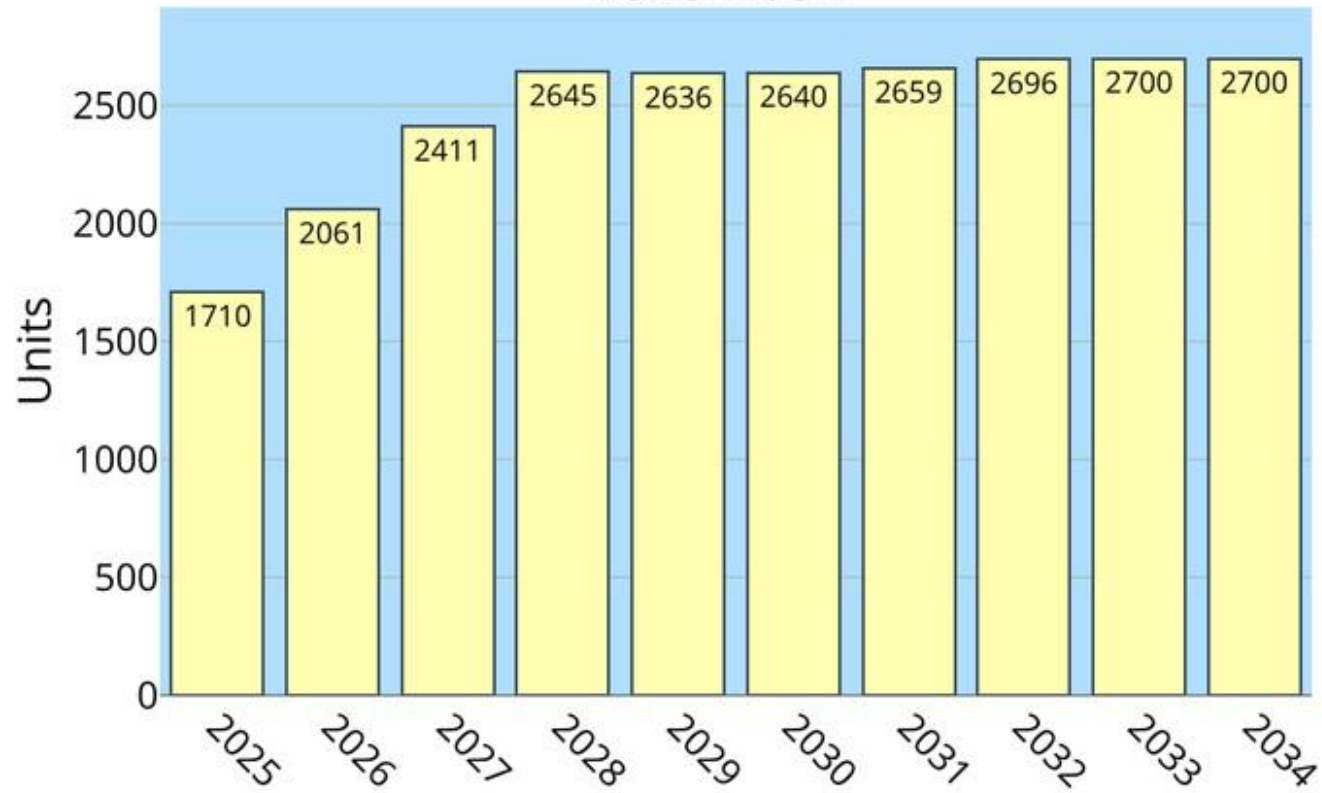


# Induction Friction

Customer	Suspected removal reason	Date Arriv	Days On H	Quant	NIS	ESN	TSN	CSN
	CML coking	27-Mar	4	19	missing	missing	okay	okay
	CML coking	27-Mar	4	19	missing	59C005	missing	missing
	CML coking	27-Mar	4	19	missing	598695	okay	okay
	CML coking	27-Mar	4	19	missing	59A536	okay	okay
	CML coking	26-Mar	5	18	missing	60B204	okay	okay
	CML coking	26-Mar	5	18	missing	missing	okay	okay
	CML coking	26-Mar	5	18	missing	missing	missing	missing
	CML coking	25-Mar	6	19	missing	59B573	okay	okay
	CML coking	25-Mar	6	19	missing	missing	missing	missing
	CML coking	25-Mar	6	9	missing	60A953	okay	okay
	CML coking	25-Mar	6	9	missing	60A953	okay	okay
	CML coking	24-Mar	7	10	missing	603499	okay	okay
	CML coking	21-Mar	10	18	missing	602633	missing	missing
	CML coking	20-Mar	11	19	missing	missing	missing	missing
	CML coking	20-Mar	11	19	missing	missing	okay	okay
	CML coking	19-Mar	12	19	missing	missing	missing	missing
	CML coking	18-Mar	13	18	missing	603128	missing	missing
	CML coking	18-Mar	13	18	missing	60A174	okay	okay
	CML coking	12-Mar	19	19	missing	missing	missing	missing
	CML coking	11-Mar	20	19	missing	missing	missing	missing
	CML coking	11-Mar	20	19	missing	missing	missing	missing
	CML coking	10-Mar	21	19	missing	missing	missing	missing
	AHS distress	10-Mar	21	6	missing	60A159	missing	missing
	CML coking	6-Mar	25	19	missing	59A403	missing	missing
	CML coking	5-Mar	26	19	missing	599881	missing	missing
	shop visit	27-Feb	32	9	missing	missing	missing	missing
	CML coking	25-Feb	34	19	missing	missing	missing	missing
	CML coking	25-Feb	34	19	missing	599121	missing	missing
	CML coking	23-Jan	67	2	missing	okay	okay	okay

# Induction Friction

## Unit Production Forecast 2025-2034



## Insights we can see & Questions we can answer

- Nozzle time on engine
- Position of nozzles that are coking
- Operator coking intensity – Operator “A” vs Fleet
- At what point in lifecycle does coking appear? First fit vs 3<sup>rd</sup> repair
- Seasonality vs. region
- Service Bulletin deployment throughout deployed units

## Form - Component 1

Enter information for component OH6120066E03--S - PAT125R4

Form incomplete

Part  <span style="background-color: #f8d7da; border: 1px solid #f5c6cb; border-radius: 10px; padding: 2px;">Unserviceable</span>	Part Number <b>OH6120066E03--S</b>	Serial Number <b>PAT125R4</b>	Owner <b>AIR INDIA LTD</b>	Tail Number <b>SPARE</b>	Voir détails ...
--	---------------------------------------	----------------------------------	-------------------------------	-----------------------------	------------------

### Editable fields ?

#### Aircraft ID

Current value: SPARE

#### Owner

Current value: AIR INDIA LTD

#### Asset Serial Number

Missing value

#### Part Number

Current value: OH6120066E03--S

#### Author

Current value: john.doe@skythread.aero

### Specific information - REMOVE ?

#### TSI - Time Since Install \*

Number of operating hours since installation

#### CSI - Cycles Since Install \*

Number of operating cycles since installation

#### Reason for removal \*

#### Position

Click to select position on the diagram

#### Location Country

#### Location City

#### Incident report



Dashboard

Build & Delivery

New Part

New Engine

1st Install

New Plane

New Delivery

Operations & Maintenance

Remove & Ship

Repair & Ship

Install

End of Life

Decom

Resell

Scrap

Search

Components

Events

Companies

Airplanes



Export Part's Info

Revise

Event Details

Event Version History Current Version ▾

<b>Event</b> Part Birth	<b>Event Date</b> 2018-09-14	<b>Event Location</b> ADVANCED ATOMIZATION TECHNOLOGIES DBA AATECH 124 Columbia St	<b>Company Submitting Event</b> Parker Aerospace	<b>Transaction Receipt Date</b> 2025-03-06
<b>Part Description</b> NOZZLE ASSEMBLY (2085M3IG03)	<b>Part Number</b> 6120066E03	<b>Manufacturer (Cage) Code</b> 27515	<b>Serial Number</b> PAT125R4	<b>Manufacturer Short Name</b> ADVANCED ATOMIZATION TECHNOLOGIES DBA AATECH
<b>Status after Event</b> Part in OEM Inventory	<b>Previous Part Numbers</b>	<b>Part Unique Identifier</b>	*****	

Click Tabs for Additional Detail

Birth record detail

[Part Information](#) ● 
 [Part Assembly Information](#)
[Order Information](#)
[Certification Information](#)
[Custody Ownership](#) ● 
 [Event Information](#) ●

---

[Documents](#)

Part Information

<b>Part Number</b> 6120066E03	<b>Part Description</b> NOZZLE ASSEMBLY (2085M3IG03)	<b>Serial Number</b> PAT125R4	<b>Manufacturer (Cage) Code</b> 27515	<b>Manufacturer Short Name</b> ADVANCED ATOMIZATION TECHNOLOGIES DBA AATECH
<b>Current State</b> Part in OEM Inventory	<b>Part Condition</b> New	<b>ATA Code</b> 73-11	<b>Part Mod Flag</b>	<b>Life Limited?</b> No
<b>Previous Part Number</b>	<b>Part Unique Identifier</b> : *****	<b>Harmonized Tariff System</b> 8411.91.7010	<b>ECCN Code</b> 9A991	

**Part** **Unserviceable**
Part Number **OH6120066E03--S**
Serial Number **PAT125R4**
Owner **AIR INDIA LTD**
Tail Number **SPARE**

**MODEL**

Description  
**Fuel nozzle component for aircraft engines**

Manufacturer  
**GE ENGINE SERVICE - MALAYSIA**

**METRICS**

LLP (Life Limited Part)  
**No**

CSN (Cycles)  
7246 / 3000 100%

TSN (Hours)  
13064.15h / 8000h 100%

**LAST EVENT**

Last Event  
 Remove

Date  
**5/19/2025**

Status  
**AS\_REMOVED**

TSI (Hours)  
**0h**

CSI (Cycles)  
**0**

Timeline Events

☐	IDENTIFICATION			LOCATION		MESURES				DÉTAILS		Actions
	Date ↓	Type ↑↓	Condition ↑↓	Location ↑↓	Aircraft ↑↓	TSI ↑↓	CSI ↑↓	TSN ↑↓	CSN ↑↓	Company	Created By	
☐	5/19/2025	Remove	Unserviceable	Glendale, US	-	0h	0	13064.15h	7246	SAFRAN ARICRAFT ENGINES	nadia.siffer2@safrangroup.com	...
☐	2/26/2025	Remove	Unserviceable	Glendale, US	-	0h	0	13064.15h	7246	GE ENGINE SERVICE - MALAYSIA	ahmadabada@geaerospace.com	...
☐	1/12/2024	Remove	Unserviceable	Glendale, US	-	3085.92h	1966	13064.15h	7246	TATA SIA AIRLINES LIMITED	diraj.gupta@tata.com	...
☐	9/14/2022	Remove	Unserviceable	Glendale, US	-	4184.83h	2371	9978.23h	5280	AIR INDIA LTD	binayaka.mishra@airindia.com	...
☐	8/10/2020	Remove	Unserviceable	Glendale, US	-	5793.4h	2909	5793.4h	2909	AZUL LINHAS AEREAS BRAS SA	ana.andrade@voeazul.br	...
☐	8/17/2019	Install	New	Toulouse, France	-	0h	0	0h	0	AA Tech	tech@aatech.com	...
☐	8/10/2019	Birth	New	Cincinnati, USA	-	-	-	-	-	Parker	ops@parker.com	...

- Dashboard
- Build & Delivery
- New Part
- New Engine
- 1st Install
- New Plane
- New Delivery
- Operations & Maintenance
- Remove & Ship
- Repair & Ship
- Install

**End of Life**

Decom

Resell

Scrap

**Search**

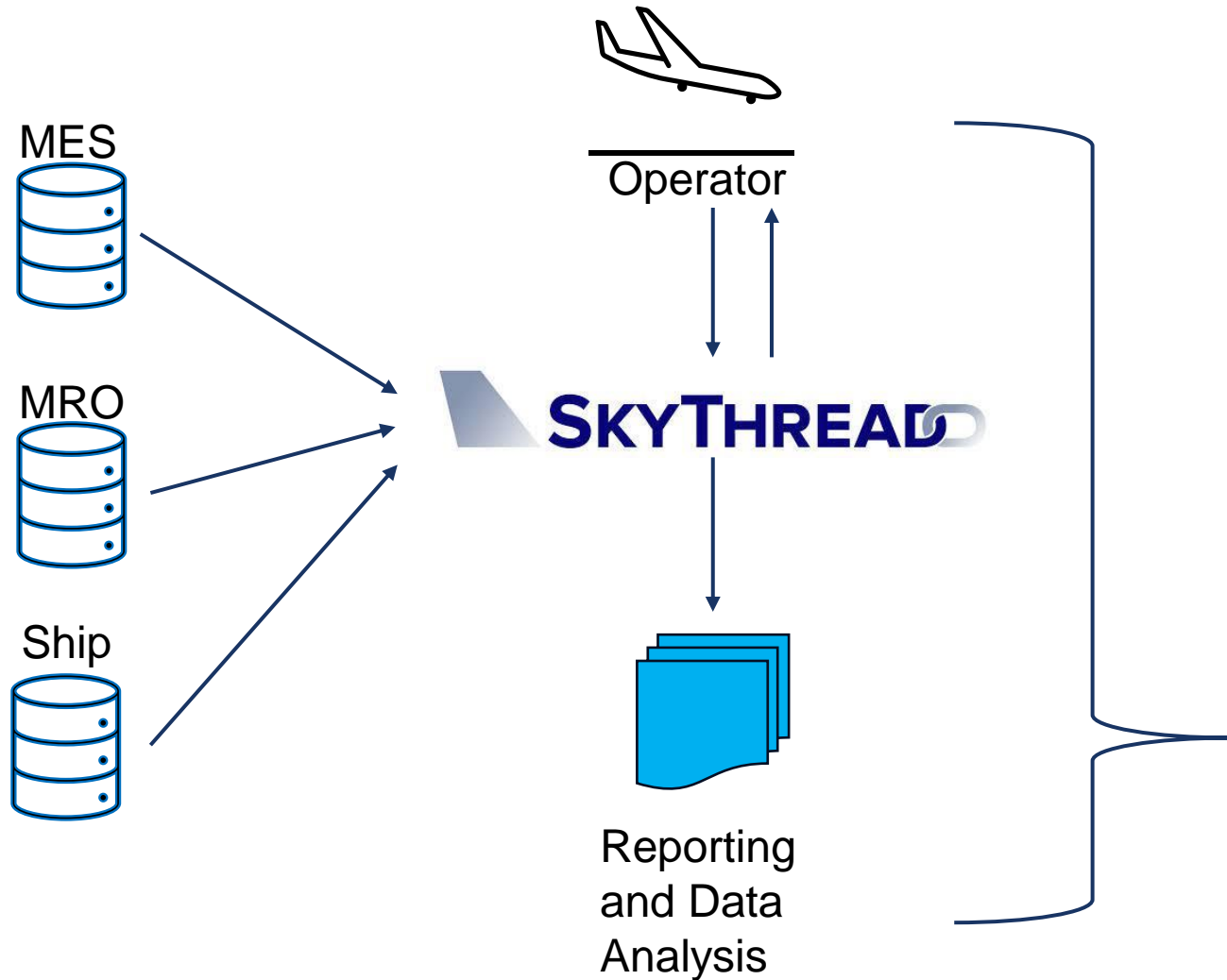
Components

Events

Companies

Airplanes

# What we're doing



Combining clean lifecycle history with engine data can speed root cause investigations and predictive model development



**Thank you**