

# POWER FOR THE AFTERMARKET

INNOVATING CFM56 POWER

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FTAI Aviation – Investor Day

7 June 2023

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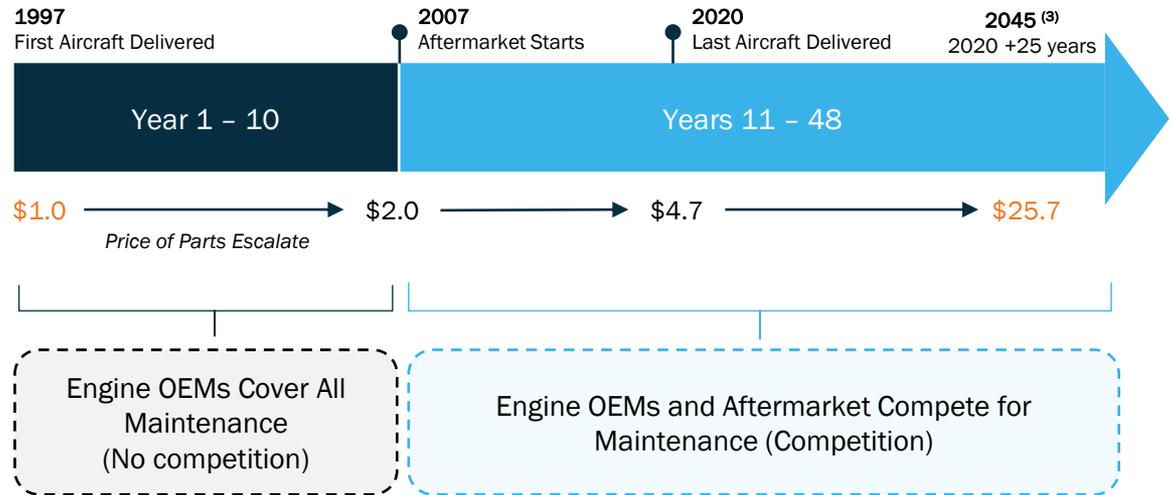
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# The Engine Platform Lifecycle

- Boeing and Airbus form a duopoly, competing fiercely to deliver new airplanes to airlines – **exerts downward pressure on suppliers**
- As a result, Engine Original Equipment Manufacturers (“Engine OEMs”) operate under a razor-blade economic model <sup>(1)</sup>:
  - Razor: Sell new engines at minimal to no profit
  - Blades: Sell replacement parts through maintenance over next 40 years <sup>(2)</sup> – **price of parts escalate ~7%+ per year <sup>(3)</sup>**
- Engine maintenance is normally completed every 5 years
  - Airlines' third-largest expense, after fuel and labor

## Service-Driven Profit: The Business Model of Engine Manufacturers

**Illustrative Example:** Assuming **\$1.0** of replacement parts escalated at 7% p.a. <sup>(3)</sup>



## Aftermarket Opportunity

Engine OEMs open maintenance networks to make services more accessible, thereby creating a longer-lasting platform.

Benefit to OEM

Longer-lasting platforms are accretive to razor-blade model

Benefit to Aftermarket

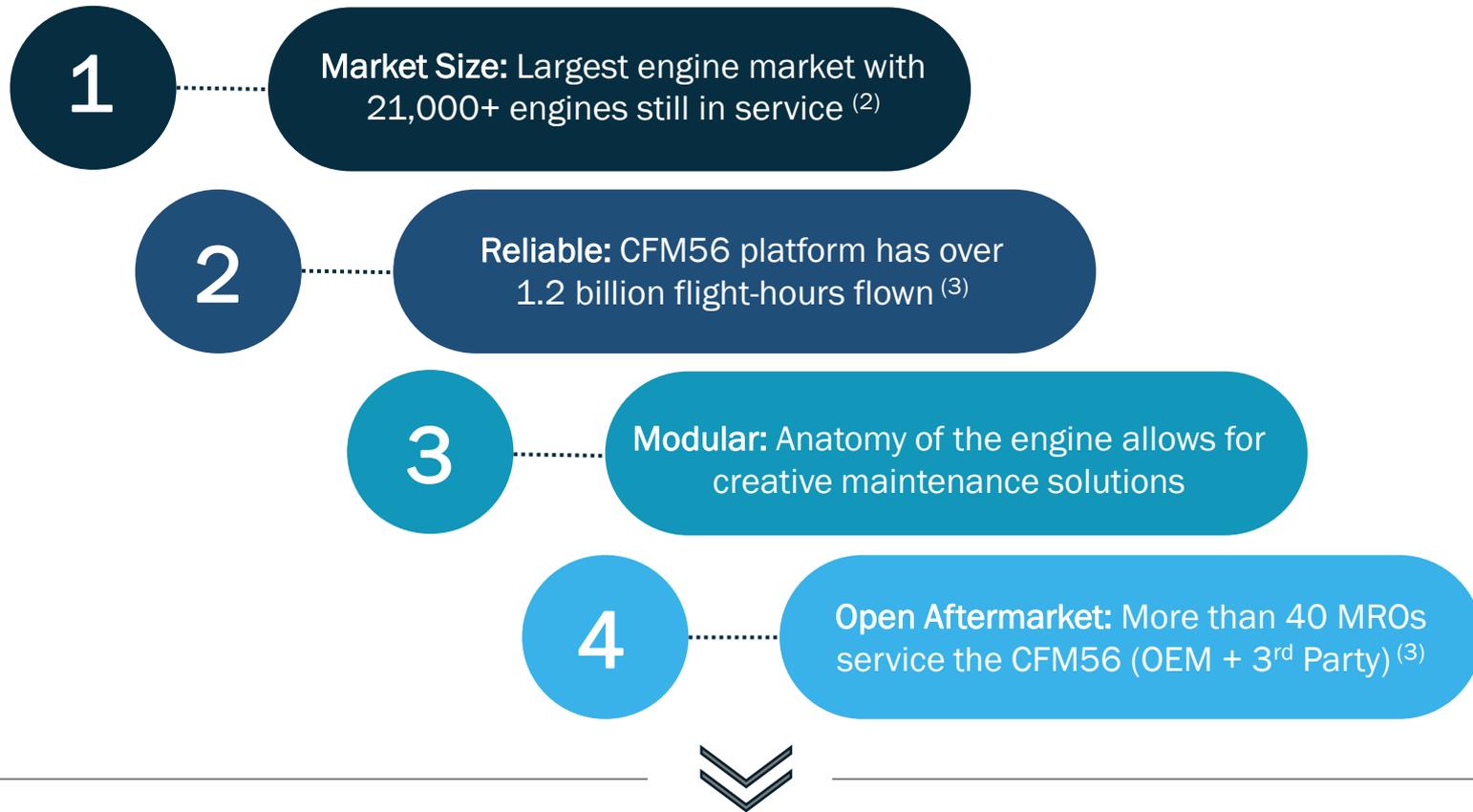
Substantial reward for aftermarket players capable of innovating cost-saving solutions

1) Source: RAND Corporation Report “Applying Best Practices to Military Commercial-Derivative Aircraft Engine Sustainment” – Published 2016

2) Source: CFMI – May 2023

3) Source: MBA report “CFM56-5B/7B LLP Cost Escalation” published December 2022

# CFM56 is the Largest Commercial Aftermarket Opportunity <sup>(1)</sup>



## Platform Longevity

We expect the CFM56 platform to have 25+ years of additional life remaining <sup>(4)</sup>

1) Based on market size using data from Cirium Ascend Fleet, as of December 2022.

2) Data from Cirium Ascend Fleet, as of December 2022.

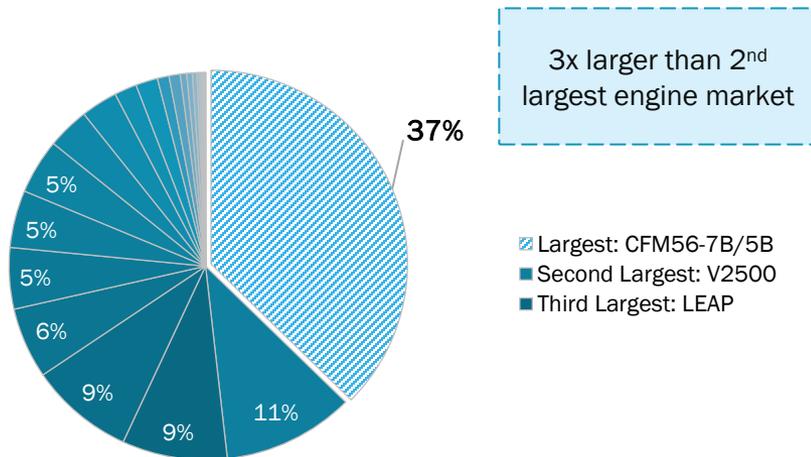
3) Source: CFM International – May 2023.

4) Based on management's current views and estimates, and actual results may vary materially.

# Aftermarket Industry Scale

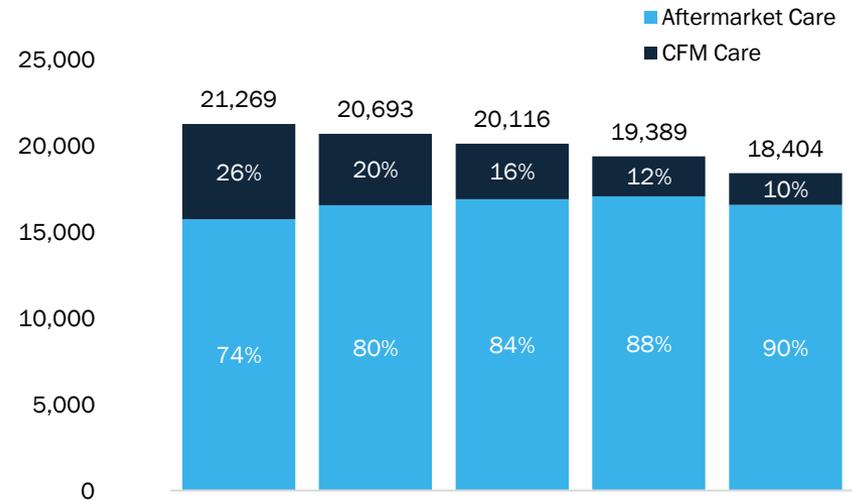
- The CFM56-7B/5B is the largest engine market ever produced, with 22,000+ engines manufactured and 21,000+ still in service today <sup>(1)</sup>
- Aftermarket care for CFM56 is expected to grow 16% between 2022 and 2030 <sup>(2,3)</sup>
  - o GE shifting focus to new technology engines including the LEAP

## 1 Largest Engine Market Today <sup>(1)</sup>



- **Industry Workhorse:** 37% of commercial jet engines today
- **Narrowbody Power:** 100% of 737NG and 60% of A320ceo fleets
- **Long Remaining Life:** Average age of -7B/5B is only 13 years old

## 2 Aftermarket Care for CFM56 is Growing <sup>(1,2,3)</sup>



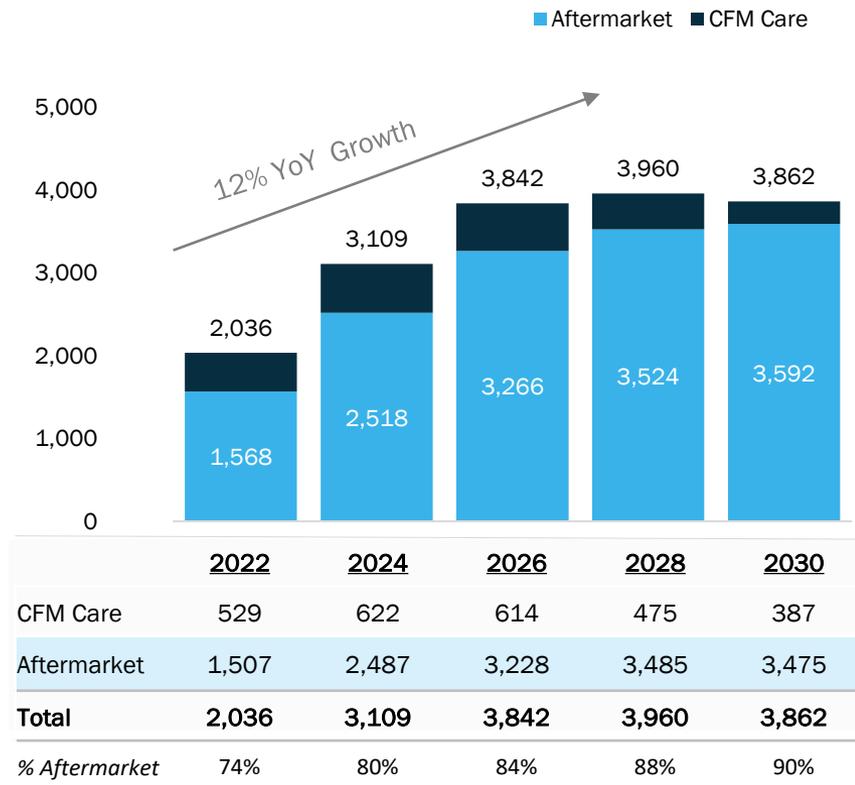
	2022	2024	2026	2028	2030
CFM Care	5,526	4,140	3,215	2,326	1,844
Aftermarket	15,743	16,553	16,901	17,064	16,560
<b>Total Engines</b>	<b>21,269</b>	<b>20,693</b>	<b>20,116</b>	<b>19,389</b>	<b>18,404</b>

1) Data from Cirium Ascend Fleet, as of December 2022. Assume retirement of P2F-compatible aircraft after reaching 40 years of age and PAX-only aircraft after 24 years of age. Assume 5% of spares in circulation.  
 2) See "Disclaimers" at the beginning of this Presentation for more information on forward looking statements.  
 3) Split of CFM and Aftermarket provided by IBA in Shop Visit Market Report provided in November 2022

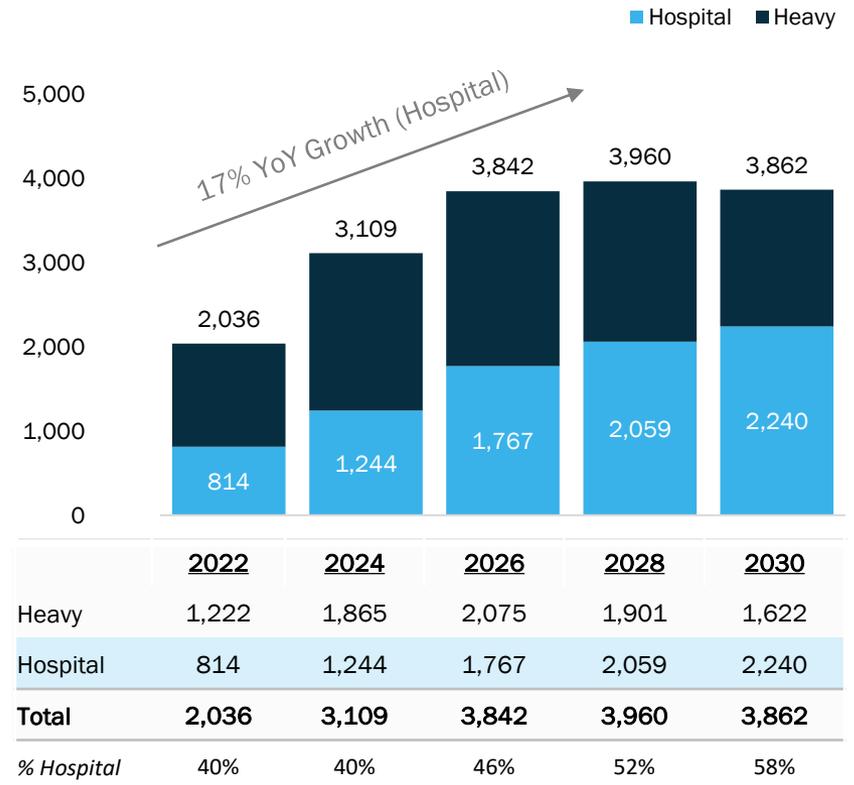
# CFM56 Shop Visit Outlook

- Approximately 45% of CFM56-7B/5B engines have yet to experience their first heavy shop visit <sup>(1)</sup>
- Shop visits are expected to peak in 2028 with ~4,000 engine events per year <sup>(1,2)</sup>
  - o Annualized growth rate of 12% per year between 2022 and peak in 2028
- Large maintenance volume requires higher reliance on third party MROs and hospital visits

## 1 Shop Visits Rising Quickly <sup>(1,2)</sup>



## 2 Number of Quick Turns Rising <sup>(1,2)</sup>



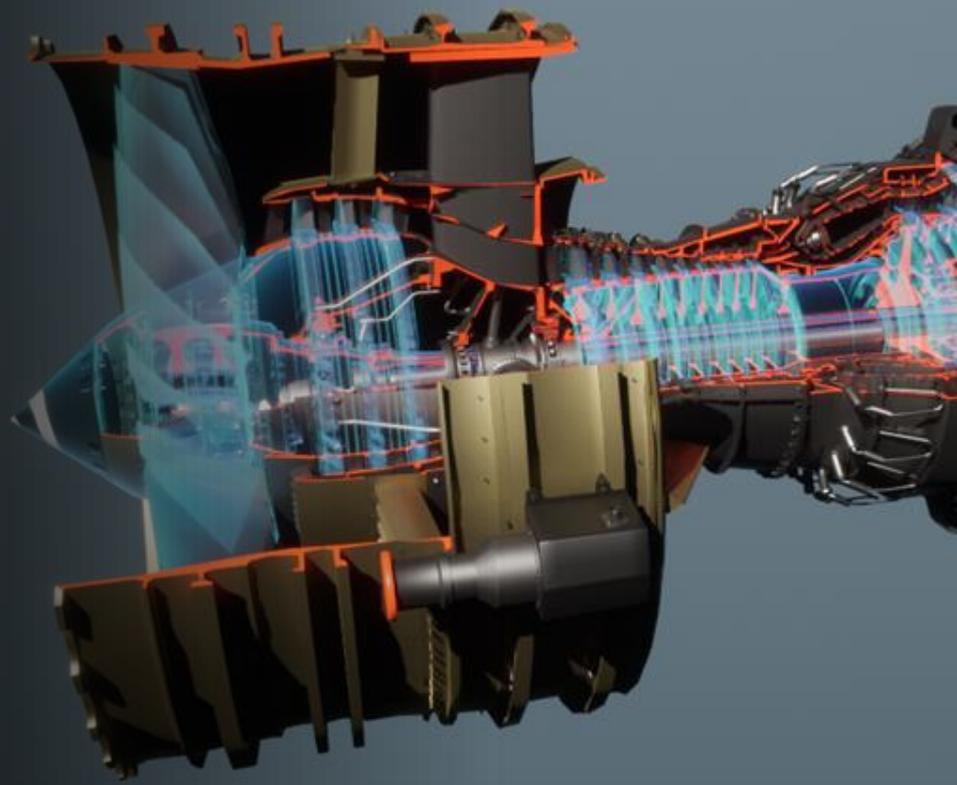
Fan Major

Core Major

LPT

# Understanding the CFM56 Engine

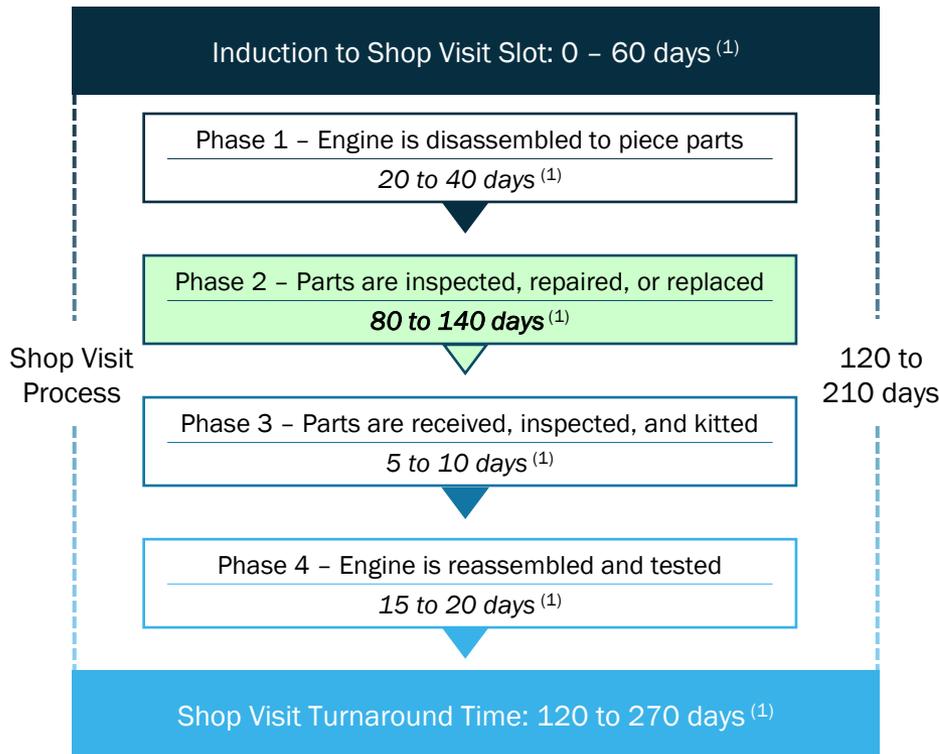
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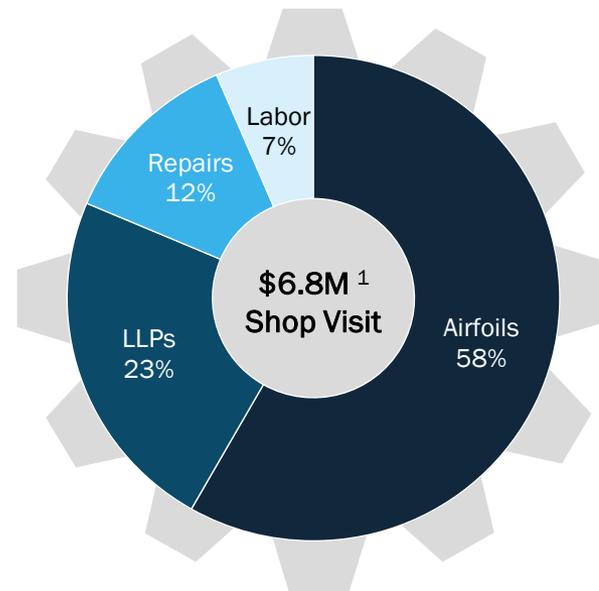
# Deconstructing a Shop Visit

- We expect a CFM56 engine shop visit to occur every 5 years and cost approximately \$6.8 million today <sup>(1)</sup>
- We estimate a traditional shop visit takes 3 to 6 months to complete depending on slot availability and repair times <sup>(1)</sup>
- High probability of going over budget due to level of disassembly required <sup>(1)</sup>
  - o Estimate that on average, 80%+ of a shop visit's cost is parts <sup>(1)</sup> (Airfoils + LLPs) – which escalate ~7% percent per year <sup>(2)</sup>

## 1 How a Traditional Shop Visit Works?



## 2 80% of Shop Visit Cost is Parts <sup>(1)</sup>



Airfoils and LLPs account for \$5.5M of the total shop visit cost of \$6.8M <sup>(1)</sup>

# Why We Expect Everyone Will Use Modules (1,2)



# FTAI's Differentiated Approach to Shop Visits (1,2)

Illustrative Example of Engine Maintenance: Fan: 0k | Core: 10k | LPT: 5k

1. Savings of ~\$1.00 million
2. Eliminate overage risk of \$500k
3. Turnaround Time ("TAT") savings of 3.5 months

## 1 Traditional Engine Shop Visit

Engine Induction		Shop Visit Process	KPIs			Outgoing Engine	
Cycles Remaining			Cost	TAT	Risk	Cycles Remaining	
Fan	0	Disassemble, Replace Parts, Reassemble	\$1.10M	3 months	--	Fan	10,000
Core	10,000	Expose Core, Inspect/Repair, Reassemble	--	--	\$0.50M	Core	10,000
LPT	5,000	Disassemble, Replace Parts, Reassemble	\$1.65M	4 months	--	LPT	10,000
			<b>\$2.75M</b>	<b>4 months</b>	<b>\$0.50M</b>		
Total Engine							

## 2 FTAI Modular Shop Visit

Engine Induction		Shop Visit Process	KPIs			Outgoing Engine	
Cycles Remaining			Cost	TAT	Risk	Cycles Remaining	
Fan	0	Module swap for 10k module	\$0.60M	3 days	--	Fan	10,000
Core	10,000	Remains assembled, no action	--	--	--	Core	10,000
LPT	5,000	Module swap for 10k module	\$1.15M	15 days	--	LPT	10,000
			<b>\$1.75M</b>	<b>15 days</b>	<b>--</b>		
Total Engine							

*Added Benefit: FTAI keeps 5,000FC LPT intact to use in future builds*

# Video of a Fan Module Exchange

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# Modular Maintenance Minimizes Waste

- Inherently, our business model aligns profitability and sustainability goals
- We have established a CFM56 engine maintenance circular economy with the following goals:
  1. Maximize profits at each level of disassembly
  2. Minimize waste at each level of disassembly (“Zero Waste Engine Maintenance”)

## Our Circular Economy in Engine Maintenance

Steps in Circular Economy		Target Profit Potential <sup>(1,2,3)</sup>	Material Saved <sup>(2,4)</sup>
<b>Step 1: Reuse Modules</b>	Reuse modules to consume remaining life	\$1.00 million	0.5 tonnes per shop visit
<b>Step 2: Reuse Parts</b>	Repair and install used parts by using OEM/DER repairs and developing new repairs when possible	\$0.33 million	0.2 tonnes per shop visit
<b>Step 3: Recycle Parts</b>	Recycle scrap parts into raw materials to close the manufacturing loop	In Process	0.1 tonnes per shop visit
<b>Total per Shop Visit</b>		<b>\$1.33 million</b>	<b>0.8 tonnes per shop visit</b>

Servicing 300 Shop Visits = Up to \$400 million EBITDA + 240 tonnes of material saved

1) See “Disclaimers” at the beginning of this Presentation for more information on forward looking statements.

2) Assumes the re-use of the fan and LPT modules and rebuilding core

3) Based on management’s current views and estimates, and actual results may vary materially.

4) Per KPMG study

# Scaling The Module Factory™ Business

1

## Leverage FTAI'S Large Fleet as Feedstock

- 335 CFM56 engines and growing <sup>(1)</sup>
- 150+ modules in inventory <sup>(1)</sup>
- Various life-limit builds available

3

## Wide Customer Base

- Airlines
- Lessors
- Maintenance Shops ("MROs")

2

## 80% of Sales via Exchanges

- Module Exchanges
- Engine Exchanges
- Multi-year Programs

4

## Distribution through Hospital and Field Services

- FTAI's QuickTurn
- Hospital Shops & Field Service Teams
- Major Independent MROs

**Very Sticky Product: Majority of Customers Are Repeat Business**

# The Module Factory™ at Lockheed Martin

- World-class facility in Montreal with 25+ years experience on the CFM56 family – 1,500+ engines serviced <sup>(1)</sup>
- Jointly transformed by LMCES and FTAI into a high-volume modular maintenance facility for CFM56
- Equipped with two test cells capable of testing up to 25 engines per month <sup>(1)</sup>
- Capabilities include full overhaul, test, component repair, on-wing services and customized engine builds <sup>(1)</sup>

## LMCES Key Capabilities<sup>1</sup>



### REPAIRS:

- Engine and module-level repairs
- Piece-part repairs (LLPs, combustor, accessories)



### INNOVATION:

- 1<sup>st</sup> of its kind modular maintenance facility
- Developed repairs saving up to \$1M per engine



### FUTURE OPPORTUNITIES:

- In-house repair development & certification
- LEAP Engine Capability

## LMCES – Center for CFM56 Excellence

