



# **Engine Lease Finance** Corporation

Supporting the world's airlines



# RELEASE POWER & RELEASE FUNDS

**Dubai Oct 2017**

# Engine Leasing

- Introduction to ELF
- The market
  - Market size
  - Major players
  - Business model throughout asset lifecycle
  - Exit strategies
  - OEM dominance
- Conclusions



# Engine Lease Finance Corporation



Founded 1989

The world's leading spare engine lessor

c.300 engines

(570 in all group companies)

\$3bn portfolio value

210 customers



# ELF Company Structure



Mitsubishi UFJ Lease & Finance Company Limited ("MUL")

Engine Lease Finance Corporation



ELFC Singapore Pte. Ltd.



ELF London Limited

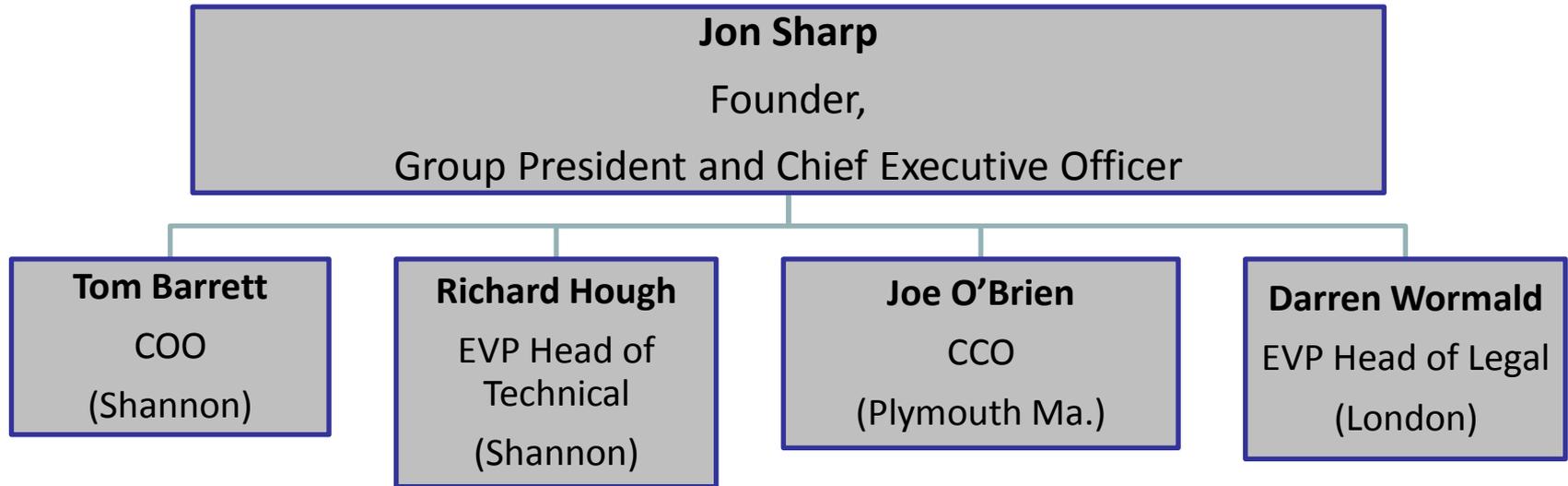


Aviation Lease Finance LLC



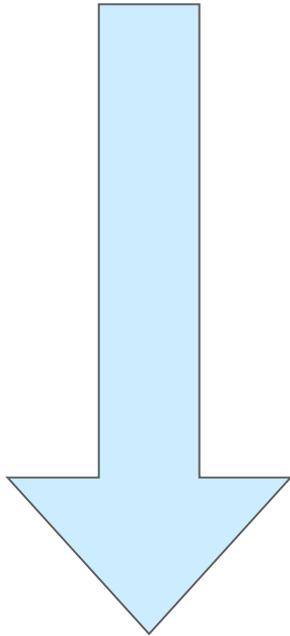
INAV LLC  
60%

# *ELF Executive management*





# *Engine Operating Lease Market 2017-2036*



- How many aircraft will be delivered?
- How many spare engines?
- What proportion will be leased?
- OEM controlled share
- What dollar value?



- Market size



# *The engine lease market*

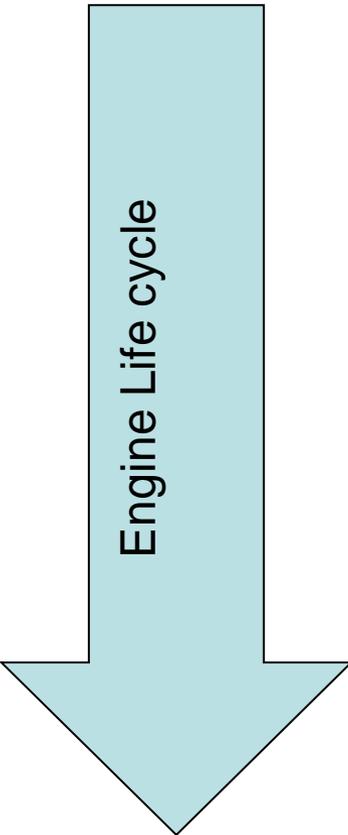
- Some 40,000 new commercial jet aircraft are expected to be delivered into service over the next 20 years
- 80,000 installed engines will require the support of approximately 6,000 spare engines
- 42% of deliveries will be leased (compared to 42.6% of current fleet)\*
- 42% leased = 2,520 leased spare engines
- Prices between \$12m and \$37m each engine in 2017 \$
- Funding requirement = approx \$44bn in 2017 \$
- \$2.2bn p.a. average
- 60% OEM market share
- Independents \$1bn market typically acquired by sale and leaseback, occasionally by direct purchase from the OEM

# Leading engine lessors

Engine lessor	# Engines est.	Comment
GEEL	450	OEM
RRPF	400	OEM
Engine Lease Finance	300	Independent
SES	240	OEM
WLFC	220	Independent
Sumisho	50	Financial institution
PW	130	OEM
New entrants 2012-16	50	Various



# *Engine lessor business model*

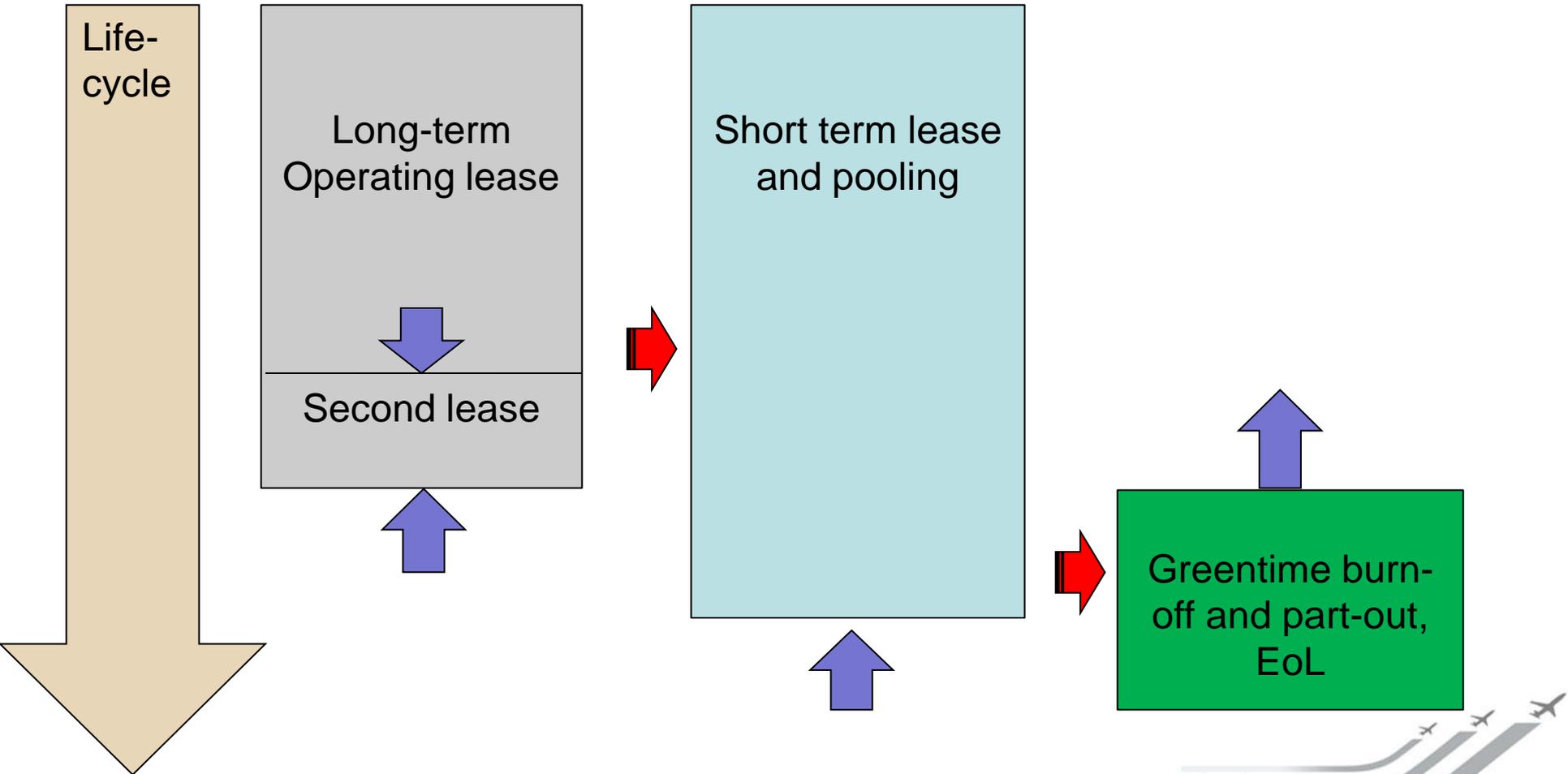


Engine Life cycle

1. Long term operating leases
  1. Sale and leaseback/Purchase and lease
  2. Third-party engine and portfolio management and remarketing services
2. Short-term leases / AOG support
  1. Leasing of assets returned from operating leases
  2. Greentime burnoff/refurbish
3. End of life exit
  1. Part out
  2. Sell as is

9

# Engine leasing business in practice

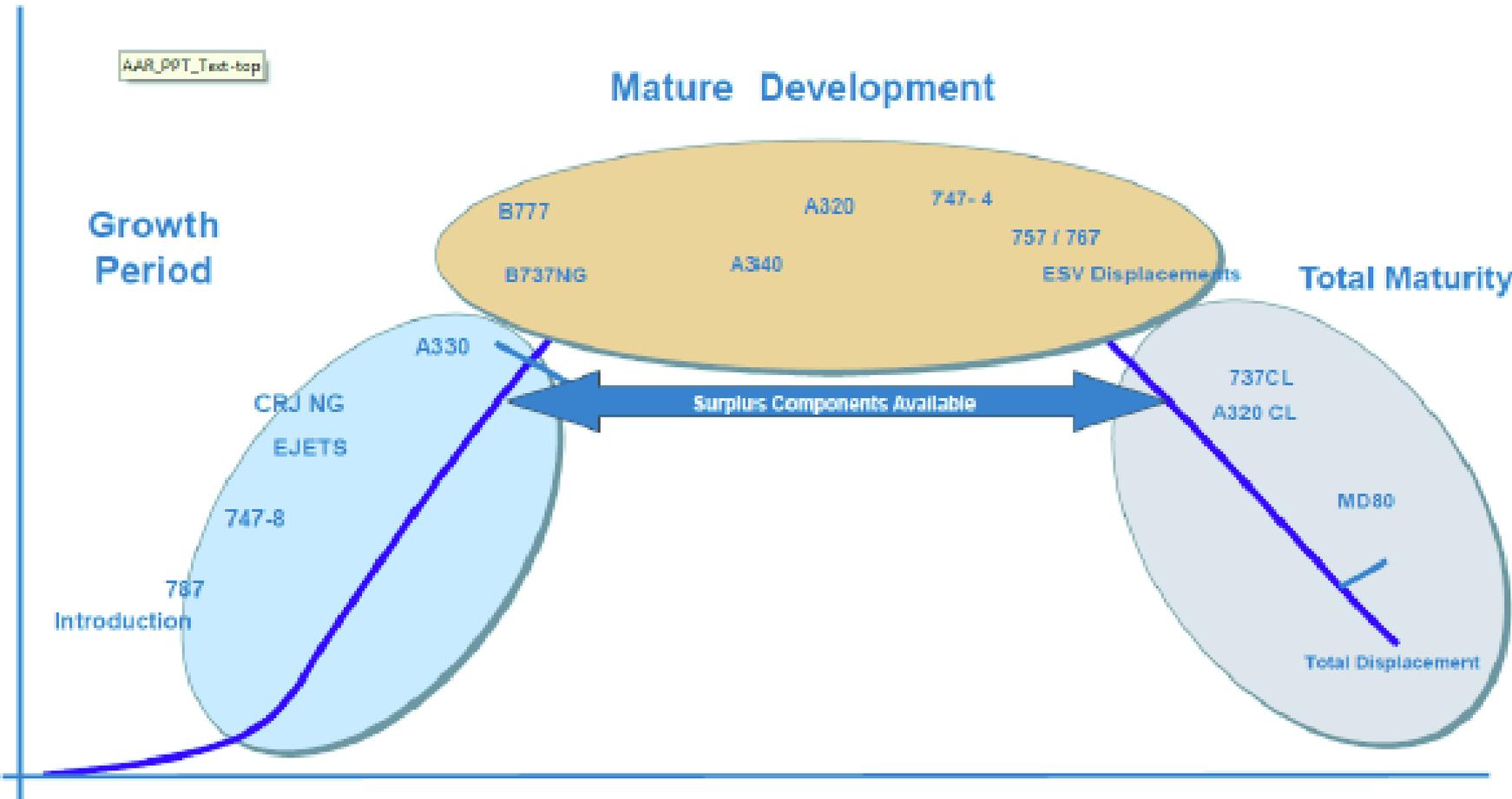




# *Changing Market*

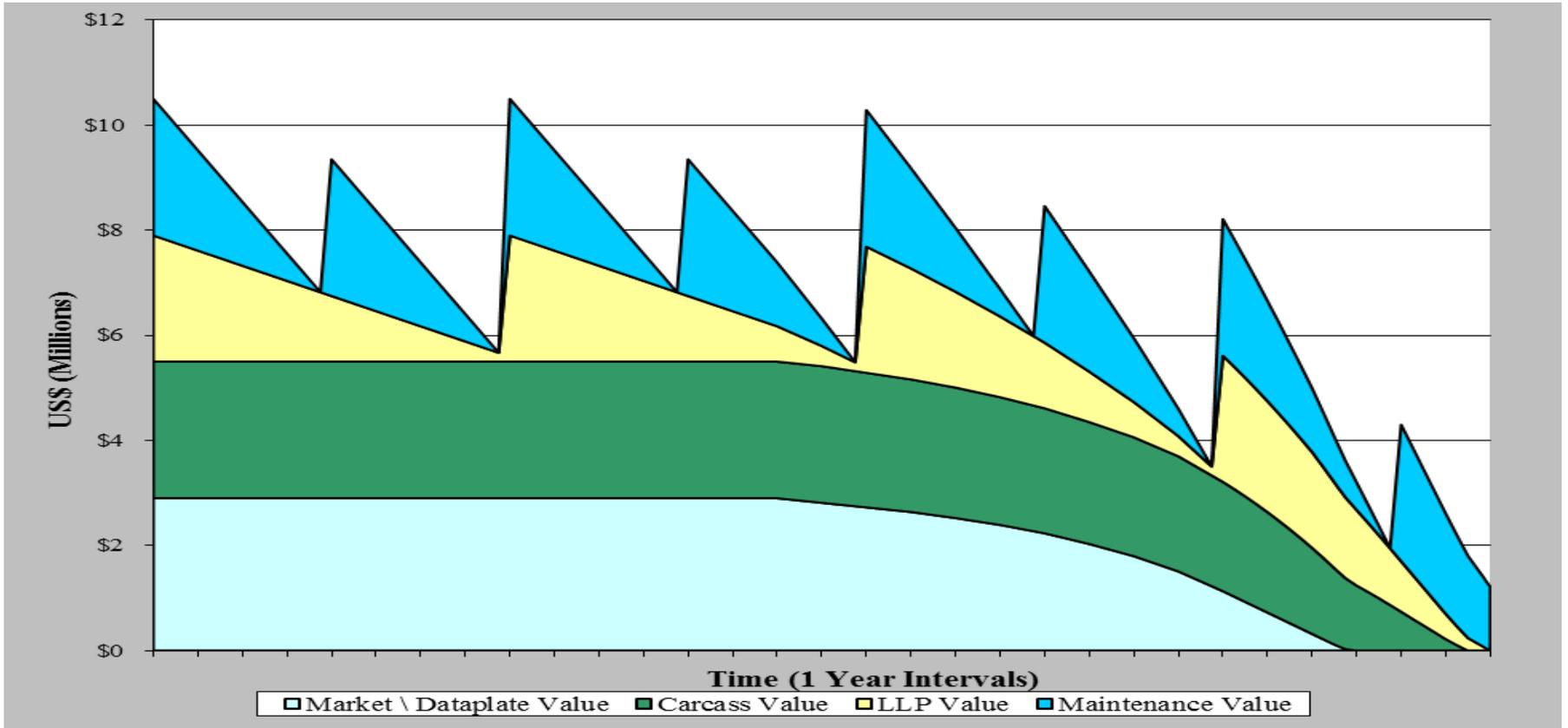
- Leases used to be typically seven years, followed by a second for three years.
- Now usually one long-term lease (typically ten years) then direct into short term lease and then quickly phased into greentime/part out.
- Recent rapid growth in the market for breaking aircraft for parts has created a large spare engine inventory for mature types.
- Those engines are rarely refurbished but go direct to part-out.
- Part-out companies refurbish and then sell as used serviceable material (“USM”) to MRO providers at a fraction of new parts prices.

# Aircraft family lifecycles



Source: AAR, "Engine Parts-Outs and Used Surplus Parts Market, How is the Market Changing" by Christophe Giraud, May 2014.

# Historical Residual Value Model (0% Inflation)





# *End of Life Solutions Vitally Important*

- The leasing community employs many different business models.
- All those business models have two common elements –
  - Buy the right asset at the right price (and lease it making money over money) and
  - Ultimately, monetarise the asset at the optimum time in its life cycle (at more than book value).
- Decisions constantly made: refurbish or sell? It is a market judgement.
- Ultimately, Lessors sell their end of life assets (engines) to MROs or parts companies.

# *In-house parts company*



**INAV** LLC  
An Engine Lease Finance Company

- Inventory Navigators.
- Chicago-based part-out company.
- Majority shareholding acquired by ELF in June 2017.
- This gives the ELF Group a fully vertically-integrated business model providing successive revenue streams throughout the asset's life.
- Provides end-of-life exit for ELF's assets

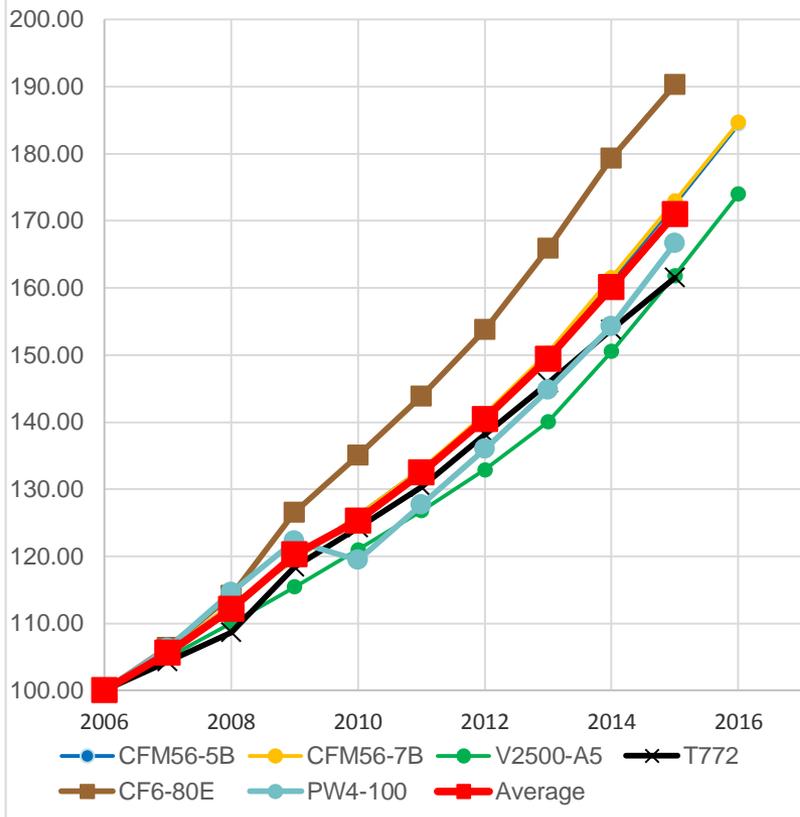


# *Engine and spare parts pricing structure – cause and effect*

- The engine OEMs sell engines at a loss, so rely upon revenues from spares sales.
- Resultant high spares prices has created and sustains the USM market, running at well over \$1bn p.a. for engine spares alone.
- The USM market is vital to the industry
  - The OEMs cannot produce sufficient spare parts to feed the MRO market
  - It provides a lower cost option
  - It provides competition to the OEM
- Unsurprisingly the OEMs try to squeeze the USM providers

# New OEM Parts Escalation: LLPs

LLP Escalation Factor

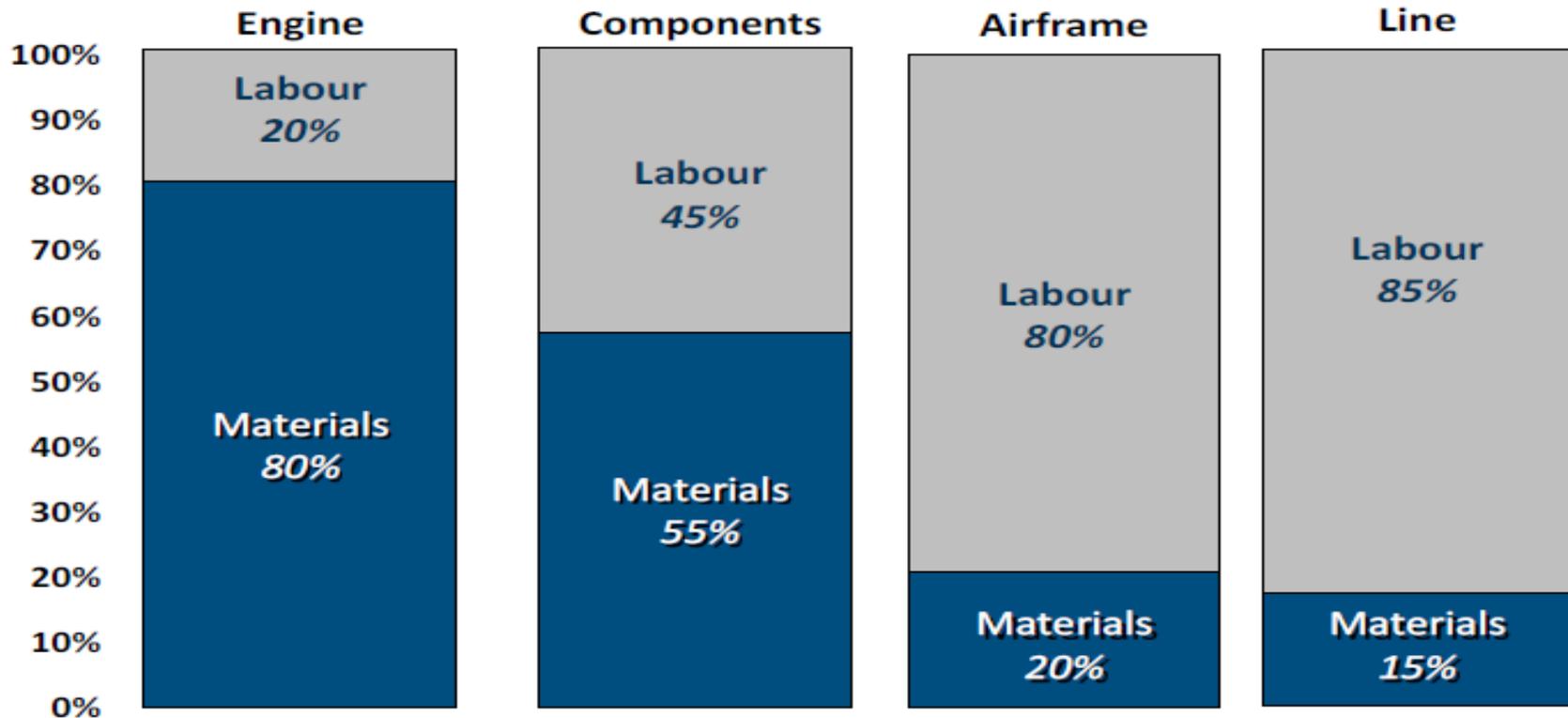


- ✈ SV Costs are typically 70-80% material and the balance being labour & repair
- ✈ Graph reflects LLP Parts Escalation
  - Research shows LLP costs (generally reflect top 50 line items)
  - LLP escalation is a good indicator for material price inflation
- ✈ Reviewed LLP increases since 2006 on 16 engine models from all OEM's:
  - Model Average Range 5.5% - 7.5% p.a.
  - Overall Average 6% p.a.
  - Material prices double every 11 years!

# Material Costs Dominate Engine MRO

(Source: ICF International)

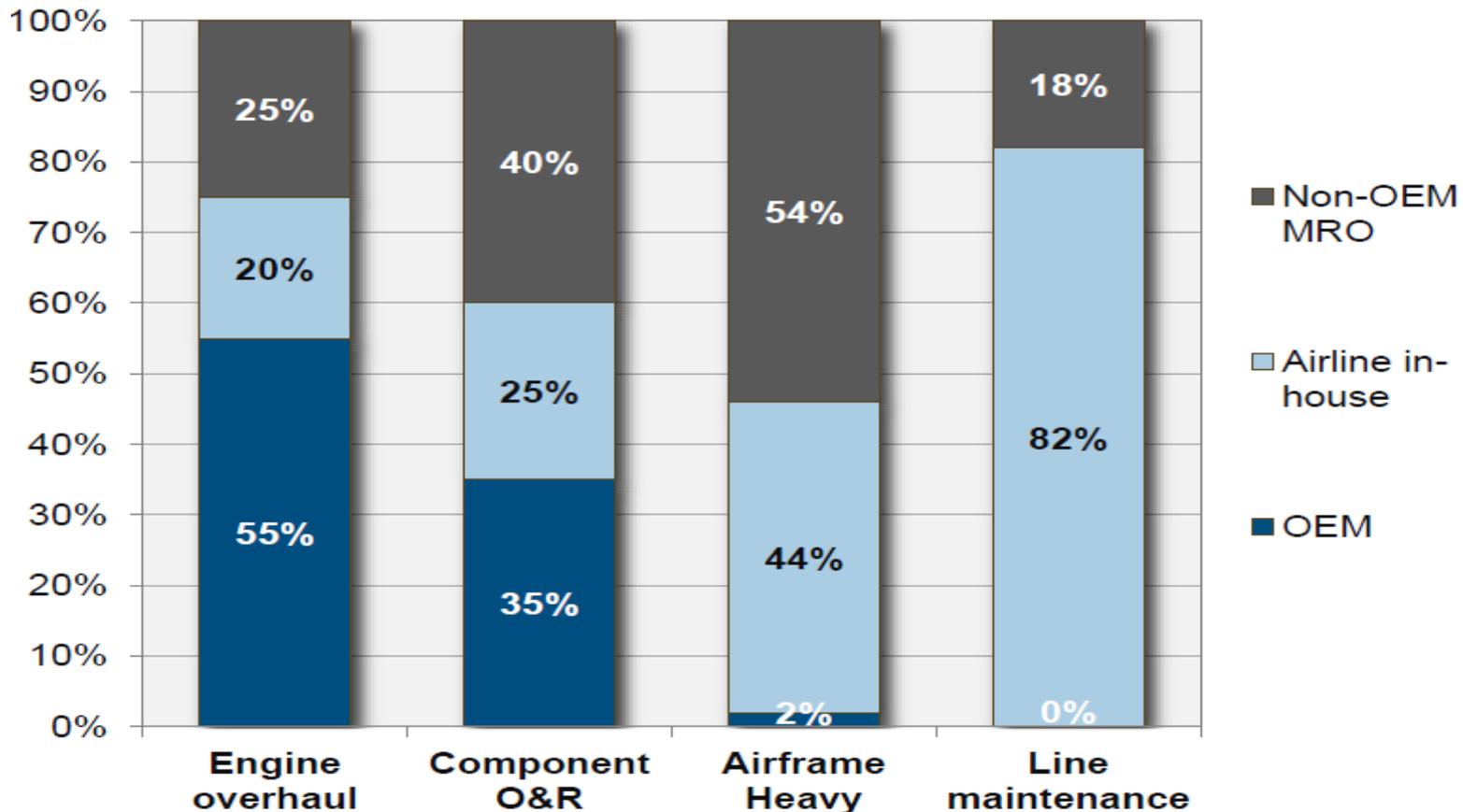
## Typical Aftermarket Cost Breakdown



# OEMs Dominate Engine MRO Market

(Source: ICF International)

## Air Transport Supply (2015)





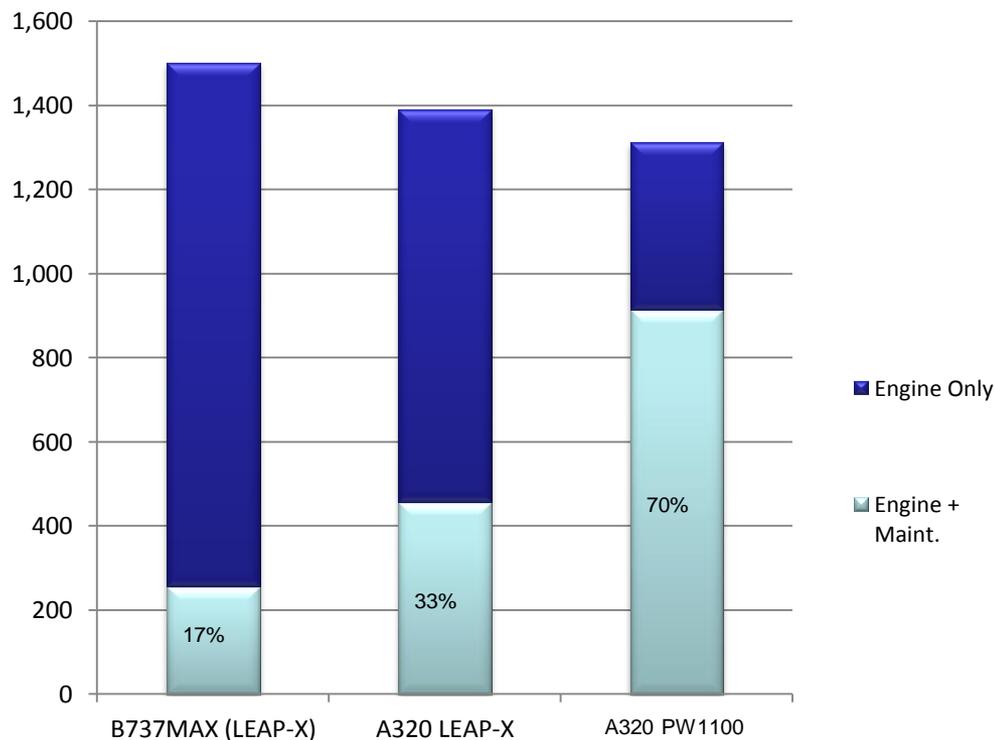
# *Growth in OEMs' Dominance of the engine MRO Market*

*(Source: ICF International)*

- In 1995 Engine OEM's had 15% of a \$6.25bn engine MRO market
- In 2005 - 45% of a \$12.5bn engine MRO market
- In 2015 - 55%+ of a \$25bn engine MRO market
- In 2025 OEM will have ??? of an estimated \$37bn p.a. engine MRO market

# OEM Flight Hour Maintenance Agreements contracted at point of engine sale

Airline Orders as of July 2016



- Chart includes:-
  - airline orders only (no lessors)
  - only orders where engine selection has been made
  - Firm orders only (no options)
- Very long term agreements 10 – 20 years.



## *Non-OEM lessors' problems with integrated*

- Lack of security - no reserves
- Restriction on portability of fund
- Questionable adequacy of fund
- Inflexibility of workscope
- Extra legal and management costs
- Restriction of end of life exits

Some banks find engines a difficult asset to fund for these reasons.

Some lessors are refusing to invest in aircraft powered by certain manufacturer's types.

OEMs doing 'something' about it



# ***OEM Aftermarket Control – Multiple Fronts***

OEM's continue to use a multi faceted approach to achieve a dominant aftermarket position:-

1. Increase in OEM owned or controlled MRO providers
2. Proliferation of flight hour agreements
3. Reduction in repair availability and restrictions on performing repairs
4. Effective elimination in use of PMA & DER in gas-path
5. Continuous enhancements, modifications and upgrades
6. Control of new parts prices and increased presence in USM market
7. Discounting of value for Non OEM maintained engines e.g. “TruEngine” and “Pure-V”



# *“The Erosion of Choice”.*

- OEMs dominance of the aftermarket –
  - Engine leasing
  - MRO
  - Parts supply
- Airlines and lessors are facing “The Erosion of Choice”.
- IATA is on the case of potential anti competitive behaviour and now the EU Commissioner for Competition is investigating at IATA’s request.
- Independent service providers must form part of the solution.



# *Some conclusions*

1. The engine lease market is robust but small in scale compared to the aircraft lease market.
2. Engine lessors business models combine long term and short term leases, greentime burn-off and part-out to extract value throughout whole engine life.
3. Leasing of engines and aircraft have different dynamics.
4. Business models for engines need more emphasis on management of 'metal' than on credit or finance.
5. The OEMs have driven radical market change, airlines' choices have been eroded, but Independents do provide a solution to maintain healthy competition and airlines' choice.



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