

# PMA Market Outlook

## *Effects Of The Recession*

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**AeroStrategy**  
Management Consulting

**Ann Arbor, Michigan • Amersham, United Kingdom • Singapore**

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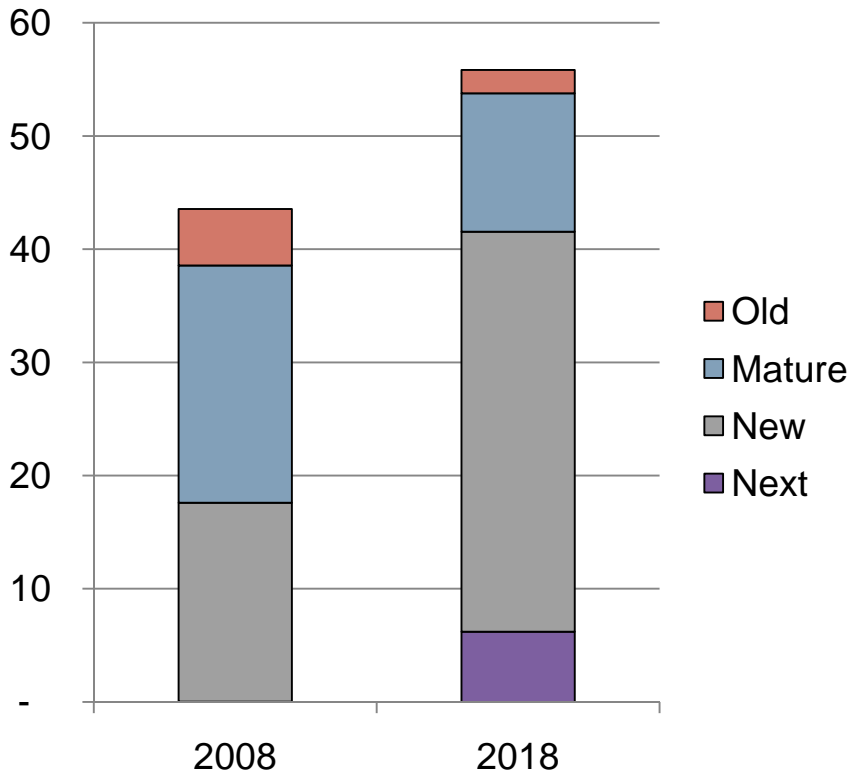
# Agenda

**Current PMA Market**

**PMA Market Outlook**

# There Is A Long-Term Transition From Older To Newer Generation Platforms

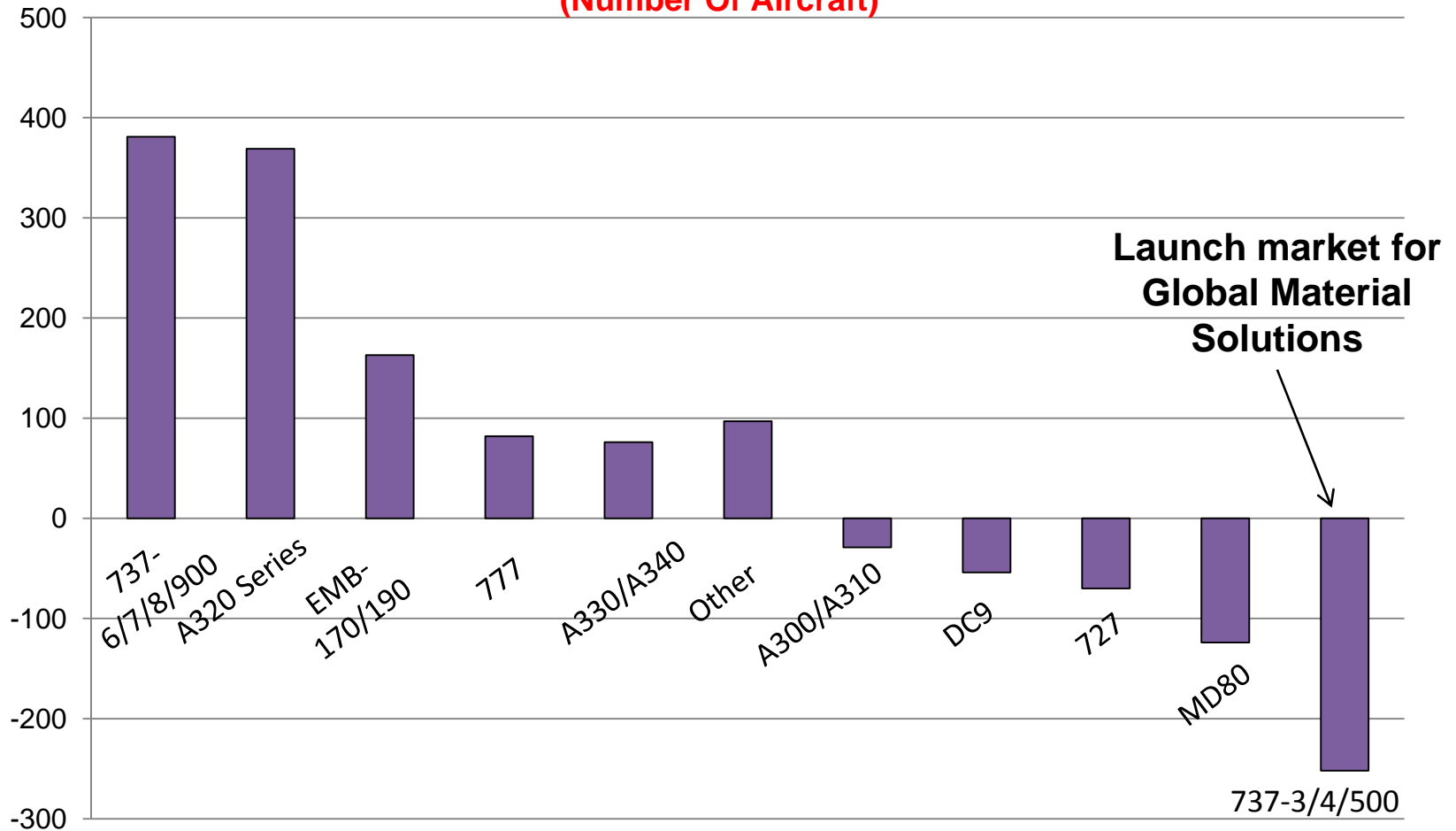
## 2008-2018 Air Transport MRO Market By Generation (\$B)



- Old and mature aircraft currently represent 60 percent of MRO spend; this portion will decline to 26 percent by 2018
- In 2018, 60 percent of MRO spend will be generated by "New" generation aircraft, like the 737NG, A320 Series, 777, or A330

# The Fuel Crisis Accelerated This Trend...

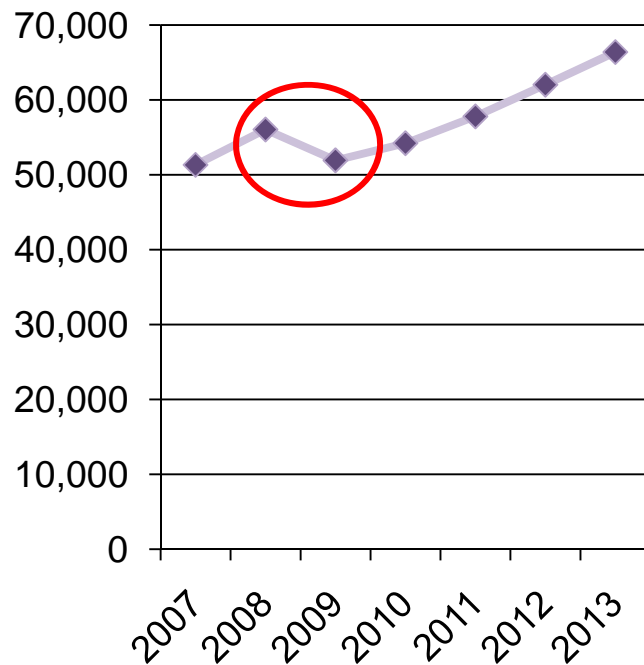
**2008 Net Change In Air Transport Fleet  
(Number Of Aircraft)**



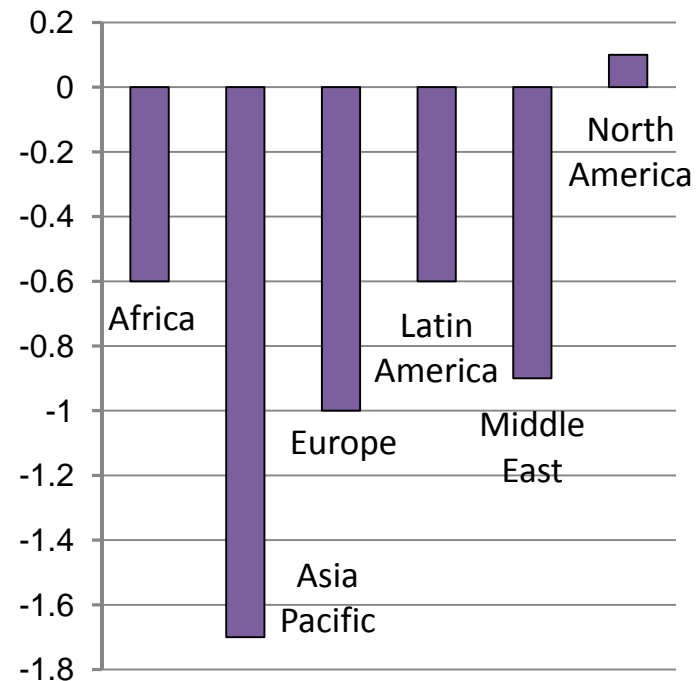
**Fleet retirements affected some key PMA markets**

# ...And The Fuel Crisis Was Followed By A Recession...

**World GDP Forecast (\$B)**



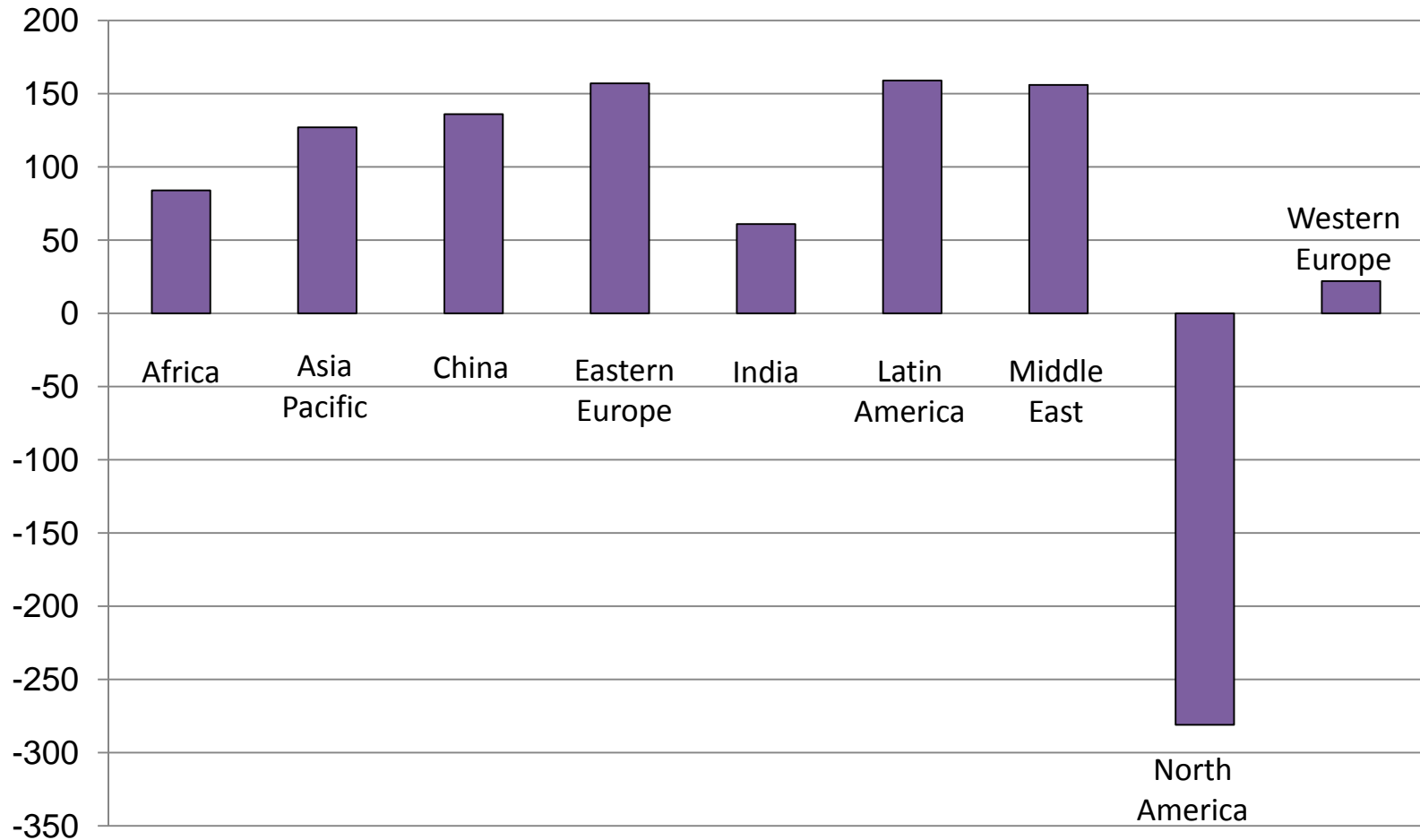
**2009 Expected Airline Losses (\$B)**



**World GDP is expected to decline 1.8% in 2009, and lead to severe airline losses**

# ...As A Result, The North American Fleet Contracted By More Than 250 Aircraft

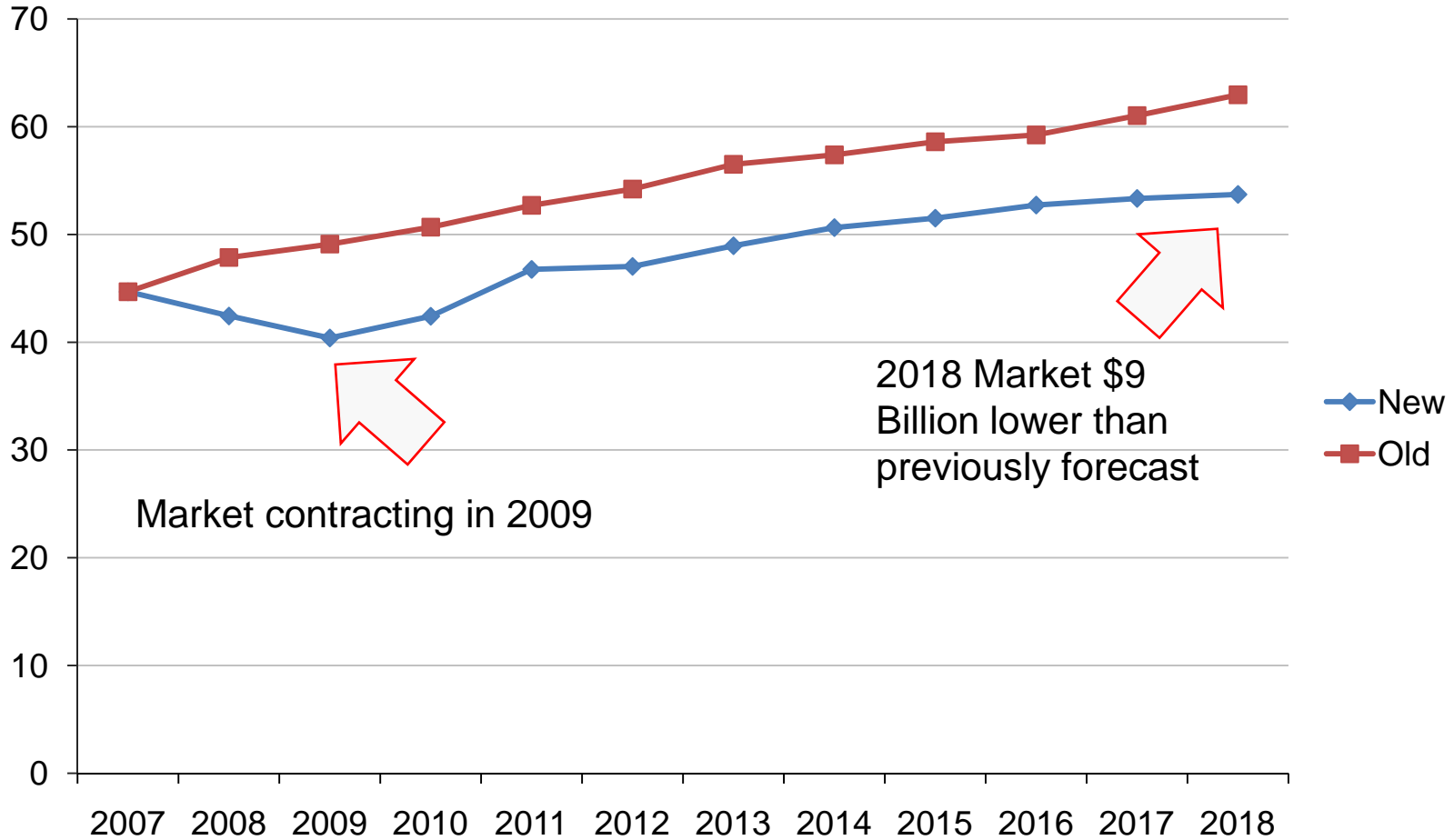
2008 Net Change In Air Transport Fleet (Number Of Aircraft)



Due to fleet restructuring, North American airlines have relatively healthy financials in 2009

# The Recession Will Reduce MRO Market Growth Considerably During The Next Three Years

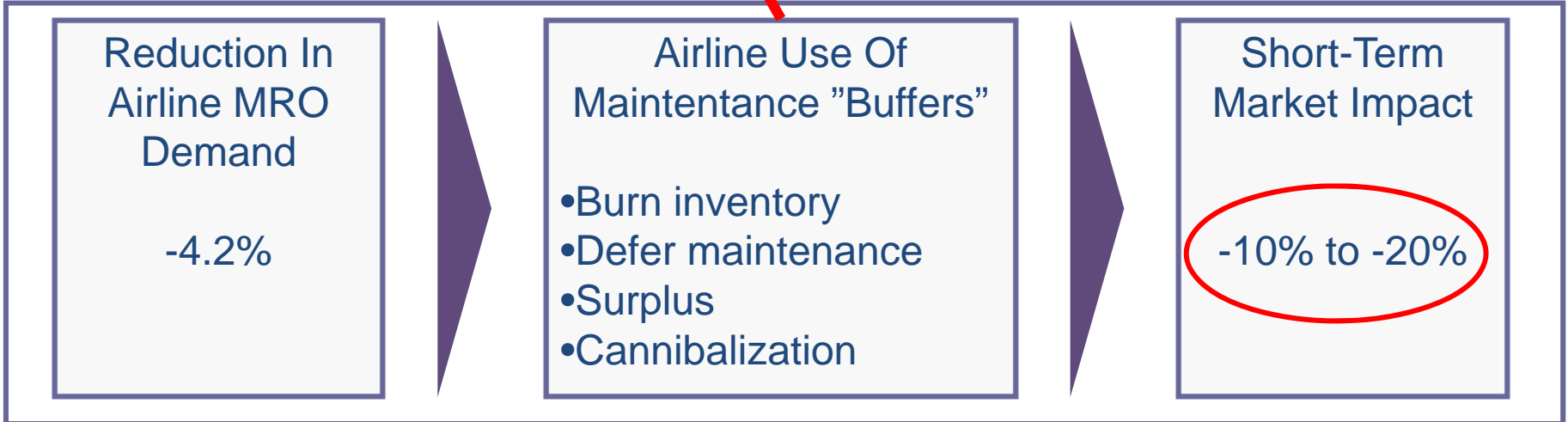
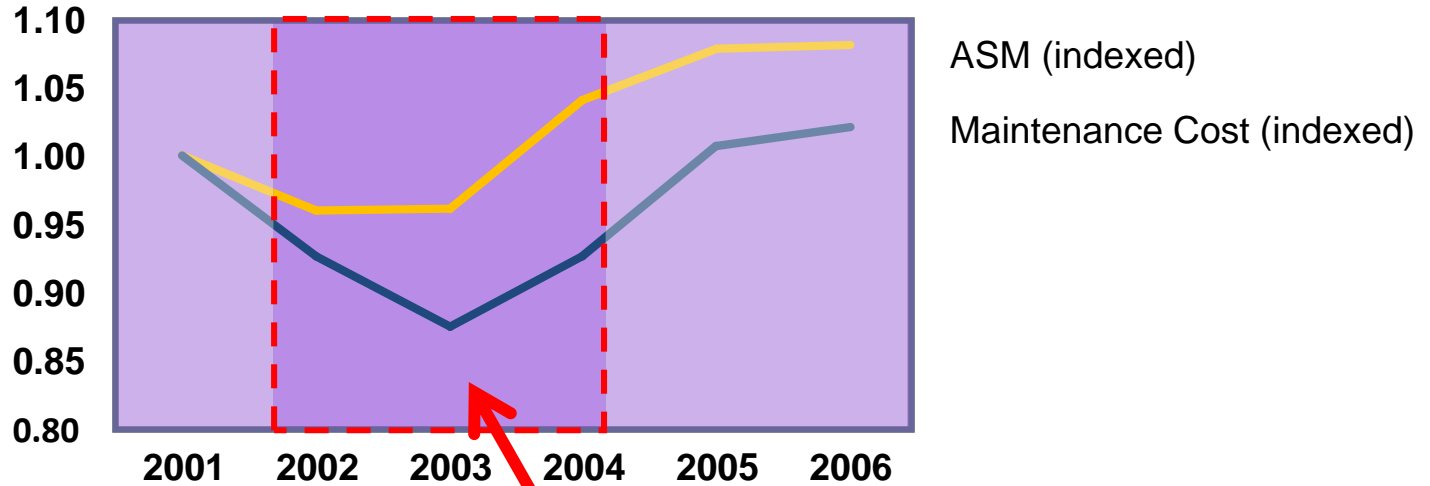
2008-2018 Air Transport MRO Market (\$B)



**The MRO Market Will Lose Three Years Of Growth!**

# In Addition, Suppliers Could See An Even Steeper Decline In Revenue As A Result Of Airline Use Of "Buffers"

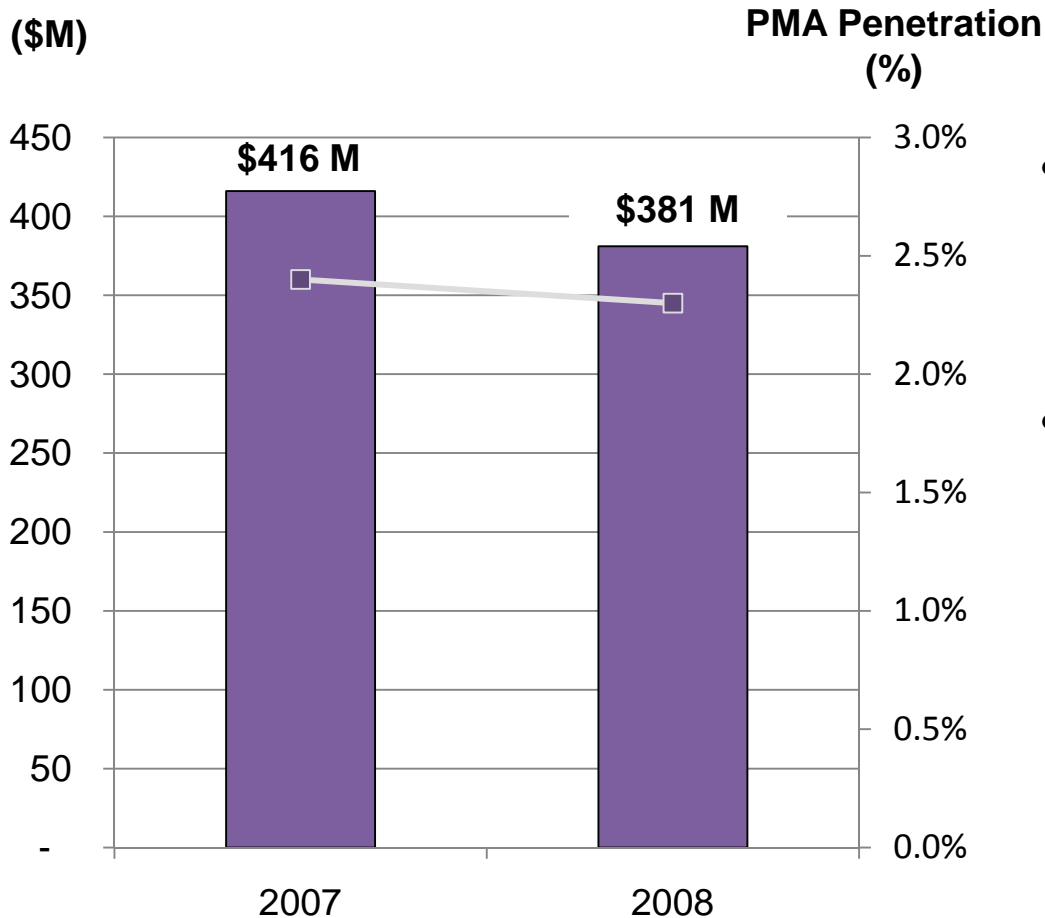
## 2001 – 2006 Maintenance Costs Versus Available Seat Miles In The US





# The Fuel Crisis In Combination With The Recession Contracted The PMA Market By 8% In 2008

## Air Transport PMA Market (\$M)



- 2008 PMA market is down 8% versus 2007, from \$416M to \$381M
- Several factors drive the PMA market contraction
  - Capacity reductions
  - Retirement of PMA-friendly platforms
  - Airline use of buffers
  - OEM defensive measures

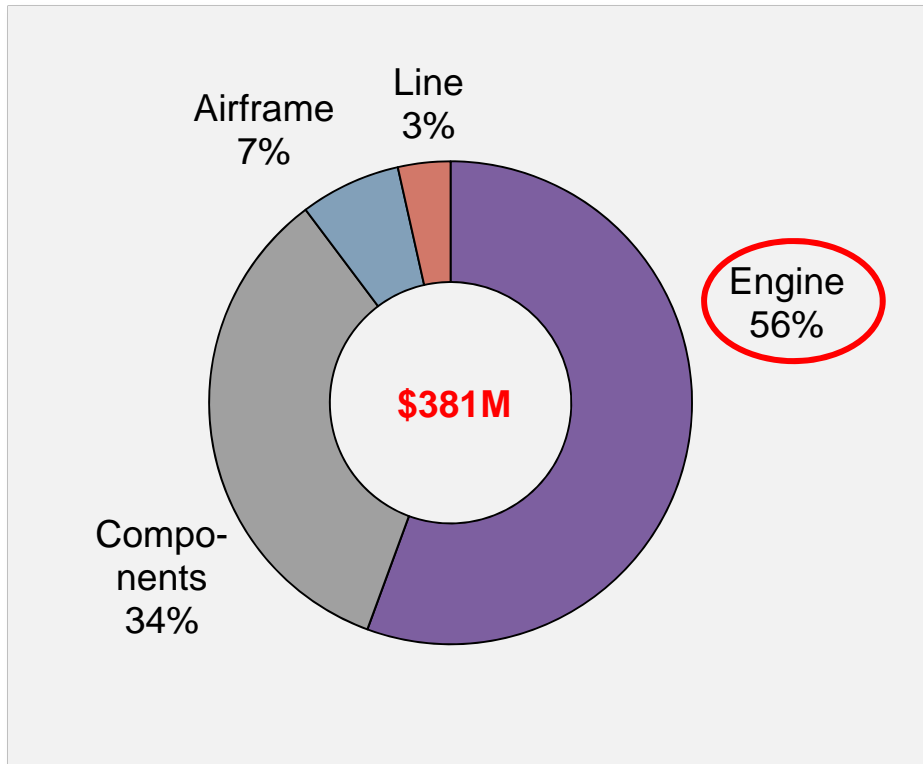
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**Current PMA Market**

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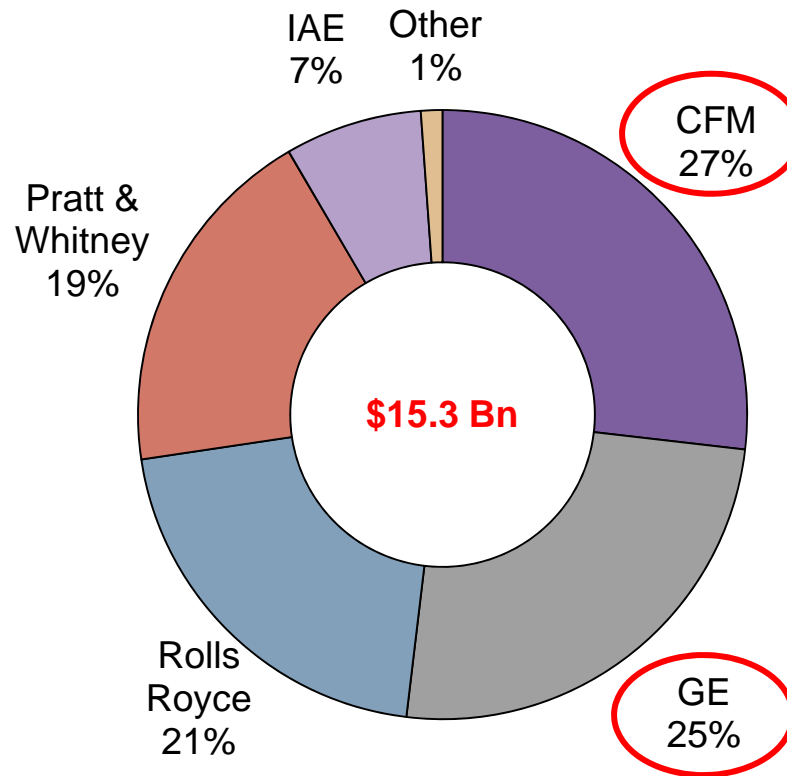
# Engines Account For Half Of The Air Transport PMA Market...

## 2008 Air Transport PMA Market



# ...And GE Engine Models Account For Half Of The Engine MRO Market

## 2008 Air Transport Engine MRO Market



# By Adopting A Licensed Service Center Aftermarket Strategy, GE Gains Significant Influence Over 17% Of The GE/CFM Market

## Recent GE Agreements With MROs

2002-

AIR FRANCE INDUSTRIES  
KLM engineering & maintenance

CFM56-7, CF80E, GE90, GP7200

2007

الخطوط الجوية العربية السعودية  
SAUDI ARABIAN AIRLINES

GE90, CF6, CF34

DAE  
دبي لصناعات الطيران  
Dubai Aerospace Enterprise

MOU MRO cooperation

2008

ST Aerospace  
A company of ST Engineering

CFM56

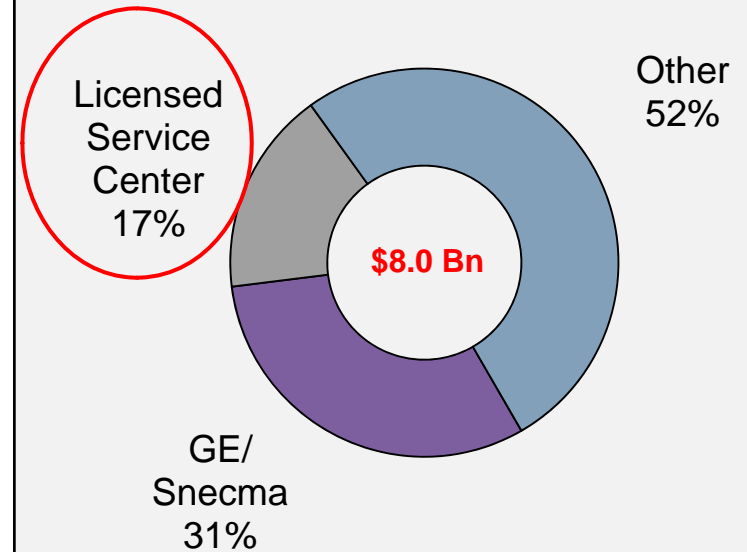
IBERIA

CFM56-5A

aveos

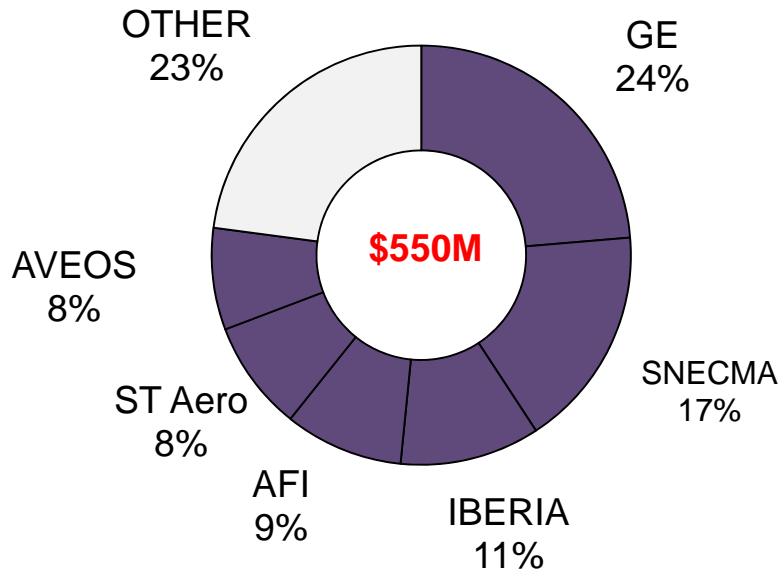
CF34, CFM56-2/-3/-5A and -5C

## 2008 GE/CFM Engine MRO Market, By Supplier Segment



# The CFM56-5B Is An Excellent Case Study Of The Effectiveness Of GE's Aftermarket Strategy

## 2008 CFM56-5B Overhaul Spend By Supplier



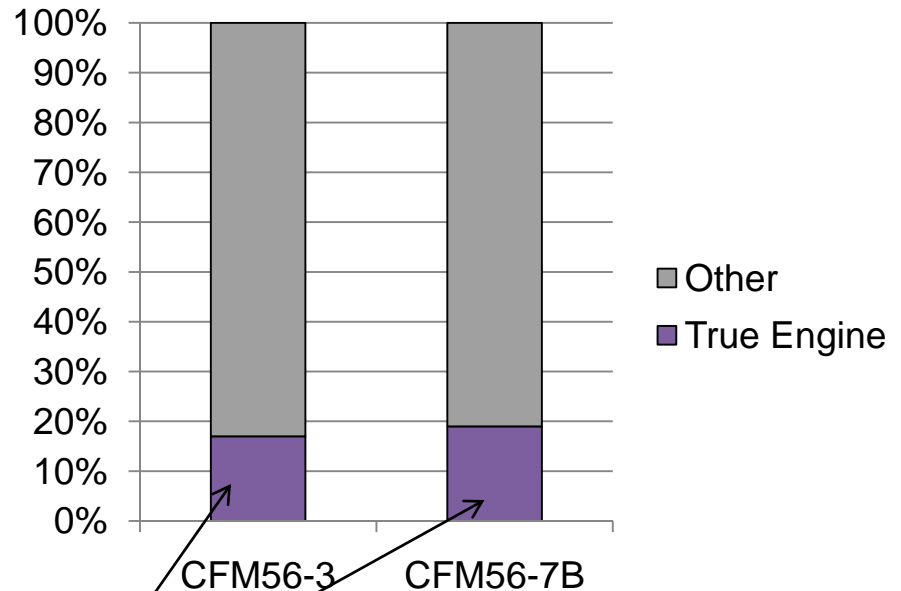
- CFM56-5B entered service in 1995 and powers nearly 45% of the current A320 fleet
- The MRO market for this engine is projected to reach \$1 Billion within the next five years
- From an age perspective, this engine would have been one of the growth platforms for engine PMA
- However, with current market shares, 77 percent of the supply side uses OEM parts

**Around 70-75% of the material for CFM56-A/-B are controlled by the OEMs**

# In Addition, GE's Branding Campaign Reduces The Addressable Market For Two Popular Engine Models

Portion Of Global Fleet Marked As "TRUEngine"

TRUEngine™



Nearly 20 percent of the CFM56-3 and CFM56-7B are branded TRUEngine

# In Contrast, Airframe And Component PMA Markets Are Expected To Continue Robust Growth

## Components



- Major suppliers of Broad Component Support have embraced PMA and are gaining an increasing share of the market
- Lesser risk for lessors to bring PMA onto the aircraft
- Components is a more fragmented market relative to engine, and many OEMs have relatively less aftermarket control.
- Below-average service from certain OEMs enhances the airlines' benefit of shifting to PMA

## Airframe

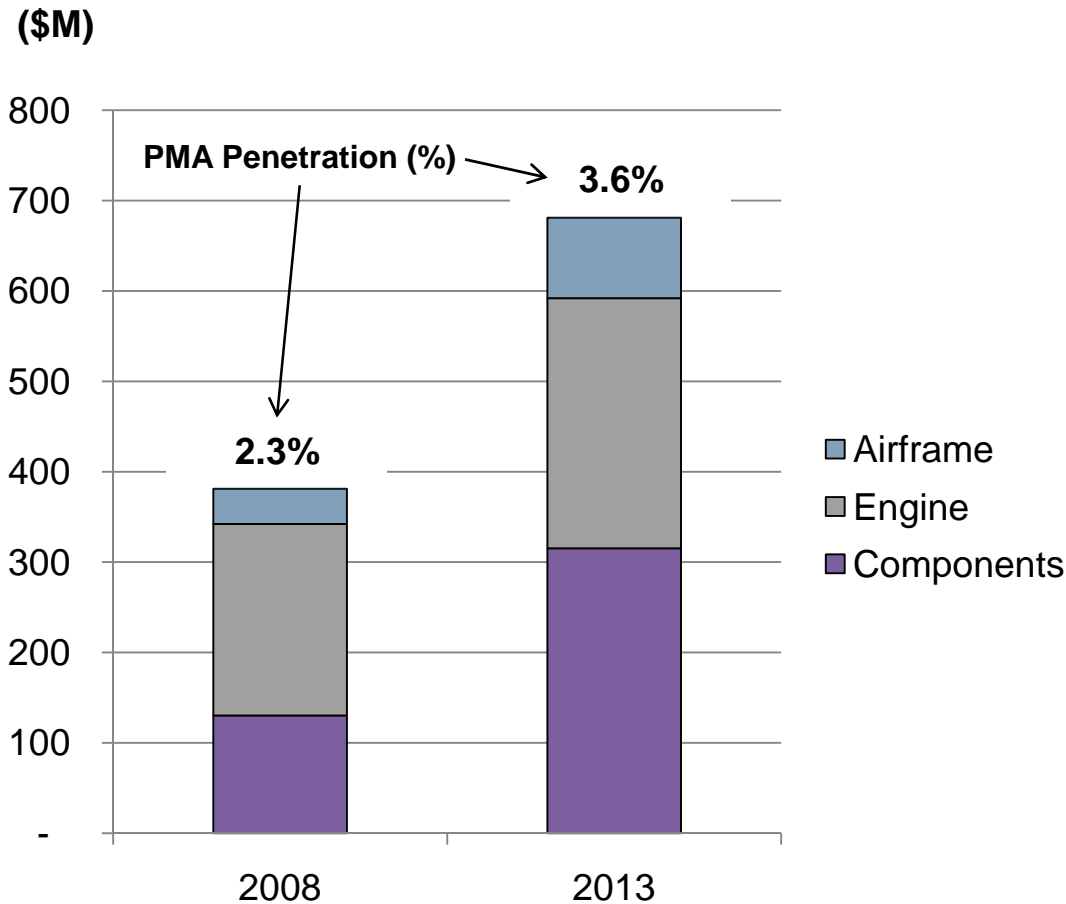


- Growing activity in competitive PMA for aircraft interiors
- For many operators, use of PMA for interiors is not a flight critical issue
- Barriers to entry are lower than for engines and components
- Defensive measures from OEMs are less sophisticated than in the engine segment



# The Air Transport PMA Market Is Expected To Reach \$680 M Within The Next Five Years

## 2008-2013 Air Transport PMA Forecast



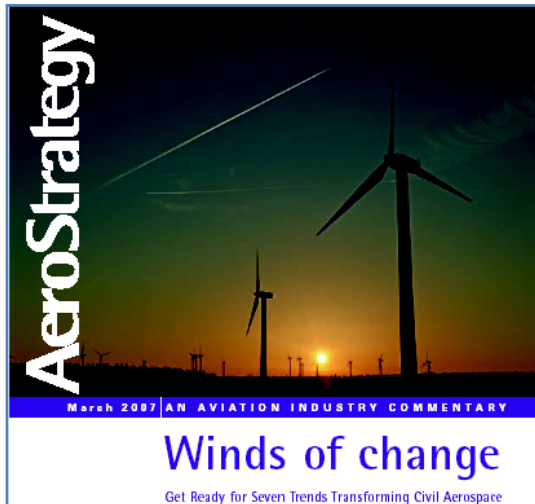
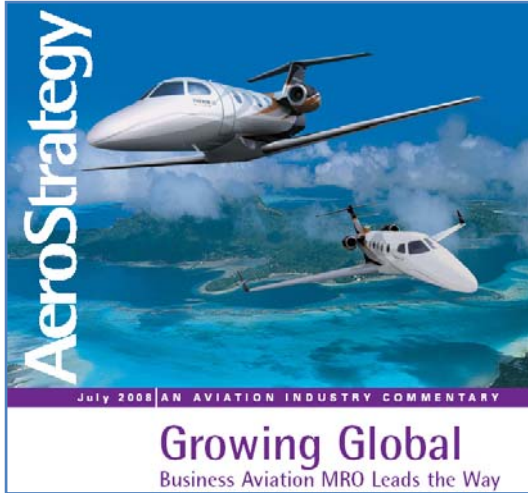
- Total material spend grows from \$16.6 Billion to \$21.4 Billion
- PMA Market increases from \$380 Million to \$680 Million
- PMA penetration expected to reach 3.6% of total material consumption
- Components and Airframe will have the highest growth rates and become more prominent
- Engines will see less growth as a result of strong OEM defensive measures

# Key Messages



- The fuel crisis in combination with the recession contracted the PMA market By 8% in 2008
- Engine OEMs have launched defensive measures, which have strengthened their control of the engine material market
- In contrast, airframe And component PMA markets are expected to continue robust growth
- The PMA market is expected to reach \$680M the next five years with 3.6% overall market penetration

# Thank You For Your Attention!



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