THE PMA INDUSTRY ECONOMIC OUTLOOK

Presented by:

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San Diego, CA March 22, 2012

Today's Agenda

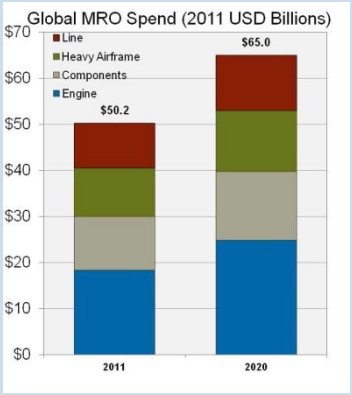
- **MRO Forecast**
- **PMA Market Forecast**

Making a forecast in these uncertain times….?

Two major factors influence aircraft MRO activity – *fundamental demand and supply chain practices*

Simplified MRO Supply Chain

1. Fundamental Demand For Aircraft MRO



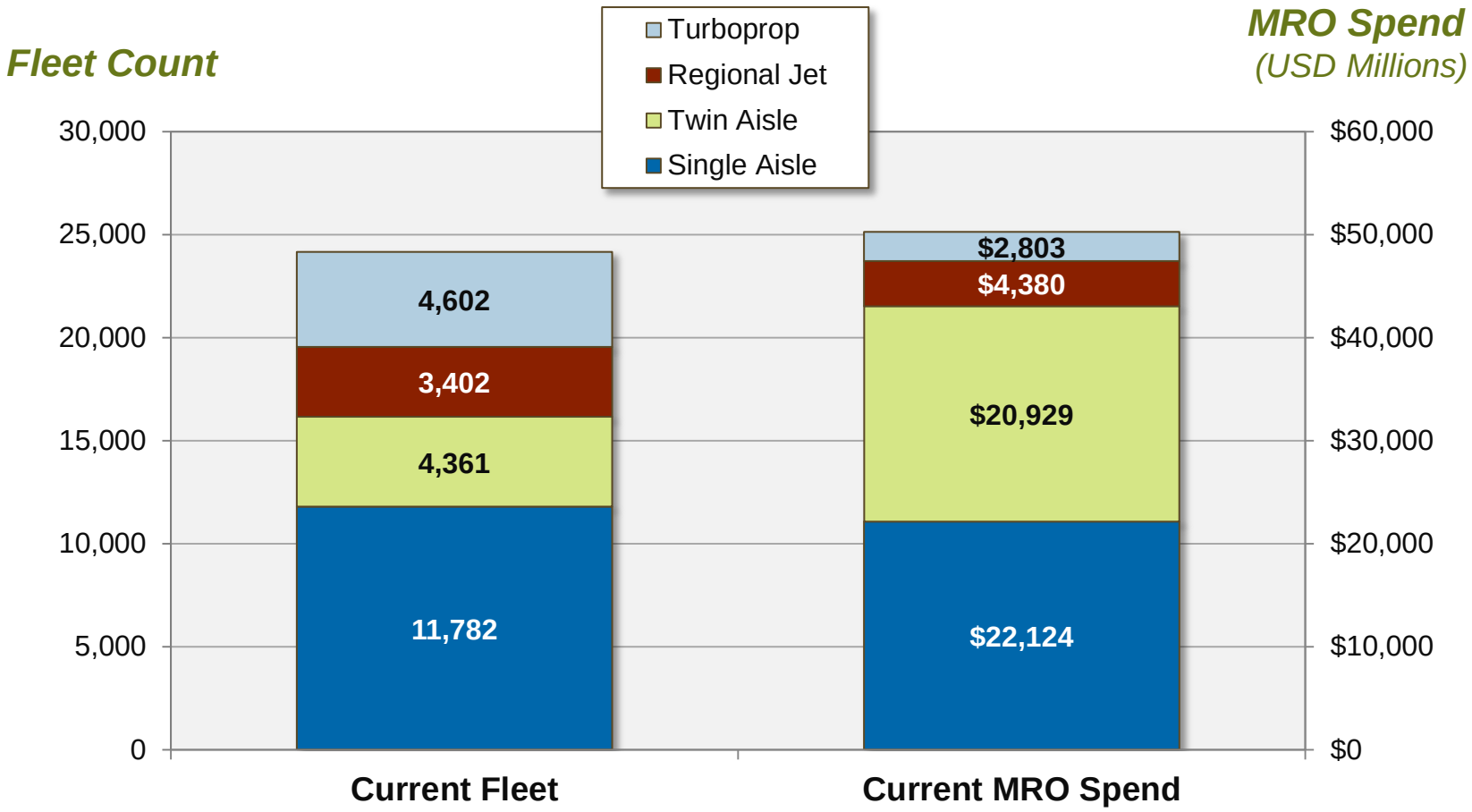
- Predicted airline maintenance spending as a result of aircraft demographics, utilization, equipment reliability, maintenance programs and regulations
- A good predictor of supplier MRO and aftermarket activity in normal times

2. MRO Supply Chain Practices

- Airline changes in purchasing and cost management in times of crisis such as Inventory destocking, use of surplus, deferred and reduced scope maintenance
- All act as a buffer between fundamental demand and realized revenue by OEMs and MRO suppliers

Source: ICF SH&E analysis
Forecast in 2011 $USD, exclusive of inflation. Includes turboprops

Today's active fleet is 24,000 – *this generates an MRO spend of about $50B*



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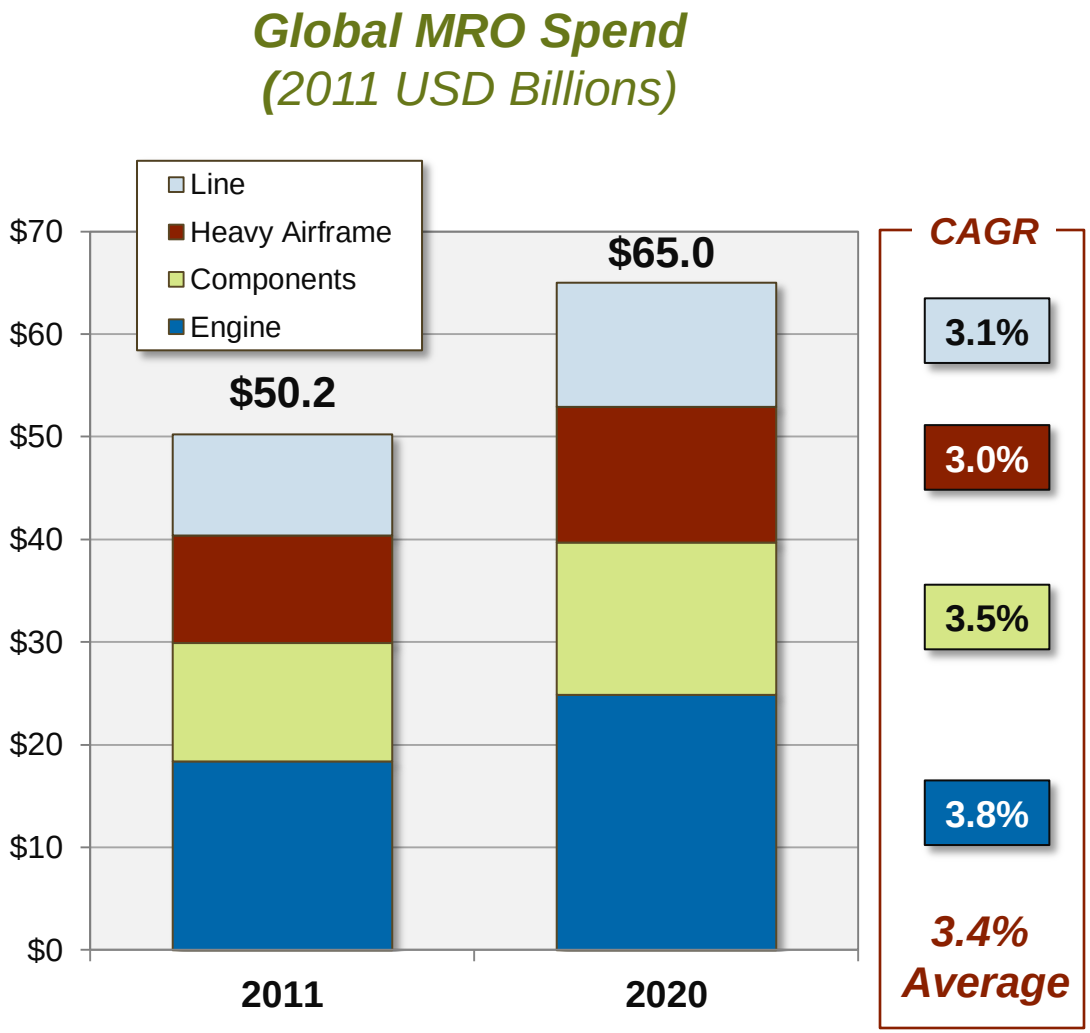
Forecast in 2011 $USD, exclusive of inflation. Includes turboprops

Currently valued at $50B, the global MRO market is expected to grow to $65B by 2020



- Global MRO spend is $50B, with the largest segment being engines at 36% of demand
- Average growth over the next 10 years is forecast to be 3.4% CAGR to $65B in 2020
- The strongest driver of growth is expected to be the engine market
- Despite reducing manhour intensity of airframe heavy checks as the fleet renews, upgrade and modification demand means airframe heavy MRO grows at 3% CAGR

Source: ICF SH&E
Forecast in 2011 $USD, exclusive of inflation. Includes turboprops

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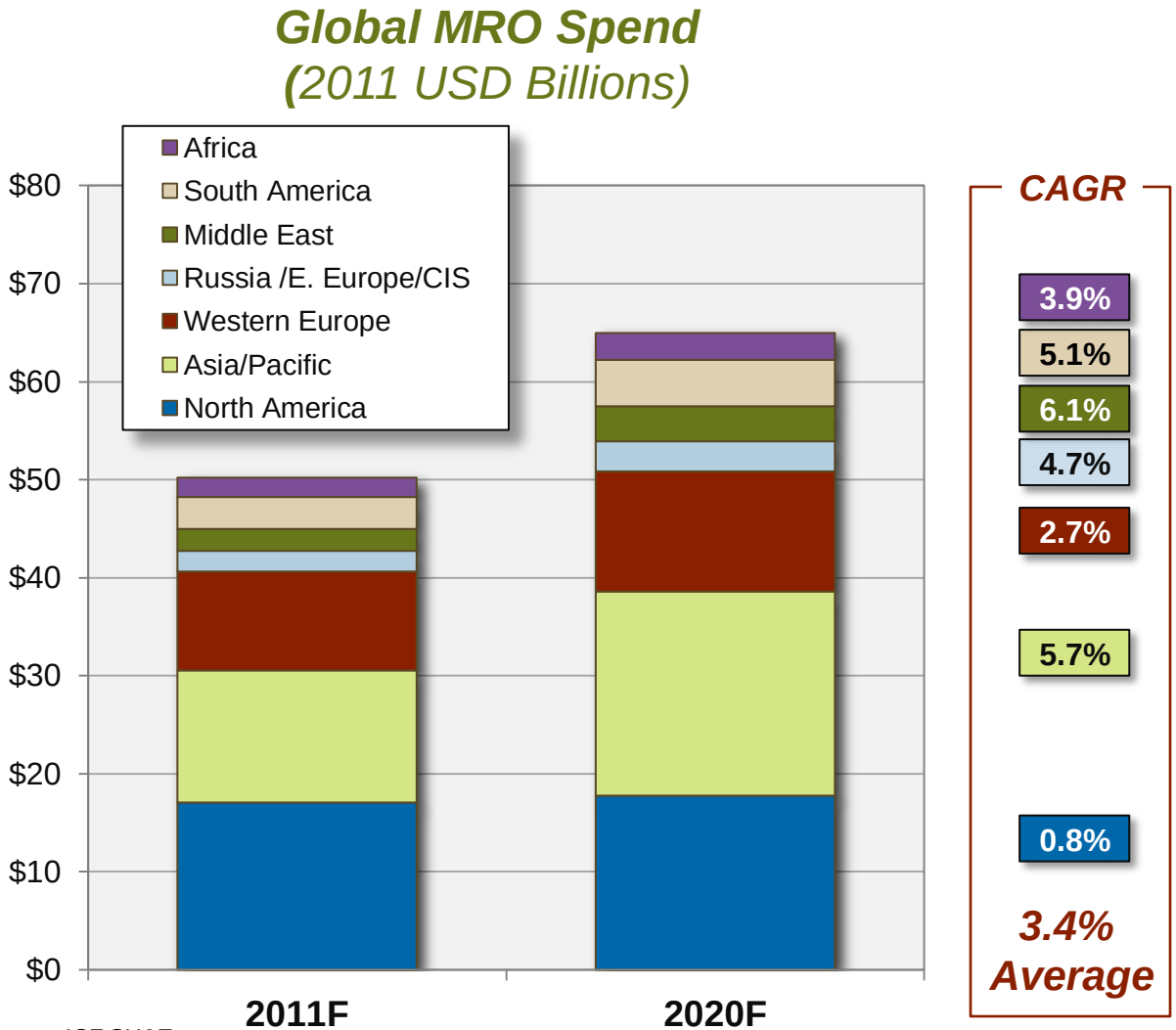
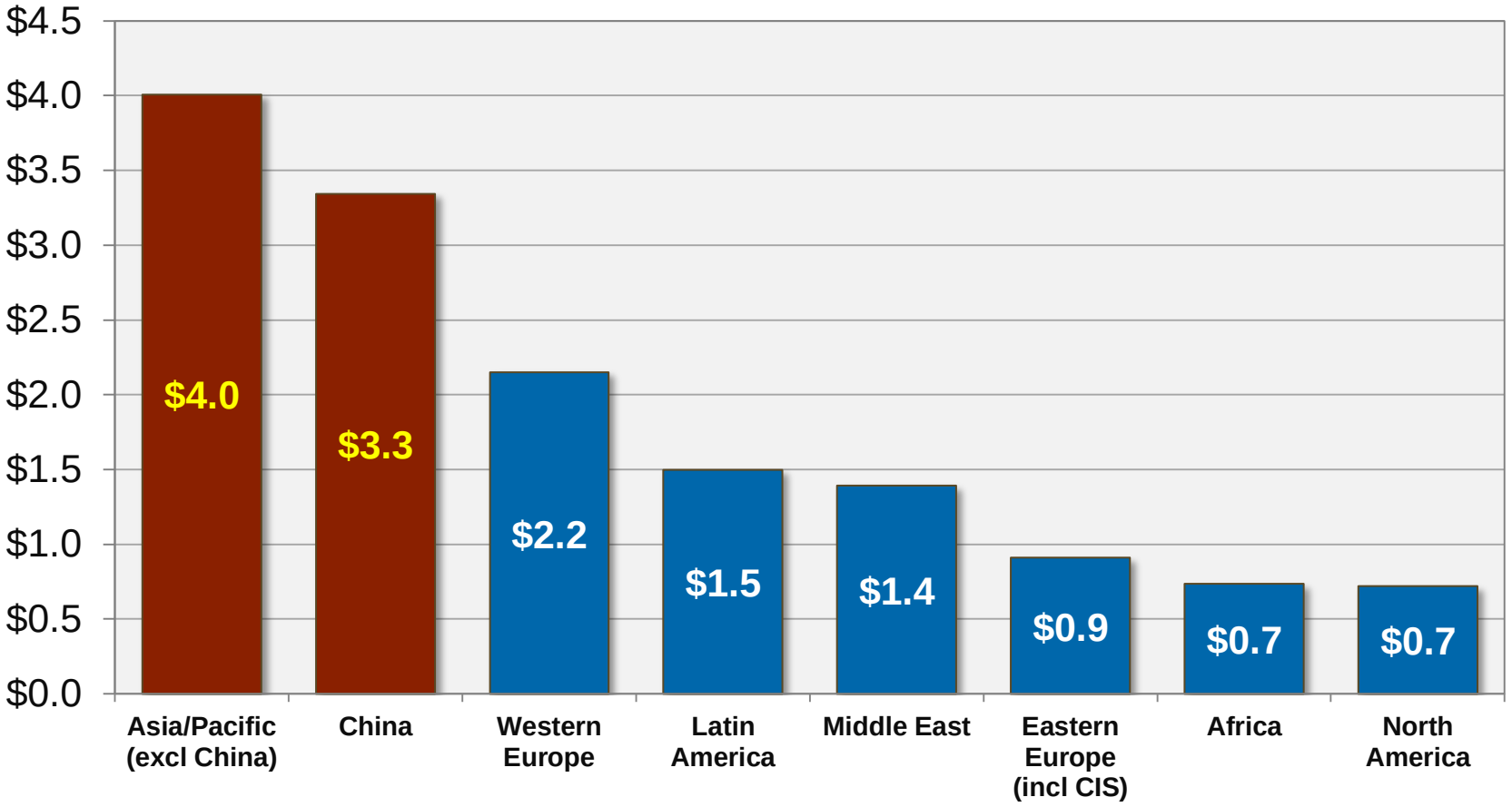


- **The mature North America MRO market remains virtually flat – *0.8% growth per year***
- **There is strong MRO growth from Asia Pacific operators (led by China and India) and the Middle East (led by Emirates, Qatar Airways, Etihad and Air Arabia)**

Source: ICF SH&E
Forecast in 2011 $USD, exclusive of inflation. Includes turboprops

MRO growth in $ terms is emphatically in Asia Pacific

Difference in $ MRO Spend, 2020 vs. 2011, By Region
(USD Billions)



Source: ICF SH&E
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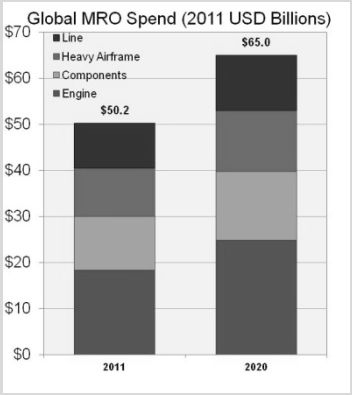
However, MRO supply chain practices have attenuated fundamental MRO demand since 2009

Simplified MRO Supply Chain

1. Fundamental Demand For Aircraft MRO



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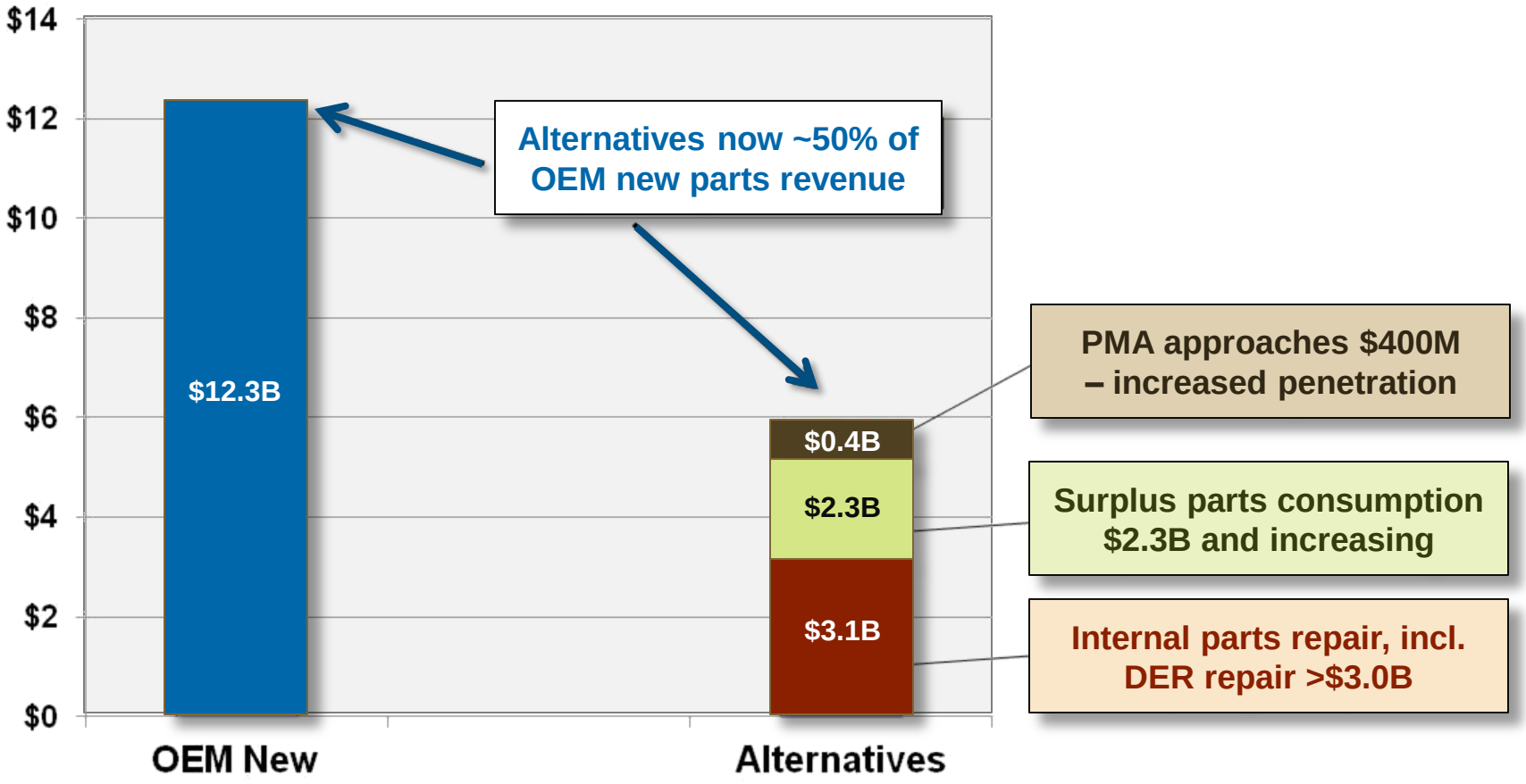
Airline interest in alternative parts increased…

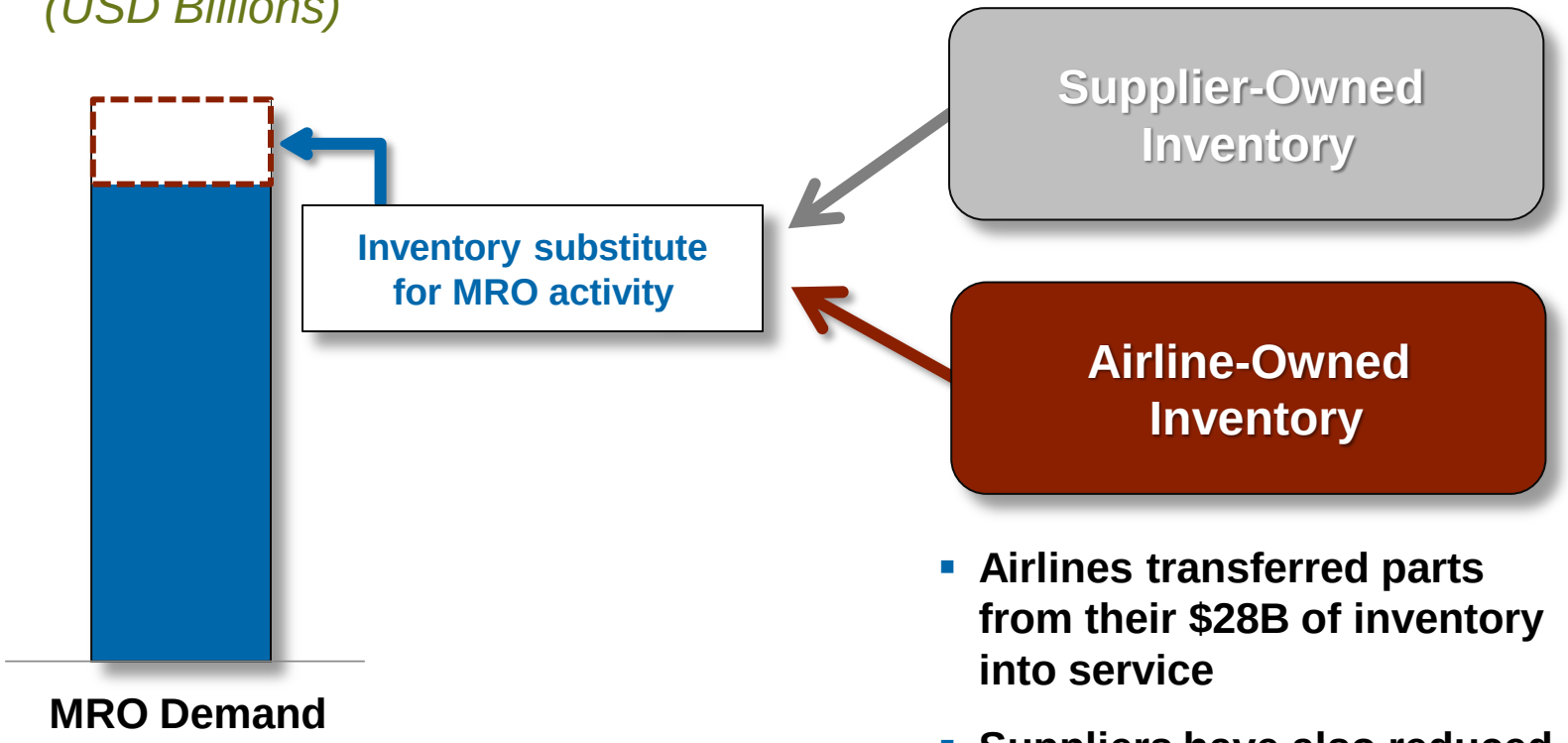
2011 Air Transport Service Parts and Alternatives
(USD Billions)



Source: ICFI SH&E

Airlines and MROs burned down inventory stocks in lieu of maintenance

Air Transport MRO Demand
(USD Billions)



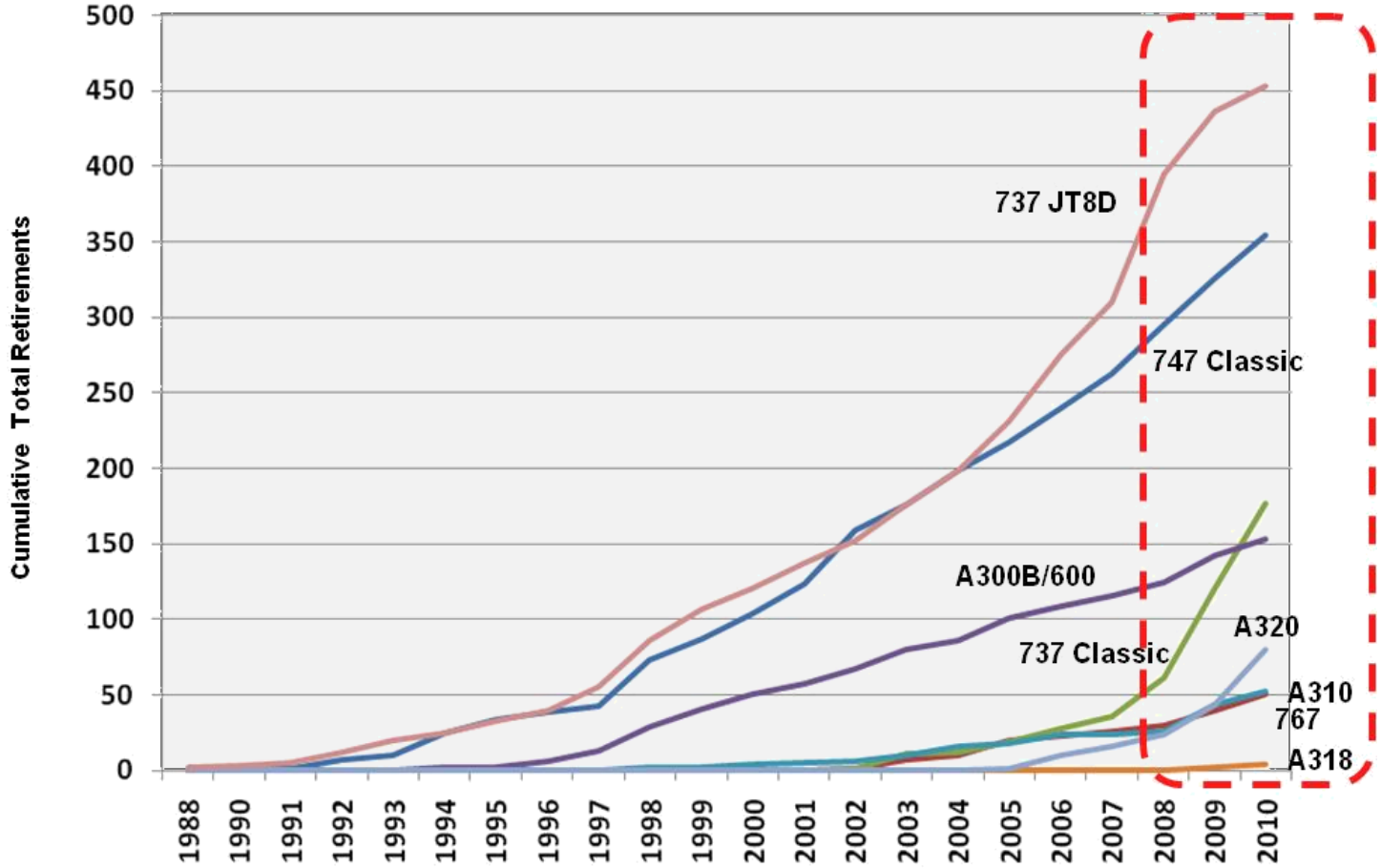
- **Airlines transferred parts from their $28B of inventory into service**
- **Suppliers have also reduced inventories**

Source: ICFI SH&E

In addition, aircraft cannibalization accelerated for certain aircraft models…

Cumulative Aircraft Retirements

1988-2010, By Retirement Year

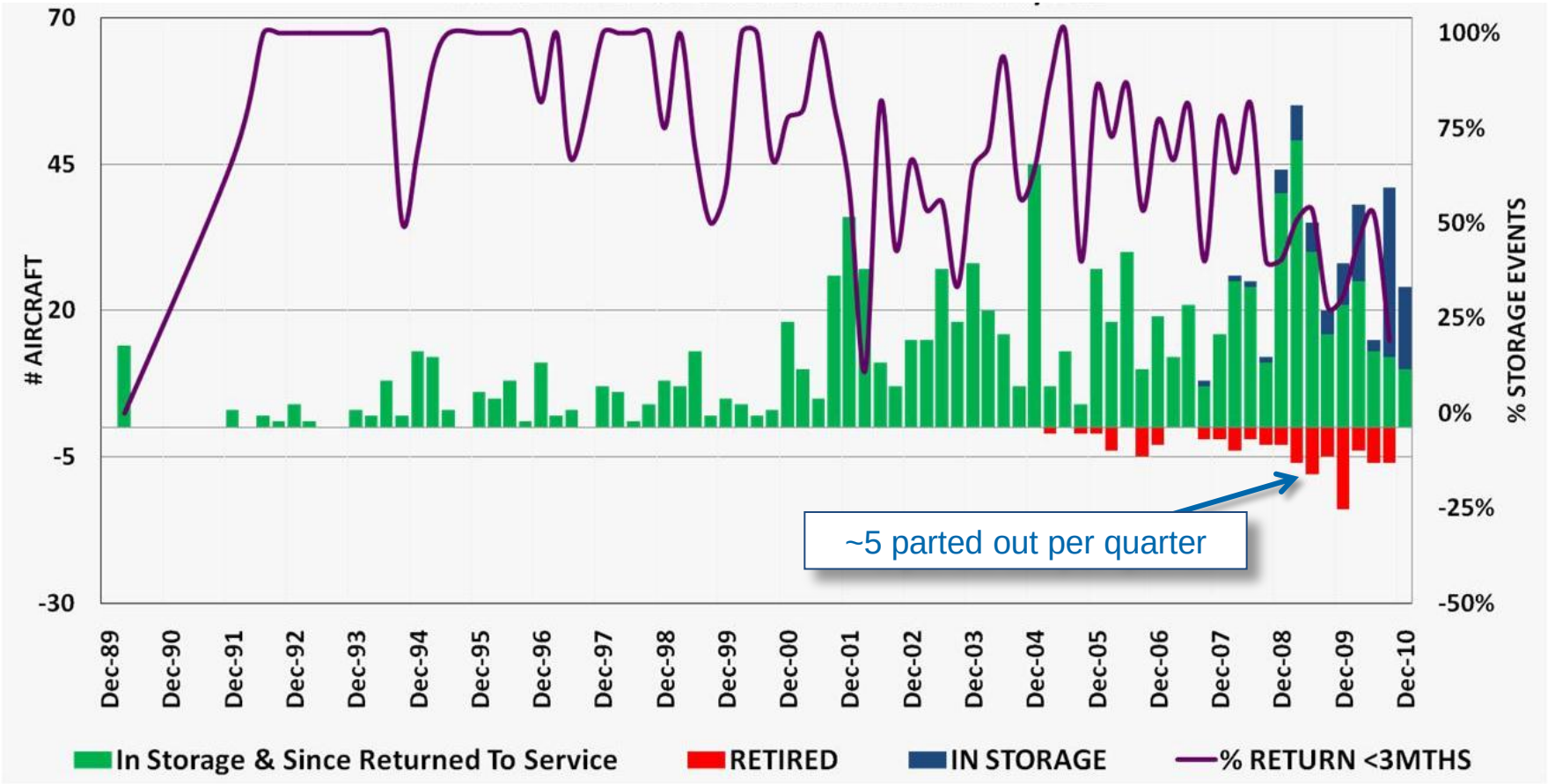


Source: ICFI SH&E analysis, Airclaims

... Parting out is affecting even earlier model A320s

Historical Storage Events By Quarter

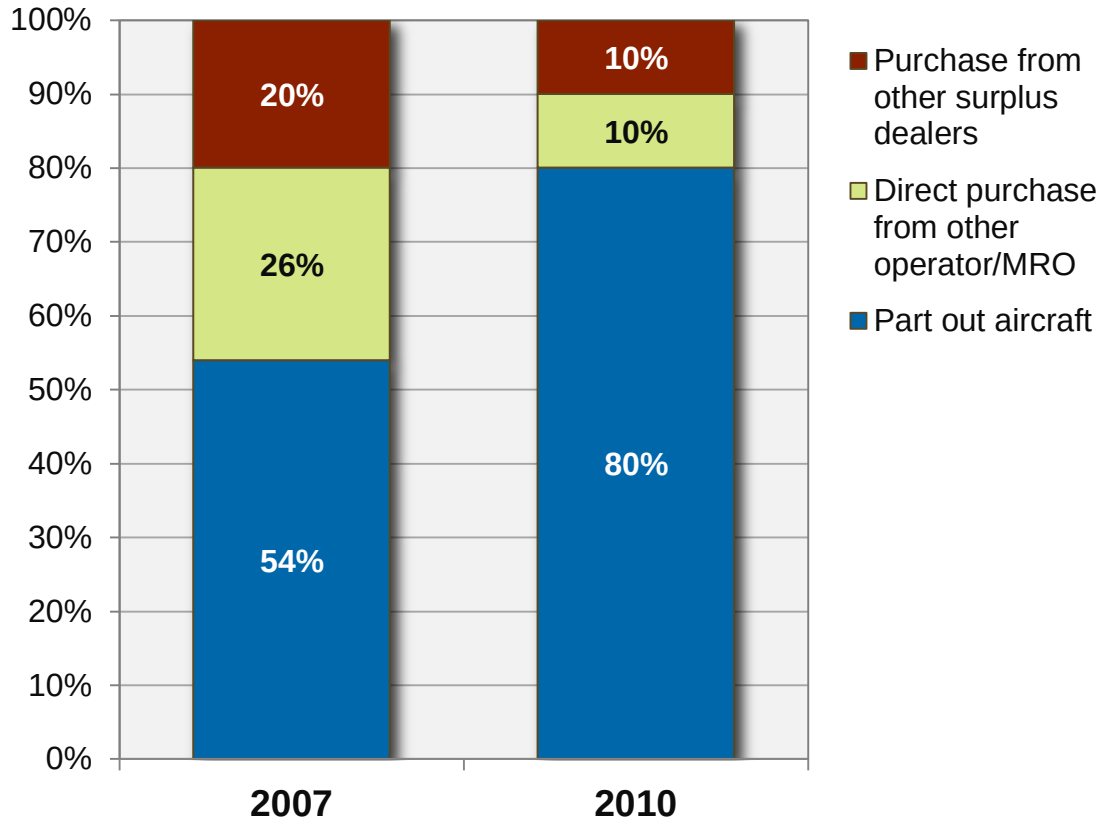
1990-2010: A320-100/200s



Source: ICFI SH&E analysis, Aircraft

Surplus dealers now get 80% of their materials from parting out aircraft, compared to 60% in 2007

2007 & 2010 Supplier Channels for Acquisition of Surplus Materials

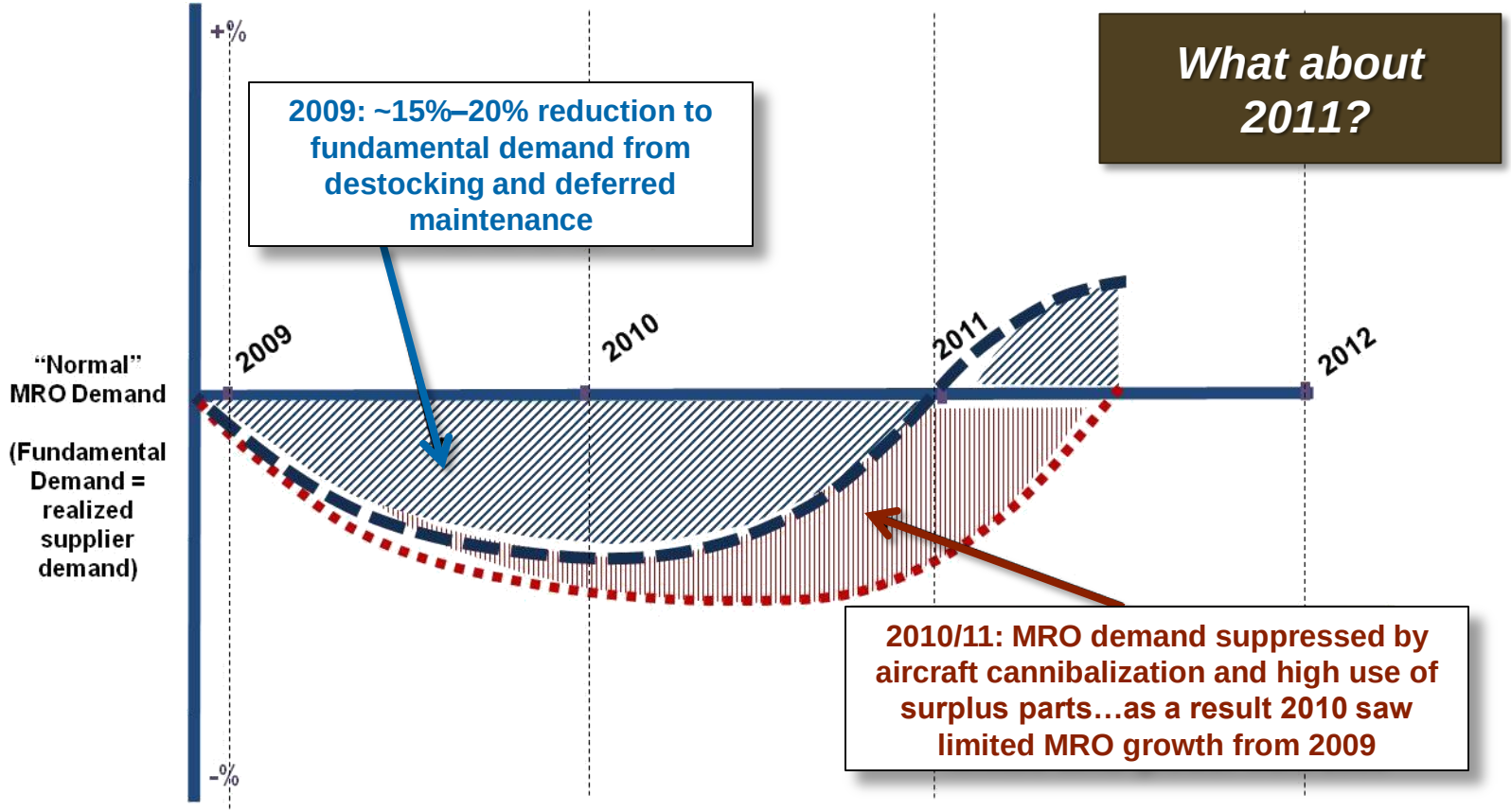


- **Increases in the rate of aircraft retirements and the associated harvesting of spare parts has resulted in up to 80% of surplus parts originating from parted out aircraft**
- **Leaner airline and MRO inventories have resulted in less surplus parts coming from excess inventories**
- **Companies that scrap aircraft have a direct advantage in access and control of surplus parts**

Source: ICFI SH&E

These trends have led to significant attenuation of fundamental MRO demand

Factors Supressing Fundamental MRO Demand



Source: ICFI SH&E

2011 saw the start of sustained revenue growth for the OEMs and Heico has continued to report strong growth

Year on Year Aftermarket Revenue Growth – Credit Suisse

COMPANY	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010	Q4 2010	Q1 2011	Q2 2011
Pratt & Whitney	-20%	-25%	-15%	-30%	-14%	0%	25%	45%	33%	20%
Hamilton Sundstrand	-11%	-14%	-9%	-18%	4%	4%	4%	31%	23%	25%
Goodrich	-8%	-16%	-19%	-20%	-10%	-4%	1%	12%	12%	14%
Rockwell Collins	-9%	-14%	-17%	-23%	-19%	-9%	2%	16%	16%	16%
Heico	-7%	-12%	-16%	-6%	2%	7%	14%	24%	25%	22%
Transdigm	-2%	-10%	-10%	-8%	-2%	12%	18%	25%	25%	25%
Honeywell	-11%	-14%	-17%	-21%	-4%	-4%	4%	9%	14%	21%
Meggitt					-9%	-2%	6%	29%	9%	18%
SAFRAN					-20%	0%	0%	12%	12%	13%
Average	-10%	-15%	-15%	-18%	-8%	0%	8%	23%	19%	19.3%

2009 – Annus Horribilus for MRO

Growth returns

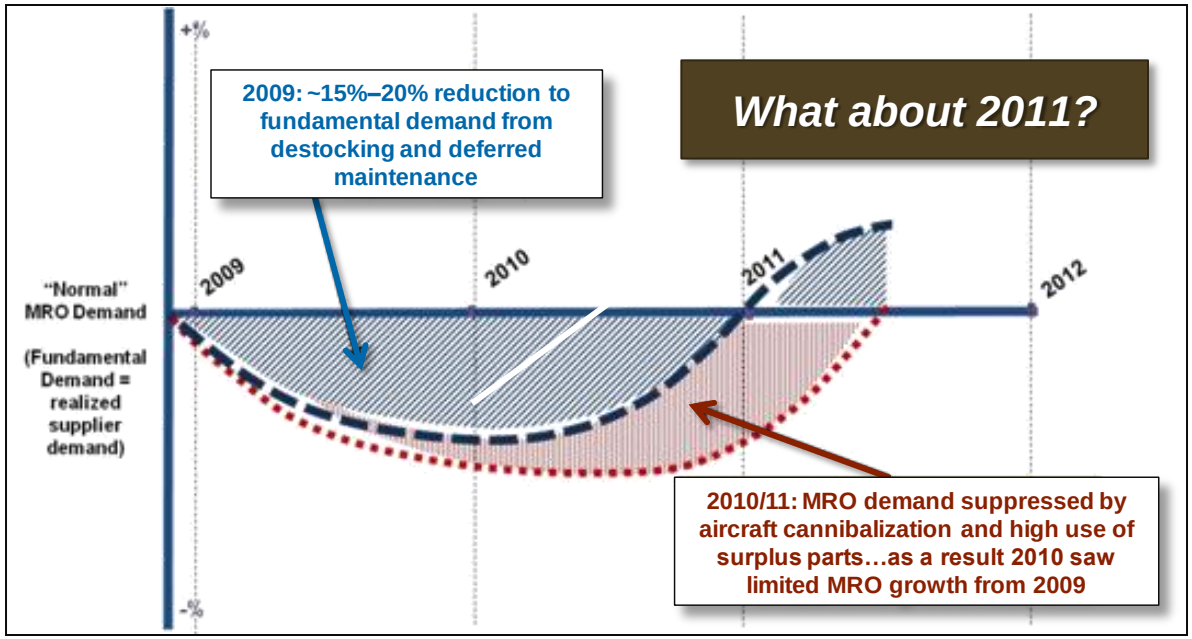
Sustained strong growth

Source: Credit Suisse

The outlook for 2011 Year On Year growth is mixed depending on who and where you are…

Factors Supressing Fundamental MRO Demand

- **The expectation and outlook for MRO growth in 2011 is mixed, depending on position in the MRO supply chain and geographic location e.g.,**
  - OEMs: double digit growth
  - European airline/ independent MROs: low anticipated growth
  - Asia and Middle East MROs: more robust growth driven by inherent stronger economic and utilization outlook
  - Surplus: double digit growth
- **On a global basis, ICF SH&E expects average MRO realized revenue growth in 2011 in the 7%-9% range**



Source: ICFI SH&E

What trends can MRO executive leadership rely upon for decision-making?

Growing interest in MRO market from OEMs

- New source of revenue and margin growth

Globalisation

- High relative growth in developing regions
- Global brands

Demand for integrated support services

- Predictable cash flow
- Outsource investment/ risk

Consolidation

- OEMs: scale (breadth of offer, financial)
- Distribution: service, cost and logistics imperatives

Continuing focus on cost reduction

- Economic imperative for airlines

Larger share of demand from newer generation aircraft

- Natural fleet migration to more efficient airframes
- Likely production rate increases

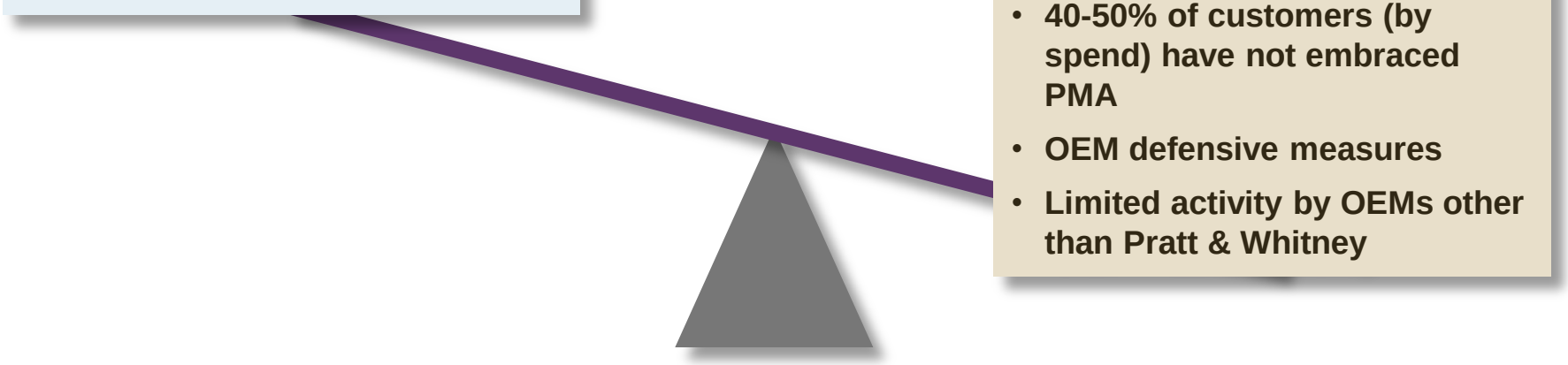
Today's Agenda

- MRO Forecast
- **PMA Market Forecast**

PMA parts penetration has not reached the tipping point

PMA Parts – Not Yet At Tipping Point

- Improving attitudes toward PMA
- Continued airline financial stress
- Growing customer acceptance of PMA parts
- Entry of Pratt & Whitney into PMA parts business

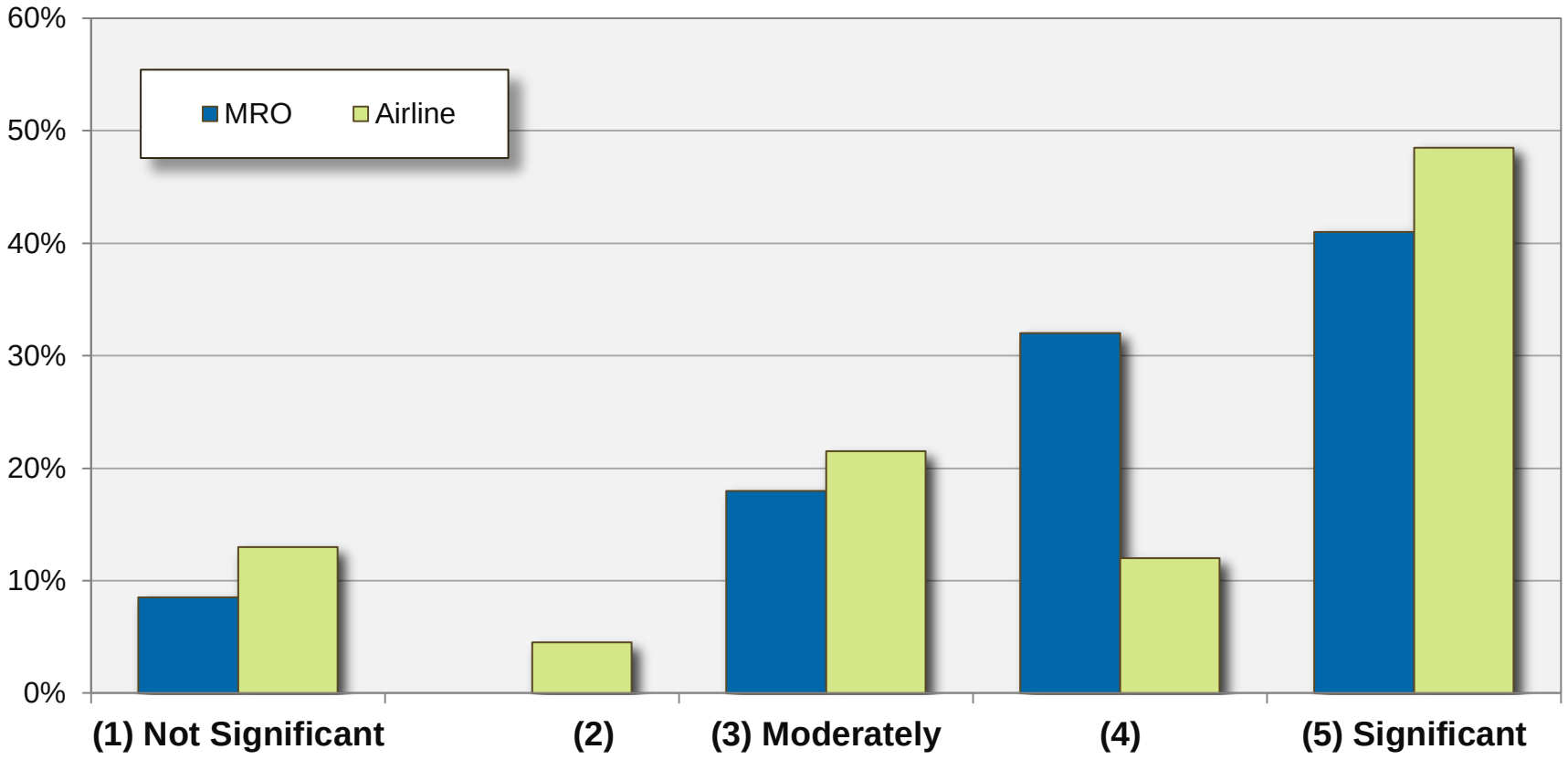


- Retirements of PMA-friendly platforms
- Growth of surplus supply
- Limited acceptance by lessors
- 40-50% of customers (by spend) have not embraced PMA
- OEM defensive measures
- Limited activity by OEMs other than Pratt & Whitney

Tipping Point Definition: significant change in OEM pricing power and/or business models

Most airlines and MROs feel that OEM pricing policy significantly drive the usage of PMA…

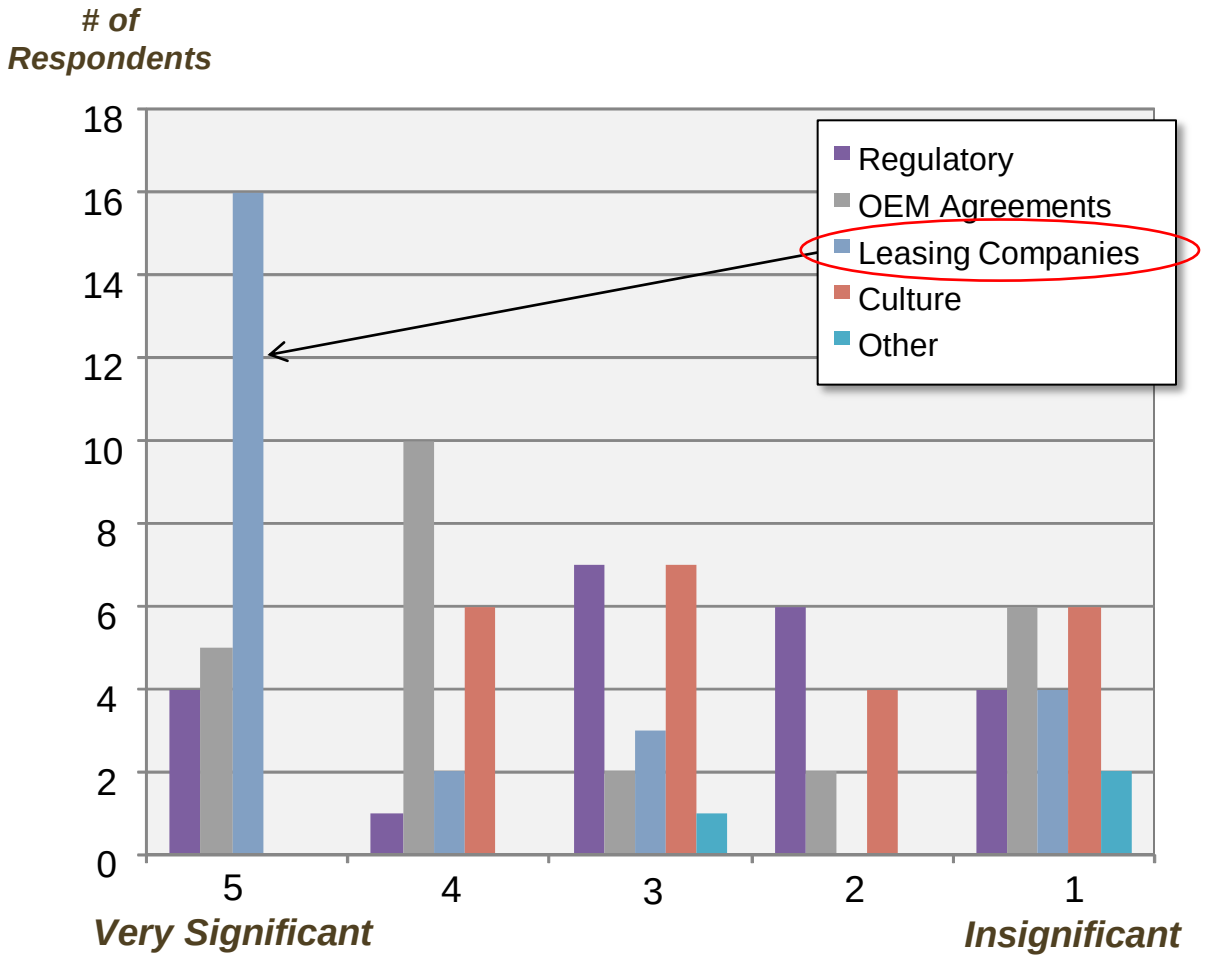
Extent To Which OEM Pricing Policy Drives The Use Of PMA



Source: ICFI SH&E

…But airlines believe that leasing companies are the largest barrier to PMA penetration

Barriers to PMA – Airline Perspective

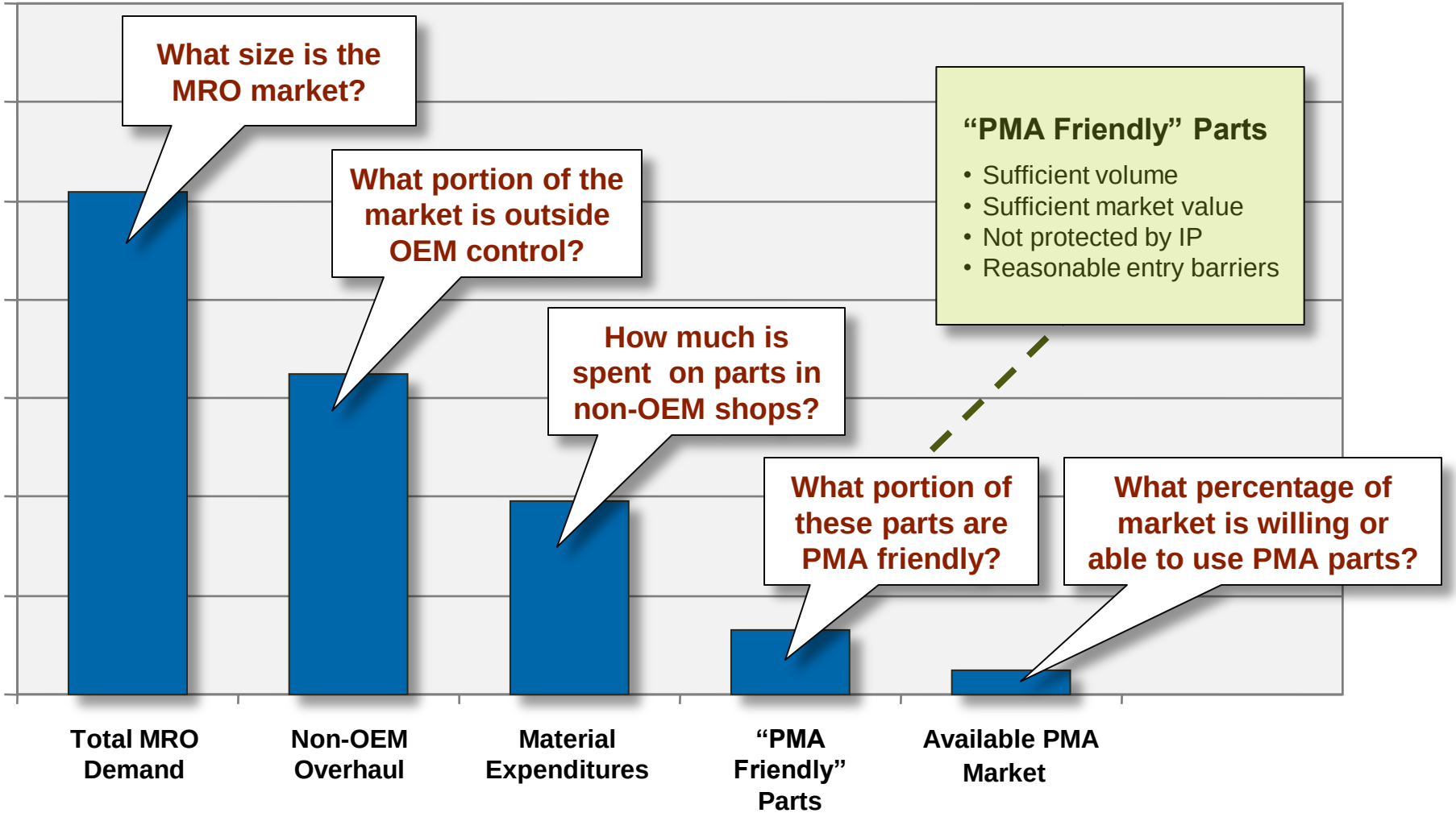


"It is not even possible to arrive at a reasonable financial formula to allow a lessee to use substitute materials in return for a higher rent."

– Chief Technical Officer of A Leasing Company

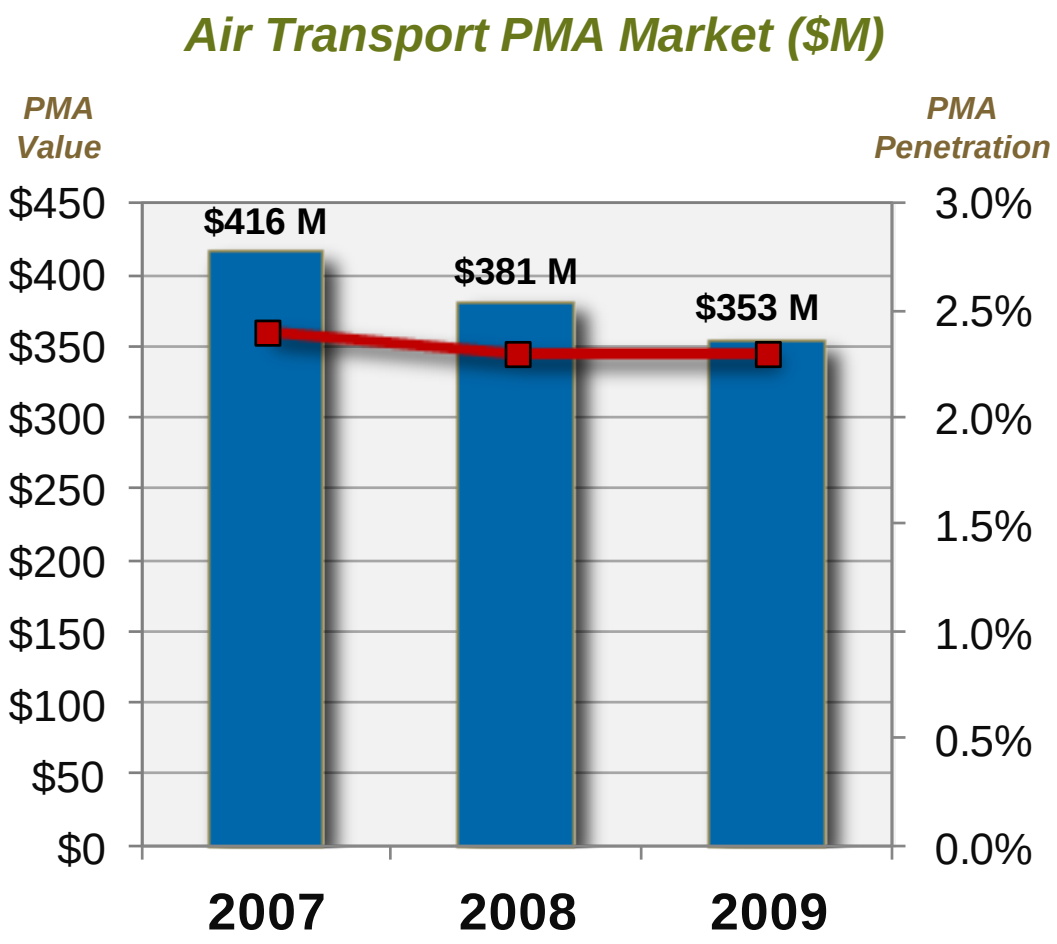
Source: ICFI SH&E

The methodology for assessing the PMA parts market includes several screens



Source: ICFI SH&E

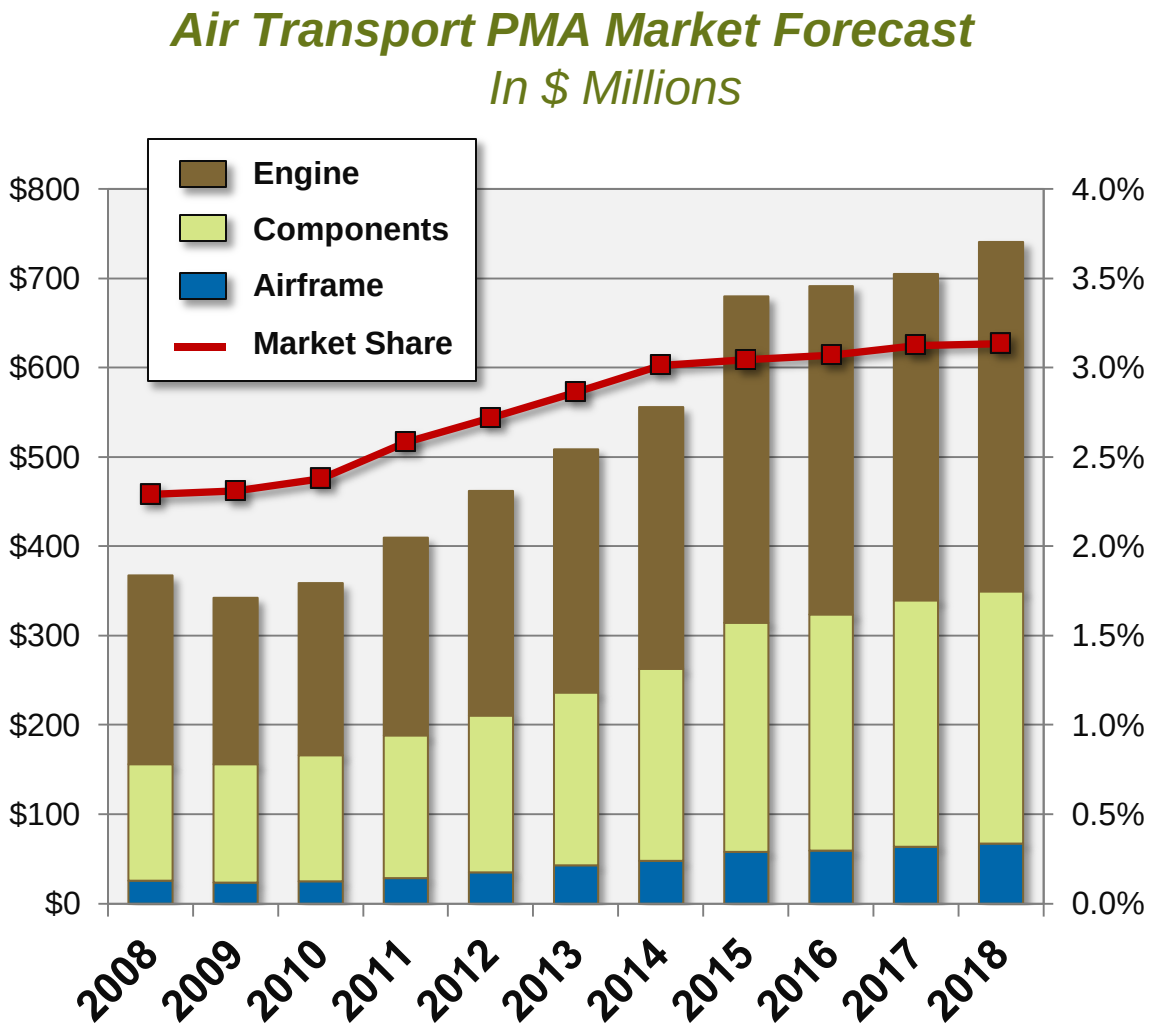
The 2009 PMA market contracted by an estimated 8%



- **2009 PMA market was down 8% versus 2008, from $381M to $353M**
- **Since the peak in 2007, the PMA market has fallen by 17%**
- **Several factors drove the PMA market contraction**
  - Reduction in Fundamental Demand
  - Airline use of buffers
  - Deferred maintenance
  - Work scopes (e.g.. more repair and less replace)
  - Cannibalization of surplus aircraft and engines
  - Lack of airline resources devoted to PMA approval process
  - OEM defensive measures

Source: ICFI SH&E

Current PMA penetration is 2.4% and is projected to grow to over 3% by 2018

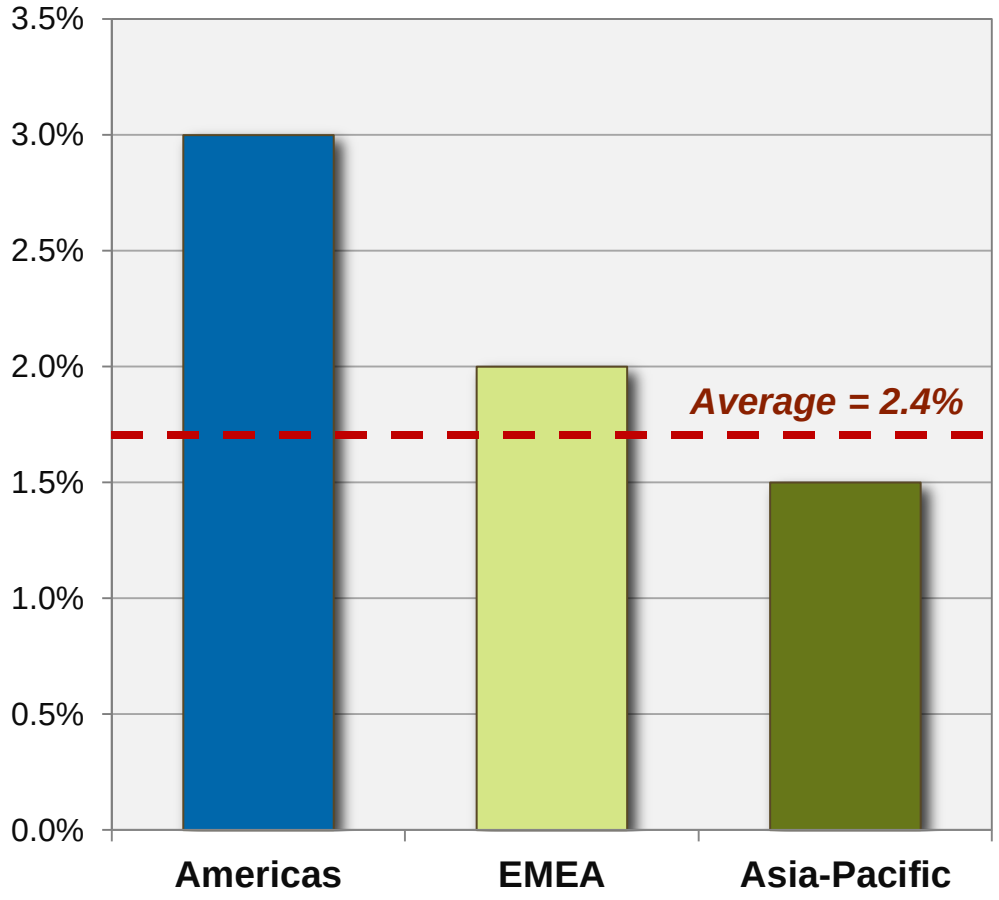


- **The PMA market is estimated to grow from $410M in 2011 to $750M by 2018**
- **Engine PMA parts remain the largest category**
- **PMA penetration expected to grow to over 3% of total material consumption**

Source: ICFI SH&E

The penetration of PMA varies by geographic region

Air Transport PMA Market Penetration By Region

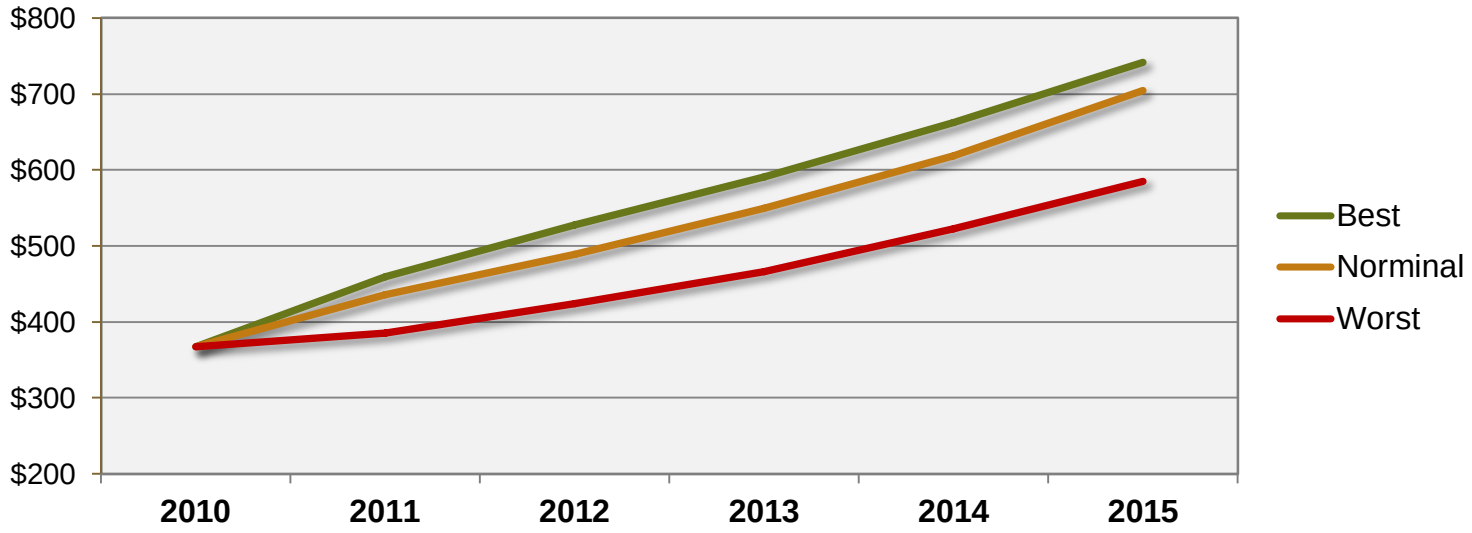


- **PMA penetration is highest in the Americas at an estimated 3.0%**
- **This is due to broad regulatory acceptance and a fleet dominated by large airlines with significant engineering capabilities**
- **PMA penetration is the next largest in EMEA (2%) followed by Asia Pacific (1.5%)**

Source: ICFI SH&E

The PMA market outlook is strong, but oil prices could moderate growth …

How Will Oil Prices Affect The PMA Market?



Best case
Oil < $80/bbl

- Fuel costs fall to less than $80/bbl
- Strong kick-back growth during 2011 and 2012
- 5 yr CAGR of 13%

Nominal case
Oil $80 – 110/bbl

- Fuel costs fall to less than $80/bbl
- Strong kick-back growth during 2011 and 2012
- 5 yr CAGR of 12%

Worst case
Oil > $110/bbl

- Fuel costs fall to less than $80/bbl
- Market exhibits slow growth due to flat airline travel
- 5 yr CAGR of 9%

Source: ICFI SH&E

The latest new – and big – event…
UTC and Goodrich

United Technologies

GOODRICH

More big deals to come?

AVIATION WEEK

UTC To Acquire Goodrich for 18.4 Billion

By Madhu Unnikrishnan madhu_unnikrishnan@aviationweek.com, Joseph C. Anselmo janselmo@aviationweek.com

United Technologies is buying Goodrich for $18.4 billion, marking one of the largest aerospace and defense (A&D) mergers since a wave of industry consolidation in the late 1990s.

UTC announced the deal late in the evening of September 21, confirming the talks the two companies were rumored to have held since late last week. The deal is for $127.50 per share of Goodrich, including $1.9 billion in debt. UTC says it plans to finance the deal through a combination of debt and equity, with the equity component comprising 25% of the deal. The combined company is expected to have sales of $66 billion. Separately, UTC was expected to report 2011 revenues of $58 billion, while Goodrich was expected to report revenues of $8 billion.

UTC plans to borrow about three-quarters of the purchase price. UTC CEO Louis Chenevert said he expects the deal, which still must receive shareholder and regulatory approval, will close in the second or third quarter of 2012.

"This acquisition further strengthens our postition in the growing comercial aerospace market and enhances our ability to support customers with more integrated systems," Chenevert said.

While the talks were said to be ongoing. Bain & Co. global A&D practice leader Michael Goldberg told Aviation Week that a potential deal would make sense. "A deal would increases the number of subsytems and capabilities between power and propulsion and electronics structures and interiors and would gives a larger supplier an opportunity to provide more on each airplane," he said.

In a conference call with analysts on Thursday morning, Chenevert acknowledged that his company has been eying Goodrich for some time. He said robust growth in air traffic, driven by demand in emerging markets, adds to the appeal of a combination, noting that UTC's Hamilton Sundstrand unit and Goodrich both provide a lot of content to new aircraft platforms such as the Boeing 787.

The deal reflects the premium value that Goodrich has established over the last decade, says Jeffries analyst Howard Rubel. "The transactions values Goodrich at 18.2 times our 2012 estimated earnings-per-share and approximately 10.5 times our 2012 estimated [earnings before interest taxes, debt and amortization] of $1.75 billion," he says.

Goodrich CEO Marshall Larsen will become chairman, president and CEO of a combined UTC Aerospace Systems business unit that includes Goodrich and Hamilton Sundstrand and which will be based in Charlotte.

Larsen noted that 43% of Goodrich's sales are in the aftermarket. And he added that the 30% of Goodrich sales in defense and space are spread across many areas—electro-optical surveillance, helicopters, the Joint Strike Fighter—and not as vulnerable to defense budget cuts. In fact, Goodrich's defense sales saw organic growth of 8% in the first half of 2011.

… And the growing interest in the MRO market from component OEMs may lead to lower PMA market growth

Recent Component OEM Partnerships

- **Component OEM focus on the aftermarket is reducing the portion of MRO outside OEM control (therefore open to PMA usage)**
- **OEMs are looking for independent MRO partners to expand their component licensed service center network**
- **Engine licensed service center network model being replicated by component OEMs (e.g. following success of CF34 / CFM56 networks)**
- **Component PMA forecast might therefore be optimistic**
- **PMA companies might consider:**
  - **Focusing on parts from OEMs that are not paying attention to the aftermarket**
  - **Look for opportunities in adjacent markets (e.g. industrial gas turbines)**
  - **Seek licensed PMA opportunities on sunset platforms to help OEMs better support products**

In summary, there are questions, opportunities and challenges for PMA companies to address

Move away from engine PMA to components / interior

- New challenges for PMA companies in the component space– fragmented interiors market, potentially fewer customers, lower volumes compared to engine PMA

Still limited interest in PMAs from leasing companies

- Still hard to make the business case for leasing companies to use PMA – what's in it for them?

How can PMA companies maintain momentum?

- PMA companies must reinvent themselves and their value propositions to airlines. Must be more than just a 30% cost savings; Provide guarantees, system solutions (i.e. a whole seat vs. a seat part), asset management, etc.
- Opportunities may exist in licensed PMA, for example on engines. But this requires very good logistics skills on top of the engineering skills

How will PMA companies respond to OEM focus on MRO

- Component OEM focus on the aftermarket may reduce PMA market growth in the future

Thank You

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- **MRO Cost & Performance Benchmarking**
- **MRO Information Technology (IT) Assessment**
- **M&A Commercial Due Diligence**
- **MRO Strategic Sourcing Support**
- **Supply Chain Management**
- **LEAN Continuous Process Improvement**
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