

OLIVER WYMAN CAVOK

MRO EUROPE 2019 MARKET FORECAST AND TRENDS

15 OCTOBER, 2019

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Oliver Wyman's Aviation, Aerospace & Defense practice is the largest and most comprehensive consulting team dedicated to the industry

OUR EXPERIENCE

- ~450 professionals across Europe, North America and Asia
- Deep aviation knowledge and capabilities allow the practice to deliver data-driven solutions and provide strategic, operational, and organizational advice

OUR CLIENTS

We have worked with more than 75% of the industry's Fortune 500 companies, including:

- Most Global Airlines
- MROs, OEMs, and independent parts suppliers in the Americas, Europe, and Asia
- Dominant aerospace and defense firms

OUR APPROACH

Data-driven: Unbiased benchmarking and forecasting tools to establish problems and identify solutions

Innovative: Ideas that are forward-thinking

Actionable: Results-oriented recommendations

Collaborative: An emphasis on working with our clients, alongside executives, management, and support teams

This presentation incorporates Oliver Wyman's 2019–2029 Global Fleet & MRO Market Forecast and 2019 MRO Survey, both of which are available at oliverwyman.com



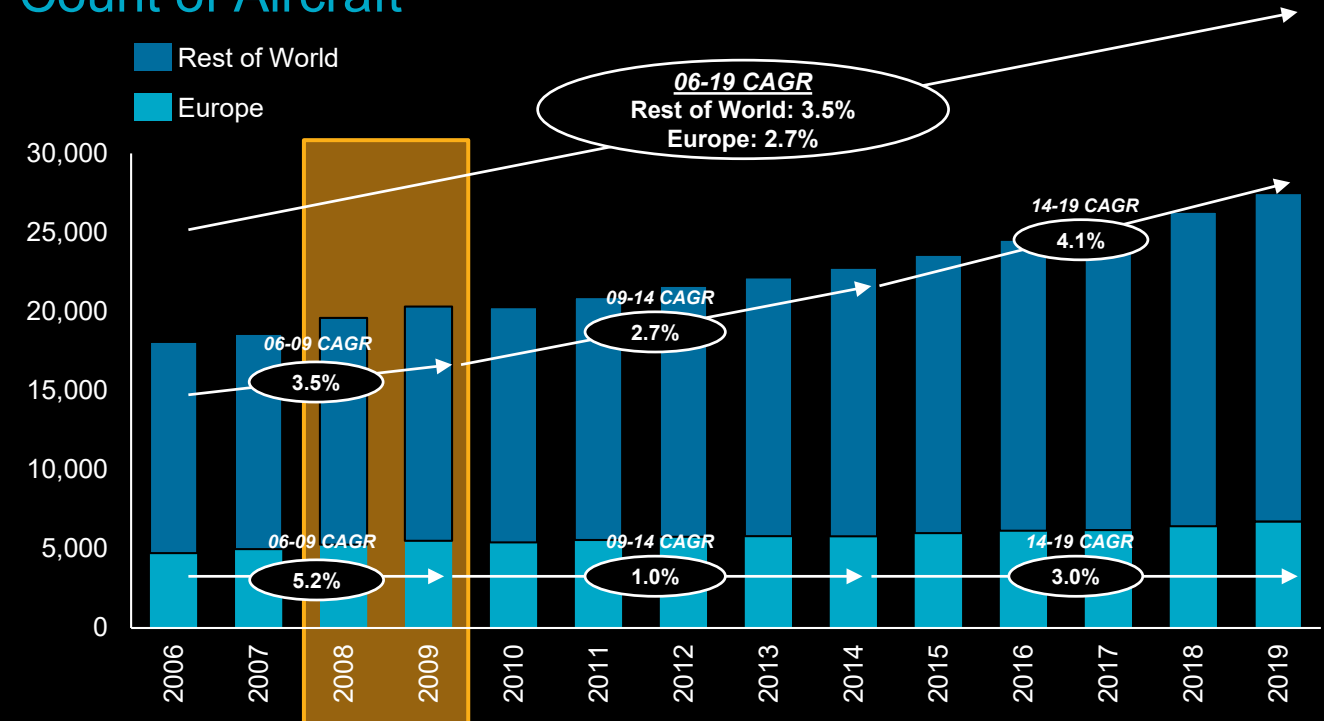
1 | State of the Industry

The global economy and aviation has come a long way from the 2008 Great Recession

A Look Back at the 2008 Financial Crisis



Annual Fleet Size Europe vs Rest of World Count of Aircraft

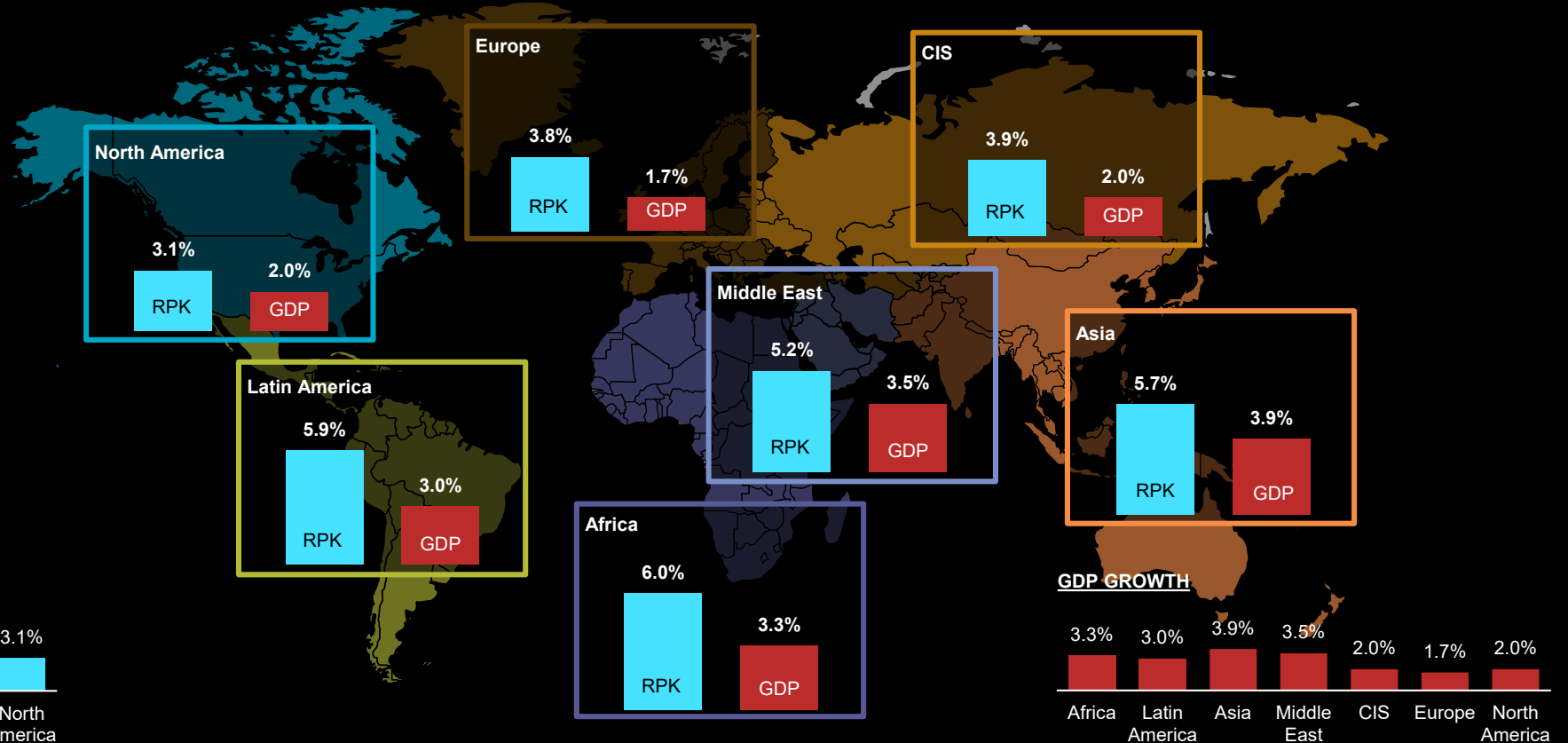


Global fleet growth has fueled MRO...but 10 years without a downturn, is this trend sustainable?

Global RPKs are forecast by Boeing to grow 4.7 percent annually over the next two decades, outpacing global GDP growth of 2.8 percent over the same period

2017-2037 Year RPK and GDP Growth Projections

Source: Boeing

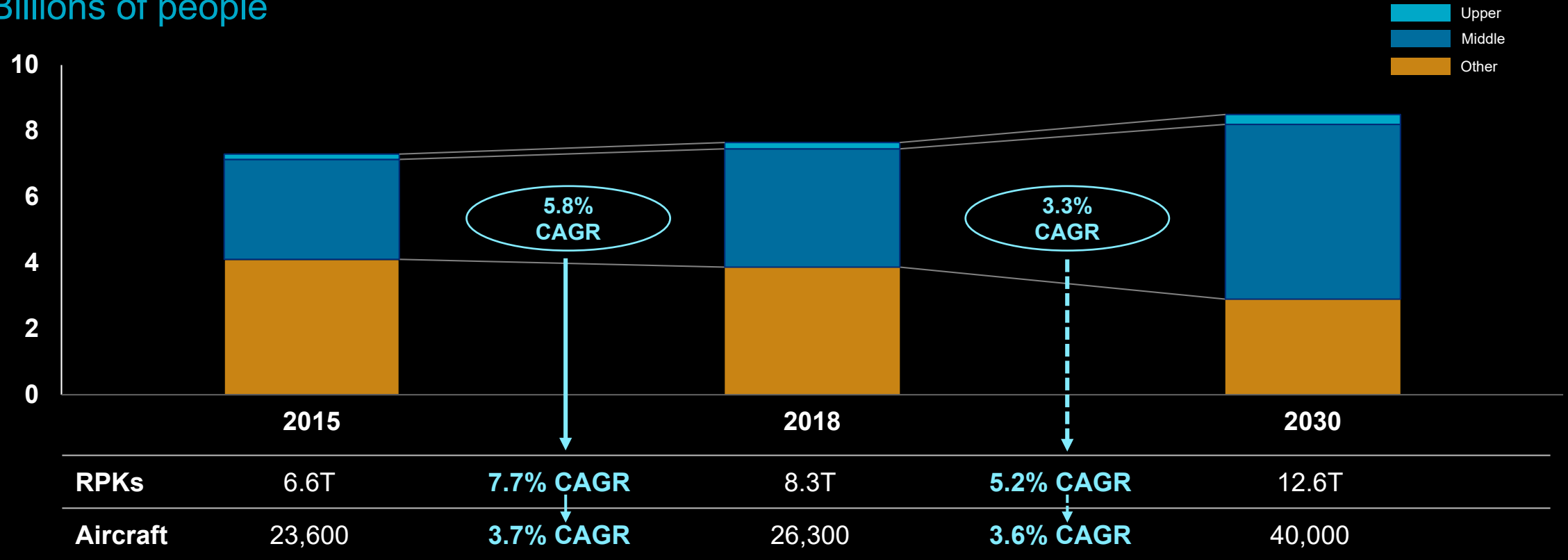


Source: IATA, Air Travel Demand Briefing, April 2018

The global middle economic group is expected to add over 1.8 billion people over the next decade plus

Global Middle and Upper Economic Group Population Growth

Billions of people

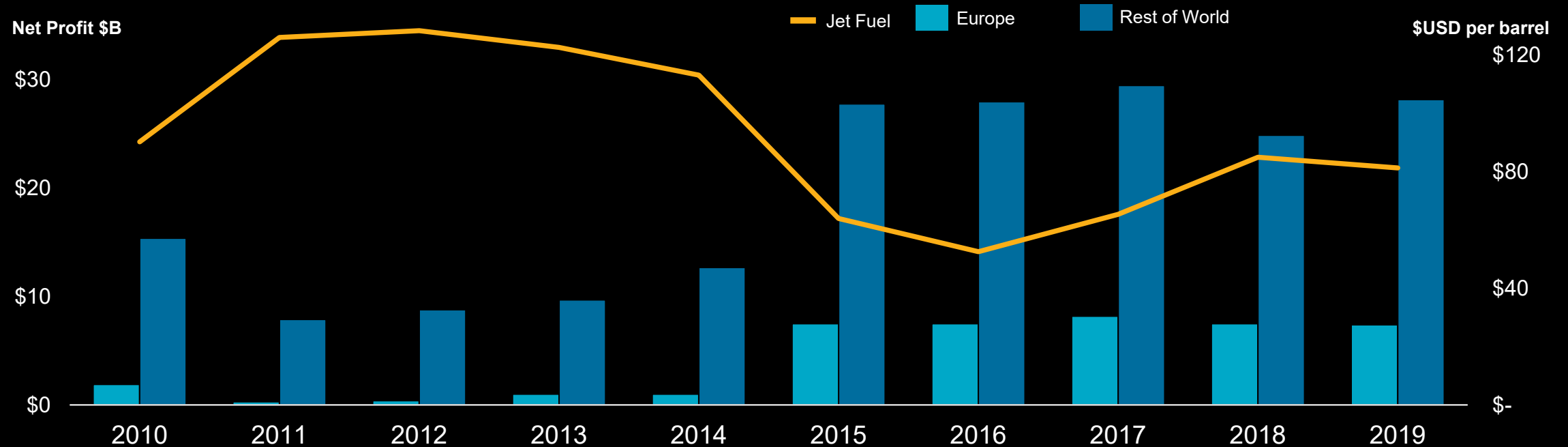


By 2030, 40,000 aircraft will be needed to provide 12.6T RPKs annually

Source: Brookings, UN, IATA

Europe 2018 profits were largely unaffected despite increases in both fuel and labour costs

Global Commercial Air Transport Industry Net Profit and Fuel Prices By year

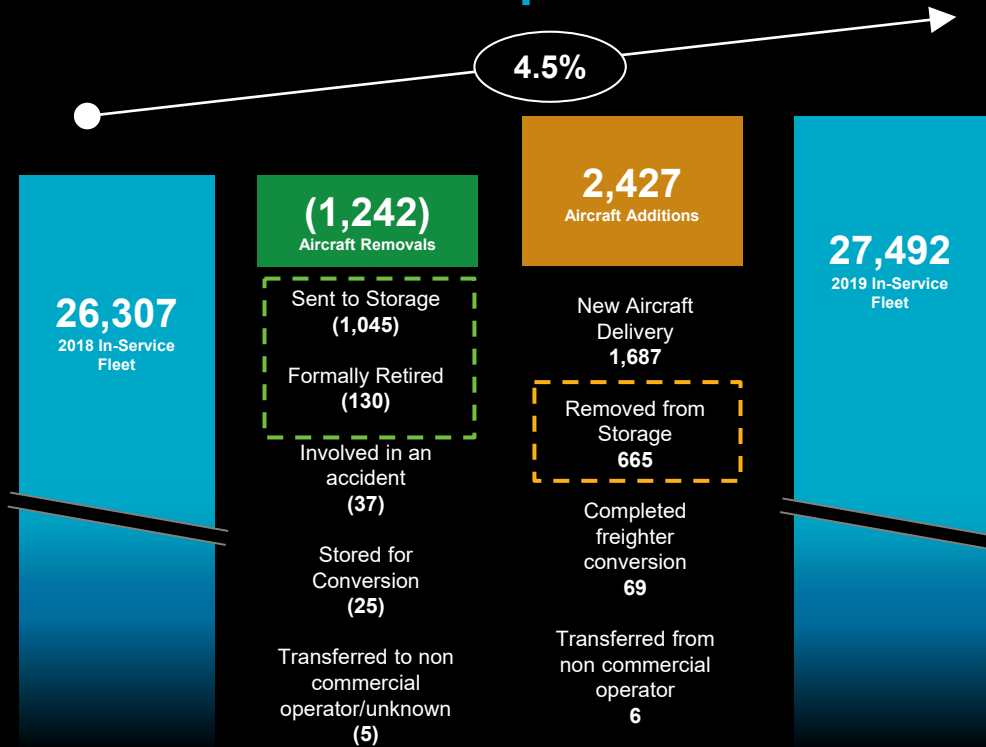


Representing almost a quarter of operating expenses, the global airline industry had an estimated \$180B in fuel costs during 2018. Fuel will always be essential to Airline margin quality

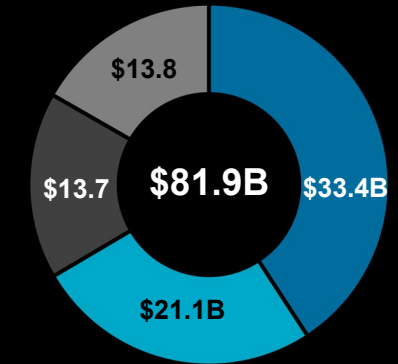
Source: IATA, US Energy Information Administration

Over last year, the global commercial in-service fleet grew 4.5 percent, driven by a slowdown in aircraft removals

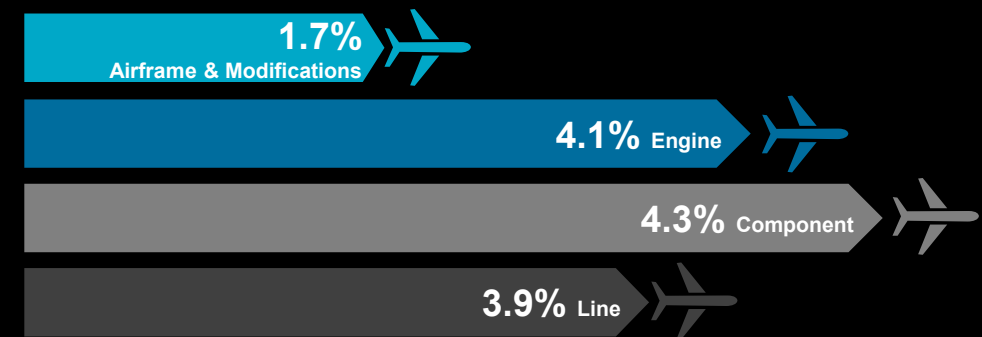
Year Over Year Changes to the Global Commercial Air Transport Service Fleet



2019 Global Commercial Air Transport MRO Market Forecast



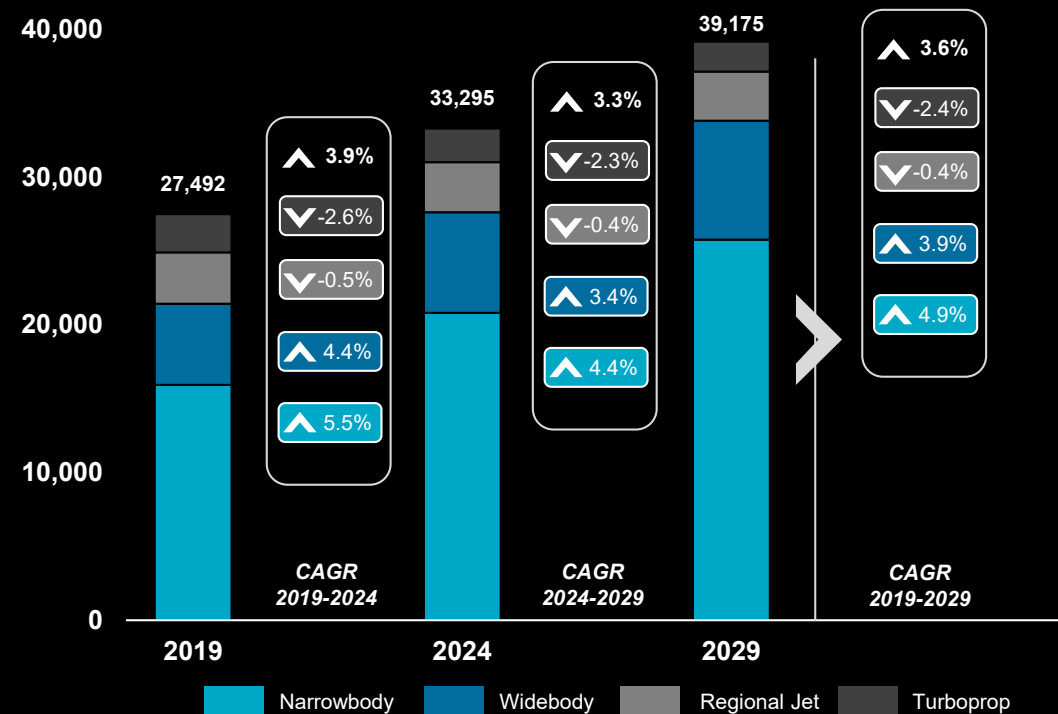
10 Year Forecast CAGR



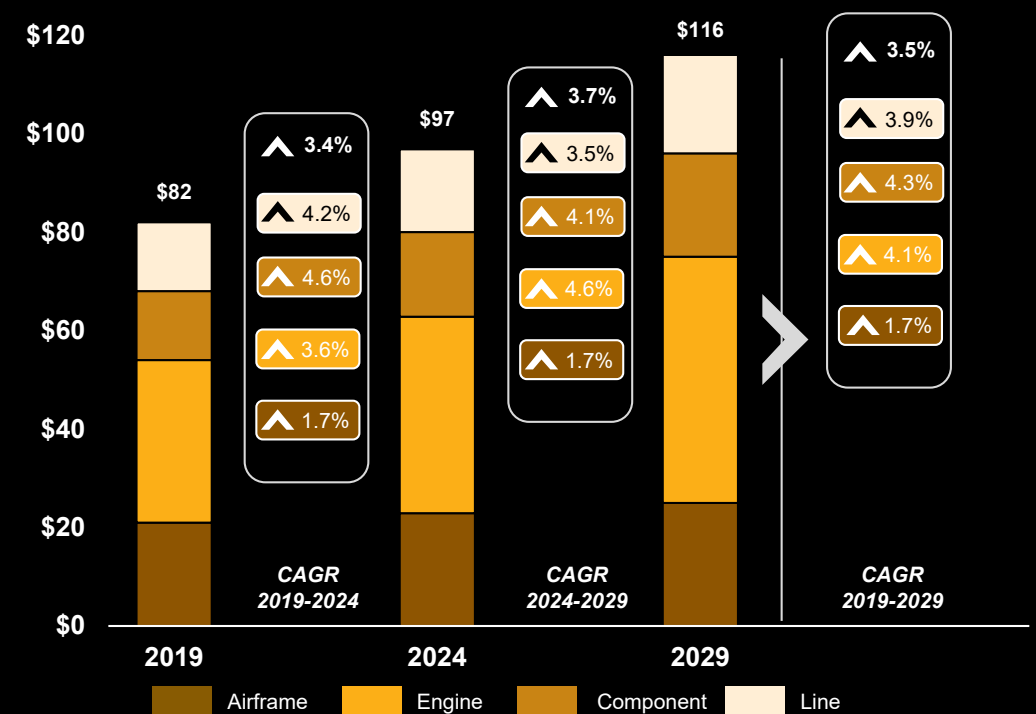
Translating the global fleet dynamics into MRO spend, the 2019 market is expected to be \$81.9B, with engine MRO continuing to be the single largest expense category

By 2029, the global fleet will grow by nearly 12,000 aircraft, pushing commercial MRO spend up to \$116B

Global Commercial Air Transport Fleet Forecast By Aircraft Class/number of Aircraft



Global Commercial Air Transport MRO Forecast By MRO Segment/US\$ BN



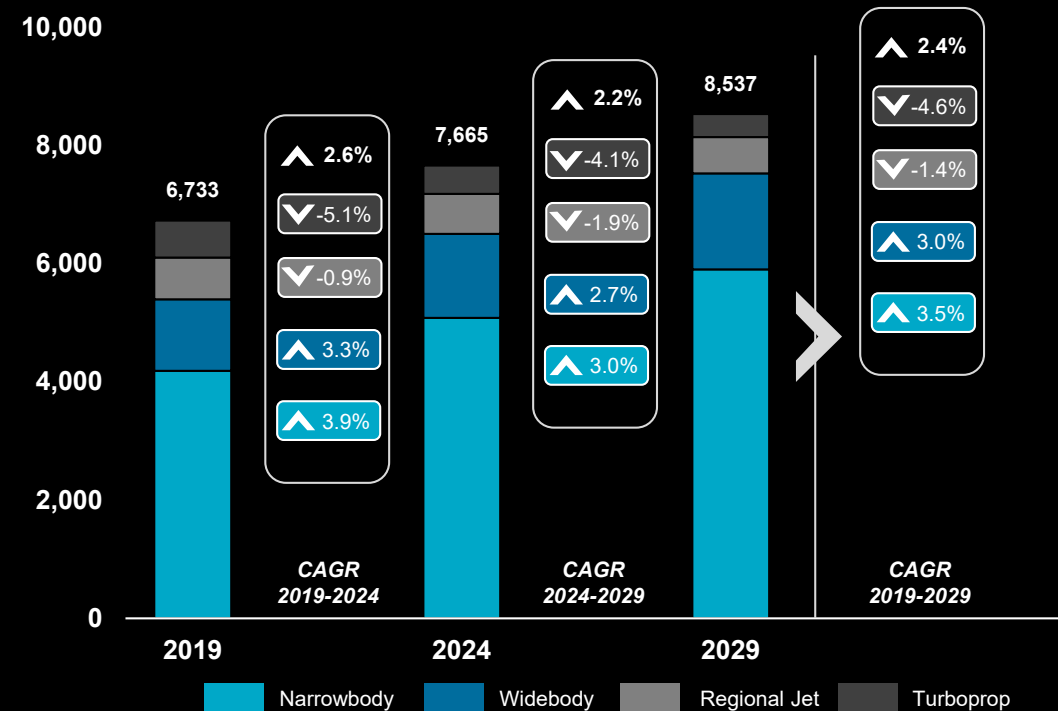
By 2029, next generation₁ aircraft will represent over half of total MRO spend, up from 13 percent today

Source: Oliver Wyman Global Commercial Air Transport Fleet Forecast; Scenario variables: Economic growth, passenger traffic, fuel prices and interest rates

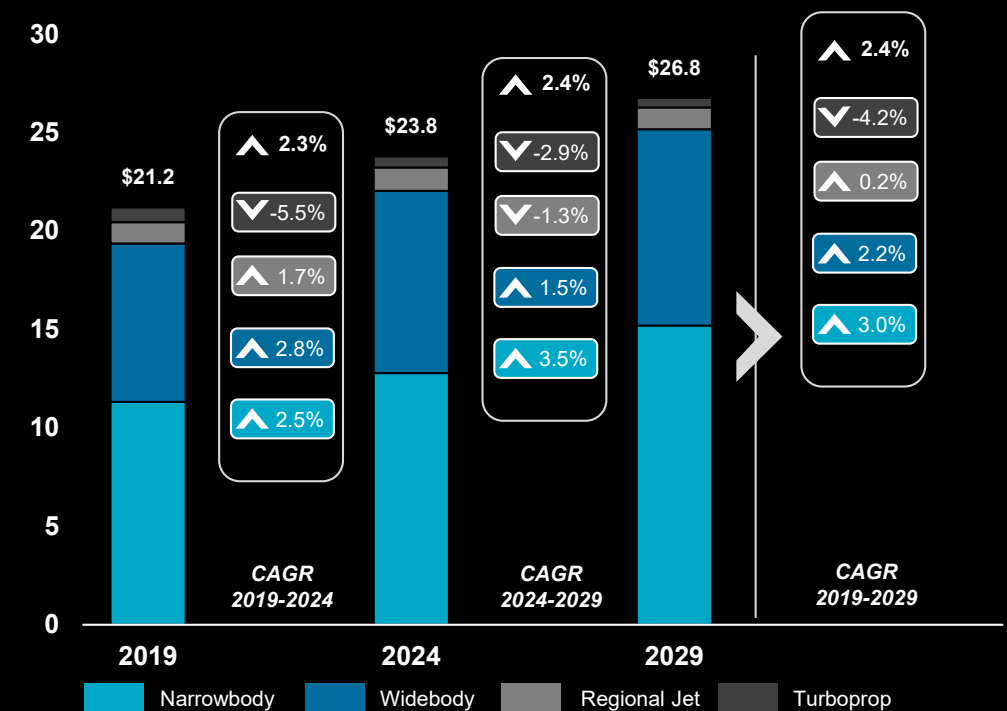
1. 2010 vintage and later

The European fleet and related MRO spend are set to grow at 2.4 percent annually over the next 10 years

Europe Global Commercial Air Transport Fleet Forecast
By Aircraft Class/number of Aircraft



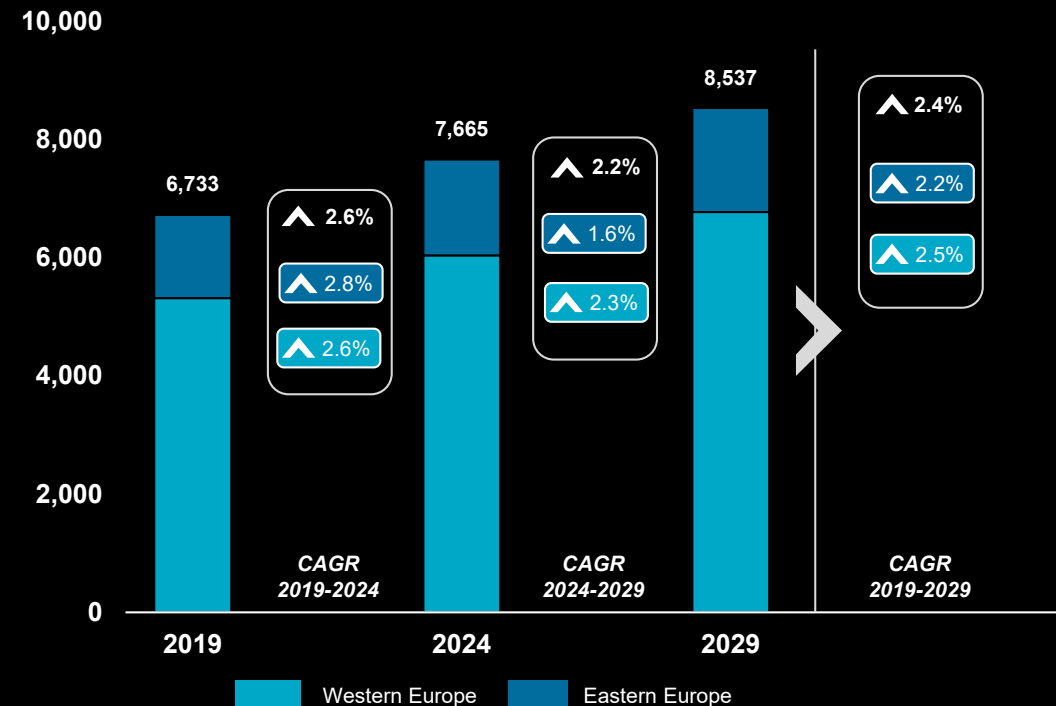
Europe Global Commercial Air Transport MRO Forecast
By Aircraft Class/US\$ BN



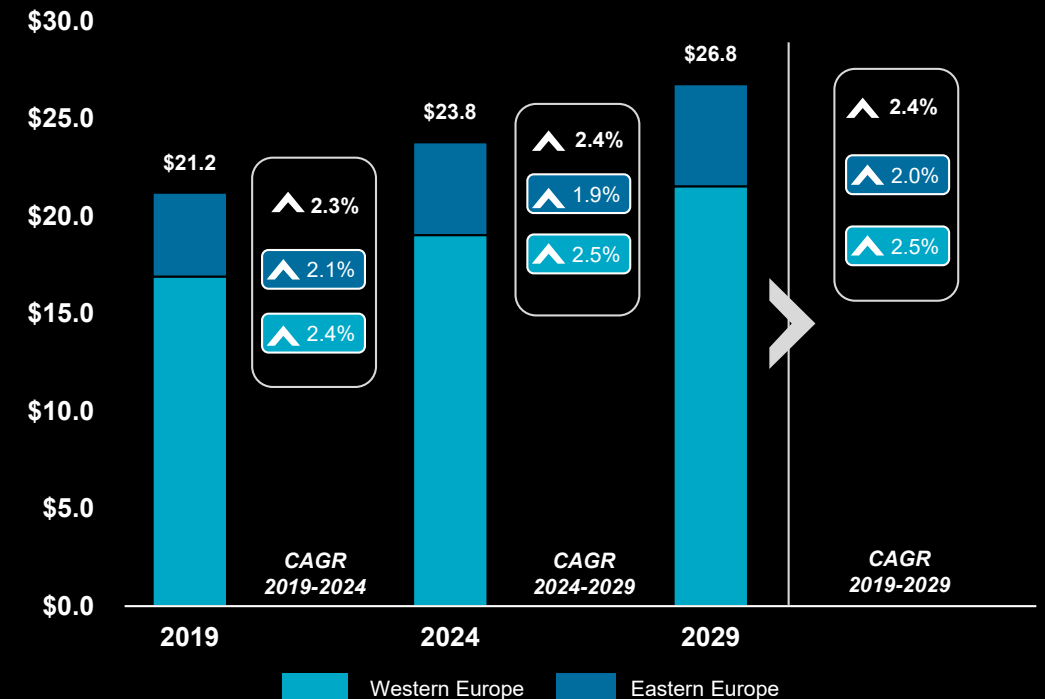
Source: Oliver Wyman Global Commercial Air Transport Fleet Forecast

From a region perspective, Western Europe is fueling the majority of the growth

Europe Global Commercial Air Transport Fleet Forecast
By Region Segment/number of Aircraft



Europe Global Commercial Air Transport MRO Forecast
By Region Segment/US\$ BN

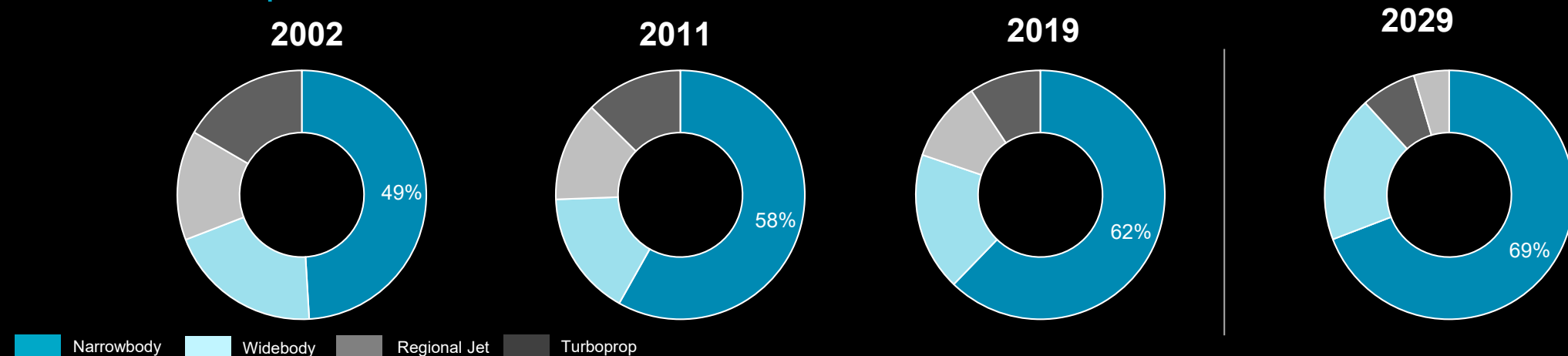


Source: Oliver Wyman Global Commercial Air Transport Fleet Forecast

European deliveries will be very skewed to Narrowbody aircraft which will dominate the future MRO market

Three Decades of Narrowbody Growth

Share of Europe fleet, %



Cost Advantages

- Fuel efficiency
- Cost of acquisition and financing
 - Large block commitments of aircraft
 - Large lessor inventory of NB jets

Maintenance Advantages

- Programme synergies with previous models
 - Designed to incorporate maintenance programmes with close similarities to previous generations
- Maintenance base locations and capabilities
 - Providers with prior NB capabilities able to expand to newer generations
 - Wide range of available locations to perform maintenance

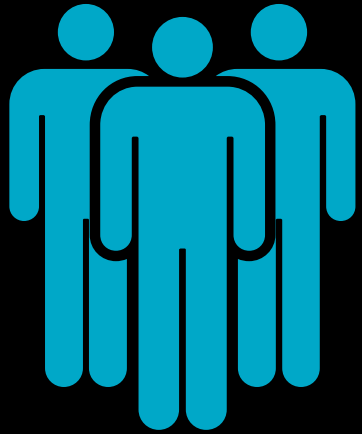
Operations Advantages

- Gate availability
 - Most airport gates are built for wingspans between 75ft (RJs) and 120ft (NBs) where WB wingspans reach 220 ft
- Route density
- Range flexibility
- Pilot familiarity
- Shrink or stretch models
 - Seat ranges from 150-200+

1. 2010 vintage and later

2 | Downturn on the Way?

In the short term, various global risks could impact the growth of the commercial fleet and MRO demand



Labour Shortage



Brexit



Fuel Prices



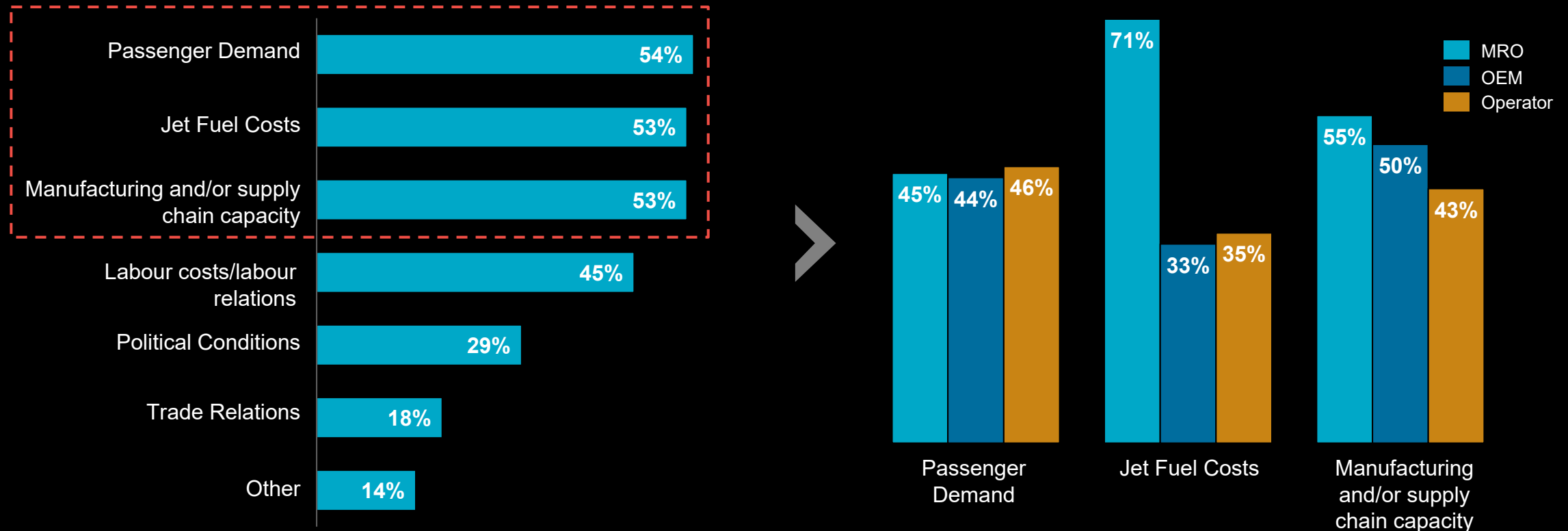
Rising Interest Rates



Global Trade Wars

Passenger demand, fuel costs and supply chain capacity are the three most impactful factors from the 2019 Survey

Over the next five years, which three factors are most likely to determine the direction of the MRO market?
% of participants who selected each response

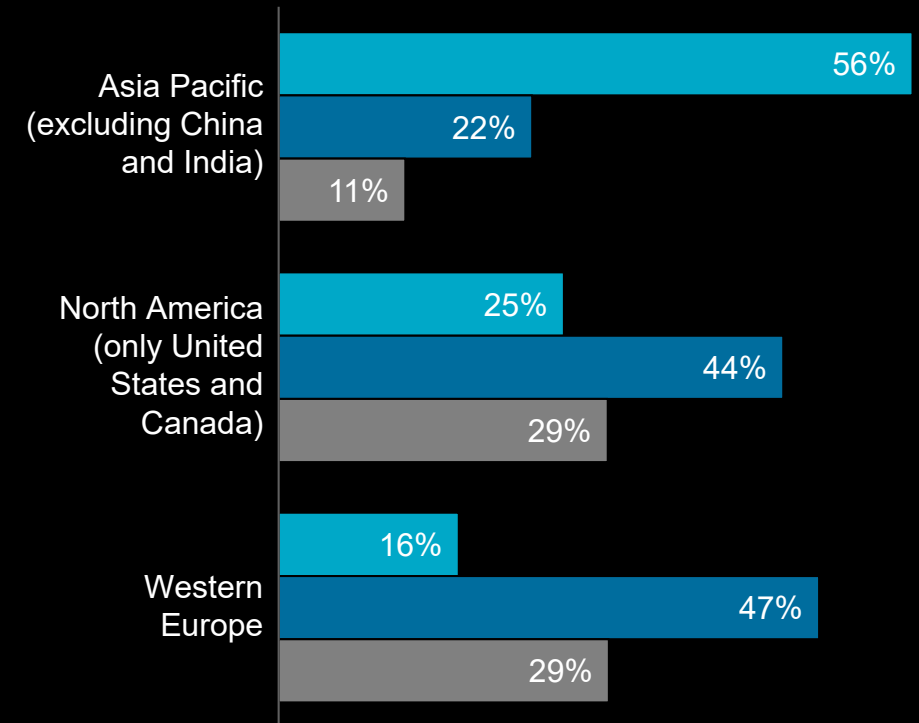
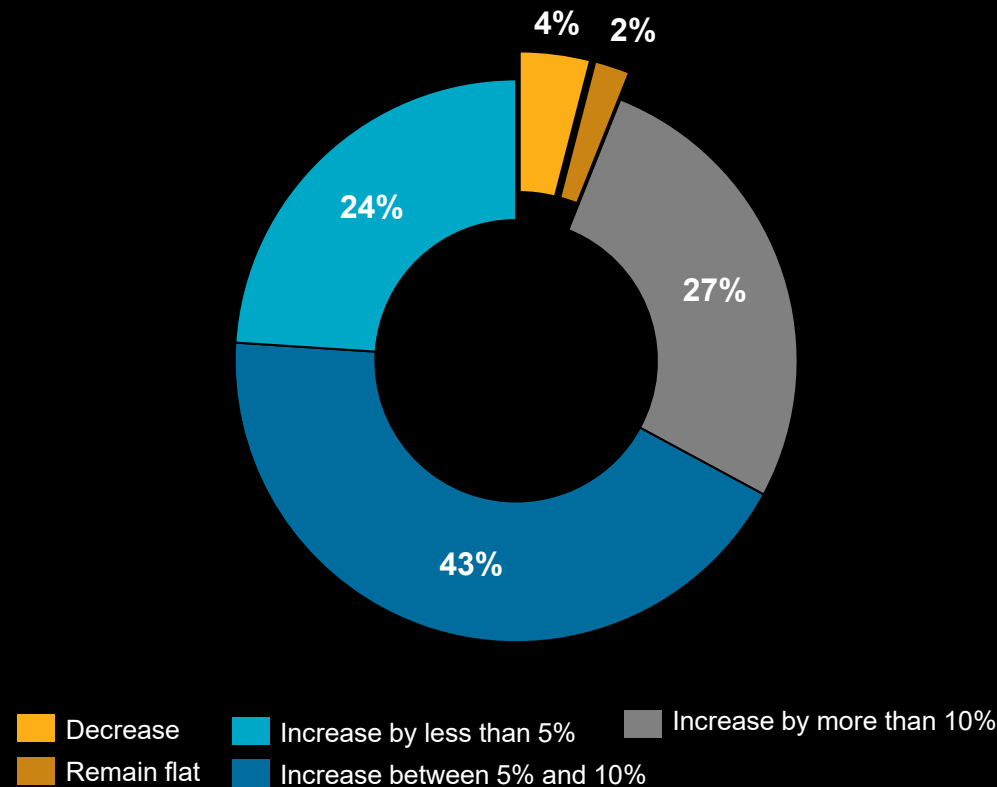


Slowing or declining passenger demand will be a concern equally for OEMs, operators and MROs

Despite potential risks, more than 90% of respondents believe the aftermarket will grow over the next five years

Over the next five years, in the regions you operate, do you expect to see demand (spend) for MRO services to

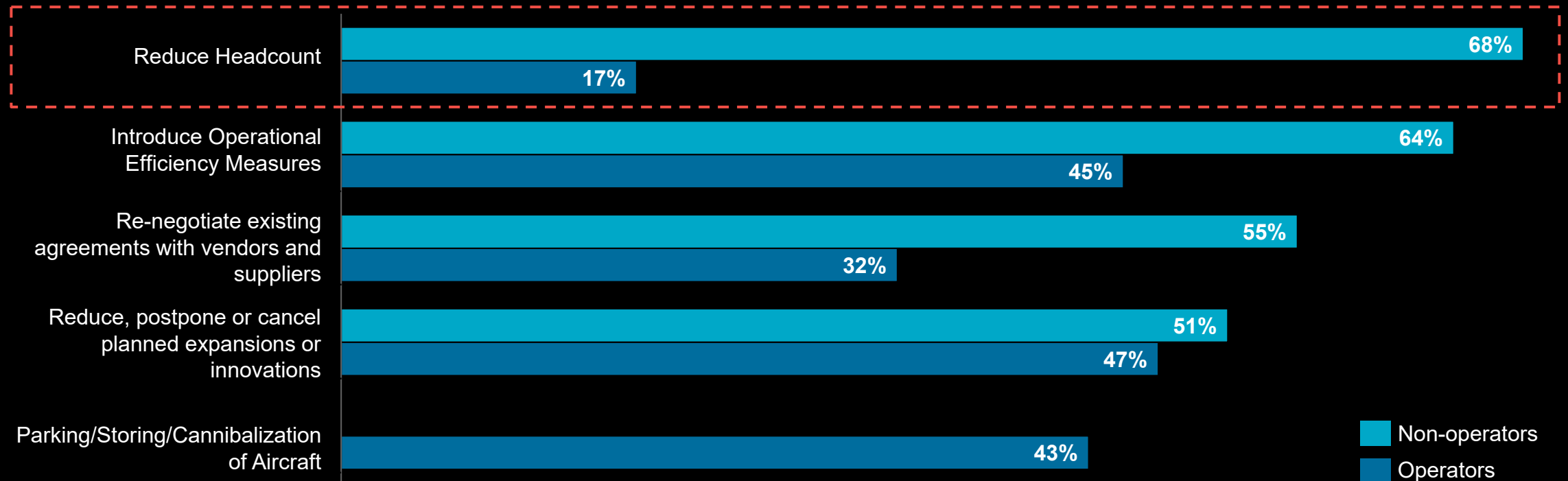
Distribution of total responses



Business confidence is not always a leading indicator of future growth, however...

Out of 13 possible options, likely actions in response to a downturn were focused amongst five options

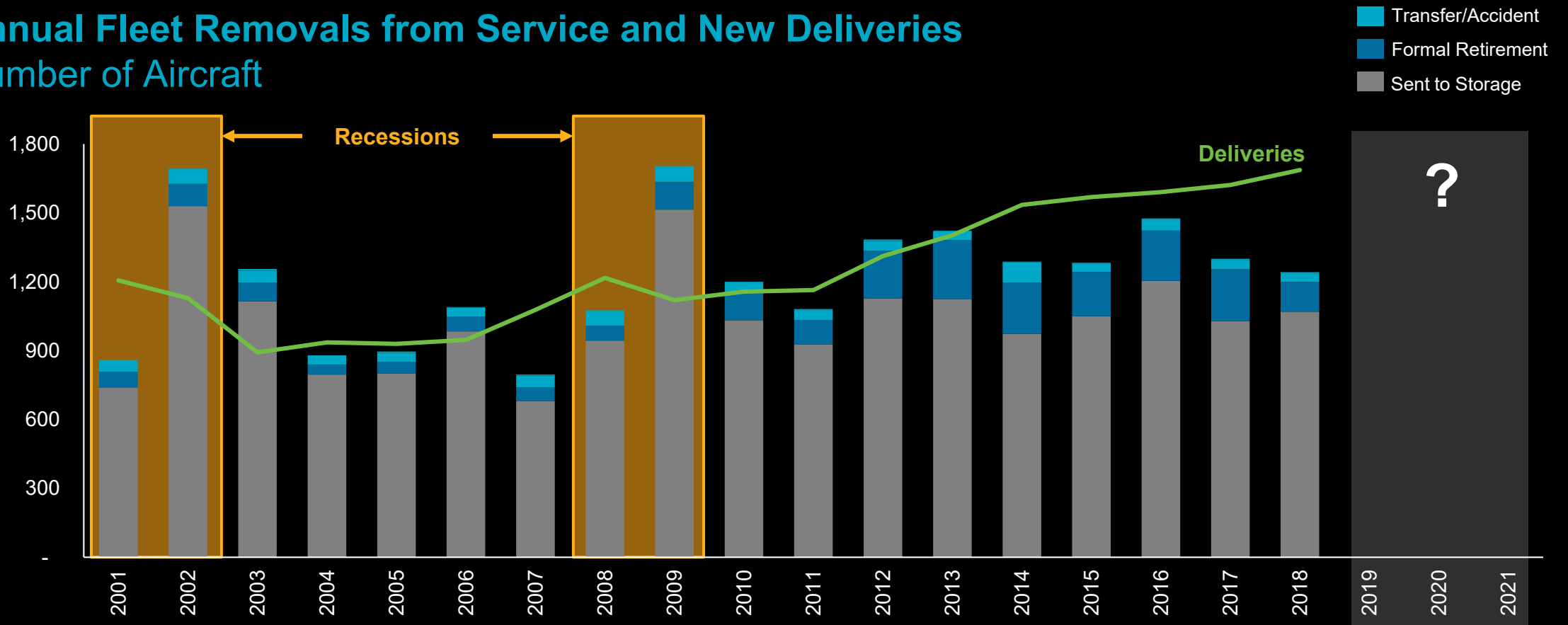
Please select the top three levers you will likely use in the event of an economic downturn
Distribution of total responses



While non-operators would plan to reduce headcount, aircraft operators would largely maintain staffing levels, choosing to improve efficiency and temporarily decrease capacity through postponements and storing aircraft

The responses align with history; e.g. the amount of stored aircraft saw large spikes in 2002 and 2009

Annual Fleet Removals from Service and New Deliveries Number of Aircraft

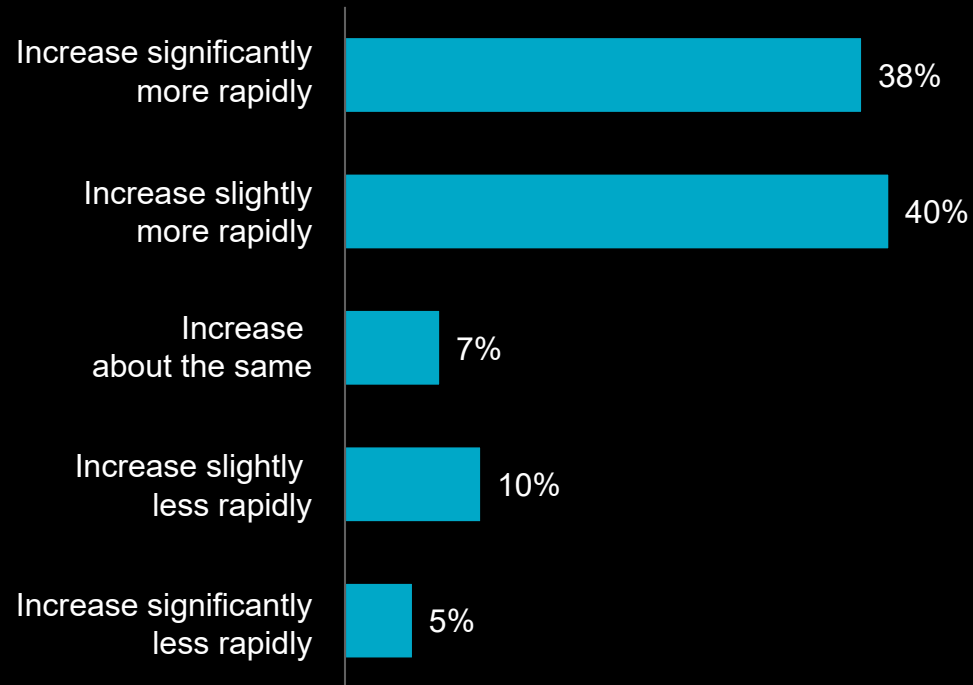


With an average age of 18 years, aircraft sent to storage would not incur scheduled maintenance events, negatively impacting MRO demand in the short term

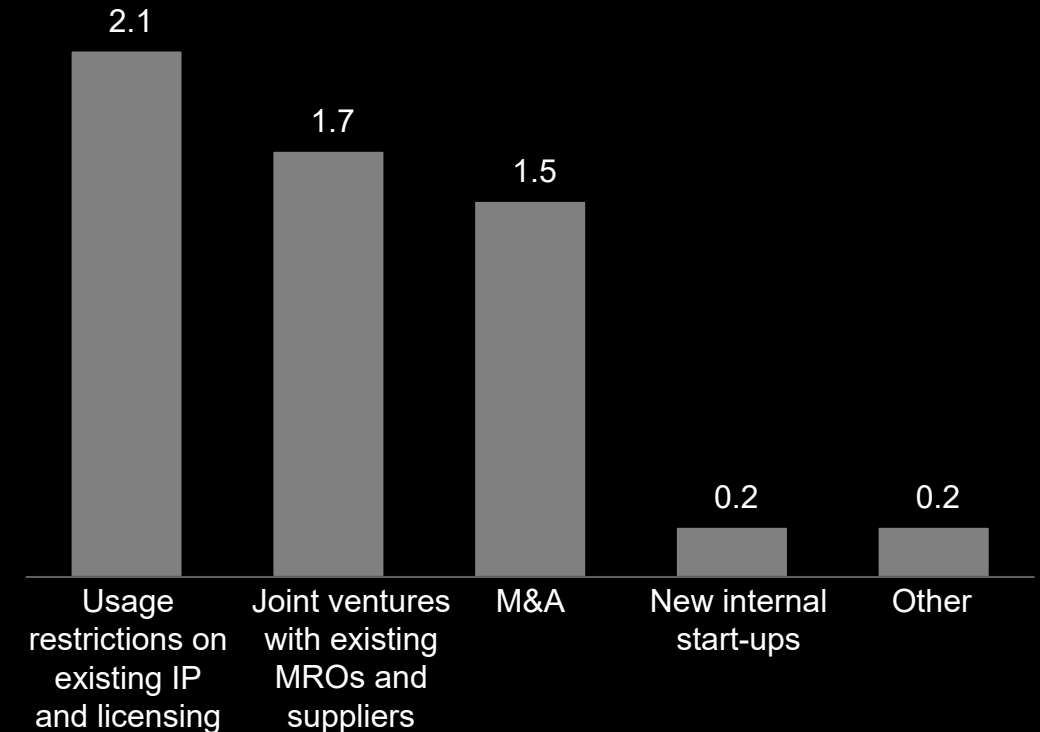
3 | An OEM Centric Aftermarket

In 2018, there was an expectation that OEM's would see an increase in market share, driven by three key factors

Compared to the market growth, OEMs' share of the aftermarket over the next 3 years will...

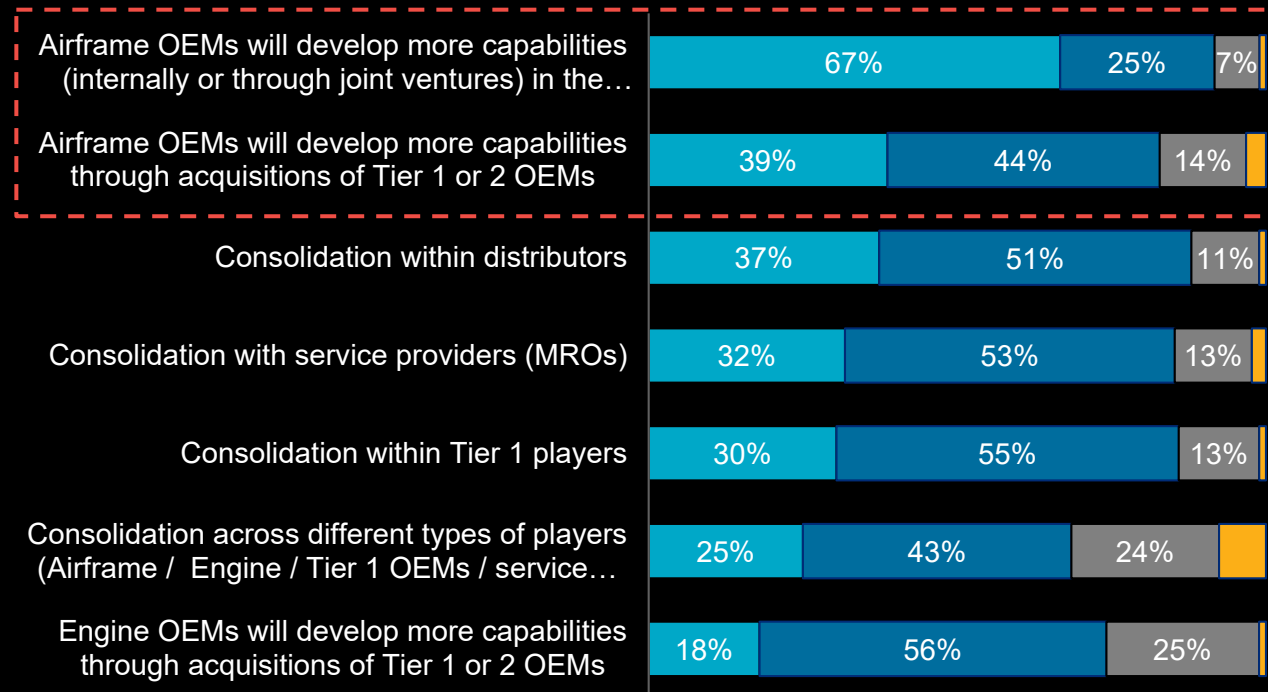


How will OEM grow their presence in the aftermarket?
Weighted average of rankings (scale of 1-3)

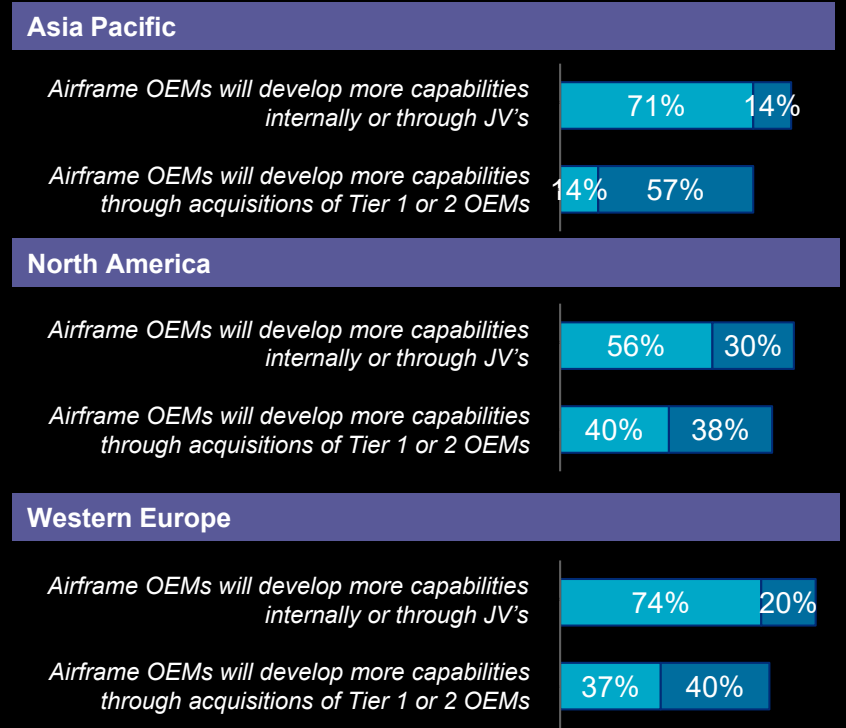


In 2019, respondents continue to believe that OEMs will grow in the aftermarket space

Q: Over the next couple of years, what is the likelihood of the following events happening in aftermarket services?
Distribution of total responses



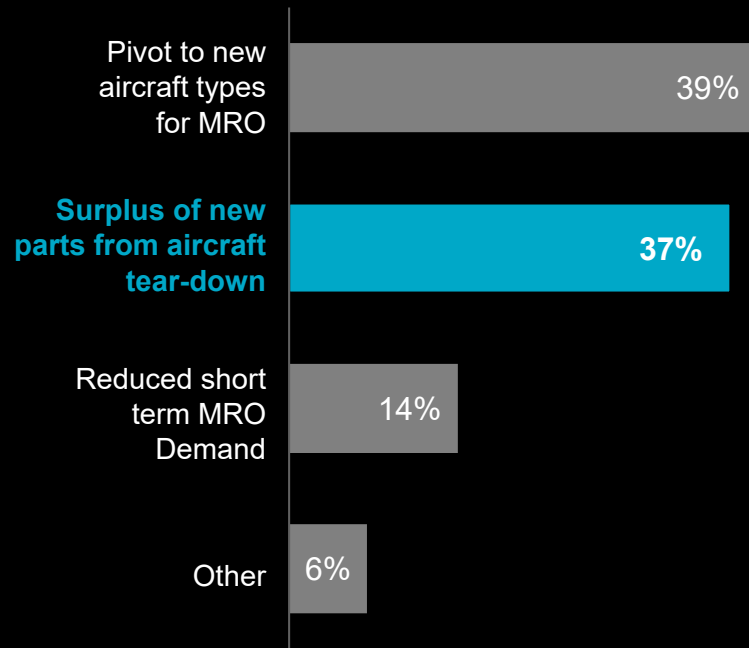
Highly likely Likely Unlikely Highly unlikely



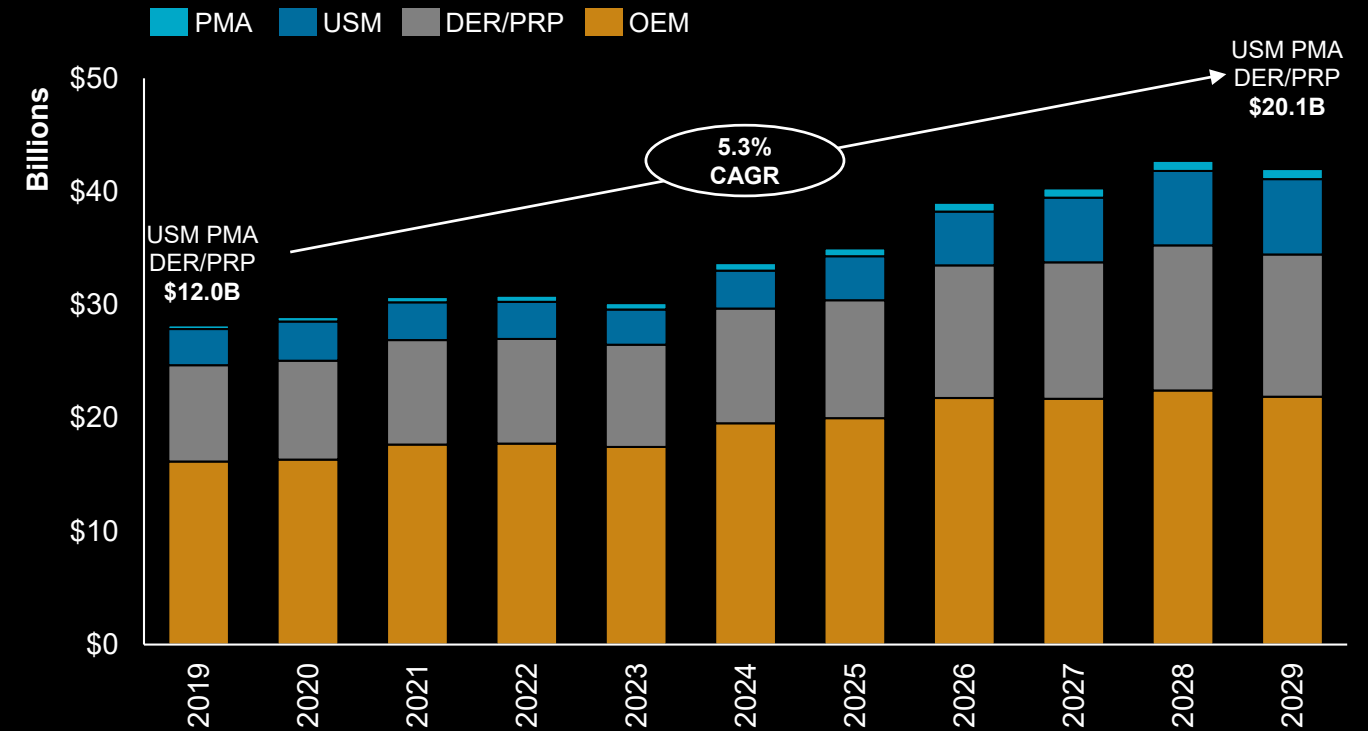
95 percent of respondents believe that Airframe OEMs will develop more capabilities either internally, through joint ventures or acquisitions of Tier 1/2 OEMs

Growing demand for USM offerings is changing the spare parts aftermarket and helping improve penetration rates

As older vintages are retired over the next five years, what will be the most important result of this for the aftermarket?



Total Engine Materials Demand by Source

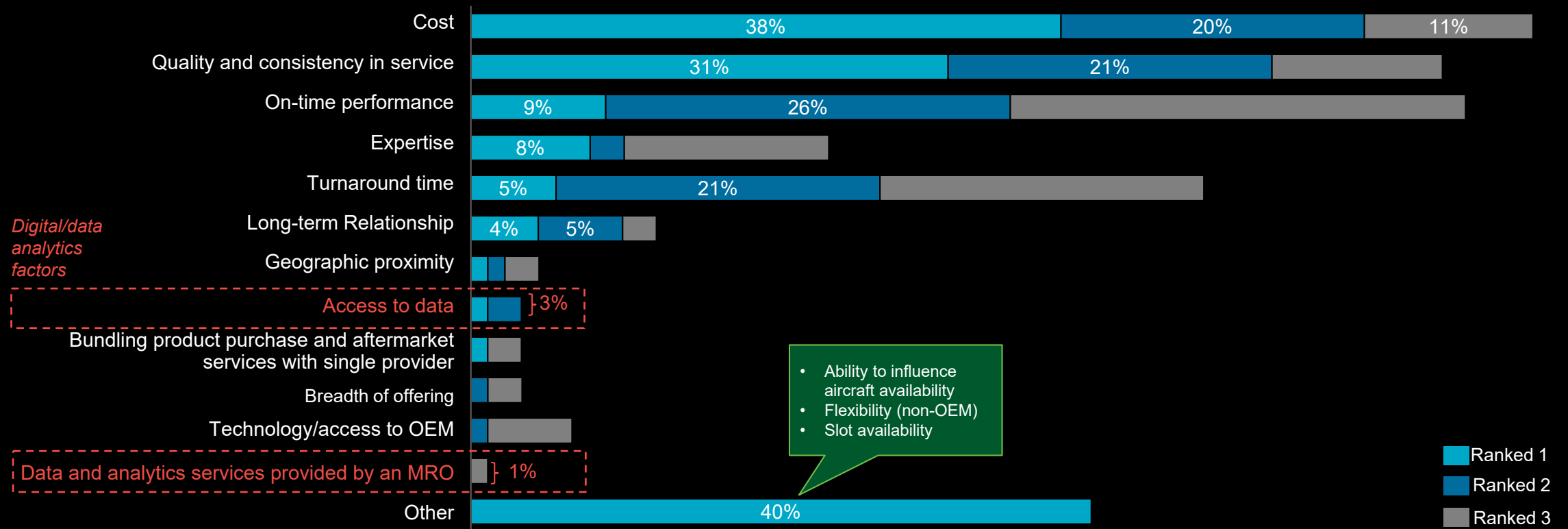


Operators are not waiting for the market to meet their materials needs, as cost advantages for USM parts / DER repairs are driving increased demand in the segment. By 2029, USM, PMA and DER/PRP will represent close to 50 percent of all engine materials

3 | A Digital Evolution

Cost ranks as the most important selection factor for MRO supply, with almost 90 percent ranking it in their top 5

What are the most important factors when an operator is choosing an MRO service provider?
 Ranking each factor from 1 (most important) to 13 (least important) - % of respondents

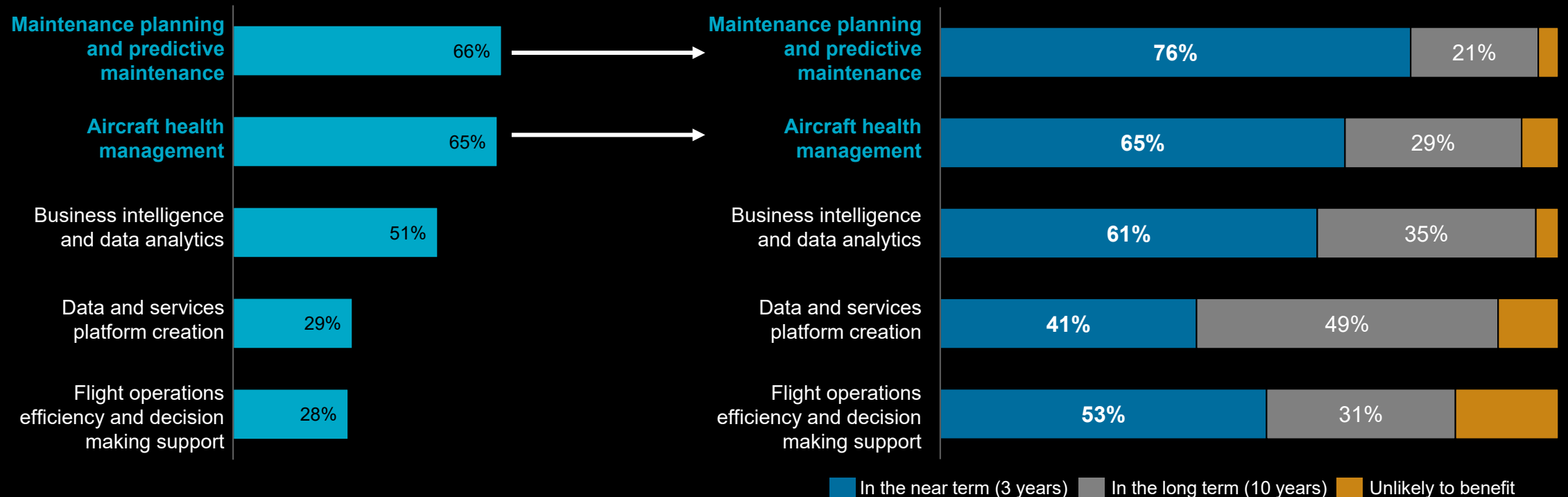


Currently, digital and data analytics offerings are not a differentiator when choosing an MRO service provider

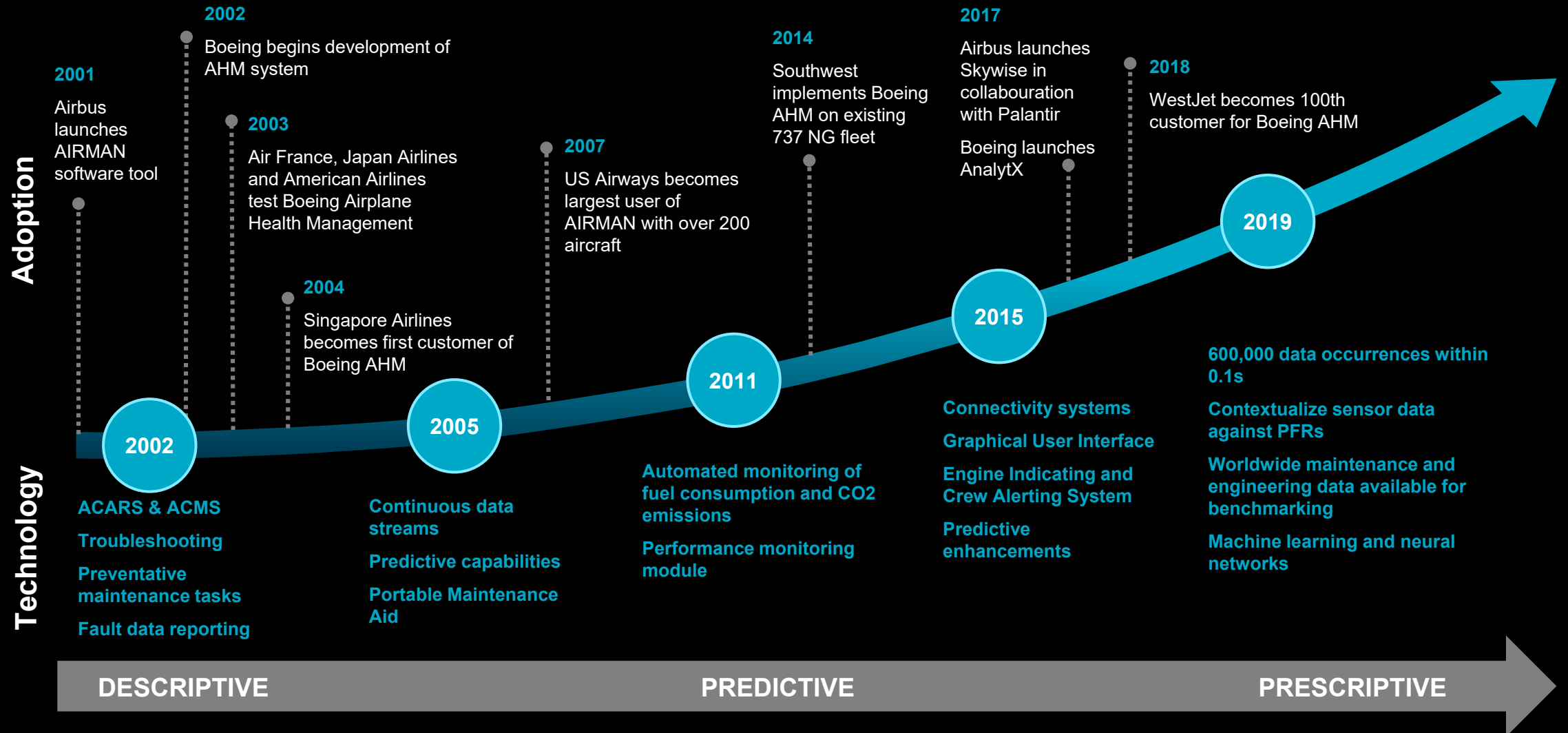
While not considered the most important factor, digital offerings have evolved with benefits expected soon

What digital offerings have evolved the most?
% of participants who selected each response

When is each digital offering likely to benefit your business the most?
Distribution of total responses



AHM technology has evolved over the past two decades, driving increased adoption rates among operators

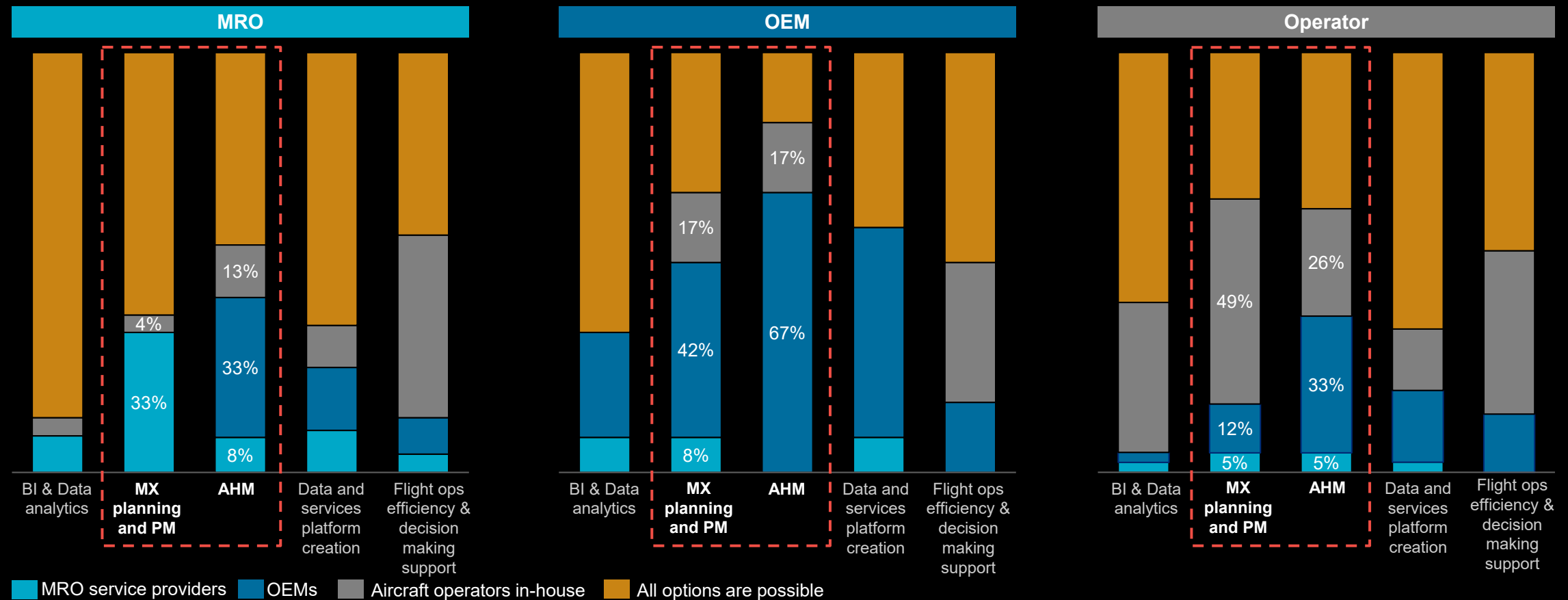


The AHM/PM field has become increasingly crowded over the past two decades



Disagreements exist about who should provide these digital services like AHM and predictive maintenance planning

Who should be responsible for providing digital and data analytics services?
 Distribution of total responses by company type



4 | And finally....Hot Topics and Conclusions

Aside from those already discussed, other hot topics will be high on the MRO Europe agenda this week...

**More European
airline consolidation
and exits?**

**The Environment issue...an
existential threat? A
European only issue?
Timing?**

737 Max impact?

**Brexit !!!
???**

Conclusions

Fleet and MRO growth is supported by strong underlying metrics

- An expanding global middle class will drive demand for air travel over the next decade plus
- Emerging markets will see the largest growth on a relative basis
- The global fleet will exceed 39,000 aircraft by 2029, driving \$116B in MRO demand

Aftermarket battles will intensify, driven by an expanded OEM presence along with the increasing popularity and availability of USM materials and repairs

- An acceleration of aircraft retirements in developed regions will replenish the shrinking supply of used parts
- Industry acceptance of alternate materials sources will increase competition in the aftermarket



Despite near term global risks, the industry is bullish about both short and long-term growth potential

- Tightening labour conditions, fuel prices, global trade wars and political instability are all external factors that could negatively affect market growth
- Future sentiment is largely positive, with plans in place to deal with a potential downturn

Digital offerings will continue to evolve and positively impact the bottom line

- Mx planning, AHM and predictive maintenance have evolved the most
- As these offerings begin to impact cost more substantially, they will become important factors considered by operators when choosing an MRO

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