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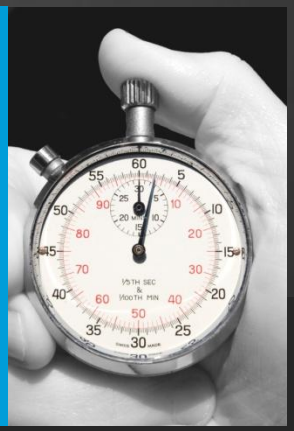
# A Time for Renewal

## The Global MRO Forecast 2013 – 2023



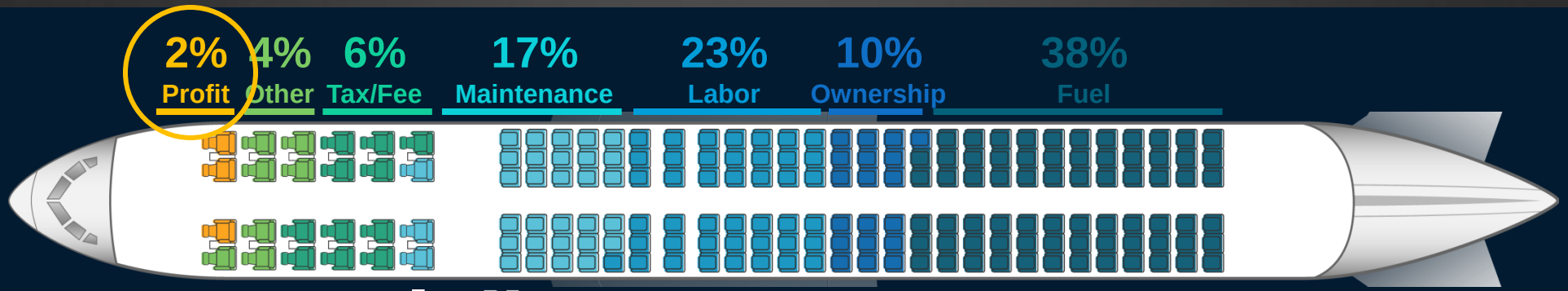
2013 MRO Europe Conference

Presented by:
Chris Doan
Chairman & CEO, TeamSAI, Inc.

# What is on the mind of the airline CEO?

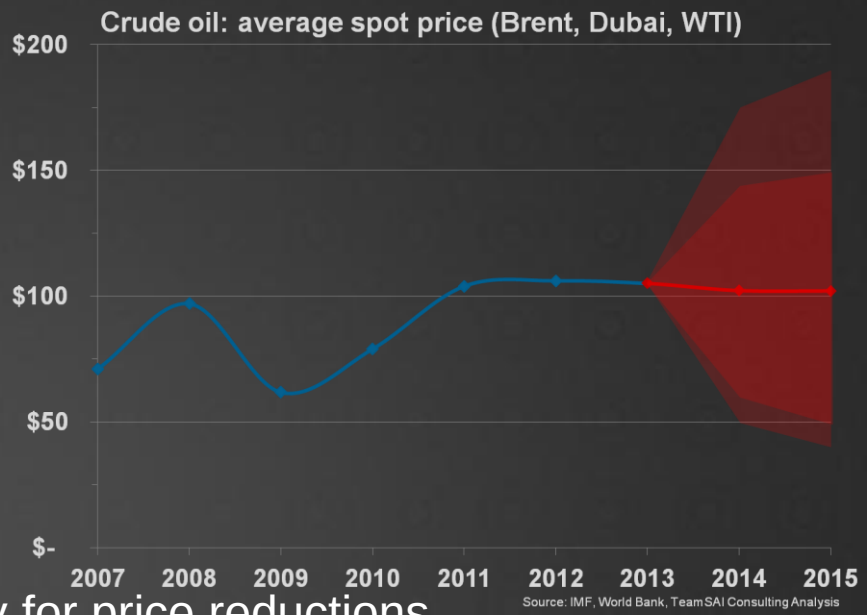
# Airline Themes: Profit margin remains unacceptably low

- While revenue has definitely improved, profits remain low relative to other industries
  - Worst return on capital among 30 industries
  - History of extreme variation in financial performance
  - Remain susceptible to external shocks that cannot be controlled




betterairways Cost Distribution

# Airline Themes: Fuel Costs



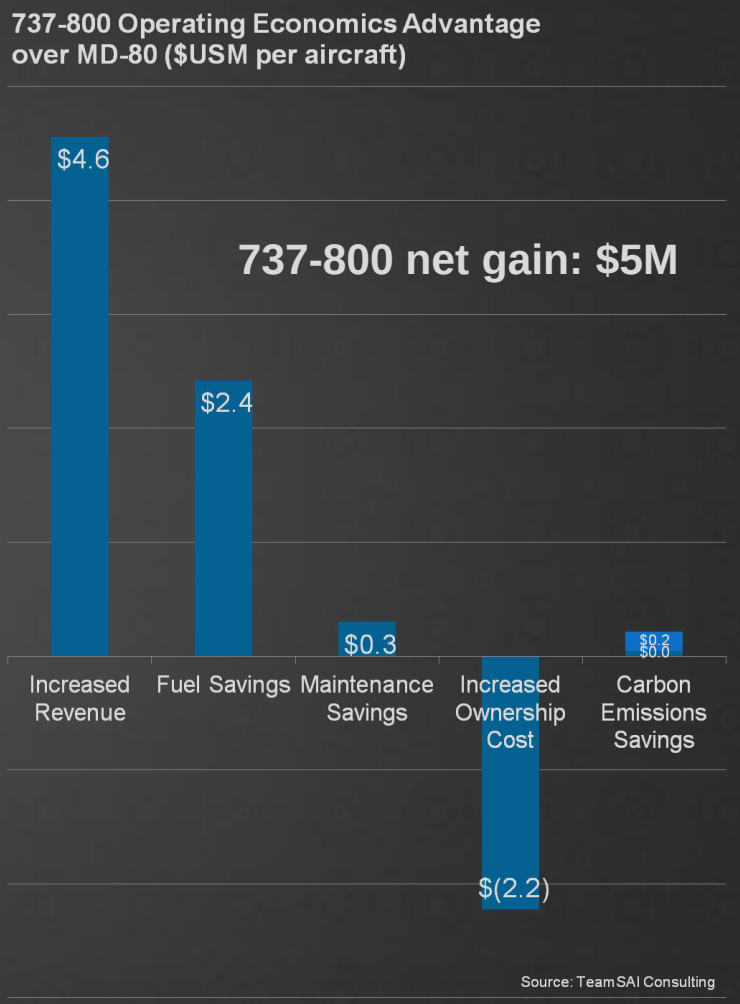

- Fuel is 30-40% of operating expenses
- Crude oil is expected to remain stable around $100-105/bbl in 2013 and 2014
- Jet fuel is expected to average almost $130/bbl in 2013 and 2014 (IATA)
- Fuel should remain relatively stable for the next two years, but exposure to fuel price volatility remains
- 5-10 year outlook: no significant opportunity for price reductions
  - Biofuels
    - No significant commercial-scale development expected in the next decade
      - IATA's biofuel usage goal is only 3-6% of total fuel by 2020
    - Price competitiveness expected to remain a barrier
  - Exploration of shale gas and oil
    - Will increase global oil supply, but global oil demand also expected to increase led by developing countries

**The only real option: newer and lighter aircraft**

# Airline Themes: Capital, Finance, and Taxes

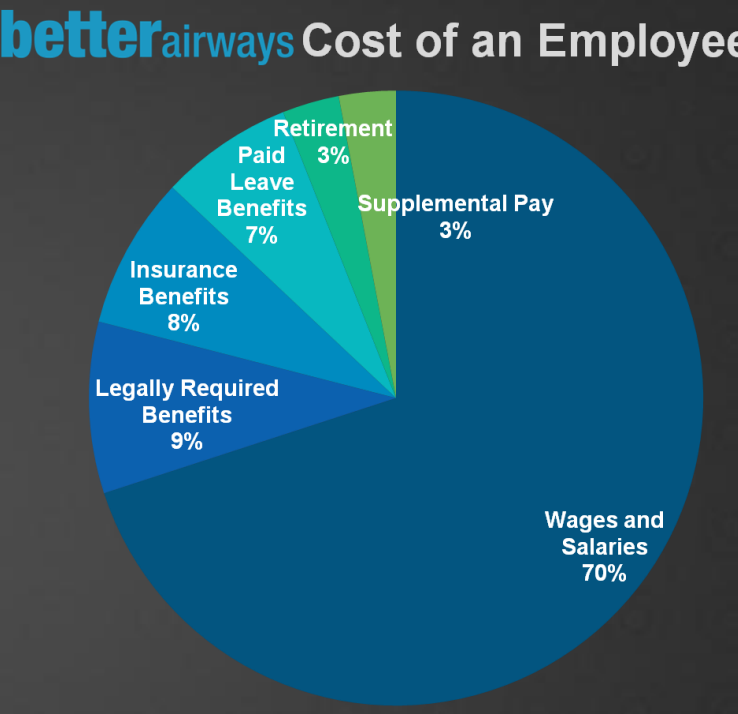
- New aircraft will…
  - Increase revenue potential
  - Lower fuel, maintenance, and potential carbon emissions costs
  - But increase aircraft ownership costs

| Factor | MD-80 | 737-800 |
|---|---|---|
| P&L Considerations | | |
| Revenue | 150 seats | 160 seats |
| Fuel | 950 gal/FH | 680 gal/FH |
| Mx | $2.4M/yr | $2.1M/yr |
| Carbon | 27k MT $CO_2$ | 20 MT $CO_2$ |
| Taxes | marginal | |
| | | |
| Balance Sheet Considerations | | |
| Own | $1.9M/yr | $3.6M/yr |
| Lease | $0.2-0.7M/yr | $2.3-4.2M/yr |



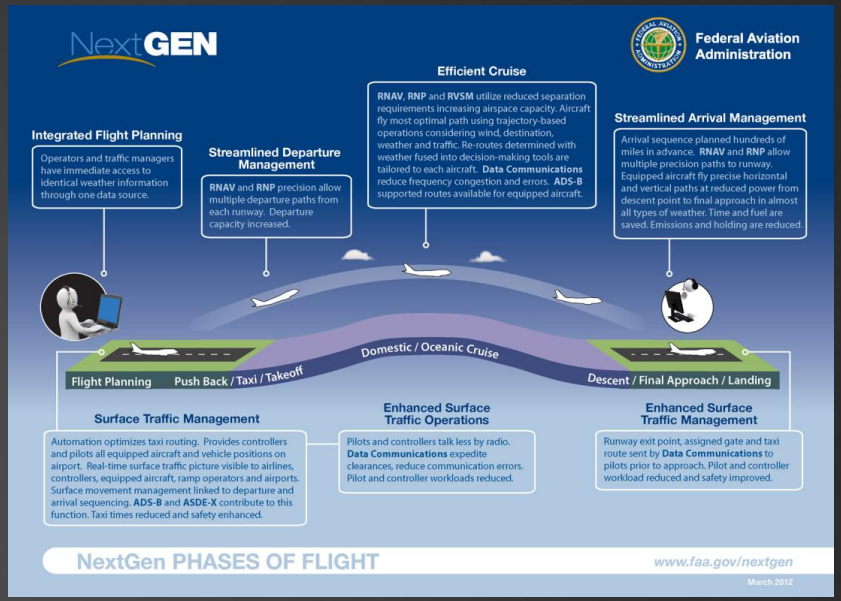
# Airline Themes: Human Resources Costs

- Labor is 20-25% of operating expenses
- Many labor contracts were struck in 2008 at height of financial crisis
  - Rates only expected to rise
- Tightening labor supply
- As margins increase, labor will be looking for a greater share
- Significant increases in healthcare costs expected over the next several years



# Airline Themes: Operating Costs

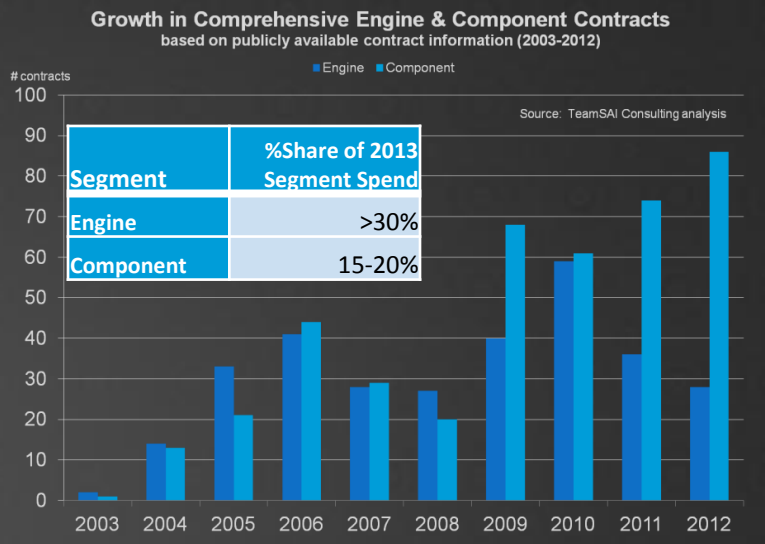
- NextGen, FANS, and RNP represent potential costs savings
  - Improved navigation could shave off 5-20 miles per flight
  - Translates to $540,000 fuel and labor savings per plane per year
  - Implementation costs are not small, however
  - Avionics upgrades, and service contracts range from $500,000 to $1 million per aircraft
  - New deliveries will come equipped with required technology




- More importantly…the necessary infrastructure is not yet in place
  - NextGen is not expected to be operational for at least 5 years
  - Current budget crises further compounding deployment efforts
- MRO trade off
  - Slight reduction in engine and component MRO expenses
  - Cost of maintaining new avionics uncertain but expected to be significant factor in cost-benefit analysis

# Airline Themes: Engineering & Maintenance Costs

- Maintenance is 15-20% of total operating expenses
- 40-45% of E&M spend related to engines
  - Most engine MRO in long term PBH deals
- Contracting component MRO to a comprehensive, single-source solution growing in popularity
  - Lower direct costs and improved ROIC
  - Predictable cash flow
  - Balance sheet improvement if asset sale included
- New aircraft creating several opportunities
  - Better designs with lower maintenance expense
  - New leverage for striking comprehensive deals




| Segment | %Share of 2013 Segment Spend |
|---|---|
| Engine | >30% |
| Component | 15-20% |

| MRO | Current Fleet | Planned Fleet |
|---|---|---|
| Airframe | Increased man hours due to aging fleet; Shorter C check interval | Lower HMW man hours; Longer C check interval |
| Engine | Locked into PBTH | Locked in PBTH at higher rate |
| Components | Less expensive due to availability of used parts | More expensive; Complex technology ; High cost of spares; High material costs |
| Line | Similar costs | Similar costs |

# Fleet & MRO

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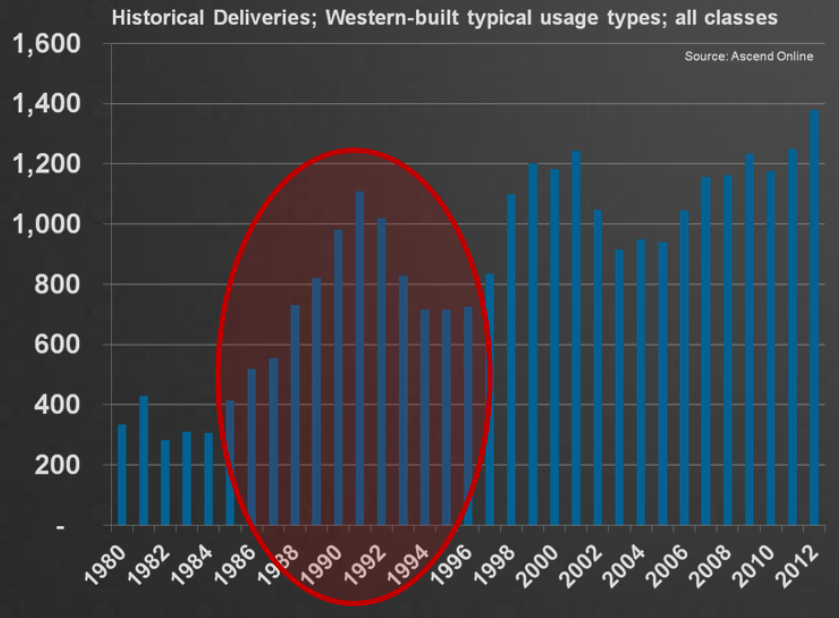
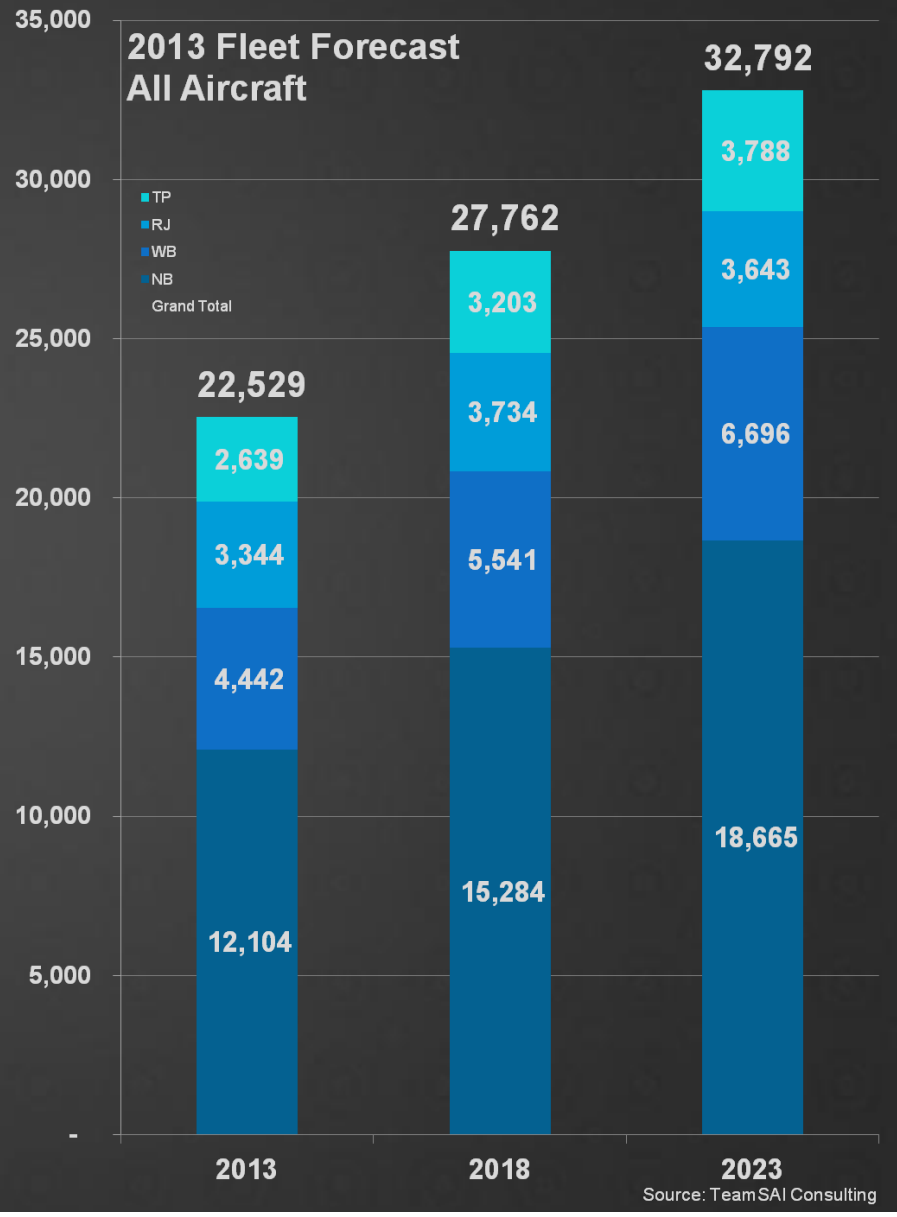
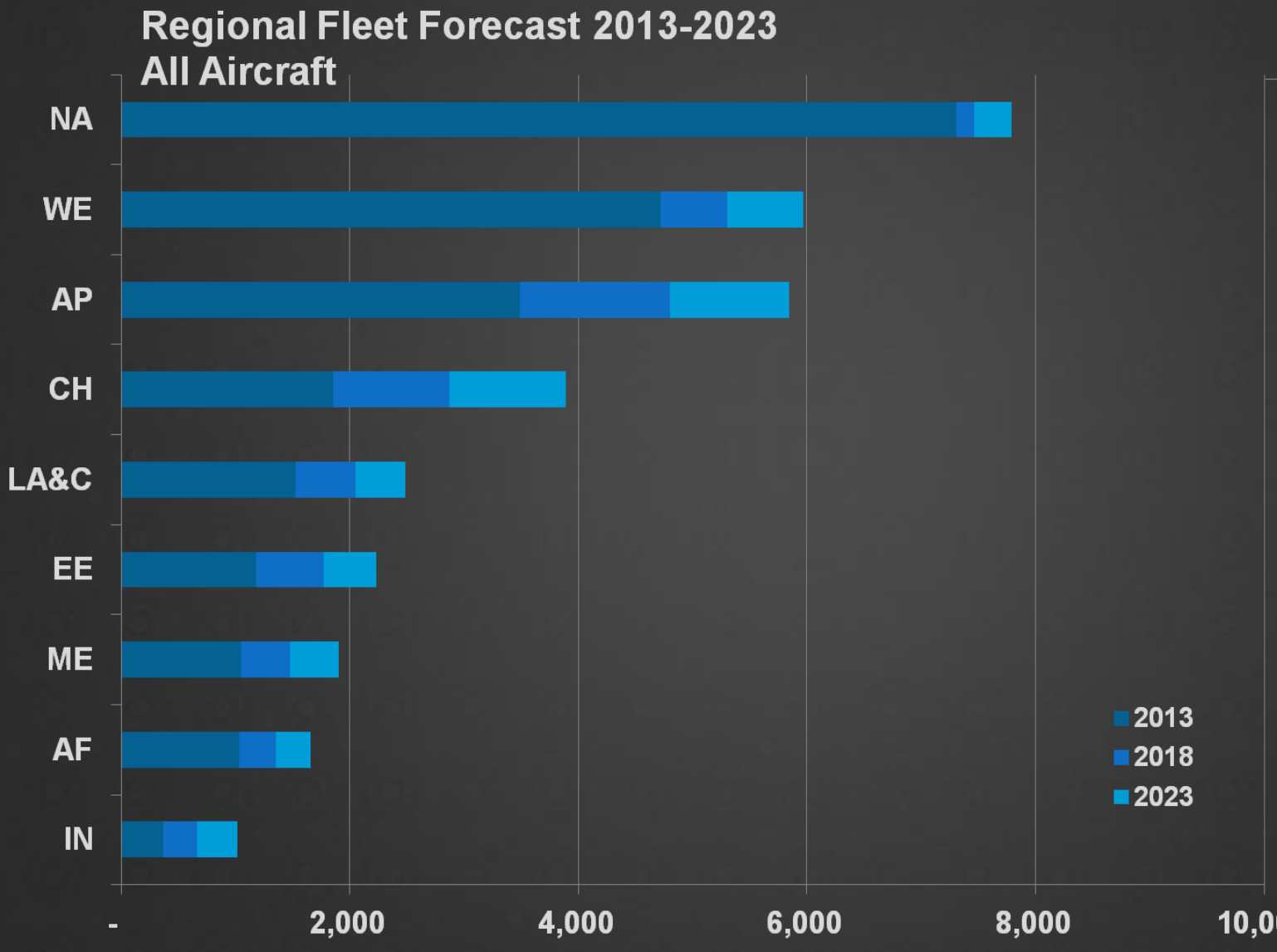
# Global fleet outlook - commercial airline sector

- 22,529 in service aircraft in 2013
  - 19,890 jets
  - 2,639 turboprops
- In 2023, the fleet will grow to nearly 33,000
  - 3.7% CAGR growth rate expected
  - 6,200 of the current fleet will retire
  - Over 16,000 new deliveries in the period
    - 38% of new aircraft will be replacements



# Regionally, fleet growth rates vary significantly




| | 2013-2023 Growth Rate | 2023 Market Share |
|---|---|---|
| NA | 0.6% | 24% |
| WE | 2.4% | 18% |
| AP | 5.3% | 18% |
| CH | 7.7% | 12% |
| LA&C | 5.0% | 8% |
| EE | 6.6% | 7% |
| ME | 6.2% | 6% |
| AF | 4.8% | 5% |
| IN | 10.8% | 3% |

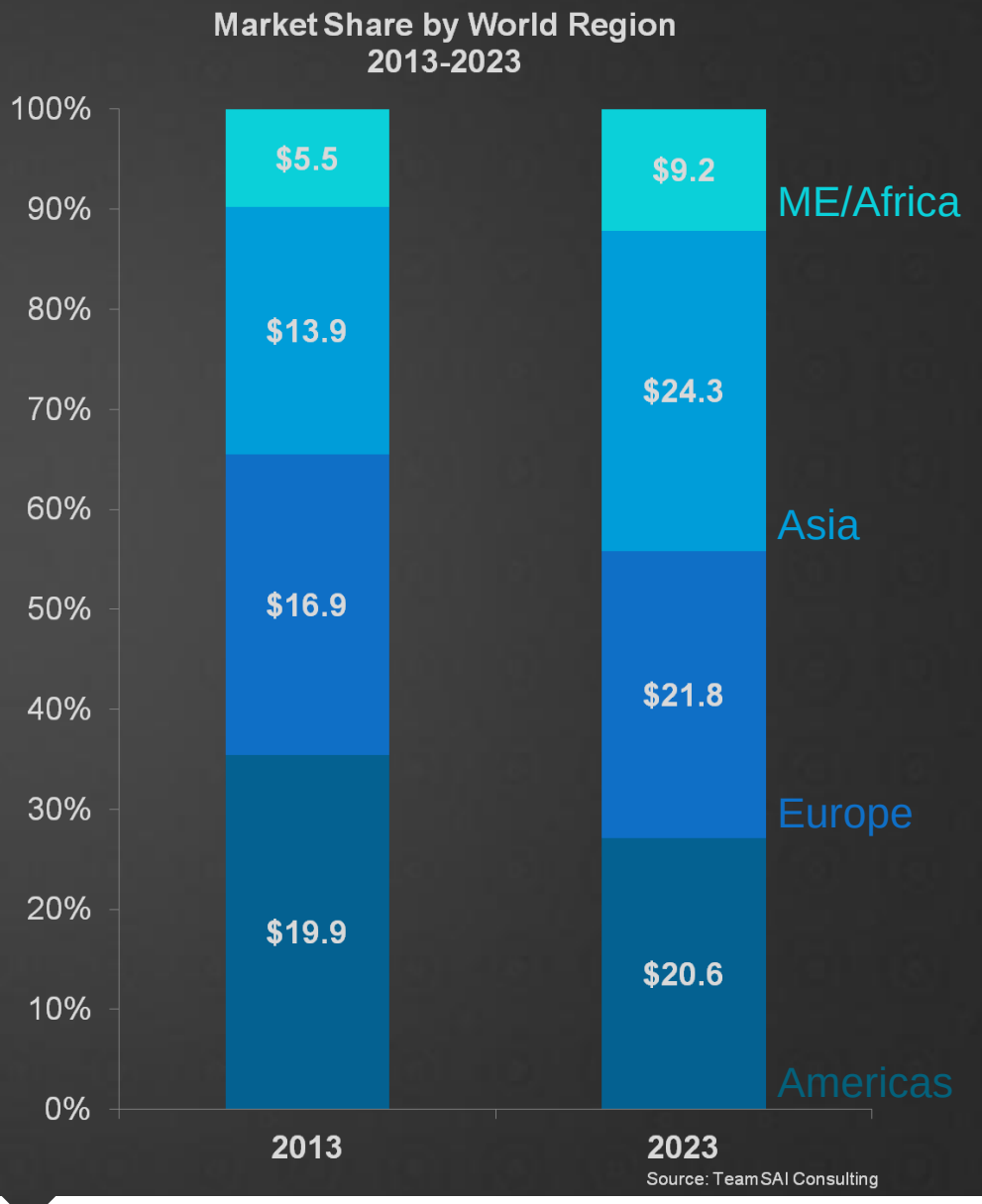
Source: TeamSAI Consulting

# Globally, the MRO growth outlook is healthy

- Growth is expected to average 3.1% CAGR through 2023
- $56.2B industry will grow to $76.0B over the 10-year forecast period
  - 2023 forecast captures delivery of significant new Airbus neo and Boeing MAX fleets
- Engine remains the largest segment
  - Engine and component MRO growth rate expected to slow in second half of forecast period due to honeymoon period

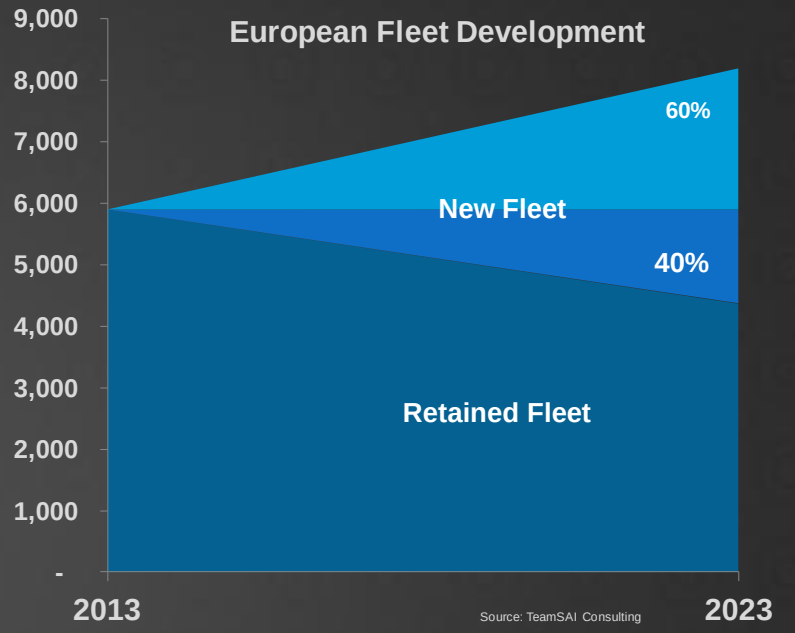
# MRO regional market shares change dramatically by 2023

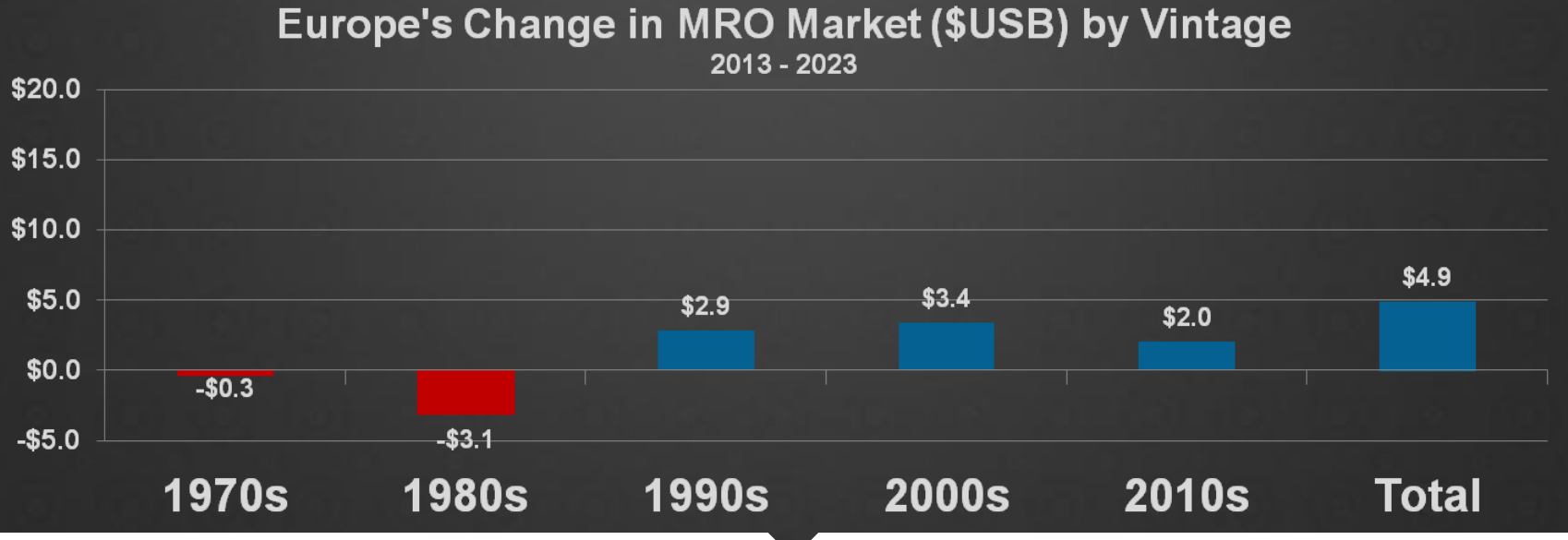
- Europe (both East and West combined) will overtake the Americas by 2023
- But Asia is driving the growth of the global MRO market
  - Asia will be the largest MRO market by 2023
  - Few retirements
  - Oldest aircraft contributing to MRO
- MRO in North America expected to suffer from large-scale fleet replacement



# Europe's fleet growth will be modest

- Europe's fleet growth over the next 10 years will be split between the East and the West
  - 3.3% CAGR from 2013-2023
  - 3,830 new deliveries and 1,488 retirements of current in-service aircraft are forecasted
  - 40% replacement rate
- Nearly all aircraft in EE will go toward fleet growth in that region
  - WE will use more than half its deliveries as replacement



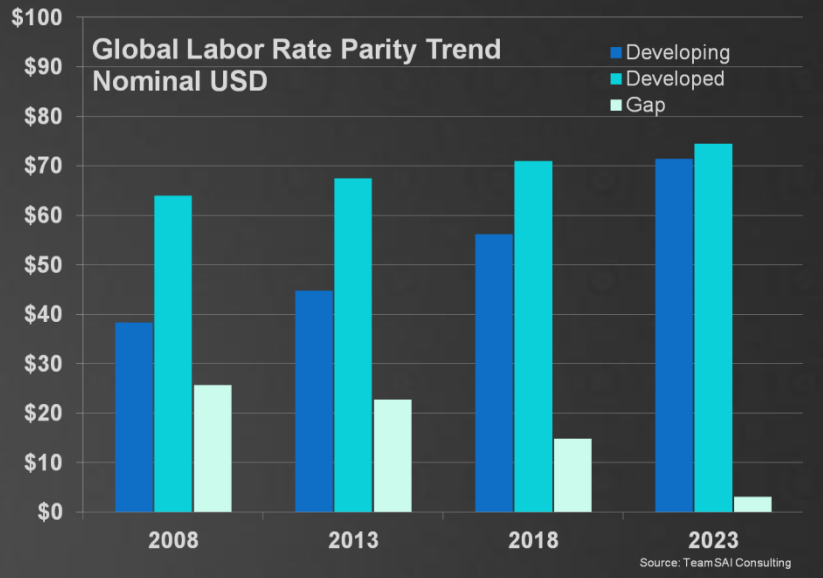
# Summing up the European outlook

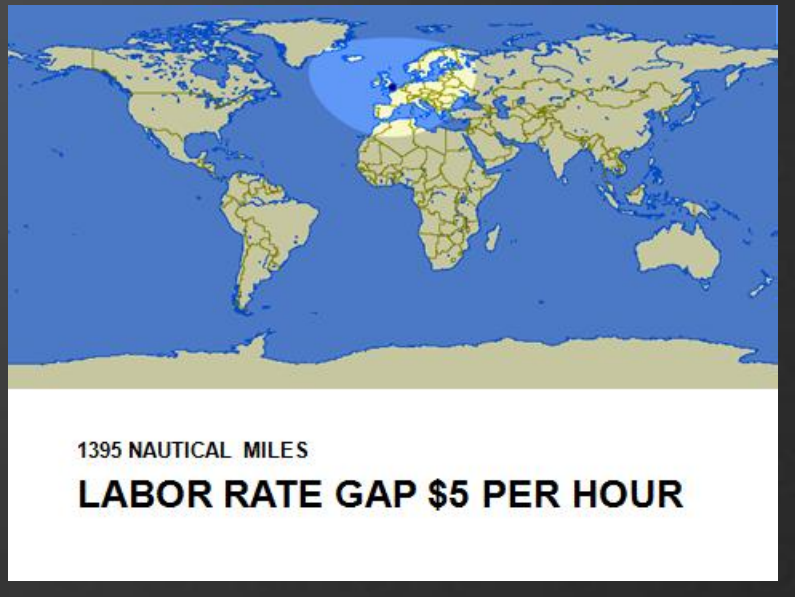
- EU's MRO growth will be impacted by:
  - limited net fleet growth in the larger WE
  - aircraft with less-maintenance intensive HMV work and honeymoon periods
- Eastern Europe will enjoy notable market growth
  - Russian fleet replacement
  - Share of fleet and MRO is ~20% though so relatively small compared to WE

| Regional MRO | Europe | | |
|---|---|---|---|
| Billions | 2013 | 2018 | 2023 |
| # Aircraft | 5,901 | 7,077 | 8,197 |
| HMV& Mods | $3.2 | $4.0 | $4.6 |
| Engines | $6.0 | $7.2 | $7.8 |
| Components | $4.3 | $5.1 | $5.2 |
| Line Mtce | $3.4 | $4.1 | $4.3 |
| **Total MRO** | **$16.9** | **$20.3** | **$21.8** |

# Labor rate parity will change outsourcing trends

- MRO labor costs can differ dramatically from the general cost of labor in a given region (e.g., China)
- Increasing wages and rising currencies in developing regions are mitigating the labor arbitrage benefits of the last 10 years
  - Resulting in shrinking benefits of ferrying aircraft for maintenance
- Outsourcing considerations
  - Maintenance cost
  - MRO capabilities
  - Ferry costs
  - Turn-around-time
  - Quality of work
  - Customer service
- Off-shoring to Asia losing its value?



# MRO challenges and responses

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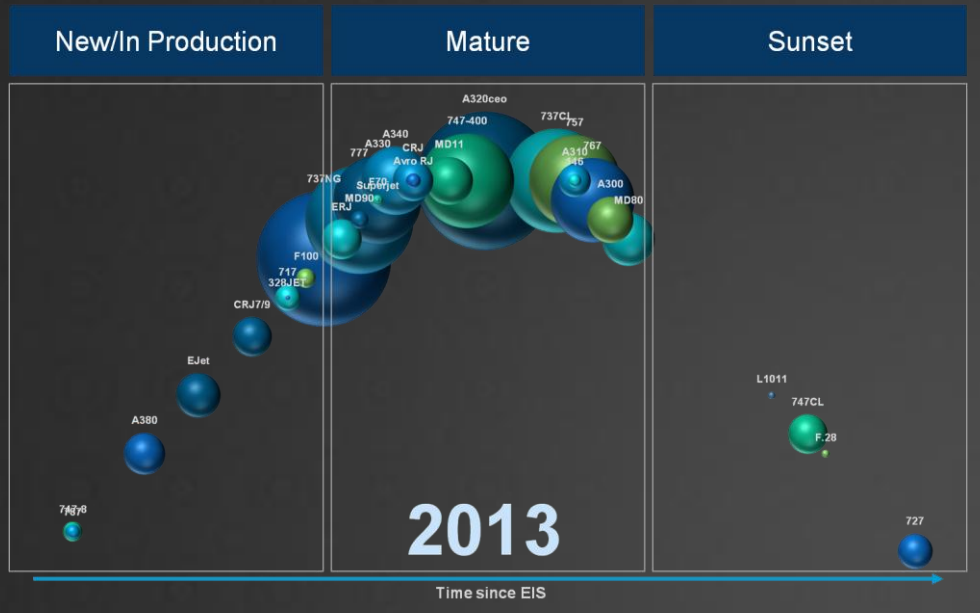
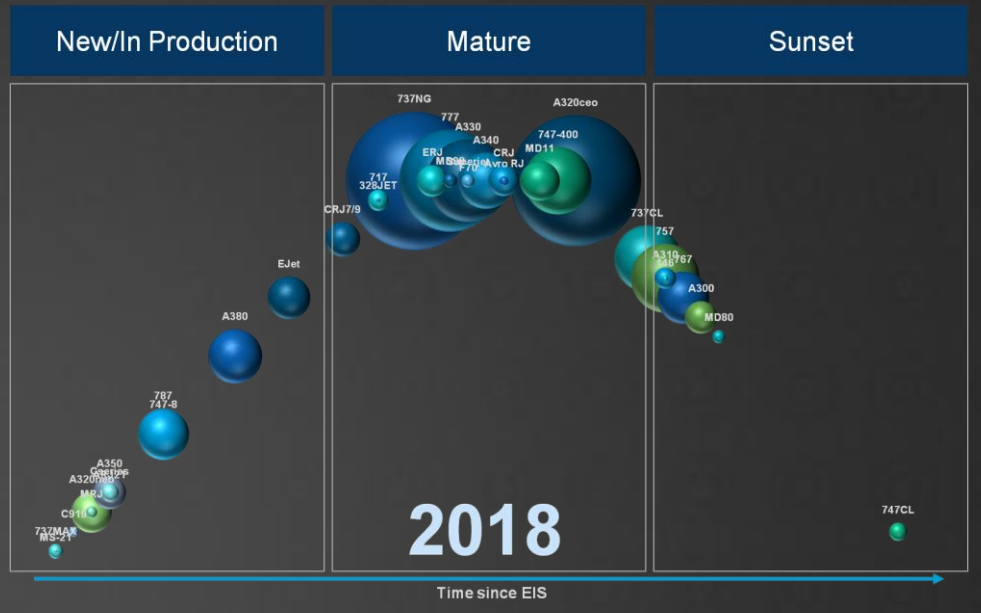
# Response: prepare for necessary capabilities

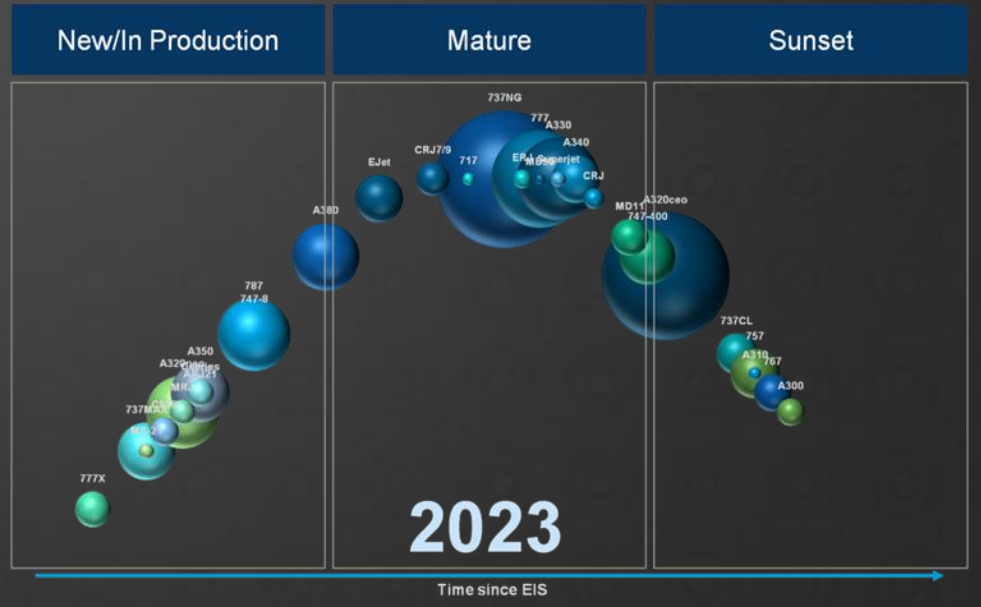



**2013-2023 Net MRO Growth by Aircraft Family ($USB)**

| Growing | | Declinng | |
|---|---|---|---|
| Family | Net Growth | Family | Net Growth |
| Boeing 737NG | $6.0 | Boeing 737 Classics | -$3.6 |
| Airbus A320neo family | $3.9 | Boeing 767 | -$2.1 |
| Boeing 787 | $3.8 | Boeing 757 | -$1.9 |
| Airbus A320 family | $3.7 | Boeing 747-400 | -$1.7 |
| Airbus A380 | $2.7 | Boeing (McDonnell-Douglas) MD-80 | -$1.3 |
| Airbus A350 | $2.5 | Boeing (McDonnell-Douglas) DC-8/-9/-10 | -$0.7 |
| Boeing 737 MAX | $2.5 | Boeing 747 Classic | -$0.6 |
| Boeing 777 | $1.8 | Boeing 727 | -$0.5 |
| Airbus A330 | $1.6 | Embraer ERJ-135/-140/-145 | -$0.5 |
| Boeing 747-8 | $1.4 | Bombardier (Canadair) CRJ100/200 | -$0.4 |

Source: TeamSAI Consulting



# Challenge: OEM dominance is changing the business model

- Airframe and component OEMs will increase their presence in the market mirroring engine OEMs' successful strategy
  - Technology in new aircraft give OEMs an opportunity to penetrate market
    - Restricting IP and charging high licensing fees
  - OEMs pursuing support contracts at point of sale to enter market
    - Crucial for airframe OEMs entry into aftermarket
- How will the smaller independent MRO survive?

# Response strategies for Independent MRO survival

- Become a niche player
  - Target lessors with fleet support packages
  - Look to LCCs
    - MRO outsourcing is essential to their business model
  - Develop a reputation as a best in class
  - Create a value proposition around flexibility and speed
  - Consider partnering with an OEM

- Consider speed and quality as a financial performance multiplier
  - Higher productivity through LEAN improves margins and revenue
  - Customer proximity and service can drive sales
  - High quality results in less rework and lower costs

Focus: leverage flexibility and speed for a better customer experience

# Airline cost pressures having outsized impact on MRO

# Thank you!

**Chris Doan**
Chairman & CEO
TeamSAI, Inc.
303-987-3454 Ext. 104
cdoan@teamsai.com

**WWW.TEAMSAI.COM**

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