

# Global MRO Dynamics & Increasing Interest in Data Analytics

2016

Aerospace & Defense Practice

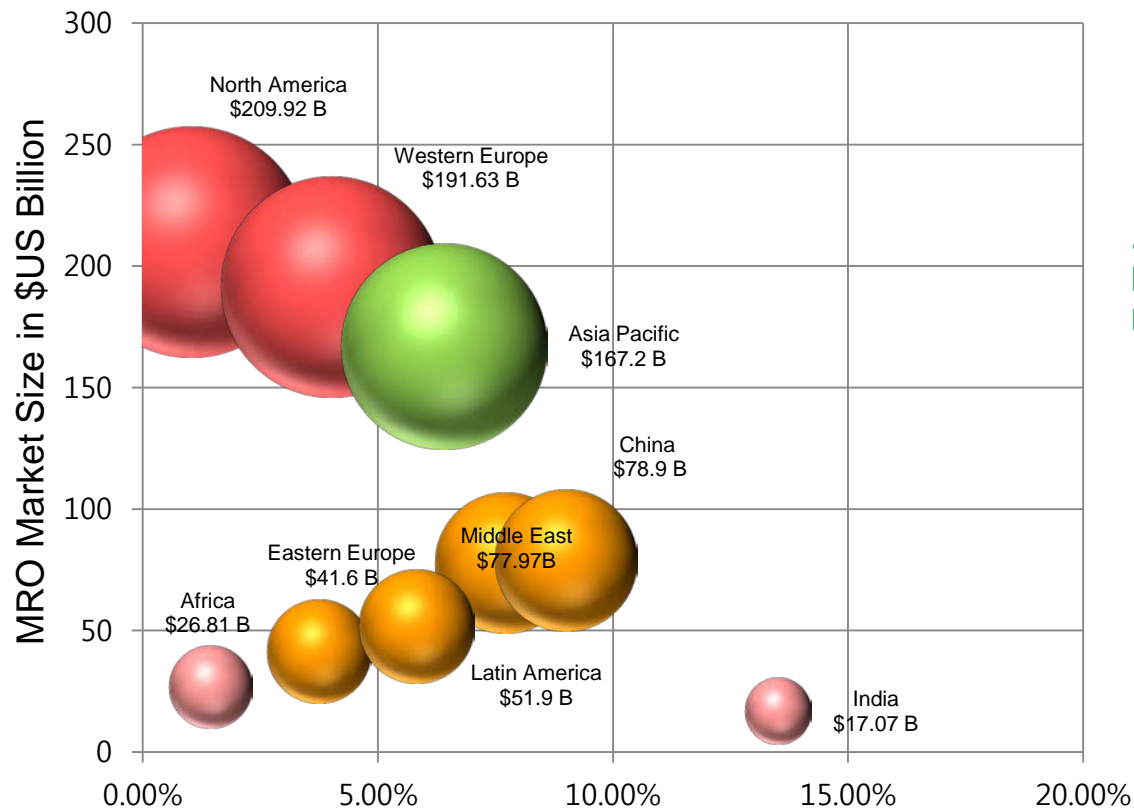
Frost & Sullivan



# Global MRO demand forecast

- A 10 year market sizing which is important to decide investment horizon shows that Asia Pacific region is ripe for investment and amounts to \$US 167.2 Billion over next 10 years
- Asia Pacific market size is marginally less than WE and NA but growth rate is far better as suggested by 6.40% CAGR. In subsequent 10 years 2025-2034 it will surpass NA and WE

## Global MRO Forecast by regions (2015-2024)



## ~ 10 year market forecast

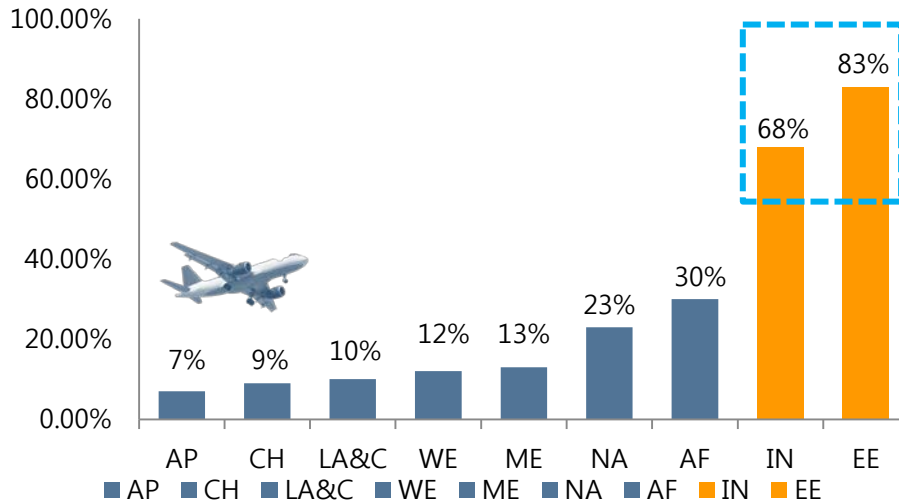
Region	* Market Size	CAGR
• North America	\$ 209.9B	1.03%
• Western Europe	\$ 191.6B	4.02%
• Asia Pacific	\$ 167.2B	6.40%
• China	\$ 78.9B	9.00%
• Middle East	\$ 77.9B	7.71%
• Latin America	\$ 51.9B	5.82%
• Eastern Europe	\$ 41.6B	3.75%
• Africa	\$ 26.8B	1.45%
• India	\$ 17.0B	13.51%

\* 10 year consolidated market size

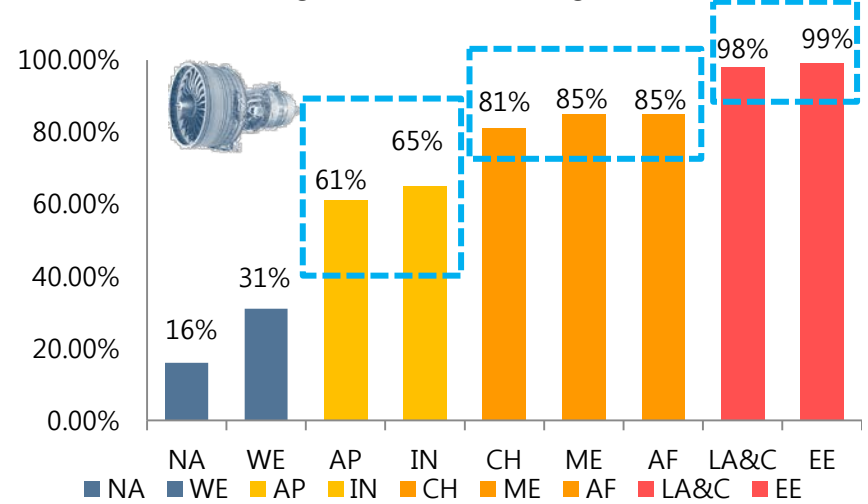
Source : Frost & Sullivan analysis

# Global MRO Outsourcing Pattern

## Global Airframe MRO Outsourcing Pattern, 2015



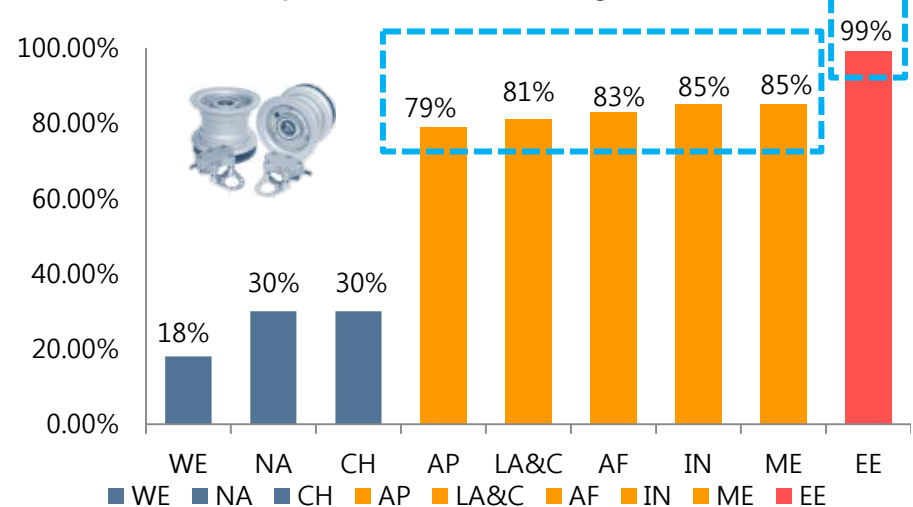
## Global Engine MRO Outsourcing Pattern, 2015



## MRO Opportunity

- Airframe MRO opportunity exist in India and Eastern Europe
- Engine MRO opportunity exists in Eastern Europe, LATAM, Africa, Middle East, China followed by India and APAC
- Component MRO opportunity exists in Eastern Europe, Middle East, India, Africa, LATAM and APAC. China has developed expertise through OEM collaboration.

## Global Component MRO Outsourcing Pattern, 2015



## Global Component MRO Outsourcing Trends

Component maintenance is increasingly witnessing dominance of OEMs and greater outsourcing by airline towards total component support packages from large one-stop MRO shops

- No investment by airline in self rotables inventory
- Flat-rated component maintenance costs.
- Availability of aircraft parts
- Low investment cost

Pooling Contracts

Dominance of  
OEM

**One Stop  
Component  
MRO Shops**

Decrease in airline in-  
house component  
maintenance

- Parts have become more expensive & reliable
- Inspection & repair requires intellectual property
- More sophisticated equipment is required for testing & repair

- Expensive to set up own Part-145 organization with all the actual requirements and procedures, tools, GSEs
- High cost of OEM licensing
- Lack of scale

## How are MRO's adapting to new business models ?

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With OEMs taking a larger share of aftermarket gradually, the only way for MROs to respond has been to quickly adopt emerging business models in collaboration with OEMs

✓ **License Services**

✓ **Share/co-develop intellectual property**

✓ **Joint venture**

✓ **Acquire OEMs**

✓ **Acquired by OEMs**

✓ **Other business models**

# How airlines are tapping into the Internet of Things (Aircraft IOT)

For the airline sector, IoT offers multiple opportunities to improve operational efficiency and offer increased personalisation to passengers. It may even have the potential to change business models.

## Who has already leading the IOT game?

### Supporting the airline industry requirements



Rolls Royce signed a deal with Singapore Airlines which aims at decreasing fuel consumption across 137 aircrafts..



Bombardier has teamed up with Pratt & Whitney to develop and implement a data management service for the CSeries



GE's Flight Efficiency Services has been working with AirAsia since 2012 to utilise IoT

### Supporting the passengers experience



Delta Air Lines has enabled its customers to keep a virtual eye on their luggage throughout the journey via its mobile apps since 2011



easyJet in partnership with London Gatwick airport combines live data from the airport's systems to provide personalized instructions and updates for passengers



Emirates Group's IT Innovation Lab has trialled embedding beacon technology into bag tags to improve both the operational and customer service aspects of baggage handling

2015 Airline IT Trends Survey produced by SITA in association with Airline Business says "that and 86% say IoT will generate benefits over the next three years. Today, 37% of airlines have already allocated a budget for IoT implementation, according to the study; however, over the next three years 58% are planning to invest resources into IoT, with the emphasis on pilot projects, although 16% are preparing for major programmes."

...two-thirds of them believe IoT offers clear benefits for their airline right now

...86% say IoT will generate benefits over the next three years

...37% of airlines have already allocated a budget for IoT implementation

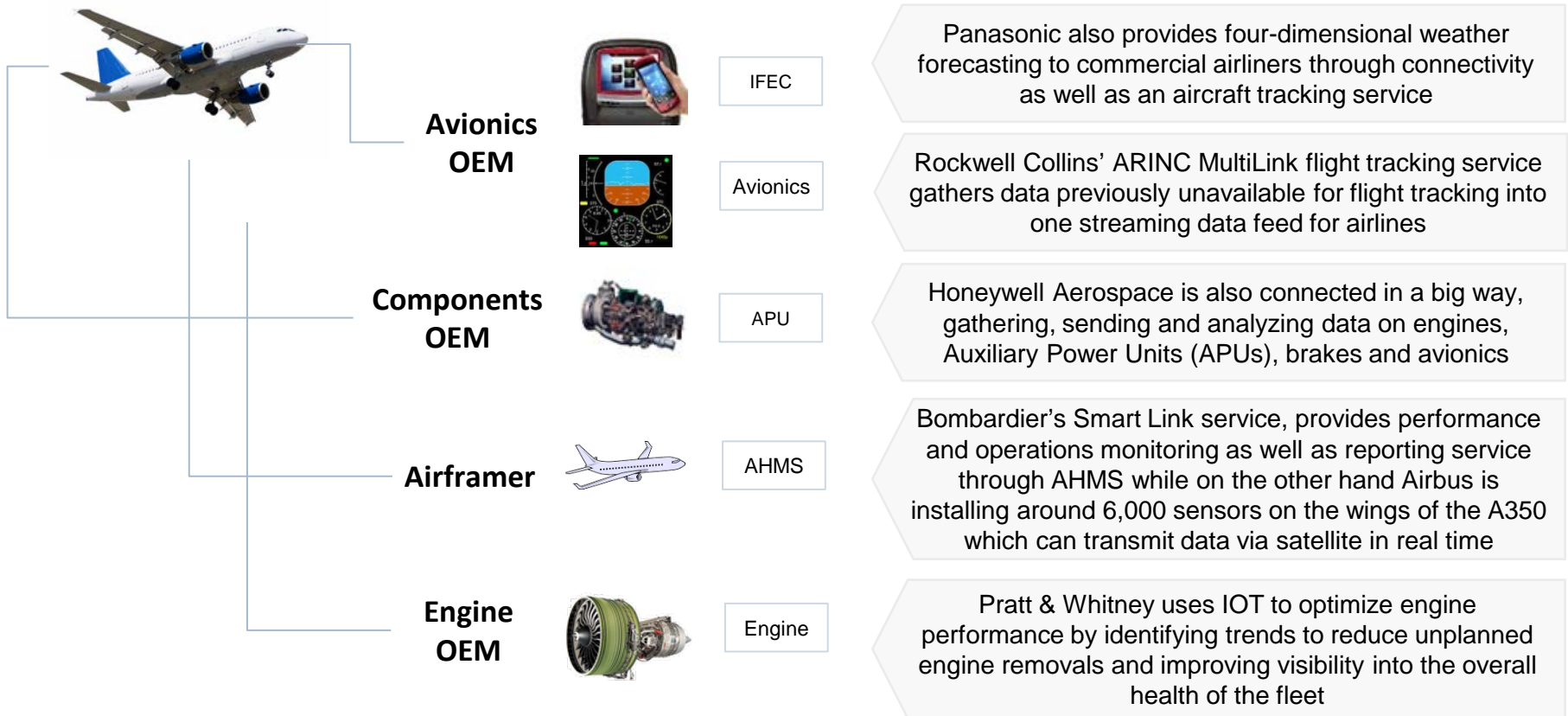
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# Aircraft Data Analytics Value Chain

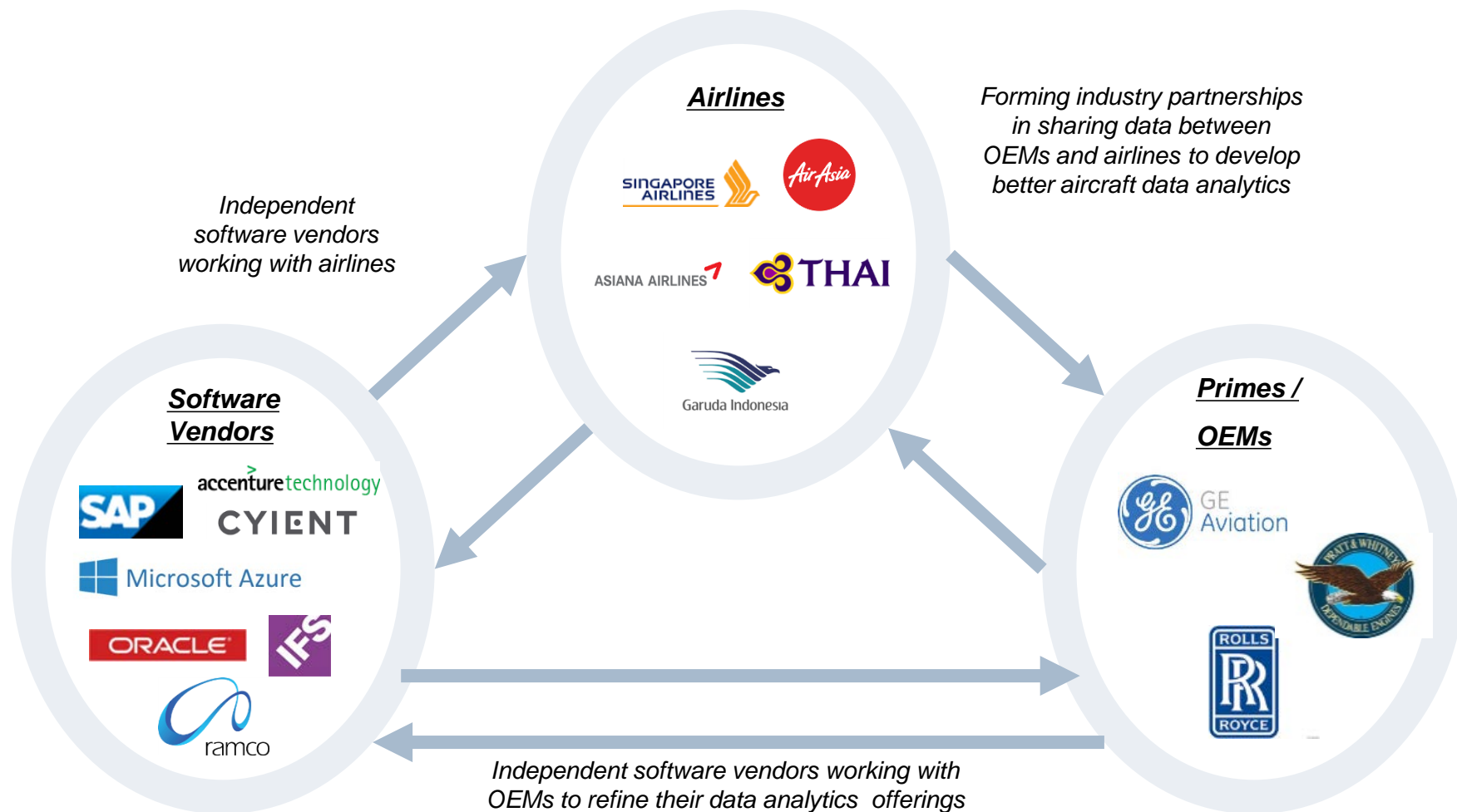
Multiple aerospace OEMs have their own offerings for health monitoring and increasingly they are integrating it with airframes to provide a complete suite of product and comprehensive coverage of services that are better inter-linked

## Airline Operator has flight analytics requirements across various components



## Industry stakeholders to be involved to understand market gap in data analytics

Potential synergies are yet to be realised which can propel growth of aircraft data analytics offerings and software vendors are unable to leverage technology due to lack of scale of airline customers and right pricing strategies





## How are MRO's adapting to new generation technology ?

MROs, OEMs and airlines are placing increasing importance on new generation technologies to reduce cost and TAT at the same time increase operational efficiency

