

## A review of the state of the aviation MRO market in 2007

The September 11th 2001 terror attacks in the United States spelt one thing for the commercial aviation industry at the time: disaster. According to KPMG, the year 2002 was undoubtedly one of the worst in aviation history. It has taken until 2006 for the MRO market to soar again.

Over the eighteen months since 9/11, Standard & Poor's Global Air Transportation investment outlook for the airline industry remains negative. 'Rising costs, along with continued weak demand stemming from prolonged economic weakness, have led airlines to reduce capacity, cut costs, postpone aircraft purchases, add fuel surcharges, seek government aid, and in some cases file for bankruptcy protection,' predicted risk specialists, Standard & Poor. Nearly every sector of the industry has been affected, including OEMs and after-market services, such as Maintenance, Repair and Overhaul (MRO) sector. (KPMG: 2004).

A review of the aircraft sector as a whole, from The Industrial College of the Armed Forces (U.S.), states the estimated losses of the top ten airlines in 2001 were \$7.6bn and \$11.3bn in 2002 (Industrial College of the Armed Forces: 2004).

Many analysts, KPMG included, believed the commercial aviation sector would not see a recovery until 2005, recovering to the early levels of 2001, before the infamous attack on New York. The MRO market itself lost up to three years of potential growth. KPMG explain:

The reduction in passenger demand post 9/11 resulted in a number of measures being introduced by airlines to cut capacity, the most significant of which for the MRO market was the grounding of older aircraft. The MRO market depends on the expansion of the global commercial aircraft fleet and the age of its aircraft – older planes require more maintenance, repair and overhaul work. During the six months after September 2001, in excess of a thousand aircraft were grounded – with the global

commercial aircraft fleet estimated by Boeing at 15,000 aircraft; this represented almost seven percent of the world's aircraft. While many of these were older aircraft, they were not scheduled for retirement for a number of years. Many of them were also coming up for heavy maintenance checks that will now never be undertaken (KPMG: 2004).

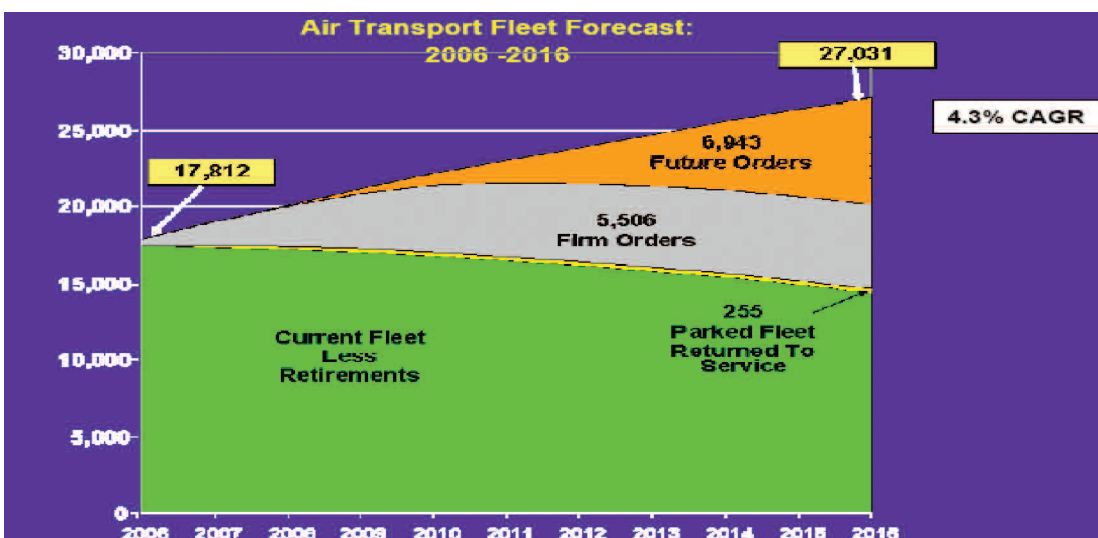
MRO is becoming an ever important aspect of the airline business, and as Mercer MC state:

'If you think that rising fuel prices are the only thing airline executives are preoccupied with these days, think again. Faced with unrelenting cost pressures, they must also continue to pay heed to other strategic questions that have a major bearing on their businesses such as aircraft MRO' (Oliver Wyman: 2006).

## Improving Conditions in the global MRO market

Evidence suggests aerospace analysts were correct when they predicted a turnaround of fortunes to the industry (as a whole) in 2005. Recoveries were certainly made, but 2006 was the year when the MRO market began to soar once again.

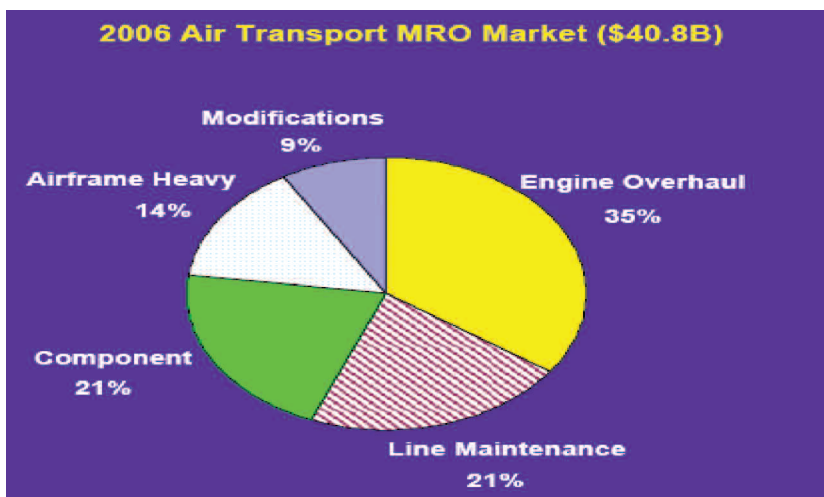
The recovery of the aviation sector as a whole has meant that the Air Transport Fleet will reach an astonishing 27,000 aircraft by 2016 according to Aerostrategy, as highlighted in the chart below:



(Source: Aerostrategy 2006)

BACK Solutions predicts the fleet mix will remain relatively unchanged, although it predicts decline in the narrow body mix, from 61 percent of the total aircraft down to 55 percent. It also claims regional jet (RJ) growth is expected to slow down, due to a lesser interest in 50-seat jets and despite an increase in larger RJ sales. AeroStrategy forecasts a comparable 4.2 percent increase in fleet size and, breaking down the market by regions, predicts the annual growth rates in India and China will reach double digits over the next decade. Seventy percent of the orders and options are destined for international airlines and low cost carriers (LCCs), BACK Solutions reported (Aviation Maintenance: 2006).

The ever growing increase in the air transport fleet will provide catalyst for growth in the aircraft MRO sector, which has already started to see record turnover. In 2006, the Air Transport MRO market was worth US\$40.8bn, with the majority of spending (over a third of demand) on engine maintenance and overhaul, as demonstrated in the pie chart below:



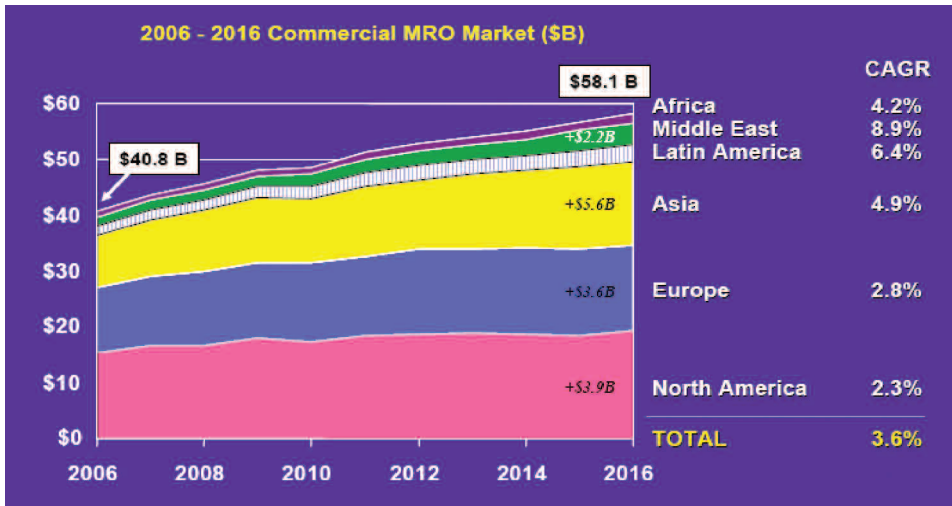
(Source: Aviation Week 2007)

A market forecast from Aerostrategy predicts steady growth within the sector, with growth figures reflecting the graph above. Engine maintenance and overhaul is expected to see the biggest rise. Within the next ten years, predict Aerostrategy analysts, the commercial MRO market will see a market growth size of 3.6%, leading to an astonishing increase of revenues from US\$40.8bn to US\$58.1bn:

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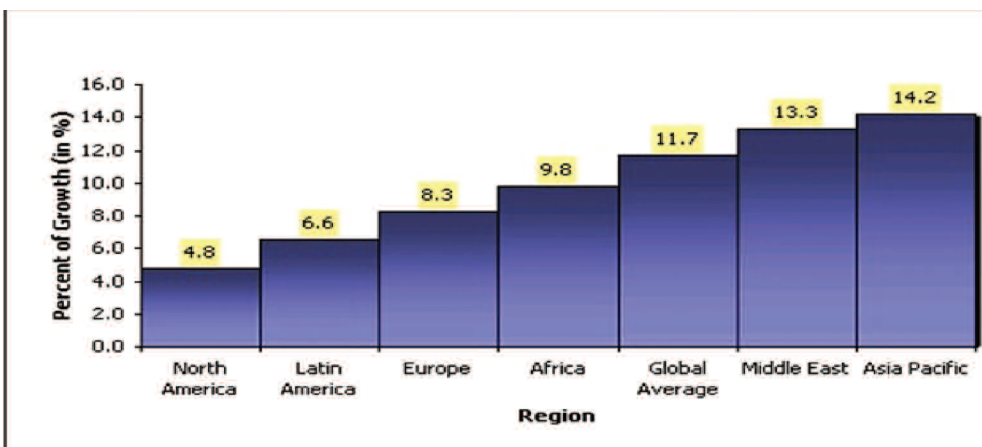


(Source: Aerostrategy: 2007)

## MRO Services Are Becoming Truly Global

Traditionally, the majority global MRO activity has been undertaken in North America and Europe. With the largest fleets of commercial aircraft, it made business sense to base the majority of MRO houses within these two geographies.

More recent years have seen a more substantial percentage of air traffic moving away from 'The West', with Tiger Economies such as India and China attracting more air traffic as well as substantial growth in domestic and short-haul airlines. The graph below, produced by analysts Frost & Sullivan (for 2004), highlights the substantial growth in air traffic throughout Asia:

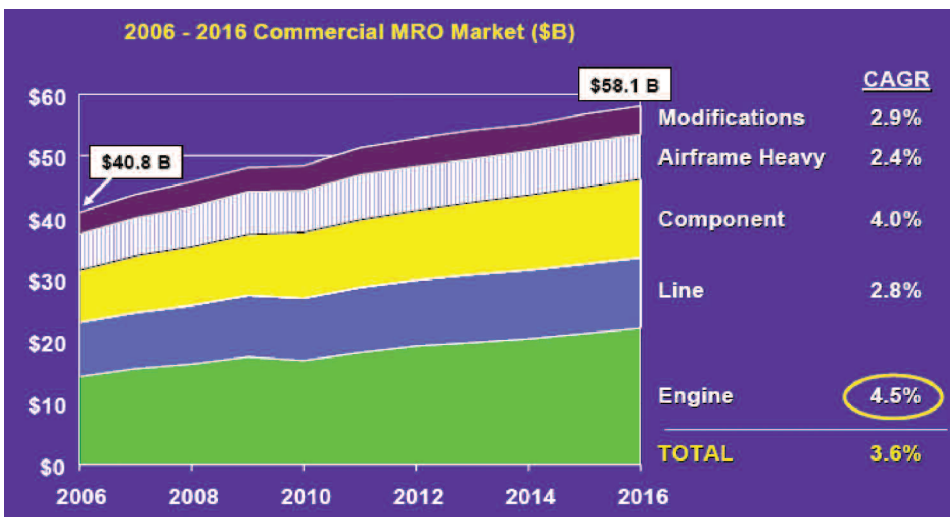


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The rise in air traffic in the Middle East and Asia Pacific regions has coincided with a rise in MRO services in those geographies. Evidence suggests that combinations of factors, such as lower labour costs, are driving the MRO sector within the Middle East and Asia Pacific.

The graph below highlights the expected growth in the MRO (with Compound Annual Growth Rates) market over the next ten year period, and the results are surprising:



(Source: Aerostrategy 2006)

As shown, the Middle East is expected to see the most growth in the MRO market over the next ten year period, suggesting this should be the future target market for MRO operators.

Although the graph above suggests the Middle East and Latin America will become key MRO markets in the future, evidence suggests that currently, the markets in Asia are the geographies that are seeing the most substantial increase in MRO services.

## A report from Global Information Inc. states:

With lower-labour rates, Asia is a particularly attractive market for labour-intensive base maintenance. The growing fleet in Asia and growth in domestic/international air traffic provides ample opportunities for Asian-origin airline affiliates to evolve and set up world-class maintenance facilities with the advantage of an established brand in the larger aerospace value system (Global Information Inc: 2006).

A 2006 published brief from analysts Frost & Sullivan continue this statement by adding:

North America and Europe outsource their heavy maintenance work to the Asia Pacific region to take advantage of the low-labour cost advantage in the region. Presently, the labour rates for heavy maintenance work are estimated to be around \$58, \$47, and \$36, respectively, for North America, Europe, and Asia Pacific. Hence, to continue to gain a foothold on the global heavy maintenance work, Asian participants are expected to strive to maintain their maintenance costs to the minimum without compromising on the quality. In addition, the increase in fuel prices is likely to continue to push the airlines to adopt advanced fuel-efficient aircraft. Simultaneously, to remain in business, MRO companies should be able to constantly upgrade their technology to support the newest fleets (Frost & Sullivan: 2006).

## The Role of Original Equipment Manufacturers

Increasingly, aircraft OEMs are becoming significant players in the MRO market, especially in the engine overhaul market. Analyst's estimate that currently 28% of engine overhaul is conducted in-house by airlines and that 72% is available to outside vendors. Compared with other MRO market segments, the engine market is the most outsourced activity.

Where do the OEMs come into this? By far the largest share of total spend (43%) is held by OEMs and their joint venture partners (for example: the Rolls Royce/Singapore Airlines joint venture SAESL). The next largest supplier category is the airline third-party shops such as KLM Engineering and Air France

Industries, which hold a 16% share. Finally, independents such as MTU and SR Technics hold a 13% share (Engine Yearbook: 2007).

Reading the above statistics, it is clear that the OEM's are significant players in the aftermarket. Hence, their varying strategies and approaches are key drivers of change, states the Engine Yearbook of 2007. GE Engine Services, having acquired numerous shops in the 1990's, has now adopted a strategy aimed at leveraging its ability to control parts flow. Rolls Royce has a long established strategy of forming joint ventures with key customers in major markets and these include SAESL (Singapore Airlines), HAESL (Cathay Pacific) and TAESL (American Airlines).

With the fundamentals in place to form joint ventures and further subsidiaries, the OEMs in the MRO marketplace have significant opportunities to leverage their technologies within the MRO sector, making the environment more competitive and eroding the competitive advantages some third party MRO service operators have spent years obtaining.

## The Importance of the Supply Chain in MRO Services

With airlines today aiming to run 'lean' operations, an operation of that scale calls for the efficient management of a vast number of spare parts. In an April 2007 article, Air Transport World believe the airline and associated MRO industry has made great strides in improving the efficiency of its maintenance, repair and overhaul materials supply chain but much work remains to be done, say experts, particularly in comparison to performance of other industries, such as the automotive industry.

"Airline [MRO] operations are plagued by a number of problems," says Bill Krebs, manager at Boeing's Integrated Materials Management Program. Many of these "are supply chain-related. They include late deliveries from suppliers, long order cycle times and high expedited-freight costs. They also include service levels stuck in the high 80% to low 90% range, low inventory turn rates, high capital intensity with equally high inventory obsolescence rates. And of course airlines face complex requirements around parts tracking, quality control and regulatory compliance.

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This fact is backed up by Volvo Aero President and CEO Claes Malmros who, when speaking to ATW Online in 2007, stated:

"In that business [Volvo's Automotive Business], we manage 4,000 suppliers and integrate them into a common global infrastructure to distribute parts globally. So we took a look at the airline business to see whether we could leverage the same existing infrastructure, software support and resources to support its MRO needs."

"In its analysis, Volvo found two differences. First, airlines require higher parts and service availability because of the extremely high cost of downtime. But the number of parts is less. So automotive is about managing high volumes while air is about managing less volume but at a higher responsiveness level. The airline industry has a unique burden of having to comply with strict regulations governing every single part. It is a huge challenge to make this efficient and provide the service required." (ATW Online: 2007).

For OEMs, which continue to make inroads in the MRO market, the need better to manage their service/parts supply chains also is paramount. "This is a very interesting time to be in our industry," observes Dave Boynes, CPIM commodity manager-indirect materials and services-supply chain management at Goodrich Corp. "We've got an ever-shrinking group of suppliers all supplying to the end game, the airlines." (ATW Online: 2007).

Competition is forcing the situation. "The number one issue affecting our business today is overcapacity," says Bill Millhaem, a materials manager with GE Aviation Services. "As newer engines come into the industry, they stay on the wing longer and require less maintenance when they come off wing. This means that even though the number of aircraft flying continues to increase, labour content for MRO is levelling out. At the same time, more players are entering the MRO industry. For example, we've seen a lot of MRO shops convert from servicing Pratt & Whitney product lines into the more popular GE products. That creates excess capacity." (ATW Online: 2007).

## Deregulation of the Aviation Sector

The fact that the spares and maintenance segment of the aviation sector has been deregulated, has meant the playing field and business models are having to change, especially for the OEMs. Oliver Martins, VP of Engineering at American Airlines talks of a gripe heard at airlines across the globe: Price inflation. "In essence," he observes, "the pricing of [OEM] parts has been increasing unabated for the last 15 years. We've seen price increases on the order of 160%. Some parts have even higher increases than that."

Such price escalation is helping to push carriers toward non-OEM parts suppliers (ATW, 2/07, p. 62). "The alternative parts industry provides our only choice to help us build a different economic model for sourcing parts," he acknowledges. "So we see a small shift in sourcing from OEMs to independent parts manufacturers. But the OEMs are buying up all the independents and controlling supply options. To a degree, we have some ability to leverage our buying volume to gain lower prices. However, we feel the greater leverage is to invest in PMA parts because that's the only time the price changes. But we play a limited game, because if the PMA industry dies or is absorbed by the OEMs, once again we'll have no leverage." (Air Travel World: 2007).

MRO service providers, be they third-party supply chain managers or OEMs, must help their customers as they struggle to withstand the economic pressures of their industry. "Unless we can all help to improve the airlines' profitability," Volvo CEO Malmros concludes, "we don't have a healthy industry. That hurts us all." (ATW Online: 2007).

## Where are PMA (Parts Manufacture Approvals) taking the Industry?

The rise of PMA in the aerospace maintenance sector is also having an affect on the industry. According to the Aerospace Wales, The OEMs see the PMA manufacturers targeting specific parts and thus whittling down their long term profit base. This base has long been accepted as providing the means to which the OEM generates a return on their investment. OEMs have a number of techniques that can prove to be a counter to PMA parts. These include providing regular modification programs and upgrade packages which the PMA manufacturers will not be readily capable of reproducing (Aerospace Wales: 2006).

A number of industry commentators remark that the PMA industry is about a third of the way to realizing its true potential of 10% of the MRO repair market. While the aircraft PMA parts market is reasonable, the biggest potential that is being unlocked at present is the jet engine MRO market. Modern technology coupled with cleaner guide lines from Civil Aviation Authorities have combined to allow significantly complex and highly stressed parts to be 'PMA'd'. (Aerospace Wales: 2006). Analysts at Aerostrategy believe the issue of PMA is the key number one market trend that will impact the MRO sector. Aerostrategy explain:

The subject [of PMA] of many, sometimes heated, debates at MRO industry conferences. PMA is now a fact of life rather than a trend that may or may not impact the market. Recent years have seen the potentially game changing moves from parts manufacturers and third party MRO operators. For example, Pratt & Whitney recently announced that it will produce PMA parts for a competitor's engine.

This, state Aerostrategy, raises some important questions that only time will resolve. For example, what impact might this have on the traditional OEM pricing model if this strategy of producing PMA for competitors is adopted on a wider basis across the MRO sector?

The share of the PMA market is only set to increase because it is a vital tool in the airlines armoury for reducing cost and keeping OEM parts pricing and availability in line (Engine Yearbook: 2007).

## Challenges for the Sector

The vast number of happenings and pressures in the global MRO sector has created a number of challenges that are driving industry changes. These challenges include:

- The deregulation of the aircraft spares and maintenance sector by Civil Aviation Authorities has created a global, even playing field and opened up competitive forces from around the globe.
- Global competition in the MRO industry is on the increase. This means MRO service providers are facing the challenges of reducing their costs, whilst at the same time improving safety, increasing services and providing extra added value for their customer base.

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- OEMs are actively pursuing greater involvement in the aftermarket. They have significant opportunities to leverage their technologies in the area of parts repair. This means the market environment will become tougher still for all but the most strategic thinking and technology capable third party service providers.
- Although OEMs have significant opportunities to leverage their technologies in parts repair, the ever increasing role of the PMA market has put added pressure on the OEMs and could even the playing field for third party MRO and independent service providers.
- MRO service providers are now expected to manage the supply chain and logistical headaches of aircraft maintenance for their customers. These extra pressures will require new strategies and an increase in capabilities. Only the most innovative service providers will survive.
- The creation of key partnerships (especially when entering new territories) could be a vital aspect in delivering value, providing differentiation and gaining competitive advantage in the global market.
- Not every airline is the same. In order to be successful in such a competitive environment, aircraft maintenance providers must have a real understanding of current and future customer needs in order to deliver value.

## Conclusion

There is overwhelming evidence that the aircraft MRO sector is in an evolution stage. Perhaps the conclusion should be left to David Stewart, Principal Analyst with Aerostrategy:

'Pressures from airline customers to reduce costs and increase aircraft availability make the sector an extremely challenging marketplace.

For various supplier categories there are key challenges. OEMs face a potentially new market paradigm in a world where PMA could destroy traditional revenues. This is presently creating uncertainty and a wait-and-see attitude is being taken, but the potential impact is significant. For airline third party suppliers alike, there are key challenges in satisfying customer demand for lower costs and retaining

customers. Also, decisions regarding the appropriate levels of investment in repair development and the formulating of a PMA policy will need to result in suitable action being taken. In addition, global strategies will be required to address a changing global fleet deployment.

Finally, and potentially the biggest decision of all for MROs (especially engine MROs) will come as the world's airlines deploys larger numbers of new, high-technology aircraft. MROs which have not set up for this new era will have to decide whether or not to invest in new capabilities and if so, on which aircraft and engine types. This will not be easy, particularly now that the OEMs have become such a competitive force.

These are exciting times with underlying growth providing opportunity. Nevertheless, a changing customer base and an evolving fleet present significant challenges. The winners will need scale, scope, differentiating value propositions and a compelling story on cost-competitiveness! (David Stewart, Aerostrategy: 2007. Sourced from: Aviation Industry Group: 2007).

## Why Talk to ICDL?

ICDL creates High Performance Organisations, sensitive and responsive to the smallest changes in market demand patterns. ICDL calls these organisations 'Outside-In'.

So how can you become an 'Outside-In' organisation? You deliver the right offerings to the right people in the customer, in a way which is appropriate for them, by identifying what is truly important to your customers; and building offerings to meet these real requirements.

By identifying what is truly important to your customers you enable them to deliver real value to their customers and obtain competitive advantage.

## Sounds tricky... are there an alternative?

The alternative is being what ICDL calls an 'Inside-Out' organisation. Most organisations invest in the wrong activities, identify inappropriate information and build their futures on what they think is important, not what the customer thinks is important.

'Inside-Out' organisations sit in their offices, analyse their offering and invest time, energy and resource in trying to identify how they can 'beat the competition', and where they can sell more of their products or services. They do not invest in understanding the customer's needs and continuously adjusting their offering to achieve best fit. The result is generally seen as follows:

- Unreliable Sales Forecasts
- Poor Customer Service
- Highly Competitive
- Blame Culture
- Take No Risks

The Global MRO sector is reaching a turning point. ICDL's approach is unique for organisations operating in complex or changing markets, enabling them to build their own clear differentiation and competitive advantage strategies.

Even with the increase in competitive forces running throughout the global MRO sector, the opportunities are there for that can react to market drivers and know how to exploit them. The growing importance of being to able to differentiate from the competition makes it key for organisations to be able to anticipate changing customer needs before their competitors and demonstrating how they can add real value to their customer – thereby achieving competitive advantage.

## Achieving Differentiation with ICDL

Business differentiation from ICDL focuses on adding Value, emphasising the importance of meeting the customer's needs and wants. Analysts from Aerostrategy confirm a changing customer base and an evolving fleet present significant challenges. The winners will need scale, scope, differentiating value propositions and a compelling story on cost-competitiveness.

Working with ICDL can not only enable you to add value to your customer offerings, but increase your chances of sales success by helping you determine where to focus your resources to generate maximum return and which customer or market areas are most likely to achieve the best results for your business.

ICDL creates 'Outside-In' organisations; Organisations which go out and stand in the shoes of their ultimate end users, look back at them and their competition and ask themselves, "standing here, looking back, what do I need to do to make my organisations, our offering and our partners seem more valuable to this end user than our competitors?"

This thinking drives remarkable change throughout the organisation, and through this, changes the perception of the end user. The results are clear:

- Take 'Customer' Risks
- Reliable Sales Forecasts
- Focus on Customer Needs
- Everyone Focused on 'Customer'
- Strong Orientation on 'Value-Adding Partnership'

Not all organisations or all sales teams are ready for change of this magnitude, nor are they all capable of implementing it. Those that can and do, however, will be the winners.

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ICDL exists to enable our customers to have this choice by giving you the unique differentiator... knowledge! Real knowledge of real ways you can really help your customers. With ICDL you have overwhelming competitive advantage, right from the first meeting.

For more information on how ICDL can help you, call us today on +44 (0)118 979 8433 or e-mail [enquires@thebusinessaccelerators.com](mailto:enquires@thebusinessaccelerators.com)

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