

Commercial aviation focuses on three moving targets

By [Mark Martin](#)

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Global fleet and maintenance, repair and overhaul (MRO) markets will see dynamic growth as the demand for air travel rises.



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Alongside this, organisations will have to deal with fluctuating oil prices, labour skills shortage and newer, complex assets entering service. How will these companies cope in this competitive market environment?

Reliability analysis becomes the engine for growth of predictive capabilities

Reliability data buys operators decision-making time

A recent IFS study into the top commercial aviation pain points, found operational availability to be the greatest challenge, cited by 60% of respondents. No matter how quickly operators can turn around a plane between flights, the disruption of having an aircraft on the ground (AOG) has drastic ramifications - with parts and time potentially costing millions of dollars. Improving operational availability and avoiding costly schedule delays must start in the maintenance planning process.

The solution lies in analysing reliability data, which can enable operators to accurately predict when a component will fail and give them more time and freedom to decide on the next step. If operators know when a part is likely to malfunction or break, they can get as much as two to three weeks to review options and source a replacement from the most cost-effective vendor. This removes the pressure to find a part at short notice, which often leads to cascading maintenance schedule changes and expensive emergency parts sourcing.

MROs can also capture valuable reliability data

Last year, IFS predicted digital twins would play a bigger role in commercial aviation and we have seen this materialise and continue to dominate the agenda across the industry. We will see more MROs take advantage of digital twin information gained from original equipment manufacturers (OEMs) to capture much of this valuable reliability data.

During the manufacturing process, sensors on machinery send signals to the twin to gauge operational performance, product characteristics and environmental conditions within the factory. When this is combined with organisational information - such as data and user rights - and third-party data on weather forecasts, historical intelligence and flight schedules, the digital twin is able to run analyses to spot patterns signalling sub-optimal conditions.

When MROs see this data, they can better understand how assets are used in the field, how long-lead-time components improve product performance and where data can be used to open new revenue streams.

It is important to note that some improvements pay off better than others. Take the essential fuel pump for example - expensive to produce and a long repair time. Focusing analytical capabilities on this area will deliver more efficiencies and cost savings than elsewhere. The key for MROs is to identify the areas where reliability data can have the most disruptive effect. Any improvement that will allow an MRO to enhance or gain predictive capabilities is going to be a major service differentiator.

Operators and MROs will double down on their efforts to make data count towards predictive capabilities - and these capabilities will stretch further than ever before.

Quicker deployment of in-air and in-hangar innovation

For operators, the only way is cloud

Operators face unprecedented demand to innovate faster, which usually manifests in pressure to adopt new technologies that improve the passenger experience—from in-flight entertainment systems to the latest avionics. Yet these new tools and functionalities often take too long to approve and integrate—so much so that aviation is lagging other industries in speed of innovation.

This innovation dilemma is down to several factors, including regulatory constraints, but is often due to the fact that archaic processes are still widespread across the operator ecosystem. Paper is still prevalent in a lot of maintenance hangars, RFPs for new projects themselves are extremely old fashioned in their construction and personnel are still taken out of operations to conduct classroom-style training sessions.

Instead of pointing the finger at OEMs, regulators and the industry as a whole, operators can get a head-start on innovation by looking within. Cloud software will be a necessary tool in the new aviation IT landscape to speed up the delivery of new capabilities and eliminate the cost of purchasing and managing on-premise technology. Software-as-a-Service will remain a primary model for this.

Commercial operators will connect more areas of the enterprise to the cloud to deploy new technologies faster and drive efficiencies through successful digitisation and supply chain optimisation.

Mobile customer service: MROs must manage maintenance expectations

MROs will face increased competition from OEMs moving into aftermarket services. Unlike most OEMs and operators, maintenance is the main skillset of an MRO—this gives them a head-start when it comes to being flexible, but they are also afflicted by paper-based processes and regulatory pressures.

When it comes to innovation, MROs will need to demonstrate their capabilities through customer value. This means looking for new ways to use technology to deliver a better service and overcome distance challenges. Moving maintenance visibility beyond the boundaries of the MRO organisation and in front of the customer is a good place to start.

Mobile devices are an indispensable part of this. MROs can make accurate maintenance status reports instantly available through mobile-enabled customer portals, and customers will directly benefit from better visibility into key metrics such as turnaround time to help with flight scheduling.

MROs who prioritise innovative service will take the step from technology laggard to leader and can develop a key service differentiator in an ultra-competitive climate.

Companies put talent and knowledge first, putting robots aside

One-to-many knowledge transfer is now a reality for operators - virtual or augmented

Labour costs are the second-largest operating expense for airlines after fuel costs. Robots will not replace engineers and professionals this year and the labour force is quickly ageing - so there needs to be a better way to aid human labour and help an ever-increasing number of people travel seamlessly. This means operators have a responsibility to ensure workers have all the knowledge, tools and support currently available.

Knowledge transfer - the capability to capture knowledge from a small pool of subject-matter experts and disseminate it across the enterprise - is becoming key. It is an area that has benefited from significant developments in commercial software tools over recent years.

In the short-term, point solutions, such as augmented reality, are coming to the fore. IFS is already working to deliver IFS Applications on Microsoft HoloLens headsets, which supports real-time one-to-many knowledge transfer from experienced technicians to newer recruits. Looking longer-term, incorporating asset history into maintenance support systems will ensure that lessons learned stay learned and component history can be tracked.

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