

MRO 360°

The Smart MRO

Digital Technologies
Are Changing
Aircraft Maintenance

The Cash Trap

Surplus Inventory
Solutions

Human Factor

Understanding the
Human Element

Maintenance Mythbusters

"Most Errors Are Technical Mistakes"



© Shutterstock

MRO and Digitalisation – a Marriage Made in Heaven?

Not every business model perfectly lends itself to seamless digitalisation. Has the MRO sector been able to successfully make that transformation and embrace all its benefits?

By David Dundas

Though often mistakenly interchanged, the terms digitisation and digitalisation are not the same. Consequently, just so you can be 100% clear what we are referring to in this article, let us explain further. Put simply, digitisation is the conversion of data and information into digital, 'machine-readable' format. Examples of digitisation include the creation of Excel spreadsheets and PDFs from paper documents. Digitalisation, however, is slightly more complex, involving the use of digital technologies and digitised data to transform how businesses operate, communicate, and to automate processes, increase efficiency, and establish new business models.

While digitisation may lay the

foundations, digitalisation builds on that foundation by reimagining how decisions are made, how work is done, and what value can be delivered. The primary goal of digitalisation? To optimise business operations and models. However, there are those businesses that are easy to digitalise as they typically deliver intangible services or digital products that require zero shipping, nominal if any inventory, and low initial overheads. At the other end of the scale, there are those businesses which are difficult to digitalise as they involve physical logistics, strict regulations, tactile human-to-human interaction, and/or complex supply chains. Sound familiar to anyone?

We were keen to find out how the landscape for many of you in relation to wanting

to digitalise your business and actually achieving your goal. We also wanted to get an idea of what the landscape would look like in ten years time if digitalisation of the industry continued at its current pace. Finally, among other things, we wanted to know what, if anything, had been identified that has been stubbornly resistant to digital transformation. When you get feedback



Simon Walker, SVP Technical, AerFin

“In today’s MRO environment, digitalisation is the ability to induct an asset - whether an aircraft, engine or component - into a maintenance facility and return it to service with little or no reliance on hard-copy paperwork between the customer and supplier.”

Simon Walker, SVP Technical, AerFin

from ten industry professionals on the subject of digitalisation, chances are there are going to be some interesting talking points.

How would you define "digitalisation" in the context of MRO today, beyond the buzzword?

We've described what the 'buzzword' refers to in general terms; here we wanted to know what digitalisation specifically means for those working in the MRO sector in general, and specific fields in particular.

Simon Walker, SVP Technical at AerFin highlights the sounding of the death knell for paperwork as he comments that "In today's MRO environment, digitalisation is the ability to induct an asset - whether an aircraft, engine or component - into a maintenance facility and return it to service with little or no reliance on hard-copy paperwork between the customer and supplier. It also extends to the internal management of the asset. This includes workscope planning, parts supply, repair order management, and the flow of information across the maintenance process. Ultimately, digitalisation is about creating seamless, connected processes that improve efficiency, traceability, and decision-making." Monica Badra, the CEO and Founder of Aero NextGen suggests that the test beyond the buzzword is simple: if digital tools do not measurably reduce turnaround time risk, rework, AOG exposure, or compliance effort, the organisation has digitised its interfaces, not transformed its operations. She then adds that "Digitalisation in MRO is the disciplined shift from document-driven work to data-driven work—where planning, production, quality, and supply chain decisions are made from trusted, structured data rather than paperwork, email chains, and tribal knowledge. In practice it means:

- Capturing work performed, parts movement, configuration, and compliance evidence at the point of activity—not reconstructed afterwards.
- Standardising core data definitions (task, defect, part, serial, batch, release) so information is reusable across systems.
- Building end-to-end traceability and auditability, from requirement to sign-off.
- Connecting operational systems so the shop floor, engineering, quality, and procurement work from a single version of the truth."

She then adds: "The test beyond the buzzword is simple: if digital tools do not measurably reduce turnaround time risk, rework, AOG exposure, or compliance effort, the organisation has digitised its interfaces, not transformed its operations."

Andy Boothroyd, Digital Transformation & Innovations Director at AJW Group suggests that digitalisation is often mistaken for just going paperless, but it's much more than that. It's about putting the right data in front of people at the right time, so they can make quicker, better decisions, whilst reducing the amount of manual effort. He further explains that: "Our focus has been on connecting that data across the supply chain, so it actually flows, from the first customer touchpoint right through to fulfilment, with minimal intervention. We're moving away from static documents towards guided, data-led workflows. Our teams are supported in real time, with intelligent prompts helping to drive accuracy and consistency. It's about equipping our people with the tools and data they need to perform at their best, amplifying the value of their expertise. At the end of the day, it's about joining everything up. Data, systems, and people working together as one, creating a faster, more responsive, and genuinely customer-focused operation." As opposed to digitisation, Hannah Myers, VP of Marketing highlights the differentiation between that and digitalisation, advising that digitalisation involves changing how work gets done. "Done properly it allows information to move as a by-product of work being completed, for example a technician closing out a task and a record being captured in the same motion. Digitalisation should allow your techs to spend less time feeding the system and more time doing their jobs, without sacrificing compliance or quality," she says.

Robert Suhs, VP Global Sales at Inventory Locator Service makes it clear that to him, digitalisation in MRO is not about putting another system in front of already busy teams but is more about connecting the information that drives the work. "In a real MRO environment, the critical question is rarely 'Do we have data?' The question is 'Can we trust it, act on it, and move quickly enough to protect the operation?' That means connecting parts availability, supplier confidence, documentation, pricing context, maintenance requirements, and logistics into a workflow that helps teams

make better decisions faster," he tells us. Scott Wells, Managing Director at MRO-PRO looks at digitalisation from a slightly different perspective. From his viewpoint, "At its core, it's not about digitising paper records or installing new software, it's about fundamentally changing how decisions are made. Digitalisation in MRO is best understood as the transition from fragmented, reactive processes to integrated, data-driven operations that enable more effective, faster decision-making. The real value emerges when data can be leveraged, particularly through AI, to improve predictability, streamline workflows, and enhance overall operational efficiency and bottom-line profitability."

According to Tom Eskola, Vice President of Panasonic Technical Services at Panasonic Avionics Corporation, "Digitalisation in MRO is increasingly about using data and software-driven insights to move from reactive maintenance to more proactive and predictive approaches. It is not simply about replacing paper-based processes with digital tools. Rather, it is about creating an ecosystem where operational, maintenance, and system-performance data can be collected, analysed, and acted upon in real time. This shift is less about digitising individual processes and more about connecting data directly to maintenance execution." He adds that: "Today, digitalisation at Panasonic Technical Services (PTS) enables capabilities such as remote diagnostics, real-time monitoring, data-driven troubleshooting, and proactive maintenance planning across in-flight entertainment and connectivity (IFEC) systems." At Pentagon 2000, the company's Global Head of Sales and Marketing, Guy Danon, makes some extremely valid points as he adopts an almost critical approach to how attempts to 'digitalise' legacy systems create as many problems as they solve. "Many organisations continue to rely on legacy systems that have evolved over decades. Rather than solving the underlying challenges, additional tools are often layered on top to fill operational gaps. On paper, this may look like digital transformation. In practice, many of the ERP systems and technological stacks out there require companies to sustain teams of IT specialists, system admins, or external system integrator consultants only to maintain and adjust the systems to the business needs. Yet, after millions invested, technicians are still re-entering

information, buyers are working from spreadsheets, and critical operational data remains fragmented across multiple systems." From his point of view, "true digitalisation means information is captured once, flows seamlessly across departments, and remains fully traceable throughout the lifecycle of a component, work order, or aircraft. When maintenance, inventory, procurement, quality, and management teams are all working from the same real-time information, with fewer or no manual processes and greater visibility, regardless of whether working from a tablet, desktop, or mobile phone — that is what true digitalisation is."

At Sky Select, Erkki Brakmann, the company's CEO and co-founder is very clear in his opinion regarding digitalisation. "The honest definition is this: digitalisation is the moment when decisions, not just data, improve. Aviation has accumulated enormous volumes of accessible data: M&E records, supplier portals, lead time histories, consumption logs. What has not changed is the quality of the decisions made against that data, because the volume of variables per part, per fleet, per month exceeds what any planning or procurement team can genuinely process. Buyers still fall back to last year's forecast plus a buffer. That buffer is paid for in excess inventory and in the AOGs the inventory was supposed to prevent. True digitalisation in MRO means the decision layer catches up with the data layer. It means a buying organisation can act on real consumption signals across tens of thousands of part numbers, continuously, at the cadence the market actually moves...

rather than acting on hindsight at quarterly review cadence. When that happens, the financials move: inventory comes down, spend comes down, and reliability goes up simultaneously. Until the decisions improve, everything else is digitised paperwork," he suggests. To effectively conclude this section, Tom Torosian, Director of Business Development at TruVideo, remarks that: "A truly digitalised MRO operation connects the technician on the hangar floor to the engineer, the planner, the customer and the compliance record in real time, with information that is structured, searchable and actionable." He then shares further thoughts with us: "The regulatory direction is clear: digitalisation is no longer an operational preference, it is where the industry is being led. The MROs that treat that as a floor rather than a ceiling will be the ones that pull ahead. For too long, MROs have digitised records and schedules while leaving the actual work (the inspection, the finding and the diagnosis) locked inside a technician's head or on a paper form. When an engineer can see exactly what a technician sees, in real time, from anywhere in the world, with visual data captured directly within the workflow, that is digitalisation that moves the needle."

Where do you see the biggest gap between digital ambition and execution in the industry?

It's all very well talking about digitalisation and what is involved in the process, but just because you want to digitalise a process doesn't automatically mean it can be. We wanted to discover if there were any areas where desire to become digitalised and fulfilment of that wish haven't quite met expectations.

The biggest gap is not technology availability—it is operational readiness to implement and sustain change. Monica Badra tells us, adding that: "MROs set ambitious targets (paperless, predictive, real-time visibility) and underestimate three execution realities:

- Data quality and governance: digital outcomes depend on consistent master data, disciplined transaction capture, and clear ownership. Without it, analytics and AI simply scale bad inputs.

- Interoperability and process alignment: point solutions bought without an integration strategy create digital islands, where teams still reconcile ERP/MRO, planning, quality, inventory, and customer reporting by hand.

- Change management on the shop floor: adoption fails when tools are imposed without redesigning workflows, training, and incentives. If technicians see digital tasks as administrative overhead, compliance stays superficial."

The way to close it is to start with a defensible requirements baseline and a fit-for-purpose shortlist. Aero NextGen's Solution Finder helps MROs structure their needs through a vendor-neutral quiz and identify best-fit providers across 60+ solution categories.

Looking at the bigger picture, Andy Boothroyd has some very valid comments, especially when it comes to those systems which have to work collaboratively across the wider industry, not just within one organisation. "A clear example is parts traceability and airworthiness documentation. Despite the technology available, key artefacts like Authorised Release Certificates remain largely paper based. As a result, highly skilled technicians and inspectors are still spending time on repetitive administrative tasks that could be automated, improving accuracy while freeing them to focus on safety-critical work and enabling a more seamless, real-time process. From a strategic perspective, that points to a bigger issue. You can't fully transform digitally if everyone is working in silos, because the supply chain itself cuts right across multiple organisations. Individual businesses, like ourselves, have made strong progress internally, but as an industry, we're still missing consistent, scalable ways to share trusted data. There's also, understandably, some hesitation



Tom Torosian, Director of Aviation Business Development, TruVideo

“When an engineer can see exactly what a technician sees, in real time, from anywhere in the world, with visual data captured directly within the workflow, that is digitalisation that moves the needle.”

Tom Torosian, Director of Aviation Business Development, TruVideo

when it comes to sharing information more openly," he suggests, adding that "Our approach is to focus on building a digital supply chain with a single source of truth, so that traceability, compliance, and transaction data can move much more easily between partners. Ultimately though, closing that gap isn't just about technology. It comes down to alignment across the industry and building the right level of trust, and that's where we see our digital strategy playing a role in helping move the aftermarket towards a more connected and transparent model."

Hannah Myers is concise in her thoughts: "One thing I see frequently is companies overloading their workflows with tools, without addressing the underlying processes. Often they are afraid to adopt a new system, so they wind up adding several bolt-ons to solve challenges. In the end, they wind up creating an expensive and clunky system that actually makes things harder and fixes nothing," while Robert Suhs is more concerned with alignment as opposed to the technology itself. "The industry has made real progress, and many organisations have stronger systems, better data, and more digital tools than they had even a few years ago. But supply chain disruption is already driving more than US\$11 billion in additional costs in 2025 (IATA) across commercial aviation, and a big part of that is because different teams within a single organisation can still arrive at different conclusions because they are optimising for different priorities. A CFO may want to reduce inventory and protect working capital. Operations may want more inventory on hand to reduce turnaround time. Procurement may be focused on price

and supplier terms. Maintenance may be focused on availability and speed. Quality may be focused on documentation, trace, and compliance. Each perspective is valid, but if those priorities are not connected, digitalisation can expose the conflict rather than solve it. That is where execution becomes difficult. MRO teams do not just need more information. They need shared intelligence that helps different business units make better trade-off decisions together. From the ILS perspective, that is where aviation market intelligence has to become practical. Teams need visibility into what is available, who can support the requirement, whether the documentation is right, and what decision best protects the aircraft, the customer, and the business," he advises.

However, Scott Wells is adamant that there remains a clear gap between ambition and execution, largely because of the challenges around data integration and legacy infrastructure across the MRO industry. Backing this up by saying that: "While many organisations have defined digital strategies, progress is often slowed by historically siloed systems and inconsistent data quality. As a result, ambition overtakes execution if AI cannot be deployed at scale, limiting its potential positive impact on efficiency and cost reduction." Beyond this, Tom Eskola has quite an insightful opinion on the matter. "The industry has a clear vision of what a digital MRO can achieve; however, most MROs fail to operationalise data insights at scale," he points out. "The last mile of the digital MRO is execution, not simply generating insights. The combination of a rich data environment with strong execution can transform MROs and create significantly stronger performance. Regulatory certification is one of the biggest concerns that can impede progress. Any changes to cabin systems or their maintenance must comply with strict regulatory standards, often with region-specific requirements. While the ambition is to introduce digital tools

rapidly, implementation must be balanced with safety, compliance, and operational continuity. This creates a gap not just in technology deployment but in integrating those technologies into day-to-day maintenance workflows. Closing this gap requires greater collaboration between OEMs, airlines, MROs and regulators to ensure that digital solutions can be integrated smoothly while delivering measurable operational value. Designing products with implementation in mind is also important. At Panasonic Avionics, we address this by designing solutions with implementation and integration in mind, where modularity, maintainability, and data integrity is always a key factor. By designing our latest systems with a digital MRO in mind, this helps simplify the operational capabilities deployment and reduce installation friction, giving airlines the flexibility to upgrade systems while keeping their fleets at top performance. For instance, our new-generation seatback monitor retrofit solution, eXNeo, was developed to modernise legacy cabin systems while using existing mechanical interfaces. By minimising certification efforts and installation complexity, this solution helps airlines introduce next-generation digital capabilities while reducing downtime and operational disruption," he concludes.

For Guy Danon, one of the biggest gaps is the disconnect between vendor promises and operational reality. He goes on to further explain that: "Some of the leading and shiny ERP vendors present polished mock-ups, slide decks, and ambitious claims, but customers often discover the true gap only after contracts have been signed. ERP implementations do not have to be excessively complex or expensive. However, when companies choose systems that are not built for industry-specific processes, they often face extensive customisation, long-running projects, large teams of consultants and IT specialists, and rapidly escalating costs. In many cases, the result is a cumbersome



Guy Danon, Global Head of Sales and Marketing, Pentagon 2000 Software, Inc.

“Some of the leading and shiny ERP vendors present polished mock-ups, slide decks, and ambitious claims, but customers often discover the true gap only after contracts have been signed.”

Guy Danon, Global Head of Sales and Marketing, Pentagon 2000 Software, Inc.

implementation that still fails to deliver the integrated, practical functionality the business needs. For instance, aviation MRO processes have unique requirements around traceability, regulatory compliance, serialised inventory, repair management, and documentation control. When those capabilities are not built into the ERP, and when an advanced Parts Master management is not a core foundation of the system, then organisations often resort to custom development, layers of multiple systems, spreadsheets, disconnected applications, and manual workarounds. Digital transformation is not simply about implementing technology. It is about combining the right system with the right processes and the right data to create a reliable operational foundation."

For Erkki Brakmann, "The gap is not technological, it is integration. Most MRO digital programmes are built inside functional silos: a maintenance planning tool here, an inventory system there, a compliance module somewhere else. Each works within its own boundary. The problem is that the decisions that actually drive reliability and cost cut across all of those boundaries simultaneously. While most digital roadmaps aim for complete, end-to-end visibility, actual execution usually results in isolated, point-solution systems. Closing this gap takes more than just upgrading software; it requires operators, MROs, OEMs, and suppliers to share data openly. However, doing so triggers deep competitive and commercial concerns that technology by itself cannot fix." However, to draw this section to a close, Tom Torosian focuses more on the fact that, in his opinion, "The biggest gap is at the point of work." He continues: "MROs have invested heavily in ERP systems, scheduling platforms and compliance tools, but walk onto a busy hangar floor and you will still find technicians relying on verbal communication, paper documentation and static photographs. The digital

infrastructure stops at the edge of the bay. That is where the investment has not caught up. Bringing real-time visual intelligence into the workflow at the technician level, not as an added burden, but as a natural extension of how the work already gets done, is where the industry needs to focus next."

What will MRO operations look like in ten years time if digitalisation continues at the current pace?

It never does any harm to look into the future, and though digitalisation of the MRO sector is in its infancy, surely enough has happened for forecasts to be possible.

At its core, MRO will always rely on highly skilled, hands-on work, that doesn't change. What will change is everything around it. "The biggest shift will be stripping out the non-value-added tasks. Searching records, interpreting manuals, building bills of materials, processing paperwork; those are exactly the kinds of activities that will be automated or AI-assisted. Instead, technicians will work in digitally guided environments, with the right information appearing when they need it, rather than having to go looking for it", Andy Boothroyd tells us, adding that: "At AJW, we're taking a human-led approach, backed by smart automation. It's about giving people better tools, not replacing them. AI takes care of the repetitive, data-heavy work, so our teams can focus on decisions and expertise, and that's how you scale without simply adding more resource. We're also seeing a move towards real-time, data-led decision-making across the supply chain. Inventory, repairs, and logistics are becoming far more connected, with predictive tools helping us stay ahead of demand rather than react to it." According to Hannah Myles, "Technology is developing at a faster pace than ever before and the gains seen by companies who are adopting it

in a smart way are becoming exponential rather than gradual. I think this trend will continue and we will start to see a much bigger distinction between companies that are truly digitalising and those that are clinging to outdated processes or not making wise use of technology."

Robert Suhs eyes intelligence-led MRO operations in the future, though he explains that he does not see it being a case that people will be replaced by systems. Instead, he believes that: "the strongest teams will be supported by better signals earlier in the process. Planning, sourcing, supplier evaluation, documentation review, and logistics decisions will be more connected than they are today." He then continues: "The biggest shift will be moving from reactive problem-solving to faster, more informed execution. Instead of searching across multiple sources and manually building confidence, teams will be able to see availability, condition, supplier history, documentation status, price context, and lead time in a more connected way. That will matter because the pressure on MRO is not going away. Aircraft availability, labour utilisation, customer commitments, and supply chain constraints will all keep tightening. Digitalisation has to help teams move with more confidence under that pressure." Scott Wells follows this theme a little further in terms of seeing MRO operations becoming increasingly predictive as he suggests that: "AI will play a central role in analysing aircraft health data in real time, enabling more widespread adoption of condition-based maintenance. More importantly, MROs will begin forecasting maintenance



Andy Boothroyd, Digital Transformation & Innovations Director, AJW Group

“The biggest shift will be stripping out the non-value-added tasks. Searching records, interpreting manuals, building bills of materials, processing paperwork; those are exactly the kinds of activities that will be automated or AI-assisted.”

Andy Boothroyd, Digital Transformation & Innovations Director, AJW Group



Tom Eskola, Vice President, Panasonic Technical Services,
Panasonic Avionics Corporation

“Real-time health monitoring and advanced diagnostics will enable maintenance teams to identify potential issues earlier, reducing unscheduled maintenance events and improving aircraft availability. This allows teams to move from identifying issues to fixing them before they impact operations.”

*Tom Eskola, Vice President, Panasonic Technical Services,
Panasonic Avionics Corporation*

outcomes before maintenance events even begin, predicting likely defects, parts requirements, tooling needs, and labour demand before the aircraft enters the hangar. Planning and scheduling will become more automated, and supply chains more responsive. However, progress may not be uniform across the industry, as the leaders will be running highly predictive, AI-driven operations with real-time maintenance decision-making and tightly optimised supply chains, whilst the rest of the industry risks lagging behind, still dealing with manual processes and inefficiencies.”

Tom Eskola is in lockstep with several others in that he feels MRO operations will need to become significantly more predictive, connected and data driven. By this he means that: “Real-time health monitoring and advanced diagnostics will enable maintenance teams to identify potential issues earlier, reducing unscheduled maintenance events and improving aircraft availability. This allows teams to move from identifying issues to fixing them before they impact operations. This is where Panasonic has an advantage due to the interconnected data platform enabled by our latest IFE systems including a proprietary new aircraft health monitoring capability, and CONVERIX, an onboard server that really brings these capabilities together. By enabling these new tools and capabilities, we expect maintenance planning to become increasingly condition-based rather than schedule-driven, with data analytics helping airlines optimise maintenance intervals and resource allocation with tighter integration between data platforms and maintenance execution.

Software updates, system monitoring, and fault analysis will become more automated and integrated across the aircraft ecosystem. The result will be more predictable maintenance costs, improved operational efficiency, and higher levels of system reliability. Airlines and MRO providers will increasingly use digital platforms that provide a holistic view of an aircraft's health and performance throughout its lifecycle.” As a consequence, he believes: “We're already seeing elements of that future emerge today. For example, PTS' recent agreement with Air India combines proactive monitoring, fleet-wide support, spares management, and 24/7 technical assistance under a single service framework. As digitalisation advances, we expect more maintenance programs to evolve in this direction, where insights generated from connected aircraft systems can be translated directly into real-time maintenance actions through integrated global service support, helping airlines maximise aircraft availability, reduce operational disruption, and manage assets more efficiently throughout their lifecycle.”

Interestingly, Guy Danon shrewdly points out that ten years seems like a very long time away, especially when “Many of the capabilities we once viewed as future concepts are already becoming reality.” He further explains that: “At Pentagon 2000, we are already seeing how AI is changing the way organisations interact with their operational data. Instead of spending hours creating reports or searching through records, users can ask business questions, identify operational trends, uncover weaknesses, and access meaningful insights almost instantly. Over the next decade, we expect AI to become a standard tool throughout MRO operations. It will support maintenance planning, optimise inventory, improve resource allocation, and help organisations make faster, data-driven decisions. Thanks to AI, I believe

that the weight of identifying issues and triggering preventive action will shift from human to machine. We also anticipate greater adoption of robotics and intelligent automation, particularly for repetitive inspections, material handling, inventory management, and other routine tasks. As workforce shortages continue to challenge the industry and efficiencies become even more crucial in creating a competitive edge in the market, these technologies will allow skilled technicians to focus on work that requires technical expertise, judgment, and regulatory oversight.” He concludes with the following: “The organisations that will benefit most are those building strong operational foundations today, because AI, automation, and robotics are only as effective as the information they are built upon”

Interestingly, Erkki Brackmann suggests it shouldn't be a case of assessing things at the current pace of development but more looking at what might happen if that pace increases. “If we continue at the current pace, focusing solely on building internal tools without implementing a shared intelligence layer, the industry will remain largely unchanged from its current state. While we may achieve faster workflows and improved dashboards, we will still face the same structural inefficiencies in maintenance planning, workforce deployment, and other areas. The more intriguing question is what MRO will look like if the current pace accelerates positively. If a genuine cross-network visibility layer is established, similar to how “Retail Link” transformed the consumer goods industry, the changes will be structural and will be reflected on balance sheets. Typically, operators could reduce their parts inventory by 25–50% and cut parts and inventory spending by 10–15%. Additionally, reliability metrics will improve because demand signals will reach suppliers early enough for them to stock and deliver

parts reliably, rather than reacting to AOGs." He then adds that: "The workforce changes shape too. Not smaller necessarily, but differently skilled. Technicians spend less time on administrative compliance burden and more time on the diagnostic and technical judgment that genuinely requires human expertise." Meanwhile, Tom Torosian believes that the hangar of the future has the same skilled technicians and the same aircraft, but visual intelligence embedded in the workflow makes every step faster, more accurate and more connected. "The achievable scenario is one where every maintenance finding is captured visually the moment it is discovered, AI cross-references it against failure patterns and history, and engineers anywhere in the world make confident decisions in minutes rather than hours. Aircraft on Ground (AOG) events that today stretch into days get resolved in hours. Compliance is embedded by design, and documentation is structured and audit-ready without additional administrative burden," he tells us.

Looking at things from a different perspective, Simon Walker is of the opinion that "MRO operations are likely to become increasingly predictive. Aircraft will continuously stream health-monitoring data, providing richer and more relevant insights into component and system performance. AI tools could become sufficiently mature and trusted to identify degradation patterns weeks or even months before failure, not only at component level but potentially across larger assemblies such as gas turbine engines. This could give airlines greater confidence to replace parts based on actual condition and predicted performance rather than solely on soft maintenance intervals. Even OEM hard-time limits may come under increased scrutiny, with the potential for more flexible maintenance strategies tailored to specific operations rather than programmes that are only updated periodically." He concludes that: "If these developments become reality,

unscheduled maintenance events and AOG situations could be significantly reduced."

Which emerging technologies are you most optimistic—or sceptical—about?

In a business with established practices and a highly experienced workforce, there is always going to be a resistance/reluctance to change. However, those responsible for operations and working practices, as opposed to those who do the physical work, are often just that little bit more detached from operations so that it is easier for them to see where improvements can be made through adopting new digitalised practices. Here we wanted to know what new technologies that have appeared as a result of digitalisation seem to have potential, and those which don't.

According to Hannah Myers at AvSight, "AI for both. I've seen it used in some incredible ways, for things like managing customer approvals, tracking progress, and managing sourcing. I've also seen it used in ways that at best, do nothing, and at worst, cause serious problems. I think to succeed AI must be made for aviation processes and fully integrated into your ERP. The strategy is critical too, AI should be used to handle processes that are low skill and time consuming or those that require analysing complex data sets. Humans should always be involved in highly skilled critical tasks and relationship building. Smart use of AI is about maximising your employees' skills, not about trying to replace them." Over at Inventory Locator Service, Robert Suhs is optimistic about technologies that make MRO decisions faster, clearer, and more reliable. As far as he is concerned: "That includes AI-assisted sourcing, aviation market intelligence, API connectivity, predictive analytics, digital documentation, and stronger traceability tools." He then expands: "I am more sceptical of technology that is positioned as a solution before the problem is clearly defined. AI is a good example. AI has real potential,

but only if it is grounded in trusted data, aviation context, and a specific operational use case. Otherwise it risks becoming another layer of noise. For MRO, the test should be simple. Does the technology help reduce uncertainty, improve speed, strengthen compliance, or protect turnaround time? If it does, it has value. If it does not, it is probably a distraction."

At MRO-PRO Scott Wells senses there is strong reason to be optimistic about AI and machine learning, particularly where they are delivering measurable improvements in predictive maintenance, planning optimisation, and operational decision-making. However, he is sceptical of organisations that simply bolt AI onto legacy systems and expect transformational results. As he suggests: "The reality is that AI is only as effective as the data it can access and understand. Most legacy MRO systems were never designed with AI in mind, and much of the industry's data remains fragmented, inconsistent, and difficult to analyse at scale. The real opportunity lies not in adding AI to existing processes, but in restructuring data and workflows from the ground up so that AI can systematically learn, identify patterns, and support decision-making. The organisations that build AI into the foundations of their data architecture will achieve significantly greater benefits than those that simply add an AI layer on top of existing systems." Beyond this, at Panasonic Avionics Corporation Tom Eskola feels that technologies that help transform operational data into actionable maintenance insights are looking particularly optimistic, especially where they can be scaled across fleets

"I am more sceptical of technology that is positioned as a solution before the problem is clearly defined. AI is a good example. AI has real potential, but only if it is grounded in trusted data, aviation context, and a specific operational use case."

Robert Suhs, VP Global Sales, Inventory Locator Service



Robert Suhs, VP Global Sales, Inventory Locator Service

and integrated into existing maintenance operations. He makes it clear that: "We already see real-time monitoring, predictive analytics, connected aircraft systems, and advanced diagnostic capabilities in place, and they all have the potential to deliver further tangible improvements in reliability, maintenance efficiency, and aircraft availability. Additionally, the impact of incorporating open and modular platforms is an exciting development. By allowing airlines to introduce new capabilities without major system redesigns or extensive downtime, modularity will help accelerate innovation while simplifying maintenance and certification requirements through operating within existing certification and operational frameworks. The value of any emerging technology ultimately depends on how effectively it integrates into existing operations and whether it can deliver measurable outcomes for airlines and MRO providers. As such, the industry should focus on practical, scalable implementation."

Over at Pentagon 2000 Guy Danon is positive in his outlook. "There are countless new technologies entering the market today, and we believe a healthy level of scepticism is important. Organisations should focus less on what a technology promises and more on the operational problem it is solving," he states, adding that "At Pentagon 2000, we are particularly optimistic about AI, automation, robotics, computer vision, sensor-sourced data, and drone-assisted inspections. We have already integrated AI capabilities into our platform, and we see enormous potential for technologies that help organisations analyse operational

data, automate repetitive tasks, and improve decision-making. I believe that VR and smart AI glasses will have a more important role. Specifically in industries in which traceability is crucial, blockchain ledger technologies might be better incorporated within the standard systems, although we need to see how quantum computing will affect the credibility of the blockchain technologies. We are especially encouraged by technologies that can improve consistency, reduce repetitive manual work, and support technicians in performing inspections more efficiently. As workforce shortages continue to challenge the industry, these tools can help skilled personnel focus on higher-value activities that require expertise and judgment. However, in spite of the hype surrounding AI, we believe that the train will slow down until some crucial questions with regards to data security, future-generation AI that might become 'too' independent, and other ethical questions are addressed."

Like Guy Danon, Erkki Brakmann at Sky Select is also highly optimistic. His reasoning? "The highest-value use of AI is in the decision-making layer of parts procurement and inventory. By training AI on data from an entire network, rather than a single operator, it can continuously analyse supplier inventory, lead times, logistics costs, and demand forecasts across tens of thousands of parts. No human team can match this volume and complexity. Furthermore, because the AI learns from a whole network of data rather than just one operator's history, its recommendations are structurally superior, and they get smarter as the network grows." However, he also introduces reasoning to be sceptical, suggesting that: "Centralised procurement marketplaces and exchanges. The concept resurfaces every few years: build a single platform, get everyone to join, and efficiency follows. It has repeatedly failed because it requires universal adoption before any participant sees value, and neither airlines nor suppliers want to expose their data in a shared transactional environment. The

structural issue is that a marketplace puts itself in the middle of the transaction. What actually works is a neutral intelligence layer that sits above it: delivering value from day one with a single participant, and compounding as the network grows. The network effect should be an advantage, not a prerequisite." Of course, there is one aspect that some may be extremely positive about, and that is AR-assisted video intelligence at the point of work. Tom Torosian at TruVideo tells us more: "A senior engineer anywhere in the world can see exactly what the technician sees through AR glasses and guide the work in real time. The remote video support compresses the time to decision for the responsible engineer, particularly in AOG events, in ways that weren't practical five years ago. Separately, FAA Advisory Circular 120-78B legitimises electronic signatures and records, making digital documentation workflows viable by removing paper bottlenecks. Beyond remote collaboration, video is enabling AI-driven anomaly detection that flags corrosion, cracks, and out-of-tolerance conditions with a consistency no technician can sustain across a full shift. The scepticism is reserved for certain digital twin implementations. While they have absorbed significant investment and generated impressive demonstrations, real-world ROI at the maintenance execution level remains elusive. The technologies that will move the industry forward are not necessarily the most sophisticated ones. They are the ones that fit into existing workflows and deliver measurable value from day one."

On the optimistic side, Monica Badra at Aero NextGen looks towards technologies that can improve execution reliability as opposed to just reporting. She refers to the following:

- **Modern integration architectures (APIs, iPaaS, event-driven integration):** foundational. Without integration, even strong applications create friction.
- **Computer vision and assisted inspection:** targeted use cases—damage-



Erkki Brakmann, CEO & Co-founder, SkySelect Inc.

“By training AI on data from an entire network, rather than a single operator, it can continuously analyse supplier inventory, lead times, logistics costs, and demand forecasts across tens of thousands of parts.”

Erkki Brakmann, CEO & Co-founder, SkySelect Inc.



Digital Capture

© AJW

detection support, documentation-completeness checks—reduce variability, provided the quality system defines how outputs are validated.

- **Digital thread applied pragmatically:** linking configuration, maintenance history, and compliance evidence across the lifecycle pays off when implemented stepwise.

However, she is also sceptical about:

- **AI without governance:** AI for MRO is often sold ahead of data maturity. If defect coding, task execution data, and parts traceability are inconsistent, AI produces confident but unreliable recommendations.

- **Blockchain as a default answer for traceability:** the constraint is usually process discipline and system integration, not the ledger. Strong data governance and secure interoperability deliver the benefit faster.

At AJW Group Andy Boothroyd makes a very valid point in that the technology generating the most momentum right now is AI, particularly agentic AI, because it fits so naturally into the kind of knowledge-heavy work we see in MRO.

He goes on to add: "Its value is pretty immediate. AI can interpret manuals, support troubleshooting, and handle documentation, things that traditionally take up a lot of time. At AJW, we're not treating it as a bolt-on tool, it's built into how we operate, helping to drive workflows and support better decision-making day to day. We're also seeing strong results from machine learning in areas like demand forecasting, inventory optimisation, and predictive maintenance; especially when it's combined with our own data. That's where it really starts to make a measurable difference. Where we're a bit more cautious is with technologies that only work if the whole industry moves together, things like fully digital certification or blockchain-style solutions. They're promising, but progress has been slow, mainly because of regulatory complexity and a lack of standardisation. So, our focus is on what we can actually deploy and deliver value from today, while still building the foundations for more transformative change over time."

What skills are becoming essential for the next generation of MRO professionals?

With new technologies come new working practices and the need for different skillsets. Here we wanted to see if it has already become apparent what new skills might be required for MRO professionals in the future. For Robert Suhs, the next generation of MRO professionals will need a stronger blend of technical knowledge, digital fluency, and soft skills. To this he adds: "Digital skills will matter. Teams will need to interpret data, work across systems, understand market signals, manage documentation, and use intelligence tools to make faster decisions. But MRO will never be a purely digital business. It is still built on trust, urgency, judgment, and relationships. That makes soft skills essential. Knowing when to pick up the phone, how to ask the right question, how to build supplier confidence, and how to maintain relationships before there is an urgent need will remain critical.

In a constrained market, access often comes from credibility. Credibility comes from consistent communication, follow-through, and mutual trust. The strongest MRO professionals will be the ones who can combine aviation knowledge, digital confidence, and human connection". Scott Wells is very much in line with Robert Suhs when he tells us that "Alongside traditional aviation engineering expertise, there is an increasing need for digital and analytical skills. Data literacy is becoming particularly important, enabling professionals to interpret insights generated by AI and other digital tools. The ability to work effectively in a more automated, data-rich environment will be key to maintaining operational efficiency and supporting continuous improvement. The human role doesn't disappear, but it needs to evolve into something more analytical and decision focused."

For Tom Eskola, learning a new skill is not a one-off event but a continual process. He makes it clear that: "As aircraft systems become more connected and software-driven, MRO professionals will need a broader blend of traditional engineering expertise with digital competencies. Data literacy, familiarity with digital diagnostic tools, and the ability to interpret system-performance information are becoming increasingly important. These skills are critical as maintenance becomes increasingly data-driven and system-based. At the same time, a strong understanding of regulatory compliance, certification requirements, and aircraft systems remains essential. The future workforce will need to be comfortable working across both physical and digital environments. Continuous learning will also be critical. As technologies evolve, training cannot be viewed as a one-time event. Engineers and maintenance professionals will need ongoing development to remain current with new systems, software platforms, and maintenance methodologies. This ensures that maintenance teams can effectively operate in environments where digital and physical aircraft systems are increasingly interconnected." Guy Danon is also clear in his understanding of the current situation. As he explains: "Technical expertise will always be the foundation of MRO, but digital skills are becoming just as important. It's no longer enough to collect data. Professionals need to understand how to interpret it, question it, and use it to make better operational

decisions. Professionals will be the ones who are able to monitor and challenge AI tools, which are ultimately there to assist MRO specialists rather than replace them. For example, a planner should be able to identify inventory trends before they become shortages, a technician should understand the importance of capturing complete maintenance records, and managers should be able to turn operational data into actionable improvements. Every work order, inventory transaction, and compliance record contributes to the bigger operational picture, and all should be captured and processed in a digital way. Therefore, it is no longer enough for an MRO specialist to be an exceptional mechanic. He or she must embrace technology to become better, quicker, and relevant in tomorrow's workplace."

Erkki Brakmann has some shrewd words to share that look at the situation from a slightly different angle. "The next gen of MRO professionals won't need to learn how to build AI, but they will need to learn how to work alongside it. As digital tools increasingly handle administrative tasks, paperwork, and routine signoffs, the human role is shifting toward high-stakes decision-making and complex problem-solving," he says, before adding that: "As a result of this shift, one of the most essential new skills is the ability to critically evaluate AI recommendations. Future MRO professionals must understand exactly what an intelligent system is suggesting and why. They should possess the technical judgment to discern when a model's confidence is well-founded, when human intuition should take precedence, and when an algorithm is operating outside the specific boundaries it was trained on." Tom Torosian is of the opinion that the next generation of MRO professionals will need to be as fluent with digital tools as they are with physical ones. He goes on to say: "That means being comfortable with video documentation as a standard part of inspection workflows, communicating findings clearly through digital visual management systems, and understanding how AI-assisted tools support, not replace, expert judgment. The technician who can document a finding visually with enough clarity and context for a remote engineer to make a confident real-time decision is enormously more valuable than one who cannot. For Simon Walker, he sees the future as requiring skills to work on

multiple platforms away from the more normal workplace environment. "Digital literacy will become increasingly important. Future MRO professionals will need to be comfortable working with a range of digital tools, interfaces, and AI-driven systems. The workplace will extend beyond traditional desktops, laptops, or tablets. Technicians and engineers will interact with new technologies and AI-based assistants in ways that are still evolving today. Adaptability and the ability to work confidently with these tools will be essential," he informs us.

Monica Badra believes that digital literacy will become increasingly important. Future MRO professionals will need to be comfortable working with a range of digital tools, interfaces, and AI-driven systems. She feels that: "The workplace will extend beyond traditional desktops, laptops, or tablets. Technicians and engineers will interact with new technologies and AI-based assistants in ways that are still evolving today. Adaptability and the ability to work confidently with these tools will be essential." She cites the following examples:

- **Data literacy:** interpreting operational data, judging data quality, and using dashboards to make decisions, not just consuming reports.
- **Process thinking (Lean and standard work):** digital tools amplify process design. Teams must map workflows, remove waste, and standardise execution before automating.
- **Systems and integration awareness:** leaders must understand how ERP/MRO, planning, quality, and inventory systems interact—and where handoffs fail.
- **Cybersecurity and compliance awareness:** as MRO becomes more connected, basic security practices and audit-ready evidence handling become operational requirements.
- **Change leadership:** supervisors and leads must drive adoption, coach usage, and translate the why into day-to-day behaviours.

Andy Boothroyd thinks along the same lines as Guy Danon and underlines what he had to say: "They'll need a blend of strong technical skills and digital confidence. The engineering fundamentals don't go away, but they're now alongside the ability to work with data and AI-driven tools. As AI becomes part of everyday workflows, the role naturally shifts. It's less about following predefined tasks and more about making informed decisions, supported by better



Hannah Myers, VP Marketing, AvSight

“The tribal knowledge that lives in everyone’s heads is exactly what should be embedded into AI logic to make tools useful. Sharing it in this way will give new techs a major experience boost.”

Hannah Myers, VP Marketing, AvSight

information and smarter systems. That puts more emphasis on judgement. In a safety-critical environment like aviation, people still need to sense-check and validate what the technology is telling them but not blindly trusting it. Data literacy is also becoming essential. Whether you’re in maintenance, supply chain, or operations, you need to understand how data is being used and what it’s telling you. For us, that’s why the focus isn’t just on technology, it’s on people as well. Upskilling and bringing the workforce along is critical, because the real value comes from how well the two come together. Technology is giving MRO professionals better insight and better tools, so they can deliver faster, more reliable outcomes.

To draw this section to a close, Hannah Myers believes that deep domain knowledge is and always will be the number one skill for MRO professionals. However, she also thinks what will change “...is how that knowledge and experience is passed on. The tribal knowledge that lives in everyone’s heads is exactly what should be embedded into AI logic to make tools useful. Sharing it in this way will give new techs a major experience boost. I also think

you will see younger professionals less and less willing to learn clunky outdated software. Companies that digitalise will have an advantage when it comes to recruiting younger talent.”

What processes in MRO remain stubbornly resistant to digital transformation?

This is pretty much an extension to the second question where we wanted to try and identify those MRO operations that simply didn’t lend themselves to digitalisation. Straight away Scott Wells mentions a reluctance to change. “I would argue that the biggest barriers are no longer technological. In most cases, the technology already exists to digitise, automate, and optimise many of the industry’s most challenging processes. The greater challenge is organisational and cultural. Aviation is rightly a highly regulated industry, but many organisations remain reluctant to change established ways of working, particularly when digital transformation requires updates to procedures, training, or Maintenance Organisation Expositions (MOEs). Regulatory approval cycles can also slow adoption, creating a natural tendency to defer change rather than pursue it. As a result, the bottleneck is often not the process itself, but the willingness of organisations to embrace new approaches. The industry has reached a point where technology is advancing faster than adoption. Unlocking the next phase of digital transformation will depend

as much on mindset, leadership, and regulatory agility as it does on technology itself.” As aircraft systems become more connected and software-driven, MRO professionals will need a broader blend of traditional engineering expertise with digital competencies,” says Tom Eskola, adding that: “Data literacy, familiarity with digital diagnostic tools, and the ability to interpret system-performance information are becoming increasingly important. These skills are critical as maintenance becomes increasingly data-driven and system-based. At the same time, a strong understanding of regulatory compliance, certification requirements, and aircraft systems remains essential. The future workforce will need to be comfortable working across both physical and digital environments. Continuous learning will also be critical. As technologies evolve, training cannot be viewed as a one-time event. Engineers and maintenance professionals will need ongoing development to remain current with new systems, software platforms, and maintenance methodologies. This ensures that maintenance teams can effectively operate in environments where digital and physical aircraft systems are increasingly interconnected.”



Scott Wells, Managing Director, MRO-PRO

“The greater challenge is organisational and cultural. Aviation is rightly a highly regulated industry, but many organisations remain reluctant to change established ways of working, particularly when digital transformation requires updates to procedures, training, or Maintenance Organisation Expositions.”

Scott Wells, Managing Director, MRO-PRO

Erkki Brakmann feels that MRO procurement continues to be one of the toughest areas to digitise and that many organisations still depend on manual, time-consuming sourcing processes managed by large teams, a workflow that has not fundamentally changed since the 1990s. He suggests that: "This resistance often arises from a culture that favours familiar, reactive purchasing habits over modern tools that enhance cost efficiency and workforce productivity. Fortunately, this outdated approach is becoming unsustainable. The number of businesses operating in this manner is steadily declining each year as new, sophisticated procurement platforms gain trust within the industry." Tom Torosian sees this as a time when visual inspection, a stalwart of the MRO industry as prime for change at scale thanks to the introduction of video embedded within workflows as this "... captures findings with enough clarity and context for a remote engineer to make a confident decision in real time. AI anomaly detection brings consistency to inspections that no individual technician can maintain across a full shift." He follows this up by saying that: "The resistance today is no longer about technology readiness; it is organisational. Building these capabilities into standard workflows rather than treating them as add-ons is where the work is now."

Simon Walker agrees with Tom Torosian to degree but still feels certain visual inspections are required even when using a machine or device as an aid for detailed or complex tasks. He further comments that: "Although significant research and development is taking place, with AI,

drones and machine vision already being used in some applications, many inspection tasks remain difficult to automate fully. The industry also tends to be cautious when adopting new technologies, particularly in safety-critical areas. Support tools and parallel systems will continue to develop, but widespread adoption is likely to depend on both proven performance and regulatory acceptance before fully autonomous inspection capabilities become commonplace." That said, Monica Badra believes that "Several processes resist digitalisation because they sit at the intersection of regulation, variability, and human judgement." She identifies them as:

- **Non-routine defect management:** findings are inherently variable. Standardising defect coding, decision trees, and evidence capture is difficult but essential for repeatability.
- **Paper-heavy compliance evidence and sign-offs:** many organisations still rely on scanned documents or PDFs that are not structured data. This limits traceability and creates audit friction.
- **Parts traceability and material movement across locations:** bins, kitting, quarantines, exchanges, and subcontracting create gaps unless transactions are captured with discipline.
- **Engineering changes and configuration control:** managing the digital thread across modifications, SB/AD compliance, and as-maintained configuration is complex and often fragmented.
- **Cross-organisation collaboration:** OEMs, operators, lessors, and MROs frequently operate on different systems and data standards, forcing manual reconciliation.

Andy Boothroyd looks at change-resistant areas through a slightly different lens, focusing on traceability, authenticity and compliance. He points out that: "Things like airworthiness certification and component history are still heavily reliant on manual processes and physical documents. That's not because the technology isn't there, it's more about the need for industry-wide trust, alignment,

and standardisation. From an AJW Group perspective, that's both the challenge and the opportunity. We can optimise what sits within our own control, but the real step change comes from connecting the wider ecosystem so trusted data can move more freely between parties. Our approach has been to digitally integrate with suppliers, customers, and partners to reduce friction, while still maintaining the levels of integrity and auditability the industry demands."

Robert Suhs also looks at areas resistant to digitalisation, but again from a slightly different viewpoint as he considers those processes which are built on trust, judgement and complete information. He goes on to say that: "Parts sourcing is a good example. On the surface it looks transactional. In reality, it depends on availability, condition, trace, certification, supplier responsiveness, price, lead time, logistics, and the urgency of the maintenance event. That is not a simple transaction. It is a confidence decision. The same is true for supplier validation, documentation review, repair-versus-replace decisions, and AOG support. These processes are resistant because they are not just transactional. They are confidence-based. The opportunity for digital transformation is to bring the right signals together so people can make better decisions faster. That is what we are focused on at ILS." And to conclude, Hannah Myers sees the legacy ERP as being that element which will remain stubbornly resistant to digital transformation. As she puts it: "For many companies, the thought of replacing a system that touches every part of their business is daunting and they feel like they're too busy, so they put it off for years. Ironically, inefficient processes are often the main reason they feel so busy. Anything that requires physical inspection or seasoned human judgement has also had limited adoption of digitalised processes, but to be honest that's a good thing. I love to see digital tools helping in these areas, but they will always need some human oversight."



Monica Badra, Founder & CEO Aero NextGen Inc

“Several processes resist digitalisation because they sit at the intersection of regulation, variability, and human judgement.”

Monica Badra, Founder & CEO Aero NextGen Inc

A stylized illustration of a woman with dark hair in a ponytail, wearing large black sunglasses, a red earring, and a dark blue business suit with a red pocket square. She is holding a red and blue handbag. The background features a large blue gear and a stylized globe.

AJW®

Complex MRO vendor network?

We are your one
stop shop for repair
excellence

AJW Group is the world-leading independent component parts, repair, lease, engine, flight hour programme, and supply chain solutions integrator, transforming efficiency in commercial, business and defence aviation.

With hubs and offices on every continent - including AJW Technique, a state-of-the-art component MRO facility in Montreal - nose to tail, we have you covered.

ajw-group.com