

The digital ACCELERATION

Effective maintenance planning software solutions eliminate inefficiencies, improve performance and reduce costs. In a post-Covid world, going fully digital might move from being a 'nice-to-have' to becoming essential. **Jason Holland** reports

The key purpose of any effective maintenance planning and scheduling software is to make the role of the planner easier, more effective and more reliable. There are a range of software solutions on the market, each achieving that basic goal – and much more – in different ways.

“The essentials of maintenance and planning software are to give users access to full maintenance schedule details, allow for changes to be made easily, and for utilisation and maintenance due lists to be updated in real time, providing up-to-date and actionable data,” says JSSI’s SVP of business development EMEA & APAC Mark Winzar.

Swiss AviationSoftware’s sales representative Chris Clements adds that “core essentials” come down to accurate management and control of the data and the system’s ability to handle the complexity that comes with today’s fleets. “With effectivity of maintenance tasks changing based on configuration, both hardware and software, as well as modification status and aircraft mission status, a software system is expected to ensure that all tasks for all aircraft are accounted for and performed as required with minimal daily input,” he says.

“We also have to account for the fact that we have different requirements from the Part M and Part 145 organisations. As well as the compliance data managed by the Part M, the Part 145 needs additional data that is critical to the planning such as manhour, resources and parts. When

Once companies understand the return on investment for software, then they don’t need to be convinced

combined with the aircraft utilisation the planning can begin to take shape and additional elements can be introduced, such as facilities and manpower”

Maintenance and planning software should also possess the logics and algorithms to produce the optimised forecasting and maintenance plan to achieve the “desired objectives of cost optimisation, TAT optimisation, increasing yields, and maximising capacity utilisation”, according to Ramco Systems’ director – aviation consulting Saravanan Rajarajan. “It is essential to simulate multiple scenarios and their impact on the desired objective before firming the final plan,” he says. “Planning software should provide real time visibility at the station, hangar, bay, aircraft level on the burn rate, work stoppage reasons, planned versus projected turnaround time and resource utilisations.”

Unscheduled work is as much a part of a maintenance operation as forecasted and preventive upkeep, notes TRAX USA’s business development manager Maureen Coletta. “Any operation and its essential software must plan for the unplanned to be successful,” she says. “Therefore, the planning module needs to be a robust tool to efficiently manage the preparation of both scheduled and unscheduled, short- and long-term

maintenance events. The goal is to keep the aircraft flying safely and maximise aircraft utilisation.”

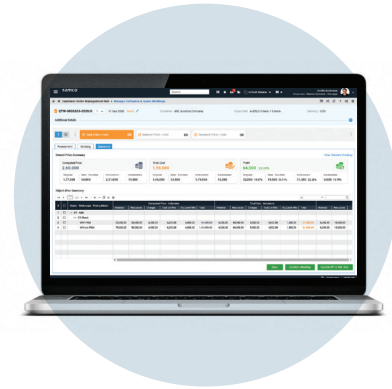
A big challenge for maintenance operations is in balancing the cost of retaining optimal inventory levels while maximising availability, she says. The less obvious challenge is in developing software that can take the data, utilise machine learning, create algorithms and ultimately develop pragmatic and predictive forecasting models.

“In the case of airlines and MRO providers, unexpected maintenance problems and protracted downtimes can take a heavy toll on profitability and customer goodwill,” Coletta adds. “In 2019, the Federal Aviation Administration estimated the annual cost of delays to airlines and passengers at US\$33 billion. Having a predictive maintenance system that is dynamic, that can incorporate machine learning algorithms, uses statistical analytics, and intelligence-driven planning can help overcome these always-to-be-expected ‘unexpected’ activities.”

Turning data into actionable analytics is a key component of any solution, says Component Control’s SVP Daniel Tautges. “Our clients implement real-time reporting and push notifications available in the MRO and planning software. Key data should be utilised in regular analytic reporting to provide details such as work in progress, parts requirements and turnaround time. Examples also include reporting on which work orders are meeting their commit date and which are not. Delays in work can create bottlenecks and



Clockwise from left: MROs must plan for the unplanned; Ramco's AI and machine learning capabilities deliver value; TRAX's business development manager Maureen Coletta



Given the number of software providers in the market, we may see increased consolidation in the sector

cascade down, impacting profitability and increasing cost. Regular reporting provides visibility of these tasks when they arise, allowing opportunity to correct them before it's too late."

Automation in planning is another essential requirement that has become apparent in recent times, according to Swiss AviationSoftware's Clements. "We need to be able to not only rely on the quality and consistency of the core data but also take into account timely reporting back of events for re-forecasting or status update."

Other practical maintenance benefits of an effective software system include the creation of optimised plans and a process for improving them after each use. "Being able to know and schedule

all resources needed to execute a plan is critical to avoid downtime and delays," says Ultramain's vice-president product management John Stone. "Being able to efficiently digitally communicate additional work requirements found during a check to customers and obtain their authorisation to proceed, with agreement on additional costs, is critical to minimising overall check time and receiving timely payment without billing disputes.

"Knowing the work completion status of each task at all times informs management if a check will be accomplished according to plan, and if not, why not. Knowing in advance the profit to be made in accomplishing a check per a plan is critical to profitability management and growth. Knowing what you should be doing, what you are doing, and how you are doing is critical to a successful MRO business. Successful execution of maintenance in accordance with the plan will result in satisfied customers, more business, more profit – and more growth."

After Covid

In a post-Covid-19 world, airlines and MRO companies will likely have an even more intense focus on cost savings. Can efficient, modern MRO planning and scheduling software provide this?

JSSI's Winzar suggests some operators may not fully understand the value of

scheduling and planning to ensure slot availability, including replacement parts supplies and rental engines. "There will potentially be a high demand for MRO services," he says. "As a result, maintenance shops, operators and facilities will need to plan and schedule effectively to avoid delays. In addition to this, parts supply may be an issue and so understanding the expected schedules will help avoid disappointment."

In previous years, airlines would have expected summer schedule planning to take months but, due to the pandemic, carriers are being forced to make decisions faster in response to changing expectations of market demand, says Aerogility's CEO Gary Vickers. "There is a growing realisation that the aviation business of the future may not be a continuing smooth growth curve, and instead there could be frequent fluctuations in demand. This means that airlines need a more agile and responsive approach to making planning decisions, and must be able to react more efficiently to these changes as they occur. There will always be a need to continually squeeze more efficiency out of the operation and maximise the utilisation of assets."

Ramco Systems' Rajarajan expects there to be an uptake of intelligent automation and a reduction in manual intervention for planning and scheduling functions in light of the Covid-19 crisis. "We will be seeing extensive automation on task and access panels sequencing, automatic assignments of the rostered staff with right skills to tasks and non-routines, proactive identification and mitigation of bottlenecks due to capacity, labour, parts and tools," he says. "MRO planning and scheduling will also be tightly integrated with upstream contracts management, e-publications, HR functions, SCM and production functions for real time decision assist capabilities."



MAINTENANCE PLANNING

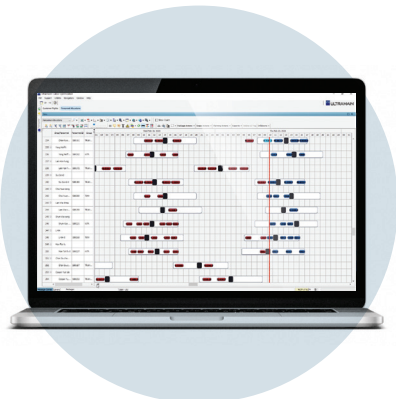


By pushing forward with digitalisation, MROs can better utilise their workforce and unlock the full potential of software

Ultramain's Stone believes the Covid-19 crisis has made the decision to use software systems an easy one. "Organisations that embrace them will be more efficient and profitable than those that don't," he states. "Organisations who execute better will win the future. It's that simple."

As recovery begins to take place in the MRO industry, that recognition of the power of software systems is starting to translate into increased uptake and expansion of existing usage.

Seabury Solutions has reported a "huge upswing" in the interest of companies in such software solutions since the final quarter of 2020. "This includes companies who are actively seeking to install a new software solution, and those who are just curious as to what is happening in the software market at the moment," says sales support engineer Noel Cleary.



"In order to survive in the new economic climate, undoubtedly some organisations will have to consolidate or merge together. This will result in streamlining processes and missions to maximise efficiency; having a software capable of managing this is key. Also, implementing a new software system is easier in off-peak seasons or periods of low activity. Therefore, many organisations appear to see this as a perfect opportunity to improve their processes, systems and effectiveness in preparation for a return to (near) normal activity."

Swiss AviationSoftware's Clements notes that more customers began using its 'AMOS' solution in 2020 than in 2019. "The digital transformation of processes and business is still one of the key attractions and AMOS has had the functionality to satisfy this for some time," he says. "Of course the current situation has put more focus on budgets than ever before, but it seems that some players in the market are taking this opportunity to ready themselves for the future and ensure that they are best placed to attract new business as the upturn in demand begins."

TRAX's Coletta has seen customers take measures to position themselves for the future aviation industry upturn, including "right sizing" their businesses. "Many are turning crisis into opportunities with plans to invest in technology and managing projects

Left: Even smaller airlines and MRO shops see the benefit of paperless activities

Below: Fully connected all-digital solutions such as Ultramain aim to provide more clarity in all aspects of the maintenance process

to build a more efficient, digital and paperless operation," she says. "Although 2021 is not without its own challenges, there is reason for cautious optimism for continued market recovery, especially for those companies that are foresighted about digital transformation, creating efficiencies and evolving non-contact working processes where possible."

Aerogility's Vickers says the capability to create a range of new planning scenarios and adapt existing ones quickly has proved "invaluable" in these uncertain times. "Our expectation is that as the market recovers, airlines will prioritise innovative solutions that enable them to be more adaptable and responsive to future change and, for a while at least, uncertainty and change will be the norm," he says.

The increased interest in digital solutions has mainly come from larger operators, according to JSSI's Winzar. "They have access to significant amounts of operational data, so it is slightly easier to adopt new technologies and make the most of the digital insights afforded financially and operationally," he explains. "For smaller operators with less access to data there is a reliance on solutions providers. However, I believe there is an opportunity to utilise industry-wide data to enhance planning and scheduling for all."

Given the number of software providers, there is also a possibility that we will see increased consolidation in the sector as a result of Covid-19. TRAX's Coletta says such activity has been lower during the pandemic itself, but "may well pick up" once operators start flying heavier schedules again. "There is a growing market need for fully integrated solutions with paperless operations capability," she says. "Some vendors have achieved this by purchasing other companies. Others such as TRAX have developed their own in-house solutions. Even smaller airlines and MRO shops see the benefit of paperless activities and an overall system that manages data, resources, manpower, material requirements, and more effectively manage and forecast maintenance."

Opinions are mixed as to the extent of possible consolidation. Ramco's Rajarajan sees a "high possibility" of it in the future between niche players in planning and predictive maintenance solutions and large ERP software companies. Component Control's Tautges notes that



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Left: Immediate gains in digitalisation are cost and process streamlining
Below: Aerogility's CEO Gary Vickers sees power in model-based AI systems in adapting to frequent fluctuations in demand

There could be an uptake of intelligent automation reducing manual intervention for planning and scheduling functions

larger solution providers “don’t seem to be active” in vertical mergers and acquisitions, preferring to “add best-in-class companies” to their portfolios.

Seabury Solution's Cleary estimates that it takes between 10-15 years of development and experience in order to develop and deploy a robust solution. “This experience includes implementation and customer support experience which in turn contributes to the development experience accrued by the software provider.

“All of this contributes to a more robust, all-round software experience capable of meeting the requirements of a wide range of customers. Therefore, it may be the case that smaller organisations with less experience may

have to merge with other organisations to consolidate their position in the market and extend their experience in other areas of the industry,” he says.

Unlocking software's full potential

One thing all these companies agree on is the need for digital acceleration in the MRO sector. The obvious immediate gains in digitalisation are cost and process streamlining, removing the need to combine paper and digital processes, notes Swiss AviationSoftware's Clements. “Additional benefits could be considered as the standardisation of the industry and how the workscope of maintenance is shared. Only once operators and MROs are working to a common digital standard will we see more widespread benefits.”

Current software solutions have to be able to cope with paper-based as well as digital processes. By pushing forward with digitalisation, MROs can not only better utilise their workforces but also unlock the full potential of software solutions, Clements says.

There has been a renewed interest in concepts like paperless shopfloors, e-signatures and digital collaboration, according to Ramco Systems' Rajarajan. “Large MRO organisations are even considering breaking away from their heavily customised and expensive legacy systems to out-of-the-box best of breed solutions,” he reports.

Airlines and MROs that have not adopted the latest software solutions are “already behind the curve”, explains TRAX's Coletta. “So many CAMOs are still using legacy or previous generation MRO software. They have been limping along with solutions that are functional, but clearly do not take advantage all the technological advances available with more modern software.”

Airlines have benefited greatly from upgrading their in-flight entertainment, reservation and service software systems, and many are seeing the need to invest in and enhance their maintenance operations to gain equivalent efficiency and performance, she notes. “In addition, the regulatory authorities are now insisting that they have a commercial MRO software product in place as opposed to disparate solutions such as Excel or other homegrown databases.”

Aerogility's Vickers largely agrees. “Digitalisation enables different teams to integrate their work more closely and collaborate on business-critical analysis, plans and decisions,” he says. “This integration is key to the efficient use of expensive assets and resources. Plus, digitalisation is a foundation for faster and more agile forecasting and planning processes and is essential if you expect to succeed in a fast-changing market.”

Of course, convincing companies to invest in new software is a challenge, especially given that many are struggling financially at present. “This is an understandable concern and one which needs to be taken into consideration when discussing sales with potential clients,” says Seabury Solution's Cleary. “Aside from that, some of the main challenges include overcoming traditional mindsets, understanding a company's procedures or lack thereof, and fitting an implementation and training programme seamlessly into an organisation's day-to-day operational schedule.”

Ultimately, once companies understand the return on investment for the software they are considering using, then they don't need to be convinced that they need it, says Component Control's Tautges. “There are sometimes investment hurdles or a lack of IT bandwidth,” he concedes, “but a modular approach to implementation also provides scale for smaller customers to get started and grow into a larger solution when needed.”

