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MRO Software: Push for digitisation

Paperless maintenance procedures are ongoing in the MRO sector.
Photo: TRAX

The global MRO software market is witnessing several modifications based on the changes in global dynamics. **AviTrader MRO** examines how these technologies are improving operational efficiency.

Industry experts say the global aircraft MRO software market is expected to witness a CAGR of 5.55% during the forecast period of 2019-2025. Based on the end-user, the aircraft MRO software market is segmented into third party and independent MRO, in-house airline MRO, and OEM-affiliated MROs.

In an increasingly digital world, vendors have become increasingly aware that customers are demanding adaptability and connectivity from their MRO software systems – “In today’s business setting, the gold standard for productivity is to be able to connect and work from anywhere,” declares Omar Santos,

VP, Global Services and Support at TRAX. “The hardware and technology exist, and with TRAX so do the software solutions. We are completely focused on providing solutions that mobilise maintenance since it is an essential requirement in today’s aviation environment.”

Keeping steps ahead of technology transitions has become a hallmark of the TRAX business perspective. Santos says this approach continues today and is best demonstrated by TRAX’

successful implementations of its web-based eMRO system and associated eMobility suite of apps. “These products leverage today’s technology to support digital signatures, paperless operations and manuals, RFID-capability for logistics, biometric security, offline capability for apps, web-based solutions and the ability for its users to work anywhere with easy access to real-time information.”

AJW’s customers ask for flexibility, simplicity, and standardisation when delivering connectivity between multiple systems – “There is no one size fits all solution,” states Han-Ley Tang – Chief Information Officer at AJW Group. “Naturally, there is a high level of bespoke development and customisation for each airline dependent on its fleet size and mix and technical capability, but there is also a breadth of software and technology used across the maintenance industry.”

At AJW, the preference is to integrate through modern web services (REST APIs and web-hooks) based on their own digital integration platform. “This extends the capabilities of our Quantum system to enable



Omar Santos, VP, Global Services and Support at TRAX



Han-Ley Tang – Chief Information Officer – AJW Group



near real-time integration with our customers in a robust, standardised manner. This API is leveraged to deliver customer integrations, vendor integration, our next-generation customer web portal, and to enable internal automation projects such as our use of software robotics," he says.

Sergei Shkolnik, Base Maintenance Director at Magnetic MRO has noticed the trend of customers expressing their interest rather than demanding to have MRO either entering data directly into customer software or arrange certain crosstalk links between customer and MRO software. He says Magnetic MRO is utilising both options providing the customers with the flexibility to choose.

Ian Kent, Product Manager at Rusada observes that their customers, both new and old, are looking to digitise their operations beyond the traditional business processes and are looking for more flexible and connected solutions in support of this. "We are reacting to this by building more configurability into our software with improved business

workflow support along with more mobile solutions that enable the removal of paper-based systems," he responds.

Christobal Henner, Sales Director at ADSoftware feels tremendous synergies can be initiated if all software providers agree to work together to allow a continuous flow of data between their solutions. "We are always open to work towards this goal, in fact we have done so with financial, flight operations and SMS software providers. We are also working with OEM and equip-

ment manufacturers to connect our MRO software to their services and equipment."

Also, Henner highlights that choosing the right technology is also important when trying to increase connectivity. "The programming language we chose allows accessibility from any computer or mobile device. This allowed us to develop mobile solutions for pilots and mechanics. They can now bring the power of our MRO solution with them wherever they go which means they are more efficient, also the rest of the company can benefit from their feedback in real time."

At Ramco they have built an industry specific ERP – Ramco Aviation Suite, that provides solutions to the distinct demands of the aviation segment. Ramco Aviation Series 5 Suite covers the entire spectrum of aviation operations that range from maintenance planning to line, hangar, shop and engine maintenance, reliability and engineering, and technical records.

Saravanan Rajarajan S, Solution Consulting and Head of Pre-Sales at Ramco Aviation Solution says it also provides support in terms of human resource management, purchasing, inventory, warranty, maintenance, financials, third party maintenance and sales.

Pertaining to the developing MRO requirements, the current challenge while using any ERP system is data entry which is time consuming and prone to errors. He says at Ramco, by leveraging AI /ML and high amount of



Sergei Shkolnik, Base Maintenance Director at Magnetic MRO



Ian Kent - Product Manager at Rusada



Kirk Baugher, Executive Vice President, Business Development at Pentagon2000

software for many years, yet the market is witnessing an upsurge in interest especially now. Kirk Baugher, EVP of Business Development reminds that CAMO's operate in an extremely demanding and complex environment. He says business operations require advanced supply chain management, customer service, process control, quality system management, regulatory compliance, and much more. "There are a few good options available for CAMO's to automate their full range of operations without taking on complex system-to-system integrations of separate software systems."

Uniquely, says Baugher, the Pentagon 2000SQL system incorporates the full set of capabilities within a single system and database for multinational CAMO organisations. "For operators, functionality for fleet management, flight operations, and aircraft recordkeeping is available. For the shops, advanced work order systems support aircraft maintenance, component repair, engineering, manufacturing and teardown work orders. Core materials management capabilities to perform exchanges, outside repairs, and full supply chain execution are included."

Baugher adds: "And with a full GAAP and IFRS compliant accounting/financials capability, the system supports multi-company, multi-currency, and multi-language operations. The advancement of powerful and affordable fully integrated systems such as Pentagon 2000SQL has driven a resurgence of automation among mid-market CAMO's that now compete with the global giants."

CAMOs rely on this software to maintain accurate and timely data, notes Marc Bajaj, Sales Director Americas at Spairliners – "This enables reliability and the tracking of maintenance events and documentation. We believe the uptick in interest is due to increased digitisation



Marc Bajaj - Sales Director Americas at Spairliners

data available in the ERP system, tangible benefits can be brought in wherein the ERP software suggests and automates the transactions. Moving from Passive ERP to Active ERP. "We are collaborating with our customers in identifying and evaluating the use cases for AI application, few of the use cases have been successfully deployed and are in the production, yielding desired results."

Continuing Airworthiness Management Organisations (CAMOs) have been using MRO

capabilities of the providers as well as the increasing acceptance by the regulatory entities to accept paperless solutions."

There is also a growing focus on big data and analytics in the aviation industry. So how is this impacting the MRO software business? Bajaj says their ability to aggregate big data gives the company the most efficient solution to plan, manage and provision assets for the supply chain and pool locations – "We form strategic alliances with technology partners to accomplish these

goals. These alliances also allow us to integrate services into standalone products. One such product is SPACE, our asset management and planning tool. The key is to utilise the data efficiently and derive results based on probabilistic forecasting technology in real time in order to ensure a minimum of downtime for the aircraft, smooth operations and therefore achieve maximum cost savings."

Making informed, intelligent, and real-time business decisions is critical for aviation operations. Santos indicates that MRO software such as TRAX eMRO is a prime candidate for fostering data analysis. "With so many transactions entered across an operation, tremendous amounts of raw data are captured on an ongoing basis. The key is transforming this data into actionable information that provides the ability to improve organisational effectiveness, lower costs, and increase revenue. That is why we have developed numerous dashboards and enhanced our custom report generation features to turn 'big data' into 'great data', i.e. usable. An example of this is the lease return portal app we created that facilitates the use of existing data for an efficient and successful aircraft re-delivery."

Santos adds that MRO software can utilise artificial intelligence concepts in the aviation industry sphere to best take advantage of all the data that is being generated. TRAX has AI development plans that include augmented reality, machine learning, predictive analytics, and others.

More airlines are implementing paperless maintenance procedures through MRO and engineering software to achieve paperless maintenance records management.

The approval processes for airlines to implement paperless maintenance records management via MRO software varies from airline to airline observes Christopher Lawn, Marketing Specialist at WinAir. "Generally, these approval processes are very stringent, which is a good thing, as it safeguards against the use of inadequate software. However, airlines must be cautious in their approach to be sure that they are selecting the right system. To ensure operational success, they need to do their research and speak with operators that are using the software to gain first-hand knowledge about their experience with the solution," he advises.



Christopher Lawn - Marketing Specialist at WinAir - Aviation Management Software

There are many safety-related benefits associated with going paperless, including ensuring compliance and having the ability to easily identify unsigned tasks via a user-friendly interface. "Operators can rest assured knowing a paperless environment that is powered by a comprehensive system with software enforced data validation will hold all authentications intact. But it doesn't end there, airlines can actively integrate their maintenance software with a third-party flight-ops system to provide dispatch information. They can also expand this paperless approach to other areas of their operation to allow for greater situational awareness for aircraft maintenance," Lawn continues.

During MRO Europe in London, Czech Airlines Technics (CSAT) introduced www.e-CSAT.com, a new e-commerce portal, to support this segment. "This portal provides our customers the option of ordering items from CSAT stock even more easily. In addition, they can benefit



Pavel Hales, Czech Airlines Technics.

from online prices and stock availability, flexibility of order placement and a complete overview of products. We focused primarily on a simple and intuitive portal user experience and believe that its users will be satisfied with this approach. We also expect to see a significant time-saving benefit of the ordering process," speaks Pavel Hales, CEO and Chairman of the Board of Directors, Czech Airlines Technics.

Using the new e-commerce portal, CSAT will provide its customers with online access to its inventory of over 25 thousand consumable items to the value of \$15 million USD. The portal displays in real-time items for sale alongside their purchase conditions. In addition to the price quoted, the customers are also offered the option of selecting how to collect the ordered goods. In urgent AOG requests, where a quick response is needed to minimise time of aircraft on ground, the shipment for EU customers will be dispatched within an hour, non-EU customers within about three hours. Hales states in other cases, different delivery options will be offered to suit the customers' needs. He says the portal also supports various shipping options for each consignment, allowing the customer to specify multiple addresses if needed.

"We also plan to launch an AOG support, available around the clock very soon. This segment will grow very quickly in the coming years, so we plan to focus more on the promotion of Czech Airlines Technics as an important supplier of spare parts."

Earlier this year, Honeywell launched Honeywell Forge for Airlines. Arnaud Renard, Honeywell Regional Retrofits, Modifications and Upgrades Centre of Excellence EMEA & APAC explains that the platform collects, cleans and analyses streams of data from a wide variety of aircraft, airport, government and Honeywell sources, offering actionable insights and alerts that can help improve an airline's understanding of its fleet, profitability and passenger experience.

Renard reports that Honeywell Forge Connected Maintenance is available on multiple aircraft OEM platforms and works with both Honeywell and non-Honeywell aircraft systems. "Other approaches require retrofitting the aircraft for data collection; our system works with your existing systems, making for an easy integration. Furthermore, the



Talvar Tari, Senior Airworthiness Engineer - Magnetic MRO

system allows users to access detailed data through mobile devices or an online portal, meaning records management is both straightforward and better accessible for intended users."

Talvar Tari, Senior Airworthiness Engineer at Magnetic MRO believes at a low level, operators and MROs have been approved to use various paperless procedures. However, they are mostly internal processes and limited in scope, and often still needing to be duplicated on paper. "At a higher level, the progress



WinAir dashboards displayed on Monitors in maintenance hangar. Photo: WinAir

towards going all-digital does not look so good. Even though the content requirements have been harmonised by ICAO and IATA, guidance on acceptance of electronic records has been published by ICAO and electronic record interchange has been standardised through ATA Spec 2500, the progress has screeched to a near halt. The only remaining step is giving it legal status; otherwise, nothing will change. However, national aviation authorities are reluctant to step from the paper world into a no-paper-ever world."

"The aviation industry is finally acknowledging that if they haven't already begun their digital transformation, they're already late to the game," comments Alexis Clemens, Director, Business Development and Strategic Partnerships at Power Werks.

Clemens sees the industry responding by creating new tools that allow users to harness their data and make it more usable. "Digitisation is all about saving time and enhancing quality. There is data floating everywhere relating to the aircraft, paperwork, engineering, and so much more, and unless people are able to centralise this data, it's virtually useless."



Alexis Clemens - Director, Business Development and Strategic Partnerships at Power Werks

In terms of implementing paperless maintenance procedures, Santos from TRAX finds that the guidelines and regulations are already in place for most regulatory agencies. An example of this would be the IATA guidance document for Paperless Aircraft Operations (PAO).

Santos says gaining approval is not an insurmountable process and is actually very similar to approval gained when implementing a regulatory compliance system (although TRAX has found the process for its eMobility products to have a vastly shortened timeline by comparison).

"As we see it, the approval process is not an obstacle to mobilising maintenance."

In the hot seat.....

Chris Clements, Sales Representative, Swiss AviationSoftware Ltd.

AviTrader MRO: Briefly, what is your job function at Swiss-AS?

Clements: My roles as Sales Representative is to work with my Marketing colleagues to manage new prospective customers, dealing with their technical queries and upon request perform an on-site demonstration of AMOS. Due to my background as an aircraft technician before joining Swiss AviationSoftware I am able to fully understand our customers' requirements and demonstrate to them why AMOS is the best solution for them.

AviTrader MRO: What is the most challenging part of the job?

Clements: Ensuring that I am fully up to date with our product, AMOS. Despite working for Swiss AviationSoftware for the last 10 years the ever changing industry and broad customer base that we serve, as well as the innovations that are released with AMOS, means that between customer visits I have to test and probe AMOS to keep myself up to date!

AviTrader MRO: What demands and opportunities are you seeing in the MRO market today?

Clements: In my opinion, the most common demands are mobility and the ability to share

data with vendors or MRO's. AMOS offers a mobile solution for maintenance execution and we continue to look into other roles and business areas that have a genuine requirement to be mobile and provide the user with the correct tools for their job. We have seen the requirement to share and access data, collaborating with business partners, as the opportunity to develop AMOScentral and allow our customers to share data between themselves, and in the future, with third parties. This may be as simple as sharing available stock that we would be willing to supply or transmitting work packages for a C check simply whilst regularly sending performance updates.

AviTrader MRO: How can MRO's in particular benefit from the AMOS suite of software?

Clements: The complete integration of the AMOS modules gives our MRO customers an end-to-end solution. From the initial contact, quotation phase, paperless maintenance execution with the ability to export the work package results to the customer at regular intervals all the way through to the billing AMOS has it all in a single solution. With our new Component Maintenance programs coming soon, it will be even easier to handle ship-shop-ship transactions than it is today as well as shop routing based on decision nodes with prede-



Chris Clements, Sales Representative, Swiss-AS

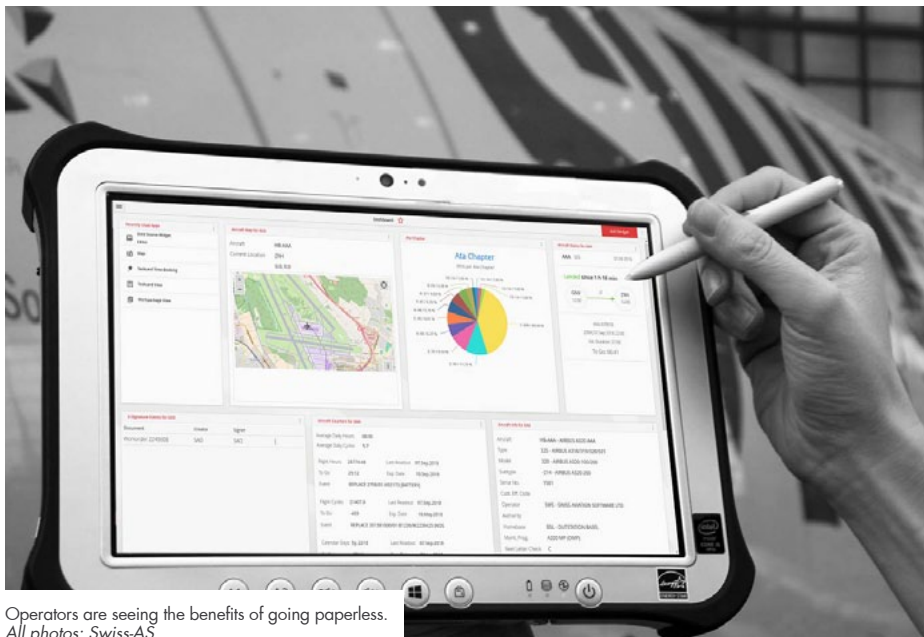
finer worksteps available.

AviTrader MRO: For a new carrier, briefly explain the implementation process for your MRO software?

Clements: Firstly, it is important to clarify that an AMOS project is not a "MRO software" IT project. Instead, it is a business optimisation project with the target to increase process efficiency through digitalisation.

Our dedicated Business Consulting Teams have devised tools and methodologies to assess the "as-is" process landscape and works together with the airline & MRO's stakeholders to define the target digital-based future state. The prioritisation of the change impact scoping based on expected business value, starts during the pre-sales phase and is then detailed during the definition phase. Swiss-AS assigns a team of business and IT experts to play a key part within the customer project team.

The customer's project team receives an accelerated AMOS knowledge ramp-up through trainings (classroom, e-learnings) and process review workshops. Swiss-AS Consultants deliver more than 90+ pre-written "AMOS-based business processes", which are used as the baseline to be refined and documented within each customer's process landscape. The fact that AMOS software is a "ready-to-use" commercial off-the-shelf (COTS) product, the project team's efforts are well spent on business value improvement instead of software customisation and development. Typical AMOS implementation projects have a duration of



Operators are seeing the benefits of going paperless.
All photos: Swiss-AS