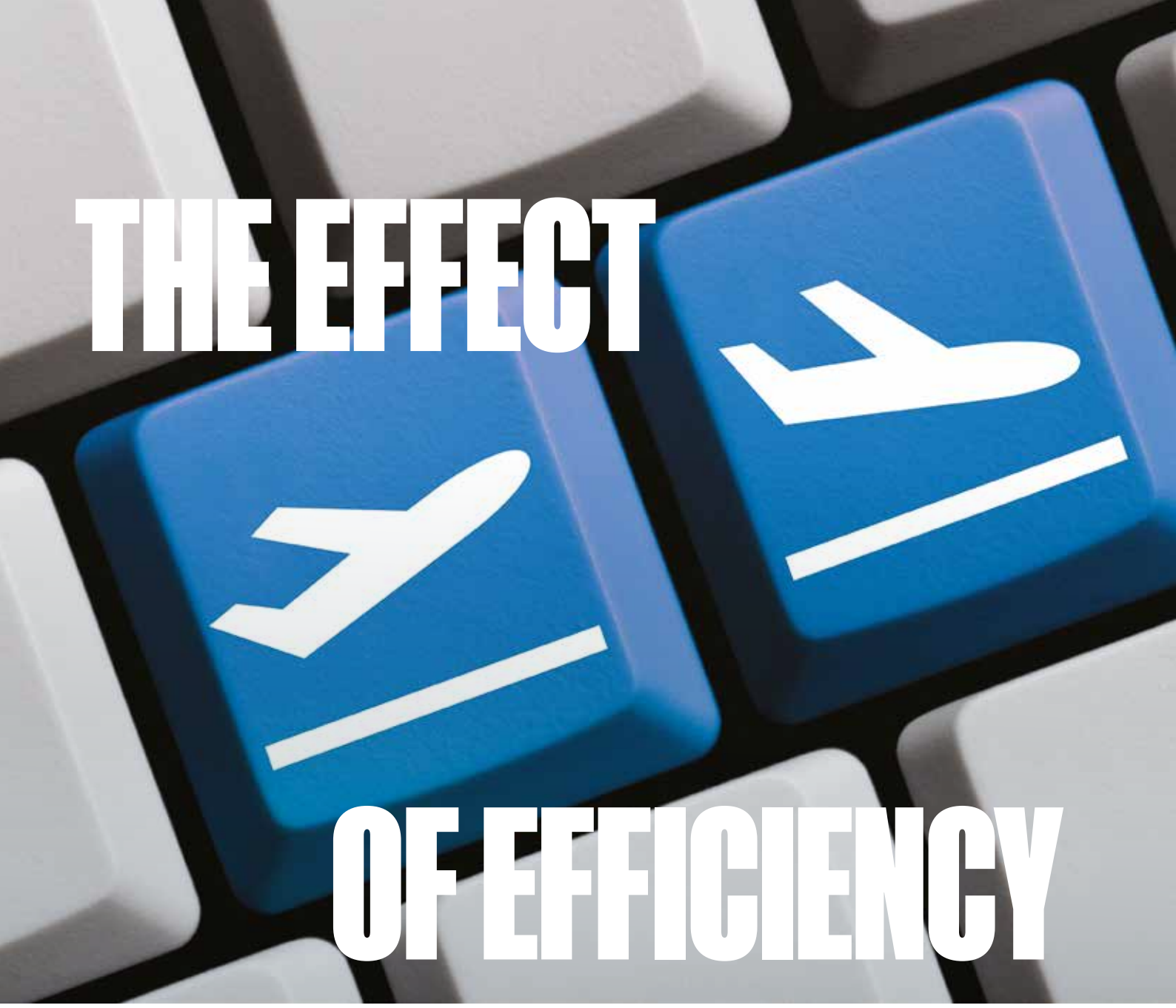

THE EFFECT OF EFFICIENCY

Electronic systems bring many benefits, and the scope is expanding into machine learning

"Efficiency is about doing things right, effectiveness is about doing the right things," management guru Peter F Drucker once quipped.

While most airlines are doing the right things, doing things right is a little harder to define. IT in maintenance and repair has been around for a long time, but improvements in the packages available are driving the industry towards being both more efficient and more effective.

"An electronic system affords many benefits, with one being work completion awareness that exists as work is accomplished in real-time," John Stone, VP product management at software house Ultramain explains.

SYSTEM BENEFITS

"Having an efficient means of digitally communicating additional work requirements found during a check to customers and obtaining their authorisation to proceed, with agreement on additional costs, is critical to minimising overall check time and receiving timely payment without billing disputes," Stone says, adding that knowing the work completion status of each task at all times informs management if the check will be accomplished according to the plan – and if not, why not.

"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

"KNOWING WHAT YOU SHOULD BE DOING, WHAT YOU ARE DOING, AND HOW YOU ARE DOING IS CRITICAL TO A SUCCESSFUL MRO BUSINESS"

business and more profit," he explains, adding that the ability to do this is what a good MRO system, such as one from his company, will provide.

Omar Santos, vice president, global services and support from Trax concurs with the efficiency benefits of upgrading to a paperless system. "Firstly, it eliminates the risk of human errors that often occur when handling and transcribing paper documents," he says. "With a paperless system, information can be entered in real time and stored digitally, reducing the chances of data entry mistakes. Additionally, a paperless system enables real-time collaboration and access to up-to-date information, ensuring that all stakeholders are working with the most current data."

There is the question of how the packages available can provide effectiveness for an operation. As Santos points out, there is little point in having a highly effective computer system if handwritten errors are being transcribed into it.

"One primary differentiator between our product and the competitors was our early foray into the field of mobile and paperless aviation maintenance that allows users to work anywhere. Unlike many systems available, Trax's solution is truly offline capable with the capacity to provide real-time information and synchronise transactions when back in range of internet access," he says, adding that his company has a proven track record of implementing paperless task cards and e-signature sign-offs over the years.

Saravanan Rajarajan, a director at Ramco Systems believes digitisation enables aviation MROs to be more agile and efficient. He notes that Ramco Aviation Software's supply chain management (SCM) module helps those organisations to achieve this in more ways than one.

"The first is increased agility. The SCM module is capable of ad hoc and real-time planning for changing demand and supply situations. Planning cycles are minimised and become a continuous process to reach dynamically varying demands and constraints," he elaborates.

"For example, the Ramco float computation and optimisation module leverages data and machine learning (ML) algorithms to forecast the float requirements and the best possible stock levels. The supply chain data and the part engineering and reliability data are processed together to arrive at the solutions, ranging from driving reliability, turnaround time (TAT), replenishment or purchase.

"Next is increased efficiency," he continues. "Here, the automation of the supply chain process reduces the lead time, thereby reducing the float to be maintained. For example, the parts removed from aircraft are automatically screened with relevant data from sourcing, warranty, reliability and criticality. Based on all the parameters, the solution suggests the best possible disposition, whether to repair, to upgrade, make warranty claims or even put repairs on hold to conserve costs. Once deemed suitable for repair, based on the automation rules and supplier contract, the entire repair order process is automated in the software."

Canada-based WinAir says its system can "efficiently and effectively track and manage aircraft maintenance and inventory control". Jason Street, a member of the company's business development team, elaborates on the solution's capabilities with regard to stock levels.

"The WinAir maintenance planning system analyses aircraft utilisation to estimate due dates for all required maintenance tasks," he explains. "Subsequently, it generates a comprehensive forecast report outlining the parts required for upcoming maintenance activities. This entails calculating the quantities on hand, those already reserved, available quantities and potentially available quantities based on outstanding purchase orders and other pertinent variables."

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Reliability is, as you might expect, a selling point of such systems and all of the reps that we spoke to were keen to underscore how their respective products maintained uptime.

"Ultramain is a comprehensive and mature system that has been built and refined over decades. It has been written and re-written into the latest technologies of the day four times over the years and each time it becomes more powerful and easier to use," says Stone.

MACHINE LEARNING

In the future we are likely to see an increase in machine learning and artificial intelligence technologies, according to Trax's Santos. Explaining that he believes opportunities exist to more rapidly deploy the firm's portfolio, he says: "We are determined to leverage Trax's position in the mobile software market and expand it to encompass autonomous enterprise solutions."

In addition, Santos reveals that the company is currently working an upcoming 'Pro Series' suite of applications. "This innovative suite will harness the power of artificial intelligence and machine learning across a spectrum of system functionalities," he explains.

The eMRO pro series applications will introduce a simulation engine, placing the customer in control of modelling diverse supply chain scenarios. "This simulation engine allows for the adjustment of a multitude of parameters, such as encompassing demand fluctuations, shifts in lead times, store openings or closures, maintenance demand forecast simulations, new aircraft inductions and lease returns to name a few. This comprehensive flexibility empowers our customers to anticipate the repercussions of these scenarios on inventory and operational efficiency.

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"The process includes conducting effortless and insightful 'what if' analyses. Users can seamlessly adjust parameters like demand projections, lead times, order quantities and safety stock levels. This enables them to visualise potential outcomes and associated risks, facilitating well-informed decisions," explains Santos.

FUTURE

Aviation is a risk-adverse industry, so it is perhaps no surprise that take-up rates of computer systems has lagged. "Ultramain Systems has offered paperless systems for nearly two decades. The adoption rate has been slow," admits Stone. "However, more recently we have seen a change and evolution in regulatory procedures and approvals for full paperless operations."

Trax's Santos would like to see an increase in data standardisation. "The Trax capabilities to capture tremendous amounts of data based on transactions, alongside the ability to integrate with external data systems, provides high value to our customers," he explains. "It is for this reason that we would love to see an acceleration of the standardisation of formats and schema for data exchange across the aviation industry. Increased standardisation would streamline the sharing of data between OEMs, airlines, MROs etc. and enhance efficiencies."

He goes on to explain that Trax follows efforts such as the Air Transport Association (ATA) standards guidelines and specifications for data interchange that is increasingly being adopted within the aviation industry.

"We incorporate ATA spec developments such as Chapter 11 reliability and ATA Spec 2500 into our software. We would like to see more standardisation development efforts and a more rapid industry adoption," Santos concludes.

New technology such as machine learning, coupled with an increase in cross-system compatibility, means that a more efficient and effective future will be coming to a hangar near you.

"WE WOULD LIKE TO SEE MORE STANDARDISATION DEVELOPMENT EFFORTS AND A MORE RAPID INDUSTRY ADOPTION"

1. Software standardisation helps all parties
2. Electronic picking is more efficient and accurate