

IT for MRO

As a result of progressive releases and updates, software companies today cater for almost every aspect of maintenance provision. Yet refinements are still being made to functionality and ease of use, while new technologies offer the potential for further efficiency gains. *AF&NM* assesses the IT market and provides a round-up of some of the major players.

| Location | Lot Number | Serial Number | Quantity |
|----------|------------|---------------|----------|
| A-1 | LOT-101 | | 57 |
| A-1 | 112 | | 17 |
| 01 | LOT-101 | | 12 |
| 01 | LOT-101 | | 2 |
| 01 | LOT-101 | | 2 |
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| 01 | LOT-101 | | 1 |

The Avexus solution is designed to be as intuitive as using an ATM machine.

One might have expected 2006 to be a tough year for IT vendors in the MRO arena. Cost pressures on the airlines show no sign of abating and seem to imply reductions in the IT budgets of both operators and maintenance providers, particularly in the US, where the troubles of the majors are most profound.

However, by and large there appears to be scant cause for concern: SAP reports that it's working on more deals than ever before, while other IT providers, such as Mxi Technologies, describe "a healthy uptake in business". Matt Tobin, vice-president of marketing and alliances at Mxi, concedes that some operators have postponed IT investment, but, on a more positive note, claims that "some airlines which were in bankruptcy took the opposite view, which is to say automation was viewed as part of achieving a better cost profile".

If successfully implemented, IT can bring myriad cost and productivity benefits to maintenance provision: enhanced supply chain visibility enables more prescient maintenance planning and leads to reduced inventory costs; better informed repair-or-scrap decisions can be made if relevant financial details can be quickly and easily accessed; and hosted solutions can lower support costs. Hardware also makes a big difference;

wireless technology and the ability to transmit data to portable devices means technicians can spend time working on aircraft rather than traipsing around hangars searching for information.

Significant benefits can also be drawn from specific features of IT solutions, as Martin Elsner, head of aerospace and defence at SAP, explains: "One customer used our warranty management function to check which parts in their fleet were due for a check. Whenever they had a leased aircraft due for return they would disassemble these parts and put them on the returning aircraft, obviously making the lessor very happy because he receives an aircraft where almost every single part is out of compliance!"

Despite such benefits, though, IT projects can sometimes result in more pain than gain. Technology investments are sometimes never fully realised within organisations due to the complexity of operation, complexity of training and integration issues with older systems. British Airways is usually cited as the classic example of this within aviation: it elected to install SAP's EWS solution to replace 150 legacy systems, but the system went live two years late and massively over budget.

Such events have strengthened claims from 'best-of-breed' providers that ERP

solutions such as SAP and Oracle are ill-suited to the complexities of MRO, designed as they were for manufacturing processes. This means, they say, that ERP systems often require extensive customisation — without any guarantee of success — which in turn involves implementation periods of years rather than months.

Elsner at SAP naturally begs to differ, highlighting the advantages of extending the service to maintenance: "You reduce the number of interfaces significantly by combining ERP with MRO. Everything concerning the control of materials management, warehouse management, finance, HR and MRO is combined in one system...At one client we reduced the number of interfaces by 80 per cent."

Point-solution providers do recognise the need to work alongside ERP as many of their customers already have such a solution installed, typically for their finance and HR departments. And although all point-solution providers emphasise the square-peg-in-a-round-hole argument when commenting on ERP for MRO, some offer a more measured response. Mark Ogren, marketing director for MIRO Technologies, says: "Companies like SAP have the resources to continue to



MIRO's AuRA product is founded on flexible business rules.

invest in new modules for their product and the money to market those so they will always have some significant market share. Nevertheless, I do think the market has made it clear that the best-of-breed tools are their preference in terms of finding a good IT solution for maintenance and engineering."

Undoubtedly, huge companies like SAP and Oracle have the resources available to sand off the sharper corners of the square pegs, so will it only be a matter of time before their products become functionally analogous to tailored solutions? "Fundamentally I don't believe it's possible," says Tobin at Mxi. "It's just not in the DNA. If you look at the design of an ERP there are only so many ways that you can stretch it to adapt it to non-traditional functions, and there are certain things about aviation maintenance that do not fit the original ERP model." He also points out that aerospace and defence forms less than one per cent of SAP's customer base.

In spite of this, SAP has become a major player in the aviation IT market. British Airways, Singapore Airlines and VEM are just some of the operators who have elected to deploy it. Ogren at MIRO outlines why he believes it has become so prevalent: "Once an airline has invested in an ERP system such as SAP there's a lot of momentum to move it across the entire enterprise so it's natural for them to be willing to pay a lot of money to customise the product to try and force-fit it into the maintenance and engineering area as well."

Doubtless, the ERP versus best-of-breed debate will rumble on for some time to come. In the meantime, maintenance operators will need to

decide which IT solution best suits their particular organisation and structure:

Avexus

Avexus was launched with third-party MRO service providers. The underlying premise of its IT product has always been to provide complete cycle management of the MRO business process. Accordingly, in 2004 it released Asset Management & Operations to manage fleet-wide maintenance, rather than just the isolated maintenance events.

Avexus' current release is version 8.0. It is a fully web-deployable system that uses J2EE (Java 2 Platform, Enterprise Edition) architecture. A five-tier approach to the design of the product means that clients can modularly update the system whenever new industry standards are unveiled.

In keeping with its focus on providing a flexible solution, Avexus doesn't concentrate only on the software side of IT provision, as Richard Bergmann, CEO of the company, explains: "We're going to have to stay in very close touch with hardware manufacturers and understand the environment that these tools are being deployed in, and understand some of the human factors, meaning: usability; size of screen; power; stability; and signal pickup. It's interesting: as the business has grown we've become the guys who the hardware technology people are now

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pursuing and showing how they can work with our technology." As a result of such cooperation, Avexus has made its solution deployable on the latest wireless, touch-screen devices. It also utilises workstation kiosks which function in the same intuitive fashion as ATM machines.

MIRO Technologies

MIRO delivers an annual release to its customers, for which they pay an annual service fee. In August 2006 MIRO announced the planned release of AuRA Version 2006. This latest release incorporates 270 modifications and over 70 enhancements. One of these includes a navigator for searching and viewing SGML-based maintenance manuals from the OEMs. Customers also have the option of web-enabling the product using MIRO's ASP offering or a CITRIX solution.

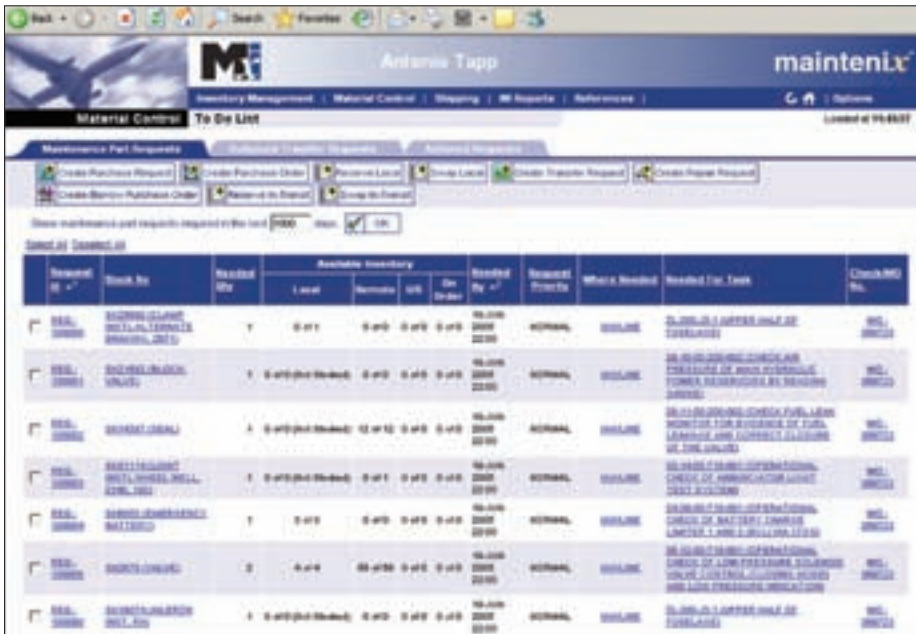
In line with the trend to which most IT solutions have conformed, AuRA offers role-based functionality. This means that the information that is presented to any given employee conforms to the tasks he has to carry out. However, in addition to this, AuRA incorporates flexible business rules. These rules underpin the system and can be altered according to a customer's specific business model.

The majority of the key processes in AuRA are managed from desktops. These powerful features bring together all the key data into one unified view for the user, thereby making management and visibility easier. Constant throughout the application are tree widgets, nested hierarchal structuring, and embedded graphs to display numerical data. As AuRA was developed with a Windows interface, it is often possible to export data to MS applications for further editing.

Mxi Technologies

Mxi first released its Maintenix product in 1998. Since then it has evolved from a traditional client/server architecture to thin client architecture. It is now a fully web-enabled, J2EE-based solution and Maintenix customers have the option to utilise Mxi's open-source server.

The application is browser-based which means it can be set up on any device



Maintenix from Mxi is a fully web-enabled, J2EE-based solution.

capable of running Microsoft's Internet Explorer. Such an approach is intended to foster familiarity with applications commonly encountered by users, improving ease of use. This technique is exploited by many IT providers, as indeed is Maintainix's role-based user interface.

Mxi is also forward thinking when it comes to process security, as Tobin describes: "People emphasise the notion of identifying who you are and the electronic signature does concern itself with that, but it must also deal with storing encrypted records that reflect exactly what was seen by the mechanic at the time of carrying out a maintenance action. So we have an electronic signature capability, it is in field use, it has been given regulatory approval in that context and it uses encryption keys and various methods to ensure the right

person is inputting the data, and there are audit trails to satisfy the regulators."

SAP

SAP began to develop its aviation modules in 1996. Since then it has been through eight major releases. Through these iterations SAP has addressed a number of issues, including: Spec 2000 (a set of e-business specifications, products and services designed to overcome the traditional bugbears of the aviation supply chain); earned value management; interchangeability; and tracking and tracing.

Although ERP solutions are much maligned by competitors, their key, distinct advantage is visibility. Elsner explains: "If you sell MRO services you are looking at the capability on hand not only to do the maintenance, but also to drive decisions to take the service or not. In order to do so you need more information than just the sheer planning and execution: you need to know about your supply chain, about the financial aspects, about skills, HR availability and so on." Through such visibility SAP estimates that its system can lead to inventory reductions of up to 50 per cent and improved planner productivity of up to 20 per cent.

For ease of use on the shop floor, the SAP solution can present technicians with Adobe forms on the computer that appear exactly as the previous paper version did. Information can then be

entered in the same way as it was before, only on the computer, while in the background the system is fed with the information automatically.

For those processes that the system does not cover, SAP provides a platform called Netweaver, an open standard that can be used to connect other systems to SAP.

Ramco

Ramco's Aviation Solution breaks somewhat from the ERP or best-of-breed mould in that it combines attributes of both. The India-based company has developed its aviation ERP solution from the ground up using the latest web technologies. The solution is organised in Business Components, giving customers the choice of selecting any combination of operations, maintenance, logistics, technical records, HR, and finance elements.

The whole solution is web-architected, browser-based and, again, process-orientated. The focus is very much on ease of use combined with high visibility. This means that while a line mechanic has the ability to personalise his own screen without any loss of functionality (i.e. he will only be presented with the tasks pertaining to his role), management can aggregate a vast swathe of data — covering everything from HR to logistics — to better plan ahead.

The solution's web architecture allows developers in India to add new features on a customer's test server. After inspection and acceptance the update can then be transferred to the production server for users to take advantage of. However, unlike some IT providers, Ramco clients are under no obligation to implement updates, allowing them greater flexibility to customise their solution and manage IT life-cycle costs.

Whether hosted solutions, such as that provided by Ramco, become an industry norm remains to be seen. Experience at some US majors — where once-traditional in-house capabilities such as heavy maintenance have been relinquished — has shown that outsourcing is not merely the preserve of the low-cost carriers. On the other hand, third-party service provision requires perhaps an even greater level of supervision. Time will tell how IT adapts to the business models of the future.

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