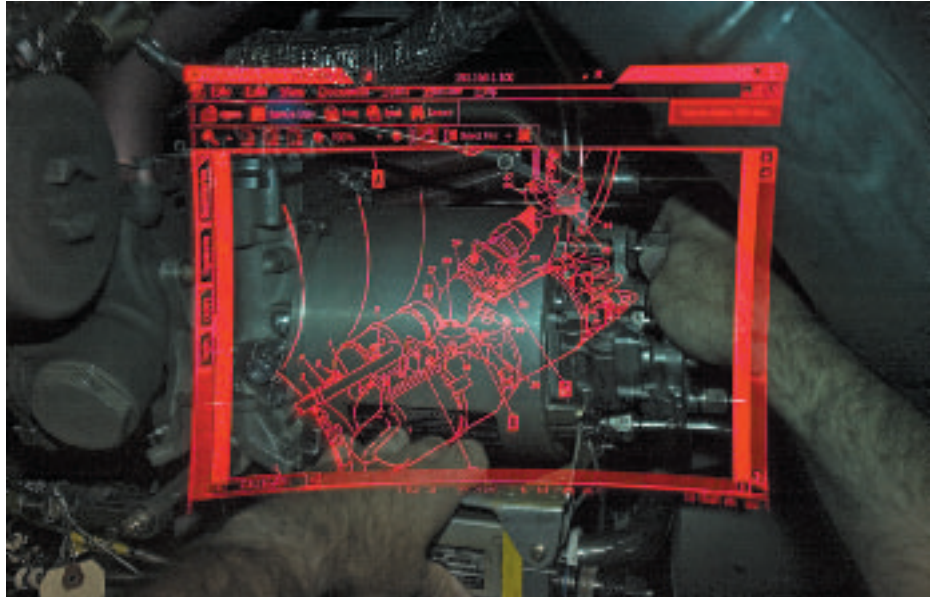


IT for the paperless MRO environment

There is a dizzying array of options open to airlines and MRO shops seeking to eliminate paper and associated inefficiencies in their maintenance operations. *Aircraft Technology* talks to a leading provider of ERP solutions, two companies which offer aviation-specific MRO software packages, and a newcomer to the industry marketing a tool to assist maintenance technicians.



The Nomad Expert Technician System allows technicians to superimpose text and diagrams from electronic service manuals directly over their workspace.

"It happens that SAP sells software, but the big value in our company is our process knowledge... What we try to achieve – and this is something we achieved with a lot of our customers – is being the trusted advisor. Airbus is one of the very big examples here. Airbus has 40,000 employees and 40,000 users of SAP."

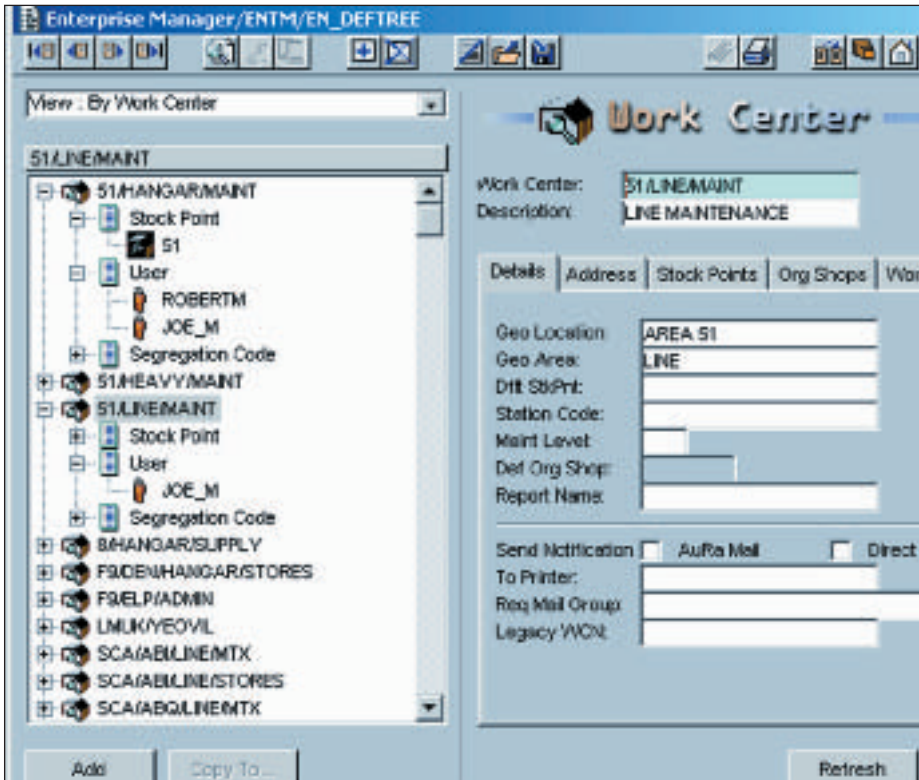
—Martin Elsner, field service director — aerospace and defence, SAP

Present across an array of industry sectors, SAP is perhaps the most well-known international provider of client-server enterprise resource planning (ERP) solutions. It serves airlines and MRO providers through its aerospace and defence division. "I think we have certain best-of-breed capabilities which others do not provide," says Martin Elsner, SAP's field service director, aerospace and defence. "One, for example, is the tracking and traceability of every single part across the complete supply chain, but I think the first and the most important is the integration. As SAP is an ERP tool, it handles all aspects of the company: HR, finance, controlling, purchasing, sales, production planning, MRO planning, plant maintenance — basically you can cover all aspects with it."

'Best-of-breed' ERP

SAP's aerospace and defence solution was launched in 1997. "Until 1997 we focused on a standard product applicable to all industries,"

recalls Elsner. "In 1997 we saw that there were some industry specifics that we needed to address: MRO manufacture part numbers, SPEC2000, rotatable controlled pooling... So basically what SAP did is, they recruited some people like me — aeronautical engineers, coming from the industry with process knowledge — and asked them, 'What do we need to do to create an MRO product which is feasible for a lot of MRO companies?' It needed to be generic enough to be applicable, within the MRO business, to a big group, but specific enough to serve the needs of the industry... Today, when you buy SAP software, you get a CD that contains that standard SAP product, and on top of that a CD with the add-on functionality for aerospace and defence. We want to keep [providing] SAP 4, the standard solution, and only add those functions that are really necessary for the aerospace- and defence-specific things. We try to move even the specifics as far as possible down into the standard solution." For example, the resource-related billing



MIRO Technologies' AuRA solution is adapted from GOLD, a product widely used in military applications.

functionality, a particularly important requirement for aerospace and defence users, is incorporated in the standard solution rather than the add-on.

SAP's aerospace and defence division has performed over a thousand installations for some 320 customers. "In the beginning SAP was not recognised as an MRO software provider, not at all," admits Elsner, "but when you [look at] those that have implemented SAP — Singapore Airlines, Lufthansa, Varig, British Airways — obviously, that causes noise. This industry might be very cautious with new things, but if something is proven, this is a real community that is very close. [Recently] I was in Singapore with a customer announcing something: I flew the other day to London to another customer, and he told me what I just told the day before in Singapore! And these two are competitors! If you do good things in the industry, it spreads around quickly."

Elsner identified process knowledge as the key to SAP's

aviation success: "It happens that SAP sells software, but the big value in our company is our process knowledge... What we try to achieve — and this is something we achieved with a lot of our customers — is being the trusted advisor, [so] that the customer comes to us and says, 'We need to do something, please be part of our team defining our future.' Airbus is one of the very big examples here. Airbus has 40,000 employees and 40,000 users of SAP."

Mxi: aviation-specific MRO software

Unlike SAP, Canadian provider Mxi Technologies operates only in the aviation industry, marketing an MRO software package brand-named Maintenix that can be used to devise an entire maintenance plan for any aviation asset, be it an aircraft or individual sub-component.

"Maintenix can substantially increase an airline's efficiency in conducting unscheduled maintenance," says Mxi's marketing vice president Matt Tobin. "We provide a capability for real-time diagnosis of the discrepancies that happen randomly when an aircraft is in service. We have a module that processes fault codes that are transmitted through ACARS or pilot reports. If a fault develops in flight, you can have notification sent to the destination before the plane lands, so you can begin organising the parts, people and other resources required to fix the problems."

Beyond its line maintenance capabilities, Maintenix also offers heavy and shop maintenance functions, and is intended to support engineering, materials and fleet management. "The beauty of Maintenix is that all types of maintenance tasks - MEL items, DMIs, other unscheduled maintenance, regular scheduled maintenance, and engineering orders based on SBs and ADs — are all managed in a single system," explains Tobin. "This maximises efficiency, because Maintenix ensures that all necessary tasks are done, without inadvertently doing anything twice — something that



Weighing only 4.5 ounces, the Nomad head-worn Display Module can either be mounted under the brim of a cap or integrated into a headband.

in mind. "We basically have a product that is functionally rich, but simultaneously uses a very advanced architecture," says Tobin. "Mxi is targeting major and regional airline accounts." Accordingly, Mxi's airline customers include KLM Royal Dutch Airlines, Air Canada, Executive Jet Management and Aloha Airlines. Tobin identifies the aviation-specific nature of Maintenix as one of its critical selling-points. "ERP systems are designed for manufacturing, and they can't really handle the cradle-to-grave record-keeping that is required for aviation maintenance," he asserts. "They're not designed for tracking parts at the serial number level."

Integrated maintenance

In September 2004, private equity firm Solis Capital Partners acquired MIRO Technologies — formerly known as Spirent Systems — from Spirent plc, a UK-based communications technology company. MIRO markets an integrated maintenance solution, AuRA, which was adapted from a product brand-named GOLD, deployed in military applications for well over two decades. Both are intended to provide customers with maintenance workflow management, inventory control, repair order management, recording & forecasting capabilities and configuration management of high value assets.

"The main differences [between GOLD and AuRA] are in the whole cost-benefit area," says Mike Hickey, an EVP at MIRO. "It's not that costs are unimportant on the military side, but they're nowhere near as developed in how they're trying to manage them as they are on the commercial side. The other thing that's different is the line maintenance environment. The downtime of the aeroplane could be any time on the 24 hour clock, so we built some additional things into AuRA which allowed the commercial guys to much better manage how they set the capacity up — the parts, the people — and how they actually get all this work done."

Hickey points to the importance of AuRA's advanced configuration

happens surprisingly often if separate systems are used at the line and in the hangar. Add to that the ability of Maintenix to accurately predict parts requirements for both scheduled and unscheduled tasks, and you have a paperless MRO organisation that runs smoothly, with the right maintenance being done, and the right parts available where and when they're needed."

The Maintenix solution's platform architecture is three-tiered (or n-tiered). There is the "presentation layer", which is displayed on the end user's workstation; the business objects, which run on their own separate server; and the database server. This facilitates integration with legacy and ERP systems, and allows users to scale the software. The Maintenix solution can also be offered as an Applications Service Provider-hosted service, where instead of installing the service on a client's own computers, the software is installed at a remote location and the client pays to access it.

Mxi's software is designed primarily with medium to large fleets

"At the time ERP came out, there were a lot more people doing manufacturing than doing service or MRO, so a lot of the competition we see [is from] products that work quite well in the manufacturing arena, and they're trying to bring them into the MRO arena, and what they're finding is, it's difficult."

—Mike Hickey, EVP, MIRO Technologies

navigation through a touch pad and keypad on the belt-mounted Nomad Control Module.

"Our technology allows us to be daylight-readable and see-through," says Bruce Westcoat, Microvision's marketing manager for defence and aviation. "This device automatically adjusts to the bright sunlight, and we can control and modulate that light source and put plenty of brightness in the image right at the eye. Competing technologies such as AML CDs or LEDs can't get that bright image to the eye in a see-through format: because of the technology, it washes out in the sunlight, or they have to occlude the image which means you can no longer see through it."

The Nomad Expert Technician System was originally developed for the automotive industry, with Honda as its launch customer. "They've done field trials that resulted in a 40 per cent increase in productivity," says Westcoat, "and the reason for that increase is, [previously] a lot of the technicians were having to stop what they were doing, go to a terminal, pull out the manual, go back to their vehicle, try and relate it to the vehicle, maybe forget a couple of the parameters... This resulted in a 40 per cent improvement [for that reason]."

The FAA has deemed the product a secondary flight instrument not requiring certification, and Microvision is now hoping to establish it in the commercial aerospace arena. "We've been quite

Voucher	Part Number	Serial Number	Qty Due	Est Return	Requestor	Temporary Owner	Status
V0004457	02049		10	08/30/2000	SGBP	SGBP	O
JOE0001551	TOOL BOX	13010	0	08/16/2000	LANCE-SCA	LANCE-SCA	S
V0004536	0320	1	1	08/16/2000	STEPHN	STEPHN	O
V0004554	995-00-520-00	A000	1	08/17/2000	USSERY-AMR	USSERY	O
V0004550	20032-2-DPS		0	11/16/2000	MKEB-SCA	MKEB-SCA	S
V0004551	20032-2-DPS	1002	0	11/16/2000	MKEB-SCA	MKEB-SCA	S
V0004556	20032-2-DPS		0	11/16/2000	MKEB-SCA	MKEB-SCA	S
V0004558	20032-2-DPS		0	11/16/2000	MKEB-SCA	MKEB-SCA	S
JOE0001560	JMK TOOL CLASS 1	12	1	08/26/2000	JMK-SCA	JMK-AMR	O
R0001488	20032-2-DPS		0	08/24/2000	DOUGS-SCA	DOUGS-SCA	S
R0001491	20032-2-DPS		0	08/24/2000	DOUGS-SCA	DOUGS-SCA	S
R0001493	20032-2-DPS		0	08/26/2000	DOUGS-SCA	DOUGS-SCA	S

MIRO's AuRA is used by Embraer, ExpressJet, Frontier Airlines and TNT Airways, among others.

extensive testing with one of the major turbine engine manufacturers," says Westcoat. "We have talked to airframers — of course, we're near Seattle, which is home to one of the world's major airframers; they're extremely interested — but I think our best entry point right now is the engine side, and I think you're going to see, in the next [couple of] quarters, one or two announcements in that area."

Quality At A Price That Delivers!

- Machine Shop
- Skydrol Shop
- Red Oil Shop
- Landing Gear Shop
- NDT
- Engineering
- Heat Treating
- Boeing 727, 737, 747, DC9, & MD80
- Falcon
- Hawker
- Challenger
- Learjet
- Citation
- CRS# GQRR431E

TXI Aviation, Inc. • 8350 Denton Drive • Dallas, Texas 75235
972.647.7300 • 214.358.2225 fax

