

Air Canada Jazz has switched from an in-house system to Trax's EVO 1.



# Scrupulous software selection

Henry Canaday surveys the range of software applications available to aid maintenance organisations in their drive for efficiency.

**D**espite severe economic pressures, airlines continue to adopt or enhance software to manage their maintenance operations. The potential benefits, in reducing inventory, labour, administrative and downtime costs, are real. Moreover, many older maintenance applications are not only out of date, but are becoming more expensive even to maintain themselves.

The choices here are complex, though. There are point solutions for particular maintenance functions, broad and advanced solutions for the whole maintenance challenge, and even broader solutions that tie maintenance into the management of the entire airline enterprise. A thorough assessment of a carrier's needs, as well as a hands-on review of vendors' products, is the minimum required for smart acquisition. Furthermore, software decisions are also bets on the future: which applications will be supported well, and will continue to evolve with the technological and business environment?

Five years ago, Air Canada Jazz was still using its Regional Carrier Maintenance System (RCMS), a green-screen application developed in-house. "It was based on paper processes; mechanics filled out forms, and data were

entered by hand," remembers John Hensel, Jazz's senior Trax specialist. RCMS was also costly to maintain.

With 137 Bombardier regional aircraft operating in Air Canada Jazz colours, the carrier manages line and heavy airframe maintenance, and some components, in-house. It decided that new software was needed to support better maintenance. Department managers listed the requirements: Windows-based; user-friendly; supporting Lean and Six Sigma; easily extended across Jazz's network; and able to change with technology.

## COMPETITIVE PROCESS

Jazz sent out requests for information to 20 software vendors, and narrowed the choice to five and then, after discussions with other airlines, to three finalists. Each of these demonstrated its software for two days to Jazz maintenance staff.

Carrier visits and demonstrations helped to confirm the final selection and clarified the challenges ahead. "You have to understand the issues because there will always be issues," Hensel stresses. Trax was selected in February

2006 as the best overall, with the greatest support and ability to keep up with technology.

The implementation of Trax's EVO 1 was completed in November 2008. Data conversion was a major, but straightforward, challenge. Hensel says the biggest difficulty was managing internal changes, which proved tricky for veteran staff that had used RCMS since 1985. On the other hand, "personnel who were new to the company and Trax were flying right from the start".

Jazz first trained "super users", who then trained the rest of the 1,300 maintenance employees in two-hour sessions for a total of four days. Training cannot be done too long before actual use, or lessons may be forgotten. Three months into implementation, even veterans were "asking the right questions; they were seeing the flow of it".

Jazz implemented all but three modules of EVO 1. The module that integrates with electronic flight bags (EFBs) for aircraft communications addressing and reporting system (ACARS) is still under review. Quality assurance (QA) and training modules will be implemented in the future because Jazz has QA and →

training software used by non-maintenance departments that must be integrated with Trax. EVO 1 has already been integrated with other airline systems for payroll, human resources and finance, and with Sabre flight operation software.

The benefits are clear, including facilitating Lean initiatives. "With RCMS we held more stocks, due to delays in getting information into the system. Trax is more real-time," Hensel reports. Paperwork has been shed and administrative time reduced, and Jazz is moving toward predicting and managing defects that were once treated as random.

Trax links maintenance requirements and information to task cards, so technicians get a one-stop picture of what needs to be done, and the equipment or parts required. This reduces setup time, improves communication and boosts time spent on aeroplanes. In addition, Trax integrates data from all maintenance units, whereas RCMS had been built to serve individual departments.

Jazz plans to expand its use of wireless, enabling mechanics to sign off using tablet devices. The carrier is also working with Trax on a virtual warehouse for inventories and on improving labour capacity planning. Heavy visits are now solidly planned only nine months in advance. Furthermore, Jazz is testing Trax's EVO 3 version for implementation by mid-2010.

Nearly 90 customers use Trax, including Virgin America, Air New Zealand regionals,

## COMMON-USE WIRELESS FOR MECHANICS

TAP Portugal has just finished a pilot test of SITA's new common-use platform for wireless connections between mechanics and maintenance information systems. Gregory Oullion, SITA VP for technology, research and innovation, believes the common-use approach should make wireless access much more affordable for airlines, especially at outstations away from their maintenance bases.

SITA is becoming much more active in maintenance-related areas. Current projects include enabling part traceability across many industry databases, and establishing communication and infrastructure for economically distributing airframe manufacturers' software to outstations.

Spanair, Royal Jordanian, Azul, Volaris and Transavia. The newest EVO 3 version includes enhancements such as manpower planning, Spec 2000 reliability, aircraft fault codes and electronics repairs.

Marketing director Chris Reed says Trax is working on further improvements, like digital signatures, electronic techlogs, Windows touchscreens and radio-frequency identification (RFID). The latter is increasingly important, as Boeing and Airbus have agreed on initial standards, and software vendors can incorporate these requirements.

### BREEDING ADAPTABILITY

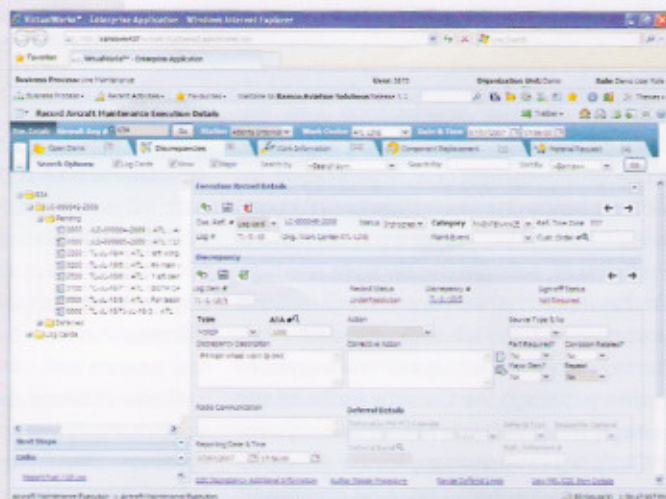
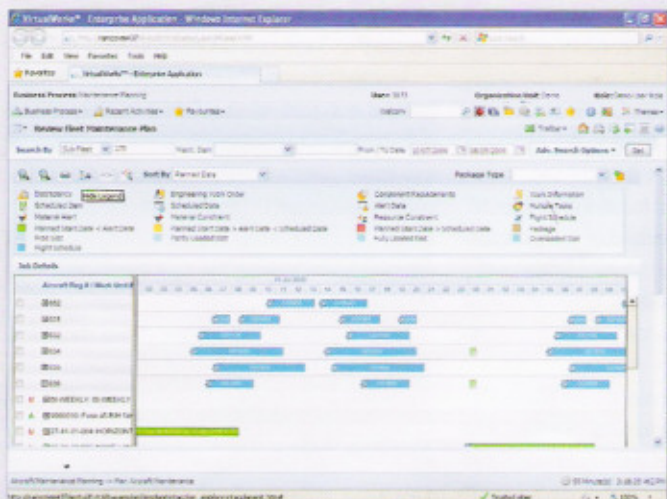
After twenty years, fully half of Swiss AviationSoftware's AMOS staff still work on research and development to keep the product at the cutting edge. But it is success and experience with many customers that really breeds highly adaptable maintenance software. Overall, there are nearly 80 AMOS users now, an extremely wide base for keeping the software advanced.

Moreover, AMOS began by serving a regional airline, Crossair, and its customers now include Régional, Eurowings, Alitalia Express, Aer Arann,

CityJet and Finncomm Airlines. As regards LFAs, Ryanair began using AMOS in 1997 and taught developers the unique needs of this segment. Now easyJet, AirAsia, Germanwings, Gol and India's IndiGo are among the LFAs using the product. In spring 2009, Etihad Airways became the first AMOS user in the Middle East. Norwegian Air Shuttle began implementing it in September and expects to go live in April 2010.

Ramco Systems recently released version 5.1 of its comprehensive aircraft maintenance software. The firm now has 28 aviation customers, including airlines such as Comair, Pinnacle, AeroMéxico Connect and TACA Regional as well as maintenance shops. Product director John Stone notes that shops increasingly provide software as part of outsourcing services.

Ramco is "an MRO enterprise system, an end-to-end suite", Stone stresses. Unlike some applications, it includes modification management, aircraft planning, human resources, finance and accounting. And unlike common enterprise resource planning (ERP) systems, Ramco's aviation suite was built from the ground up for aircraft. Stone says Ramco especially suits newly consolidated airlines that must



Screenshots from Ramco Systems' VirtualWorks application.

integrate different legacy systems. "We do that very well," he states. This integration method was used by TACA Regional, and is under way at Pinnacle and Republic Airways.

Stone acknowledges that carriers are cautious on software spending now, mostly to conserve cash. "We have several deals unfinalised – they are waiting to see if they weather the tough storm – but we think the delay is a matter of days, weeks or months, not years." Most carriers now look for point solutions, applications that address specific maintenance challenges, or only prepare for the more comprehensive enterprise approach. But Ramco can also exploit, rather than replace, legacy systems, extending capabilities where necessary. "Using our VirtualWorks, they can get up [to speed] very quickly," Stone says.

Implementation of Ramco's full, enterprise-wide system takes from six months to several years. "It is always underestimated," Stone says. "It is not a surprise that the time required is underestimated, but a surprise that they are surprised." Delays tend to stem from overly optimistic planning.

#### ■ DESIGNING AROUND USERS

Ramco 5.1 is much more user-friendly than previous incarnations and is 100% browser-based. It has been redesigned around users, rather than paper documents. "It is based on user journeys and stories – for example, how mechanics do their jobs [at a location] where they need output and can do input." There is a single screen on which mechanics can both enter and retrieve all data. "If he gets everything

he needs on one screen, he will use it more and give us data we need."

Another 5.1 improvement is a single screen for maintenance planners, with 'waterfalls' showing all critical dependent factors, which can replace the multiple screens common in planning departments. Stone says current applications are not very satisfactory for engineering. "We want ours to be very robust and yet very simple." And he says Ramco's line maintenance module is sufficiently robust that an LFA can use it for C checks, as one customer now does.

Other robust maintenance systems continue to evolve. Mxi Technologies recently released version 6.9 of its Maintenix software for commercial use. The new incarnation supports long-range planning with very detailed data. →

Product manager Evan Butler-Jones says Mxi continues to develop specific applications for airlines in all regions. For example, Qantas is the third Mxi customer to go paperless with e-signatures. Maintenix has also been enhanced to include advanced planning tools and Spec 2000 integration, allowing customers to communicate electronically with suppliers.

#### ■ BETTER COSTS AND COMPLIANCE

Both airlines and manufacturers are determined to reduce cost and downtime while improving compliance management, Butler-Jones says. Financial pressure means that carriers are "getting back to basics", focussing on warranty claims, improved compliance and raising labour productivity. Mxi has put a lot of recent emphasis on online workflow, alerting, automating repetitive activities and integrating across enterprises. Moreover, operators increasingly want to integrate with their vendors as well, and Butler-Jones thinks that gives Mxi some advantages.

AeroSoft Systems offers two basic products, PMI and DigiMAINT, and is introducing a third, DigiDOC. Sales director Amir Bhatti says his

company plans to market all three more aggressively outside its traditional North American and European markets, seeking customers in the Commonwealth of Independent States (CIS), the Middle East, Africa and Asia-Pacific.

DigiMAINT is a web-based system designed to handle core maintenance functions affordably, generally for smaller airlines. PMI is the more complete system, adding engineering, production control, inventory, receiving, links with regulatory agencies and some human resources functions. It connects with carrier financial systems and can be either installed or hosted by AeroSoft. DigiDOC will handle digital document content from all major manufacturers. It will also translate ACARS messages into specific task cards for repairs. About 30 operators now use either DigiMAINT or PMI, including Mesa, Mesaba, Air Wisconsin, LIAT, Amerijet and Chautauqua.

Pentagon 2000 is a full-featured application, "purpose-built for aviation", according to sales director Peter Waugh. The 23-year-old software has been used by major carriers such as All Nippon Airways and UPS, as well as by smaller

firms such as Dynamic Aviation and the Phoenix Air Group.

Pentagon has been Windows-based for a decade and is designed for installation on customer servers, which can provide access over the web to remote users. The vendor is now adding wireless access via smart phones and other personal devices. "Users will be able to place orders, check inventory status and create work orders wherever they are," Waugh stresses.

"It's a little bit of everything," he summarises, describing a package that covers virtually all aspects of aircraft overhaul, repair, purchases and inventory management. "It is modular, so you can do just buying and selling, or do heavy maintenance and flight operations." Pentagon has concentrated chiefly on the North American market, but also has customers in the UK, France, Israel and Indonesia.

#### ■ NEW ENTRANTS

More vendors continue to enter this market. Cambridge Online Systems has just launched its NAVAIR software with Malta's Medavia, which operates regional aeroplanes, charters aircraft and does maintenance on its own and other aeroplanes. Cambridge Online is now offering NAVAIR to mid-market airlines and maintenance shops with anywhere from five to several hundred users.

NAVAIR combines Microsoft Dynamics' NAV ERP system with aviation maintenance functions developed by Cambridge Online during 26 years of working for major carriers such as Continental Airlines and FedEx. "We integrated aviation maintenance functions such as technical records, engineering and planning into NAV's standard purchasing, financial ledgers, stock and job control modules, providing a software solution for the whole business," sales manager Mark Thompson explains. "It is all on a standard Microsoft platform, familiar and easy to use."

Thompson argues that NAVAIR will provide mid-sized aviation firms with a very economic integration of ERP and maintenance functions. Cambridge Online is continuing to develop the product's functionality, with significant enhancements to the planning tools due to be made available soon. ■

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