Data analysis to monitor, analyse, control and improve sales through new channels like the internet is extremely difficult, and many airlines struggle to get a grip on the actual revenue generated by each departing flight. New technology is emerging to solve this problem for senior management.

Technology to exploit new sales channels

The first step in taking advantage of new sales channels is to understand their behaviour so as to formulate a technology strategy that will maximise their effectiveness. Airline sales channels are developing and evolving apace. With the growing access to, global coverage and increasing bandwidth of the internet, coupled with increases in home computing power, the internet is driving forward channel development for airlines *(see The future of web-based applications, Aircraft Commerce, June/July 2006, page 43).*

While this is an opportunity for airline managers to increase revenue, it is also increasingly complex to monitor and control, especially for medium and small airlines. Airlines will typically have a mix of sales including direct on-line bookings, call centres, airline ticket offices and traditional travel agents through the global distribution system (GDS). They may also have to manage interline tickets and codeshare sales. Marketing and sales will want to keep track of frequent flyers' behaviour, as well as sales by region, country and city. They will then want to cross-match these with the sales channel mix, to determine the most effective marketing and advertising effort to boost revenue. But airline managers face a mix of unfriendly and sometimes unhelpful, separate systems from which to draw key performance indicators (KPIs) for the current and future revenue positions. Fortunately, help is at hand.

Quicker information

Airlines have evolved around some big centralised distribution tools for their sales. These have served the industry well for many years, but lead to challenges in terms of data. In reality, revenue data tends to reside in separate 'data silos' which makes it difficult, if not impossible, to present management information in a timely fashion.

Spotting this gap in the technology market, Planitas Airline Systems was formed in 2000. Planitas is an Irish technology company specialising in management information systems (MIS) and internet booking engines (IBE) products for the airline industry. The Planitas MIS extracts booking, ticketing and departure control information from traditional reservations host systems in real time. It is stored in a centralised relational database, which may then be accessed securely through a suite of powerful web-enabled applications.

Planitas claims to have a management team with a blend of technical and airline management skills to guide the airline through the specification and implementation phases of its technology and to assist in internal change-management procedures. Planitas is currently independent from any other provider to the airline or travel industry, so it can work with any host system provider such as Sabre, Amadeus, SITA or Lufthansa Systems, or indeed some of the smaller-tier reservations system providers.

Planitas can also work with airlines that have their own host system and are not hosted on multi-host systems such as Sabre. "Our core technical team has a collective 100 years' experience in airline IT with companies such as Aer Lingus, British Airways, Qantas, KLM, Galileo, Amadeus and Datalex," comments Ken Jones, director of sales and marketing at Planitas. "Our senior engineers all have extensive knowledge of the legacy host systems, having worked in senior technical roles for airlines and GDSs. They have since transferred their skills and knowledge to developing e-Business solutions for airlines using the latest technologies. We have experience in the development of web-based products and solutions for the airline and travel industry. This includes MIS, IBE and frequent flyer programmes (FFP). Each of these systems utilises the latest relational database and open-systems technologies including C++, DHTML, XML, Java, JavaScript, Oracle and Tomcat."

The technology expertise, and the knowledge and experience of the variety of systems that facilitate the current sales channels for airlines, are the key advantages offered by the company. The Planitas MIS is a new software suite which uses leading edge technology to extract data from host systems in real time, then formulates and makes available this data for real-time use securely via the internet.

It is, first and foremost, a tool that provides time-sensitive information to airline managers. There are a large number of airlines where the revenue side of the business does not have the same level of real-time access to vital management information as the expense side does. Cost data, such as maintenance, fuel, crew, ground handling and navigation charges are easier to collect. With a few notable exceptions, the profitability of airlines is wafer thin or non-existent, and their stock (the aircraft seat departure) is very perishable.

The MIS is designed to overcome this lack of vital real-time management information relating to past, current and future revenue, as well as sales and marketing data. Planitas claims that the power of the MIS comes through having data from the airlines' host system mirrored in real time to a centralised relational database, and a powerful set of web-enabled reports and 'alerts' to present valuable data to management in a secure and timely manner.

This allows decisions affecting the

Planitas's management information system (MIS) is an easy-to-use fully hosted tool to help executives understand the up-to-date revenue position of their airline. It wraps around the core reservation host systems without the need to perform risky modifications to these business-critical systems.

business to be based on the most up-to-date information, benefiting all aspects of the airline's operation, including revenue and finance, sales and marketing, commercial planning and customer service interfacing.

The speed and ability to report by various parameters and to drill down to low-level data are key features that Planitas says it can deliver. It also believes that its solution is unique. "No other system exists that provides an airline's historical, current and future booking information, and in one place," claims Jones. "The MIS is a simple, web-based solution that provides airlines with critical decision-supportive data in real time."

Technology in action

The MIS uses new technology to extract data from legacy host systems in real time, then formulates and makes available this data for real-time use via the internet. It is a hosted system, using the latest technology to integrate remotely and securely into the airline's legacy systems. "It is very dangerous to mess around with your core host reservations system," continues Jones. "So the data extraction process is achieved by what we call 'wrapping the host'. The host is a repository for all the relevant information on ticket sales and cashflow, and this data cannot be accessed at the moment in a timely businesslike fashion. Realising that the legacy host systems have stood the test of time doing the job they were devised for in a satisfactory manner, it seemed that the obvious course was to devise a methodology that used the existing host as a platform and to seek to deliver management information based solely on this source. The Planitas product does this, and dispenses forever with the need to engage in any costly software development of MIS applications involving batch processes and limited data on the legacy platforms, since these can be easily accommodated within the Planitas suite."

The benefits can be widespread and, in the extreme, life-saving for airlines. For example, the sales and marketing department can now monitor and manage inventory, sales and outlets with more accuracy and react more quickly to the changing sales picture. "One of the first changes an airline will see is better control of seat stock through monitoring of all sales channels," says Jones. "These are the web, airline offices, call centre and travel agents. Agencies can perform a real-time comparison of sales over disparate channels, such as travel agents' distribution: who is selling, what routes, what classes and fares they are selling, when they are selling, and the actual revenues generated. At a detailed level, the sales team can review, in real time, the performance of individual flights, routes and sales channels in terms of bookings and revenues, enabling identification of market changes. Good examples are the performance of a new route or the impact of a new competitor on a route. The MIS can also provide vital information about the launch of a new sales or media campaign or a low uptake of a group allocation."

Revenue managers also benefit. The MIS gives them the ability to look at up-to-date revenue figures for all flights, routes, individual flights for future sales, showing sales liability, and revenues on flown flights. In addition, they can review revenue for all channels and for individual travel agents, and predict and compare revenue for different periods and profitability per flight. The MIS also acts as an easy-to-use tool for revenue accounts staff to retrieve passenger name records (PNRs) and associated virtual coupon records (VCRs) to check data.

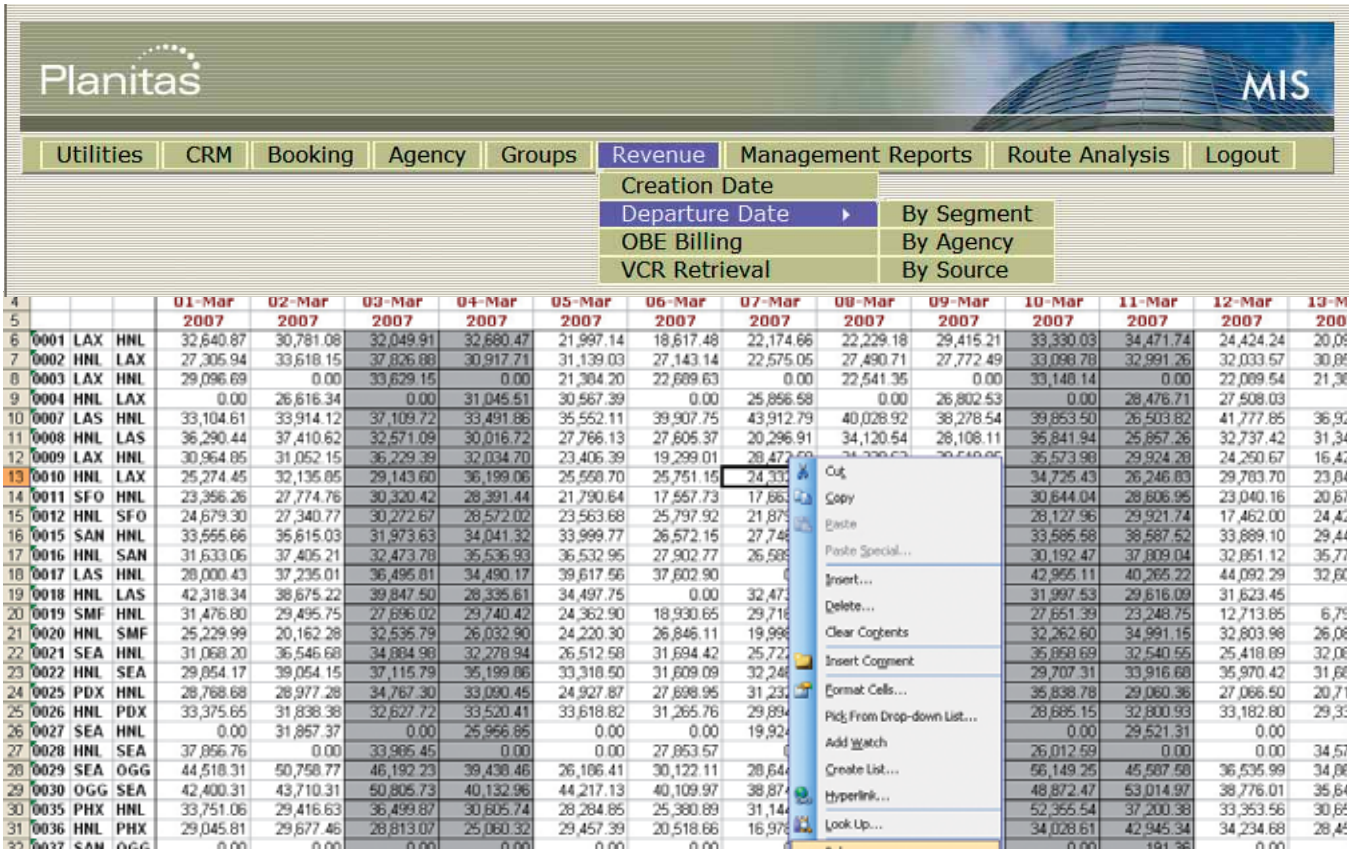
The main users of the system will undoubtedly be airline management. "The Planitas system is designed to give senior management a clear and concise overview of key information through a summary report. This includes departure date revenue by route, together with average yield. The summary report provides a detailed breakdown for each route flown by the airline. This detail includes the revenue booked for each route, based on the creation date of the booking, together with average yield for that route. The report also contains details of the top performing travel agents for the reporting period; alongside a comparison of the performance of the airline's own sales channels, call centres and sales offices. The MIS also generates a summary of sales by each type of channel. These are sales from the GDS, the web, its own sales offices and call centres. There is also a route summary that identifies the best performing routes defined by number of bookings. This is an analysis of what flights are being booked. Details are also available of departed flights, with booked versus flown details and classes booked. The system will also provide valuable planning and marketing information through the analysis of originating traffic for hub airports, together with staff planning data through identification of busy and slack periods for sales offices and call centres.

Marketing is not left out. The MIS is claimed to have improved productivity and customer service. It provides both front-line and back-office staff with easy and immediate access to all PNR and VCR information, such as baggage tracking, customer loyalty and revenue accounts. The database is large and will include historical and active PNRs and VCRs.

Multiple building blocks

The MIS comprises a number of elements, all built on an open, scalable, extensible Java-based architecture designed for growth, which can be deployed rapidly. The first and most important element is a complete PNR and VCR capture in real time from the host reservation system. The Planitas solution takes all active PNRs and VCRs from the host in real time and saves them in the MIS database, so that it mirrors the airline booking activity on the host. This data is never purged, so the MIS contains the airline's complete historical, current and future booking information.

As PNRs are amended, the changes are immediately reflected in the centralised relational database. In addition, the MIS solution is capable of



Planitas uses familiar user interfaces, but embeds customised drill-down capabilities. In the revenue-by-departure report the passenger name can be displayed from the summary cell.

processing all historical PNRs that have been purged from the host and stored off-line. The PNR data is parsed and then stored in the MIS relational database. This key feature has allowed the development of a sophisticated presentation layer in the MIS. Instead of presenting raw data to the user, vital management information is presented in a series of detailed, user-friendly reports that require minimal training to use them.

The next element of the solution is access to the data. The Planitas system opens a secure, real-time window to all data in the MIS database via the web with normal security access enabled. Once access is granted, the MIS user interface is a secure and web-enabled environment. It is user-friendly and intuitive, allowing complex management reports to be generated with a few clicks of a mouse. All input screens feature intelligent calendars which interlock for start- and end-date selection, and have intelligent 'drop-down' lists for routes or airports, for example. Planitas recognises that the MIS stores a lot of commercially sensitive information, particularly where the revenue modules are deployed. Mechanisms that limit the scope of data available to each user are accordingly built into the product.

Data presentation for the end user is important. The MIS supports multiple output formats for the reports produced including HTML, Excel, XML, and graphical within Excel. Reports include a 'drill-down' capability, which allows reports to be generated by selecting data of interest in a current report as the basis for the new report, removing the need to navigate back to the input screens every time. A novel idea is the alerts function, which is where a predefined event will trigger a predefined action. For example, the trigger for an alert may be where a blacklisted credit card is used to make a booking or a booking is being made for a VIP. The resulting alert may involve the generation of an e-mail, SMS text or message to another system, or all three. Planitas is developing more sophisticated usages of the alerts function involving, for example, flight build-up. This is where bookings on a flight do not reach targets at various points in time prior to flight departure. The alerts feature also has implications for assisting security and passenger screening by linking into security databases.

What customers think

Eastern Airways is a UK regional carrier that was awarded European Regions Airline Association's (ERA) prestigious Gold Airline of the Year Award last year. Named as Europe's number one regional airline 2006/7 ahead of 65 other airline members at an awards ceremony at the ERA in Barcelona, the independent airline, which celebrates its tenth anniversary this year, continues to launch and develop niche routes in a heavily competitive UK market. It currently operates over 800 flights a week across 26 routes. "The MIS is used in numerous areas throughout Eastern," says the airline's director of strategy. "While some of the data is available from other sources, the speed and ability to summarise by various parameters makes it a more user-friendly solution. Pretty much all parts of the MIS are used in our overall commercial process. The creation date reports allow us to track booking activity on our services on a day-by-day, week-on-week or month-on-month basis. This enables us to quickly assess swings and also daily booking patterns. More recently, as we received a competitor on a key route, we have been able to review the downturn in bookings by class (identifying whether leisure or business traffic was declining), isolate the type of passenger being lost (greater than three-day stays) and draw conclusions on the probable overall impact on our network. No other system available to us allows us such access to daily booking data. This report is also of value in assessing the impact of media campaigns. For example, we ran radio advertising in Inverness in June and were immediately able to measure the resulting upswing in sales, which allowed us to know if the investment in media spend was justified.

"Of major value in this report is the ability to drill down into the passenger name list (PNL) and PNR if required, quickly answering questions such as

Data on current bookings by flight can quickly be displayed to show the build-up of sales before departure. This information is usually the type of data imported into yield management systems to enable automatic adjustment to fares and inventory by class.

whether the increase in bookings is due to a large group being booked, for example. It also allows us to assess the quality at the booking class level of bookings received. Although we do not do it today, this report can also be adapted to provide a revenue value for bookings received," says Eastern's director.

"The booking source report provides a summary of bookings by source of sale and sub-totalled by channel. This, at a glance, shows us how our sales channels perform and the success of our web sales," continues Eastern's director. "It also allows us, by route, to identify the balance of sales on each and thereby understand whether it is best to target web or direct sales campaigns. For example, on certain routes we already get 70% of sales via the web, while on others the figure is as low as 15% so we should target the 15% route for maximum gain. This also allows us to assess how web-only campaigns perform, specifically their impact on agency or call centre sales, which will be vital in assessing any reaction to our reduction in commissions later this year. The ability to judge booking patterns also assists us in planning the staffing of our call centre."

The departure date report has significant uses, both for planning and historic review. The report allows airlines to compare bookings each month, relating them to a year-on-year performance. The departure date report also enables a new route to be closely monitored on a minute-by-minute basis, drilling down into the individual PNRs and booking class records. The report is also useful for analysing route history, or determining the seasonality of booking patterns, or day of week booking behaviour. The same report is also useful in anticipating future bookings when considering a schedule change. The daily tracking report enables monitoring of market changes on a specific route or flight, and also in the reassessment of the need for aircraft equipment change on a new route. The list of uses is endless, and it eliminates the need to use alternative sources, none of which can match the ease of the MIS.

"The system also helps in tracking travel agency activity, although this module needs additional functionality to bring it into line with others. Nonetheless, we can list bookings by International Air Transport Association (IATA) number, by route and so on. This also has value for our sales function," says Eastern's director.

Financial management

"We, Eastern Airways, use Planitas in finance to estimate our forward sales values, factoring the bookings by class by the average yield to provide a monthly future sales liability. The sales liability is the value of sales made for future travel so, while it is in our account, it has not yet been 'earned' by flying the passenger. The alternative to this would be a download from Sabre and a Visual Basic application to calculate the values. This is cumbersome and requires some computer expertise, rather than the simple way we can achieve the same result via the MIS.

"The MIS can also be used to provide us with a revenue forecast by day, using a similar method as the future liability process. When a flight pack is being processed, the Revenue Accounts agent may notice a passenger on the manifest without a coupon or ticketing details. Instead of going into Sabre, where the PNR by this stage will probably have been purged, or using the past-date inquiry (PDI) CD storage, which is not necessarily available for more recent flights as it is two weeks in arrears, we are able to use the customer relationship management (CRM) feature in the MIS to search by name, PNR reference or flight number to locate the PNR and ticketing details if present. The speed of this process has played a major role in allowing us to totally streamline our Revenue Accounts procedures and get our processing fully up to date. We also use the CRM in Revenue for any follow-up queries from travel agencies regarding payment for bookings.

"For customer relationships, having the MIS allows us to access PNRs relevant to a customer claim or comment, which have been purged from Sabre. The Sabre PDI product does not lend itself to being distributed over a local area network (LAN), so Customer Relations do not even have access to the PDI CDs. When processing a customer comment or complaint, we at Eastern Airways, also use the MIS to look at that customer's booking history, such as frequency of travel, to establish their total value to us. This would not be possible without an FFP or any other tracking mechanism. Even with an FFP, we would be dependent on the customer being a member and so on, whereas the CRM module allows us to track by name.

"In comparison to products available from other vendors, the MIS gives a simple and web-based solution to decision support data, which would otherwise require multiple actions to acquire. The Sabre PDI process delivers a CD each fortnight which must be copied if it is to be used in multiple locations. Even then, the correct CD must be used, because the data cannot be amalgamated into a single directory. The CRM module in the MIS holds all data, irrespective of booking or flight date, so it is far superior.

"The PNR data warehouse facility provided by Sabre depends on us having our own end-application. This data is provided raw with no supporting application, so in the absence of one this data just sits on our server. More importantly, the Sabre data warehouse does not provide the level of data that is provided by the MIS. Again, the CRM PNR database serves our needs," says Eastern's director.

"The Sabre revenue management system we use is based on a Citrix system with Crystal Reports, so it is limited in formats and output options (it cannot, for example, report 'across' data fields) and takes an age to download into Excel. Its only benefit over the MIS is the ability to report on 'reading day' to provide a flight booking build-up report. The

Amadeus Web Services was adopted by Austrian Airlines to allow it to benefit from secure and reliable customised travel booking applications, while freeing it from the constraints of existing legacy systems. Using the latest service-oriented architecture (SOA) approach means that is has a single, secure point of access to connect all Amadeus content without any direct interface with existing legacy systems.

required data is in the MIS, so this is a feasible report which Planitas is currently developing.

"Nothing in the Sabre stable of reporting allows us to report on financials within bookings, so the MIS with VCR data will be unique. The future potential with Planitas is pretty limitless," says Eastern's director. "We already use their IBE, which now includes an FFP. We also see a role for the MIS in our FFP, post-flight and revenue accounting matching processes going forward."

Planitas has been found to be suitable for a large range of airlines. It is currently in use by airlines with passenger numbers ranging from half a million per year to 10 million. Trials are under way in Europe and in the US with airlines with passenger traffic close to 20 million.

New channels

Control and visibility of channel performance, using tools like the MIS, is one thing. Exploiting and opening new ones is something else. While Planitas also offers its own IBE to bolt onto core legacy reservations systems, there are a number of emerging technologies that are worthy of investigation. One of these comes from the global provider Amadeus.

A great example of this new technology is Austrian Airlines' use of the new Amadeus Web Services suite. This technology provides Austrian Airlines with on-line access to the complete range of Amadeus applications that enables new sales channels to be explored and exploited. "Amadeus Web Services was adopted by Austrian to allow it to quickly benefit from state-of-the-art, secure and reliable customised travel booking applications, while freeing them from the constraints of existing legacy systems," says Claude Demeestere, director and head of product management at Amadeus. "Providing Austrian with web-based systems means that it can adopt the solutions it wants, when it wants them."

Using the latest service-oriented architecture (SOA) approach means that Austrian Airlines has a single, secure point of access to connect all Amadeus content without any direct interface with existing legacy systems. SOA is where distributed applications comprise granular re-usable services with well-defined, published and standards-compliant interfaces. This is the big new future direction for software development. Amadeus Web Services is based on open standards, is wholly language- and platform-neutral, and fully Web 2.0 compliant. "The Amadeus solution makes it quick and easy to replace old applications, and Austrian Airlines will enjoy complete flexibility and freedom to exploit the best available technology to open new sales channels," claims Demeestere.

"We are fully committed to staying one step ahead in what is an increasingly competitive market," says Konstantin Kasapis, manager of interactive sales at Austrian Airlines. "We have adopted Amadeus Web Services because of the need to constantly change, customise and update. It leaves us to focus on how to take advantage of Web 2.0 and other innovations in sales channel development."

Amadeus continues to grow. In 2006, Amadeus migrated a further four airlines to Amadeus Altéa Customer Management Solution, taking the total number of airlines using Amadeus' next-generation customer management technology to 29. It also expanded the portfolio of travel agency technology with the acquisition of TravelTainment, a German company which develops sophisticated pricing, search and dynamic packaging technology for on-line leisure travel companies selling direct to consumers. Amadeus's on-line booking solutions for airlines enjoyed another successful year. In 2006 10 new airlines including Mexicana, China Eastern and Etihad Airways, adopted Amadeus e-Travel solutions to power their websites. This brings the total number of Amadeus e-Travel-powered airlines to 74. Last year, Amadeus e-Travel won the 'World's Leading Internet Booking Engine Technology Provider' award for the third year in a row. Traditional sales channels are also being enhanced. Amadeus started 2007 by announcing the launch of Amadeus Call Centre Solution, which is a next-generation technology to cut call-centre costs by 30%. It does this by operating a fully automated, truly multinational call centre.

Summary

Airline management faces the almost universal challenge of monitoring and managing sales channel performance in real time. Older legacy systems, which are perfect for distribution and inventory management, present difficulties in terms of data extraction and fusion to provide a clear picture. Tinkering with these core systems can also be dangerous from a revenue standpoint. New solutions are emerging to address this challenge, however. Airline executives can finally have an accurate and timely picture of revenue to inform their decisions using these new systems. Alongside these new technologies for monitoring and control, come new SOA technologies to make new sales channel development quick and easy. Having both technologies provides new opportunities for airline executives to adapt and change their business strategies to stay alive and grow in the competitive air travel business. AC