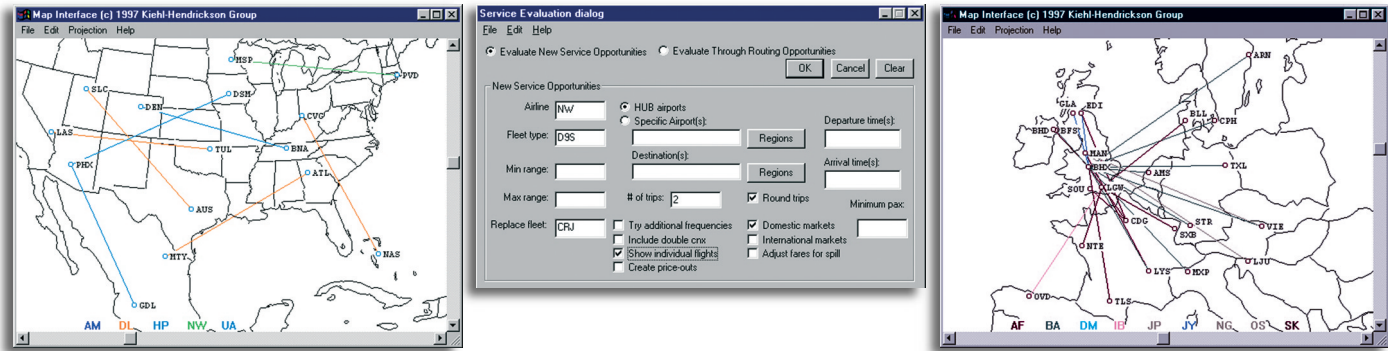


## FEATURE *Network planning*



# Keeping the network UNTANGLED

Planning an airline's route network used to be relatively simple. Even a few years ago, when regionals really began to make their mark, an airline could pick a city pair which obviously needed a direct service, apply for a licence to fly the route and, once obtained, get on with the job.

No longer though. Nowadays almost every airline has some sort of marketing agreement with another, whether it be complete alliance, subsidiary operator, franchisee, codesharing or simply timing flights to enable feed.

Eastern Airways in the UK is a good example. While generally ploughing its own furrow from Norwich and Humberside to other parts of the UK, the carrier has just introduced services from Inverness and Dundee to Manchester which are timed to allow passengers to connect with a number of bmi British Midland services. At the other end of the scale are carriers such as the Delta Connection airlines, Comair and Atlantic Southeast Airlines, which by dint of being wholly-owned subsidiaries of Delta are effectively members of the Skyteam alliance and must therefore plan accordingly.

To think about taking on a new route these days involves so much more – but there is software available from companies such as Lufthansa Systems and Sabre, among others, to make the process easier.

### FROM COMPLIMENTARY TO COMPLEMENTARY

As evidenced by the company's presence at the RAA Convention in Nashville this year, Kiehl Hendrickson Group (KHG) has regarded regional airlines as the ideal users of its PlanNET network planning solution. Its success in delivering the solution to airlines brought more than complimentary glances from one of the field's leading players, Sabre.

The upshot has been the acquisition of KHG by Sabre at the beginning of November 2002. Jim Barlow, SVP airline solutions, who has specific responsibility over pricing and yield management and planning and scheduling product management, presents the reasoning behind the purchase. "In our own portfolio we had the Sabre flight scheduling solution," he explains. "This consists of the AirFlite core schedule management tool, the Airline Profitability Model (APM) schedule forecasting tool, the O&D Fleet Assignment Model schedule optimisation tool and the SlotManager slot management tool. Anyway, this scheduling solution was originally developed for the large/major carriers and indeed nine of the world's top 10 carriers, and 16 of the top 25, use some part of the AirFlite suite in their schedule and network development process.

"For the small and medium-sized airlines, we offered PC AirFlite and this has been successful with carriers such as SkyWest, Comair, ACA, Horizon and TransStates, among others.

"With the introduction of PlanNET to the Sabre family, I believe we can offer regional airlines a complete solution – core schedule management capabilities with PC AirFlite along with profitability forecasting capabilities of PlanNET. It all leads towards realising our vision for the small/medium airline segment, which is to provide simple, easy-to-use, hosted solutions that have minimal installation and support requirements."

Recognising that customers of a smaller supplier such as KHG might be a bit nervous about it being swallowed by a global company, Barlow is quick to point out that bringing KHG into the fold has been relatively painless. And for that there is a simple reason.

"The strengths of the Kiehl Hendrickson Group and Sabre are complementary," Barlow declares. "The

*Regional airline route networks have numerous factors to take into account, so what is the IT community doing to solve the problems? Bernie Baldwin reports.*

## FEATURE *Network planning*

*“On the software side, more or less every airline gets the same. Things begin to differ on the data. That differs because they’re all in different parts of the world.”*

Dirk John,  
Lufthansa Systems

Minneapolis office [of KHG] has been kept intact with little change in day-to-day operations. So PlanNET customers will see the same personal touch while benefiting from the resources of a much larger company. In fact, the PlanNET team is already investigating using Sabre’s position as a data provider and processor to provide even more value for regional carriers.”

### BUILDING THE SOLUTIONS

Although most systems are fine tuned for each customer, a great deal of research gets carried out so as to decide which parameters should be common to most users’ systems. Both KHG’s PlanNET and NetLine/Plan from Lufthansa Systems (LSY) underwent this process.

“On the software side, more or less every airline gets the same with NetLine/Plan,” says Dirk John, VP airline network planning and control at LSY. “Things really begin to differ on the data they receive. The O&D data, passenger preference data, schedules (which is not as easy as might be imagined), everyone gets something different because they’re in different parts of the world.”

NetLine/Plan has developed since its introduction in 1993 and now has over nine years of experience in “data calibration or let’s say number crunching”, according to John. “The key to the whole operation is having high quality data,” he confirms, “otherwise your schedule will never really be truly optimised.”

KHG has used more than ten years of historical revenue and traffic flows from a variety of databases to identify statistically consistent parameters within the airline world. “As we all know, our industry is constantly changing,” comments KHG co-founder Steve Hendrickson, “so

we continually study and analyse this data to ensure the highest level of accuracy for our clientele. If new or different trends emerge that are statistically valid, we incorporate these into the PlanNET forecasting model.”

Echoing Dirk John’s statement, Hendrickson adds that in addition to US DOT reporting of domestic US traffic, KHG also incorporates travel agency data, MIDT

(reservation system data) and, for a given client, their own internal data to provide the most accurate forecasting tool possible.

“Most models will employ a basic set of QSI factors that create relative values for services: fleet type (jet or turboprop, number of seats), service type (non-stop, through-flight, single connection, interline connection, etc) and time of day,” Hendrickson continues. “PlanNET layers in other unique parameters, adjusting for specific characteristics such as carrier city presence. Our model also incorporates a carrier’s historical performance in a given market into the attractiveness-scoring algorithm. Thus, if a carrier has performed better than expected

historically in a given O&D, scores on its itineraries will be higher (and, consequently, its predicted market share). The main determinant for a parameter’s inclusion is whether it consistently improves the forecast accuracy of the model, as this is the core competency of PlanNET.”

The necessity for MIDT data from the CRSs, coupon data for individual airlines and historical data of passengers’ decisions is echoed by John. “They all provide a very important base for the calibration of the model,” he comments. “Beyond that there is the need for data on traffic demand, based on travel statistics and macro-economic data.”

Keeping research/record-keeping on traffic statistics and demand up to date is no mean feat. “As I mentioned, at KHG we are continuously collecting and analysing all data available to us,” Hendrickson says. “These sources can be O&D or onboard related; they are for both mainline carriers and regional airlines. The combining and cross-checking of these data sources fills gaps and reduces reporting errors that any one source may have. And when there are markets where a subset of carriers offer service but are not recorded in the historical demand, we make a reasonable extrapolation of the market size from the relative shares of the carriers for whom we do have traffic.”

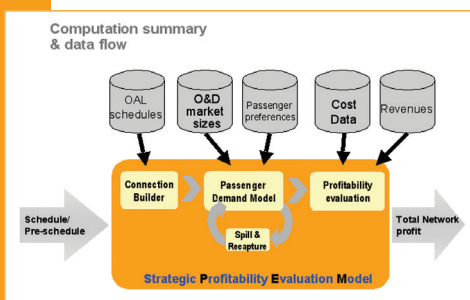
### DEMAND AND MARKET SHARE

In promotional literature and on the KHG website, the company claims that PlanNET will “quickly and accurately forecast the demand and market shares for city pairs flowing over those segments”. Building the database to enable such forecasting isn’t easy.

“Well, PlanNET builds a list of connecting itineraries from a set of non-stop flight segments,” Hendrickson explains. “It determines the validity or invalidity of these itineraries using factors such as: minimum connection times, taken from an industry-standard table; ‘circuitry’ – how much the distance flown over the connection exceeds the non-stop distance; overlap filtering – does a connecting itinerary overlap with a more desirable non-stop flight; and so on. Valid itineraries are rated by the factors that drive passengers to select certain routings. These include the time of day, the size of the aircraft and the fares offered by the carrier in question, along with others.

“From this point, PlanNET determines all the connecting itineraries flying over one segment, and values each itinerary that serves an O&D city pair. Using these relative valuations we develop market shares,” confirms Hendrickson.

In delivering its NetLine/Plan product, LSY provides several models to enable customers to examine potential market share. “In some cases they do all the data processing for themselves, sometimes we do it for the client, and there are some occasions when we do the early work



and the process is then finished off by the airline," John remarks.

"Getting the market share forecasts depends, of course, on the time period involved," he continues. "I mentioned that data quality is all important. Well, that quality gets worse the further out into the future you want to look. Sometimes, of course, it is necessary for fleet planning purposes to look four to five years ahead."

## HOSTED SERVICES

As with many software applications, the need for capital outlay on a network planning system is being eradicated with the introduction of the solutions on an application service provider (ASP) basis. "All of the NetLine and ProfitLine (revenue management system) products are offered as ASP models," John remarks, "but then we've been a data centre for 35 years so it's nothing new for us to have a hosting service."

John admits that current usage of LSY solutions sees more adoption of the ASP model in operations control functions such as crew management and rostering than in network planning and revenue management, which have been tending to stick to licensed software running in-house. "We have customers who simply don't want to own the IT they use on site. They obviously are pleased with the introduction of ASP models. At the other end of the scale though are customers who don't want to let their IT out of their hands. Overall though, we're beginning to see a change occurring. The migration process to ASP versions is under way," he confirms.

KHG, likewise, offers PlanNET through an ASP-hosting method and most of its recent customers have chosen to use this strategy. "Our clients who have adopted this strategy find it advantageous because the data administration tasks are taken out of their hands," Hendrickson notes.

"We also find it beneficial from a customer support perspective. For example, our personnel can access a particular client's server, lending clarity to the usage and to any troubleshooting questions that may arise."

## MEETING REQUIREMENTS AND MORE

No matter how much the teams at KHG and LSY work to introduce useful functions, there is always one place where they can be sure to find acceptable ideas – the customer. After listening to those ideas, each has to be inventive enough to offer something which will prove to be a product differentiator.

"Our clients are most interested in a tool that is easy to use and produces results quickly, but not at the expense of accuracy and integrity," reports Hendrickson. "We offer a series of user-friendly GUIs (Graphical User Interfaces). From this foundation, the system produces the 'explainable results' that users seek. They can then

'tweak' these results as they see fit. Of course, sometimes our clients want customisation – in methodologies or outputs – and we are happy to work with them on that."

Dirk John believes that speed and interactivity are key elements for his customers. "Planning systems sometimes have reaction times greater than an hour," he notes. "Ours is very fast in tackling planning scenarios, taking maybe one to two minutes."

"What we also think we are good at is working with the schedulers to provide plans which are completely understandable," he adds. "For example, if your airline operated three flights a day from London to Milan and you wanted to reschedule the first flight from 0800 to 0830, the system would re-scale every parameter and produce a result telling you how much extra or less revenue you could expect to get from the slot shift. But – and this is extremely important – it will also tell you why the revenue would be better or worse."

"The other major requirement we find, and it's particularly appropriate for regional airlines, is that most smaller customers are looking for an integrated suite. These carriers have less personnel and want the network planning, revenue management, crew scheduling and on-the-day-operations systems to be within one suite."

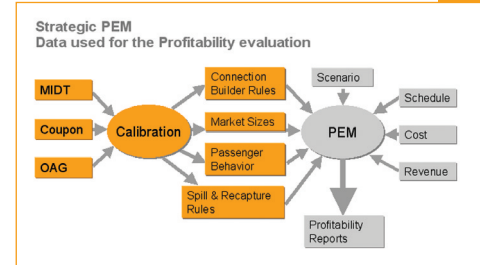
## THE AIRLINE'S VIEW

"Speed is definitely up there at the top of the requirements list," declares Pat Zachwieja, VP marketing and planning with Horizon Air. "A lot of the functions used to be performed in a piecemeal way, so a complete route analysis could take two to three days. Now it can be done in two to three hours."

Zachwieja adds that Horizon, a KHG customer, is looking to add to the opportunities to get benefits from its system. "Having confidence in the numbers and the calibration is vital, but post-11 September, trying to base calculations on historical trends is very difficult. So everything tends to be done with a conservative approach."

Where Zachwieja sees tangible benefits is an improved forecasting consistency from analyst to analyst. Also, because the software was procured in concert with Alaska Airlines, the two carriers are moving towards doing network planning from a group perspective, thus increasing the flexibility between the two.

The acquisition of KHG by Sabre is an interesting move, according to Zachwieja. "We looked at the Sabre product," he comments, "but it was more expensive and didn't suit us in terms of ease of use and flexibility." Such remarks are bound to convince Jim Barlow that Sabre's action was the right decision. ✚



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Pat Zachwieja,  
Horizon Air

