

A MAGAZINE FOR AIRLINE EXECUTIVES

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## A Conversation with ... British Airways



INSIDE

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# Conducting Valuable Research:

## *The Backbone of Technology's Continuing Evolution*

■ By Stephani Hawkins | *Ascend* Co-Editor **AND** Michael C. Clarke | *Ascend* Contributor

While airline executives put their knowledge and energy into what they do best — running an airline — Sabre passionately studies the long-term technology needs of airlines of all sizes and regions and develops software solutions capable of sending revenues skyrocketing and operating costs plummeting.

Balanced on the cutting edge of research, Sabre has honed in on several key areas where advanced technology can simplify an airline's operations and bear a profound affect on its bottom line. These include decision-support tools for airport resource management, schedule generation, schedule recovery, event-driven customer relationship management and robust scheduling.

### **Airport Resource Management**

Handling airport resources manually represents a far from ideal method that costs airlines an astronomical amount of money and time. Sabre Research has been actively involved in developing automated solutions to streamline several phases of



**With 40 people dedicated solely to research and development, Sabre is actively creating the airline technologies of the future.**

the airport resource management process including shift scheduling and roster generation.

The Shift Scheduler model — a state-of-the-art mathematical tool capable of reducing airport staffing costs by 15 percent to 25 percent — determines the optimal solution for staffing any airport environment. In production since May, the model works to either minimize cost or headcount, based on an individual airline's needs, and then considers this parameter as the primary objective to solving the complex scheduling problems facing that airline.

The Roster Maker module, available as part of the *Sabre® StaffPlan™* staff forecasting and planning system, assists with the roster generation process by producing a work schedule for each employee in the organization. The work schedule is based on an input shift schedule and consists of daily shifts and days off for each staff member. Each individual work schedule is generated to conform to various operational constraints and well-defined union rules. The Roster Maker module was put into production last year.

### **Schedule Generation**

The *Sabre® FliteWise™* frequency generation model assists airline schedulers during the schedule design process and can boost profitability for airlines by 3 percent to 5 percent based on the results of a recent benchmark study conducted by Sabre Consulting.

The *FliteWise* model can identify profitable schedule changes to evaluate code-share agreements and create schedules when given only a basic hub structure. It has the ability to recommend beneficial schedule changes such as additions of routes, frequency modifications, tim-



ing adjustments and equipment group assignments.

In addition, the system enables users to improve an existing airline schedule or generate a new schedule based on origin and destination demand data. It also computes market share using a logit-based model that captures competitive effects of other airline schedules and is functionally consistent with the *Sabre*<sup>®</sup> *Airline Profitability Model*. The *FliteWise* model automatically generates a set of proposed schedules based on user-defined criteria and restrictions. Hence, the process becomes more efficient and, more importantly, it employs a systematic search for opportunities to improve the schedule.

## Schedule Recovery

Sabre has developed an integrated solution that addresses schedule recovery both in the context of an individual carrier and a global alliance. The airline integrated recovery framework incorporates aircraft maintenance routing, crew rescheduling and the impact of schedule changes on passenger flow. The solution, which can result in a 5 percent reduction in disruption costs, consists of the Schedule Recovery model, the Aircraft Recovery model, the Crew Recovery model and the Passenger Flow model. These models have been developed to be compatible

with Sabre's existing portfolio of operations products.

The Schedule Recovery model represents the core of the airline integrated recovery framework and suggests necessary flight cancellations, delays, positioning ferry flights and equipment swaps in order to recover from a schedule disruption. The revised schedule information is used by the Aircraft Recovery model (by equipment type) to assign the new (repaired) aircraft routing and by the Crew Recovery model (by equipment type) that assigns the new (repaired) crew



Usability testing plays a key role in developing new technology for the airline industry.

pairings. The Passenger Flow model evaluates the impact of the proposed schedule change on passenger flow through the airline network.

## Event-Driven Customer Relationship Management

Parallel with the research and development of decision-support tools being driven by Sabre Research, Sabre Labs continues to

explore new and emerging technologies and identify potential applications that will help simplify an airline's operations. The group has been actively looking at how to best utilize publish/subscribe technology, in tandem with rules-based technology, to provide the foundation for automating and enhancing airline customer service. In doing so, Sabre will leverage publish/subscribe technology with a rules-based "listener" that will intelligently "listen for" or filter events — flight disruptions, baggage disruptions, passenger no-shows, frequent flyer account events

and traveler profile events — and pro-actively trigger subsequent processes via e-mail messages, cell phone notifications or other personal digital assistants that communicate an appropriate customer service treatment based on an airline's business policies.

In the near future, publish/subscribe technology will span Sabre's portfolio in order to satisfy the demands

of its customers' customer — the traveler.

## Robust Scheduling

Over the years, technology has taken most of the guesswork out of airline scheduling, but there's always room to tighten the gap between an ideal schedule and realized operations. During the next 12 to 18 months, Sabre Research will focus on its robust scheduling initiative in order to help airlines close that gap.

In today's environment, the majority of airlines' strategic and tactical planning decisions are based on assumed ideal operating conditions that hardly occur in practice. As a result, airlines are constantly faced with the need to recover from unexpected schedule disruptions that can have a substantial impact on its operations. The tightly coupled resource schedules for aircraft movement, crew pairing and airport re-sources, along with passenger flow are very susceptible to irregularities. Based on Sabre's past experiences in flight scheduling, crew scheduling and airline operations, it is anticipated that airlines could gain substantially from more coordinated decision-making processes.


Since 2000, Sabre Research, in conjunction *(continued on next page)*

with its academic research partners (Georgia Institute of Technology, Massachusetts Institute of Technology and the University of Illinois — Urbana Champaign), has been participating in research projects on better ways to create airline schedules. These include improved crew swapping opportunities within crew

pairings, an enhanced fleet assignment procedure that isolates crew-compatible equipment types by stations and the development of degradable flight schedules that are easy to downgrade during irregularities. An important component of the robust scheduling research effort is the development of an effective schedule

evaluation tool that would enable airline schedulers to better capture ideas during the schedule development process.

Research will always remain pivotal in shaping tomorrow's business models and the overall direction of technology. And Sabre, along with its academic partners

and industry experts, will continue investing in research and development efforts to ensure its airline customers have access to solutions that lead to simplification, efficiency and above all, long-term success. 

*Michael Clarke is a research and development lead in Sabre Research.*

## News Briefs from Around the Globe

## THE HIGH • LEVEL VIEW

### News from the Middle East

Oman Air has signed up for three of Sabre's industry-leading departure control IT products in addition to re-newing its existing contract to use the *Sabre*® *Passenger Reservation System* for an additional 10 years.

The three new departure control and IT tools, which have been chosen specifically to help the airline increase productivity and reduce costs, include:

- The *Sabre ACSI*™ international airport check-in system, which will fully automate Oman Air's passenger check-in process, improving customer service and staff utilization.
- The *Sabre*® *Steady State*™ weight and balance system, designed to automatically generate load control information to produce optimal flight plans for loading Oman Air aircraft and saving fuel.
- The *Sabre*® *Qik-Airport*™ airport operations system, which will enable Oman Air staff to use a single screen to access all passenger services including reservations, baggage check-in, passenger handling and ticketing, flight control and aircraft departure.

Oman Air added these state-of-art technologies after renewing its contract for the *Passenger Reservation System*.

"We were attracted to the *Passenger Reservation System* because of its ability to fully integrate departure control into the reservations process," said Abdul Rahman Al Busaidy, chief executive officer for Oman Air.

"This not only makes our life easier but it also reduces both costs and the likelihood of human error."

### News from the Americas

Midwest Express and Aeropostal airlines have renewed their contract to continue utilizing the *Sabre*® *Passenger Reservation System* and related services. Under the new agreements, Sabre will continue to modernize technology systems driving the airlines' reservations, airport check-in and departure control operations. The systems specified in the agreements support every passenger interaction from shopping for preferred itineraries to post-travel activities, increasing sales, enhancing productivity and reducing costs for the airlines.

"The five-year contract renewal will help ensure that Midwest Express stays at the forefront of industry leadership and customer relationship management," said Tom Vick, Midwest Express chief marketing officer.

The five-year renewal agreement between Sabre and Aeropostal includes Sabre's full suite of reservations management services and the *Sabre*® *Flight Operating Systems*, which will enable Aeropostal to better manage flight scheduling and on-time services.

"Sabre's regional presence and understanding of our business issues were significant factors in our decision to renew," said Licio Piccoli, chief information officer of Aeropostal. "We believe this is a solid investment for our future." 