

STRATEGY

Will BA departure from mainframes for SOA allow profits to take off?

SOA and enterprise service bus deliver flexible systems for the long haul, writes **Cliff Saran**

Next month British Airways will begin rolling out a service-oriented architecture (SOA) that will eventually enable it to migrate from its 40-year-old mainframe system built on IBM's transaction processing facility (TPF).

The IBM system, which dates back to when the airline took delivery of its first Boeing 747 plane, supports back-office processes such as departure control and passenger check-in. However, support for TPF 4.1 will cease at the end of the year.

For the past three years the airline has been building a replacement architecture based on a reference design, which it hopes will enable it to deploy new multi-channel applications, and share information with business partners and airport operators quickly and cost effectively.

Airlines drive IT change

In 1972 BA adapted to the mass market for air travel, which was made possible by the 747 Jumbo Jet and changed the dynamics of the airline industry, by deploying a real-time computer control system. Gordon Penfold, CTO at British Airways, says the new Airbus A380 and Boeing 787 will have an equally profound effect. "They will bring as great a discontinuity to IT as the 747 in the 1970s," he said.

"These aircraft are e-enabled, which means they provide us with telemetry data, which allows us to perform far richer maintenance planning," he told Computer Weekly.

For instance, during a long flight, the aircraft could signal that a repair would be required;



and the information is fed directly into BA's SAP maintenance, repair and operations system. By the time the plane lands BA would have the part and engineers ready to make the repairs, so the aircraft could be quickly returned to service.

Penfold said, "IT fulfils a business process to achieve a promise we make to the customer."

The new system is built on an SOA using Progress Software's Sonic ESB, Progress Actional SOA Management and Progress Data Xtend Semantic Integrator (SI). SonicESB is an enterprise service bus which forms the basis for the architecture by providing a standard way to integrate applications. Through SonicESB, SOA components exchange data and electronic messages to automate business processes.

Penfold said BA was half way through implementing the SOA. When it is completed, it will integrate 600 electronic systems and processes at BA. The BA.com

website is built on a suite of business components like flight selling, servicing and payment. Penfold said some of these components can be exposed as services, which can then be displayed on flight comparison sites.

When the Icelandic ash cloud hit, Penfold helped in the call centre. Disruptions are common for airlines and IT is integral to keeping passengers moving, he said. "Our proposition for business is about availability. The ash cloud earlier in the year was the most visible example of this. But the recent French air traffic controllers' (ATC) industrial action also demonstrated that information is key to maintaining flight schedules. Every time there is an ATC stoppage we need to do a lot of rerouting [of flights]."

Real-time analysis

In the financial markets, investment banks and regulators often use software like Progress' Apama to run complex event processing (CEP), which allows them to analyse events in real time based on historical information. Penfold said CEP at BA was a few years away, but the type of analysis offered by its new SOA allows for a simpler form of event processing.

The SOA is essential to helping the company tackle disruptions. "By deploying a reference architecture we can better understand joins in our business processes, which means we can recognise and react quickly, by detecting combinations of events," Penfold said, adding that thanks to the enterprise service bus provided through SonicESB, BA's IT can respond to events. It is possible, for instance, for aircraft to monitor weather conditions in the upper atmosphere to assist the flight planning process.

BA is in the process of deploying its enterprise service bus infrastructure. Messaging has been in production for six months and BA is now readying its first applications built on the new architecture. These include payment services available via its Openskies personalised travel service, arrivals and departures information, and crew management.

While BA deploys new systems which need to last another 40 years, IT has moved on and the industry is now pushing cloud computing.

Penfold looks beyond the hype. He regards cloud as an extension of virtualisation and the commoditisation of hardware. Because of concerns about privacy, running BA's IT on a public cloud is not on the horizon, but he does see some areas where BA could eventually use private cloud.

The BA SOA is itself a form of internal cloud service, allowing the airline and its joint venture partners like Iberia and American Airlines (AA) to share data and collaborate. For instance, since AA also runs a service-oriented architecture, BA can extract information from the AA systems and provide passengers with details of flight itineraries that include an AA flight, which improves the customer experience.

"Adopting SOA has allowed us to convert a legacy renewal project into a business opportunity," Penfold said. ■

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