Chapter 2.6
Improving IT-Enabled Sense and Respond Capabilities:
An Application of Business Activity Monitoring at Southern International Airlines

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EXECUTIVE SUMMARY

Commercial airlines face an extremely challenging operating and competitive environment. To remain in business they must comply with ever-changing regulatory requirements while, at the same time, minimizing their operational costs without sacrificing customer expectations of service levels. Increasingly, airlines are realizing that a "plan-execute" mode of operation must give way to a "sense-respond" mode of operation; in other words they must become a real-time (agile) organization, capable of sensing the occurrence of unforeseen events such as the placement of a last-minute shipping order, flight delays, and cancellations, and respond effectively in real-time to such events. To enable enterprises in general, and the airline industry in particular, to improve their sense-and-respond capabilities and ensure better resource utilization, a number of software vendors are offering event stream processing and Business Activity Monitoring (BAM) solutions. This case examines a longitudinal set of real-world implementation projects using such a solution at a major US airline (referred to as Southern International Airlines) and the results and lessons gained from this deployment.

ORGANIZATIONAL BACKGROUND

This case involves the interactions between two organizations—a solutions provider (Quantive, LLC) and a client for Quantive's products and services: Southern International Airlines (not their real name).

Quantive, LLC (www.quantive.com) is a small product and services company, founded in 2000 by Dwight Jones, and based in Alpharetta, Georgia. It employs several people as well as having contractual relationships with additional personnel when needed to staff projects for clients. As its Web site indicates, it uses a combination of software tools and services to: capture critical business events in real-time without touching existing application systems, and translates these events into actionable business information (called "BAM-alerts"). It does this without the need to engage IT staff at the client organization, save to make a one-time network connection to a router on the client organization's network. To do this, it uses a stack of software to capture transactional packets of data moving over the network (Packeterm), translating these captured packets into logical transactional events (Inquisitor), and then examining these resulting events to identify exception or alert situations, and sending messages to a manager or an application to take action regarding the BAM-alert (Medusa). Finally, Quantive Factory provides additional ways to evaluate and present event alert information from Medusa. For a more complete picture of their offering, see Appendix A.

Southern International Airlines (SIA) provides both domestic and international air travel and shipping from its primary base in the Southwest as well as other hubs located throughout the world. It was founded through an incorporation of several airline companies in 1930. It operates approximately 1,000 aircraft that fly ca. 420 million seat-miles per day with 3,900 flights per day to 250+ locations. Although SIA is better known for its passenger service, its cargo division flies roughly 5 million pounds of cargo each day, with services to 250 cities in 40 countries, providing one of most extensive cargo networks in the airline industry.

SETTING THE STAGE

Initial Problem

Southern International Airlines' original motivation to adopt a (Quantive) BAM solution was to improve compliance with federal regulations issued by the US Federal Aviation Administration (FAA) and thereby reduce (or avoid) the high cost of non-compliance. In the context of this implementation project, the relevant regulation is FAA AC 43.13-1B: *Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair*, which came into force on September 8, 1998 (FAA, 2002). More specifically, chapter 10 of this regulation sets requirements for both the calculation of take-off parameters for commercial aircrafts and the disclosure of corresponding compliance figures.

The primary reason for issuing this regulation is to improve flight safety. It is to ensure that if a significant weight variation takes place after the initial flight parameters are loaded that new parameters are re-loaded. If no action is taken to recalculate these parameters, the aircraft is likely to take-off with inadequate stabilizer settings and thus decrease flight safety. In this scenario, depending on the significance of the shift in the center of gravity resulting from the non-computed weight variations, these changes could cause the aircraft to exhibit dangerous flight characteristics (FAA, 1999). To prevent this scenario from happening, Southern International Airlines must have a proper weight and balance control system to enable the cockpit crew to know the actual values of the take-off parameters in order to set the stabilizer trim properly, prior to take-off. This involves monitoring factors influencing the weight and balance condition of an aircraft, such as total weight and position of load as well as the amount

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