

# > TRANSFORMING THE AIRLINES THROUGH EVENT PROCESSING

Managing the Real-Time Information Flow with  
Progress® Apama®

## THE CONVERGENCE OF TECHNOLOGY, INFRASTRUCTURE AND PROCESSES

Responding to events in the airlines industry is not a new concept. But analyzing events and responding to situations in real-time is complicated. Considering the number of factors or inputs that contribute to operations, it's no wonder that it's a challenge. The volume of data and its high variability is taxing on current technologies and architectures, and with the speed of business increasing, the speed of response to changing conditions has to be immediate.

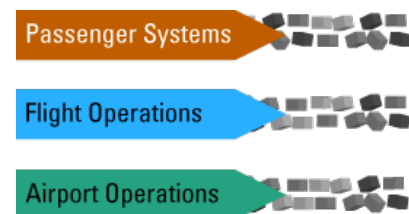
In most industries, there are silos of information. As business problems emerge, new systems are put in place to address the problems. However, the information stored in the silos is not enough to make responsive actions anymore. The data exists as static, past-tense information. The data is useful and important but may not provide the level of immediacy necessary for the speed of business today. The focus now needs to be on data as it changes, where decisions are made on data in motion and not analyzed after storage.

There is a convergence of technology, infrastructure and processes that can provide the critical key to enabling more responsive and real-time services. New business processes are being developed that leverage the capabilities of technology such as event processing. And the infrastructure is in place to transform your decision making from reactive to proactive by tapping into real-time information streams for "in the moment" response. This convergence will dramatically alter traditional decision-making solutions and the airlines that take advantage are the ones that will lead.

### TAPPING INTO THE INFORMATION FLOW

There is a vast information flow that moves throughout your organization. In that flow, there are data elements that are indicating changes in state. All of your systems contribute to the flow. From booking, check-in, bag scan, boarding scan, wheels up, etc., the systems you have in place take advantage of this data to drive important operational decisions. These data changes, when used as events, can drive real-time solutions that offer significantly greater visibility and control.

Events can come from anywhere: applications, devices, systems and networks. As individual event sources, their content is interesting in isolation. But when combined and analyzed across streams they become much more powerful. With the introduction of event processing technology, the ability to correlate events across multiple moving streams is what transforms decision making from reactive to proactive.



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## EVENT PROCESSING AT THE CENTER

Event processing, or sometimes called Complex Event Processing, is technology to build solutions that respond to real-time, moving data. Instead of processing static data from storage, event processing analyzes data as it changes and moves through your infrastructure. With static data from traditional systems, analysis functions are using decision logic on past-tense data. In other words, the events have already happened and leading to the question: “what did we do.” Event processing takes the decision making process and puts it in the present. Questions become “what are we doing now.” With event processing, actions can be taken before it’s too late.

Event processing acts on data in motion. With Progress® Apama®, data from multiple and disparate event sources can be correlated at one time. In effect, your decision logic can leverage the state of events through multiple streams. Instead of waiting for data to be stored in databases, results come from data changes as they happen.

Business rules and KPIs can be modeled into contextual scenarios that look for interesting patterns of events. Once identified, event streams can be visualized in real-time dashboards, or actions can be taken to trigger application services and deliver proactive notifications.

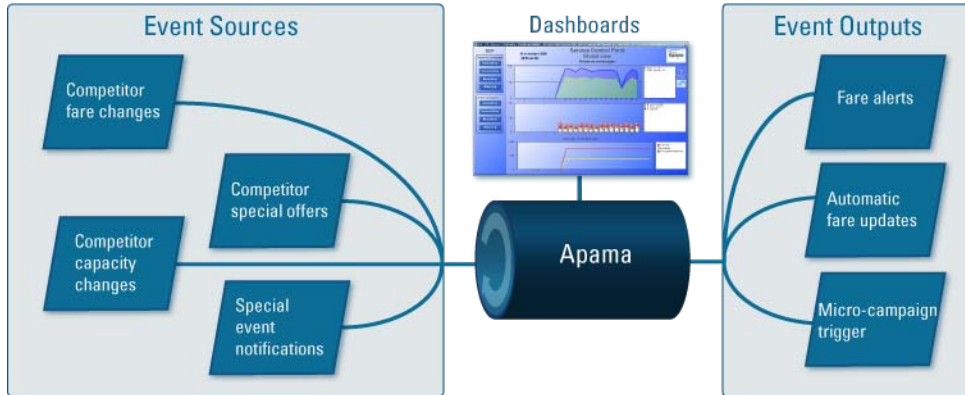
## CASES FOR EVENT PROCESSING IN THE AIRLINES INDUSTRY

Clearly, the airlines industry is filled with fast moving event streams. By using Progress Apama, the event streams can be analyzed in context with one another, and new levels of responsiveness can be introduced. New applications and services can be enabled to drive greater revenue management capabilities and better levels of customer service. In effect, event processing can significantly help transform the airlines by taking advantage of the vast real-time information flow.

Event processing has a place in the airlines, and the following scenarios are just a few of the possibilities where events drive competitive advantage.

### *Case 1: Pricing Contextualization*

There is a fairly precise science to ticket pricing. The modern step model has proven its value in the deregulated market to a point where, as long as conditions are stable, revenue management isn’t much of a problem. Stability, unfortunately, is no longer the norm. Competitive pressures, market volatility and variable day-to-day conditions are not generally considered as context for current pricing models.



What if you could identify pricing events from competitors or booking anomalies in real-time that provide current conditions to pricing templates? Could you manage fares fast enough to stay ahead of the competition?

With event processing, inputs from competitor's fares, capacity changes, offers and events, as well as your own bookings, events can be correlated to identify patterns that can provide context to pricing templates.

The result is immediate response to changing conditions and pricing models that keep customers with you.

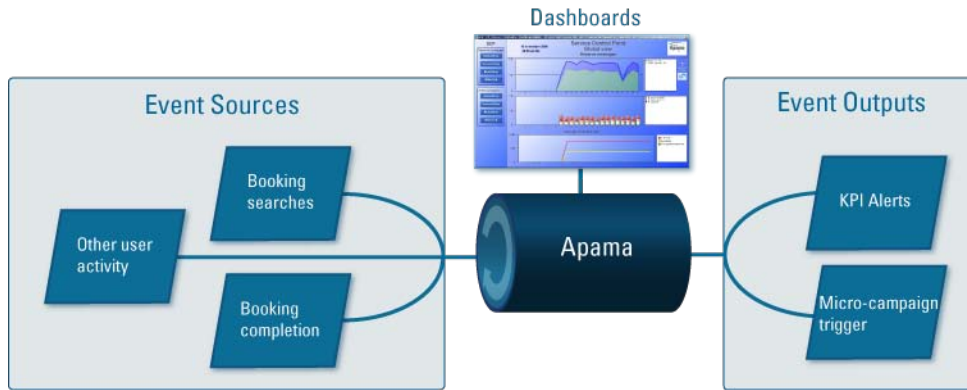
### *Case 2: Clickstream Analysis and Cross-Channel Integration*

On-line access is rapidly becoming the most common mode of customer interaction. Now that the customer relationship extends to all hours from any location, expectations for self-service are high. In a highly people-interactive industry, self-service without context is leaving the customer to their own devices and the potential to have them "click somewhere else" is high. Clickstream analysis provides the opportunity to follow click behavior during an on-line customer session and identify scenarios where customer service actions can be applied.

The effect is to gain greater context during a session with the potential to identify trouble areas or to offer incentives if interesting patterns emerge.

What if an on-line user searches for the same flight 5 times over a 2 day period? Could you offer them an incentive to purchase?

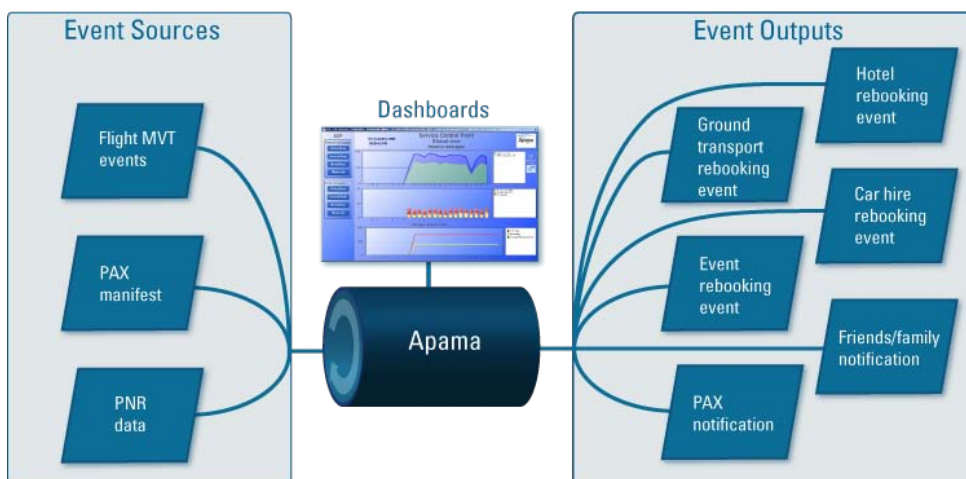
In most cases, a customer that dwells on the same flight for an extended period is probably searching for the best price. An incentive, whether it is lower fare or a cross-channel offer for additional services, could mean keeping the customer.



By analyzing the click patterns and correlating them over time, the real-time context can be used to determine the suitability for promotional activities. With event processing, the response is immediate and the customer gets what they want.

### Case 3: Proactive Service Recovery

Customer assurance is key to maintaining high-value customer relationships. Operations volatility from weather to equipment puts a continuous strain on recovery functions. Without the ability to monitor conditions in real-time, recovery becomes labor intensive and very reactive. In the case of responding to conditions where there are significant delays, recovery may include food, lodging, ground transport and potential rebooking. The orchestration of recovery becomes complex and potentially error-prone when hundreds of passengers suddenly need service.



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What if you could identify conditions that will lead to a diversion and affect high-value customers? If you could proactively notify those customers with a complete set of options for recovery, would that increase your customer satisfaction?

Consider the inputs necessary to identify a potential delay or diversion. The event streams come from multiple and disparate sources that are normally not used together in real-time. Through event processing, rules can be established to identify patterns that may lead to a diversion. Proactive notifications or actions can be taken in real-time that deliver responsive, immediate results.

## SUMMARY

Event processing is a game-changing technology for the airlines industry. You now have the technology to manage the flow of events in and out of your operations. From flight operations to on-line bookings, any and all events that contribute to operational decisions can be considered. The airlines that can tap into their information flow to identify business-critical event patterns are those with the competitive advantage.

Event processing with Progress® Apama® is the foundation for managing real-time operations. With Apama, you get the tools and services to develop and deploy full-featured event processing solutions.

For further information on event processing in the airlines industry, visit our on-demand webinar “Flying High with Real-Time Information: Operational, Customer and Revenue Management in Real-time” at:

[www.progress.com/apama-landing/webinars/flying-high.html](http://www.progress.com/apama-landing/webinars/flying-high.html)



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Rev. 10/09 6525-128944

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