

Your Say

Achieving Broadband Business Automation

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At least a dozen vendors in the market right now – Aleri, Apama, BEA, Coral8, Streambase, Truviso and others – are advertising a technology intended to revolutionise the way you approach business automation. It's called complex event processing (CEP), and though it offers an effective way to realise time and event-driven systems, it isn't so much a break from the past as an evolution of best practices developed during decades. CEP is based on design patterns that have been percolating in academia and financial institutions for years and have appeared in tools performing business rules management (BRM), business process management (BPM), business orchestration and workflow automation.

What is unique and compelling about CEP is its timescale – its singular focus on split-second reactions to late-breaking events. At the other end of the continuum, workflow automation is optimised to service business processes that take minutes, days, weeks or even years. Though vendors picture most business processes through the lens of their particular technology, such processes in financial services rarely operate at a consistent timescale, and in fact commonly straddle several different timescales, from milliseconds to fiscal quarters. Automating those processes requires more than one technology.

Imagine a mature hedge fund performing both automated trading and straight-through processing (STP) of its trades. In the front office, the goal is to translate market events into trades in real-time using automated strategies and risk controls. There is no time for phone calls, mouse clicks, faxes to prime brokers or other manual tasks. There is not even time for unexpected network latency between the hedge fund and its prime broker. Every link in the chain between market and trade confirmation must be trimmed of delay to maximise profit. In this world, the timing of events is meas-

ured in milliseconds, and it is this arena in which the CEP products shine.

However, even as the trading and risk systems quickly detect and react to confluences of events, they often need to trigger actions that cannot be performed in a blink. A constraint violation requires client or regulatory notifications, trade unwinding and the creation of audit records. Settlement failures require investigation. Even in the success case, back office STP requires figuration, reconciliation, accounting and reporting tasks across a number of different systems and databases that cannot obey tight time tolerances. Automation tools in this arena need to be able to cope with long running processes that may take hours or even days to complete. Thus, the time scope of the business is very broad, ranging from high speed execution to slow, manual processes.

What unites these tools is their common intent to separate the 'what' from the 'how' in business software and model business as flows of events, rules and triggers. What differentiates them is their timescale.

Instead of storing and indexing vast amounts of event data to support recurring complex queries, CEP inverts the common design pattern by first storing and indexing the queries into an efficient structure and then streaming data through that structure without needing to store the data. As the volume and complexity of queries increases and the time constraints become stricter, CEP scales gracefully. On the other hand, CEP cannot tolerate the delay of synchronous external services or long-running actions.

To borrow a notion from networking, CEP is a narrowband tool that only operates on business processes working at high frequencies. To achieve broadband business automation across a wide spectrum of business process frequencies, we need to look beyond CEP.

The principal focus for BRM/BPM tools

is to extract the logic of business processes from human actions and hard-coded actions in software and databases and put them into a form that can be extrinsically reviewed, managed and modified. Products from such vendors as BEA, IBM and ILOG provide not only a repository for business rules, but also an execution environment that can accept new events and trigger business rules as appropriate.

Business orchestration tools, such as Microsoft BizTalk Server, have elements of both BRM/BPM and workflow, but the focus is on stitching together disparate, independent systems by managing the message flows between them. For example, a hedge fund may download bond indexes via FTP from an information provider, clean and upload the data to several front and back office systems which then update benchmark portfolios, update prices and regenerate client reports.

Workflow automation tools provide a platform for mapping out complex interactions and long-running activities in business processes. Where CEP focuses on the detection of complex events, workflow automation focuses on the execution of complex actions. Workflows can play out over much longer time scales, from minutes to years.

The task ahead is to find effective ways to marry CEP, BRM/BPM and workflow technologies to so that broadband business processes can receive broadband business automation. While it is relatively trivial to kick off an asynchronous workflow from a CEP tool, for example, it is difficult to get a unified management or development view of the entire process across tools and timescales. It is this high level view of the whole spectrum of business automation that enables technology managers to optimise their software development expenditure, and minimise the time to market for innovative products.