Event-Driven Rules: Experiences in CEP

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What is CEP?

1. Next 27 slides

2. Join us for the CEP 101 Session
What we’ve heard so far:

Daniel: decisions are short-term, point in time, So can be part of a stateless infrastructure...

BUT: decisions are made *because* of some “decision required” event + other events may change our “decision context”...
What we’ve heard so far:

Daniel: event monitoring is also short-term – we don’t normally store state for very long...

NOTE: this depends on the context – a cargo container shipping company might deal with 3-6month (typical) to 18month (exception!) cargo lifecycles
What we’ve heard so far:

Daniel: event rule re-use is difficult due to implicit pre-conditions / state...

NOTE: if this is true, you may need to consider re-factoring your rule conditions / query components / state model / etc

BUT can an event pattern be decomposed?
What we’ve heard so far:

Mauricio: events + rules + processes are very useful together...

AND: industry is seeing this too!
Why is CEP a “rules” application area?

1. Event patterns can be represented as declarative rules
   As well as continuous queries, pattern expression languages
   + many other potential ways of deriving complex events and
     acting upon them

2. However, rule-based CEP is one of the
   most successful technology implementations
   TIBCO BusinessEvents, Drools Fusion, IBM Business Events, Starview…

3. Event Processing is about deriving “time-based facts”
   (i.e. complex events)
   e.g. temporal fact-processing / inferencing / decision-rules
Example Event-driven Rule Engines (1)

- **TIBCO BusinessEvents**
  - Rete-based rule engine (large-scale agents)
  - MOM event channels
  - Cache/datagrid for failover / scalability sharing data
  - State models for entity lifecycles
  - Stream processor query language
  - Covers most “complex event” types
  - Used as an “event-based business logic logic server”
  - 100s of customers, some with 100s of deployed engines

*Classic rule engine with event + datagrid / distributed processing smarts*
Example Event-driven Rule Engines (2)

- **TIBCO Hawk**
  - ECA-rule based rule engine (lightweight agents)
  - Highly specific event captures (machine, JVM, MOM, process...)
  - Filtering rules only, with limited state management
  - Used for “system monitoring”
  - 1,000s of customers, some with 10,000s of deployed engines

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Specialised rule engine for event capture + alert event generation
How are these used in business?
FedEx CIO Rob Carter, Sept 2011
“We need Event Decision-making Capabilities ... “

“... where we are moving to
- event-oriented systems ...”

“We need to make very real-time decisions about these shipments... “
FedEx CIO Rob Carter, Sept 2011

“...the Decision Tunnel...“
FedEx: applying rules to Events

21 + 39 = 60 days implementation

Eventing at FedEx:
FedEx’s astonishing Success and the Future Promise of EDA Architectures,
Kim McBride, EA, FedEx, TUCON Sept11

FedEx's astonishing Success and the Future Promise of EDA Architectures,
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FedEx: Event-Enabled Rule-Driven Operations

Event Enabled Operations Allows for Accelerating Returns
It enables agile, predictive business operations, shifting business and technologist thinking from silo to enterprise; from “reactive” to “proactive”.

Eventing at FedEx:
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Pah! Logistics is clearly event-driven. What about something more operational?
Data, data, everywhere... Need: intelligent operations
"Our operators proved the value of updating their procedures and rules on demand this Summer..."

"... Who would have had the rules predefined for handling a quake followed by a hurricane on the E Coast?"

PJM Presents | Charged Up: Averting Crisis in a Large-Scale Environment with Event-Driven Solutions, Rich Brenton, Snr Tech Arch, PJM, TUCon Sept11
Double-Pah!

This real-time stuff is too specialist. Talk about something more traditionally associated with rules like insurance...
Previously:

Traditional mainframe business
$1Bn pa IT budget
++Technology Duplication across LOBs
6 MOM tools
15,000 AS400 servers
...

Lessons from the Journey From Mainframe to Enterprise BPM
Doug Safford, Director EA&I Architecture
Allstate Insurance Company , TUCON Sept11
AllState’s Doug Stafford, Sept 2011

Introduced Enterprise Architecture approach:
Standard MOM
Standard ESB + framework for control
Standard Rules Engine + CEP
Simplified Partners / SIs

Lessons from the Journey From Mainframe to Enterprise BPM
Doug Safford, Director EA&I Architecture
Allstate Insurance Company, TUCON Sept11
“We feed the ESB business events to our process and CEP engines, and to our Data Warehouse.”

“... We have 800 [BE] rules engines and it's the fastest growing [service] technology we use...”
AllState: the Power of Rules

“... We monitor BAM reports to change rules overnight...
Recently increased closing rates by 15%”
OK, some insurers might be exploiting advanced IT like rule-driven CEP.

What about something affecting the man-in-the-street?
1. Synchronised, enriched, channel-agnostic Customer Management  
   + Real time BAM + Analytics  
   + streamlined Campaign Management

2. Project duration < 3 months  
   (1mth development + 1mth QA/stress + <1 mth for production cutover).

3. Inference engines operate against 480Gb in-memory data  
   = 32 rule engines for data prep  
   + 16 rule engines for daily load processing from other systems  
   + 8 rule engines for real-time TX processing
OK, so rule-based event processing is gaining some acceptance within corporate IT

But it ain’t nothin’ against the [real] [SOA] [J2EE] world!
July 5, 2011
The Future Of Business Rules Platforms
Customers Are Moving To Event And Decision Management

by John R. Rymer and Mike Gualtieri
with Phil Murphy, Boris Evelson, and Alissa Anderson

EXECUTIVE SUMMARY
Business rules platforms are a mature technology for automating decision and policy logic and for managing fast changes to that logic to keep up with business changes. Now customers are seeking more: capabilities allowing them to employ business rules to help detect and respond to business events hiding in streams of data and to automate decision life cycles. This research reveals how well vendors are responding to these new requirements.
Gartner predictions, Oct2011

Advance Toward Intelligent Business Operations

Increasing business performance through:
- Better decisions with real-time analytics
- Faster response to events
- Dynamic adaptation
Pah-to-the-power-of-n!

Where is this leading to?
2011 Rules in Enterprise Architectures

- TIBCO Hawk
  - Event Capture
- TIBCO BusinessEvents
  - Event Processing
- TIBCO AMX
  - Process + Svc Management

MOM / ESB

Datagrid

Event Cloud

- Customer Events
- Supply Chain Events
- Svc + Process Events
- Operational Events
Conclusions

- EDA / event-driven paradigm matches well with rules technology
- CEP-based / event-driven / “real-time” rule engine use growing
- Lots of rule development now “in progress”

- Consider: what is your organisation’s “Decision Tunnel”? 
Take-aways...

• Not literally though...

a.k.a. Advanced Business Analysis