

Rules Fest 2010

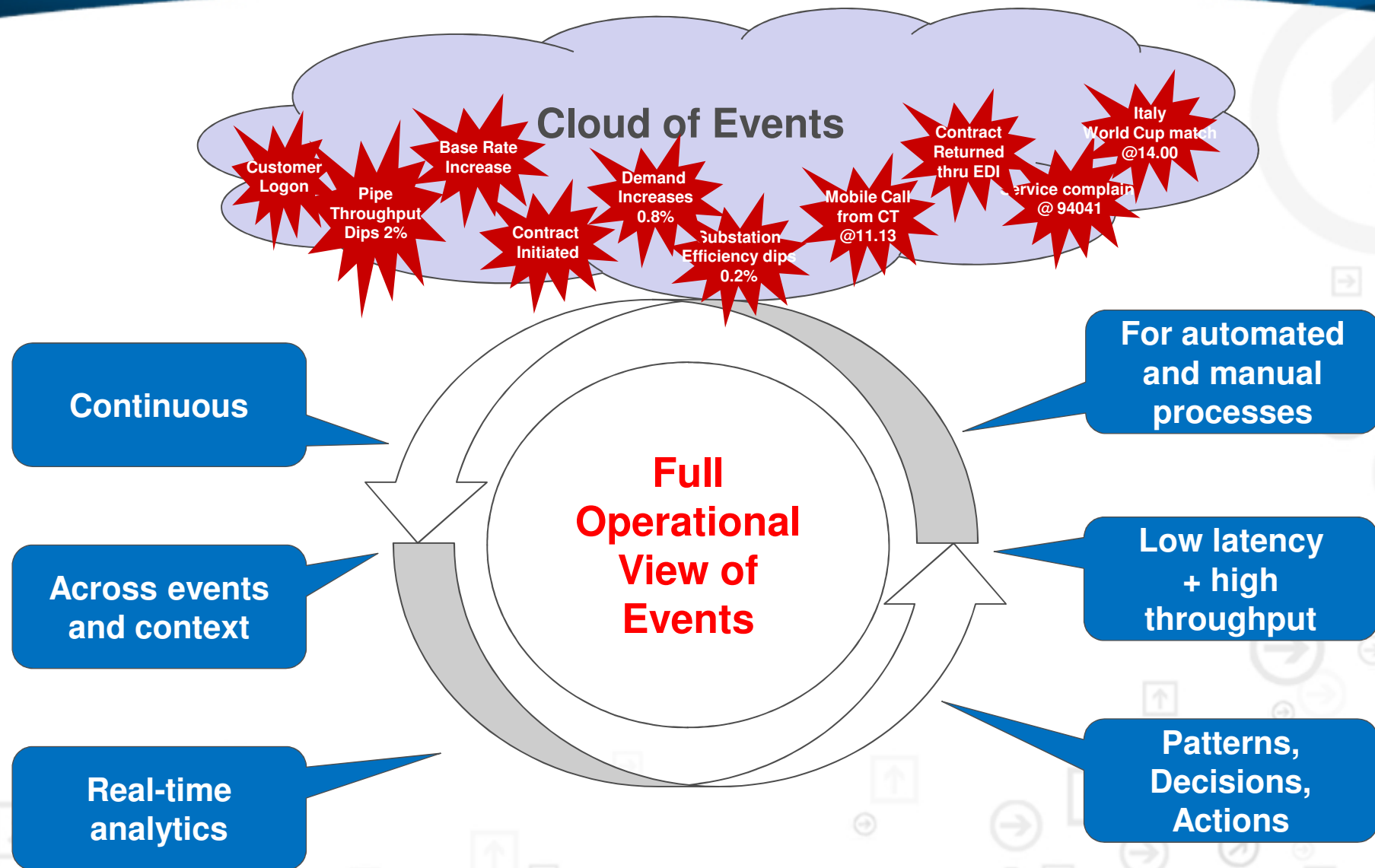
Software Practices and Experiences - of Rules - in CEP Applications

Paul Vincent, TIBCO Software – a CEP Company



- **Typical roles for CEP**
- **The motivation for rules, and types of rules used**
- **Rule execution vs latency, throughput and reliability**
- **Customer use cases and design patterns**

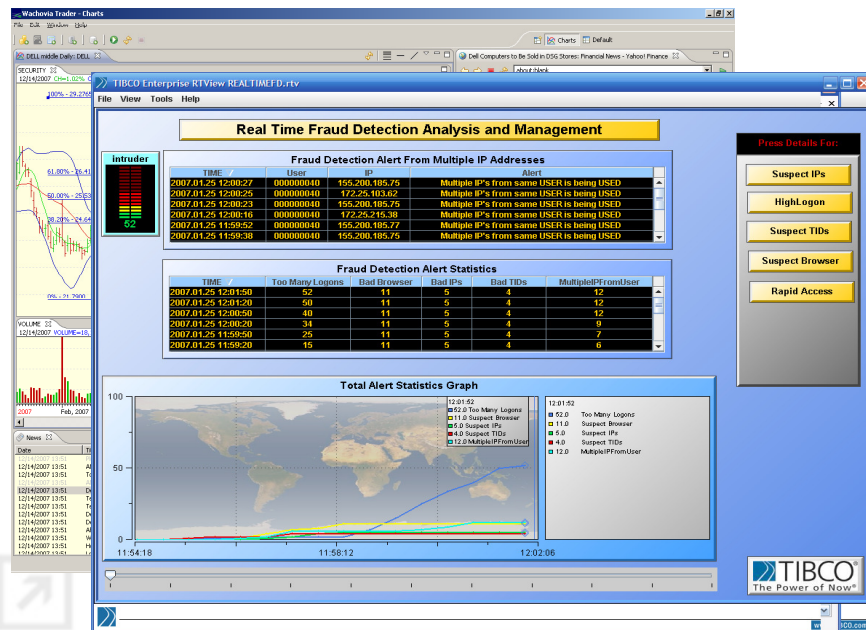
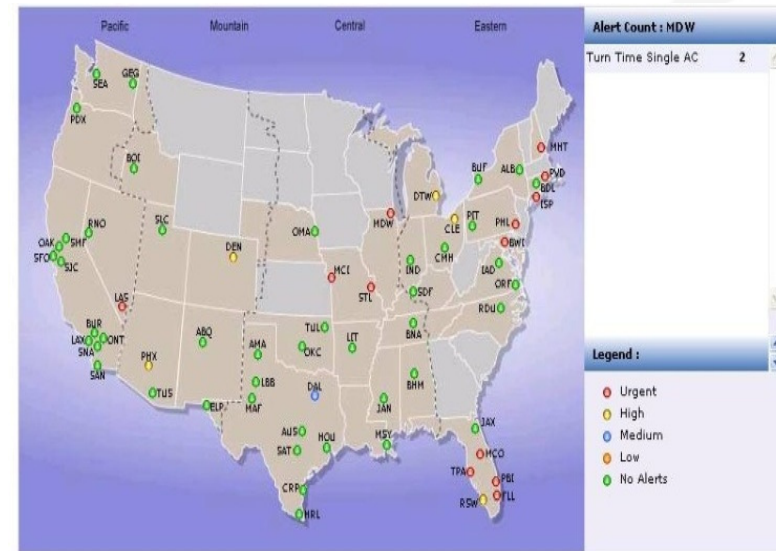
Complex Event Processing



CEP Application Areas

Energy

- Predictive energy usage / energy event processing
- Smart Grid Initiatives
- Transmission, Outage Intelligence Fault Management



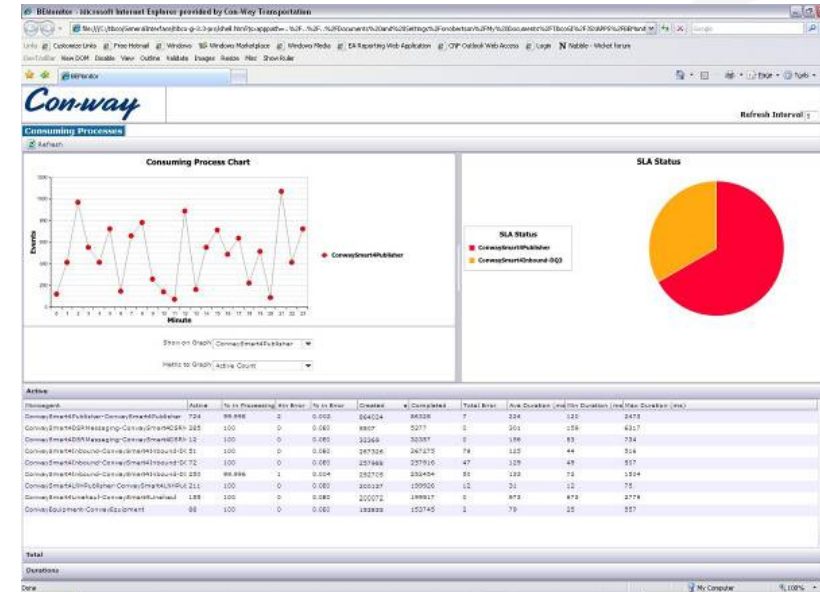
Finance

- Credit derivative trades. Used for real-time workflow and trade matching
- Visualize market data, order executions
- Fraud / Intrusion Detection
- Track and Trace for Trades / Deals / Settlements and Pre / Post trade exceptions

CEP Application Areas

Logistics

- Optimization of shipping movements to obtain greater efficiencies and reduce fuel costs
- Real-time tracking of cargo, packages border crossing manifests
- Revenue management, baggage handling in airlines



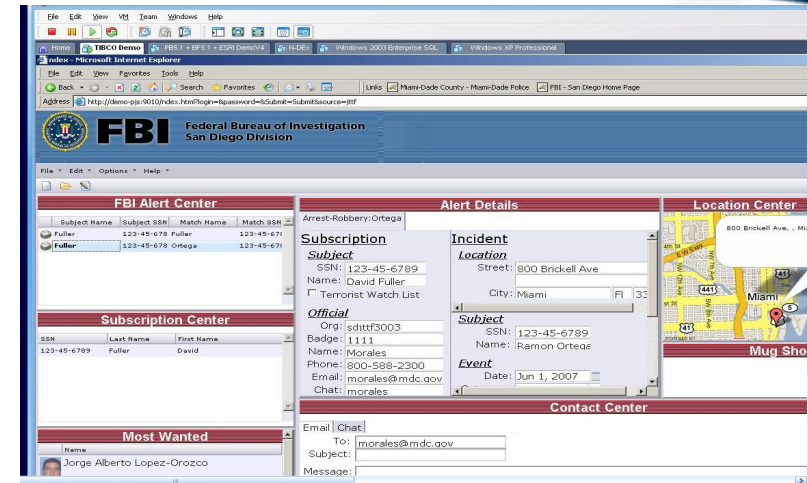
Adaptive Marketing

- Capture opportunity with customer while “window” is open
- Ability to learn from successful/failures of campaign in progress to fine tune the offer

CEP Application Areas

Government

- Track and Analyze 'patterns' that are very difficult to detect
- Real-time tracking of people, places and things
- Capacity planning



U-verse
High-speed Internet
Phone service
Wireless
Dish TV

U-verse – Local Phone – Long Distance – Wireless – Dish TV – High-Speed DSL Internet

AT&T U-verse

AT&T U-verse – The Future of Entertainment

So what is U-verse?

AT&T U-verse is an advanced product that brings together superior TV, high-speed Internet, and home phone. AT&T U-verse represents the future of communications and entertainment.

Television
 Internet
 Voice

AT&T U-verse TV

U-verse customers enjoy a crystal-clear 100% digital picture along with digital video recording (DVR), Video on Demand, High Definition, and choice programming with a wide variety of Premium and International channels —all at a competitive price!

Check Service Availability

- High-Speed DSL Internet
- U-verse
- AT&T Local Phone Service
- Long Distance
- Wireless from AT&T
- Dish Network TV

Bundles – Get More, Save More

Telco

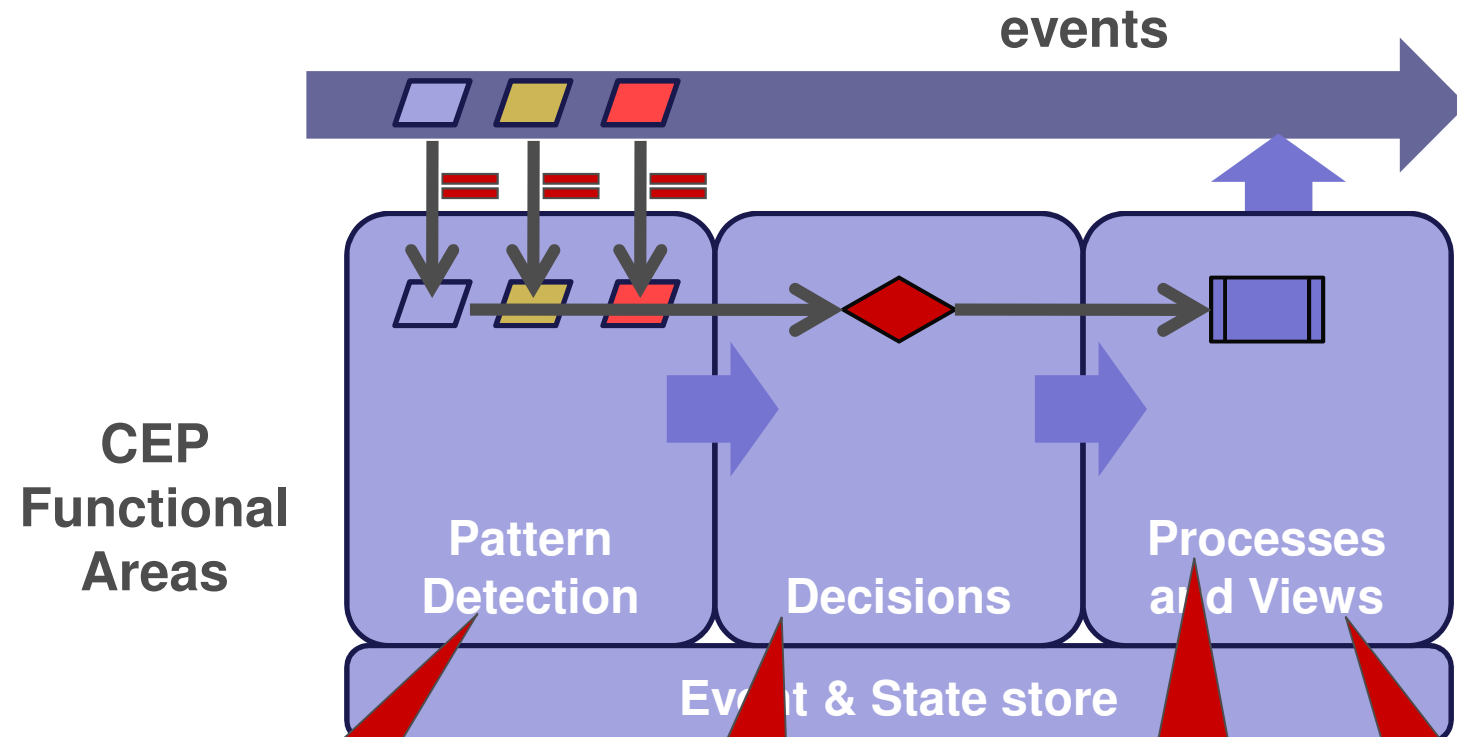
- Track missing events, SLA violations, re-sequence out-of-order events according to context
- Identify under-performing business systems to ensure service levels can be met and enhanced
- Location-based services for targeted campaigns

Role of CEP in Business

“Operational Intelligence”

*Faster, better responses to (decisions in)
business situations*

CEP Functional Areas vs Technology Areas



**“Complex Event Processing”
(aka CEP, ESP)**

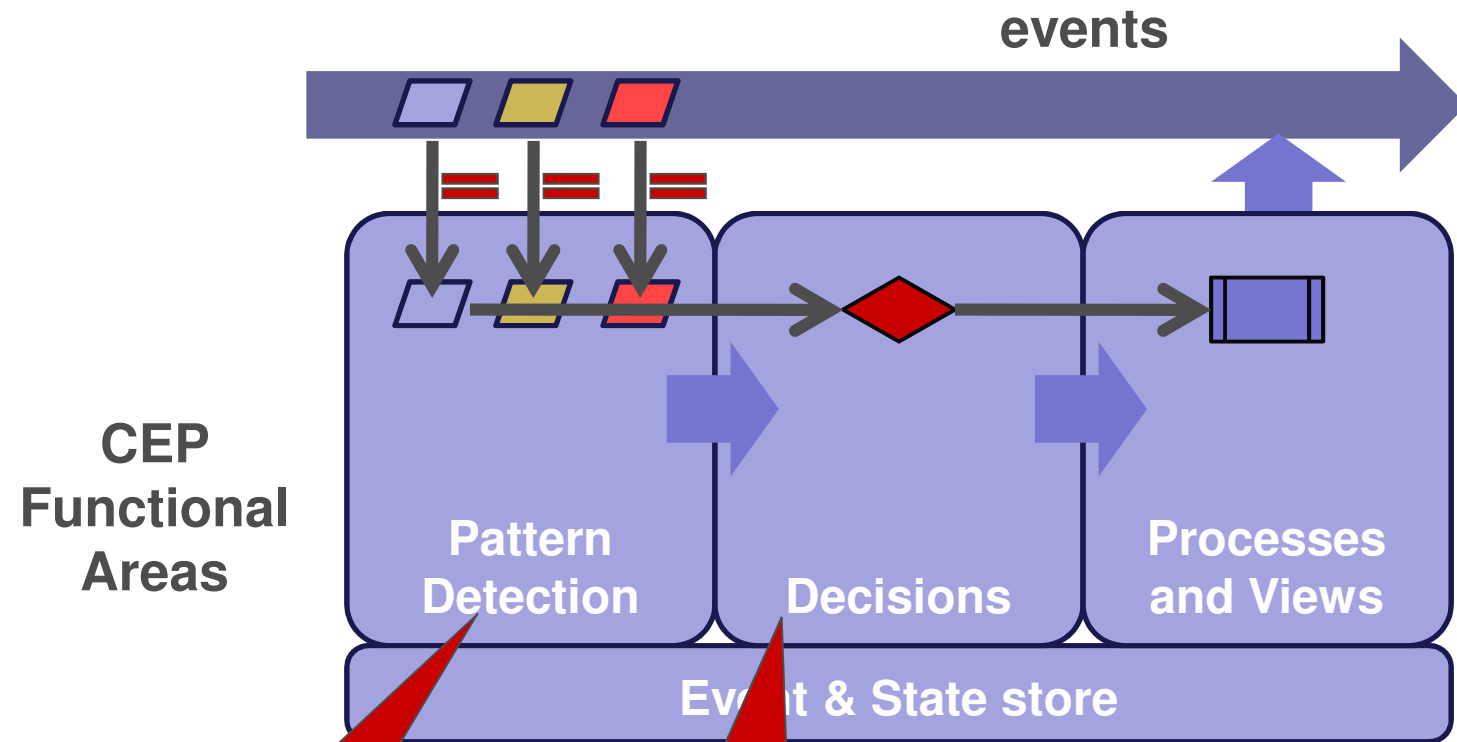
**“Decision Management”
(aka business rules, BRMS)**

**“Straight Thru Processing”
(aka real-time BPM, XTP)**

**“Real-time Dashboards”
(aka real-time BI, BAM)**

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CEP Technology Areas vs Rules



**“Complex
Event
Processing”
(aka CEP, ESP)**

**“Decision
Management”
(aka business
rules, BRMS)**

Rule Technologies

Compare
event-to-data

State Machine / Model

Compare
event-to-event or data

**Temporal Regular
Expression**

**Event patterns,
groups,
ordered, filters,
joins...**

events

Compare
event-to-data

ECA rules

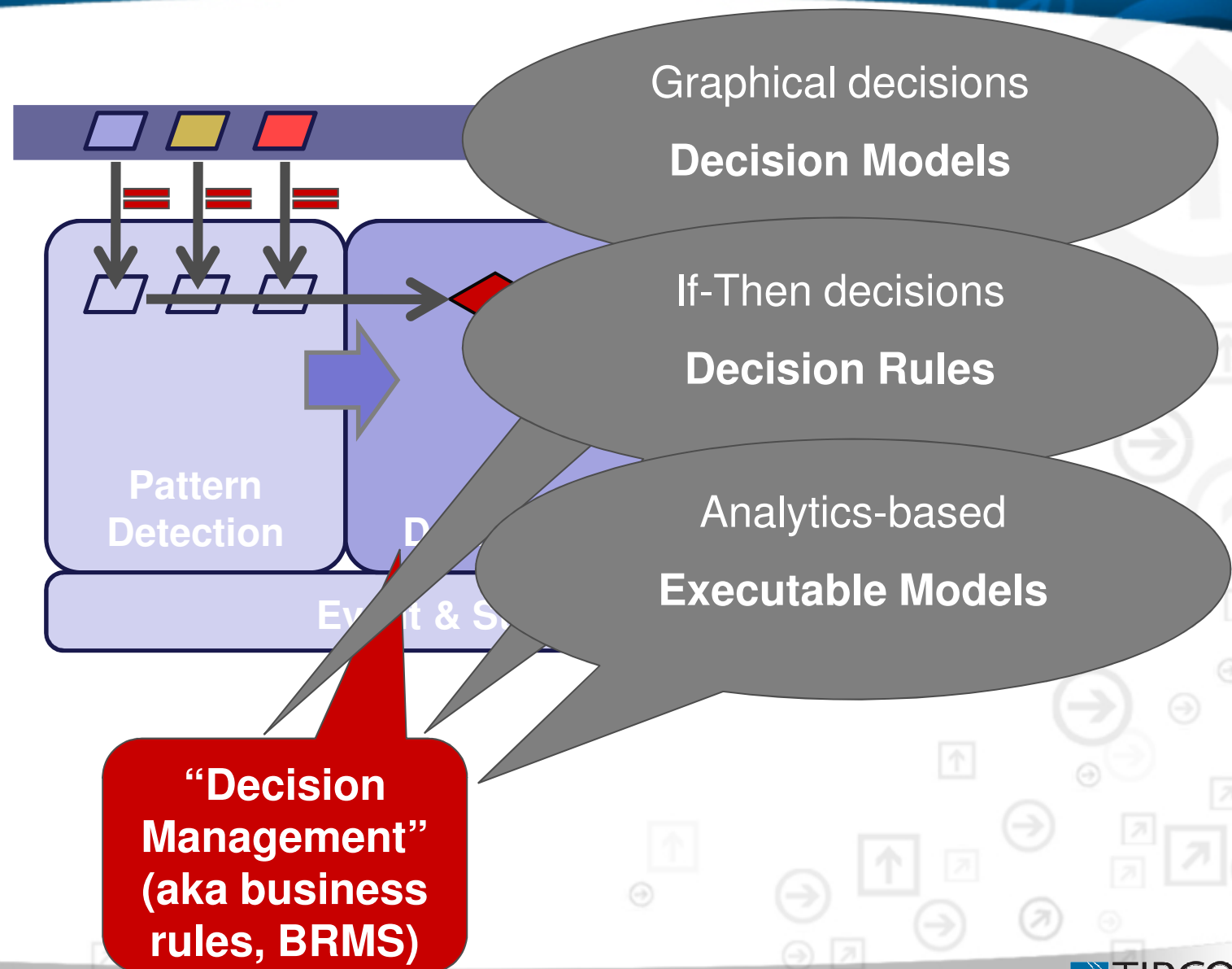
Compare
event-to-event or data

**Event-Enabled
Production rules**

Compare
event-to-events or data

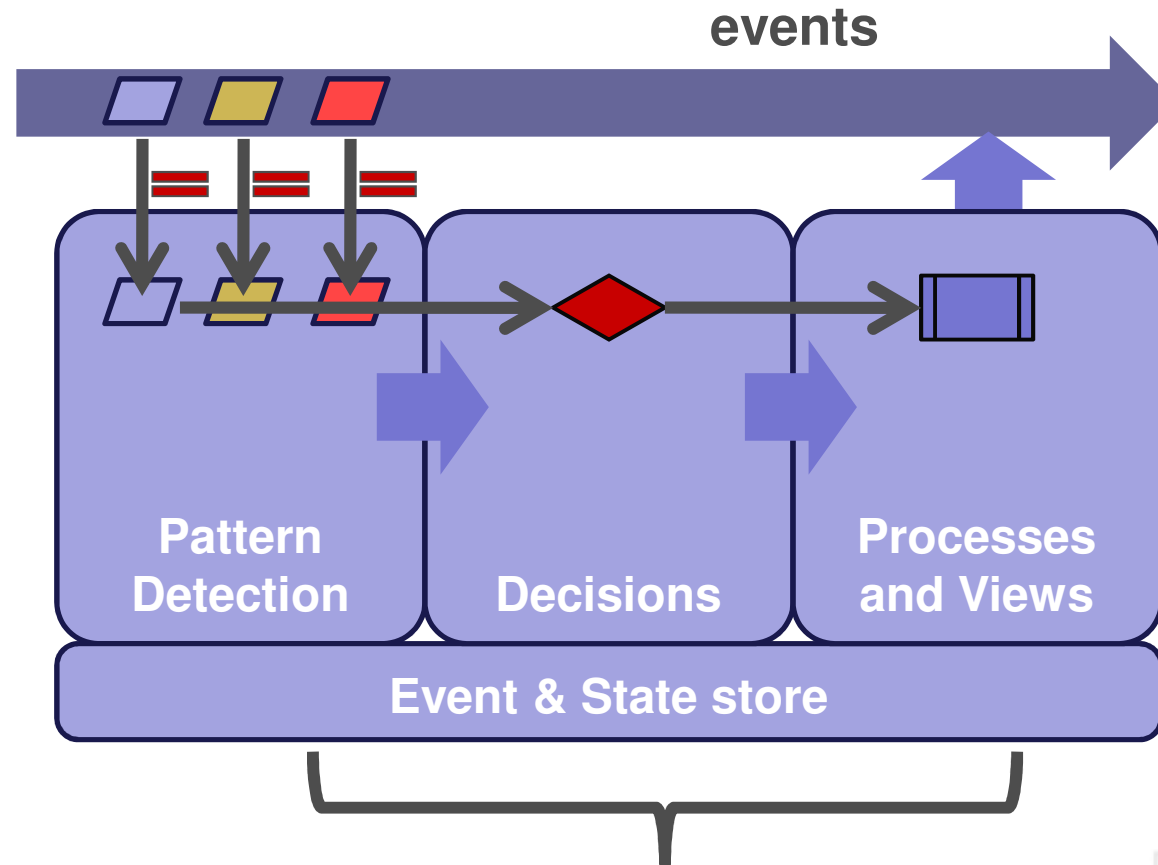
**Continuous
Queries**

CEP Technology Areas vs Rules



- Typical roles for CEP
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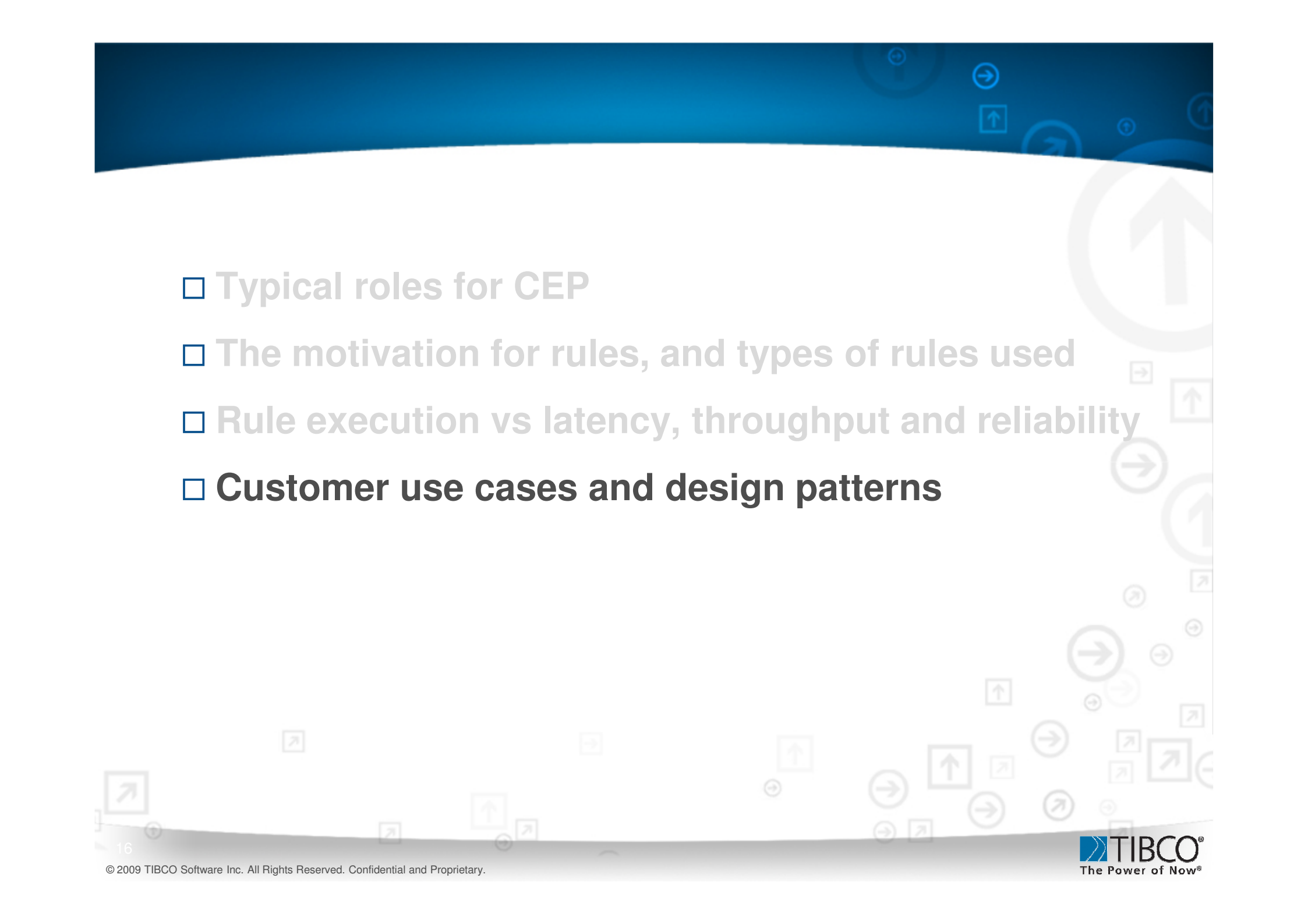
CEP Rule Goals



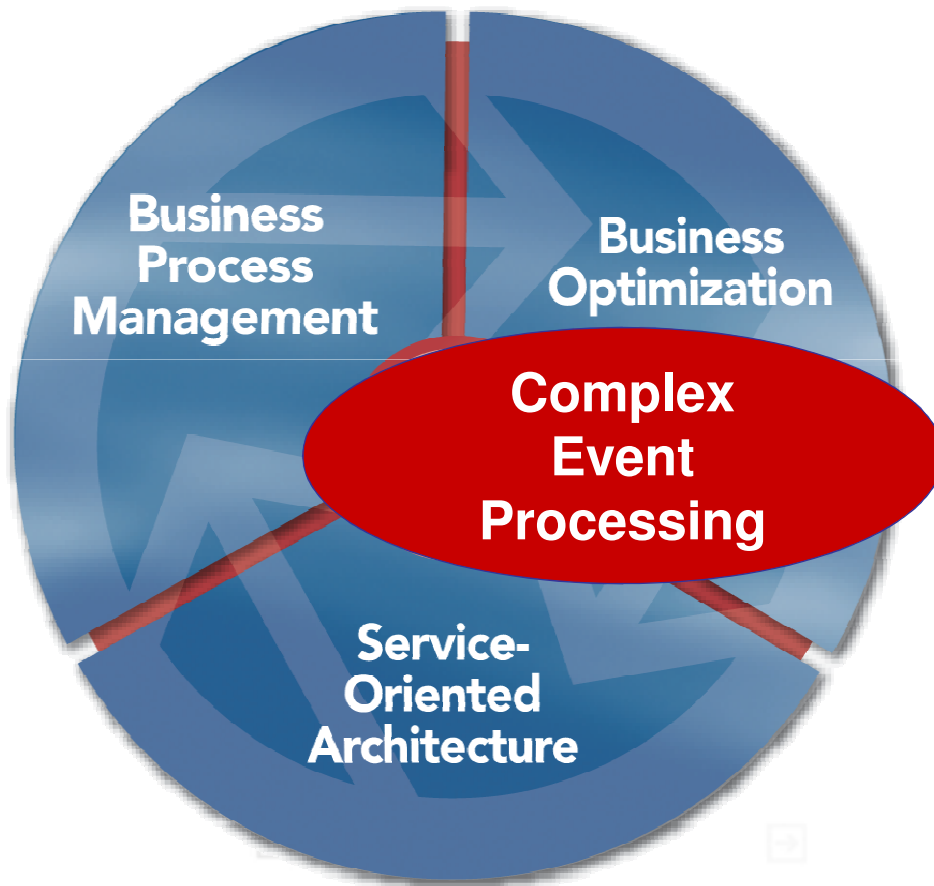
- GOALS**
- Minimise: Time from input - to - output
 - Maximise: Quantity of events, patterns, outputs
 - Scalability: Handle quantities across distributed systems
 - Reliability: Handle failover for components

Example Rule Types

- **Basic:** **Condition-Action**
- **Triggers:** **Event-Condition-Action**
- **Timers/schedulers:** **TimeUp-Action, TimeInterval-Action**
- **Event lifecycle:** **TimeToDie-Action**
- **State transition:** **Event-StateChange, Timeout-StateChange, StateEntry-Action, StateExit-Action**

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Summary



- CEP involves event pattern matching
- Rules used for pattern matching and decisions on the resulting patterns
- Highly successful model
- Resources:
www.ep-ts.com
www.tibcoblogs.com/cep