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Oracle SOA Suite in Financial Services

- CEP and Event-Driven SOA

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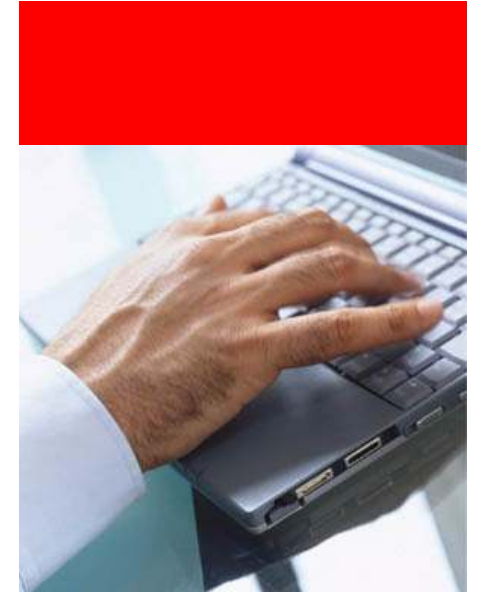
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Agenda

- State of the CEP Market
- Oracle's EDA Platform
- CEP Applications in FSI Markets
- Customer Case Study - FXall



Emerging Business Trends

- More than 200 million containers shipped each year
- 6 containers every second!



- A new product is launched every 3.5 minutes



- Growth in financial market data 21,000% over next few years
- Opportunities and risks are constantly emerging from these streams of data

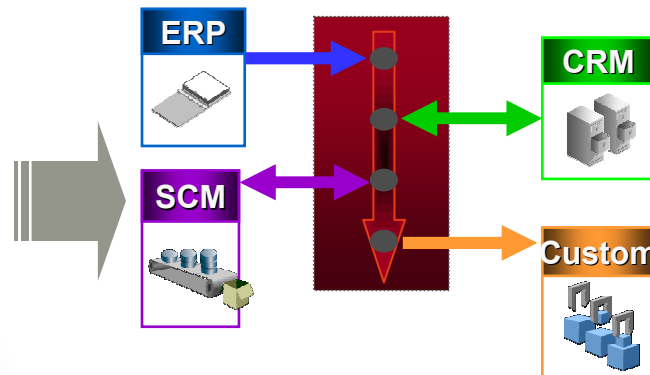
Evolving Technology Trends

Internet



Networked Information
Improved Access

SOA



Networked Applications
Improved Flexibility

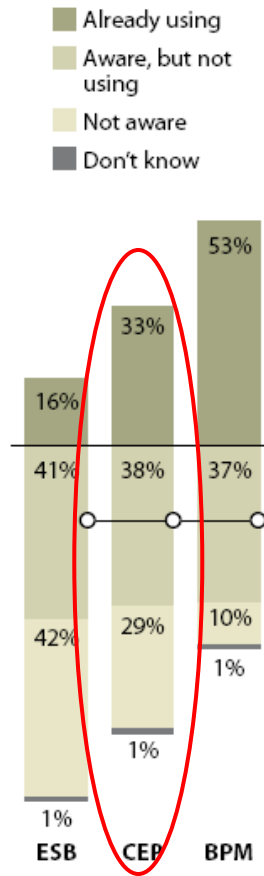
Event-Driven SOA



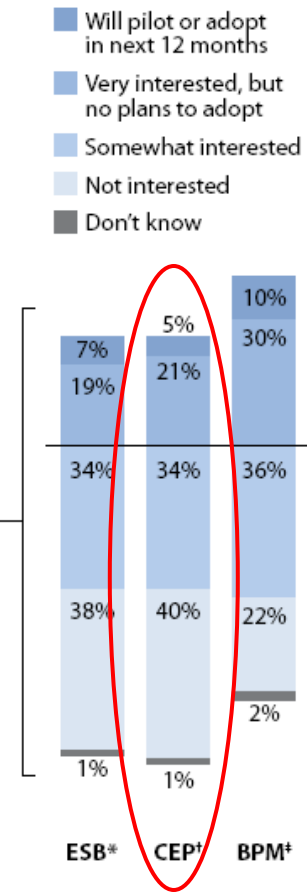
Networked Events
Improved Agility

Forrester Survey – CEP is Here Today

Technology awareness
 "How familiar are you with each of the following technologies and processes?"



Technology plans
 "How interested are you in adopting each of the following technologies?"

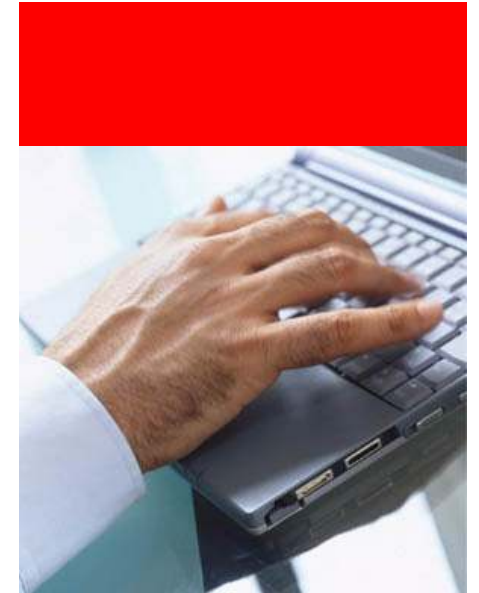


N = 1,017 Decision Makers in NA & EMEA

Source: Forrester Research, 2008

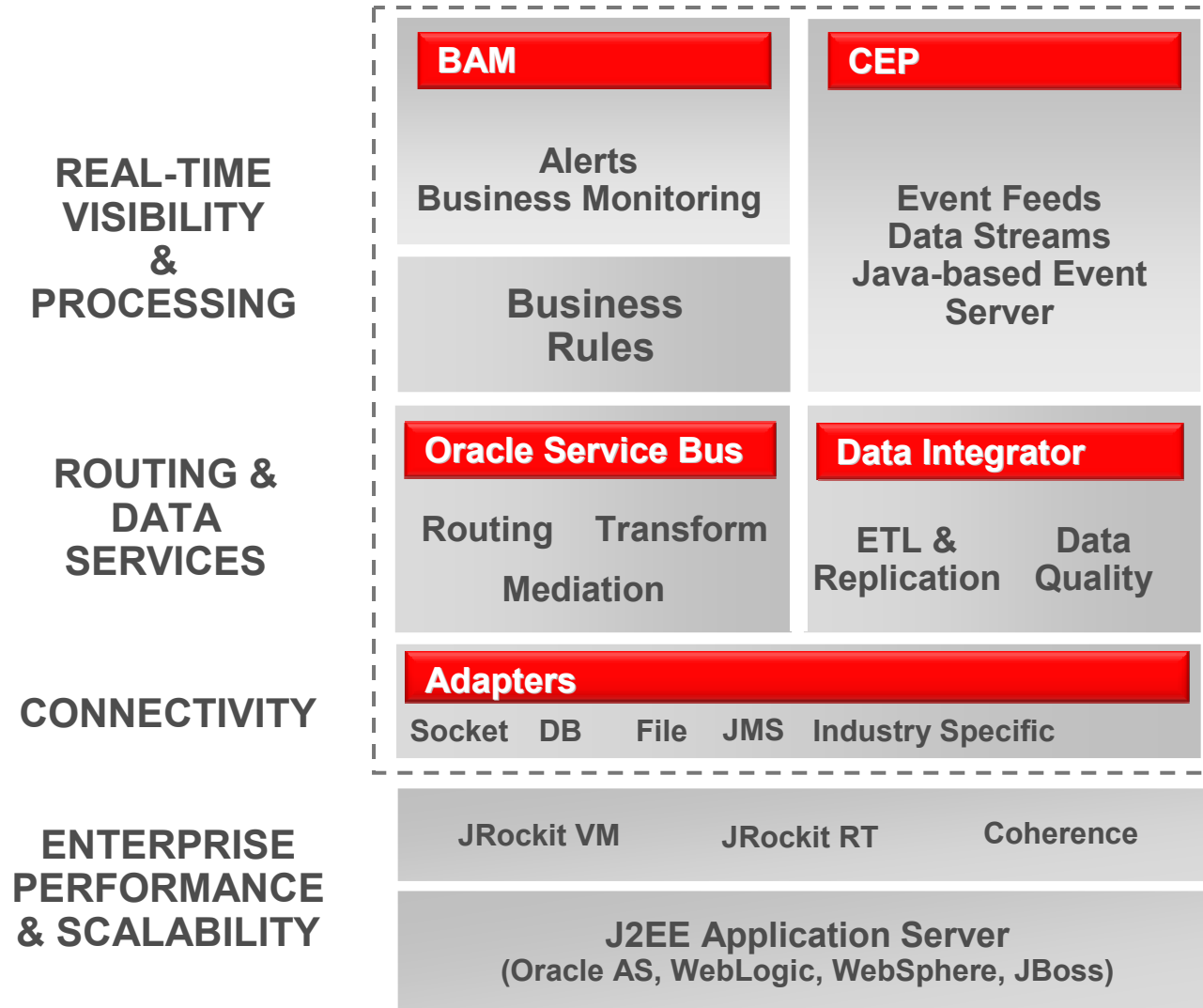
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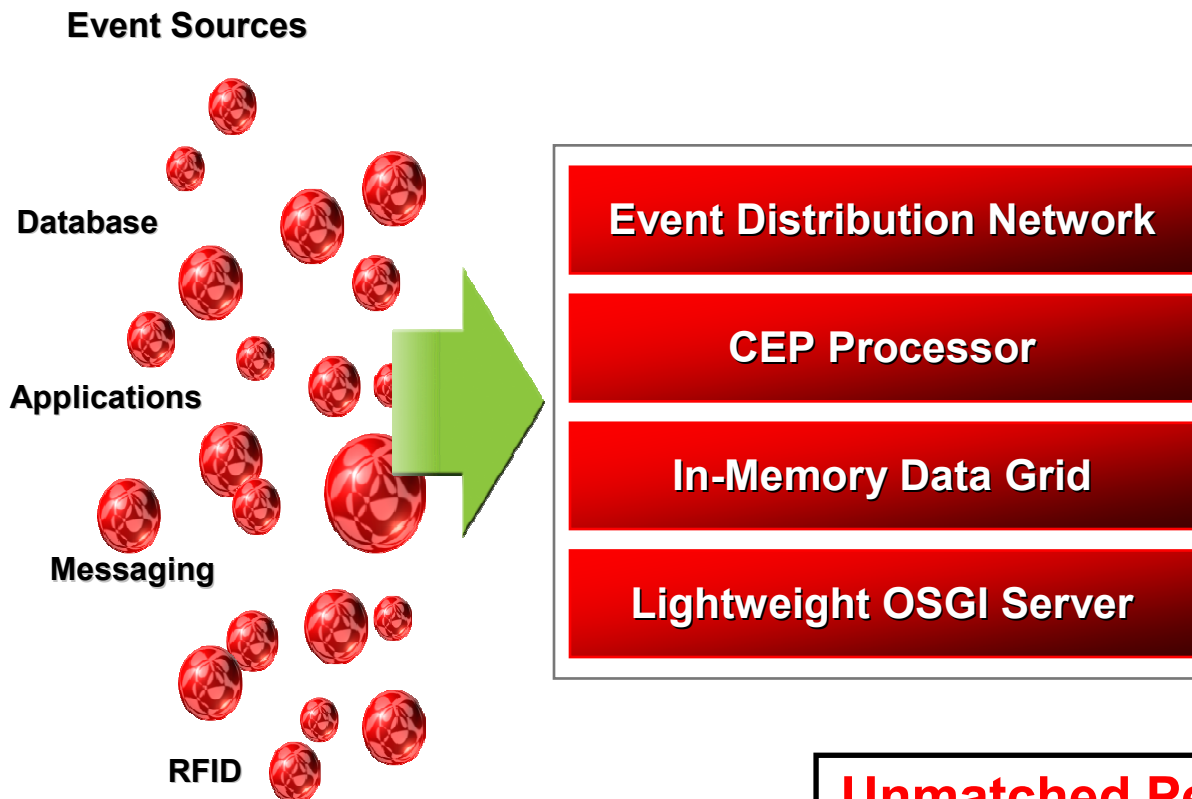
Oracle EDA Suite

Complete Suite for Industrial Event Processing



Pattern I – Pure EDA

Lightweight, Low Latency, Extreme High Throughput, and Java-based Application Container



```
SELECT S.city, AVG(temp)
FROM SOME_STREAM S
[range by 10 slide by 5]
WHERE S.state = 'California'
GROUP BY S.city
```

“I want to look at 10 seconds worth of data”

“I want a result generated every 5 seconds”

Unmatched Performance and Scalability

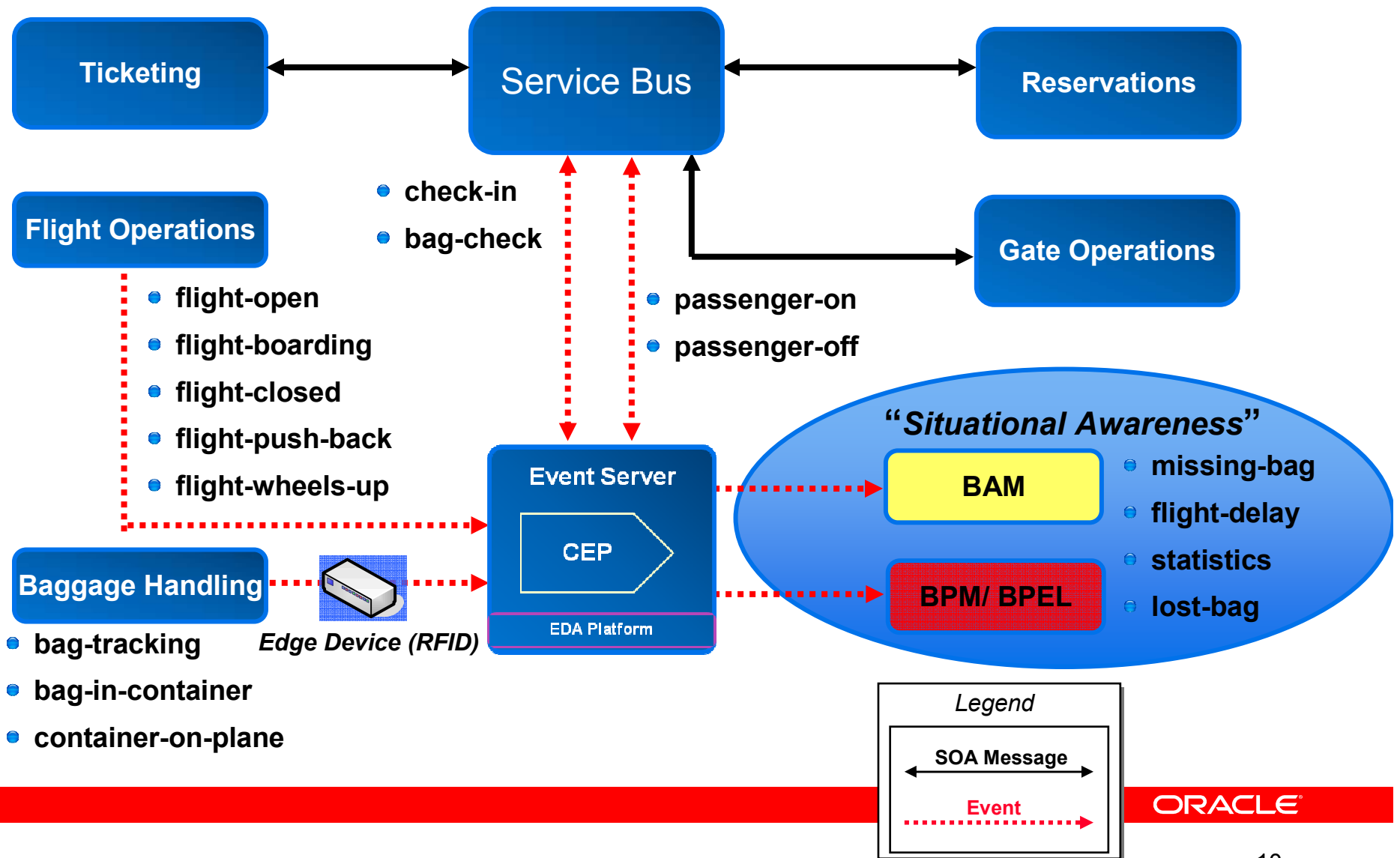
1 Million Events Processed per Second

<1 Millisecond Latency for Events

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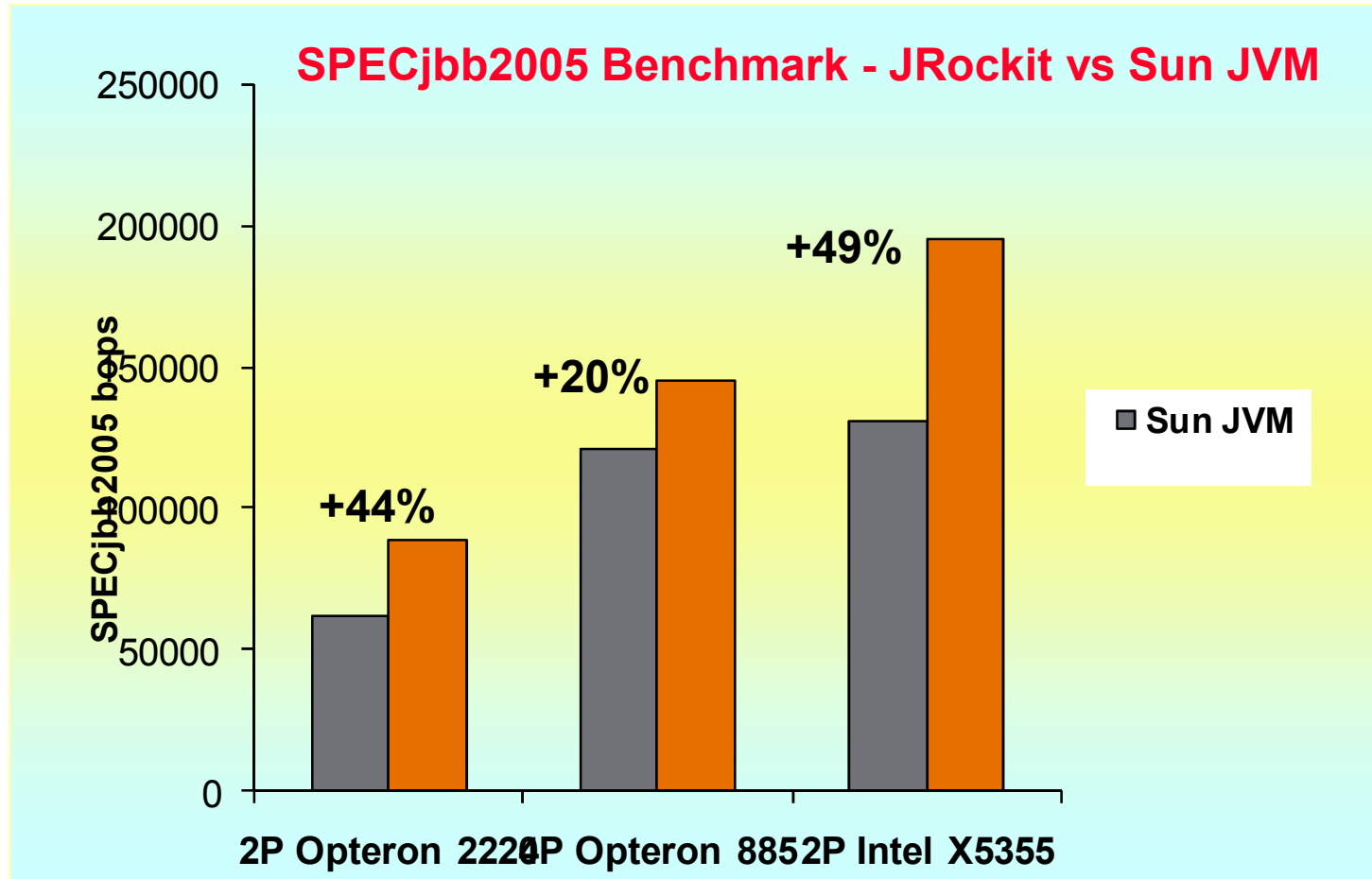
Pattern II – Event-Driven SOA

A hybrid of the worlds of SOA and EDA



Industry Leading Performance

Powered by Oracle's JRockit Real Time JVM



Based on SPECjbb2005 benchmark's business operations per second (bops) of the top results from <http://www.spec.org> as of March 31, 2007 and from Principled Technologies test report dated February 2007, comparing Sun 5.0 to JRockit 5.0 on identical or near-identical hardware..

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Industry Recognition

Awards and Acclamations

“Best Complex Event Processing Solution”

Waters Award



“Leading EDA Suite Solution”

Enterprise OpenSource Magazine



“Leading Business Activity Monitoring Solution”

Gartner Group MarketScope “Positive” Ranking



“Oracle’s BAM Removes Dashboard Complexity”

CRN Product Deep-Dive



“Oracle BAM is a Solid Solution”

AjaxWorld Product Evaluation



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Event-Driven SOA Customers

Sample Customer List

Finance/ Banking



Telecom



High Tech



Travel/ Transport



Public Sector



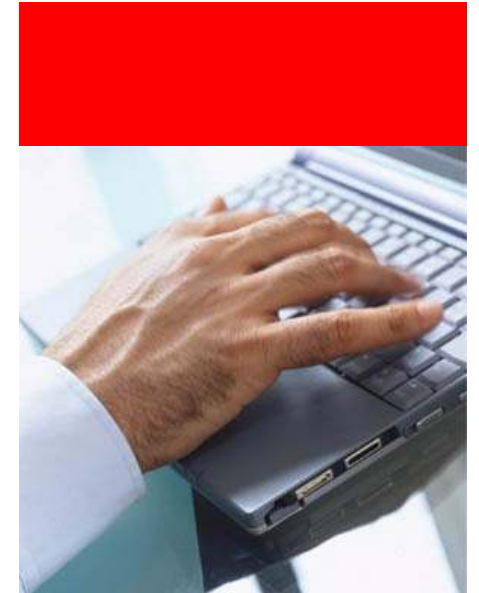
Other



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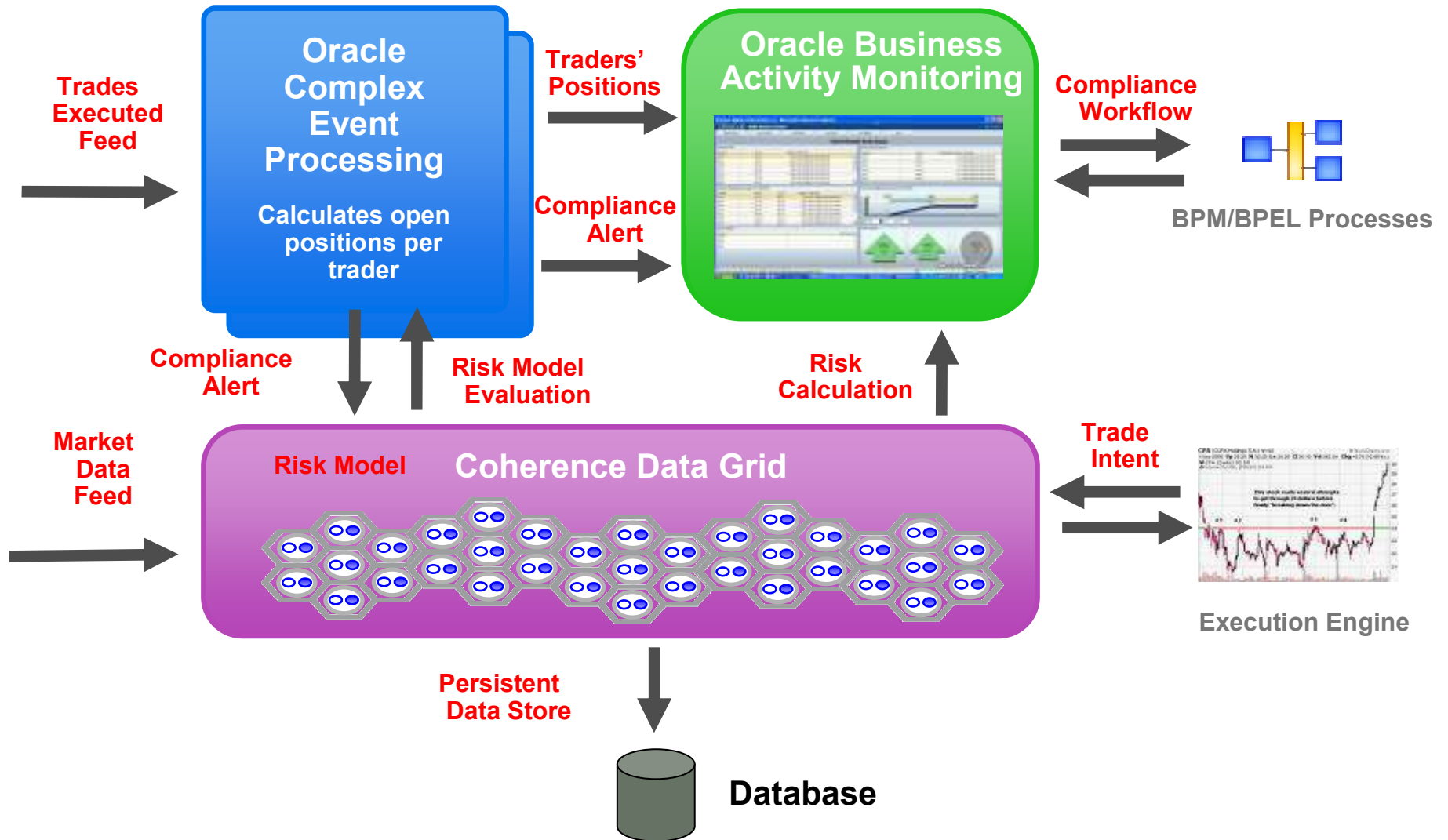





Financial Services Market Challenges

- Pre-Trade Analytics
 - Proliferation of liquidity sources - exchanges, interdealer networks, dark pools, ecn's, etc
 - Trading volumes increasing
 - Regulations for Best Execution
 - Transaction Cost Analysis
 - Algorithmic Trading
- Risk Management
 - Inaccurate and delayed projection of position and exposure levels
 - Inability to trade and realign portfolio positions in tandem with market movements
 - Failure to calculate total risk exposure across multiple asset classes exposes the firm to huge potential losses.
- Payments Fraud
 - Largest single threat to risk and profitability today in the financial services industry
 - Increased regulatory scrutiny leading to greater enforcement of data and identity protection
 - Increasing sophistication of fraudsters changing more rapidly than firms' ability to deal with it
 - Identity theft, employee fraud and new account setup fraud are the top three we are seeing

Oracle Event-Driven Architecture



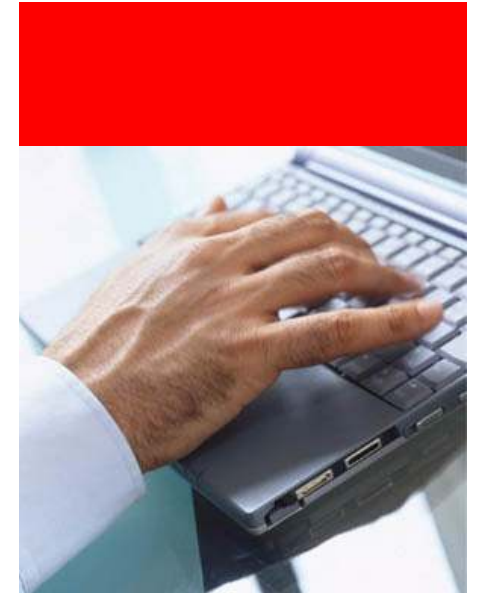


Benefits of Oracle SOA Suite for Financial Services

- Create Value Added Services
 - Monitor, Analyze and Act in milliseconds
- Improve Time to Market through consistent platform for all trading applications
- Standard low latency platform for building sub-millisecond applications
- High throughput platform to process millions of events per second
- Unlimited data scalability for real time data processing
- Reduces resource risk through standardization
- Effectively mitigate Organizational Cross Channel Fraud
- Effectively Address Regulatory Guidelines / Requirements (OCC/FACT ACT, FDIC, etc)
- Leverage the capture of Best Practices within our Solution

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FXall Overview

- Leading platform for global electronic trading and workflow for foreign exchange trading

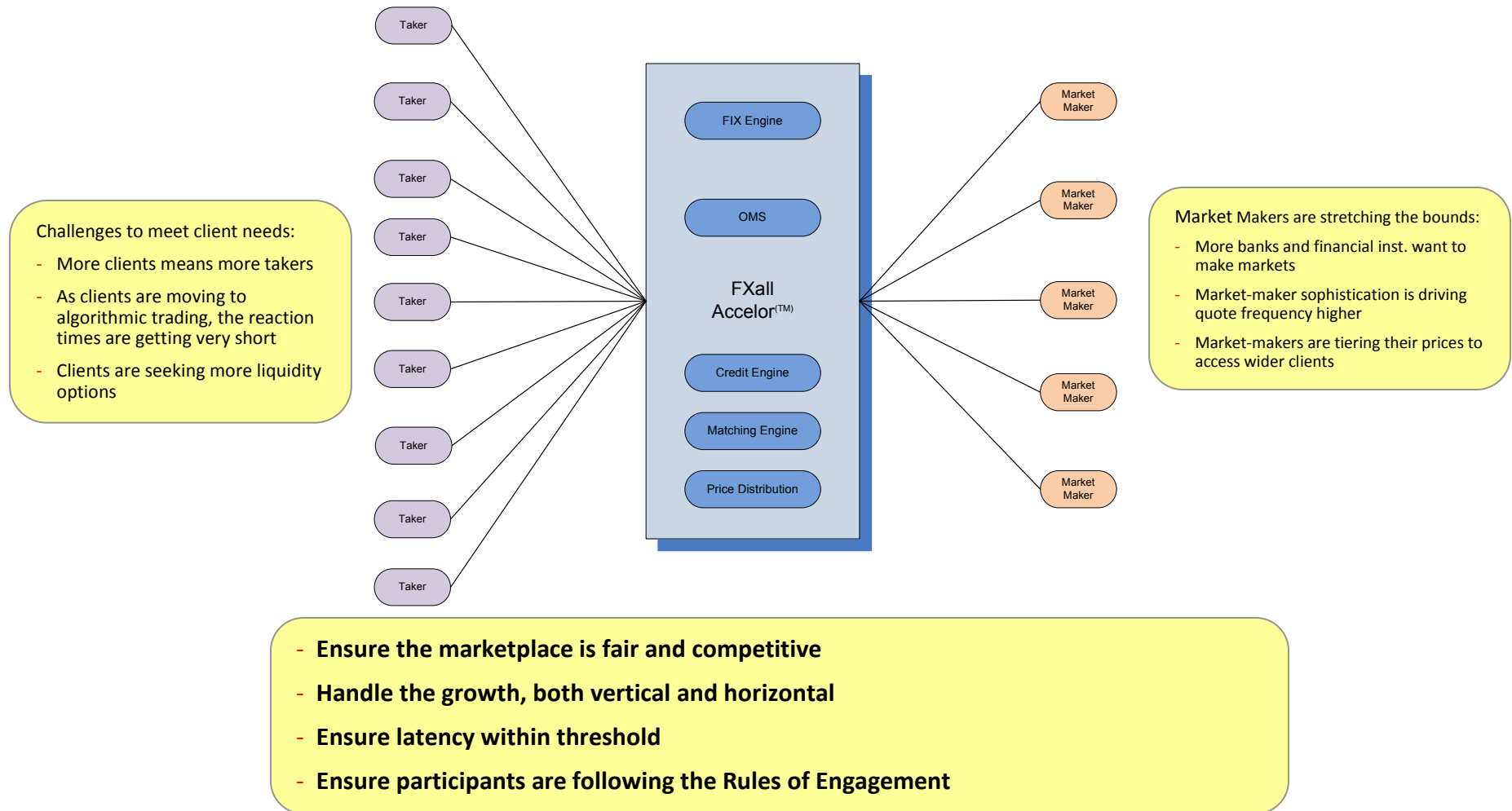
- >3MM transactions per day
- Trading platform for >700 institutions
- Integrated with Prime-Brokers
- Aggressive Growth
 - Target 11MM transactions per day
 - Low-Latency: 20ms average, none over 70ms



- Multiple components; predominantly in Java
 - In-house: OMS, Matching Engine, Credit Engine
 - 3rd-party FIX engine



Business Challenge

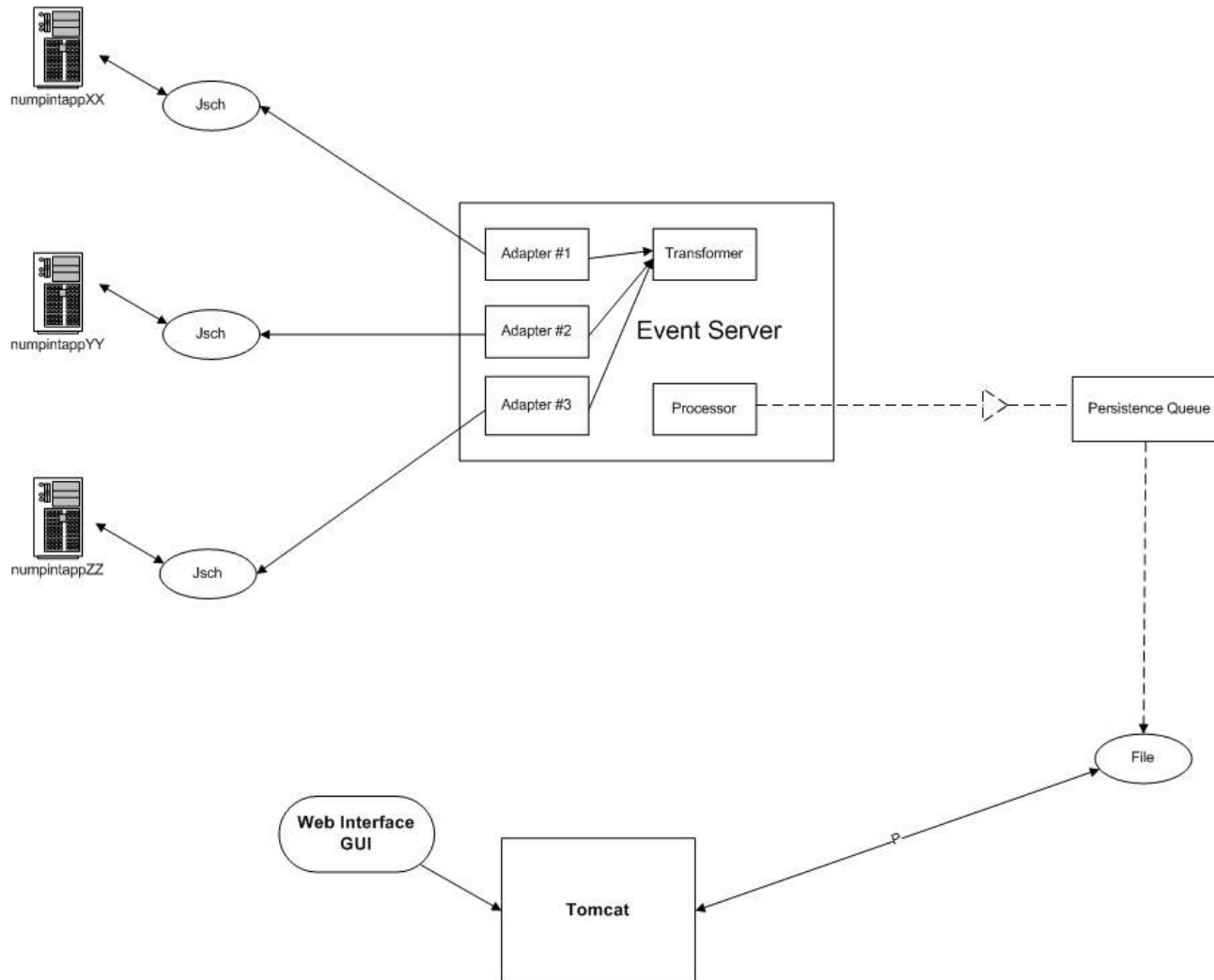




Technical Challenge: Real-Time Surveillance

- To correlate massive amounts of singular events from multiple information sources in real-time into business terms and rules that can be acted upon by users or other systems without impacting the core trading platform
 - **Many Event Sources:** Correlate multiple sources of information from different locations
 - **High-Frequency:** Capture tremendous number of events happening within milliseconds
 - **Concurrency:** Need to detect multiple events happening at the same time
 - **Non-intrusive:** Need non-intrusive mechanism to collect information
 - **Flexible:** Need to easily add/ modify complex events of interest

Log Event Processor





Solution

- Leveraged Oracle CEP to correlate trading activity from multiple applications to provide real time views of the market
 - Information from multiple sources non-intrusively aggregated via log file adapters (jsch tails of application logs)
 - Every log entry from three different types of sources evaluated to produce business relevant events
 - jsch tails on the production servers generate very little load
 - ~2000 messages/second, > 3 million messages / day evaluated on matching criteria
 - Concurrent business events detected
 - Bad trades due to high-latency, off-market prices, threshold violations



Next Steps with Oracle CEP

- Additional Real-Time Market Surveillance
 - Extend the framework to other areas
 - Add more real-time market analytics: more data points and dimensions; calculate VWAP for any market
 - Generate alerts: circuit breakers



Additional Sessions of Interest

Open World Sessions

Monday September 22, 2008

TIME	TITLE	LOCATION
05:30 p.m.	S299460 (Retail Track) Oracle SOA Suite in Retail: Event Processing in the Store, Distribution Center, and Central Office	Twin Peaks

Tuesday September 23, 2008

05:00 p.m.	S298904 (SOA and BPM Track) Oracle SOA Suite Process Monitoring: Oracle Business Activity Monitoring Implementation Best Practices	Salon 08
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Thursday September 25, 2008

01:30 p.m.	S298906 (SOA and BPM Track) Event-Driven SOA: Real-Time Business Intelligence Situational Awareness Solutions Leveraging the Power of EDA	Salon 14/15
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Oracle Develop Sessions and Hands-On Labs

Sunday September 21, 2008

03:45 p.m.	S299013 Oracle Event-Driven Architecture Suite, CEP, SOA, and Web 2.0	Salon 07
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Monday September 22, 2008

11:30 a.m.	S299043 Hands-on Lab : Oracle Business Activity Monitoring: <u>Java Edition – New to Business Activity Monitoring?</u>	Golden Gate C2
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Tuesday September 23, 2008

01:00 p.m.	S299043 Hands-on Lab : Oracle Business Activity Monitoring: <u>Java Edition – New to Business Activity Monitoring?</u>	Golden Gate C2
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DEMOgrounds

Mon. – Thurs.	Event Driven Architectures: Complex Event Processing and Business Activity Monitoring	Demo Pod 1854
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For More Information

www.oracle.com



Oracle SOA

<http://www.oracle.com/soa>

Oracle EDA

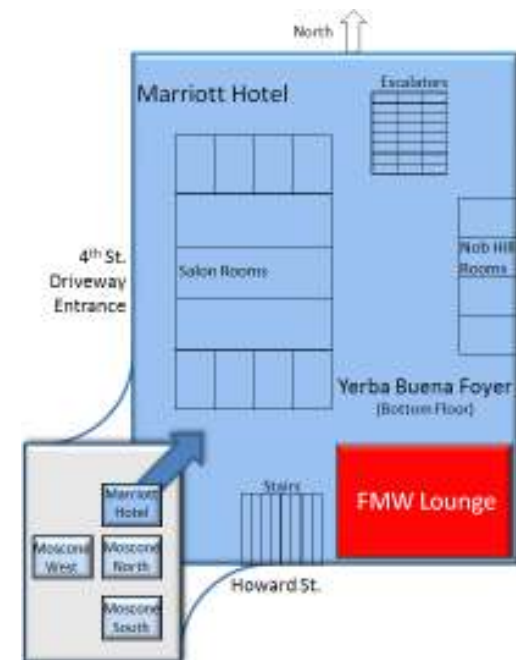
<http://www.oracle.com/goto/eda>

Oracle Complex Event Processing (CEP)

<http://www.oracle.com/goto/cep>

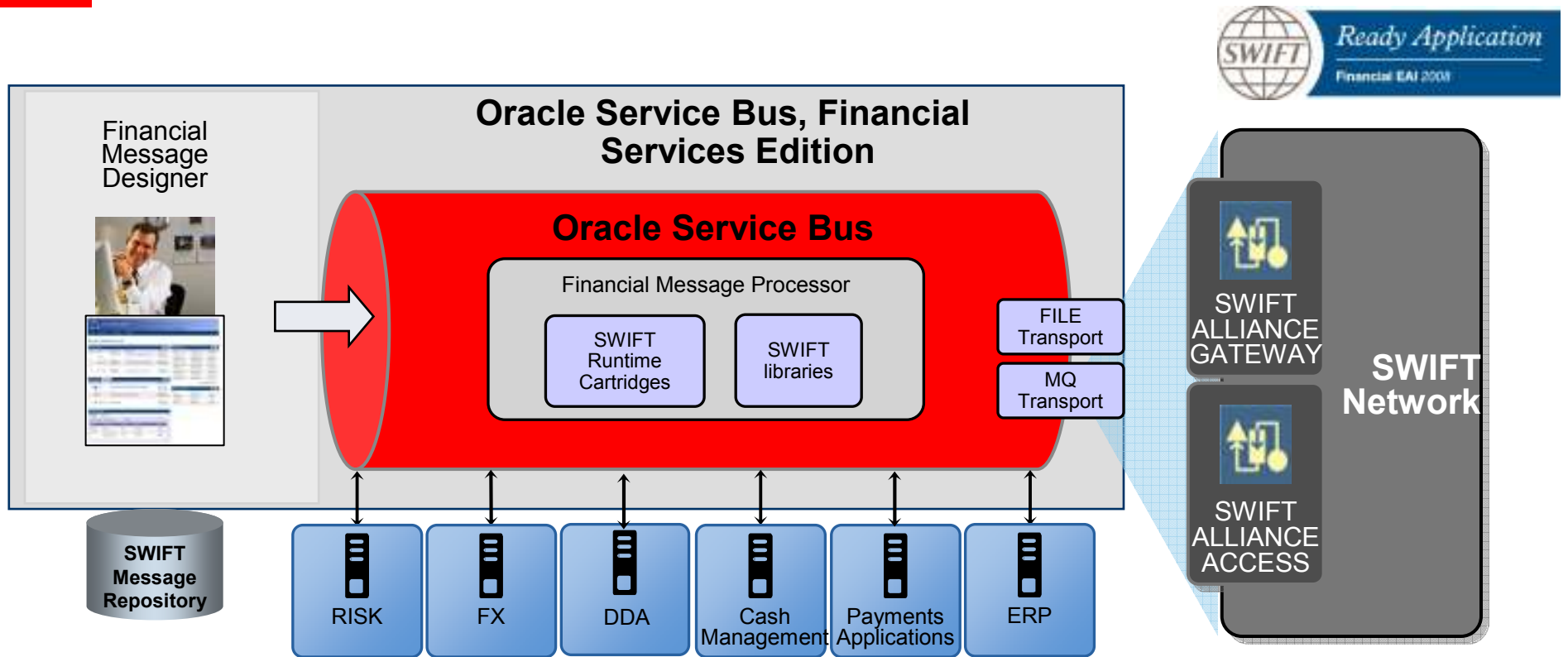
Fusion Middleware Lounge

- Record a Video Postcard and view it on YouTube. Share your OpenWorld 2008 experience with your family and friends
- Recharge your devices at a charging station while viewing the latest video, blog and twitter updates
- In the Marriott, Yerba Buena Foyer, Sunday through Thursday



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