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WORLD**

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S15701

Event Driven Patterns and Best Practices

Robin J. Smith

Product Management/Strategy Director

Oracle Complex Event Processing

Presenting with



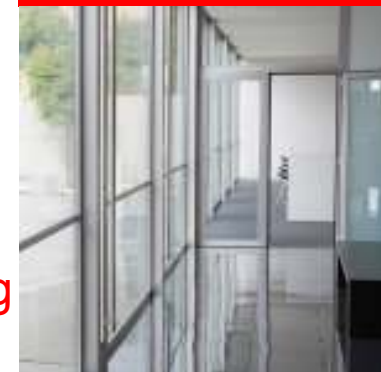
Deloitte.



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Today's Session Agenda

- Oracle Complex Event Processing Platform Strategy and Advanced Features
 - Addressing Next Generation Business Demands
 - Highlight of Technology Integration
 - Extreme Performance on Exalogic
- New Customer Business opportunities with Oracle Complex Event Processing
 - Utilities: Commercial SmartMeter/Grid solutions with 
 - Data Center Infrastructure Management with 
 - Telecommunications: The Real Time Mobile Billboard by 
 - Telecommunications: Next Generation Services Management with 
 - Financial Services: Strategic Capital Market Solutions showcase by 
- Summary and further EDA Technology Immersion at Openworld 2011



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ORACLE

Complete Holistic Event Driven Platform

Complete Strategic Real Time Event-Driven Integration and Application Infrastructure Solution Platform

Real-time business insight

Real Time
Situation Awareness

- Preempt and react instantaneously to Enterprise, Environmental and Global Business conditions, Gain business insight using previously untapped, raw event sources – **Oracle Sensors**
- Vast business value of joining “Data in Motion & Data at Rest” – **Real Time Predictive Analytics**

Hot-pluggable world-class integration

Complete Technology
Integration,
Extreme Performance

- Transparent SOA infrastructure and Database Technology interoperability
- Distributed, deployment ready, pre-integrated, in-memory Data Grid, and Java low latency determinism – *Focus on HA/Scalability* : Extreme Performance on **Exalogic**
- Oracle Spatial and Oracle (JDBC) Data Mining, Data Cartridges – *Focus on industry leading capabilities*
- Lightweight high performance Java Event Server development and Deployment platform

Real-time business friendly analyst oriented visualization layers

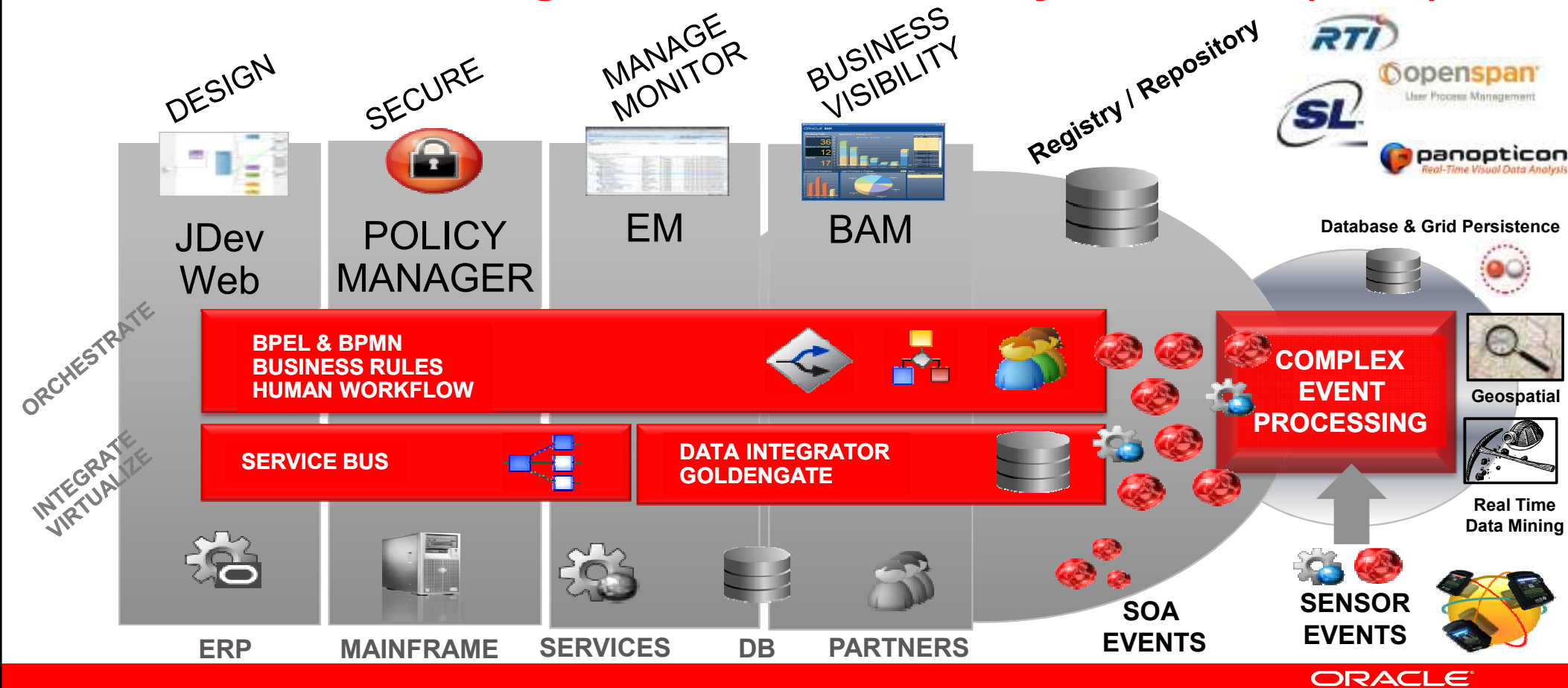
Business Level
Abstraction

- Business User focused Visual interfaces
- **Oracle** Business Activity Monitoring, Business Process Management
- Real-time Business Intelligence, **Oracle** Vertical Application solutions

ORACLE

Oracle Event Platform Eco-system

Oracle Technologies & Event Delivery Network (EDN)



Streaming Event-Driven Architecture (EDA) Solutions

Lightweight, Low Latency, Extreme High Throughput, Java-based Application Development & Deployment Platform

► Enriched Streams

- From any source: data streams, web services, Java, Database

► Adapters

- Translate external events/data into java objects for processing

Oracle Complex Event Processing Optimized Performance & Scalability



► Processors

- Set of queries applied to the streams

► Listeners

- Handle triggers raised by the processors

► Events

- Implemented as JavaBean or Map

Incoming Data Streams

**1 Million Events/Sec
On a Single Node ****

Aggregate, correlate, filter data
Can Handle Unlimited Queries

Latency

Instantaneous Perceptive Responses (low microseconds)

Resulting Data fed to vast
business opportunities with
Java language

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** (30 Nodes currently available on Exalogic)



EnerNOC

Energy Demand & Response Solutions



Leader In Demand Response and Energy Management

Market Leadership

- Incorporated in 2003; Initial Public Offering in 2007
- Based in Boston, Massachusetts
- 579 MW at IPO → 6,650 MW at June 30, 2011
- 1,308 C&I sites at IPO → 10,700 at June 30, 2011
- Over 700 demand response dispatches since IPO; over 220 in 2010; very active in 2011

Financial Strength

- \$250m contracted revenue at IPO → \$1.3Bln⁽¹⁾ on June 7, 2011
- Generated \$45.1m of Cash Flow from Operations and \$25.8m of Free Cash Flow in 2010
- Expect to internally generate cash in 2011 through 2013
- \$79.2m Cash & equivalents at June 30, 2011

Innovative Smart Grid Energy Management Applications



DemandSMART



EfficiencySMART



SupplySMART

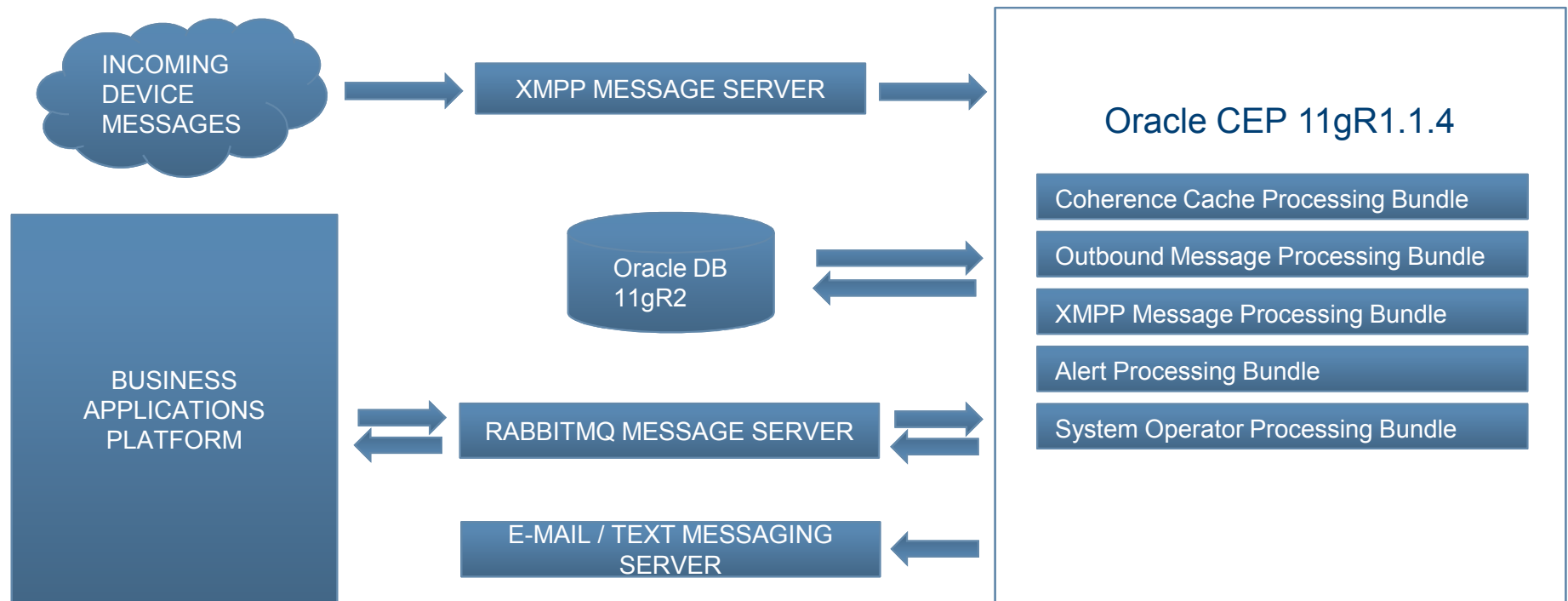


CarbonSMART

ENERGY MANAGEMENT APPLICATION PLATFORM

DR Architectural Design Diagram with CEP

Over 50GB of reading data enter our systems each day, validated and processed in Real Time by Oracle CEP



Business Proposition for Using CEP at EnerNOC

- The need for an application platform built from the ground up to support high-volume, real-time streaming data
- The ability to perform complex real-time calculations and decision processing on streaming data
- Provide an application framework that is scalable and can easily integrate with legacy applications and systems



Emerson Power Intelligent Data Centers

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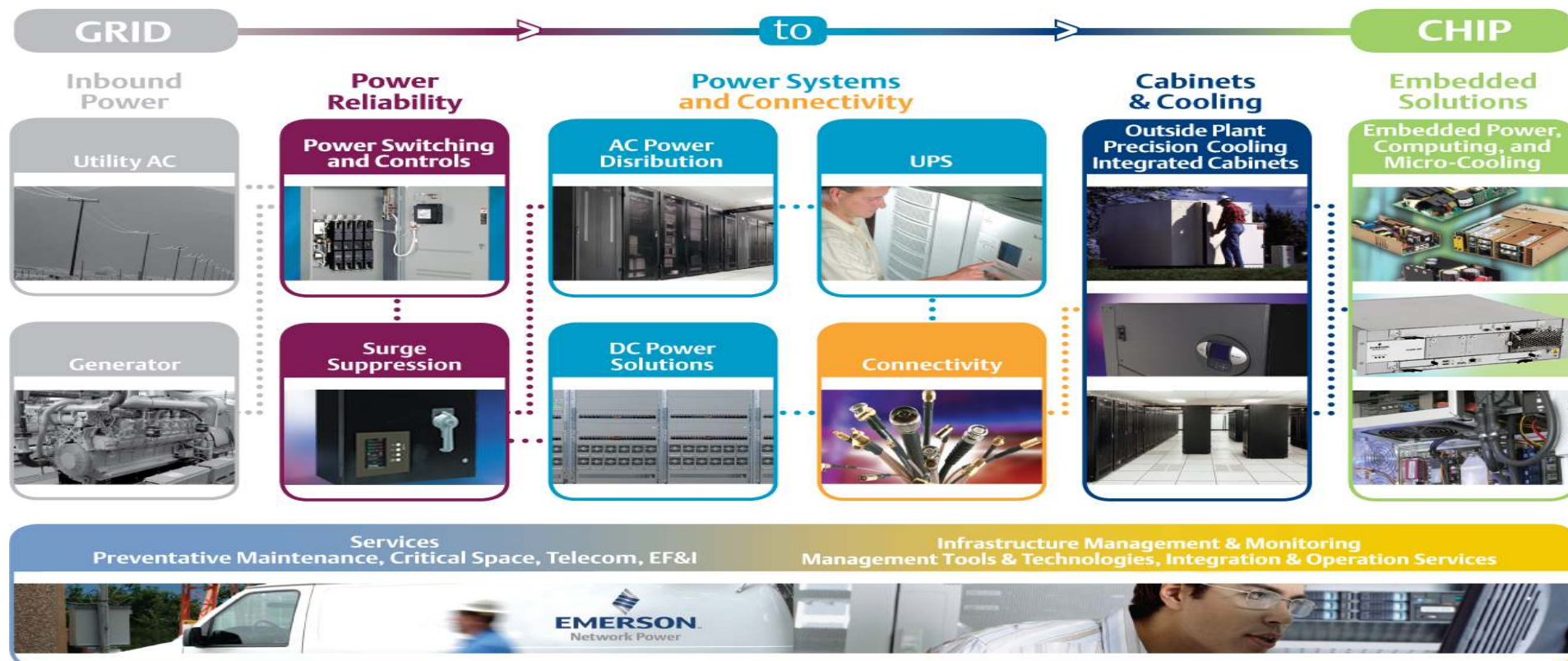
Event Driven Patterns and Best Practices

Mitesh Patel – Software Manager

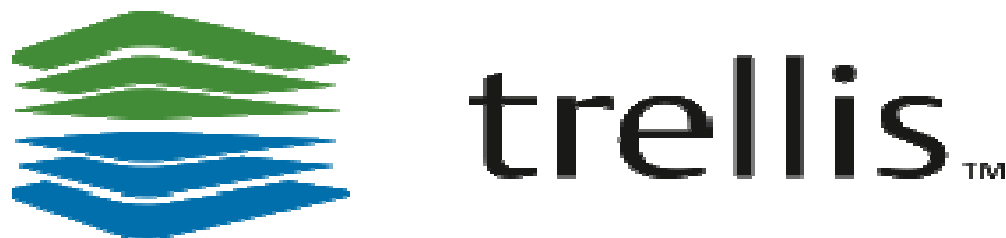
October 3, 2011



Enabling Business Critical Continuity



What is the Trellis Platform?



The only holistic DCIM platform of hardware, software and services for managing the critical operations of the data center

- Enabling smarter decisions resulting in:
 - ✓ Less risk of downtime while achieving greater efficiency
 - ✓ Allowing data centers to run at higher capacities
 - ✓ Improved compliance

Provides the Visibility and Control

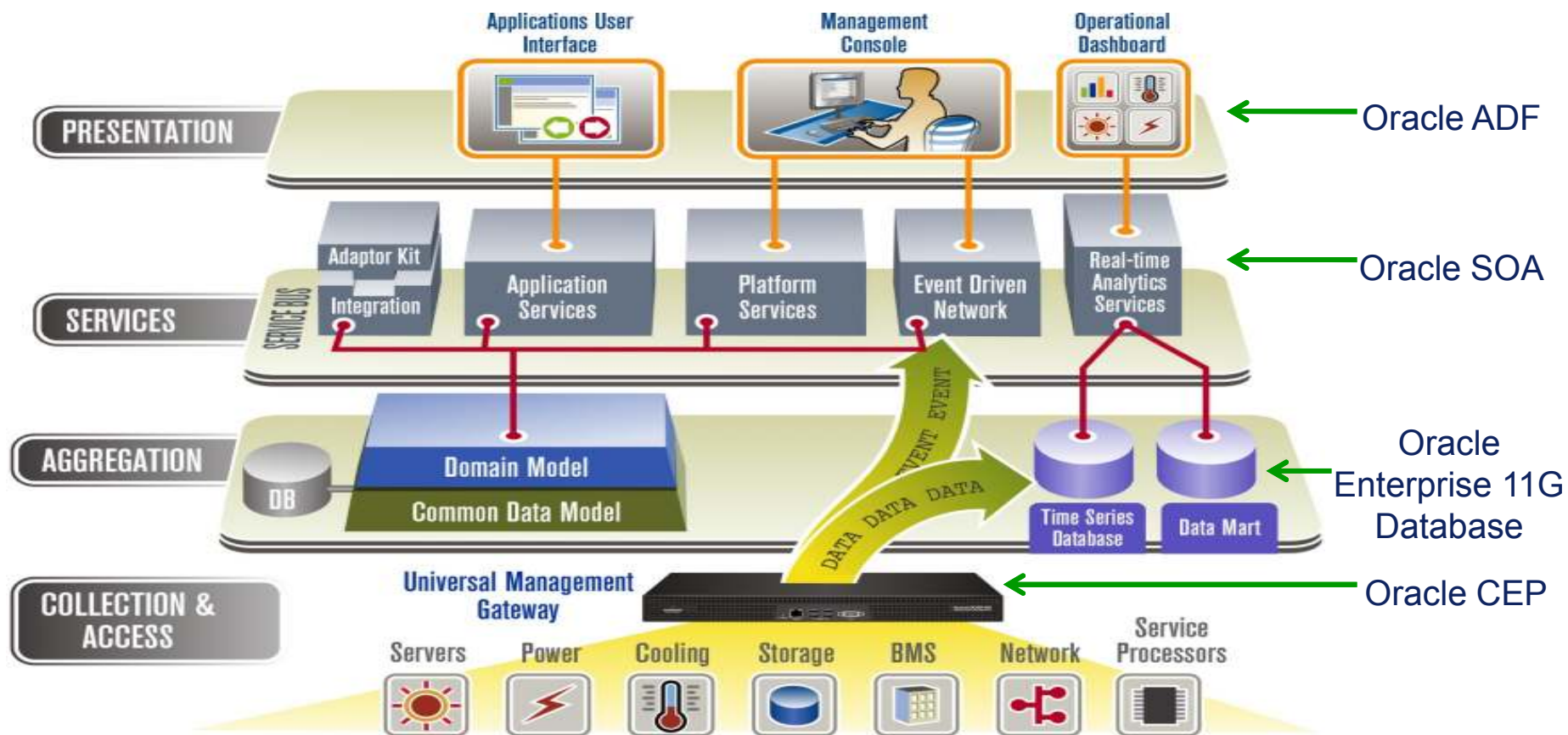


New Trellis Platform Applications

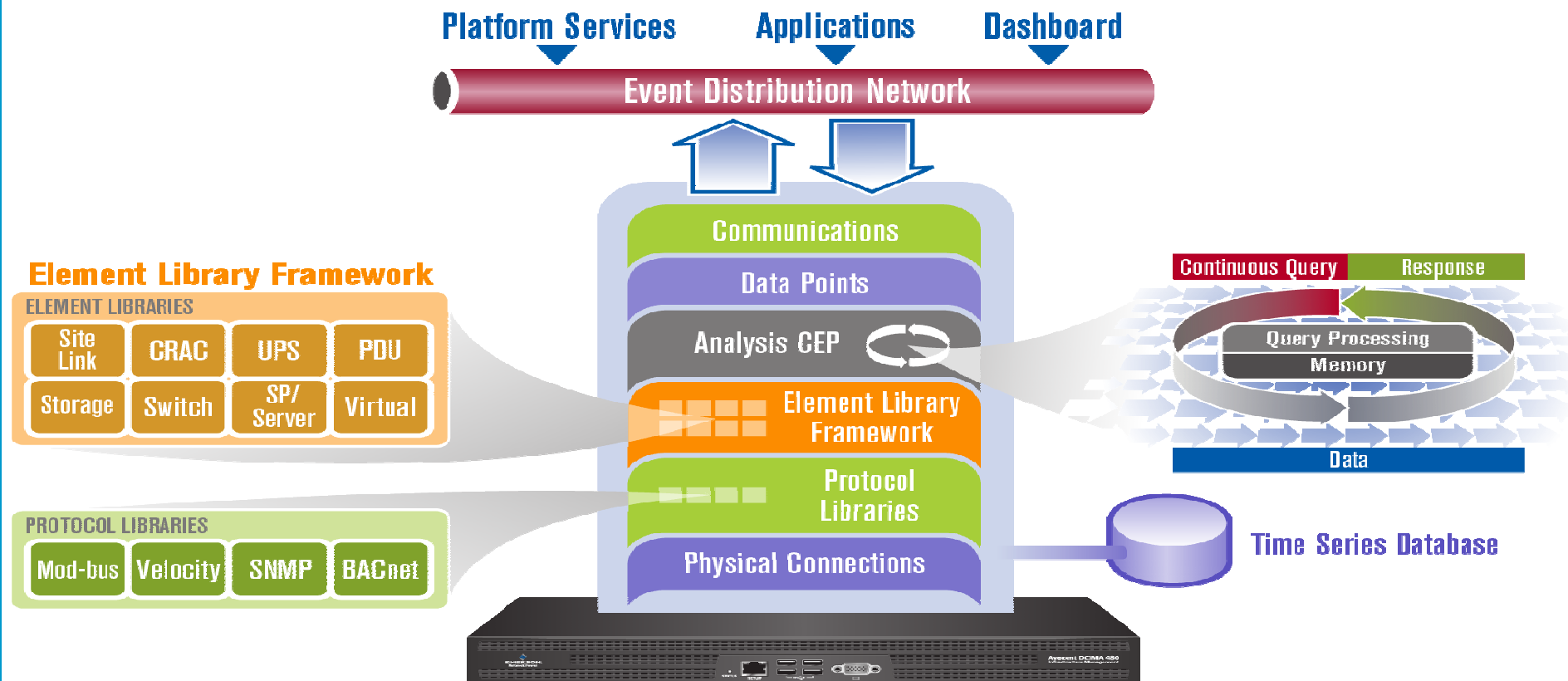
Modular Construction
Multiple Protocol Support



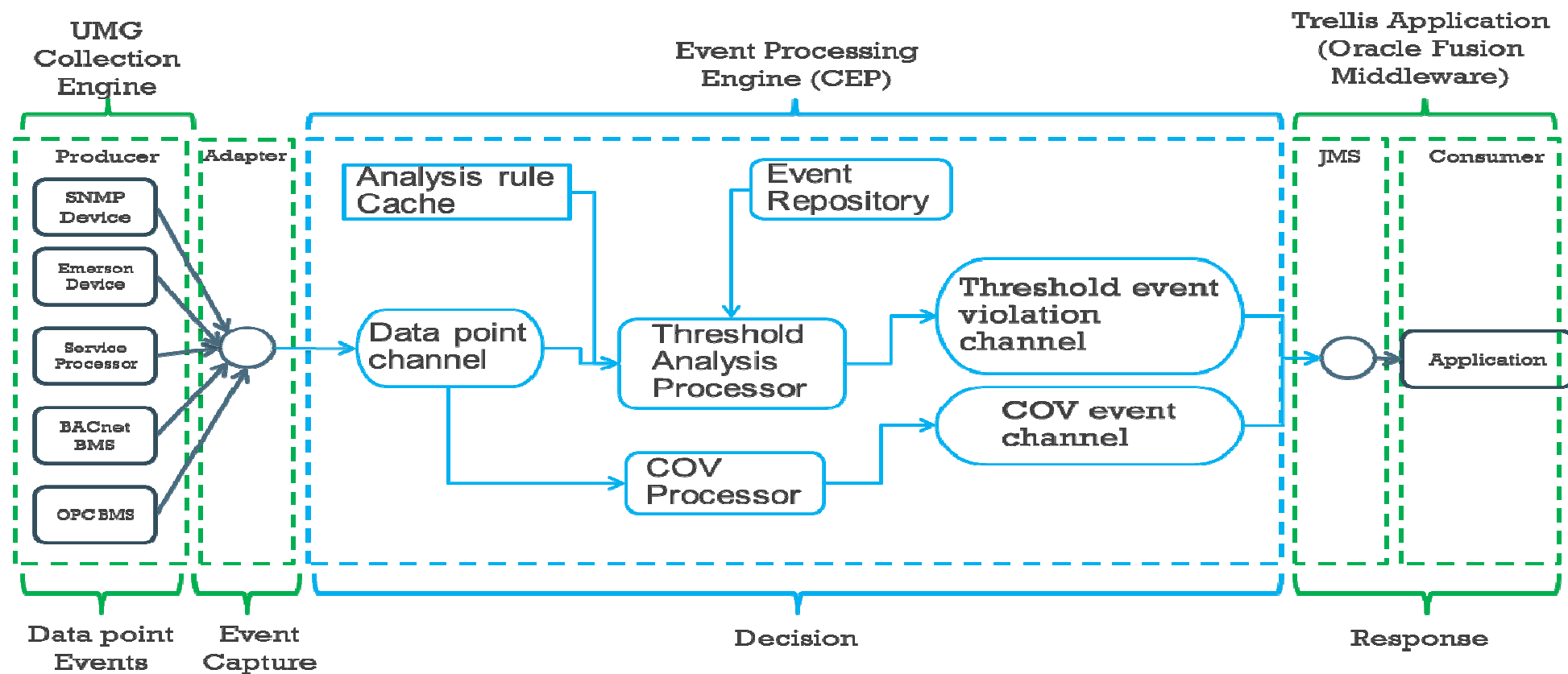
Trellis Architecture



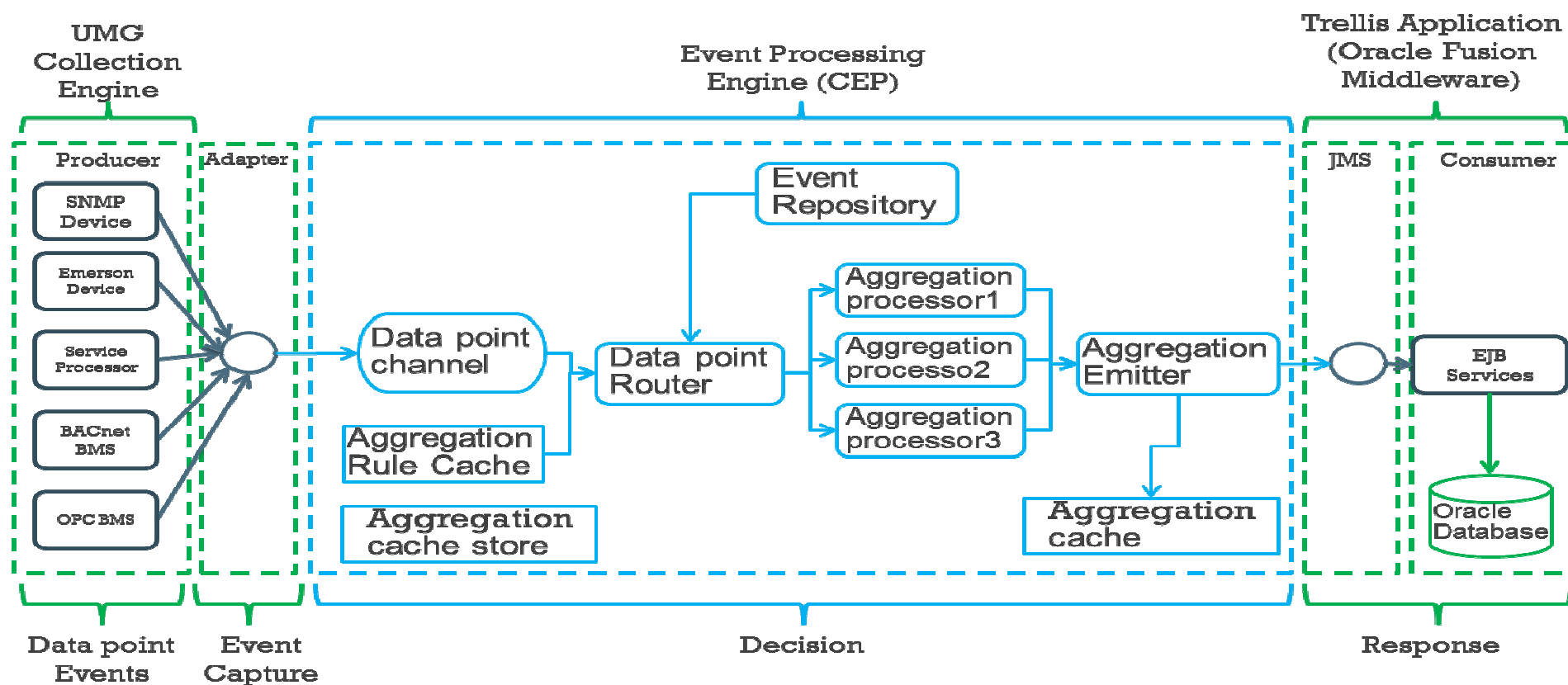
Trellis Real-Time Fabric



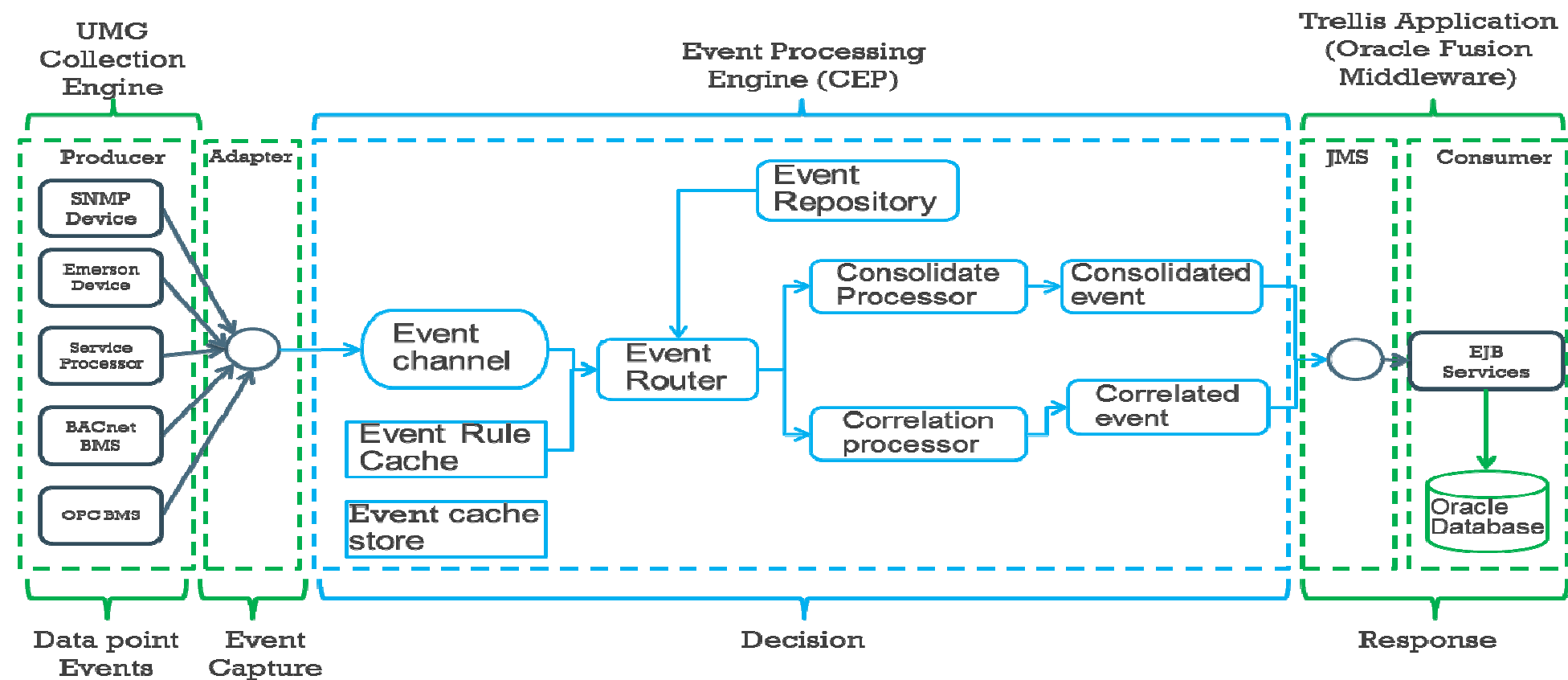
Event Processing Services



Data Aggregation Services



Event consolidation and correlation services



Summary

- Oracle CEP enables Emerson Network Power to create:
 - Configurable services
 - Support custom adapters, installing dynamic event rules and local cache
 - Internal cache helps reduce I/O
 - Ease of deployment
 - Light footprint , consumes less memory and processing power
 - Real-time monitoring services
 - Monitors real-time streaming of events to detect system errors based on business rules
 - Support time window, match recognize, pattern matching
 - Process high volume of events in seconds
 - Distributed event processing through CEP deployed in the Trellis Universal Management Gateway
 - Integrated solution Oracle Fusion Middleware 11g





Turkcell Mobile Billboard



Turkcell Technology and OCEP

Ersin İhsan Ünkar
Software Development Specialist



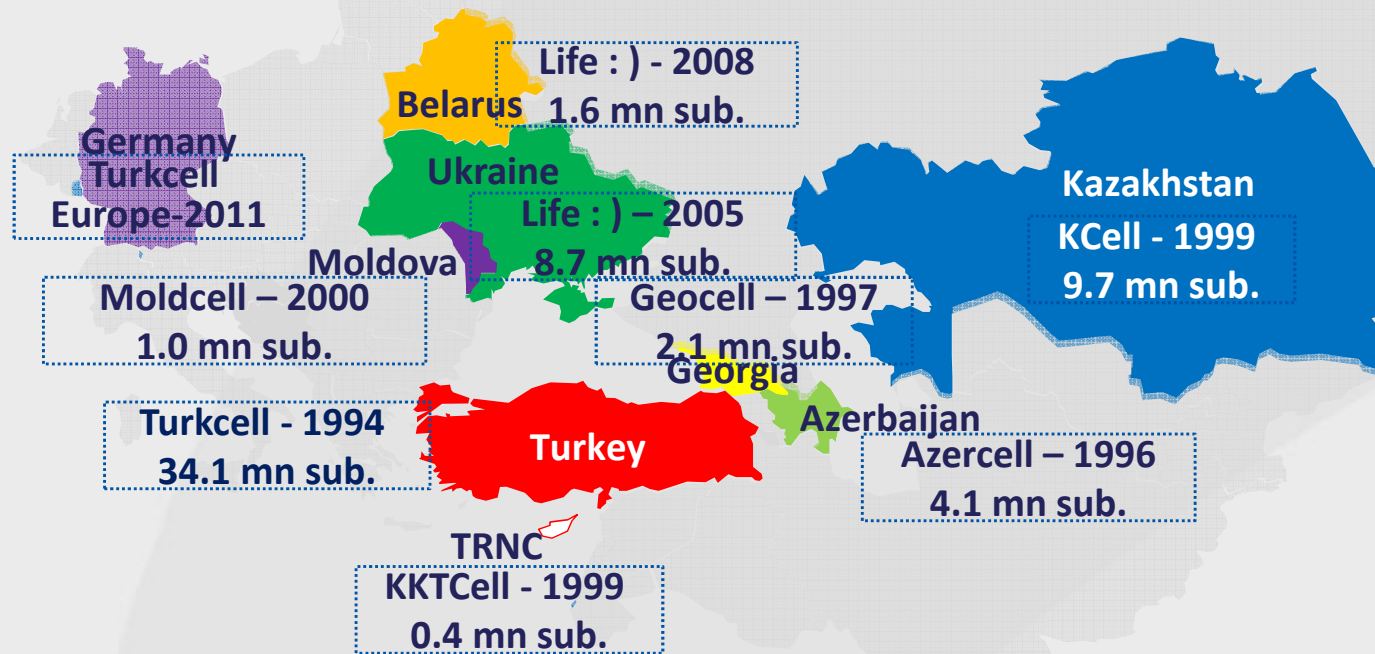
Turkcell Group – Regional Leader

- › 9 countries
- › 61.7 million subscribers
- › Leadership in the region

***Now we are in
Germany...***



- Segment focus
- Turkcell content & applications



*Subscriber numbers are as of Q1 2011

More About Turkcell



- Creates employment for more than 50.000 people in Turkey
- The first and only Turkish company listed on NYSE
- Complies with ISO9001, EU and US regulations
- Massive tax contribution to the Turkish government
- Corporate social responsibility projects on education, culture and sports



Turkcell Technology



*We are an energetic team having **more than 17 years of experience** combined with an ongoing commitment to innovation.*



Key Milestones



More than 10
years of
experience in
Turkcell ICT

TTECH Center put
into service with
255 engineers
First Turkcell
Group customers

**First out of
group customers**
361 engineers

1994 - 2006

2007

2008

2009

2010

Today

**TTECH company
formed** with 44
engineers

**First Telia Sonera
group customers**
321 engineers

Team of 400+
people with **15
customers in 14
countries**

Mobile Billboard



Make an offer

**Give an
information**

**Send an
advertising**

**Continuous Intelligence
Platform**



Also visit: Session ID: 07813

Session Title: Location-Based Data, Marketing, and Sales Services with Spatial Technologies

Solution Architecture



Mobile Billboard

Service Layer

TTECH Continuous Intelligence Platform (CIP)

**Application
Layer**

Oracle Real Application Cluster

ORACLE[®] 11^g
DATABASE

ORACLE[®] 11^g
DATABASE

Oracle CEP Domain

ORACLE[®] 11^g
FUSION MIDDLEWARE

ORACLE[®] 11^g
FUSION MIDDLEWARE

**Server
Software Layer**



**Oracle
Enterprise
Linux**



**Opearting
System Layer**



**Identical
Commodity
Machines**



**Hardware
Layer**



- TTECH CIP on Oracle CEP
 - Enriches Turkcell's ability to capture real-time events in its GSM network
 - Enables Turkcell to give its subscribers a dynamic, wide and targeted range of offers
 - Improves service clients revenue generation by adding new marketing capabilities to their portfolio

Some Numbers



- 800,000 events per second
- 50 simultaneous campaign/offer capability
- Responsiveness under 1 second
- With scalable architecture, ready to expand on 0-day



Telcom Italia Real Time Services



Customer Overview



*_ **Leader** in fixed-line and wireless telecommunication services in Italy.*

*_ Majority owner of **Telecom Italia Mobile**, Italy's **leading provider** of wireless communications.*

*_ **Core operator** in fixed-line and wireless communications for **Latin America** and the **Mediterranean region**.*

_ 2010:

Revenues 27,571 millions €

EBITDA 11,412 millions €

Profits 3,121 millions €

Fixed-line network accesses 15.4 millions

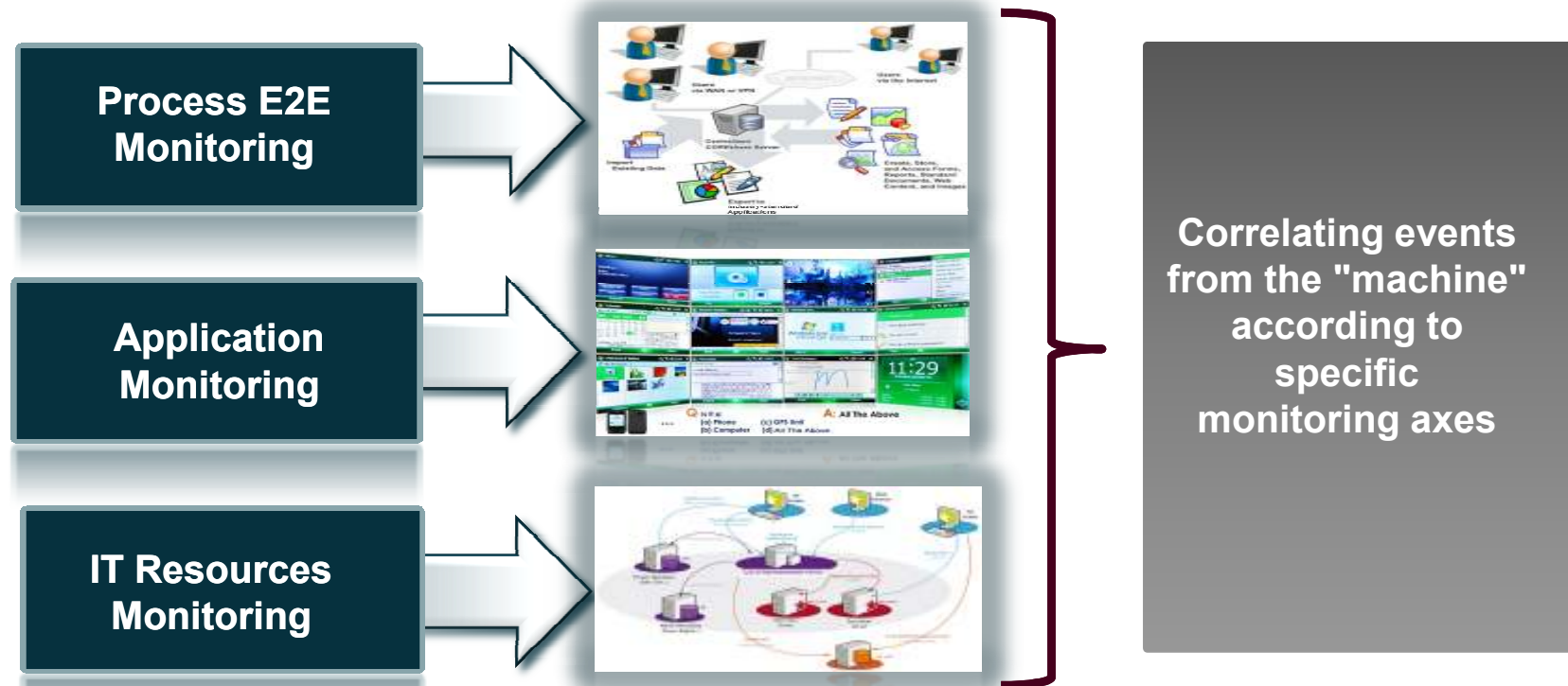
TIM line network accesses 31 millions



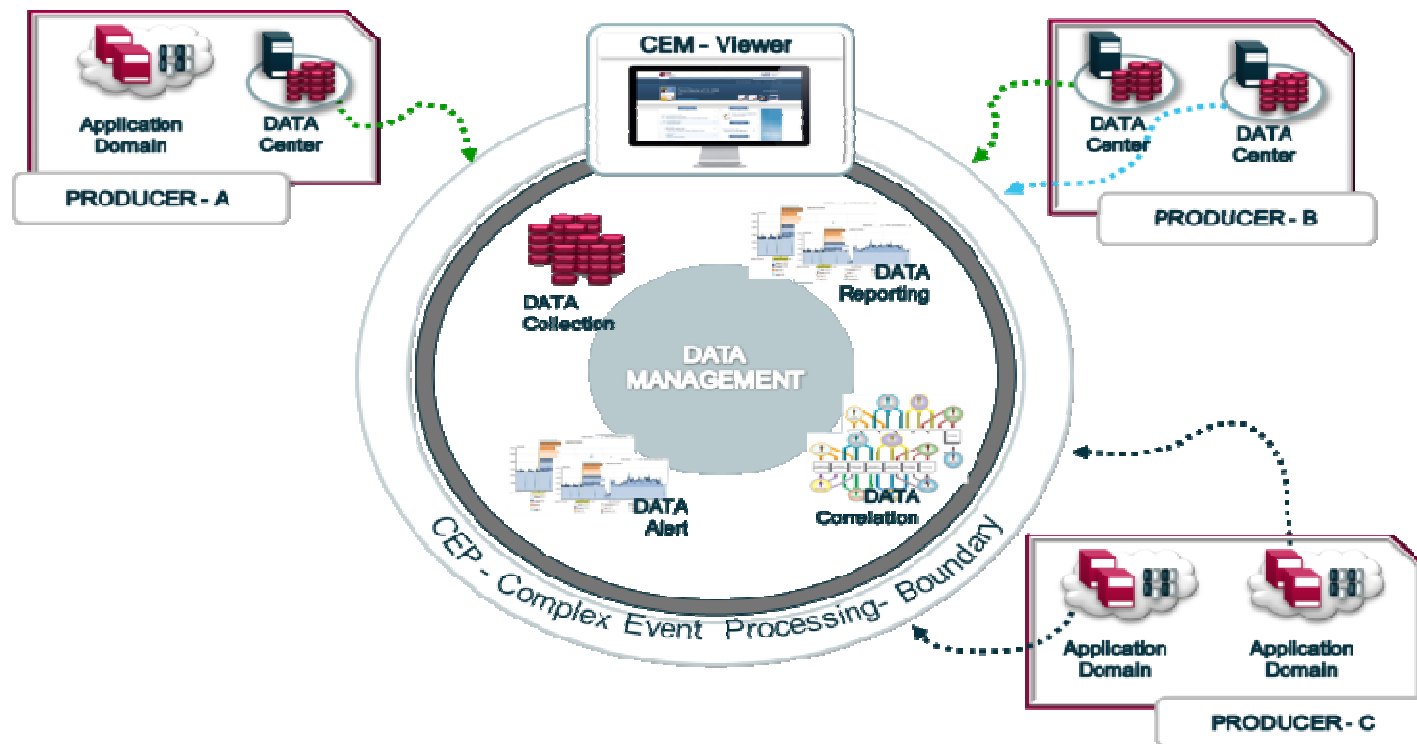
■ Core markets ■ Other markets



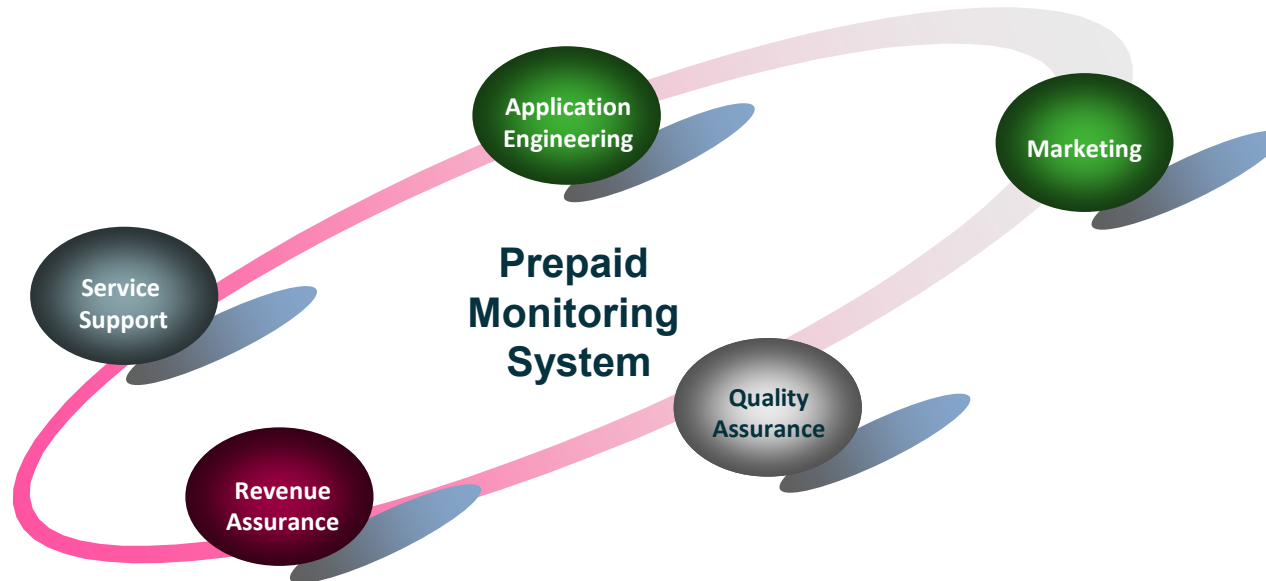
Use Case 1: Enterprise Infrastructure Monitoring (C.E.M.)



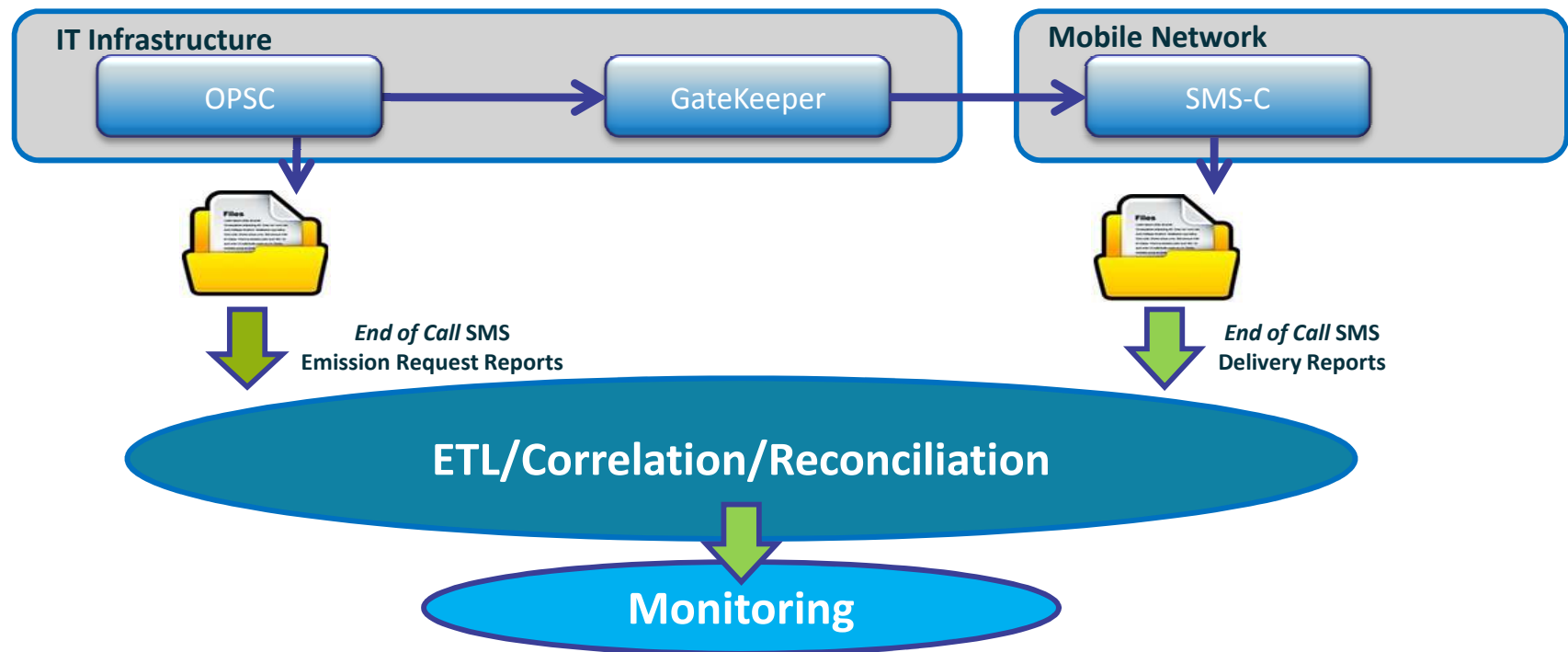
Use Case 1: Enterprise Infrastructure Monitoring (C.E.M.)



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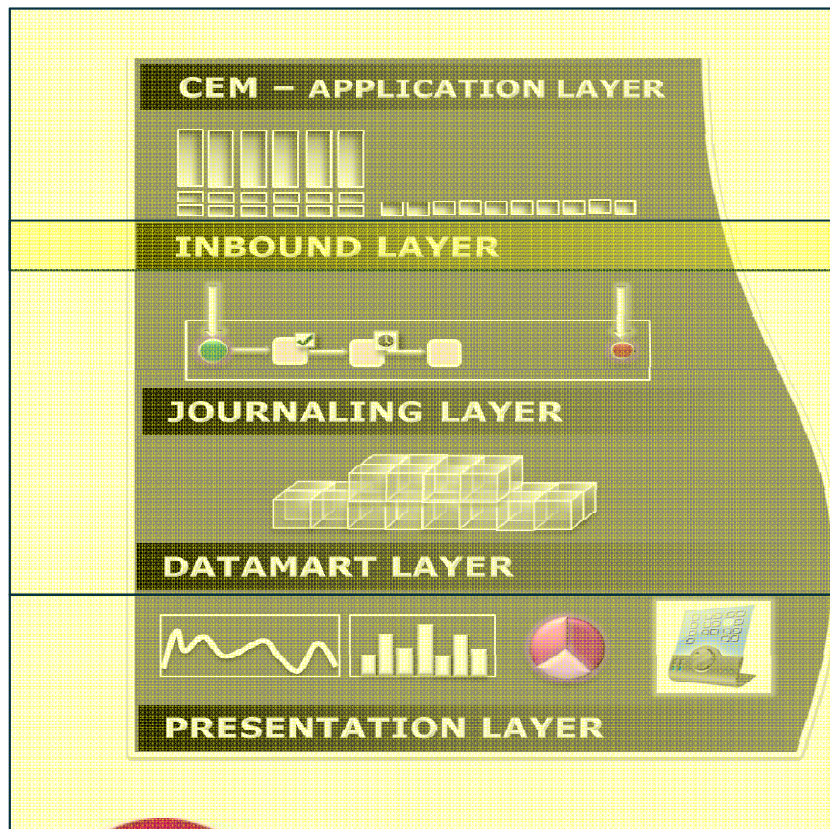


Use Case 2: Service Chain Monitoring (MO.DEL.S.)



Solution Architecture

C.E.M.



ORACLE®
COMPLEX EVENT PROCESSING

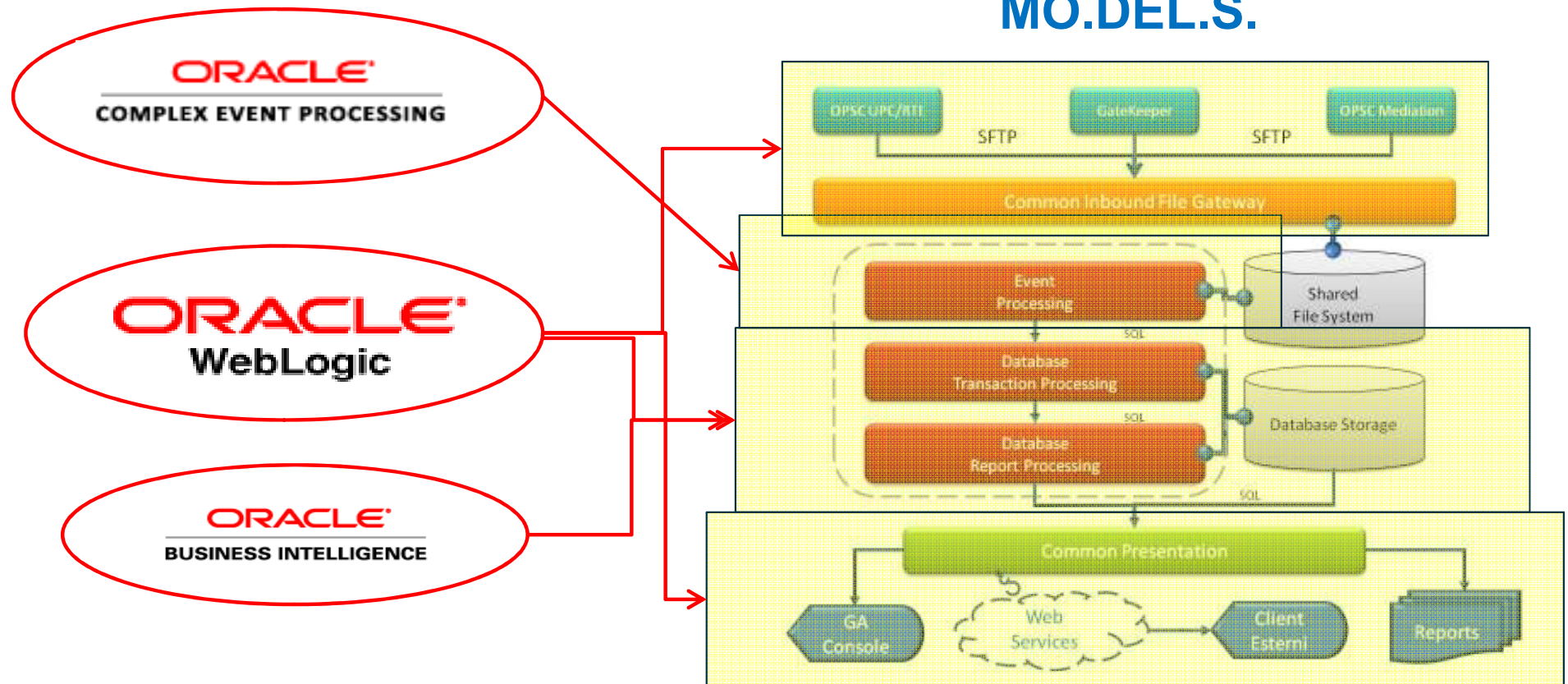
ORACLE® 11^g
DATABASE

ORACLE®
BUSINESS INTELLIGENCE

ORACLE®
WebLogic

Solution Architecture

MO.DEL.S.



Customer/Business Value Proposition

High throughput

- Expected to handle event throughput up to 10^6 /sec and microsecond latency
- Expected volumes (MODELS): approximately 100 GB/day

High configurability

- Custom OCEP adapters, EPN network, CQL

Real-Time monitoring

- Continuous, automated business process monitoring
- Different time periods can be compared in terms of traffic and business
- Rapid evaluation of the expected impact of changes in business processes
- Rapid detection of system malfunctionings to allow for a prompt and effective response
- Trend analysis for a preemptive management of potential system failures

Easy integration

- Fully Oracle-driven solution

 +  +  +  =

A Winning Equation!



Oracle in the Financial Front Office Deloitte Showcase

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Event-Driven Patterns and Best Practices

Aggregated Risk, On demand

3rd October 2011



Industry Drivers

The Capital Markets industry is facing unprecedented change fuelled by regulatory and competitive pressures brought on by the credit crisis

Regulatory Impact

- Changes in regulation, e.g. Dodd-Frank
- Increased supervision
- More stringent capital requirements

Cost Pressures

- Operational efficiencies
- Systems rationalisation
- Increased use of vendor solutions

Industry Consolidation

- Fragmented risk architectures
- Integration of risk management systems – business and technology

Risk Data Consolidation

- Single view of risk across the organisation
- Need to see updates real-time
- Ability to react to volatile market conditions

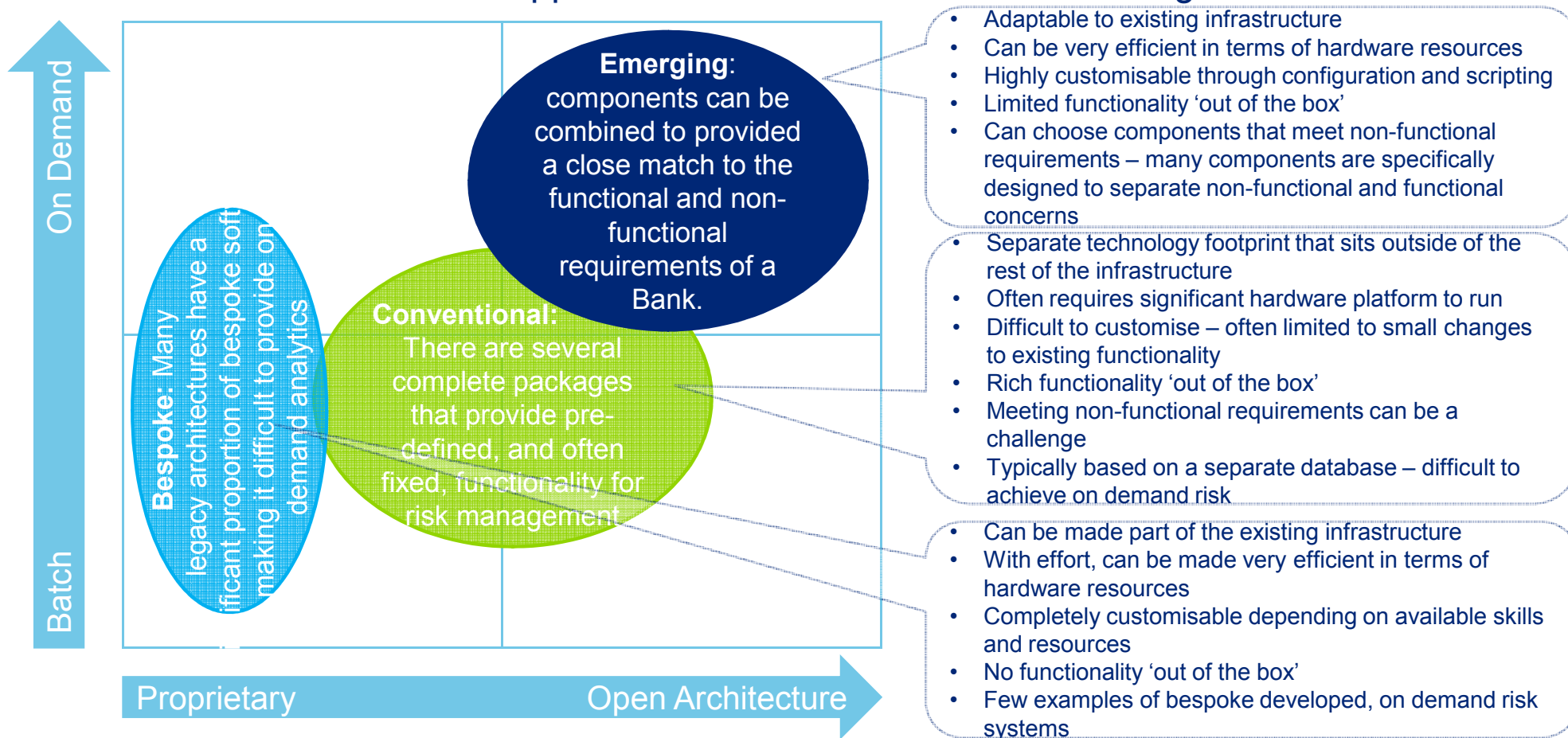


Aggregated Risk, On Demand

- Efficient connectivity through common infrastructure
- Consistent database and messaging models for data quality
- Event driven processing for on demand risk analytics
- Visualisation tools for enhanced decision making

Evolution of risk technology

New technologies that have emerged recently are now sufficiently mature that they can be considered for mission critical applications such as risk and data management.



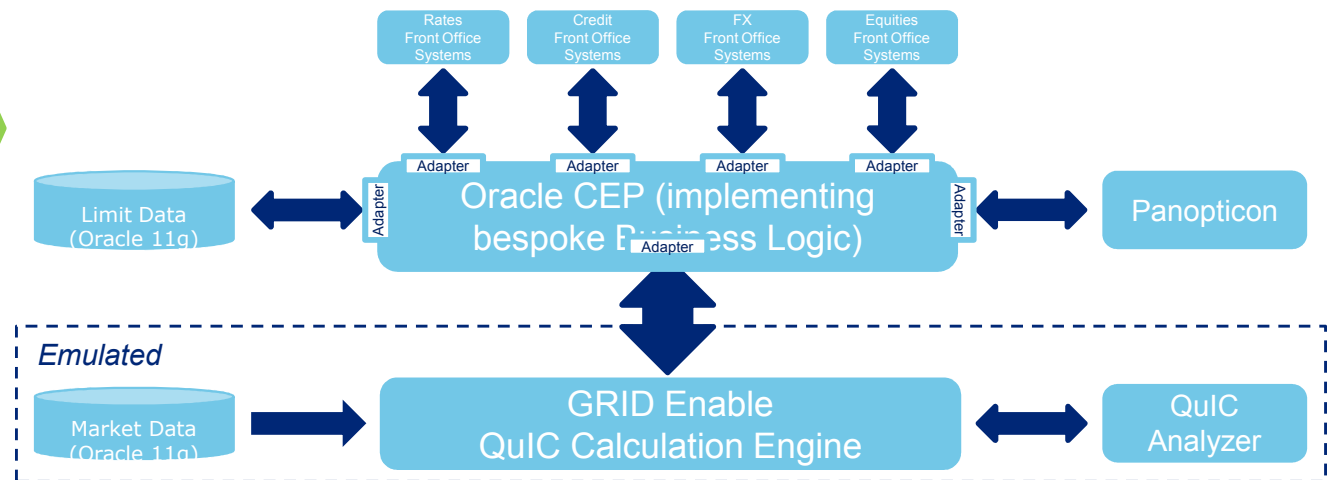
Case Study: Proof of Concept for Credit Risk

Industry Collaboration to define a reference architecture for On Demand Risk

The objective of the POC is to demonstrate how the integration of Oracle CEP technology and Panopticon visualisation technology is used to provide *real-time credit* exposure measurement for OTC derivatives trading. This can be integrated with real-time risk engines such as QuIC

- Controls workflow of inbound transaction data
- Orchestrates calling of QuIC for generation of scenario MTM's for new trade
- Displays results using advanced visualisation techniques

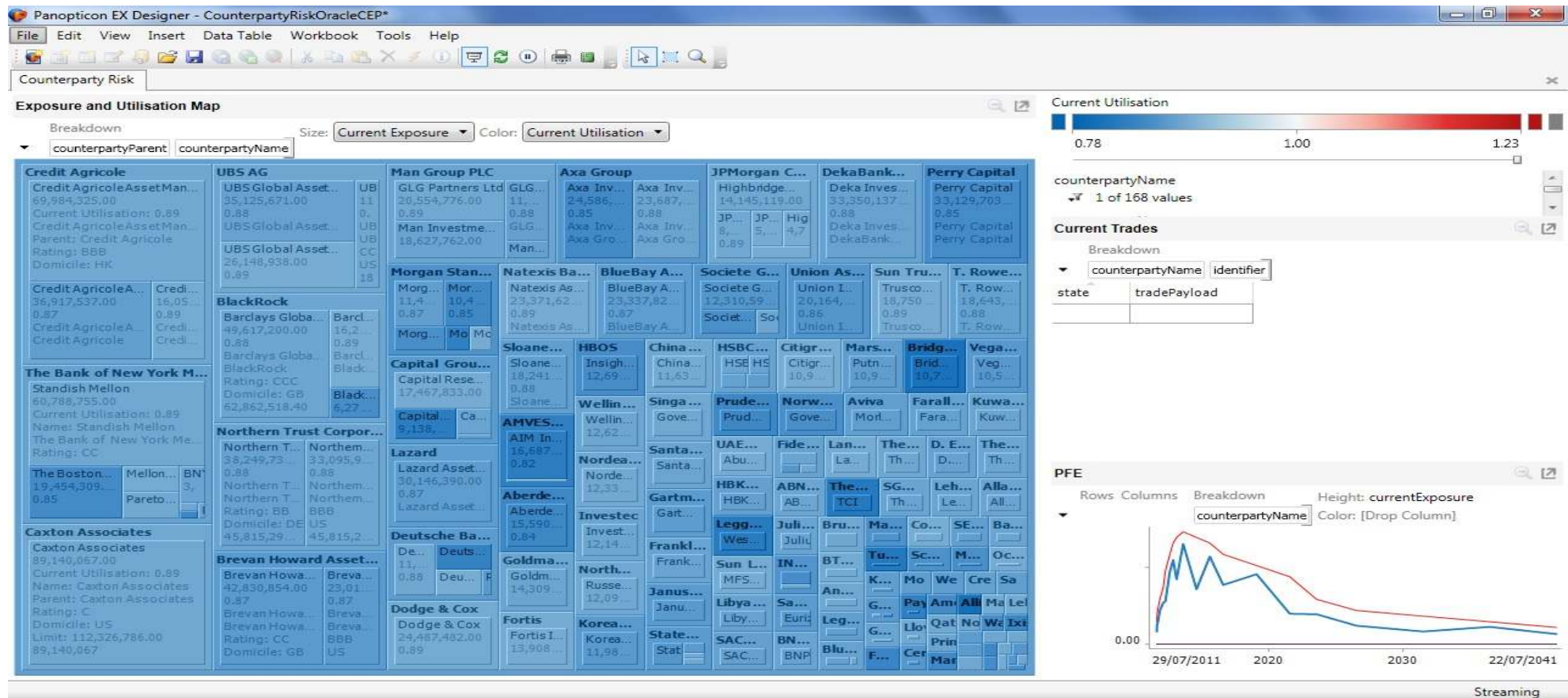
- Generates Monte Carlo scenarios
- Calculates scenario MTM of trades through time using full revaluation
- Aggregates new trade scenario MTM's with existing positions and applies collateral and netting before calculating PFE



- Combination of Oracle, Panopticon and the QuIC Product Suite is high complementary and integrates the key components of a risk architecture.
- Providing a front-end via Panopticon and QuIC Analyzer provides a powerful reporting capability for business users.

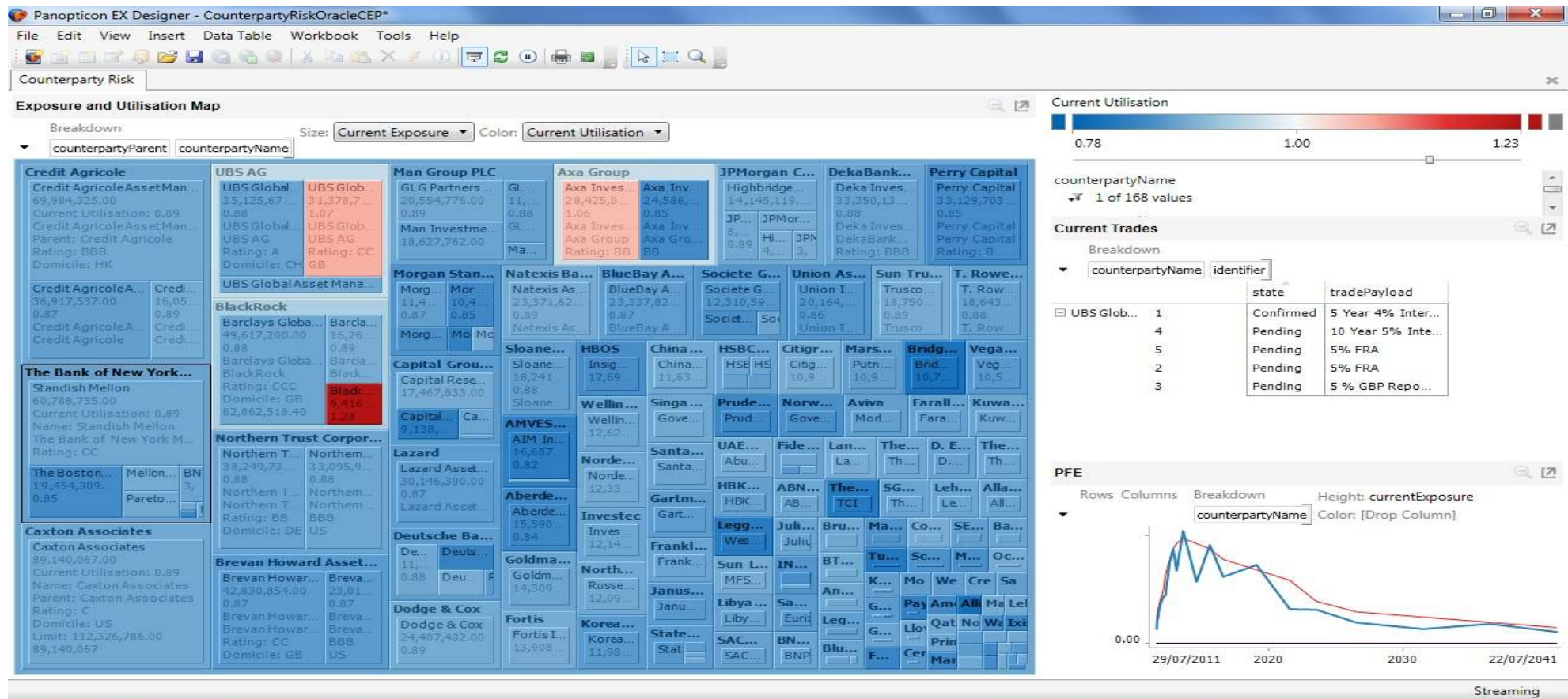
Data Visualisation

Use Case: End of Day Exposure Calculation



Data Visualisation

Use Case: Pre-Deal Limit Check





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A word cloud visualization featuring various database technologies and programming languages. The words are arranged in a circular pattern, with some appearing more frequently than others. The visible terms include:

- Databases & Query Languages:** MySQL, PostgreSQL, Oracle, SQL, XML, DBMS, PL/SQL, XQL, EJB, JSP, ASP, PHP.
- Database Management Systems (DBMS):** Microsoft Access, Microsoft SQL Server, IBM DB2, SAP R/3, SAP NetWeaver, SAP Business Suite, SAP ERP, SAP CRM, SAP SCM, SAP SRM, SAP FI, SAP CO, SAP SD, SAP MM, SAP PM, SAP PS, SAP TR, SAP HR, SAP BA, SAP CR, SAP CS, SAP EC, SAP ED, SAP EL, SAP EN, SAP ES, SAP ET, SAP EV, SAP EX, SAP FX, SAP GE, SAP GR, SAP GU, SAP HW, SAP ID, SAP IL, SAP IM, SAP IN, SAP IO, SAP IS, SAP IT, SAP IV, SAP JW, SAP KA, SAP KB, SAP KC, SAP KE, SAP KF, SAP KG, SAP KH, SAP KI, SAP KJ, SAP KK, SAP KL, SAP KM, SAP KN, SAP KO, SAP KP, SAP KR, SAP KS, SAP KT, SAP KU, SAP KV, SAP KW, SAP KY, SAP LA, SAP LB, SAP LC, SAP LE, SAP LF, SAP LG, SAP LH, SAP LI, SAP LJ, SAP LK, SAP LL, SAP LM, SAP LN, SAP LO, SAP LP, SAP LR, SAP LS, SAP LT, SAP LU, SAP LV, SAP LW, SAP LY, SAP MA, SAP MB, SAP MC, SAP ME, SAP MF, SAP MG, SAP MH, SAP MI, SAP MJ, SAP MK, SAP ML, SAP MN, SAP MO, SAP MP, SAP MR, SAP MS, SAP MT, SAP MU, SAP MV, SAP MW, SAP MX, SAP MY, SAP NA, SAP NB, SAP NC, SAP NE, SAP NF, SAP NG, SAP NH, SAP NI, SAP NJ, SAP NK, SAP NL, SAP NM, SAP NO, SAP NP, SAP NR, SAP NS, SAP NT, SAP NU, SAP NV, SAP NW, SAP NX, SAP NY, SAP NZ, SAP OA, SAP OB, SAP OC, SAP OD, SAP OE, SAP OF, SAP OG, SAP OH, SAP OI, SAP OJ, SAP OK, SAP OL, SAP OM, SAP ON, SAP OO, SAP OP, SAP OR, SAP OS, SAP OT, SAP OU, SAP OV, SAP OW, SAP OX, SAP OY, SAP OZ, SAP PA, SAP PB, SAP PC, SAP PE, SAP PF, SAP PG, SAP PH, SAP PI, SAP PJ, SAP PK, SAP PL, SAP PM, SAP PN, SAP PO, SAP PP, SAP PR, SAP PS, SAP PT, SAP PU, SAP PV, SAP PW, SAP PX, SAP PY, SAP PZ, SAP QA, SAP QB, SAP QC, SAP QD, SAP QE, SAP QF, SAP QG, SAP QH, SAP QI, SAP QJ, SAP QK, SAP QL, SAP QM, SAP QN, SAP QO, SAPQP, SAP QR, SAP QS, SAP QT, SAP QU, SAP QV, SAP QW, SAP QX, SAP QY, SAP QZ, SAP RA, SAP RB, SAP RC, SAP RD, SAP RE, SAP RF, SAP RG, SAP RH, SAP RI, SAP RJ, SAP RK, SAP RL, SAP RM, SAP RN, SAP RO, SAP RP, SAP RR, SAP RS, SAP RT, SAP RU, SAP RV, SAP RW, SAP RX, SAP RY, SAP RZ, SAP SA, SAP SB, SAP SC, SAP SD, SAP SE, SAP SF, SAP SG, SAP SH, SAP SI, SAP SJ, SAP SK, SAP SL, SAP SM, SAP SN, SAP SO, SAP SP, SAP SQ, SAP SR, SAP SS, SAP ST, SAP SU, SAP SV, SAP SW, SAP SX, SAP SY, SAP SZ, SAP TA, SAP TB, SAP TC, SAP TD, SAP TE, SAP TF, SAP TG, SAP TH, SAP TI, SAP TJ, SAP TK, SAP TL, SAP TM, SAP TN, SAP TO, SAP TP, SAP TR, SAP TS, SAP TT, SAP TV, SAP TW, SAP TX, SAP TY, SAP TZ, SAP UA, SAP UB, SAP UC, SAP UD, SAP UE, SAP UF, SAP UG, SAP UH, SAP UI, SAP UJ, SAP UK, SAP UL, SAP UM, SAP UN, SAP UO, SAP UP, SAP UR, SAP US, SAP UT, SAP UV, SAP UW, SAP UX, SAP UY, SAP UZ, SAP VA, SAP VB, SAP VC, SAP VD, SAP VE, SAP VF, SAP VG, SAP VH, SAP VI, SAP VJ, SAP VK, SAP VL, SAP VM, SAP VN, SAP VO, SAP VP, SAP VR, SAP VS, SAP VT, SAP VU, SAP VV, SAP VW, SAP VX, SAP VY, SAP VZ, SAP WA, SAP WB, SAP WC, SAP WD, SAP WE, SAP WF, SAP WG, SAP WH, SAP WI, SAP WJ, SAP WK, SAP WL, SAP WM, SAP WN, SAP WO, SAP WP, SAP WR, SAP WS, SAP WT, SAP WU, SAP WV, SAP WW, SAP WX, SAP WY, SAP WZ, SAP XX, SAP XY, SAP YZ, SAP ZA, SAP ZB, SAP ZC, SAP ZD, SAP ZE, SAP ZF, SAP ZG, SAP ZH, SAP ZI, SAP ZJ, SAP ZK, SAP ZL, SAP ZM, SAP ZN, SAP ZO, SAP ZP, SAP ZR, SAP ZS, SAP ZT, SAP ZU, SAP ZV, SAP ZW, SAP ZX, SAP ZY, SAP ZZ.

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Immerse yourselves in Oracle Event-driven Architecture Technology (CEP)

Related Sessions

•**S15701**: Event Driven Patterns and Best Practices

Venue: Marriott Marquis Golden Gate A

Monday, Oct. 3: 11:00 AM

•**S26360**: Using Real-Time GPS Data with Oracle Spatial and Oracle Complex Event Processing

Venue: Marriott Marquis - Golden Gate C3

Monday, Oct. 3: 7:30 PM



Related Demos

•**229** : Oracle Complex Event Processing

Oracle Complex Event Processing is a complete platform for building applications to process and analyze events in real time so that downstream systems are driven by true, timely intelligence. Oracle Complex Event Processing's standards-based, open architecture can overcome challenges in any industry. Advanced temporal management, spatial analysis, real-time predictive analytics, and intuitive systems integration with powerful pattern matching capabilities make it the perfect choice for all event-based applications. Using the visual development environment with standard Java-based tooling, Oracle Complex Event Processing ensures that your IT team can quickly deliver powerful event-driven applications.

Venue: DemoGrounds, Moscone SOUTH

Related Labs

•**30900** : Complex Event Processing and Business Activity Monitoring Best Practices

Venue: Marriott Marquis - Salon 3/4

Monday 10/3/11, 12:30PM

Hardware and Software

The Oracle logo, consisting of the word "ORACLE" in white, sans-serif, uppercase letters, is centered within a solid red rectangular bar.

Engineered to Work Together

ORACLE

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