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Exalytics Extreme Performance Analytics

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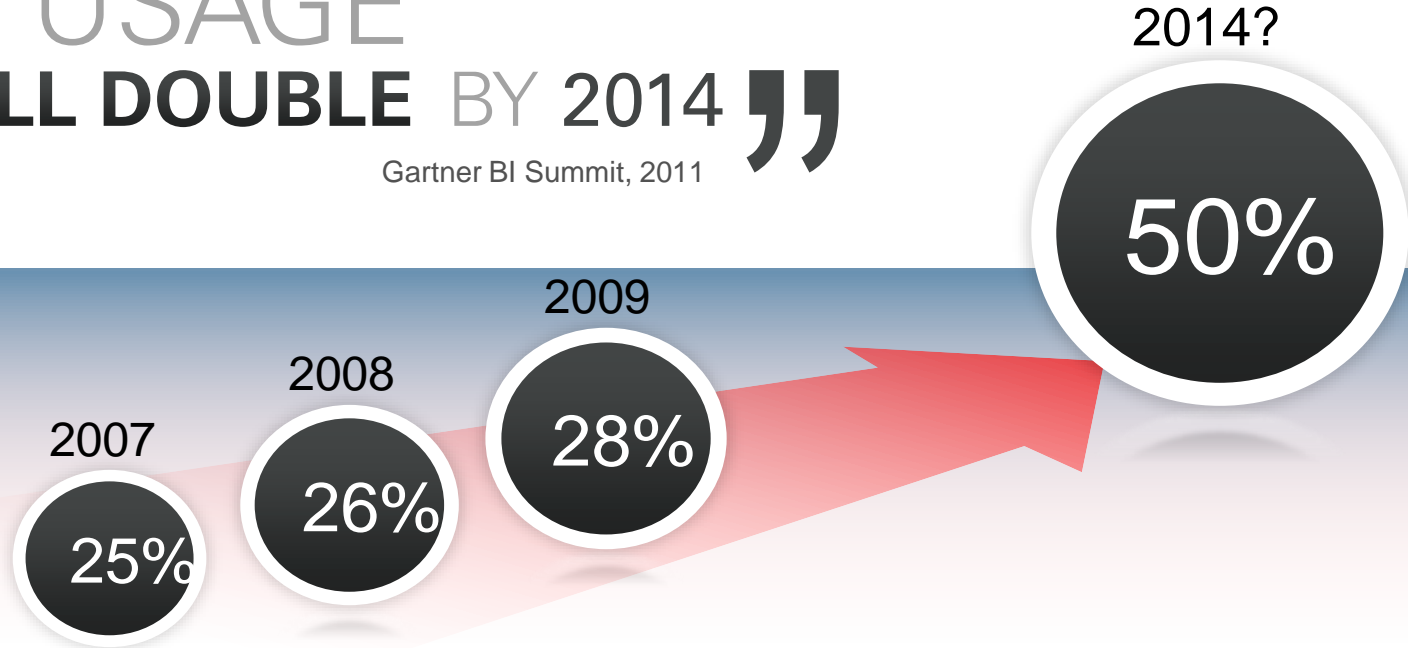
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The Race to Gain Insight

“BI USAGE
WILL DOUBLE BY 2014”

Gartner BI Summit, 2011



*Source: Gartner

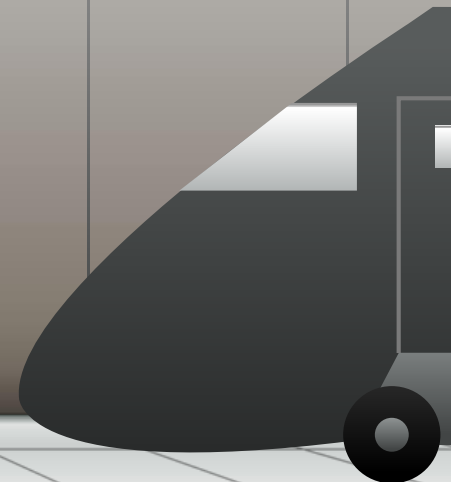
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Real-time Analytics Demands Are Increasing

NEXT TRAIN IN 2 HOURS

53%

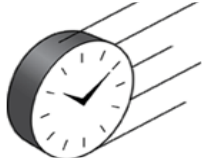
of executives say
too much critical
information is
delivered too late



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Deliver Responsive, Business-friendly Analytics

Available with Exalytics



Responsiveness independent of analytic complexity

- Intelligently cache 'hot' data into In-Memory Database
- Depth of analytic capability in memory – relational, multidimensional



Rich and Intuitive Visualizations

- Data dense, intuitive visualizations
- All reports available on mobile



Relevant data – Structured and Unstructured

- Authoritative single source of truth from logical model
- Full analytic capability on unstructured data

Oracle Business Analytics

**ANY
DATA**

**ACQUIRE
ORGANIZE**

**Discover
Analyze
Plan
Predict**



**BETTER
DECISIONS
FASTER
ACTION**

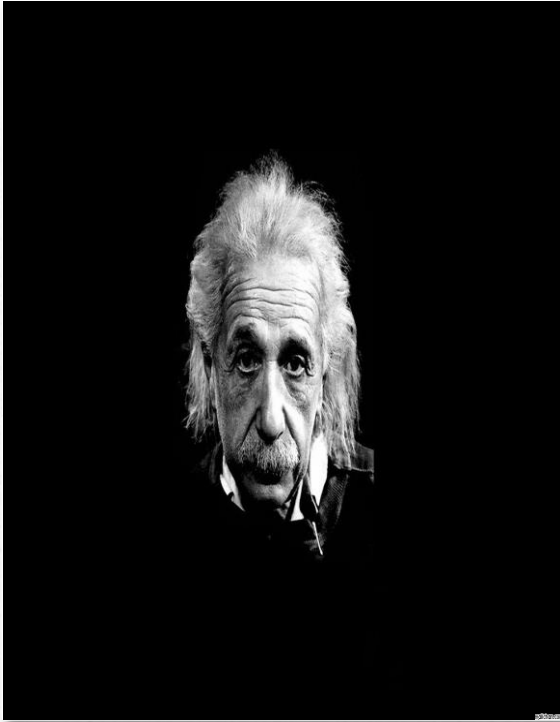
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Today's Business Landscape



Accelerate Your Business

SOMETHING HAS TO CHANGE



“We can’t solve problems by using
the same kind of thinking
we used when we created them”

Albert Einstein.

“**Insanity:** Doing the same thing,
over and over again,
and expecting a different result”

Albert Einstein.

INTERACTIVE

TRANSPARENT

ENTERPRISE 2.0

GLOBAL

EMERGING

STRATEGIC

BUSINESS MODEL

ENERGY

SERVICES

SOCIAL

PROGRESS

FORWARD-THINKING

NEW FRONTIER

LEADING

NEW FRONTIER

INNOVATIVE

PRODUCTION

EMERGING

OPEN

TRANSPARENT

STRATEGIC

TRANSPARENT

FORWARD-THINKING

COMPETITIVE ADVANTAGE

BUSINESS MODEL

NEXT GENERATION

PARADIGM SHIFT

ENTERPRISE 2.0

INTERACTIVE

PROGRESS

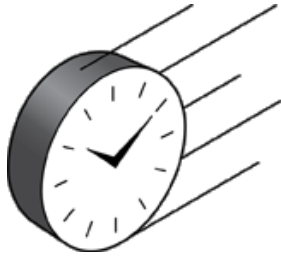
BUSINESS MODEL

GLOBAL

GAME CHANGER

PROACTIVE

What Can We Do With In-Memory?



Faster Analysis
Faster Calculations



Better Interactivity
Better Visualizations

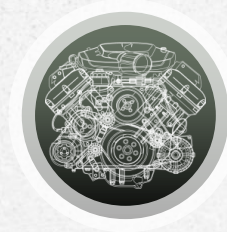
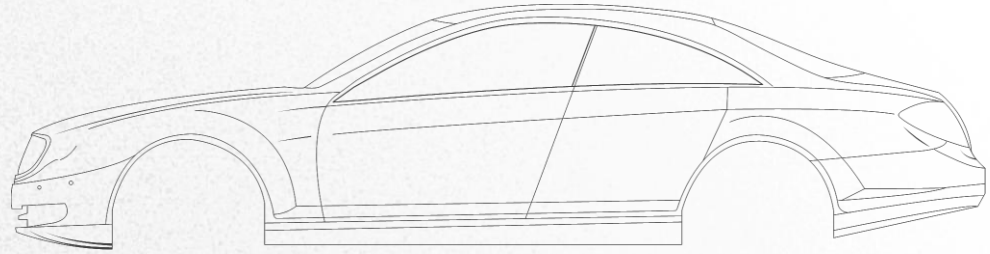


More Users
More Queries

SIMPLIFY I.T.

**It is easy to make simple things complex
but is hard to make complex things simple**

**IMAGINE
BUYING A
CAR THE
WAY A
BUSINESS
BUYS I.T.**



In Other Words



What is an Engineered System?

Optimum Performance
Best End-to-end Experience
Best Total Cost of Ownership



Engineered systems are **pre-integrated** to **reduce** the **cost** and **complexity** of IT infrastructures while **increasing productivity** and **performance**. Engineered systems include **optimizations** at every layer of the stack to **simplify** data center operations, drive down costs, and accelerate business innovation.

Hardware and Software
ORACLE
Engineered to Work Together

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How We Build An Engineered System



Hardware and Software

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Engineered to Work Together

- Tested together
- Certified together
- Packaged together
- Deployed together
- Upgraded together
- Managed together
- Supported together

Oracle Business Analytics

Engineered System for Full Suite of Analytics

All Styles of Analyses



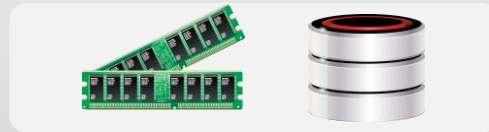
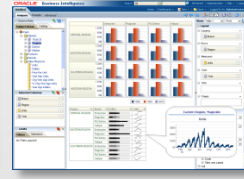
- First In-Memory Engineered System for Analytics
- Fastest R-OLAP, M-OLAP, and Unstructured Analysis
- Breakthrough Innovations:
 - In-Memory Optimized Hardware
 - In-Memory Optimized Software: Columnar Storage, High Density Visualizations, Parallel Query & Scale-Out



Oracle Exalytics

In-Memory Optimized Software

Exalytics In-Memory Machine



- **In-Memory Cache** stores & computes Analytic Data all in-memory
- **Adaptive Cache Algorithms** optimize data stored using Query Plans
- In-Memory **Columnar Compression** with full Analytic Functions
- Immersive, Highly Interactive, **Desktop & Mobile** User Experience

Exalytics – The Engineered Solution for BA

Business Intelligence Foundation Suite *



Mobile

Scorecard

BI Publisher

Adaptive In-Memory Cache (TimesTen)

Oracle Business Intelligence Server



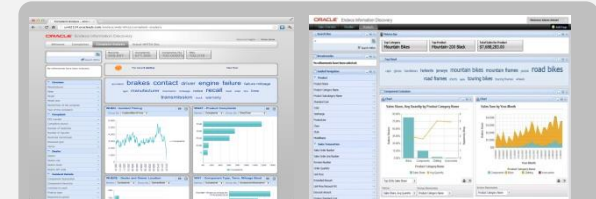
Essbase Planning Engine

Lock Manager

In-Memory Cache

Smart Storage Manager

Endeca *



Endeca Studio

Endeca Integrator

Endeca Text Enrichment

Endeca Server

Exalytics In Memory Software

Virtual Machine

Enterprise Manager



Enterprise Linux

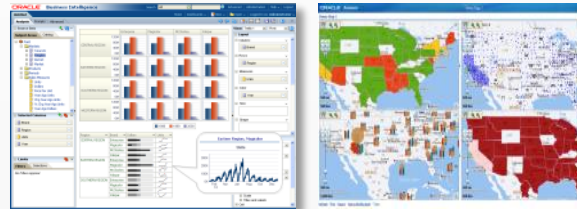
OS & HW Premium Support

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Oracle Exalytics

In-Memory Reporting & Analysis

Exalytics In-Memory Machine



Summary
Advisor

Dense
Visualizations

Adaptive In-Memory Cache
(TimesTen)

Oracle Business Intelligence

OLTP

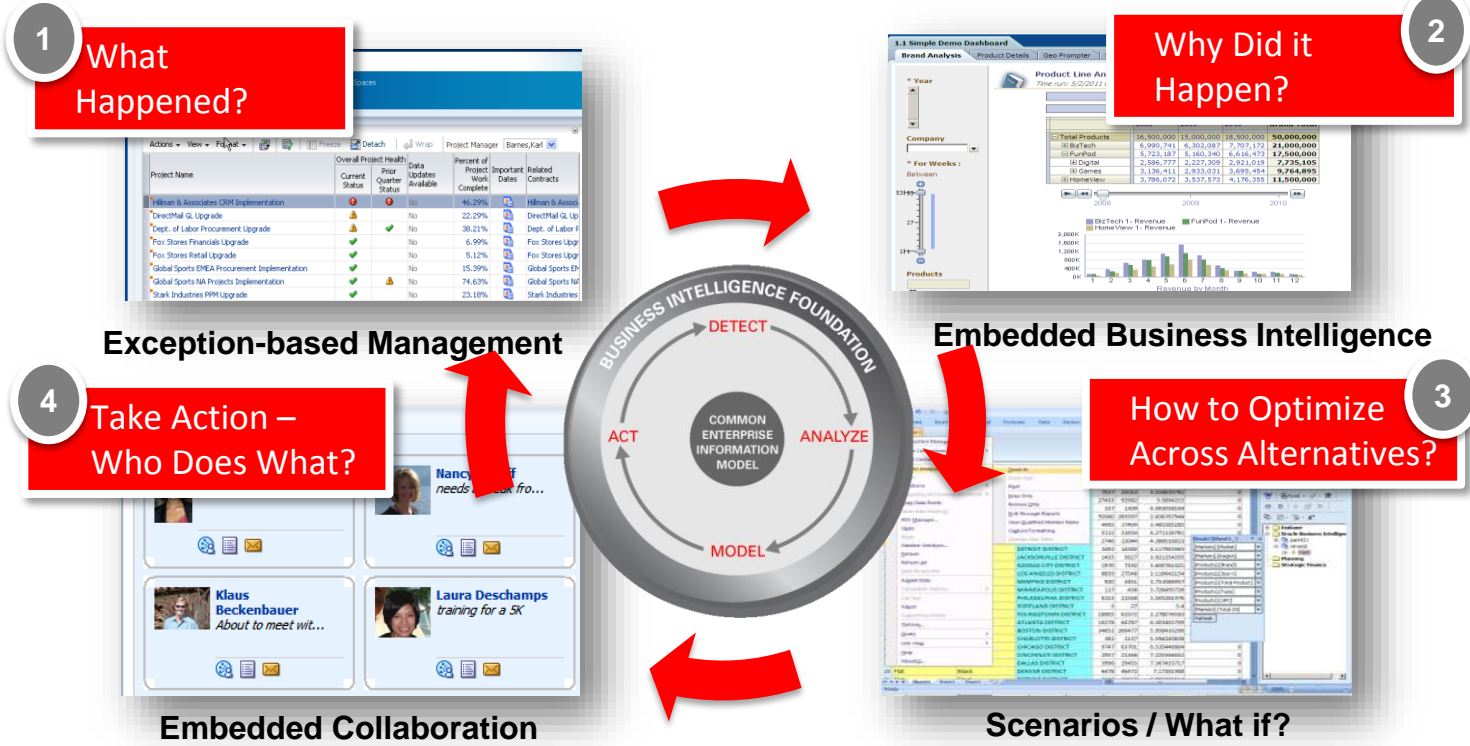
DW /
Data Mart

Custom

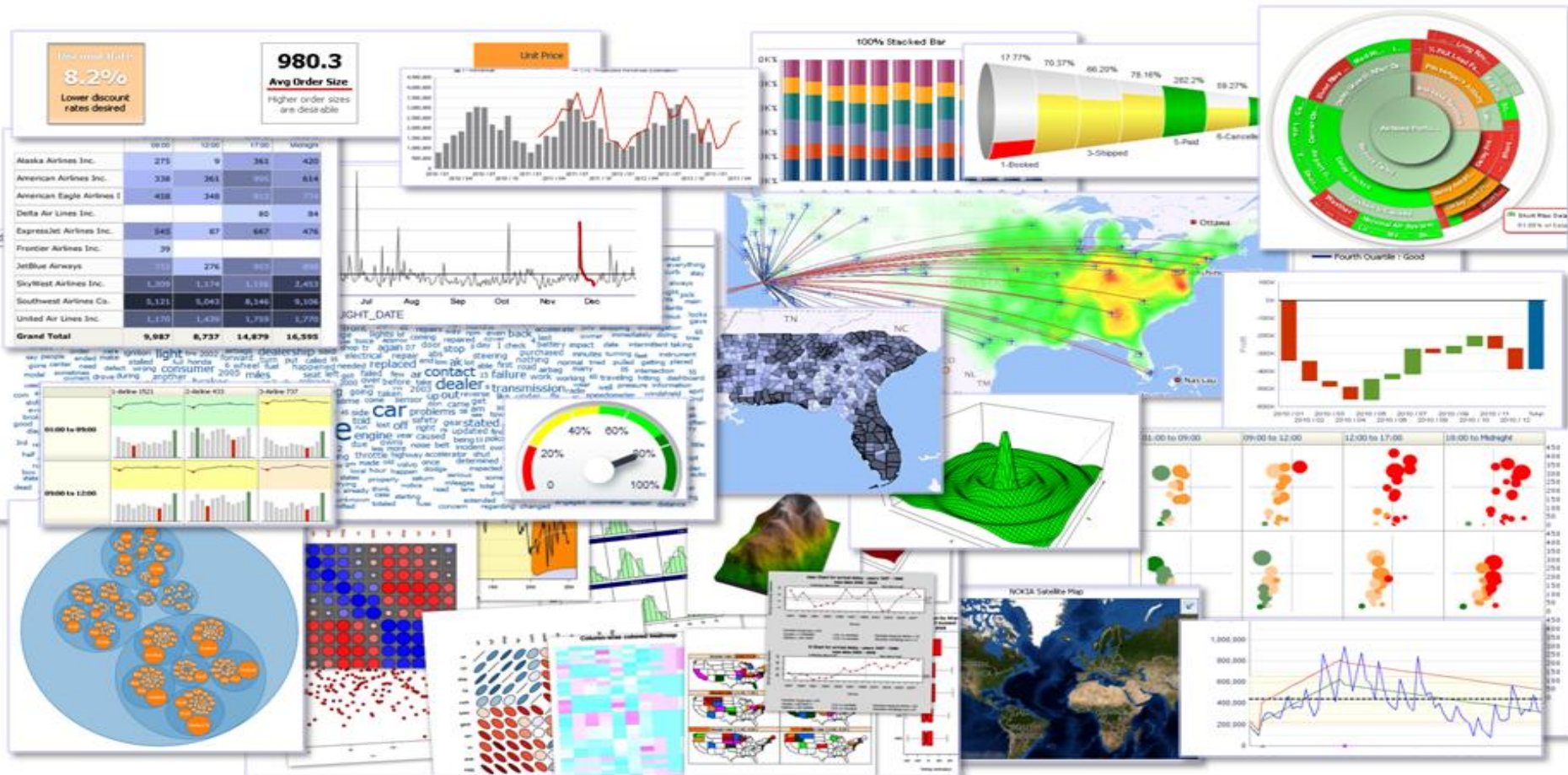
- Adaptive In-Memory cache stores & computes analytic data all in-memory
 - >10X Responsiveness and Throughput
 - 3-5X Columnar Storage and Compression
- Cache algorithms ensure frequently used data is always in-memory
 - Guaranteed **Sub-Second** Interactivity
 - **Summary Advisor** automates aggregate creation and management
- Immersive desktop and mobile user experience

Intelligent Decision Cycle

Analytics Power Intelligent Decision Processes



What's New in OBIFS 11.1.1.7



▪ Company Overview

- World's leading source of intelligent information for businesses
- \$12B Annual Revenue, 55,000 Employees

▪ Customer Need

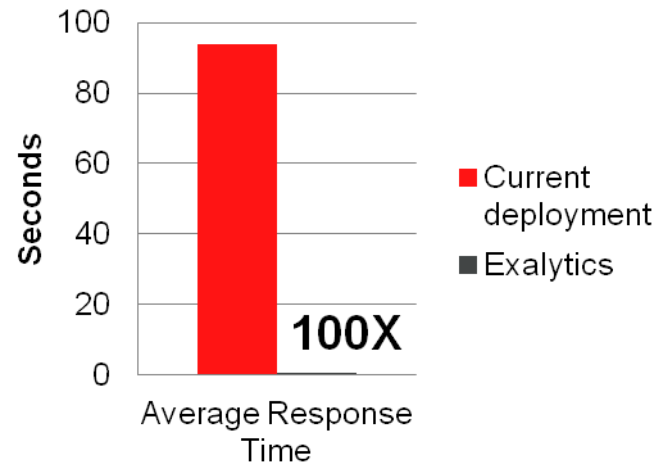
- **Use case 1:** Need to analyze RIC (ticker code) usage
 - Need: Large data volume (5B rows, 15TB in Exadata)
 - Need: Existing BOBJ system takes several minutes for reports
- **Use case 2:** MIS usage activity analysis across multiple data sources
 - Need: Existing system too slow on federated deployments

▪ Performance Results

- Use case 1: **>100X** speed up compared to existing system
 - (94 seconds for 2 months vs. sub second for 1 year of data)
- Use case 2: **140X** faster compared to existing system
 - (3 second vs. 7 minutes before)



Dashboard Response Times



Oracle Business Analytics

Over 80 Pre-Built In-Memory Analytic Applications

Integrated Analytic Applications



- Financials
- HR
- Procure & Spend
- Projects
- Supply Chain
- Order Management
- Logistics

- Planning & Forecasting



- Sales
- Marketing
- Service
- Contact Center
- Price
- Loyalty

- Communications
- Healthcare
- Retail
- Public Sector
- Financial Services

Exalytics Driving Business Adoption

Analytics as gateway to Business Operations

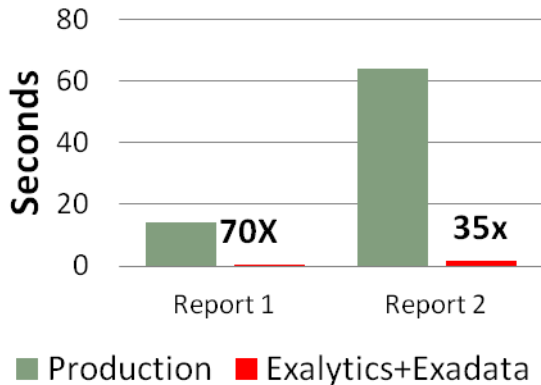


Nykredit

Exalytics enabled Analytics to be front and center of the user experience for business users

7X faster with Exadata only and **70X** faster with Exalytics+Exadata

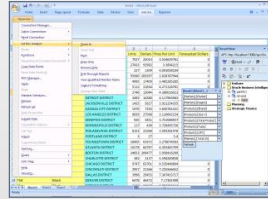
Dashboard Response Times



Oracle Exalytics

High Performance Planning & Profitability Applications

Exalytics In-Memory Machine



Essbase Planning Engine

Lock
Manager

In-Memory Cache

Smart Storage
Manager

- **Smart Storage Manager** stores frequently accessed blocks in-memory
- **In-Memory Cache** optimizes block access
- Lock Manager improves concurrency
- **80X Faster Reads; 20X Faster Writes**

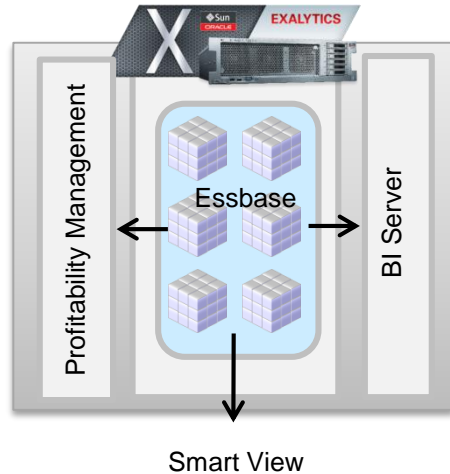


Consolidated Architecture on Exalytics

Planning, Reporting and Profitability analysis



“Several Planning and reporting cubes are consolidated along with OBIEE and profitability management on to Exalytics infrastructure, improved Planning and reporting performance by up to 10X, and reduced operating costs.”



Oracle Exalytics

In-Memory Un-Structured & Structured Analysis

Exalytics In-Memory Machine



Endeca Information Discovery

Unified
Search

Faceted
Navigation

Interactive
Exploration

Data
Mashup

Unified
Indexing

Text
Analysis



- **High Performance** Unstructured Processing, Search, & Analytics
- Flexible **Faceted Data Model**
- **In-Memory, Columnar Store**
- Optimized Data & Query Parallelism
- Unified Search, Navigation, Analytics across structured and unstructured information

Immersive Mobile Experience with Exalytics

Fastest Time to Mobile Value. No Additional Development



BI Mobile HD

IT Controlled – Managed - Consistent



BI Mobile App Designer

Purpose Built Analytical Apps



	Actual Hours	Forecast Hours	Total Amount	# of Consultants								
Ken Watanabe	11,492	13,412	\$3,104,450.96	34								
Maria Tyler												
Steve Apperson												
Yvonne Francis												
	1	2	3	4	5	6	7	8	9	10	11	12
Suri Meppan	40	40	40	40	32	40	40	40	40	40	40	40
Chris Howton	40	40	40	40	32	40	40	40	40	40	40	40
Richard Coppola	40	40	40	40	24	0	0	0	0	0	0	0
Rob Rogers	40	40	40	40	32	40	40	40	40	40	40	40
Sally Edwards	40	40	40	40	40	40	40	40	40	40	40	40
Morg Warden	40	40	0	0	0	0	0	0	0	0	0	0
Thomas Keller	40	40	0	0	0	0	0	0	0	0	0	0
Larry Champion	40	40	40	40	32	40	40	40	40	40	40	40
Jack Russell	40	40	40	40	40	0	0	0	0	0	0	0
Traci Todd	80	80	80	80	80	40	40	40	80	80	80	80



- Exalytics user experience extended to Mobile Users
- All BI content instantly available to mobile users with zero extra development
- Speed-of-thought analysis available anywhere

Oracle Exalytics

Available on Two Hardware Platforms

Exalytics X3-4

2 TB DRAM

40 Intel Cores

2.4 TB Flash Storage

5.4 TB Hard Disk Drive



Exalytics T5-8

4 TB DRAM

128 SPARC T5 Processor Cores

3.2 TB Flash Storage

7.2 TB Hard Disk Drive



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Exalytics Hardware Model Comparison

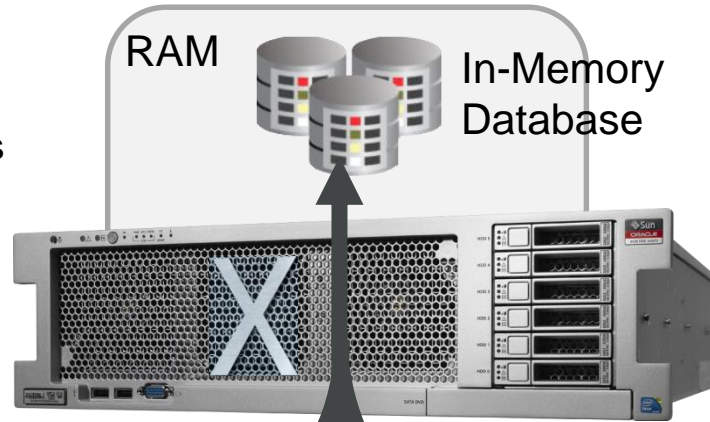
Capability	X3-4	T5-8
BI Foundation Suite Technology – OBIEE, Essbase, Scorecards, Mobile	✓	✓
Exalytics In-Memory Software including Adaptive In-Memory Cache, OBIEE, Essbase and BIP Accelerators	✓	✓
TimesTen In-Memory Database for Exalytics	✓	✓
Endeca for Unstructured Analytics	✓	
Hyperion Planning, HPCM	✓	✓
Oracle Business Intelligence Applications	✓	✓
Virtualization Support	✓	✓
InfiniBand Support	✓ *	✓
Zero-overhead virtualization		✓
Large scale consolidation		✓
ZFS file system with snapshot capability		✓
Fine grain resource isolation with Solaris Zones		✓

* InfiniBand support over X3-4 virtualization in development

Adaptive In-Memory Data Mart

Superfast Performance with In-Memory Analytics

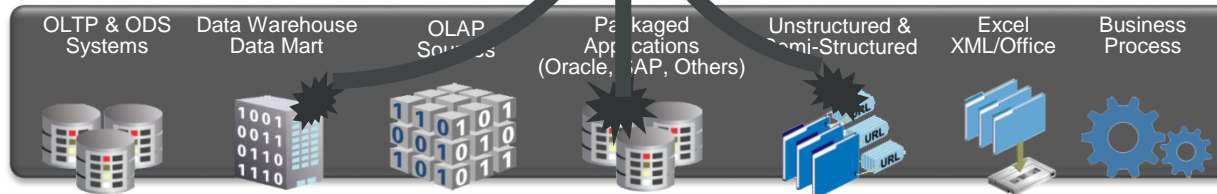
Summary Advisor Identifies Hot Spots
BI Server moves data into Memory



18X Faster Reports
Due to
In-Memory Analytics

2. Move Data to Memory

1. Identify
Hot Spots

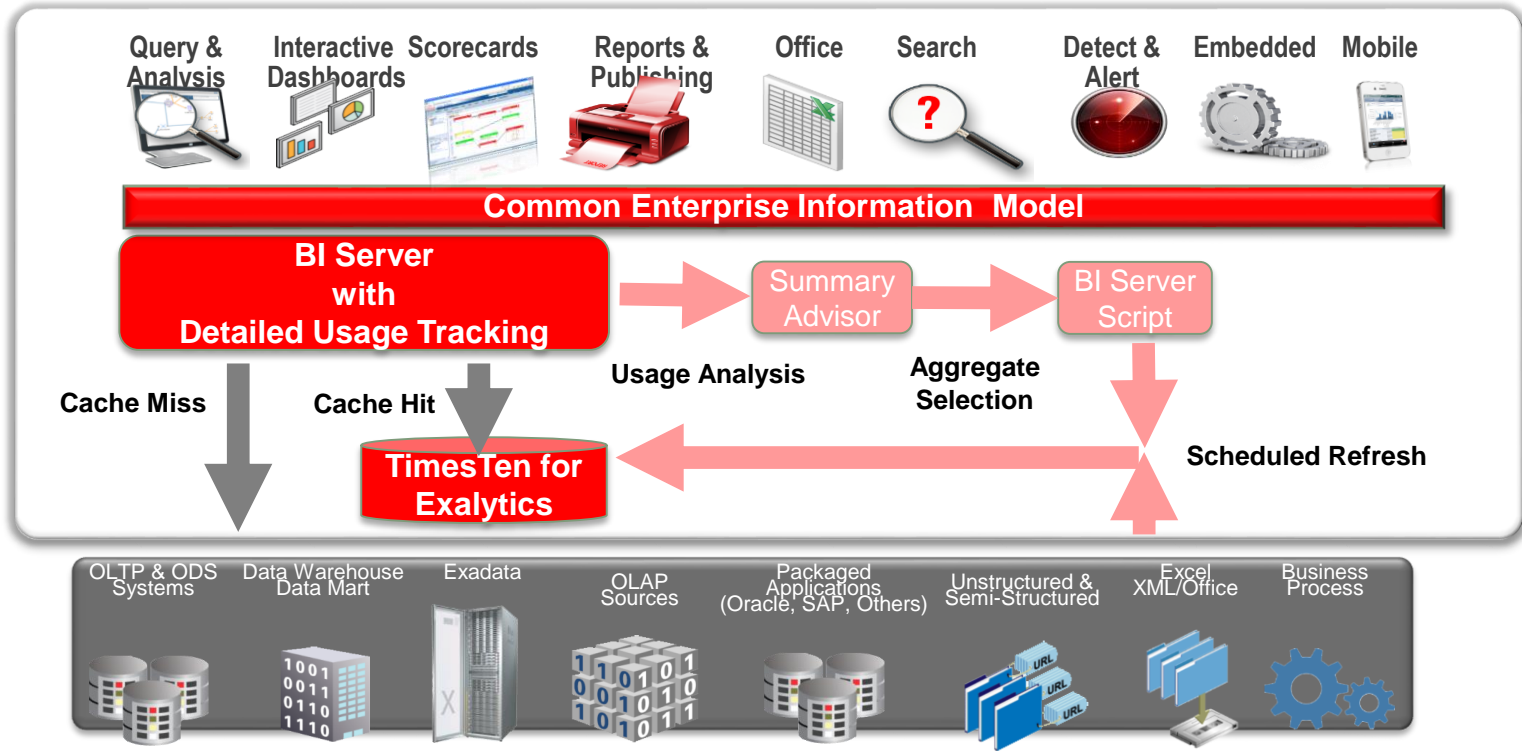


All OBI data
sources
supported

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Adaptive In-Memory Data Mart

Oracle BI Foundation Suite + In-Memory Software + TimesTen for Exalytics



Even Better with Exadata

InfiniBand Provides Superfast Connectivity

Speed-of-thought
enterprise
Business Intelligence
platform



23X Faster Reports

With Exadata + In-Memory Analytics



Extreme
performance via
pre-integrated,
optimized Oracle
database platform

All OBI data
sources
supported



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Oracle Exalytics and Exadata



Advanced Visualizations

Memory-optimized Essbase

Adaptive In-Memory Cache (TimesTen)

Oracle Business Intelligence
> 10X faster reporting and planning



InfiniBand Interconnect

Smart Flash Cache

Hybrid Columnar Compression

Intelligent, Optimized Storage

Oracle Database
>10X faster; 10X less storage

Optimized for Analytics workload

- >10X response time
- >10X throughput
- Sub-second interactivity

100X faster DW + Analytics platform

Optimized for DW/OLTP workload

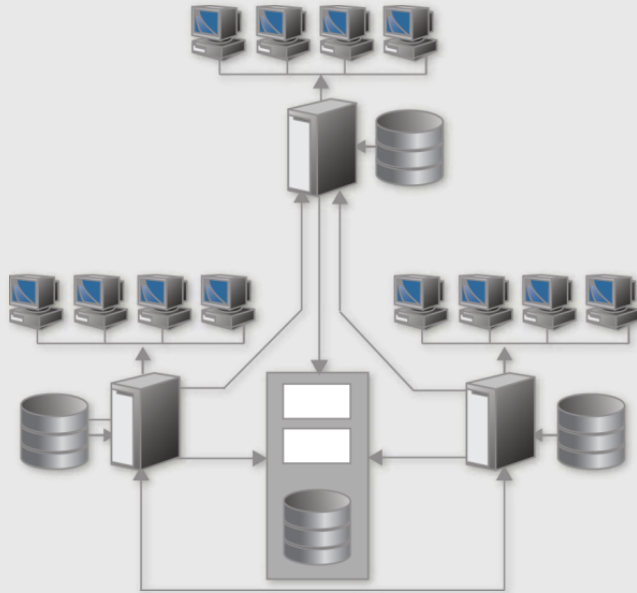
- >10X efficient storage
- >10X faster query processing
- Ideal consolidation platform



Exalytics Delivers Lower Cost of Ownership

COMPLEX

Multiple Platforms & Many Servers
High Cost of Administration



SIMPLE

One Platform & One Server
Lower Cost of Administration



Analytics Lowers Cost of Ownership

- Better Cost-performance
 - 3X more users compared to similar hardware
 - Less DW tuning needed
- Lower operational costs
 - Unified patching
 - Consolidate servers
- Risk Reduction
 - Pre-tested configurations
 - Large community of users
 - Unified single vendor support



Exalytics Rapid Customer Adoption

Exalytics Broad Interest

- Worldwide
- Varied industries and public sector
- Business Intelligence and Enterprise performance management applications



Nykredit



NILSONGROUP

ORACLE

Oracle Exalytics Customer Results

Extreme performance with Exalytics



THOMSON REUTERS

- World's leading source of intelligent information for businesses and professionals
- Need highly interactive dashboards and visualizations for global subscribers
- Up to **90X** faster with Exalytics



- World leader in Quality of Daily Life Solutions
- To deliver responsive self service reporting, including mobile for **10,000** users
- **Up to 10X** faster reporting on 70 cubes; implemented in 4 weeks



- Largest bank in Croatia
- Rolling out dynamic reporting for their corporate clients
- **> 10X** faster queries in initial results; even with increased number of concurrent users



- Second largest school district in California, serving 132,000 students
- Improve attendance by providing responsive tracking to staff, parents and admins
- Recover **\$2.25M funding annually** by helping maintain and improve attendance

NILSONGROUP

- Scandinavia's leading shoe group
- Reporting for business managers across all brands
- **Sub-second** response times with Exalytics on mobile devices

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Oracle Exalytics

Customer Results

Nykredit

- Largest mortgage provider in Denmark, major private bond issuer in Europe
- Need to deliver outstanding performance for summary and transaction grain analysis
- **35X to 70X** faster with Exadata + Exalytics



- Supplies automotive industry with market intelligence “*PolkInsight*”
- Need highly interactive dashboards and visualizations for global analyst community
- **> 10X** faster on average and up to **100X** faster in specific cases



- Large oilfield services company with about ~860 rigs deployed around the world
- Need to drive usage of packaged BI Applications across the organization
- **5X** shorter time to develop; **50X** faster than a custom report (without tuning)

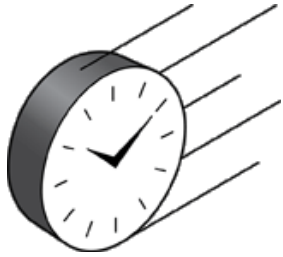


- Large cloud infrastructure services company
- Need highly interactive visualizations for large numbers of individual analyst data sets
- Consistent **Sub-second** interactivity on par with **desktop tools** down from ~30 secs

A Global
CPG
Company

- Global consumer pre-packaged foods company
- Need more frequent planning and budgeting cycles for 2000+ users
- **6X** faster cycle time - **4 hours** down from more than **24 hours**

Exalytics for In-Memory Analytics



Enable Business Agility

- Immediate Visibility
- Adapt to changes
- Accurate models

Better Insights and Decisions

- Intuitive, Interactive Visuals
- Mobile ubiquity
- Direct Action from Data

Broaden Reach

- Empower more users
- Expand beyond departmental boundaries
- Scale to Mobile

Q&A



ORACLE®

Hardware and Software

ORACLE®

Engineered to Work Together