Accelerate Big Data Adoption with Less Risk and Complexity
The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Speakers

Lelanie Moll
FICO
Director, Data Management and Database Services

Cory Vogel
Thomson Reuters
Infrastructure Architect

Helen Sun
Oracle
Enterprise Architect
Program Agenda

- What IS (NOT) Big Data
- Big Data Architecture Components
- Case Studies
  - Thomson Reuters: Infrastructure Architecture
  - FICO: The Road to Big Data
- Integrated Big Data Stack and Service Offering
What IS and IS NOT Big Data
What is Big Data?

**VOLUME**
- Online sales
- Market research data
- Retail location/channels
- Customer profiles
- Blog, Tweets
- Weather Data
- Log mining
- Social networks data
- Micro Blogging data

**VELOCITY**
- Price changes
- High velocity supply chain
- Loss Sales prevention
- Real time inventory visibility
- Real time recommendations
- Real time decisions
- Real time offers
- Location Specific Offers

**VARIETY**
- Social media data
- Micro blogging data
- Barcode scans, RFID
- POS data
- Demographics data
- Supplier product information (hardcopy, catalogs, digital)
- eCommerce Logs
- video, audio

**VALUE**
- Assortment optimization
- Pricing competitiveness
- Promo. Effectiveness
- Supply chain efficiency
- Channel optimization, etc.
- Segmentation, loyalty, wallet share, endorser etc.
The Information Architecture Spectrum
Evaluating Economic and Architecture Tradeoffs

<table>
<thead>
<tr>
<th>Data Realms</th>
<th>Structure</th>
<th>Volume</th>
<th>Security</th>
<th>Storage &amp; Retrieval</th>
<th>Modeling</th>
<th>Processing/Integration</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master data Transactions</td>
<td>Structured</td>
<td>Medium-High</td>
<td>Database, app, &amp; user access</td>
<td>RDBMS / SQL</td>
<td>Pre-defined relational or dimensional modeling</td>
<td>ETL/ELT, CDC, Replication, Message</td>
<td>BI &amp; Statistical Tools, Operational Applications</td>
</tr>
<tr>
<td>Analytical data Metadata</td>
<td></td>
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</tr>
<tr>
<td>Reference data</td>
<td>Structured and Semi-Structured</td>
<td>Low-Medium</td>
<td>Platform security</td>
<td>XML / xQuery</td>
<td>Flexible &amp; Extensible</td>
<td>ETL/ELT, Message</td>
<td>System-based data consumption</td>
</tr>
<tr>
<td>Documents and Content</td>
<td>Unstructured</td>
<td>High</td>
<td>File system based</td>
<td>File System / Search</td>
<td>Free Form</td>
<td>OS-level file movement</td>
<td>Content Mgmt</td>
</tr>
<tr>
<td>Big Data</td>
<td>Structured, Semi-Structured, Unstructured</td>
<td>High</td>
<td>File system &amp; database</td>
<td>Distributed FS / noSQL</td>
<td>Flexible (Key Value)</td>
<td>Hadoop, MapReduce, ETL/ELT, Message</td>
<td>BI &amp; Statistical Tools</td>
</tr>
<tr>
<td>- Weblogs</td>
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<tr>
<td>- Sensors</td>
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<tr>
<td>- Social Media</td>
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</tr>
</tbody>
</table>

Evaluating Economic and Architecture Tradeoffs
Big Data
Architecture Components
Impact on Your Information Architecture

- New higher volume, variety processing
- New analytical methods for highly detailed data
- New correlation with structured data

- Extreme scalability
- Hardware economics
- Dynamic data model
- Statistics
- Visualization
- Iterative
- Share metadata
- Leverage skills
- Unify dashboards
Challenge: Exploiting Synergies

Big Data. Big Architecture.

DECIDE

ACQUIRE

ANALYZE

ORGANIZE
Oracle Big Data Architecture Capabilities

**Data**
- Structured: Master & Reference, Transactions, DBMS (OLTP), Files
- Semi-structured: Machine Generated, NoSQL
- Unstructured: Social Media, Text, Image, Video, Audio

**Acquire**
- DBMS (OLTP), Files, NoSQL

**Organize**
- ETL/ELT, ChangeDC, Real-Time
- Message-Based, Hadoop (MapReduce)

**Analyze**
- ODS, Warehouse, Streaming (CEP Engine)
- In-Database Analytics

**Decide**
- Reporting & Dashboards, Alerting & Recommendations
- EPM and BI Applications, Text Analytics and Search
- Advanced Analytics, Interactive Discovery

**Specialized Hardware**
- Big Data Cluster, High Speed Network, RDBMS Cluster, In Memory Analytics

**Management Security, Governance**
Case Studies in Big Data

Featuring

- Thomson Reuters
  - Big Data Infrastructure: Lessons Learned
- FICO
  - The Road to Big Data: Make Every Decision Count
BIG DATA – LESSONS LEARNED

CORY VOGEL
INFRASTRUCTURE ARCHITECT, THOMSON REUTERS
Agenda

• Thomson Reuters – Our History
• What does Hadoop mean to TR
• Deploying Hadoop
• Application Requirements
• Hardware Platform
• Performance Comparison
• Lessons Learned
• Futures…
Thomson Reuters – Our History

- 1851 – Reuters
- 1872 – West Publishing
- 1996 – Thomson acquires West Publishing
- 2007 – Thomson and Reuters merge
- 2012 – Datacenter Strategy
  - Petabytes of data already and growing
  - Products
    - Legal, Regulatory, IP, Science, Financial, Market, Risk and Fraud
What does Hadoop mean to TR?

- Large batch processing
- Shared Infrastructure
- Scalable w/o down time
- Fault tolerant
- Lower cost
- Economies of Scale
Deploying Hadoop

- **2009** – First lab cluster, Apache version .19
- **2010** – Migrated lab cluster to Cloudera
  - Future upgrades and direction
- **2011** – First datacenter cluster (Client)
  - Multi-rack (Existing hardware)
    - 1GbE to top of Rack, then 10GbE to the distribution
- **2012** – Second datacenter cluster (Prod)
  - New hardware (Nehalem, 10GbE)
## Application Requirements

<table>
<thead>
<tr>
<th></th>
<th>Master Node</th>
<th>Data Node</th>
<th>Edge Node</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>NameNode</td>
<td>TaskTracker</td>
<td>CLI</td>
</tr>
<tr>
<td></td>
<td>CheckPoint</td>
<td>HDFS</td>
<td>PIG</td>
</tr>
<tr>
<td></td>
<td>JobTracker</td>
<td></td>
<td>Hive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HUE…</td>
</tr>
<tr>
<td><strong>Characteristics</strong></td>
<td>Single Point of Failure, Requires fault tolerant hardware.</td>
<td>Failure is expected</td>
<td>Less compute but better uptime than Data Node</td>
</tr>
<tr>
<td><strong>Requirements</strong></td>
<td>Enterprise hardware RAID Redundant Power</td>
<td>Commodity Hardware JBOD</td>
<td>Commodity Hardware RAID</td>
</tr>
</tbody>
</table>
## Hardware Platform

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Recommended Commodity</th>
<th>Initial Standard</th>
<th>Current Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>4 CPU (Intel or AMD)</td>
<td>8 CPU (Intel)</td>
<td>12 CPU (Intel)</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB</td>
<td>24 GB</td>
<td>96 GB</td>
</tr>
<tr>
<td>Disk</td>
<td>(4) 1TB 7.2k</td>
<td>(4) 1TB 7.2k</td>
<td>(12) 1TB 7.2k</td>
</tr>
<tr>
<td>Network</td>
<td>Single 1GbE</td>
<td>Single 1GbE</td>
<td>Dual 10GbE</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Single</td>
<td>Single</td>
<td>Dual</td>
</tr>
<tr>
<td>Server Cabinet</td>
<td>Dedicated</td>
<td>Dedicated</td>
<td>Shared (TOR networking)</td>
</tr>
</tbody>
</table>
## Hardware Performance Comparison

<table>
<thead>
<tr>
<th>Node</th>
<th>Teragen</th>
<th>Terasort</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU: 8 Cores</td>
<td>Mem: 24GB</td>
<td>1hrs, 26mins, 41sec</td>
</tr>
<tr>
<td>Mem: 24GB</td>
<td>Disk: 4x1TB</td>
<td></td>
</tr>
<tr>
<td>Disk: 4x1TB</td>
<td>NIC: 1GbE</td>
<td></td>
</tr>
<tr>
<td>DL180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU: 8 Cores</td>
<td>Mem: 24GB</td>
<td>13mins, 39sec</td>
</tr>
<tr>
<td>Mem: 24GB</td>
<td>Disk: 12x450GB</td>
<td></td>
</tr>
<tr>
<td>Disk: 12x450GB</td>
<td>NIC: 1GbE</td>
<td></td>
</tr>
</tbody>
</table>
## Big Data Stacks

<table>
<thead>
<tr>
<th></th>
<th>Hadoop</th>
<th>NoSQL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Disk Layout</td>
<td>JBOD</td>
<td>RAID10 for Data</td>
</tr>
<tr>
<td>File System</td>
<td>HDFS, <em>Master / Slave Architecture</em></td>
<td>CFS, <em>Peer / Peer Architecture</em></td>
</tr>
<tr>
<td>Performance</td>
<td>6X Improvement</td>
<td>5X Improvement</td>
</tr>
</tbody>
</table>

*Reference architecture vs. Standard*
Lessons Learned

• **Commodity Hardware**
  – Desktop grade hardware won’t cut it
  – Datacenter floor space comes with a premium price tag
  – Dense entry level enterprise hardware hit the sweet spot

• **Disk Spindles**
  – Increasing the amount of spindles per node dramatically reduced WIO and increased cluster throughput

• **Network**
  – 1GbE connectivity works fine with fewer smaller nodes
  – 10GbE is required for numerous large nodes

• **Memory**
  – 24GB per node worked in the beginning on a small cluster
  – 96GB provided capacity for varying work loads and kept up with CPU
Lessons Learned, cont.

- **Hadoop Distribution**
  - Cloudera provided a packaged distribution
    - Continued improvements in cluster management and automation

- **Cloud vs Private Cluster**
  - **Cloud**
    - Long waits to upload data
    - Costly if we ran continuously
    - Jobs ran slower than our current standard
  - **Private**
    - Large upfront cost (Build it and they will come)
    - Charge back – Difficult

- **Disaster Recovery**
  - No Backups
  - HA in it’s infancy
  - Hard to justify multiple clusters initially
The Future

• Upgrade to CDH4

• Add/Grow Clusters
  • Dual site cluster for backup and growth
  • Geographic alignment – Reduced WAN usage

• Additional “Big Data” Stacks
  – Same infrastructure but new stacks
    • Cassandra
    • MongoDB
    • Oracle NoSQL
    • Neo4j
FICO: The Road to Big Data
Make Every Decision Count™

Lelanie Moll
Director, IT
FICO
## Profile

The leader in predictive analytics for decision management  
Founded: 1956  
NYSE: FICO  
Revenues: $619 million (fiscal 2011)

## Products and Services

Scores and related analytic models  
Analytic applications for risk management, fraud, marketing  
Tools for decision management

## Clients and Markets

5,000+ clients in 80 countries  
Industry focus: Banking, insurance, retail, health care

## Recent Rankings

#1 in services operations analytics (IDC)  
#6 in worldwide analytics software (IDC)  
#7 in Business Intelligence, CPM and Analytic Applications (Gartner)  
#26 in the FinTech 100 (*American Banker*)

## Offices

20+ offices worldwide, HQ in Minneapolis, USA  
2,200 employees  
Regional Hubs: San Rafael (CA), New York, London, Birmingham (UK), Munich, Madrid, Sao Paulo, Bangalore, Beijing, Singapore
## Multi-industry client list

<table>
<thead>
<tr>
<th>Industry</th>
<th>Clients Include</th>
<th>Client Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking</td>
<td>More than half of the top 100 banks</td>
<td><img src="image1.png" alt="Client Logos" /></td>
</tr>
<tr>
<td>Insurance</td>
<td>Two-thirds of the top US P&amp;C insurers</td>
<td><img src="image2.png" alt="Client Logos" /></td>
</tr>
<tr>
<td>Retail/Consumer Goods</td>
<td>One-third of the top US retailers</td>
<td><img src="image3.png" alt="Client Logos" /></td>
</tr>
<tr>
<td>Health Care/Pharma</td>
<td>7 of the top 10 pharma companies</td>
<td><img src="image4.png" alt="Client Logos" /></td>
</tr>
<tr>
<td>Government</td>
<td>100+ government agencies</td>
<td><img src="image5.png" alt="Client Logos" /></td>
</tr>
</tbody>
</table>
FICO: Game-Changing Analytics

FICO holds 100+ patents in analytic and decision management technology, with 150 more patents pending.
We Apply Analytics to Top Industry Challenges

<table>
<thead>
<tr>
<th>Banking: Bankcard</th>
<th>Banking: Deposits</th>
<th>Banking: Mortgage</th>
<th>Banking: Auto Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bankcard Growth</td>
<td>• Deposit Balance Growth</td>
<td>• Mortgage Risk Analysis</td>
<td>• Auto Finance Growth</td>
</tr>
<tr>
<td>• Capital Reserve Assessment</td>
<td>• Revenue Blueprint</td>
<td>• Mortgage Response Analysis</td>
<td>• Risk Control</td>
</tr>
<tr>
<td>• Compliance</td>
<td>• Customer Loyalty</td>
<td>• Mortgage Portfolio Optimization</td>
<td>• Collections and Recovery</td>
</tr>
<tr>
<td>• Fraud Protection</td>
<td>• Fraud Protection</td>
<td>• Mortgage HELOC Growth</td>
<td>• Warranty Management</td>
</tr>
<tr>
<td>• Customer Loyalty</td>
<td>• Collections Optimization</td>
<td>• Product and Pricing</td>
<td>• Incentive Management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insurance</th>
<th>Government</th>
<th>Health Care/ Pharmaceutical</th>
<th>Retail/ Consumer Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Underwriting, Pricing, and Product Management</td>
<td>• Legislative Compliance</td>
<td>• Health Care Provider Revenue Cycle Mgmt</td>
<td></td>
</tr>
<tr>
<td>• Claims Processing and Management</td>
<td>• Fraud Protection</td>
<td>• Pharma Health Care Provider Marketing</td>
<td></td>
</tr>
<tr>
<td>• Fraud Management</td>
<td>• Risk Reduction</td>
<td>• Pharma Consumer Marketing</td>
<td></td>
</tr>
<tr>
<td>• Marketing Management</td>
<td>• Human Resources Management</td>
<td>• Pharma Consumer Health Care Analytics</td>
<td></td>
</tr>
<tr>
<td>• Compliance</td>
<td></td>
<td>• Health Care Payer Fraud Management</td>
<td></td>
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</tbody>
</table>

Health Care/ Pharmaceutical

• Health Care Provider Revenue Cycle Mgmt
• Pharma Health Care Provider Marketing
• Pharma Consumer Marketing
• Pharma Consumer Health Care Analytics
• Health Care Payer Fraud Management
• Health Care Payer Marketing Management
• Health Care Payer Wellness Management

<table>
<thead>
<tr>
<th>Retail/ Consumer Goods</th>
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</thead>
<tbody>
<tr>
<td>• Loyalty and Promotion Marketing</td>
</tr>
<tr>
<td>• Operations</td>
</tr>
<tr>
<td>• Merchandising Optimization</td>
</tr>
<tr>
<td>• Credit Risk Management</td>
</tr>
</tbody>
</table>
Better Decisions require Better Analytics

<table>
<thead>
<tr>
<th>Decision Area</th>
<th>Challenge</th>
<th>Sample Client Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>Make the right offer at the right time to build profitability</td>
<td>30% increase in profit per account</td>
</tr>
<tr>
<td>Originations/Underwriting</td>
<td>Book more customers without increasing risk</td>
<td>15% increase in customers booked while keeping risk exposure constant</td>
</tr>
<tr>
<td>Customer Management</td>
<td>Reduce credit losses while deepening relationships</td>
<td>25% decrease in bad debt</td>
</tr>
<tr>
<td>Collections</td>
<td>Collect more without additional resources</td>
<td>30% increase in collector productivity</td>
</tr>
<tr>
<td>Fraud</td>
<td>Stop fraud faster while reducing “false positives”</td>
<td>50% decrease in fraud losses without hurting customer satisfaction</td>
</tr>
</tbody>
</table>
How FICO Improves Decisions

Define and manage decision logic with business rules

Target decisions based on future behavior with predictive analytics

Select ideal action to maximize profit / revenue with optimization

Improve decisions in specific decision areas

- Marketing
- Originations
- Customer Management
- Collections/Recovery
- Fraud

Improve results across decision areas

Customers/Prospects
Segment 1
Segment 2
Action 1
Action 2

Test, learn and change through adaptive control

Define and manage decision logic with business rules

Target decisions based on future behavior with predictive analytics

Select ideal action to maximize profit / revenue with optimization

Improve decisions in specific decision areas

- Marketing
- Originations
- Customer Management
- Collections/Recovery
- Fraud

Improve results across decision areas

Customers/Prospects
Segment 1
Segment 2
Action 1
Action 2

Test, learn and change through adaptive control
A Platform for Connected Decisions

Our applications are built on a common platform that enables connected decisions across product lines and the customer lifecycle.

<table>
<thead>
<tr>
<th>Decision Management applications:</th>
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</thead>
<tbody>
<tr>
<td>Share data and decisions to improve performance</td>
</tr>
<tr>
<td>Originations</td>
</tr>
</tbody>
</table>

### Decision Management architecture:

- **FICO components**
  - Data Model
  - Rules Management
  - Model and Rules Repository
  - Case Management
  - Reporting

- **Third-party components**
  - Process Server
  - Portal
  - Application Server
  - Enterprise Service Bus
To envision where Big Data Technologies fit in your organization, you need to first understand the difference and connection between Data Mining, Business Intelligence and Predictive Analytics…Data Mining techniques form the foundation for Predictive Analytics which in turn feeds Predictive Modeling.
Data Mining, Business Intelligence and Predictive analytics

Data Mining: Explores
Run an automated search though Historical Transaction data

Business Intelligence: Provides Insight
Break out customers by age and gender and determine who buys what.

Predictive Analytics: Provides Action
Predict Future “Customer Lifetime Value” and response patterns to determine appropriate marketing treatments.
Business Goals for using Big Data technologies

- Seamless integration with existing analytical processes
  - Either replace or supplement
  - Minimal code change
  - Secure Data Management platform

- Increased efficiencies
  - Big Data platforms offer an adaptable degree of parallelism (Map-Reduce paradigm) to reduce time for predictive analytic modeling from days to hours or even less – or as quick as needed)
  - Develop 1000’s of models in parallel
  - Ability to adapt or to add new models rapidly for staying abreast of changing markets

- Similar or lower cost
IT Goals for using Big Data technologies

• Co-exist in shared data center and Operational processes
  • Utilize existing hardware contracts
  • Enterprise tools for management and monitoring
  • Meet or exceed Green IT objectives
    • Power and cooling consumption
    • Data center floor space utilization

• Similar or lower cost

• Scalable Architecture
Data Processing Design
Parallel Predictive Analytics with Map-Reduce and Optimization

Transaction Data
Buy-o-graphics
Demographics
Text data…
(Terabytes)

Event-specific training data

Parallel, Automated Predictive Analytics

Binning
Variable selection
Fitting
Scoring

Large-Scale Constrained Optimization

Offer Susceptibility Matrix
(1,000,000 rows, 1,000 columns)

|                | LCD TV | Fridge | Printer | Tablet | ...
|----------------|--------|--------|---------|--------|------
| Jim            | 0.1815 | 0.0158 | 0.6564  | 0.2067 | ...  |
| Joe            | 0.0906 | 0.0971 | 0.0363  | 0.3329 | ...  |
| Jill           | 0.0127 | 0.0957 | 0.0499  | 0.2773 | ...  |
| Ann            | 0.0913 | 0.0485 | 0.0934  | 0.0467 | ...  |
| ...            | ...    | ...    | ...     | ...    | ...  |

Budget constraints

Offer #1
Offer #2
Offer #3
...

<table>
<thead>
<tr>
<th></th>
<th>Offer #1</th>
<th>Offer #2</th>
<th>Offer #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim</td>
<td>LCD TV</td>
<td>Printer</td>
<td>Camera</td>
</tr>
<tr>
<td>Joe</td>
<td>Shaver</td>
<td>iPhone</td>
<td>Tablet</td>
</tr>
<tr>
<td>Jill</td>
<td>Wine</td>
<td>Shampoo</td>
<td>Bracelet</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Optimal Personalized Offer Assignments

Parallel Predictive Analytics with Map-Reduce and Optimization
To Summarize…

• Predictive Analytics is embedded in all FICO’s Decision Management products – that is what makes them work and being selected over our competition.

• Our solutions are about Automated Optimized Decisions. Making the best decision possible for a given situation is extremely rewarding, but poor decisions can be costly and even devastating.

• Developing these predictive models or algorithms requires vast amounts of data to be analyzed. The raw data is often unstructured or at best semi-structured.

• By enabling a secure, proficient and highly scalable Big Data platform for our business, IT not only dramatically reduce the time for data searches but opens up the opportunity for using Analytical tools designed to take advantage of parallelism in a distributed compute environment.
Lessons Learned

• Building the very first Hadoop environment may pose various challenges for IT:
  • Where does this capability fit in your IT Organization?
  • Which “traditional” IT skills is the best fit?
  • What is the best Hardware choice?

• Installing and configuring a “Performing” Hadoop environment is not obvious and definitely **NOT** the default.
  • Installation itself was not overly complicated when using the Cloudera Manager and have the server accessing the web directly. Don’t even attempt a manual installation.
  • Troubleshooting performance issues is a whole different scenario.
  • Some performance issues were hardware related and some were configuration: it was difficult to tell the different.

• **Catch 22:** Building the “best” environment for a Proof of Concept is challenging because the budget is tied to the outcome of the PoC. A major deciding factor is performance.

• Utilizing the **Oracle Big Data Appliance** can save a lot of frustration and time.
Oracle’s Integrated Big Data Solution Stack
Oracle Integrated Solution for Big Data

ACQUIRE

HDFS
Oracle NoSQL Database
Enterprise Applications

ORGANIZE

Hadoop
Oracle Big Data Connectors

ANALYZE

Data Warehouse
In-Database Analytics

DECIDE

Analytic Applications
Interactive Discovery
Oracle Big Data Platform
Accelerate time to market & reduce risk with end-to-end solution

Oracle is the industry leader in database and information management. Oracle provides all the components you need to get real results from your big data initiatives.
Help customers develop an architecture blueprint that recognizes big data opportunities, maps big data technologies to capabilities and requirements, and integrates with existing toolset. This service provides customers with a realistic roadmap to plan for high-volume and data-intensive applications that blend historic and real-time analysis, and achieve big data value incrementally through leveraging existing skills and investment.

Use Cases

General-Purpose Use Cases
- Customers bought Oracle Big Data Appliance and need advice on how to leverage the technology and maximize their investment
- Customers who are re-engineering their overall data management / architecture and looking to include Big Data capabilities

Industry User Cases
- Financial Services: Fraud, Risk Mgmt
- Retail: Sentiment analysis, Foot Traffic Analysis, Individualized Loyalty mgmt
- Supply Chain: Demand-Driven Supply Chain mgmt
- Health Care: Pharmacy/treatment Adherence mgmt, remote patient monitoring
- Insurance: Individualized Premium based on driving habits
Big Data Architecture Blueprint & Roadmap

Benefits

• Architects with deep industry experience and technology expertise
• Holistic Information Architecture framework to integrate with existing tools and leverage existing skills
• Practical Architecture Development process to realize incremental value
• Extensive Reference Architecture Portfolio to jump start the effort

Key Activities

Expert Planning
• Business Vision and Strategy Development for Big Data
• Information Architecture Maturity and Readiness Assessment
• Big Data Capability and Gap Analysis
• Big Data Technology Selection and Capability Mapping
• Big Data Architecture and Roadmap Development

Outcome
• Executive Presentation with Big Data Recommendations
• High-Level Big Data Architecture
• High-Level Big Data Roadmap

Products/Hardware:
Oracle Big Data Appliance (CDH, NoSQL, R), Exadata, Exalytics (OBIEE), In-Database Advanced Analytics (Data Mining, Oracle R Enterprise, Endeca)
Oracle Experts Helping You Succeed with Your Oracle Investments

WHY ORACLE CONSULTING?

- **Leading Expertise:** Oracle experts for every Oracle solution
- **Broad Coverage:** Lifecycle services across the entire Oracle product footprint
- **Global Scale:** 17,000 Oracle experts in 145 countries, serving over 20 million users
- **Innovative Solutions:** Services with proven best practices focused on Enterprise Architecture, Cloud and Fusion Applications
- **Migration Expertise:** Migration Services utilizing the Oracle Migration Factory

Delivering Faster Adoption and Return on Investment

- Lifecycle services with deep expertise across all Oracle products
- Expertise on your path to Cloud with architecture and implementation services
- Extensive experience with a practical approach to architecting and managing complex IT initiatives
- Best practices and tools for upgrades and migrations, including the Oracle Migration Factory
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Demos:
1. Helping You Successfully Migrate to the Cloud (Moscone West, W-022)
2. Oracle Consulting: Optimizing Your Engineered Systems Environment (Moscone South, S-170)
Questions
Hardware and Software

Engineered to Work Together