IBM Big Data & Analytics:
Fueling Competitive Advantage in the New Era of Smart

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General Manager
Information Management
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Four technologies help define the Smarter Enterprise

Client-centric, digitally savvy in its use of cloud, mobile, social and big data platforms to transform

Embraces data in all forms to apply analytics, unlock insight, and make fact-based decisions

Creates value in new ways by forging deeper relationships with clients and between employees

Constantly adapts to changing market dynamics, buyer demands and disruptive technologies

Four technologies:
- Big Data
- Analytics
- Social Business
- Enterprise Mobility
- Cloud Computing
What’s changing:
The world of Big Data & Analytics is expanding quickly

Data is the world’s newest resource

Decision-making extends from few to many

As data value grows, current systems won’t keep pace
Adding value at every point of impact

...Each decision, interaction & process

System of Record
- Infrastructure
- Security Intelligence
- Enterprise Applications

Big Data & Analytics

Systems of Engagement
- Mobile Commerce
- Call Center
- Social Business

Infuse, Extend & Integrate
Why Act Now?

To outperform in your industry
• Improve core competitiveness of the business
• Make speed a differentiator
• Monetize the data itself
• Be more right, more often

To manage risk
• Guard against poor decision-making
• Protect against security and privacy
• Get the risk-opportunity equation right

To create IT agility to underpin the business
• Relieve the pressure on the IT infrastructure
• Adopt new approach to onslaught of data
• Eliminate hidden costs
The end game: Outperform in your industry

Traditional Approach

- Generating power
- Reactive customer retention
- Prolonged claims process
- Lowering the cost of care
- Drilling oil

Transformational Outcomes

- Enabling consumers to make educated choices about their consumption and at what price
- Analyzed customer data from multiple sources resulting in a 60% retention rate increase
- Saves millions with better fraud detection and processes claims 70 times faster
- Detecting life threatening infections in neonatal care unit up to 24 hours sooner
- Predicted weather patterns to anticipate at risk oil rigs to save $1B per platform
To manage risk and create agility, embrace all data
....uncertainty of new information is growing alongside its complexity

**Volume**
Data at Scale
Terabytes to petabytes of data

**Variety**
Data in Many Forms
Structured, unstructured, text, multimedia

**Velocity**
Data in Motion
Analysis of streaming data to enable decisions within fractions of a second.

**Veracity**
Data Uncertainty
Managing the reliability and predictability of inherently imprecise data types.
By 2015, 80% of all available data will be uncertain.
Success comes down to speed, confidence & trust

Confidence in Your Data
...Before you act on insight

Confidence in Accelerating Value
...Before you start a project

Confidence in Your Skills
...To maximize the value
IBM Big Data & Analytics reference architecture

- Data in Motion
- Data at Rest
- Data in Many Forms

- Information Ingestion and Operational Information
- Real-time Analytics
- Exploration, Integrated Warehouse, and Mart Zones
- Information Governance, Security & Business Continuity

- Cognitive Computing
  - Real-time Analytics & Decision Management
  - Planning & Forecasting
  - Predictive Analytics & Content Analytics
  - Reporting, Analysis & Dashboards
  - Data Discovery & Visualization

- Security, Systems, Storage and Cloud

- Decision-Making
- Business Processes
- Point of Interaction
A new architecture is required

Big Data & Analytics Platform

- Data in Motion
- Data at Rest
- Data in Many Forms

Information Governance, Security & Business Continuity

Security, Systems, Storage and Cloud

Real-time Analytics

Information Ingestion and Operational Information

Landing Area, Analytics Zone and Archive

Exploration, Integrated Warehouse, and Mart Zones

Cognitive Computing

- Real-time Analytics & Decision Management
- Planning & Forecasting
- Predictive Analytics & Content Analytics
- Reporting, Analysis & Dashboards
- Data Discovery & Visualization

Decision-Making

Business Processes

Point of Interaction
Infrastructure Matters to Support New Big Data & Analytics Architecture

Core infrastructure capabilities deliver speed and confidence

An efficient and agile infrastructure balances the needs of different analytics workloads

Low Latency
Scalability
Parallel Processing

Predictive Analytics
Data Warehouse

Text Analytics
Hadoop Workloads

Optimization
Sensitivity Analysis

* SCM-Storage Class Memory
IBM provides confidence, speed and trust with holistic, integrated approach

The Whole is Greater Than the Sum of the Parts

- Broadest set of capabilities across big data and analytics
- Pre-integrated components accelerate value
- Pre-built industry and horizontal solutions
- Integration and optimization with storage and infrastructure
- Delivered in multiple forms: software, appliance, and cloud
- World-class consulting and implementation drives innovation and value
Delivering workload optimized performance

Meeting Big Data Challenges – Fast and Easy!

**PureData**
System for Transactions
For apps like Order Management
Database cluster services optimized for transactional throughput and scalability

**PureData**
System for Analytics
For apps like Sales Analysis
Data warehouse services optimized for high-speed, peta-scale analytics and simplicity

**PureData**
System for Operational Analytics
For apps like Real-time Fraud Detection
Operational data warehouse services optimized to balance high performance analytics and real-time operational throughput

**PureData**
For Hadoop
For apps like Big Data Exploration
Hadoop services optimized for exploration of large volumes of data with any type of structure; and as a queryable archive to augment traditional data warehousing

Powered by Netezza Technology
A year of innovation for Big Data & Analytics

IBM Announces New Big Data Platform Capabilities
April 2013

- **DB2 with BLU ACCELERATION**
  - 8-25x Faster Reporting & Analytics

- **BIG DATA PLATFORM**
  - BIG SQL, 2-10x Faster Stream Processing

- **PureData SYSTEM FOR HADOOP**
  - 8x Faster Deployment

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New Announcements in Analytics
June 2013

- **PREDICTIVE ANALYTICS for BIG DATA**
  - Improved Visualization, Automatically Find Relevant Data

- **BUSINESS INTELLIGENCE**
  - Animated Charting, Extensible Visualization

- **RISK, FINANCE & CLOUD**
  - Disclosure Management, Accelerated Internal Reporting

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AGILE GOVERNANCE FOR ALL DATA

- Find and protect sensitive data
- 80% faster monitoring

PERFORMANCE MANAGEMENT and BUSINESS INTELLIGENCE

- Single point of security for traditional, NoSQL, and big data
- Cognos TM1 with Mobile contribution
- Integrated metrics and scorecarding
- Deploy on Cloud, zLinux, on premise.
- Native mobile on iOS and Android

INFRASTRUCTURE

- Analytics on POWER 7-14x lower TCO
- X-86 innovation – 40% better perf efficiency
- System x – open analytics on Linux
- IBM Flash Systems for low latency analytics.
- Real-time compression to access all relevant data
The power of real-time insight

**October 1, 2013:** IBM will acquire The Now Factory, an expert in Customer & Network Analytics for Communications Service Providers

**Goal:** Triage customer issues to determine if they are caused by the user error, device, the OS, the app, the radio access, the core network or the destination server – or a combination of the above.

**Goal:** Understand impact of network events (bottlenecks, dropped calls, outages etc.) on subscribers’ quality of experience and address it to reduce churn & increase customer satisfaction.

**Goal:** Increase uptake/acceptance rate for marketing campaigns, uncover new opportunities for revenue generation.
Infuse Big Data & Analytics everywhere
…what we have learned

Create new business models

Transform financial processes

Attract, grow, retain customers

Manage risk

Improve IT economics

Optimize operations and reduce fraud

Big Data & Analytics
IBM has proven expertise across industries

<table>
<thead>
<tr>
<th>Industry</th>
<th>Examples</th>
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| Banking           | • Optimizing Offers and Cross-sell  
                      • Customer Service and Call Center Efficiency  
                      • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  
                      • Optimizing Offers and Cross-sell  
                      • Customer Service and Call Center Efficiency  
                      • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  
                      • Optimizing Offers and Cross-sell  
                      • Customer Service and Call Center Efficiency  
                      • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  |
| Insurance         | • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  
                      • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  
                      • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  
                      • 360° View of Domain or Subject  
                      • Catastrophe Modeling  
                      • Fraud & Abuse  |
| Telco             | • Pro-active Call Center  
                      • Network Analytics  
                      • Location Based Services  
                      • Pro-active Call Center  
                      • Network Analytics  
                      • Location Based Services  
                      • Pro-active Call Center  
                      • Network Analytics  
                      • Location Based Services  
                      • Pro-active Call Center  
                      • Network Analytics  
                      • Location Based Services  |
| Energy & Utilities| • Smart Meter Analytics  
                      • Distribution Load Forecasting/Scheduling  
                      • Condition Based Maintenance  
                      • Smart Meter Analytics  
                      • Distribution Load Forecasting/Scheduling  
                      • Condition Based Maintenance  
                      • Smart Meter Analytics  
                      • Distribution Load Forecasting/Scheduling  
                      • Condition Based Maintenance  
                      • Smart Meter Analytics  
                      • Distribution Load Forecasting/Scheduling  
                      • Condition Based Maintenance  |
| Media & Entertainment| • Business process transformation  
                          • Audience & Marketing Optimization  
                          • Business process transformation  
                          • Audience & Marketing Optimization  
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                          • Audience & Marketing Optimization  
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                          • Audience & Marketing Optimization  
                          • Business process transformation  
                          • Audience & Marketing Optimization  |
| Retail            | • Actionable Customer Insight  
                      • Merchandise Optimization  
                      • Dynamic Pricing  
                      • Actionable Customer Insight  
                      • Merchandise Optimization  
                      • Dynamic Pricing  
                      • Actionable Customer Insight  
                      • Merchandise Optimization  
                      • Dynamic Pricing  
                      • Actionable Customer Insight  
                      • Merchandise Optimization  
                      • Dynamic Pricing  |
| Travel & Transport| • Customer Analytics & Loyalty Marketing  
                          • Predictive Maintenance Analytics  
                          • Customer Analytics & Loyalty Marketing  
                          • Predictive Maintenance Analytics  
                          • Customer Analytics & Loyalty Marketing  
                          • Predictive Maintenance Analytics  
                          • Customer Analytics & Loyalty Marketing  
                          • Predictive Maintenance Analytics  
                          • Customer Analytics & Loyalty Marketing  
                          • Predictive Maintenance Analytics  |
| Consumer Products | • Shelf Availability  
                          • Promotional Spend Optimization  
                          • Merchandising Compliance  
                          • Shelf Availability  
                          • Promotional Spend Optimization  
                          • Merchandising Compliance  
                          • Shelf Availability  
                          • Promotional Spend Optimization  
                          • Merchandising Compliance  
                          • Shelf Availability  
                          • Promotional Spend Optimization  
                          • Merchandising Compliance  |
| Government        | • Civilian Services  
                          • Defense & Intelligence  
                          • Tax & Treasury Services  
                          • Civilian Services  
                          • Defense & Intelligence  
                          • Tax & Treasury Services  
                          • Civilian Services  
                          • Defense & Intelligence  
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                          • Defense & Intelligence  
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| Healthcare        | • Measure & Act on Population Health Outcomes  
                          • Engage Consumers in their Healthcare  
                          • Measure & Act on Population Health Outcomes  
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                          • Engage Consumers in their Healthcare  |
| Automotive        | • Advanced Condition Monitoring  
                          • Data Warehouse Optimization  
                          • Advanced Condition Monitoring  
                          • Data Warehouse Optimization  
                          • Advanced Condition Monitoring  
                          • Data Warehouse Optimization  
                          • Advanced Condition Monitoring  
                          • Data Warehouse Optimization  
                          • Advanced Condition Monitoring  
                          • Data Warehouse Optimization  |
| Chemical & Petroleum| • Operational Surveillance, Analysis & Optimization  
                                  • Data Warehouse Consolidation, Integration & Augmentation  
                                  • Operational Surveillance, Analysis & Optimization  
                                  • Data Warehouse Consolidation, Integration & Augmentation  
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                                  • Operational Surveillance, Analysis & Optimization  
                                  • Data Warehouse Consolidation, Integration & Augmentation  |
| Aerospace & Defense| • Uniform Information Access Platform  
                                 • Data Warehouse Optimization  
                                 • Uniform Information Access Platform  
                                 • Data Warehouse Optimization  
                                 • Uniform Information Access Platform  
                                 • Data Warehouse Optimization  
                                 • Uniform Information Access Platform  
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                                 • Uniform Information Access Platform  
                                 • Data Warehouse Optimization  |
| Electronics       | • Customer/ Channel Analytics  
                          • Advanced Condition Monitoring  
                          • Customer/ Channel Analytics  
                          • Advanced Condition Monitoring  
                          • Customer/ Channel Analytics  
                          • Advanced Condition Monitoring  
                          • Customer/ Channel Analytics  
                          • Advanced Condition Monitoring  
                          • Customer/ Channel Analytics  
                          • Advanced Condition Monitoring  |
| Life Sciences     | • Increase visibility into drug safety and effectiveness  
                       • Increase visibility into drug safety and effectiveness  
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IBM Big Data & Analytics momentum

Source: IBM. Note: All numbers used are cumulative. 3/31/2013

IBM is taking a grown up (enterprise) approach to #bigdata. Good challenge to the early pioneers. Maturity will win this race. #bigdatamgmt
IBM is helping address the analytics skills gap

- New technologies designed for business users
- **IBM AnalyticsZone** to download and experiment with software
- **Big Data University** with robust curriculum
- **Big Data Stampede** for accelerated value
- Partnering with major universities globally
- On-line resource centers & books written by IBM thought leaders
Three Steps for Strategic Action

1. Build a culture that infuses analytics everywhere
   • Develop a curiosity-driven and evidence-inspired workforce

2. Be proactive about privacy, security and governance
   • Forward-thinking approaches to maximize impact while balancing risk

3. Invest in a Big Data & Analytics platform
   • Build to master plan: all data, all analytics, full range of business outcomes
IBM is the Right Partner Committed to Your Success

IBM understands all kinds of data and analytics

- **Game-Changing Innovation** – such as Watson, BLU acceleration, streaming analytics and expert integrated systems; 20 years of patent leadership
- **Business-Ready Capabilities** – big data and analytics capabilities, integrated and hardened for serious use, with flexible deployment options

IBM knows how to turn data into value

- **Client Expertise** – deep industry know-how and solutions with global reach
- **Strong Ecosystem** – growing investment with 360+ business partners & 100+ universities
- **Build on Current Investments** – enhance existing analytics and information infrastructure with unparalleled breadth and depth of new capabilities

IBM has invested in big data and analytics

- **$17B+ in Acquisitions** – coupled with game-changing innovation since 2005
- **Analytics Solution Centers** – visited by 4000+ organizations accessing global expertise
Thank You

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