A New Era of Data Warehousing & Analytics

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V7.2

Agenda

- Introduction: Challenges that organizations are facing

- Business Analytics - driving better business outcomes

- Data Warehousing – the foundation for business analytics

- Accelerators – delivering immediate analytics solutions

- Next Steps

Underlying Infrastructure for Better Decision Making

IBM Business Analytics
Data at Rest + Data in Motion

Driving better business outcomes
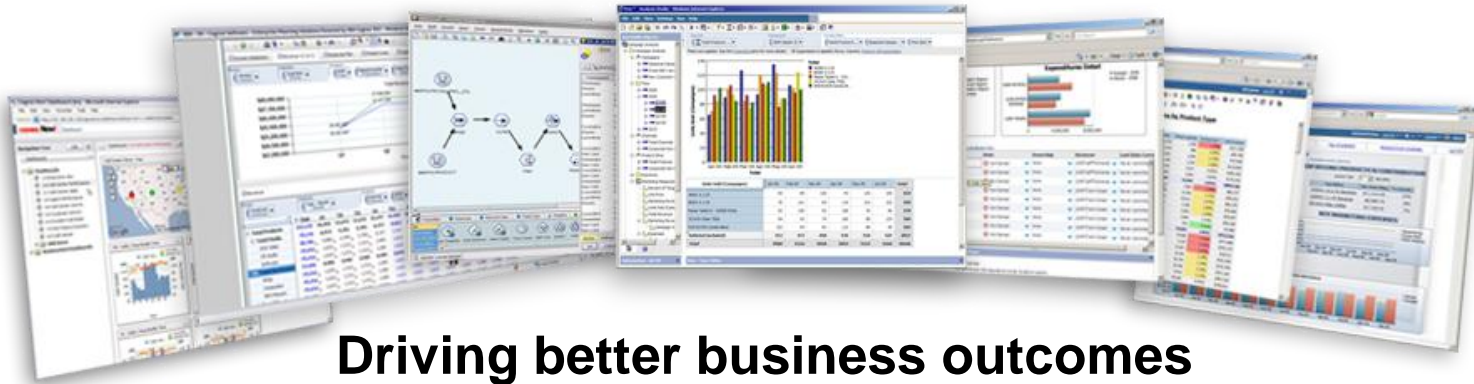
IBM Data Warehouse Solutions

The optimized foundation for business analytics

The World Faces an Explosive Growth of Information

Volume

- Every day, **15 petabytes** of new information are being generated.

Variety

- **80%** of new data growth is unstructured content, generated largely by email, images and video

Velocity

- An average company with 1,000 employees spends **$5.3 million** a year to find its own information.

30 billion RFID **tags today**

4.6 billion camera phones

100s of millions of GPS enabled

2+ billion people WWW

76 million smart meters in 2009… 200M by 2014

Organizations are focused on delivering better outcomes

**Generate
More Revenue**

Reduce Risk

**Predict Future Outcomes
with Greater Confidence**

Lower Costs

Yet All Organizations are Facing an Information Challenge

Trust
1 in 3

Business leaders frequently make decisions based on information they don't trust, or don't have.

Vision
83%

Of CIOs cited "Business intelligence and analytics" as part of their visionary plans to enhance competitiveness.

Access
1 in 2

Business leaders say they don't have access to the information they need to do their jobs.

Pre-integrated
35%

Of businesses will look to replace their current warehouse with a pre-integrated warehouse solution in the next 3 years, only 14% have today.

Source; TDWI: Next Generation Data Warehouse Platforms, 2009

Information Complexity Across the Organization is Increasing

Executive

Business Manager

Line Manager

Casual Business User

Business Analyst

Financial Analyst

DASHBOARDING

SCORECARDING

REPORTING

QUERY

ANALYSIS

PLANNING

What is happening?

Why are we on/off track ?

What is likely to happen?

What should we do next ?

Business Analytics delivers insights to drive better outcomes

Better
Outcomes

Smarter
Decisions

Actionable
Insights

Relevant
Information

Analytics-driven Organizations Can…

Increase agility

…rapidly respond to opportunity

- **Precise customer contribution margins**

- **Reduced operating costs**

Analytics-driven Organizations Can…

Detect patterns
…stop crime before it happens

- **Higher case closings**
- **Improved officer safety and resource allocation**

Analytics-driven Organizations Can…

MIAMI-DADE COUNTY

Anticipate demand

…and immediately match it

- **Infusing business analytics into every new solution**

- **Able to scale to meet the demands of internal growth**

Analytics-Driven Organizations Outperform

Driving Better Financial Performance

	EBITDA	Revenue	ROIC
Value Integrators	11.3%	14.0%	12.1%
All other enterprises	0.5%	9.4%	9.3%
	> 20x more	49% more	30% more

EBITDA
5-year CAGR, 2004-2008

Revenue
5-year CAGR, 2004-2008

ROIC
5-year average, 2004-2008

■ Value Integrators　　　■ All other enterprises

Revenue Growth: N = 580; EBITDA: N = 531; ROIC: N = 501;　© 2011 IBM Corporation
Source: IBM Institute for Business Value, The Global CFO Study 2010
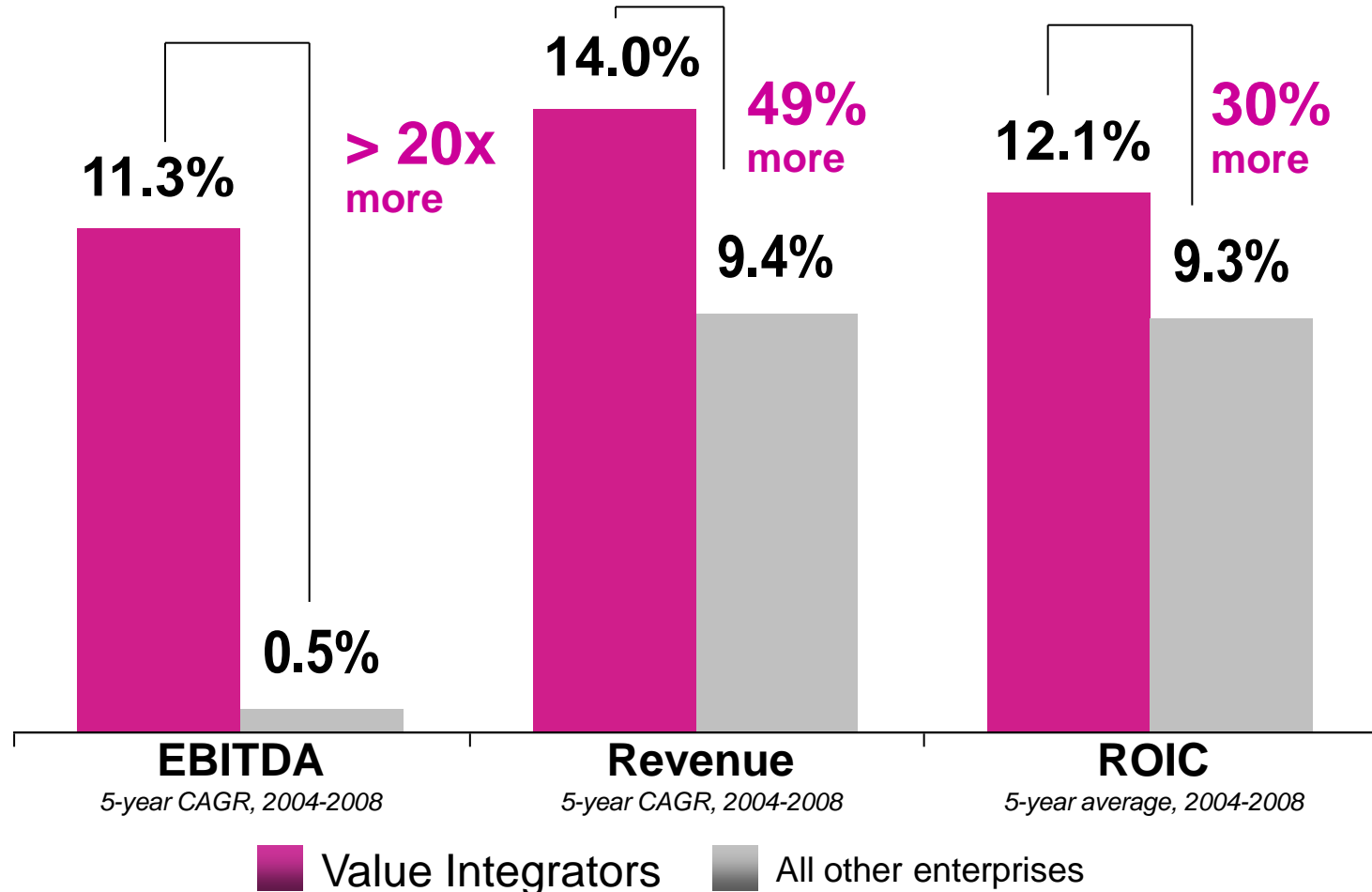
IBM Business Analytics Client Advantage: All Capabilities
IBM Cognos and SPSS facilitate decisions across the time spectrum

Reaching Beyond Basic Business Intelligence

- Benefit from big data.

- Identify weak signals.

- Embrace complexity, unexpected activity and changing conditions.

- Understand unstructured data.

- Optimize business processes.

- Automate governance, risk and compliance reporting.

- Enable full-sample forensics.

- Evolve to insight and foresight.

- Enhance scenario planning.

- Instigate innovation.

Gartner. Feb '12

IBM Business Analytics Client Advantage: Proven Platform

INDEPENDENT SOA BASED PLATFORM FITS YOUR ENVIRONMENT

Message Sources

Relational Sources

Application Sources

OLAP Sources

Modern and Legacy Sources

T R U S T E D   I N F O R M A T I O N
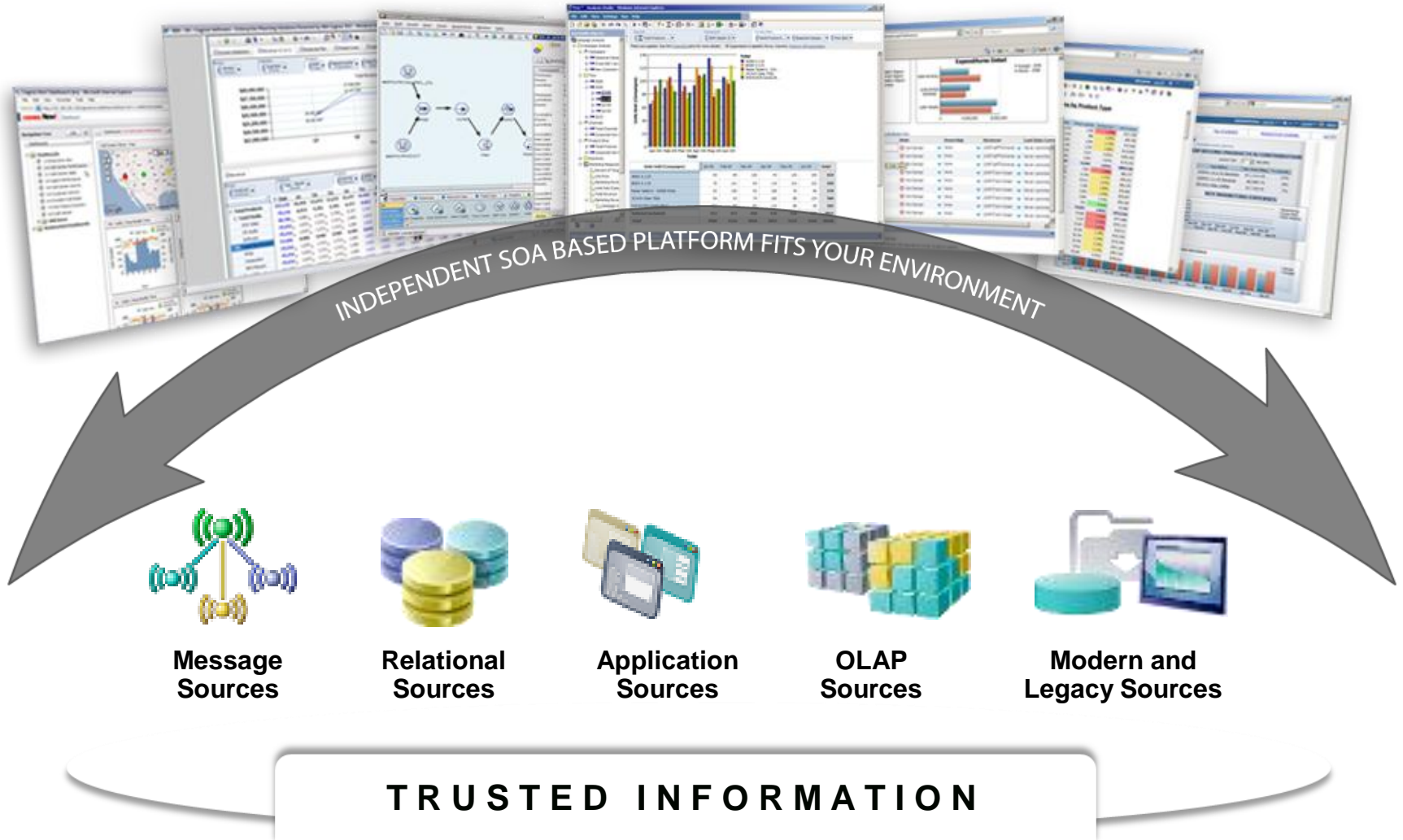
Business Analytics & Optimization

Creating unique value for clients

> *Since 2005 $14B+ investment acquiring 24 companies*

> *10,000+ technical professionals*

> *7,500+ dedicated consultants*

> *Largest math department in private industry*

> *27,000+ Business Partner certifications*

> *8 Analytics Solutions Centers*

> *Optimized hardware and software offerings*

> *100 analytics-based research assets; almost 300 researchers*

> *Significant marketing investment worldwide in New Intelligence through Smarter Planet*

Better Analytics comes from Trusted Information

IBM Business Analytics

Driving better business outcomes
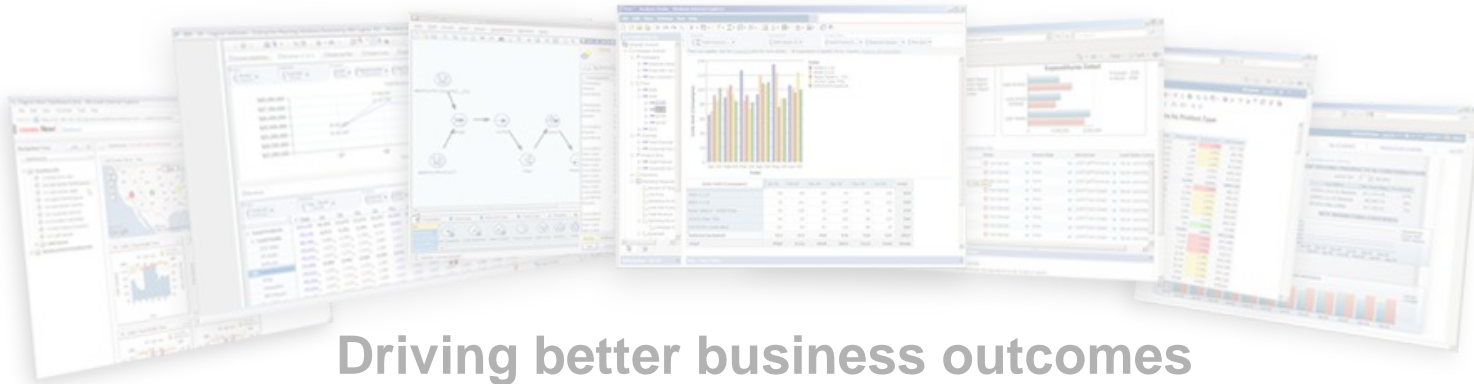
IBM Data Warehouse Solutions

The optimized foundation for business analytics

Where Does the Data Warehouse Fit in the IT Environment
IBM Offers a complete information ecosystem

Transactional & Collaborative Applications

Business Analytics Applications

Analyze

Content

Big Data

Data Cubes & Mining

Streams

Integrate

Master Data

Integration

Data Warehouses

Manage

Data

Content

streaming Information

External Information Sources

Govern

Quality

Lifecycle

Security & Privacy

Standards
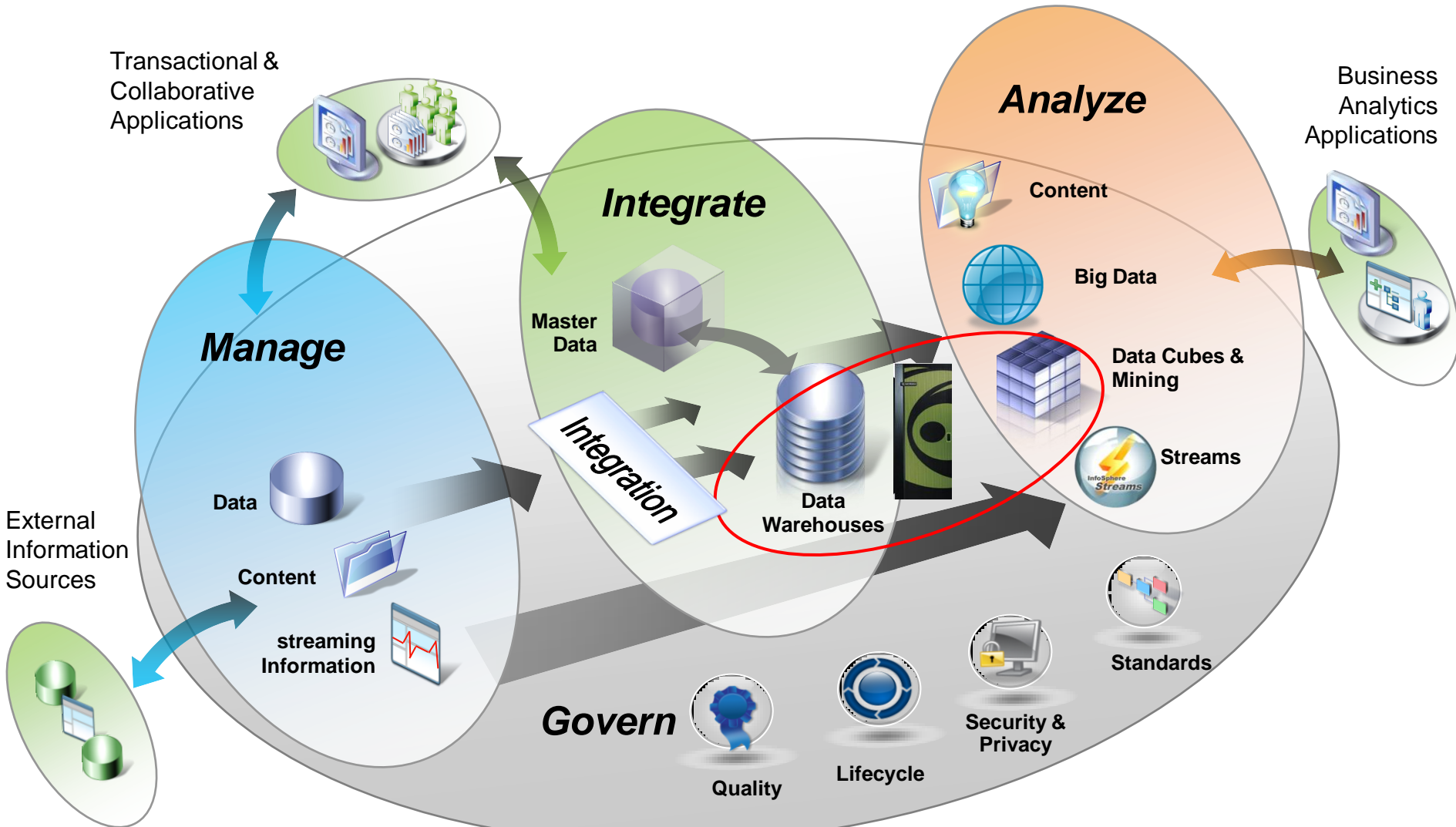
Most Comprehensive Portfolio
- IBM Data warehousing & Analytics

- 3 Key Swim Lanes
  - Traditional/Relational Data Sources w/ Traditional BI
  - Non-Traditional/Non-Relational Data Sources (e.g. real-time) w/ Event-based Analytics
  - Unconventional, Big Data Data Sources w/ Big Data Analytics
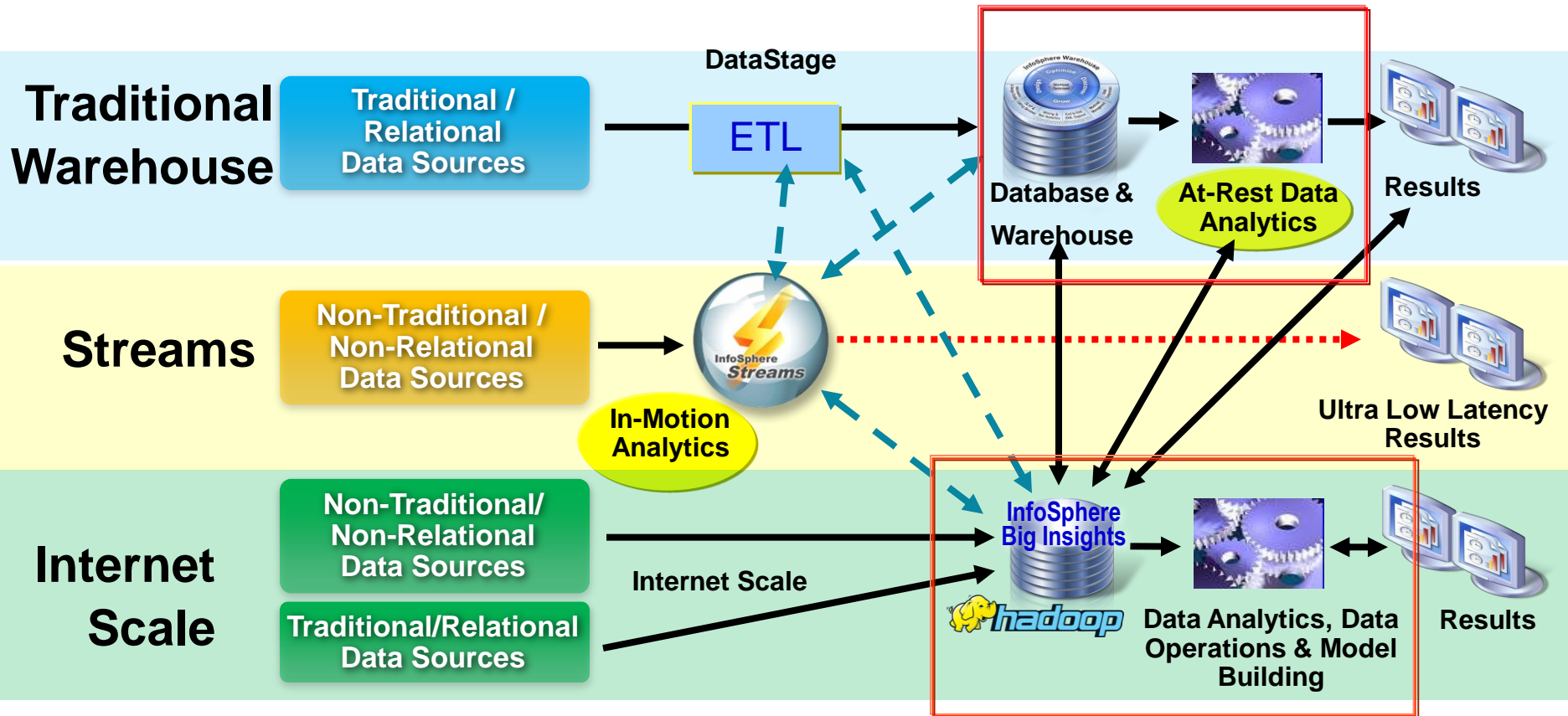
Complementary Analytics

Traditional Approach
Structured, analytical, logical

New Approach
Creative, holistic thought, intuition
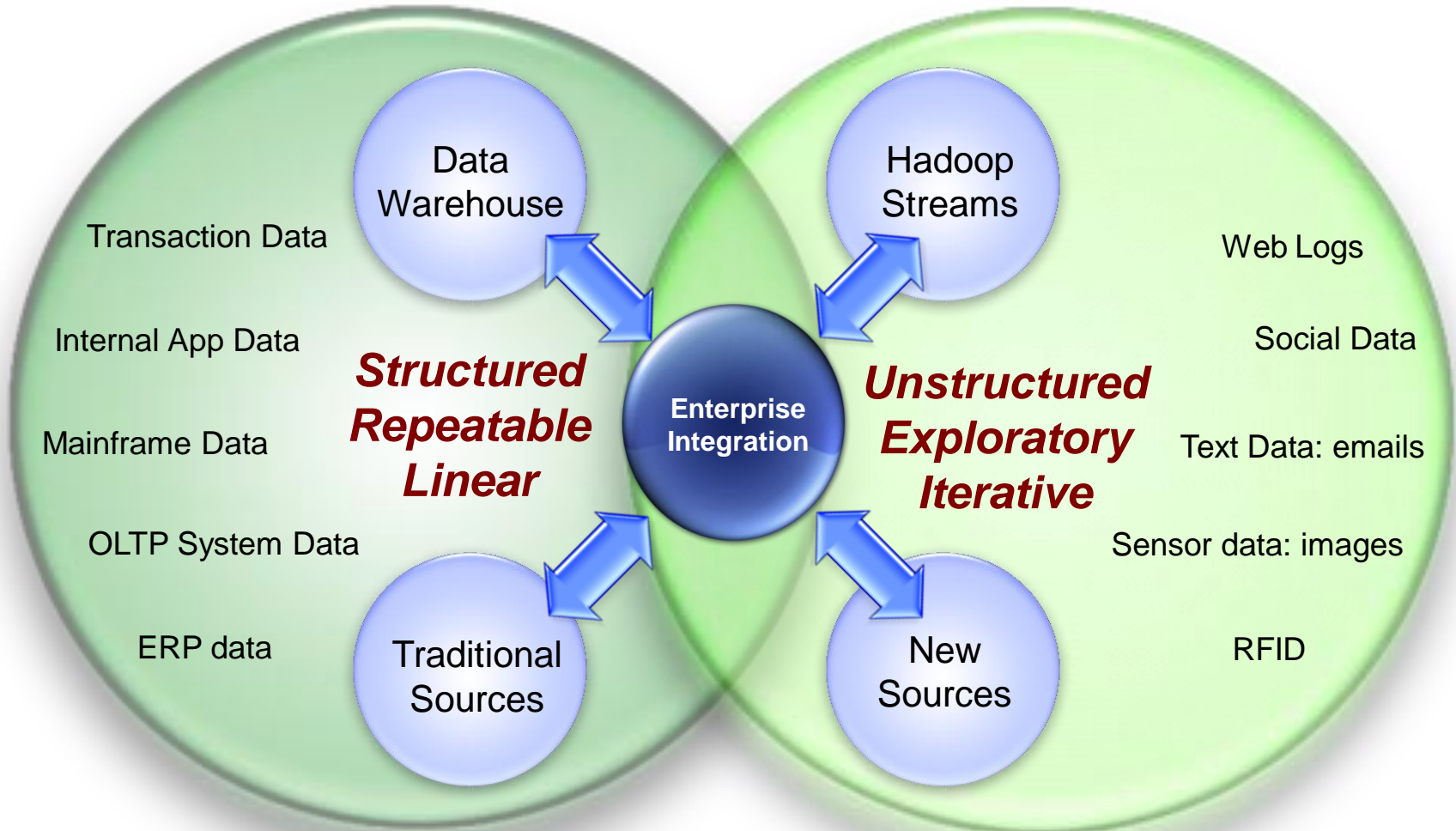
Data Warehouse

Hadoop Streams

Transaction Data

Web Logs

Internal App Data

Structured Repeatable Linear

Enterprise Integration

Unstructured Exploratory Iterative

Social Data

Mainframe Data

Text Data: emails

OLTP System Data

Sensor data: images

ERP data

Traditional Sources

New Sources

RFID

Simplicity, Flexibility, Choice
IBM Data Warehouse & Analytics Solutions

**IBM
Netezza**

**IBM
Smart Analytics System**

**IBM
Warehouse Software**

**Custom
Solutions**

Warehouse Accelerators

Information Management Portfolio
(Information Server, MDM, Streams, etc)

Simplicity   *The right mix of simplicity and flexibility*   **Flexibility**

days for a single query

constant tuning

"**Nearly 70%** *of data warehouses experience performance-constrained issues of various types.*"

- Gartner 2010 Magic Quadrant

specialized resources required

months to deploy

Traditional data warehousing for today's business analytics
Can be too complex for many customers

A lack of optimization to meet the demands of advanced analytics

- Too complex an infrastructure
- Too complicated to deploy
- Too much tuning required

- Too inefficient at analytics
- Too many people needed to maintain
- Too costly to operate

Too long to get answers

Appliances make it simple,
completely transforming the user experience.

- Dedicated device

- Optimized for purpose

- Complete solution

- Fast installation

- Simple operation

- Standard interfaces

- Low cost

Yet there are times where
flexibility is required

Clients tell us that they want choice

- Different operating systems
- Different hardware platforms
- Real time, streaming analytics

- Plug and play applications
- Robust data warehouse software
- Modular scalability

All with an accelerated approach to deployment

And for times when ultimate flexibility is required:

IBM offers warehousing and analytics software individually for build-your-own solutions

- Choice of platform
- Choice of operating system
- Dynamic growth
- Complex workloads
- Variety of applications
- Mixed and hybrid usage
- Variety of IT and DBA skills

KARSTADT
Warenhaus · Aktiengesellschaft

About 2,500 users and 200,000 reports per month:
We would not have been able to achieve our ambitious goals
in business intelligence without InfoSphere Warehouse

- Ralf Bruhnke, Controlling and Project Manager for Karstadt

IBM offers the widest and deepest portfolio of data warehouse solutions

Simplicity — *The right mix of simplicity and flexibility* — **Flexibility**
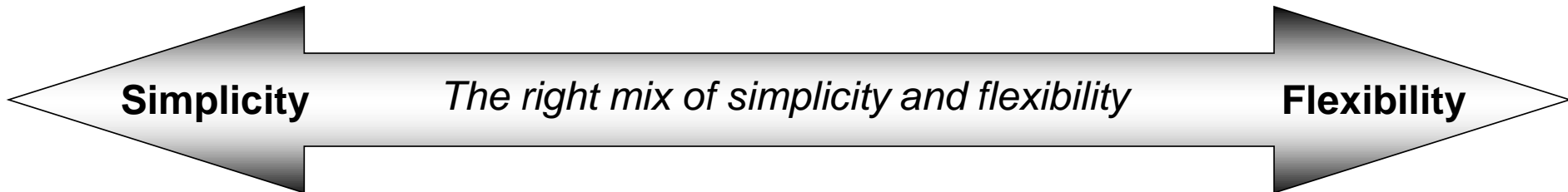
IBM Netezza Appliance
Simple, fast, accessible analytics

> " *This is what Netezza has done in the data warehousing market: It has **totally changed the way we think** about data warehousing.* "

- Philip Howard, Bloor Research

IBM Netezza

The true data warehousing appliance

- Purpose-built analytics engine

- Integrated database, server and storage

- Standard interfaces

- Low total cost of ownership

- **Speed: 10-100x faster than traditional system**

- **Simplicity: Minimal administration and tuning**

- **Scalability: Peta-scale user data capacity**

- **Smart: High-performance advanced analytics**

IBM Smart Analytics System
Powerful, versatile, real-time analytics

" *the **IBM Smart Analytics System is,** in our opinion, **superior to Oracle Exadata 2-2:** it is easier to manage and tune, easier to install, more flexible and costs (at least notionally) less money..* "

- Philip Howard, Bloor Research

Smart Analytics System
The modular system for business analytics

- Integrated Cognos Business Intelligence

- Integrated InfoSphere Warehouse

- In-database cubing and mining

- Choice of platform and OS

- **Scale 'On Demand'**

- **Modular application interfaces**

- **Built for complex and mixed workloads**

- **Autonomic tuning**

Simplicity, Flexibility, Choice
IBM Data Warehouse & Analytics Solutions

IBM Netezza	IBM Smart Analytics System	IBM Warehouse Software
		Custom Solutions

Warehouse Accelerators

Information Management Portfolio
(Information Server, MDM, Streams, etc)

Simplicity ← *The right mix of simplicity and flexibility* → **Flexibility**

Industry Models

- Proven approach and methodology

- Embedded industry expertise

- More than 500 global clients

Customer Value

- Reduces analysis and design of requirements by more than 40%

- Accelerates stakeholder approval by over 50%

- Supports on average 85% of an organization's data requirements

- Cuts time compared to custom-built data warehousing projects

Banking, Financial Markets, Health Plan, Insurance, Retail, and Telecommunications

What if the warehouse came out-of-the-box ready to solve the world's most pressing business problems?

Customer Loyalty

Optimal Pricing

Market Basket Analysis

Shipping Efficiency

Customer Churn

Vendor Performance

InfoSphere Warehouse Model Packs

Pre-built warehouses for advanced business analytics
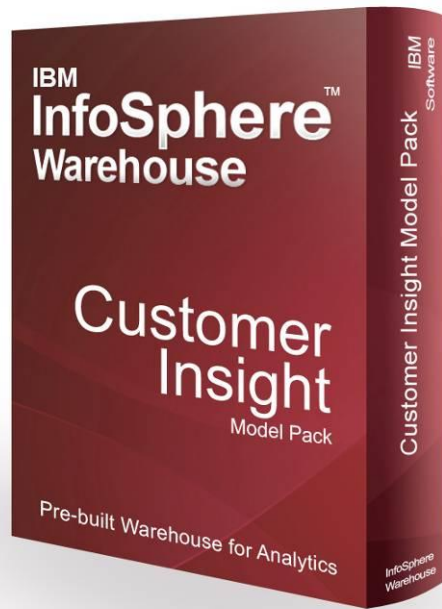
**Customer
Insight**

**Market &
Campaign Insight**
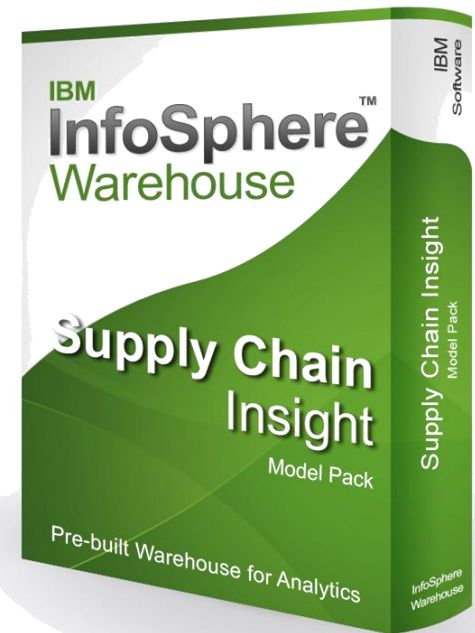
**Supply Chain
Insight**

The packs drastically reduce data warehousing project time, deployment cost and risk.

Pre-built Reports illustrate IMMEDIATE representation of your information

Ready to load

CUSTOMER = XYZ
SALES = 123
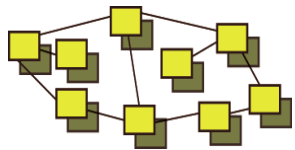
Pre-built Physical Data Models

InfoSphere Warehouse

Cognos 8 BI
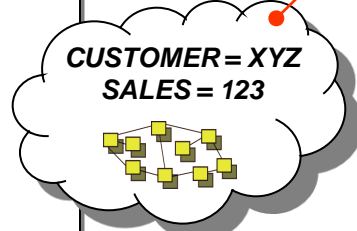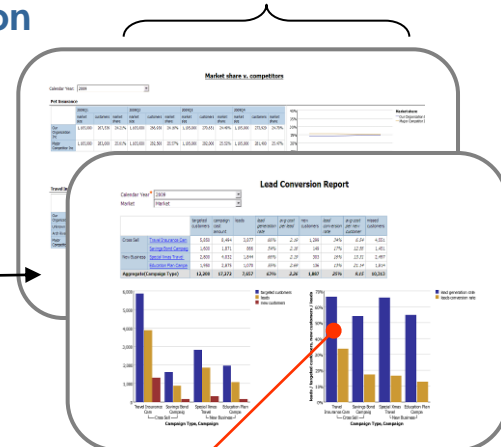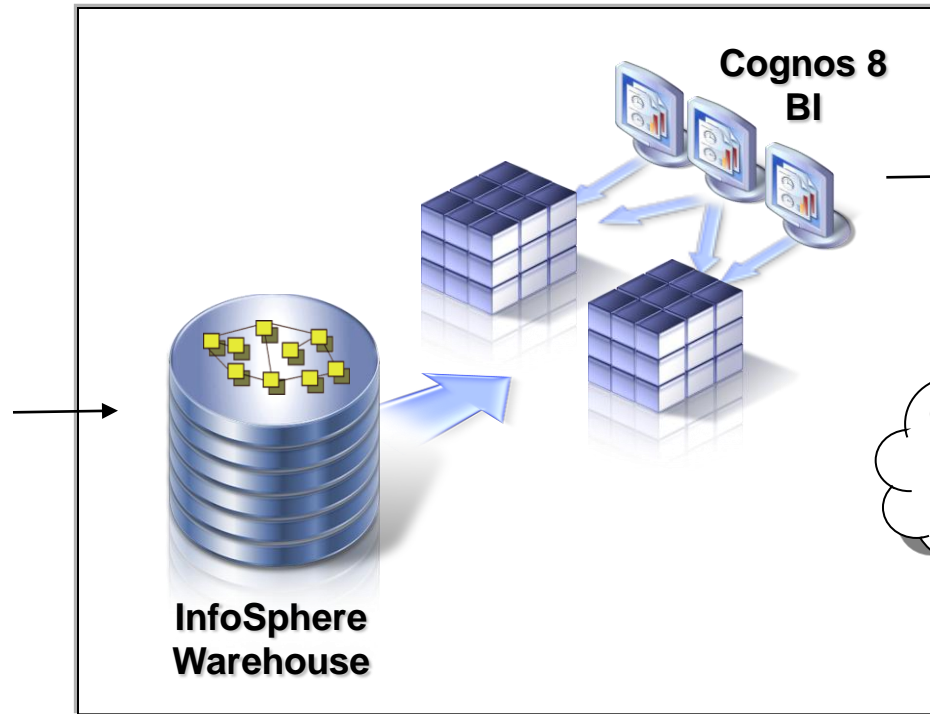
CUSTOMER = XYZ
SALES = 123

Pre-built Data Models promotes data integrity from loading through reporting
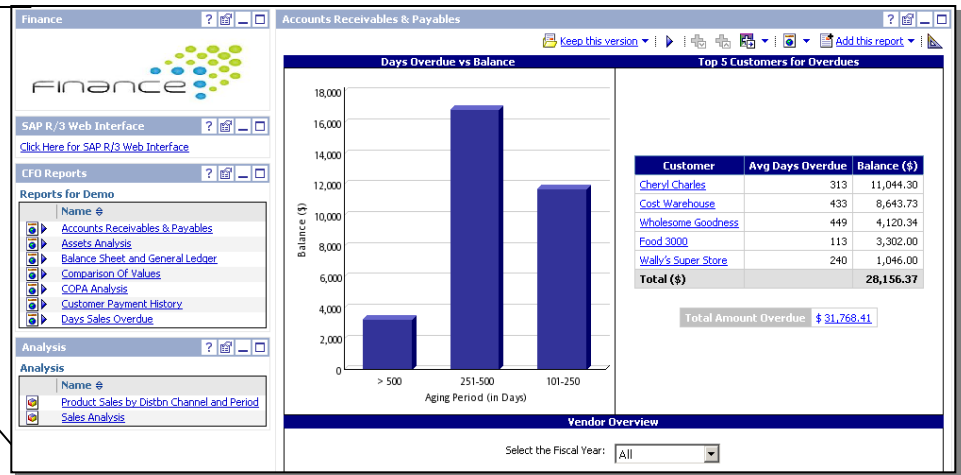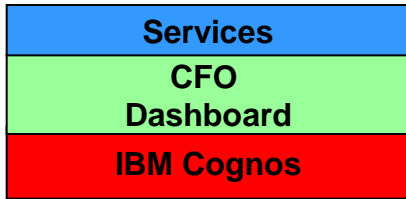
IBM provides integrated, modular and heterogeneous solutions for governance across your information supply chain

MANAGE

DB2, Informix

FileNet   solidDB

INTEGRATE

InfoSphere
Information Server

IBM Data
Warehouse
Solutions   InfoSphere
MDM

ANALYZE

InfoSphere
BigInsights

Cognos,
InfoSphere
Warehouse   InfoSphere
Streams
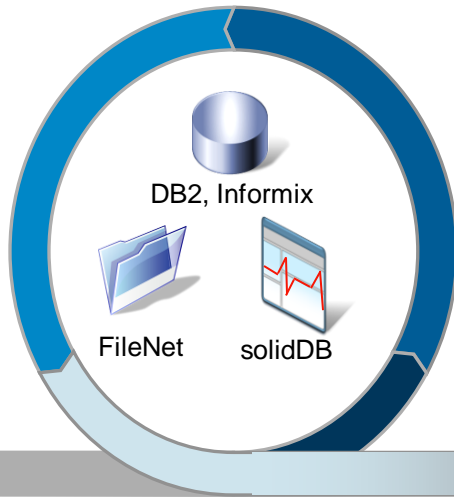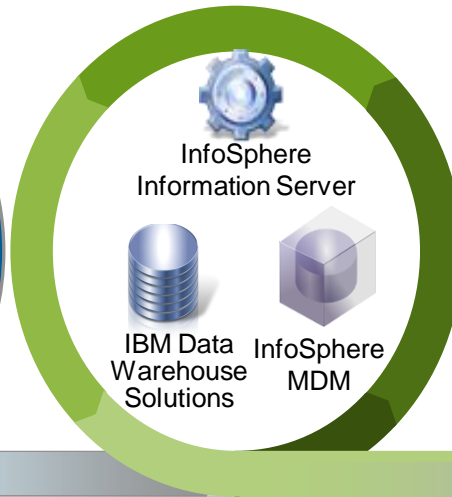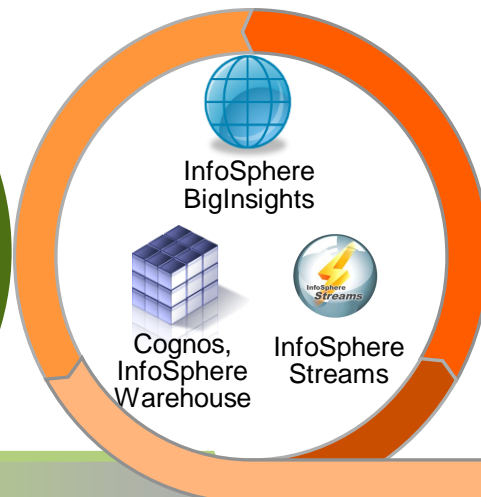
GOVERN

**InfoSphere
Information
Server**

**InfoSphere
Optim**

**InfoSphere
Guardium**

**InfoSphere
Foundation Tools
& Industry Models**
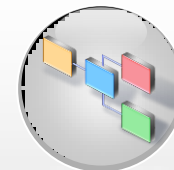
Quality   Lifecycle   Security & Privacy   Standards

It's not just Big Data, it's also New Analytics

Unstructured Data

Text Analytics

Clickstream Data

Logs & Transactions

Biological Sequences
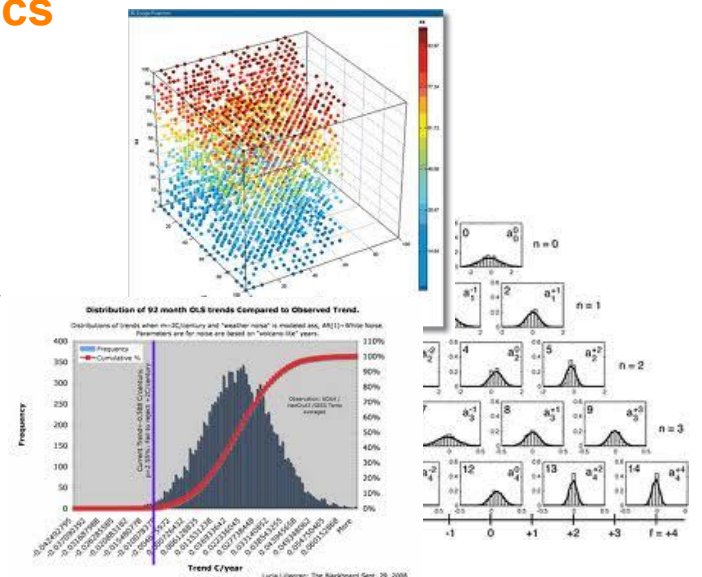
Statistical Model Building

The Big Data Challenge

- Manage and benefit from massive and growing amounts of data

- Handle uncertainty around format variability and velocity of data

- Ability to handle unstructured data

- Exploit BIG Data in a timely and cost effective fashion
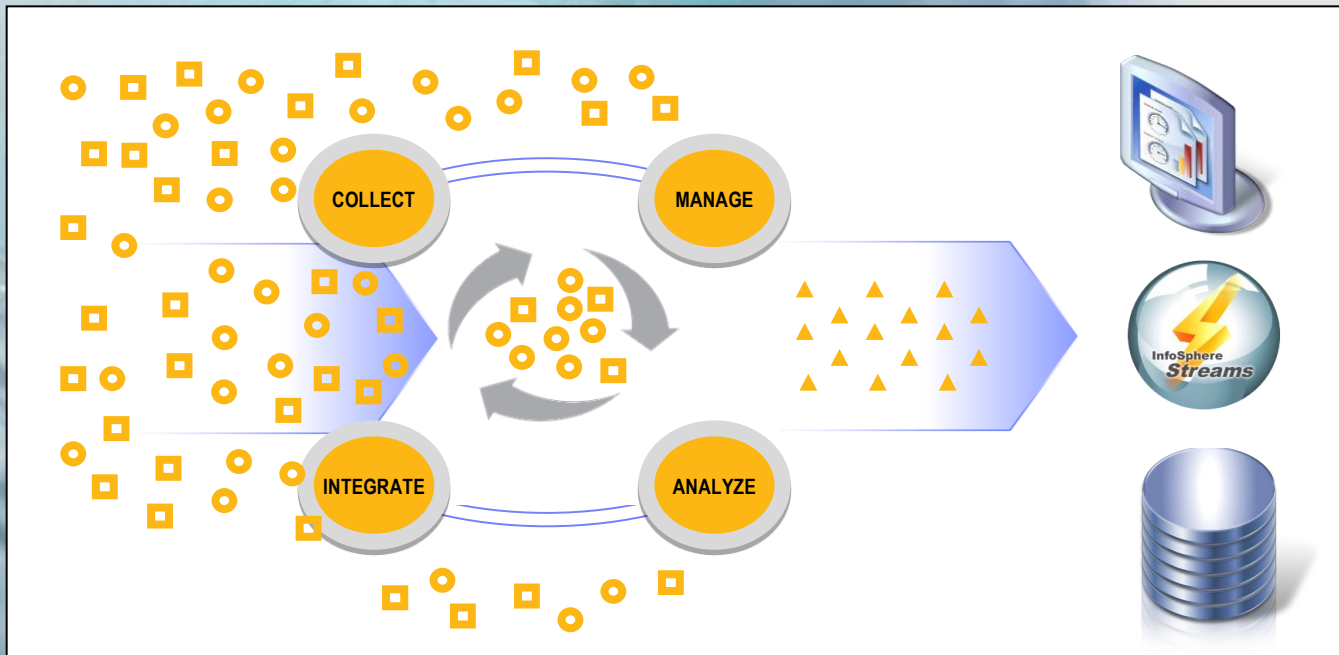
Vestas
A global wind energy company based in Denmark

Business Challenge

- Wind turbines are expensive, have a service life of ~25 years

- Existing process for turbine placements requires weeks of analysis, uses subset of available data and does not yield optimal results.

Project objectives

- Leverage large volume of weather data to optimize placement of turbines. (2+ PB today; ~16 PB by 2015)

- Reduce modeling time from weeks to hours.

- Analyze data from turbines to optimize ongoing operations.

The benefits

- Clear fulfillment of Vestas business needs through IBM technology and expertise

- Reliability, security, scalability, and integration needs fulfilled

- Standard enterprise software support

- Single-vendor solution for software, hardware, storage, support

Solution components:

- IBM InfoSphere BigInsights Enterprise Edition:

  - GPFS-based file system capable of running Hadoop and non-Hadoop apps

  - Powerful, extensible query support (Jaql)

  - Read-optimized column storage

- IBM xSeries hardware

Vestas

Leadership in Big Data
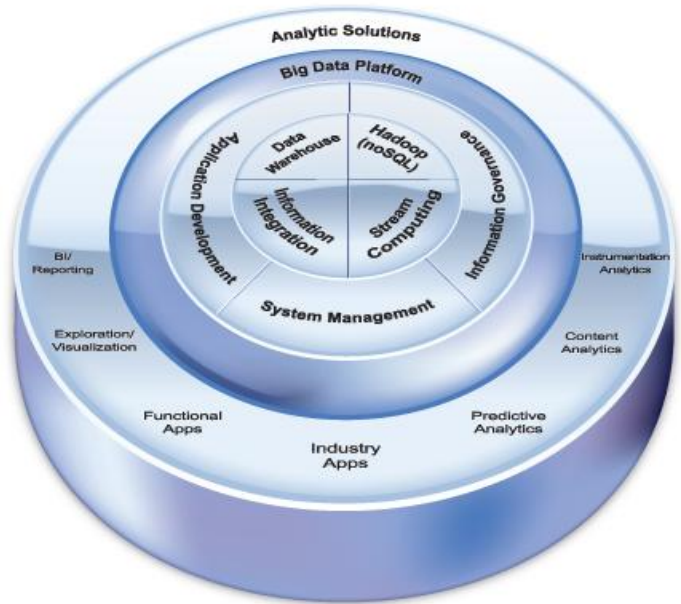
FORRESTER®

Forrester Wave™: Enterprise Hadoop Solutions, Q1 '12
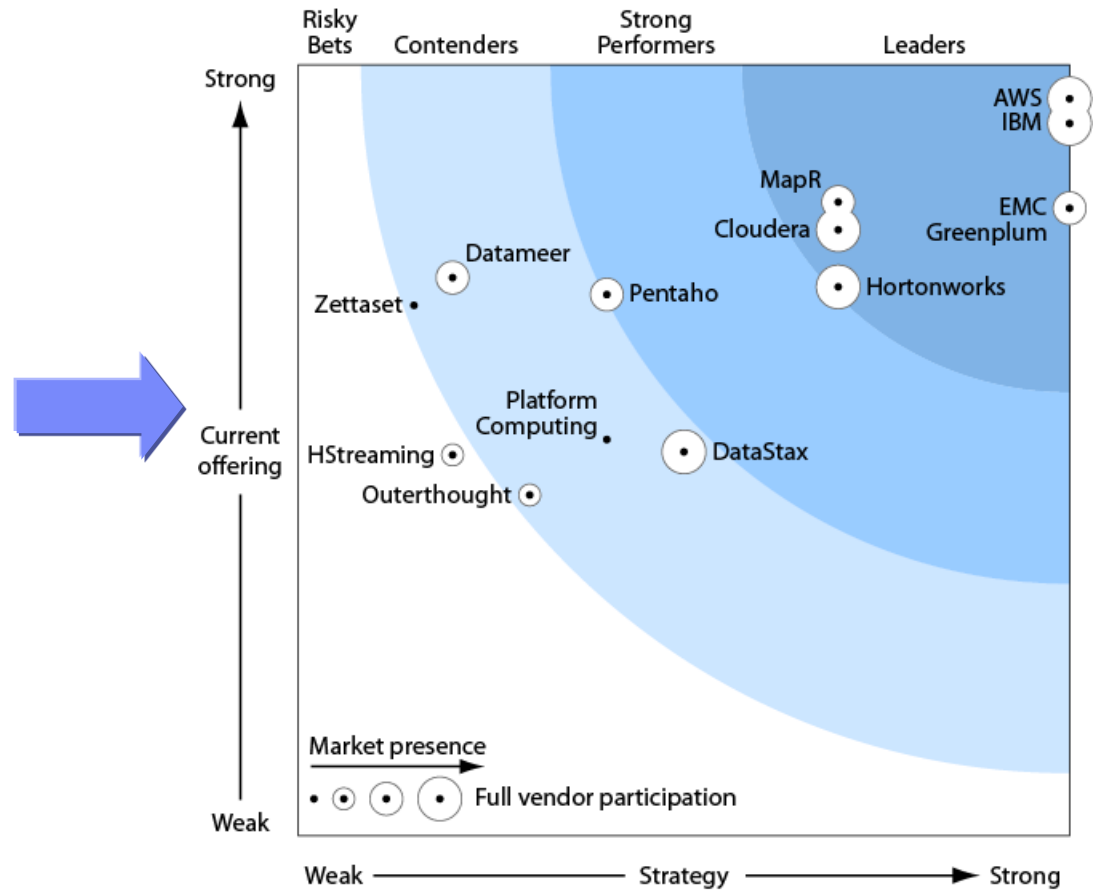
IBM's Value in Big Data

- **A complete stack and platform for Big Data**
  - Other vendors require multi-vendor solutions

- **Embracing the open source community**
  - Product support and additional offerings
  - In-field expertise to ensure client success

- **Enterprise-class focus**
  - Performance tested
  - Administrative and development tooling
  - Deep integration with information management software inside and outside IBM
  - Security and governance
  - High availability and backup

- **System x**
  - Industry leading innovation and technology
  - Best in class reliability and availability
  - #1 in customer satisfaction

- **IBM Services, Consulting and Research**
  - Deep expertise in Hadoop and other applications of Big Data, as evidenced by Watson

IBM Big Data Solutions   **Client and Partner Solutions**

Big Data User Environments

Developers   **End Users**   **Administrators**

Big Data Enterprise Engines

InfoSphere Streams (Streaming Analytics)   Infosphere BigInsights (Internet Scale Analytics)

Open Source Foundational Components

Eclipse   Oozie   Hadoop   HBase   Pig   Lucene   Jaql
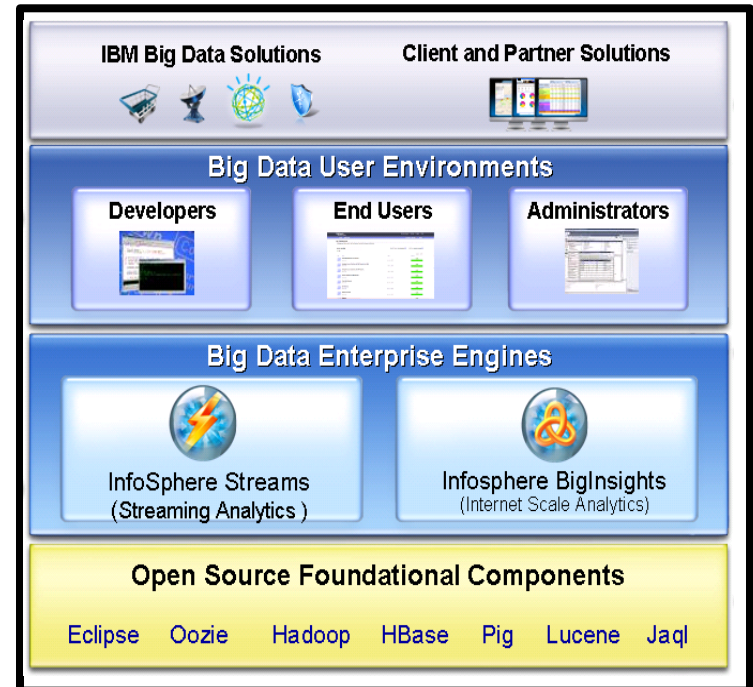
The IBM Netezza appliance empowers all types of industries:

Digital Media

Financial Services

Government

Health & Life Sciences

Retail / Consumer Products

Telecom

Other
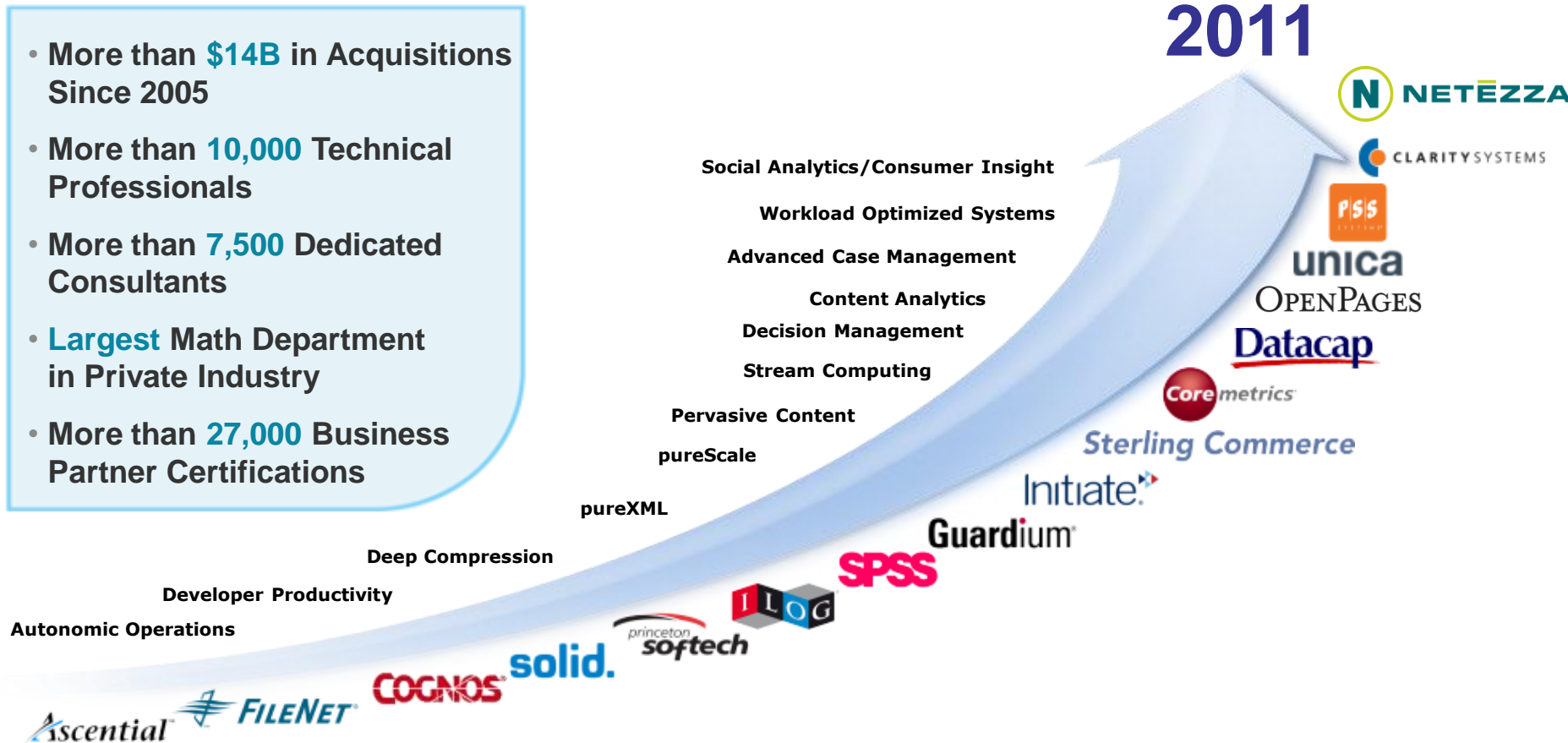
And the Smart Analytics System & InfoSphere Warehouse
Support leading organizations across the globe

Legend:
- ● Healthcare
- ● Retail
- ● Financial Markets
- ● Travel & Transportation
- ● Government
- ● Manufacturing/Industrial Products
- ● Computer Services
- ● Telecommunications
- ● Media & Entertainment
- ● Utilities & Energy
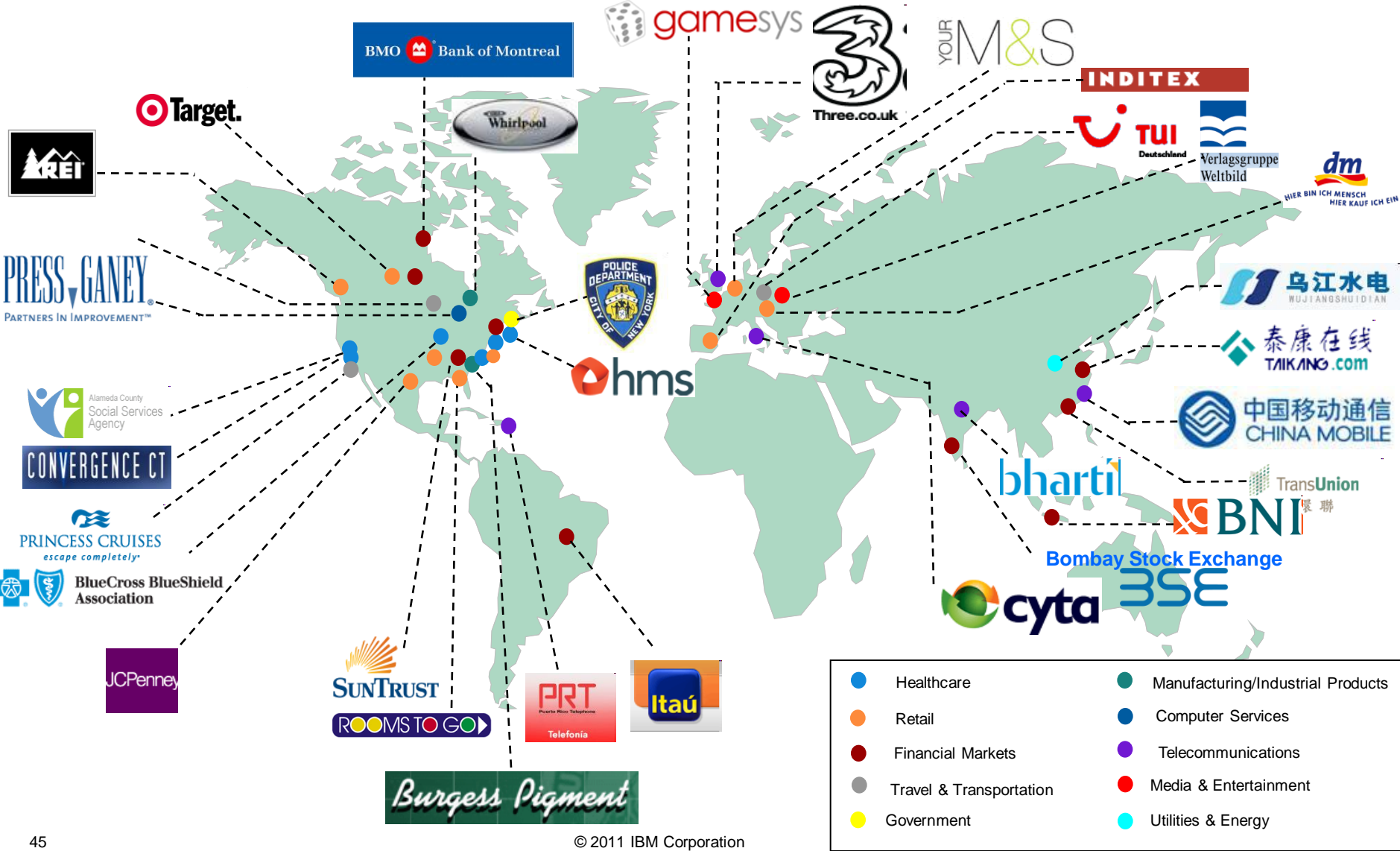
In Summary, IBM Continues To Invest: *Your* Partner in Business Analytics and Data Warehousing Solutions

- **More than $14B in Acquisitions Since 2005**
- **More than 10,000 Technical Professionals**
- **More than 7,500 Dedicated Consultants**
- **Largest Math Department in Private Industry**
- **More than 27,000 Business Partner Certifications**

2011

Social Analytics/Consumer Insight

Workload Optimized Systems

Advanced Case Management

Content Analytics

Decision Management

Stream Computing

Pervasive Content

pureScale

pureXML

Deep Compression

Developer Productivity

Autonomic Operations

2005

Next Steps – Embarking on the Analytics Journey

| Confirm Understanding of the Business Problem | Develop the Business Case | Develop Architecture Transition Plan | Develop Phase Zero Implementation Plan | Produce Solution Workshop Final Report |
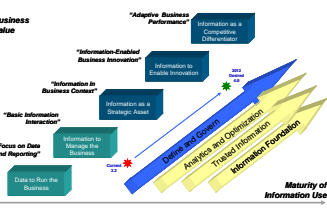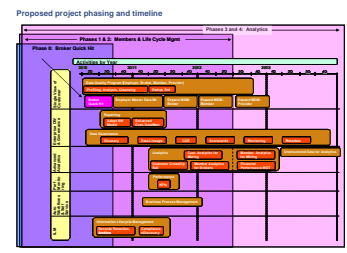
Business Alignment

Value Equation **Component Costs**

Current State Architecture

Project Tasks

Detail our Findings

Business Challenges | **Business Value Analysis** | **Target State Architecture** | **Sequenced Plan** | **Provide Recommendations**
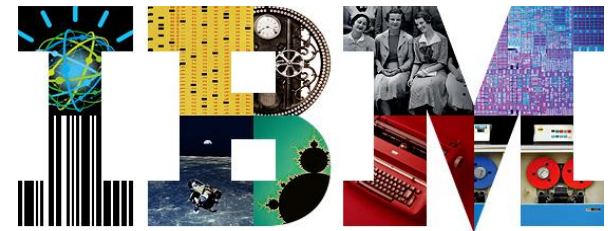
Accelerating your Business Analytics Projects in a Systematic way

The Solution Workshop helps to validate the business decision to purchase the solution and provides confirmation on how the technical components will fit in the client's environment
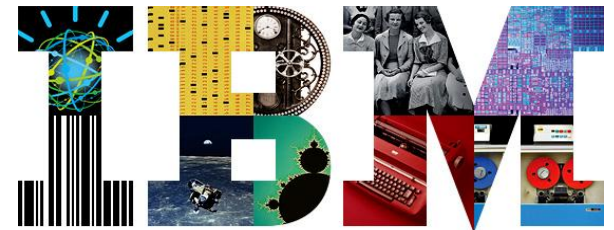
Quiz

- What is IBM's key differentiators in Datawarehousing & Analytics?

  A) IBM has a complete portfolio of solution & purpose-fit to address Companies' analytics challenges

  B) IBM solutions can combine BIG Data approach with real-time analytics and traditional Datawarehousing to provide actionable insights to Companies

  C) All of the above

Quiz

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