Bringing Big Data and Business Analytics to the Enterprise

Steve Mink

IM Mainframe Software Strategy

Agenda

- **Organizations already benefiting from analytics**
- **Analytics and Business Critical Analytics**
- **Seven facts about analytics**
- **Different approaches to analytics**
- **What IBM zEnterprise analytics offers**
- **How to bring Big Data to the Enterprise**
- **Learn more**

Business innovation with zEnterprise solutions

Run queries

up to 2000x faster

Banca Carige is doing things they could never do before, changing the way they service their customers!

BANCA CARIGE
Cassa di Risparmio di Genova e Imperia

> DB2 Analytics Accelerator helps over 1,000 business users to get fast access to vital insights – informing the development of new products, services and strategies to grow the business.
>
> *-- Daniele Cericola, CIO, Banca Carige*

Business innovation with analytics on zEnterprise

Run queries

up to 2000x faster

A strategic supplier of oil and other energy products is doing something they could never do before, **increasing retail sales nearly 5%** through reduced analytic query response times (99.8 % faster).

"

The store employee enters what the customer is purchasing, and with the DB2 Analytics Accelerator appliance, the Cognos BI and SPSS tools deliver information on complementary products in seconds.

-- A chief Information officer

Business innovation with analytics on zEnterprise

Enterprise Scale:
200,000 + users

IBM focuses on the business not technical constraints delivering BI to 200,000+ users, drawing from over 250 data sources and generating more than 30,000 reports daily.

IBM delivers BI as a service supporting 390+ projects including the small deals management team that increases sales revenue by 8% and made a major contribution to growth targets.

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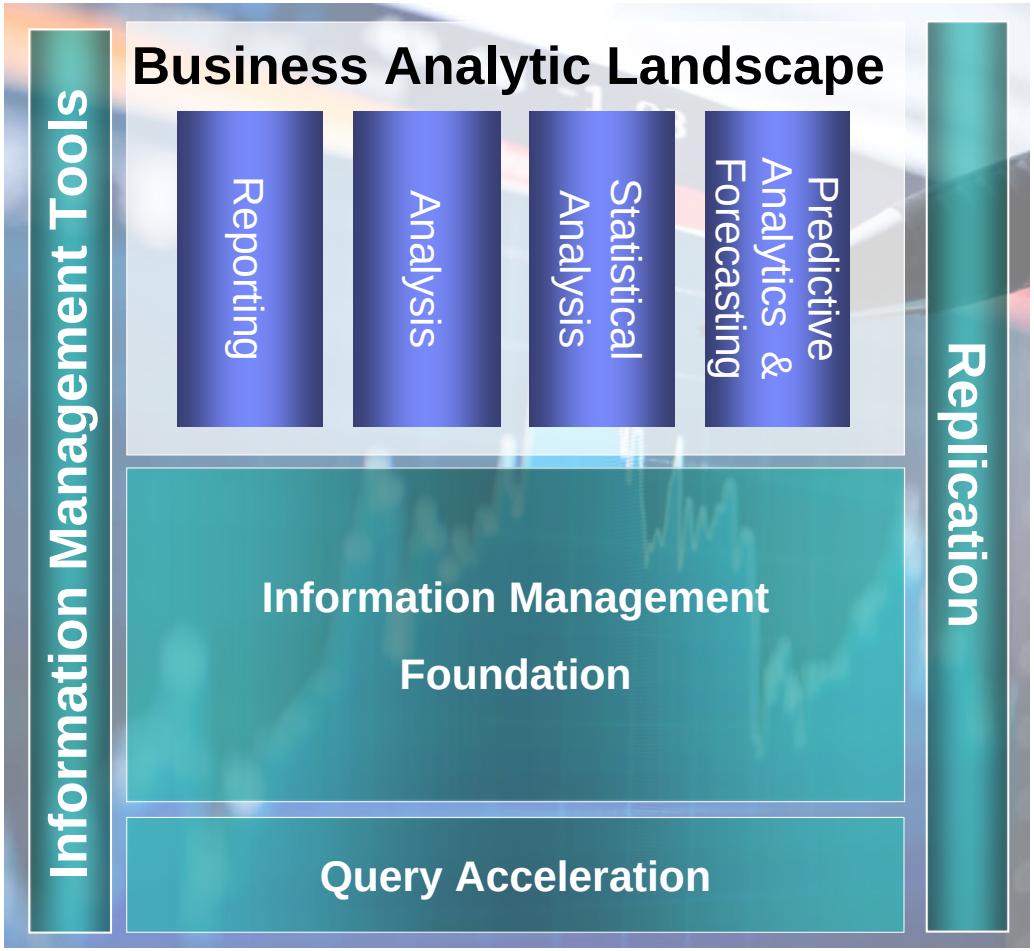
What is Analytics?

The goal of analytics is to deliver greater insight to the business to maximize business performance

Analytics are only as good as the underlying data foundation



What is Mission Critical Analytics?

- *Any analytic application critical to the optimal running of a business*

- *If this application fails for any length of time you can lose business*

A customer service or customer facing analytic application is mission critical (e.g. a spend analysis application for online banking customers)

Analytics are mission critical & impact bottom line results

Customer

Banking

- Increase account profitability

Insurance

- Retain policy holders with better service & marketing

Retail

- Understand sales patterns

Telecommunications

- Reduce churn with custom retention offers

Finance

Government

- Effective budget management

Retail

- Develop dynamic merchandise plans

Industrial

- Plan and forecast sales & operations

Operations

Industrial

- Predict maintenance issues before they occur

Retail

- Improve store performance with P&L reports

Telecommunications

- Understand & manage network traffic

Banking

- Measure branch performance

Insurance

- Streamline claims process

Government

- Reduce fraud and waste

Risk

Banking

- Align risk strategy and financial planning
- Improve compliance & regulatory response

Insurance

- Improve compliance & regulatory response

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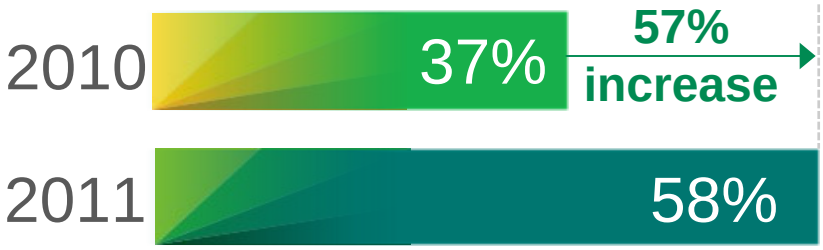
1. Organizations are using analytics to **outperform their competition**

More organizations are using analytics to create a competitive advantage

Respondents who believe analytics creates a competitive advantage



Source: The New Intelligent Enterprise, a joint MIT Sloan Management Review and IBM Institute of Business Value analytics research partnership. Copyright © Massachusetts Institute of Technology 2011

And leaders are outperforming their competitors in key financial measures

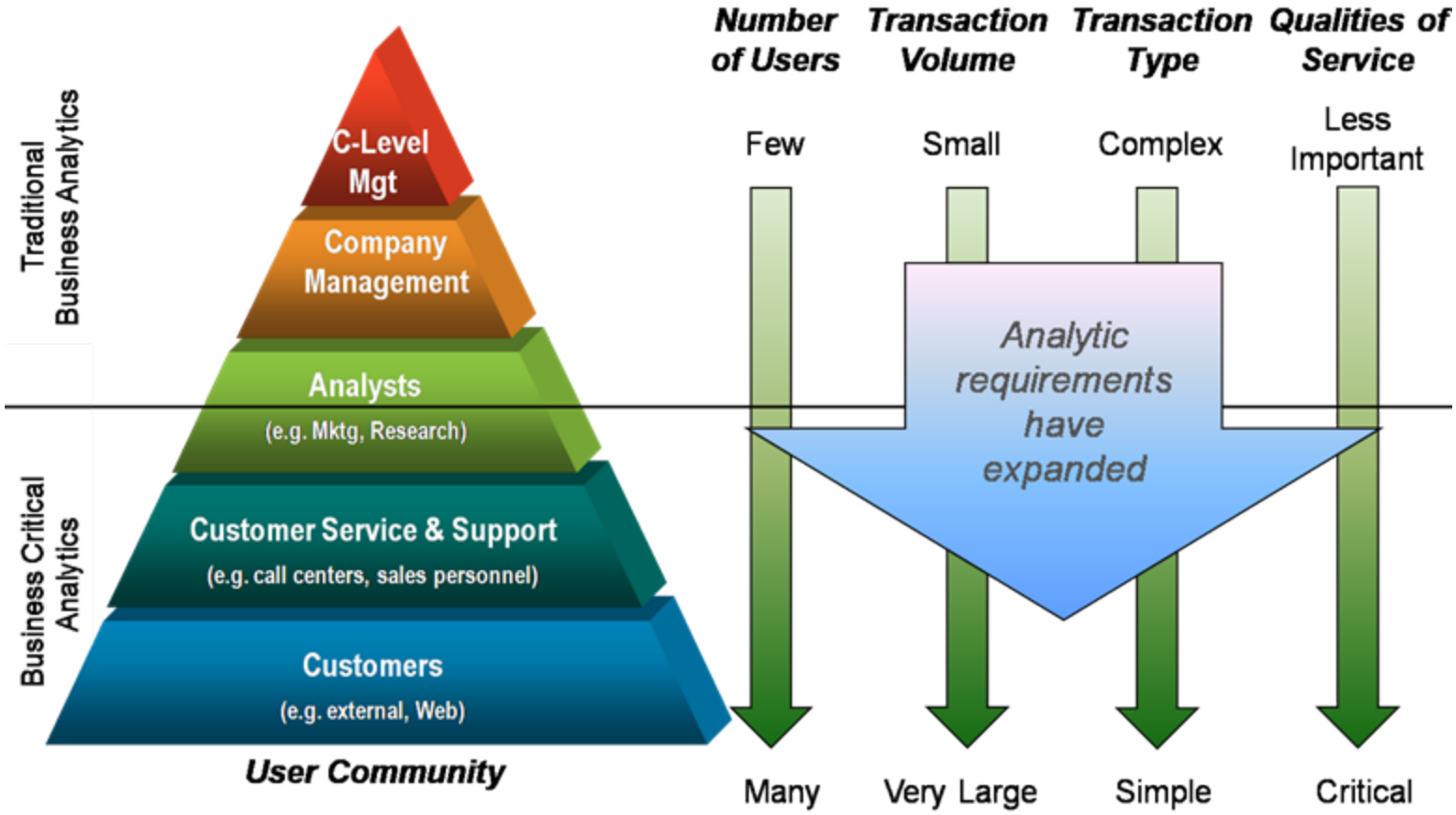
1.6x Revenue growth

2.0x EBITDA growth (pre-tax net income growth)

2.5x Stock price appreciation

Source: Outperforming in a data-rich, hyper-connected world, IBM Center for Applied Insights study conducted in cooperation with the Economist Intelligence Unit and the IBM Institute of Business Value. 2012

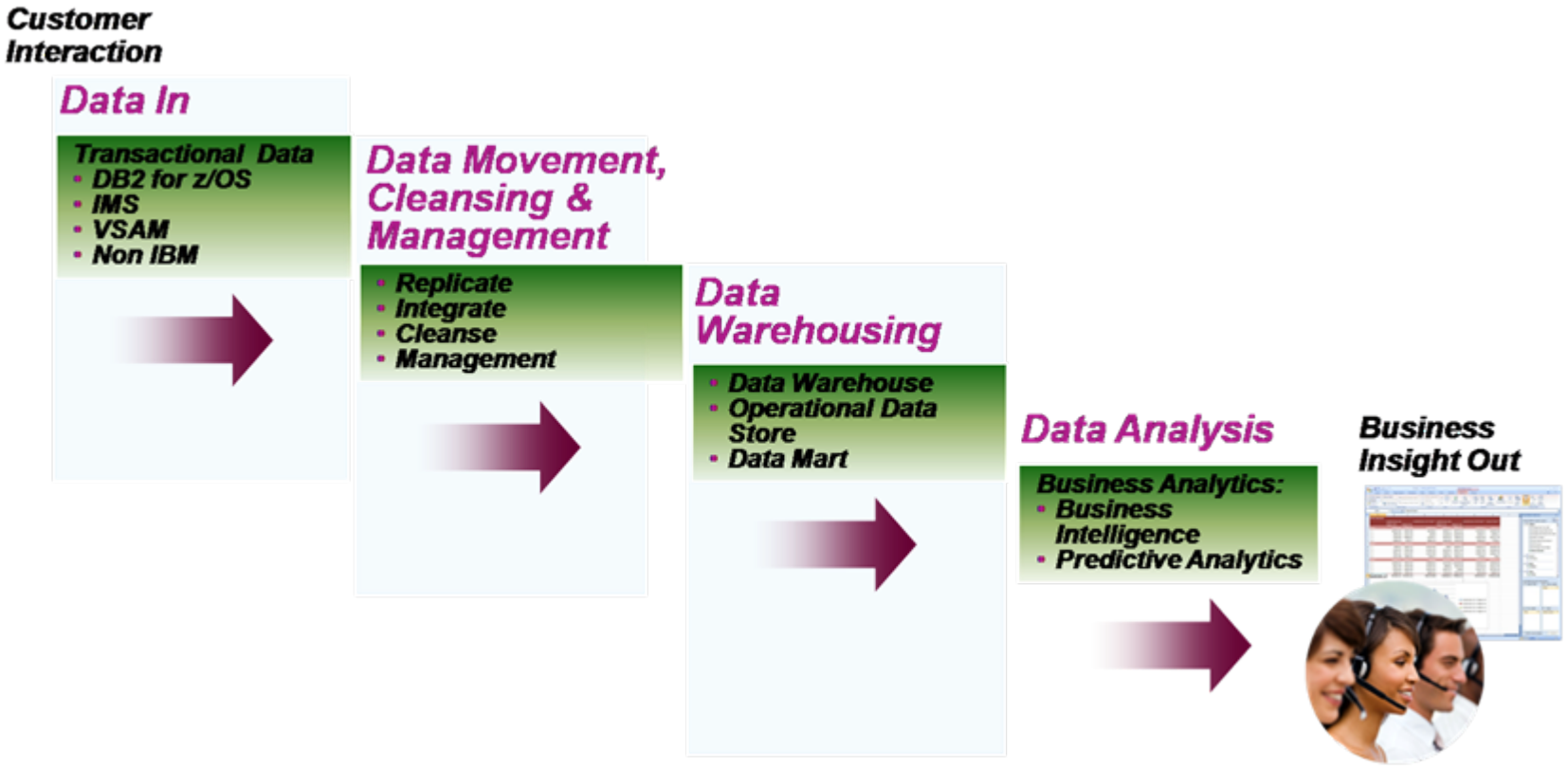
2. More users across the organization want access to business critical analytics applications



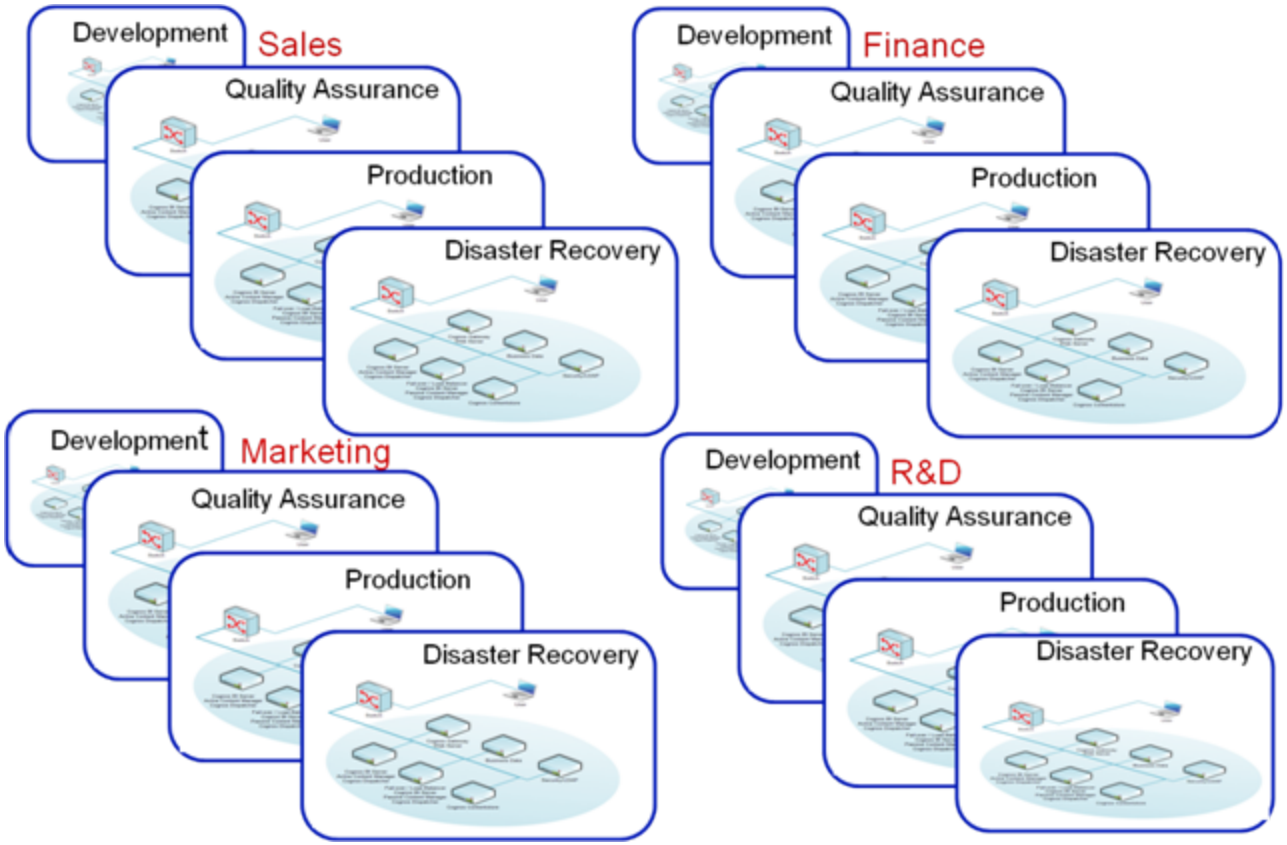
3. **Business critical analytic** applications demand low latency, high qualities of service, and performance

- Infrastructure must be scalable, available and reliable
- Data governance and security must be effective
- Analytics must be timely and accurate

4. The issue: **spreading analytic components across multiple platforms** can increase data latency, cost, complexity & governance risk



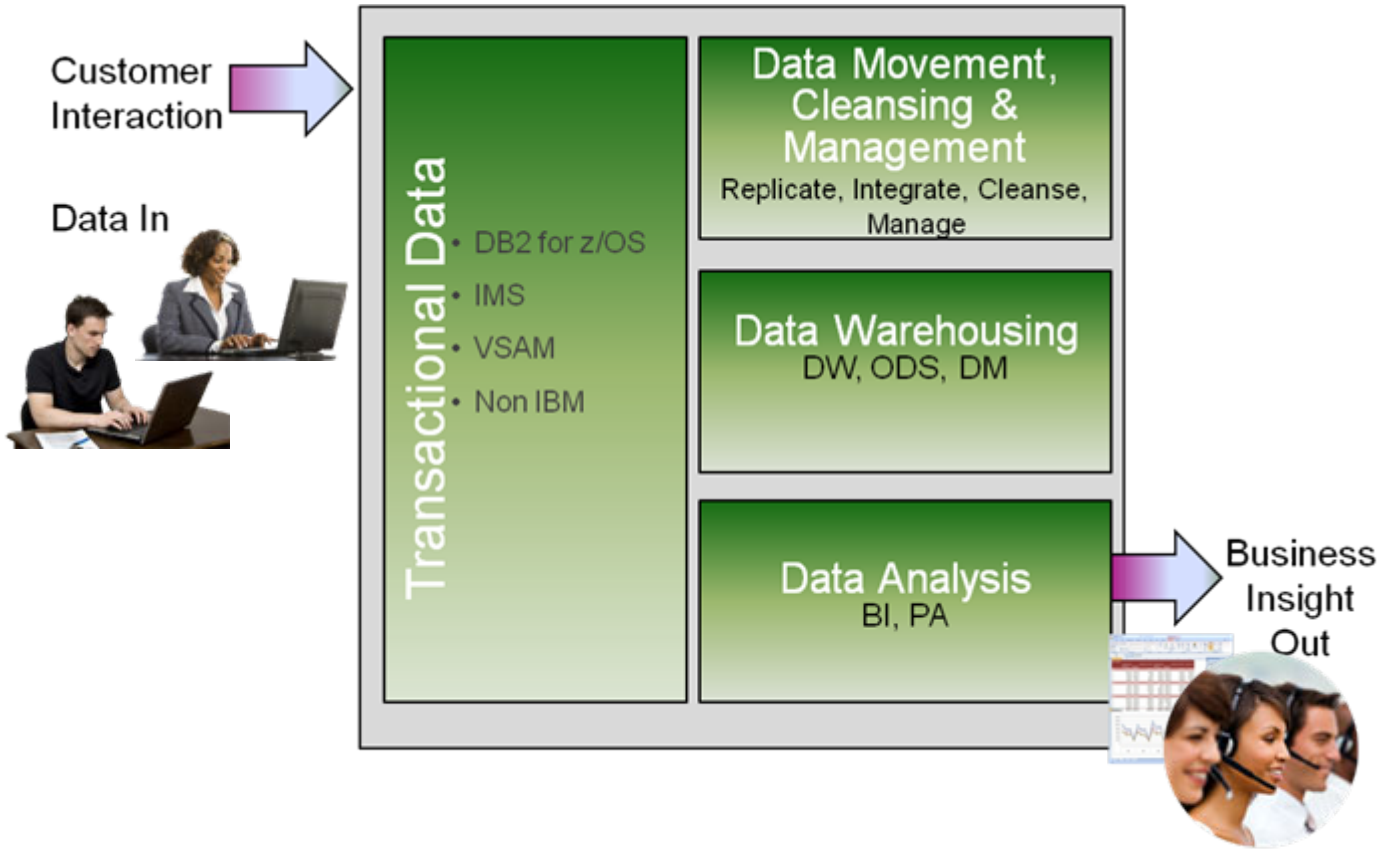
5. The issue: **supporting multiple, disparate analytic** solutions department by department further increases cost and complexity



6. Keeping analytic components **closer to the source data** improves data governance …

… while minimizing data latency, cost and complexity

7. **Standardizing and consolidating** analytics improves time to value; reduces duplicate investments/ shelf-ware; and provides greater economies of scale



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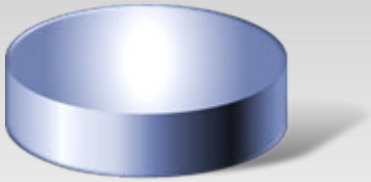
Traditional approach to analytic systems

Operational Applications

Transaction Processing



Shared Everything DB

High volume business transactions and batch processing running concurrently

Transfer Data

Latency?

Security?

Data Governance?

Complexity?

Analytic Applications

Data Store, Business Intelligence, Predictive Analytics

Shared Nothing DB

Low volume complex queries and batch reporting

The hybrid approach

Delivering business critical analytics

True Mixed Workloads

Transactional Processing, Traditional Analytics & Business Critical Analytics

Hybrid DB

Reduced Latency. Greater Security.
Improved Data Governance. Reduced Complexity.

High volume business transactions and batch reporting running concurrently with complex queries

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Analytics on IBM zEnterprise

Minimize latency. Improve performance. Drive innovation.

Brings analytics to the data

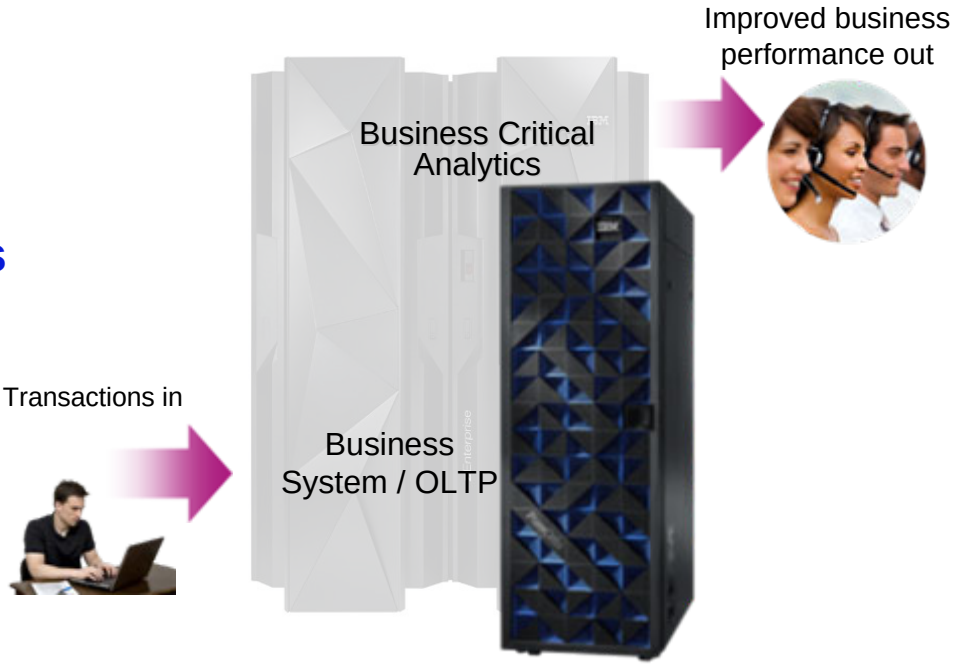
- Reduced latency
- Reduced complexity
- Reduced cost

Delivers on mission critical analytics

- Timely, accurate, secure data
- Availability, scalability, performance
- Rapid deployment & expansion

Evolves with the business

- Start where you want
- Grow without re-architecting



zEnterprise

A significant data source for today's business critical analytics

- **Data that originates and/or resides on zEnterprise**
  - 2/3 of business transactions for U.S. retail banks
  - 80% of world's corporate data
- **Businesses that run on zEnterprise**
  - 66 of the top 66 worldwide banks
  - 24 of the top 25 U.S. retailers
  - 10 of the top 10 global life/ health insurance providers
- **The downtime of an application running on zEnterprise = apprx 5 minutes per yr**
- **1,300+ ISVs run zEnterprise today**
  - More than 275 of these selling over 800 applications on Linux

What sets zEnterprise apart for analytics?

Timely, accurate and secure information	Superior availability, scalability and performance	Reduced costs and complexity	Rapid deployment and expansion
• **Co-location** of data warehousing, business analytics, transactional data • **Reduced data movement** • **Lower latency** and **near real time** data • **Rapid acceleration** of complex queries	• High **security** (EAL5+) • High **availability** (99.999%) • Performs at **100% capacity** • **Prioritization** of critical queries & workloads • Integrated **disaster recovery**	• **Processors, disk, memory added dynamically** without outage • **Pre-install then activate** as needed • **Flexible deployment options**	• **Centralized, scalable** infrastructure • **Virtualization** • Start with your **final architecture**

IBM zEnterprise

Start with your most critical business issue and quickly realize business value -- all with the flexibility to expand and grow without the need to re-architect

Where	Department	Application	Enterprise
What	Data Warehousing	Business Intelligence	Predictive Analytics
How we work	Services	zEnterprise Analytics Sys. 9700 & 9710	SmartAnalytics Cloud

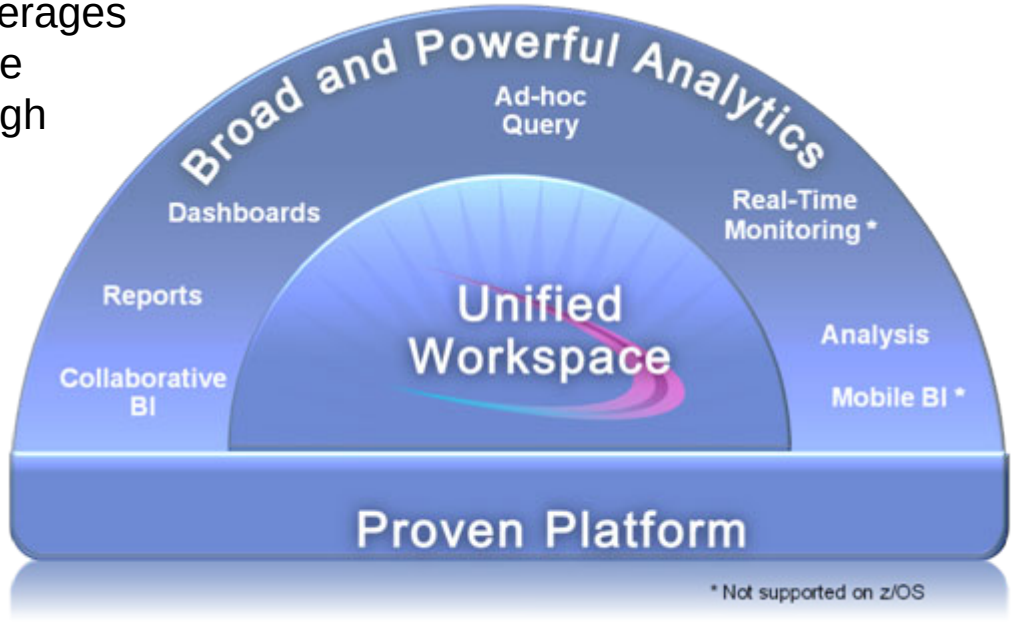
IBM DB2 Analytics Accelerator

- **What is it?**
  - A high performance appliance that integrates Netezza technology with zEnterprise technology, to deliver dramatically faster business analysis

- **What does it do?**
  - Speeds up complex queries up to 2000x
  - Lowers the cost of long term storage
  - Minimizes data latency
  - Improves security and reduces risk
  - Complements existing investments

IBM Cognos BI on zEnterprise

- **What is it?**
  - A Business Intelligence tool that leverages the qualities of service of zEnterprise to reduce cost and complexity through standardization and consolidation

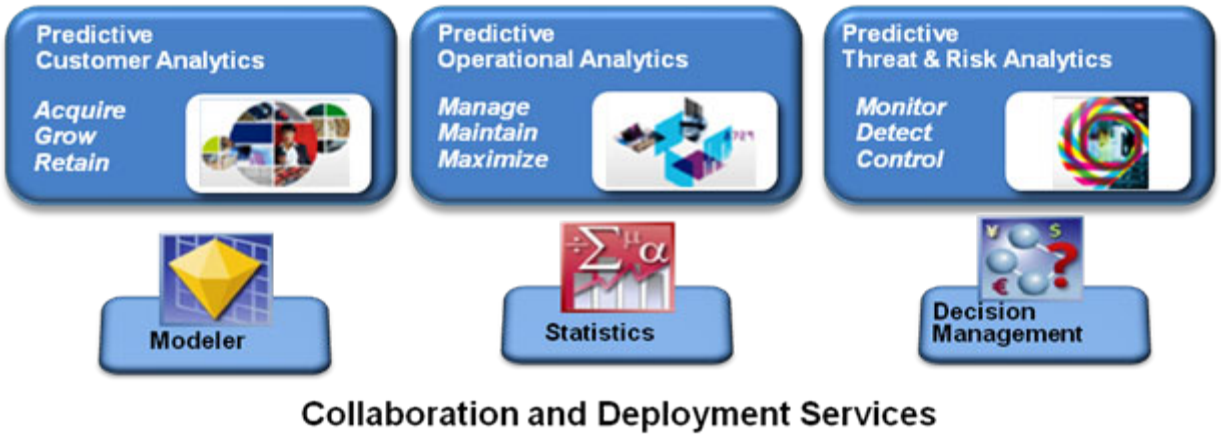


- **What does it do?**
  - Scales to supports all users from mission critical to tactical to strategic
  - Enables organizations to deliver BI as a service

IBM SPSS for Linux on zEnterprise

- **What is it?**
  - A Predictive Analytics portfolio that leverages the qualities of service of IBM zEnterprise to deliver real time insight to users across the organization

- **What does it do?**
  - Increases speed and accuracy of decision making by scoring 3000-5000+ transactions per second in real time
  - Improves the success rate of up sell / cross sell opportunities, fraud detection customer service



IBM zEnterprise Analytics System 9700 & 9710

- **What is it?**
  - A combination of hardware, software and services optimized and integrated to deliver mission critical analytics across the organization

- **What does it do?**
  - Offers data warehousing, business analytics and predictive analytics on a single platform to deliver on modern big data and operational analytic requirements
  - Brings analytics closer to the transactional data sources for more timely, accurate and secure analytics
  - Provides a flexible environment for fast deployment and expansion without the need to re-architect

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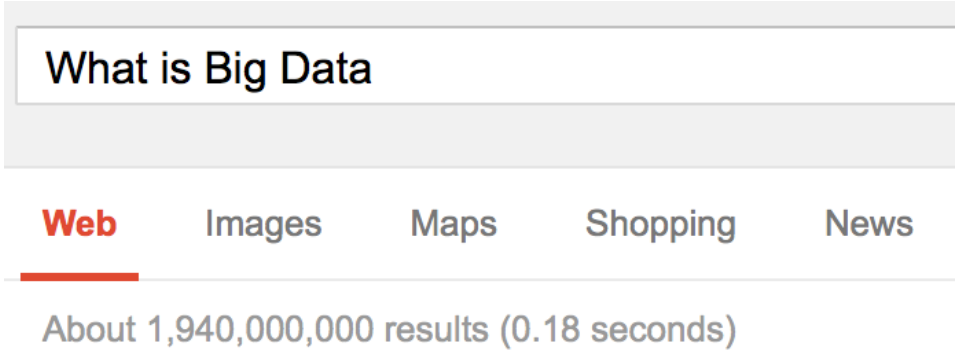
What is Big data?

- ***Google can give you nearly 2 Billion options***
- ***Vendors have even more definitions***



How Gartner defines Big Data

- *Big data is high-volume, high-velocity and high-variety information assets that demand* ***cost-effective, innovative information processing for enhanced insight and decision making****.*

We've Moved into a New Era of Computing - V^4

Radical Flexibility

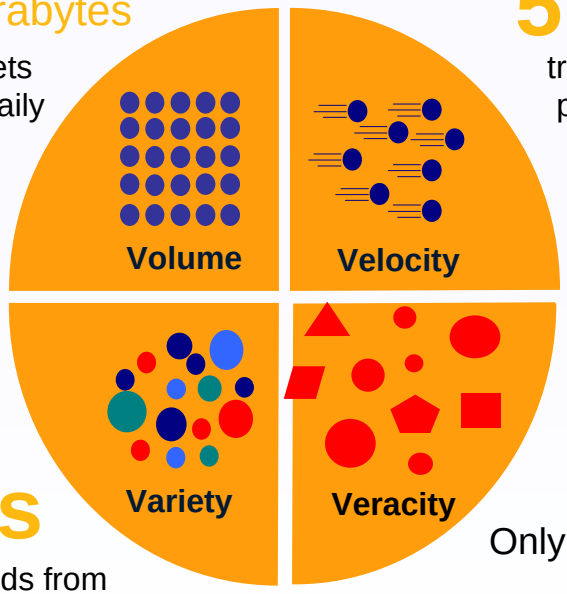
12 terabytes

of Tweets create daily

Extreme Scalability

5 million

trade events per second



100's

Of video feeds from surveillance cameras

Only **1 in 3**

Decision makers trust their information

Information from everywhere

"We have for the first time an economy based on a key resource [Information] that is not only renewable, but self-generating.

Running out of it is not a problem, *but drowning in it is*."

– John Naisbitt

Majority of today's analytics based on relational / "structured" data

- Analytics and decision engines reside where the DWH / transaction data is
- "Noise" (veracity) surrounds the core business data
  - Social Media, emails, docs, telemetry, voice, video, content
- What data are you prepared to ***TRUST?***
- Where do you put your trusted Data?

"Circle of trust"

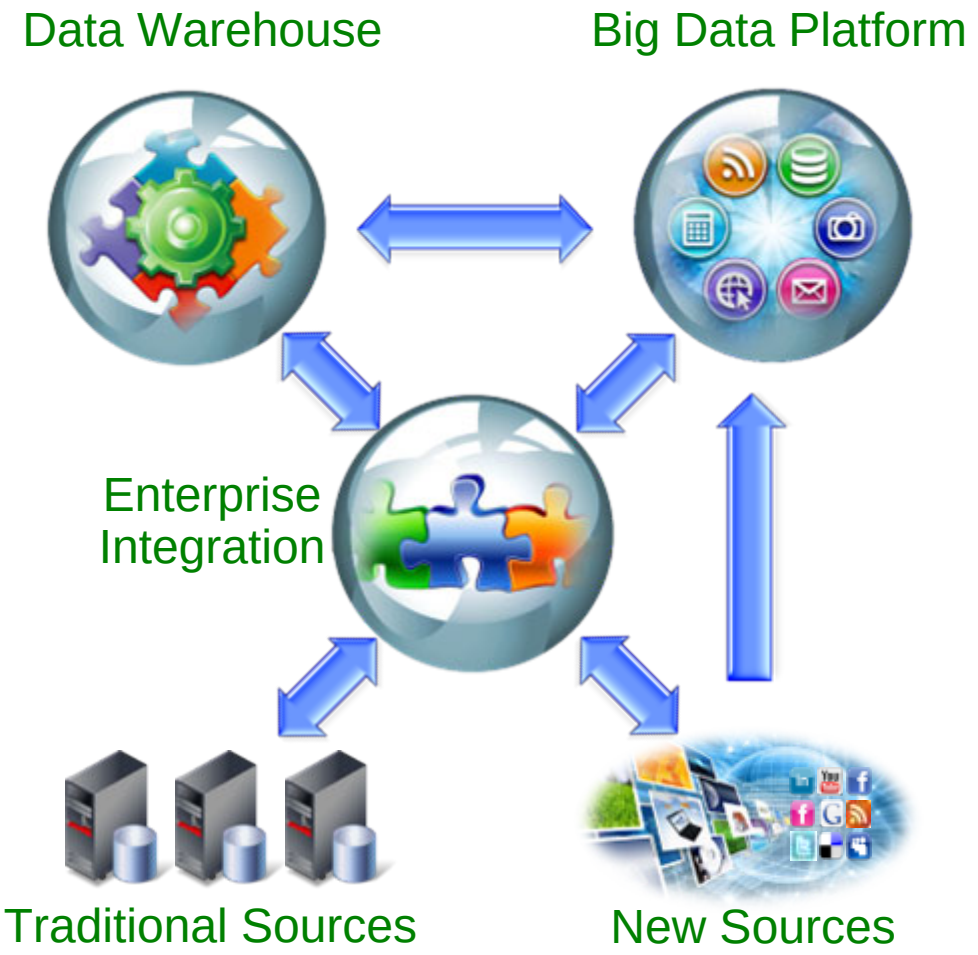
Demand for differently structured data to be seamlessly integrated, to augment analytics / decisions

- Analytics and decision engines reside where the DWH / transaction data is
- "Noise" (veractity) surrounds the core business data
  - Social Media, emails, docs, telemetry, voice, video, content
- Expanding our insights – getting closer to the "truth"
  - Lower risk and cost
  - Increased profitability

"Circle of trust" widens

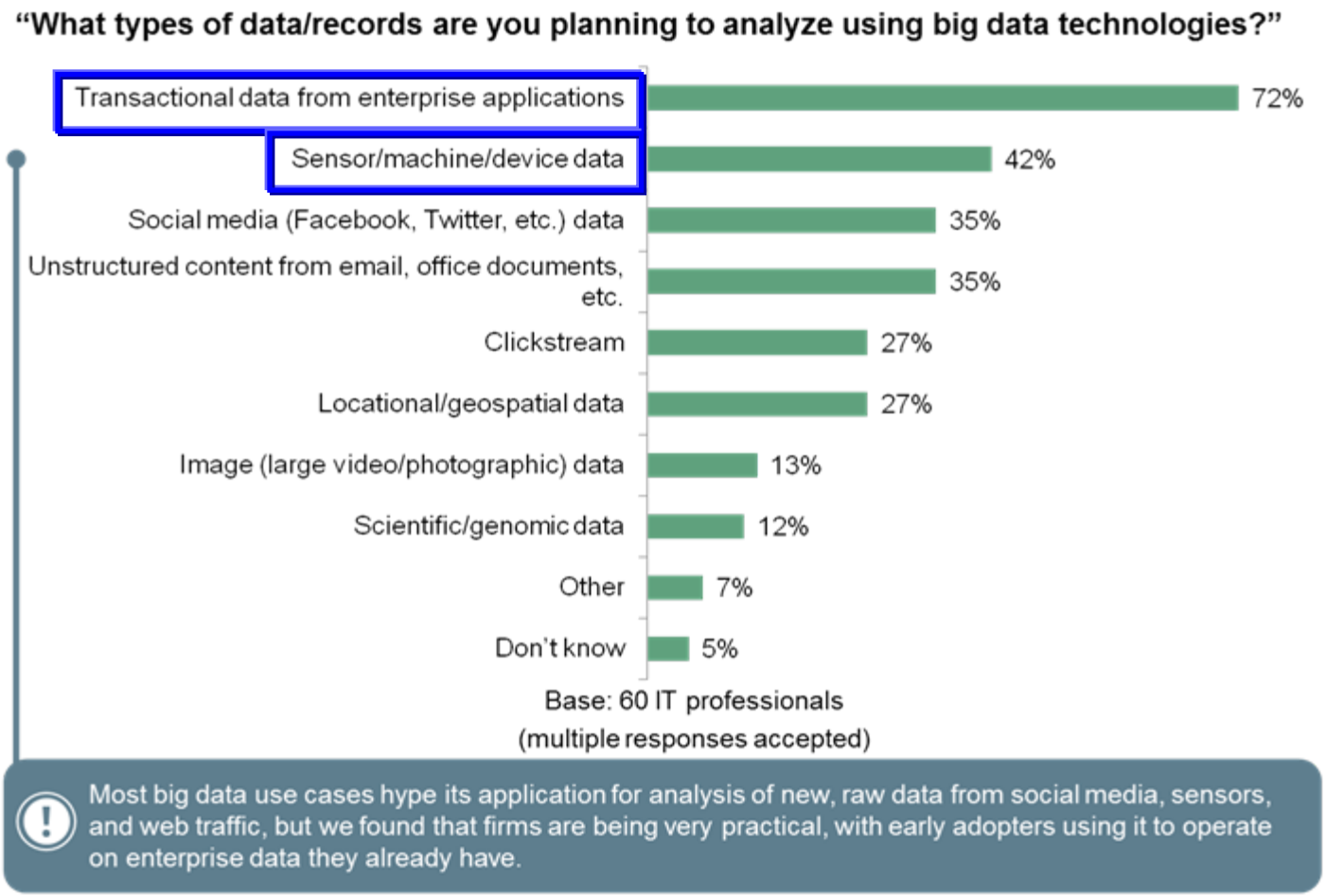
Enterprise Integration and Governance… the key to success of incorporating Big Data

- **Information Integration**
  - –Insights from big data must be incorporated into the warehouse and analytics/ decision engines
- **Information Governance**
  - –Companies need to govern what comes in, and the insights that come out



The Big Data Starting Point

Where are organizations getting the most return on Big Data projects?



Source: 2012 IBM Global Big Data Online Survey

…and our webcast survey said…

- **Have you already implemented or are you planning to implement any Big Data based initiatives within the next 6 months?**

Yes	31%
No	69%

- **How would you rate the value of being able to integrate insights from social media, telemetry, unstructured data into your analytics and decision making processes?**

High	50%
Medium	36%
Low	14%

- **Do you see the IBM System z platform as pivotal to the success of Big Data initiatives?**

Yes	90%
No	10%

Five key findings from the study about big data:

1. Customer analytics are driving big data initiatives
2. Big data is dependent upon a scalable and extensible information foundation
3. Initial big data efforts are focused on gaining insights from internal data
4. Big data requires strong analytics capabilities
5. Adoption of big data is focused upon delivering measureable business value, which happens in four stages:
   - Educate: focusing on business as usual with casual understanding of big data; challenges;
   - Explore: developing strategy and roadmap based on business needs and
   - Engage: creating pilots to validate value and requirements; and
   - Execute: deploying two or more big data technologies and continuing to innovate

Big Data Use Cases

Big Data Exploration

Find, visualize, understand all big data to improve decision making

Enhanced 360º View of the Customer

Extend existing customer views (MDM, CRM, etc) by incorporating additional internal and external information sources

Security/Intelligence Extension

Lower risk, detect fraud and monitor cyber security in real-time

Operations Analysis

Analyze a variety of machine data for improved business results

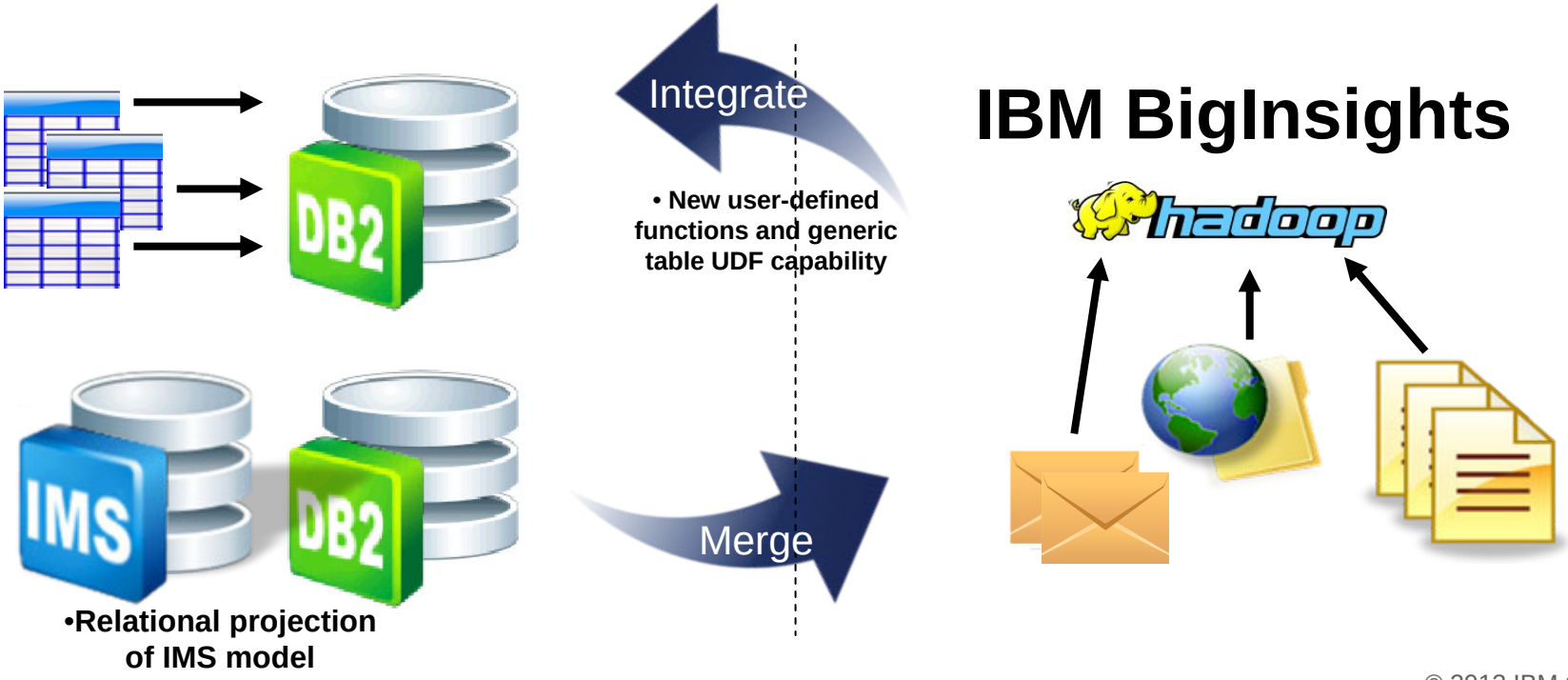
Data Warehouse Augmentation

Integrate big data and data warehouse capabilities to increase operational efficiency

Enhancing Big Data Analytics with IMS and DB2 for z/OS

▪ Much of the world's operational data resides on z/OS	▪ Unstructured data sources are growing fast

- Two significant needs:
  1. Merge this data with trusted OLTP data from zEnterprise data sources
  2. Integrate this data so that insights from Big Data sources can drive business actions
- IMS & DB2 are providing the connectors & the DB capability to allow BigInsights to easily & efficiently access each data source
- DB2 is providing the connectors & the DB capability to allow DB2 apps to easily and efficiently access hadoop data sources



IBM PureData System for Hadoop

Accelerate Hadoop analytics with appliance simplicity

New

Accelerate Big Data projects with built-in expertise

- Explore new ways to use all data
- Unlock new insights from unstructured data
- Establish a cost efficient on-line data archive

Simplify with integrated system management

- InfoSphere BigInsights software
- Compute and Storage hardware

Ensure production grade security and governance

Easily integrate with other systems
in the IBM big data platform

DB2 11 Support for Big Data

- **Goal: integrate DB2 for z/OS with IBM Hadoop based BigInsights Bigdata platform**
  - Enabling traditional applications on DB2 z/OS to access Big Data analytics.
- **Analytic jobs can be specified using JSON Query Language (Jaql)**
  - Submitted to BigInsights
  - Results stored in Hadoop Distributed File System (HDFS).
- **A table UDF (HDFS_READ) reads the Bigdata analytic result from HDFS, for subsequent use in an SQL query.**
- **Must have a variable shape of HDFS_READ output table**
  - DB2 11 supports generic table UDF, enabling this function

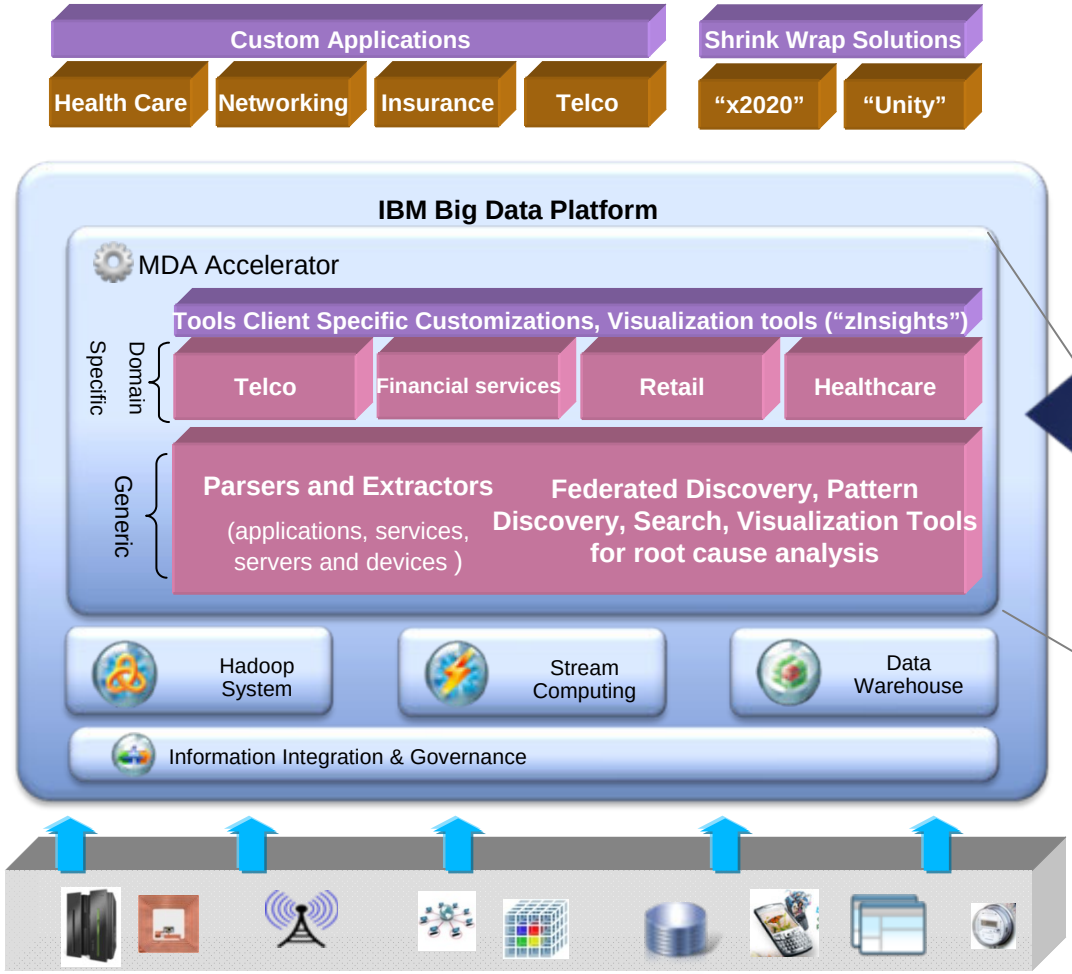
Machine Data Accelerator

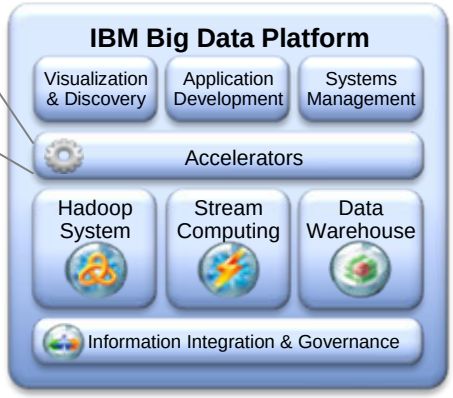
IT use cases:

- Server, performance, troubleshooting

Business use cases:

- Click stream and transaction analysis
- Optimize production, advance planning





Big Data Innovation

with IBM zEnterprise

Operations Analysis

Analyze a variety of machine data for improved business results

Banco do Brasil purchases the **largest ever** DB2 Analytics Accelerator solution to drive customer insight from operational data. The 120-way system can hold 1.28 Petabytes of data. Queries that previously took ***11 hours to run now complete in 26 seconds***, over 1500 times faster!

Banca Carige chooses System z to provide real time analytics as part of their Big Data client solution

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with IBM zEnterprise

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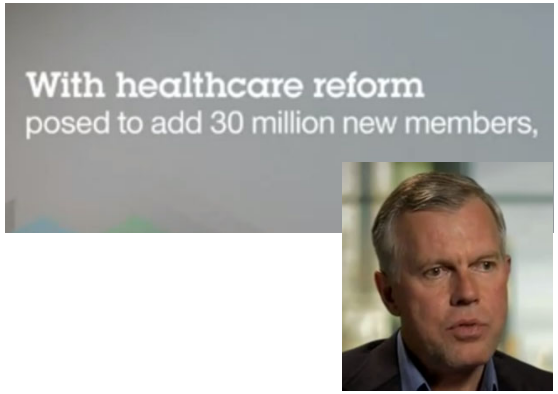
Integrate big data and data warehouse capabilities to increase operational efficiency



Aetna looks to expand membership by as much as 75% using System z which can now provide insight 1700 times faster without impacting existing applications & infrastructure

Implemented a clinical dimensional data warehouse with billions of patient diagnostic records with superior scalability and 24x7 availability, surpassing industry privacy requirements

Implementing a Mission Critical Big Data Application

Big Data Exploration

Find, visualize, understand all big data to improve decision making

JOHN DEERE

GPS & sensor information volumes exceeded the capabilities of the existing system. It was redesigned as an enterprise mission critical application using DB2 for z/OS and System z data sharing to now provide the availability and scalability to meet the current and future requirements for this solution.

Learn more!

- Visit the zAnalytics Website
- Join the Analytics Networking Community

IBM

Thank You