Delivery Mission-Critical Big Data Analytics

Dave Jeffries
Director, Business Analytics on System z, IBM

Analytics on zEnterprise

Rich Data Mining

Cost Effective Solutions

Mobile Reporting

Enterprise Planning

BI Consolidation

Operational Customer Support

Agenda

- Customers changing their businesses with IBM technology
- Analytics and mission-critical Analytics
- Five facts you need to know about Analytics
- How IBM zEnterprise Analytics improve the way customers run their businesses
- Case Study: zEnterprise Analytics for a more customer-focused enterprise
- An end to end analytics solution from IBM

Access to operational data to improve customer satisfaction

Swiss Mobiliar has achieved its objective of running its growing transaction processing and analytics workloads side by side without increasing requirements.

"Queries that used to take five hours to complete are now processed in just 20 seconds in the optimized mainframe environment—and we can run them any time, day or night, with no interruption to our production systems on the mainframe."

Access to operational data to improve customer satisfaction

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

"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."
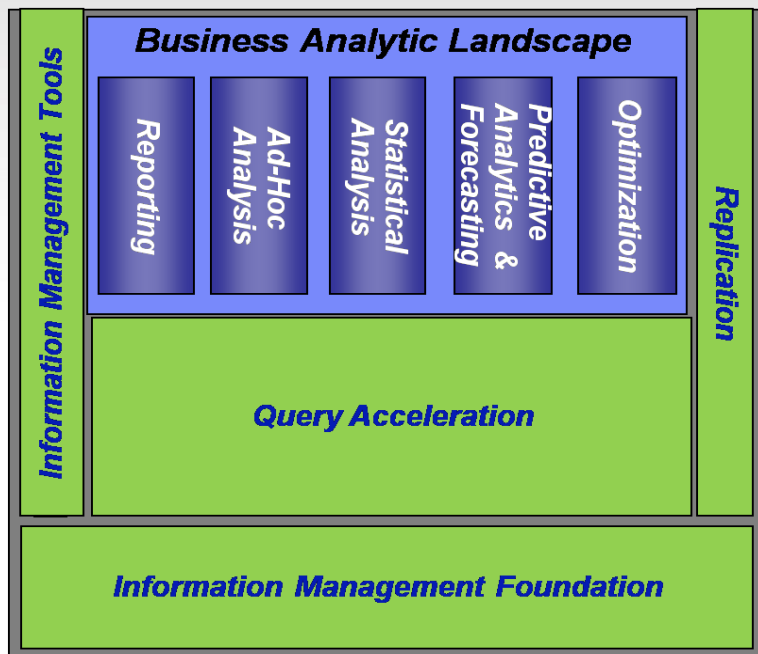
Daniele Cericola, CIO, Banca Carige

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What is Analytics?

Business Analytic Landscape diagram: Information Management Tools, Reporting, Ad-Hoc Analysis, Statistical Analysis, Predictive Analytics & Forecasting, Optimization, Replication, Query Acceleration, Information Management Foundation

- Analytics derive insight from data
- Organizations use analytics to help optimize business performance
- Analytics are only as good as the underlying data foundation

Gartner 2013 CIO Agenda: Analytics & BI Ranked the #1 Technology Priority for 2013

CIO Technologies	Ranking of technologies CIOs selected as one of their top five priorities in 2013.				
Ranking	2013	2012	2011	2010	2009
Analytics and business intelligence	1	1	5	5	1
Mobile technologies	2	2	3	6	12
Cloud computing (SaaS, IaaS, PaaS)	3	3	1	2	16
Collaboration technologies (workflow)	4	4	8	11	5
Legacy modernization	5	6	7	15	4
IT management	6	7	4	10	*
CRM	7	8	18	*	*
Virtualization	8	5	2	1	3
Security	9	10	12	9	8
ERP applications	10	9	13	14	2

* Not an option in that year

What is mission-critical Analytics?

- Any analytic application critical to optimally running the business

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

Preventing Credit Card Fraud

Reducing Customer Churn
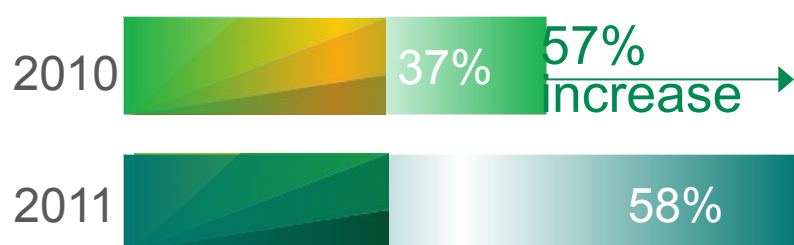
Cross-selling, up-selling customers

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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

2010 **37%**
2011 **58%**

57% increase

And leaders are outperforming their competitors in key financial measures
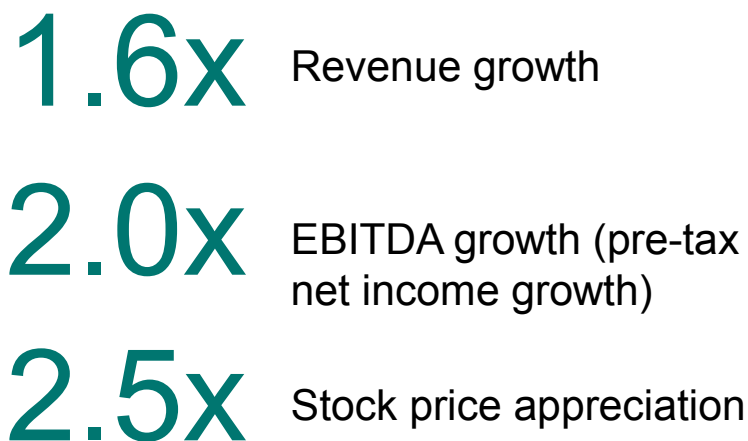
1.6x Revenue growth

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

2.5x Stock price appreciation

IBM

2. More users across the organization want access to mission-critical analytics
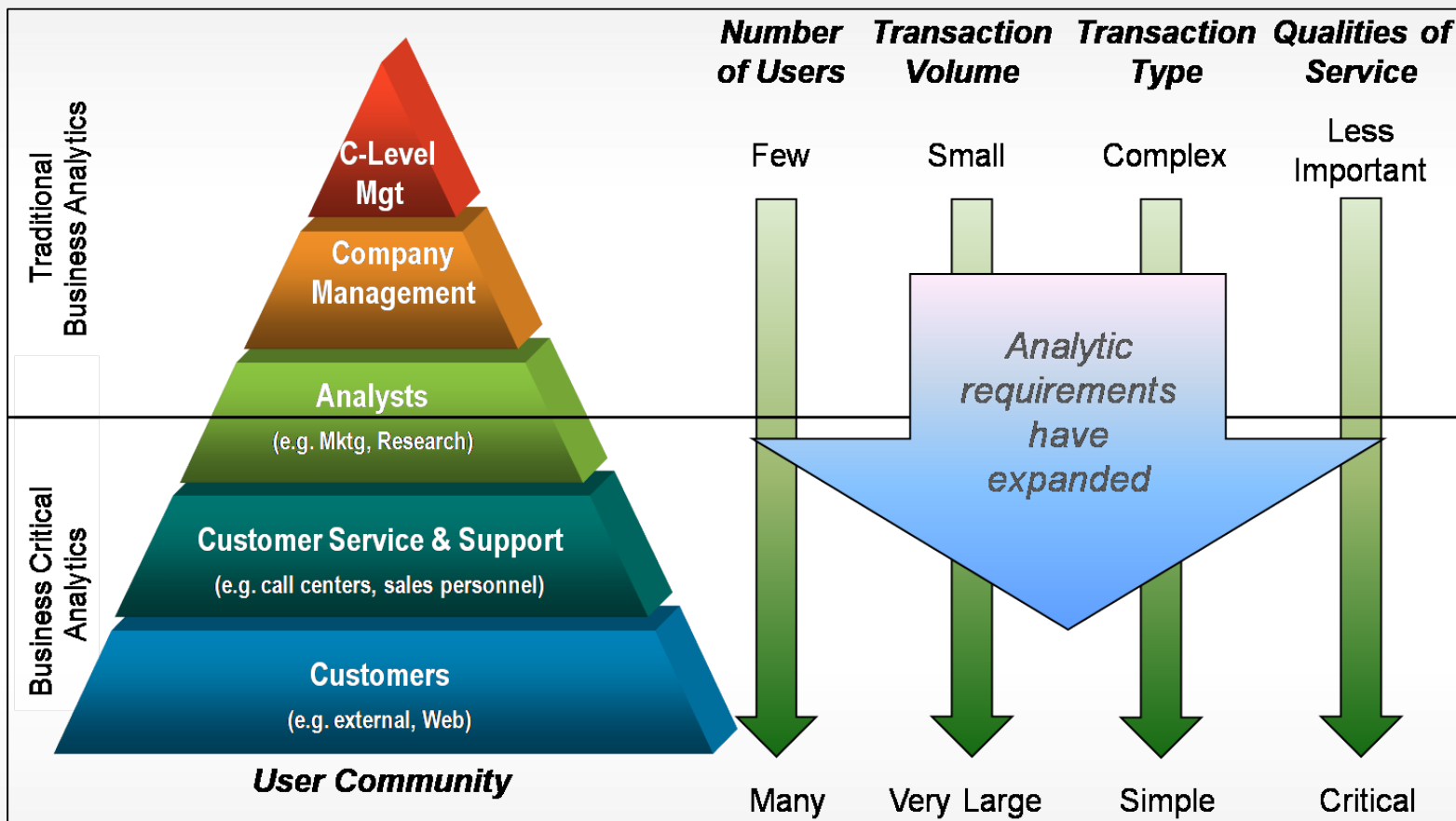
3. Mission-critical analytics demand low latency, high qualities of service and performance

- Infrastructure must be scalable, available and reliable

- Data governance and security must be effective

- Analytics must be timely and accurate

4. Spreading analytic components across multiple departments can
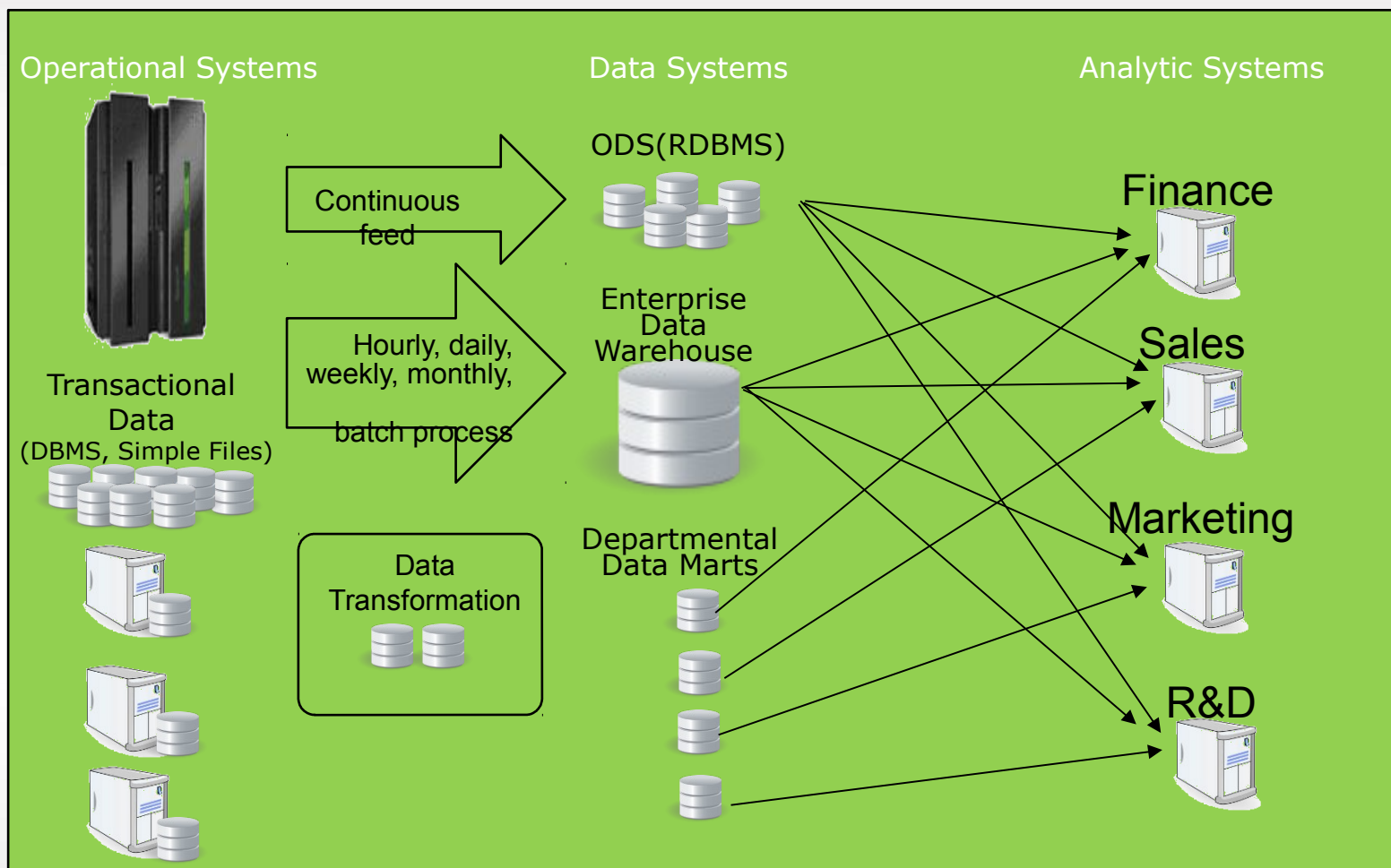
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5. Standardizing and consolidating analytic components to where the data originates improves data governance while reducing data latency
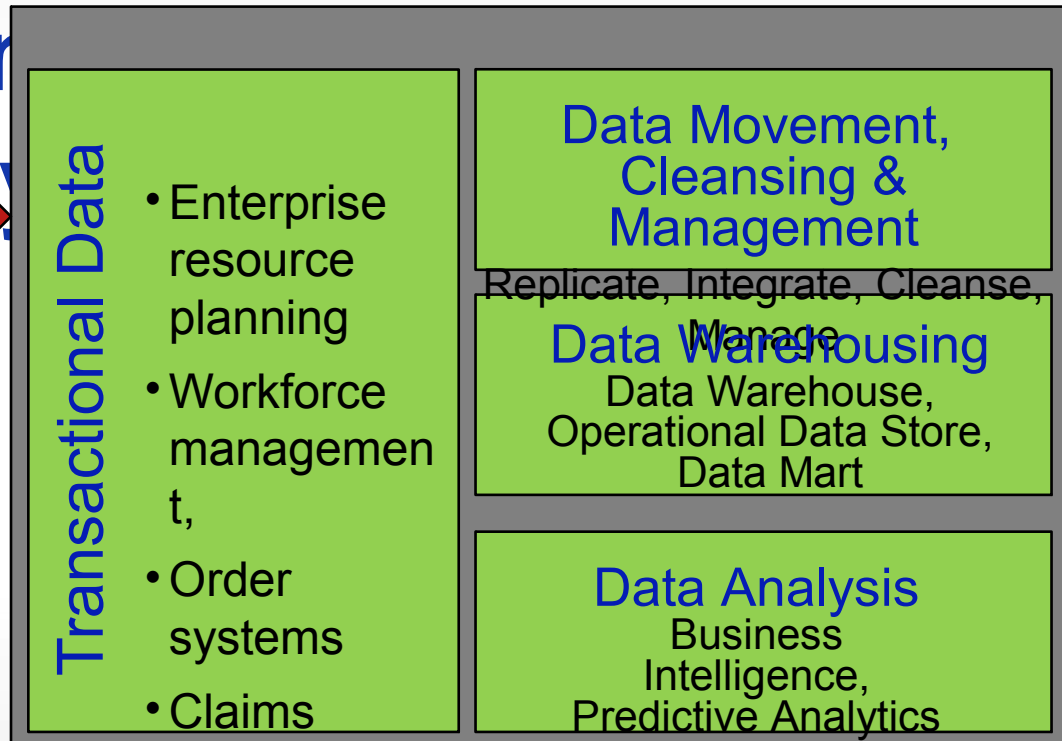
Customer Interaction Data

Transactional Data

- Enterprise resource planning
- Workforce management,
- Order systems
- Claims processing
- eCommerce

Data Movement, Cleansing & Management

Replicate, Integrate, Cleanse, Manage

Data Warehousing

Data Warehouse, Operational Data Store, Data Mart

Data Analysis

Business Intelligence, Predictive Analytics

Business Insight

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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

Data transfer

Latency?
Security?
Data Governance?
Complexity

Analytic Applications

Data Store, Business Intelligence, Reports
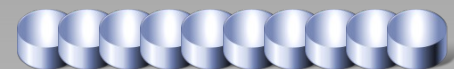
Shared Nothing DB

Low volume complex queries and batch reporting

The Hybrid Vision

Delivering business-critical analytics

Combined Workloads

Transactional Processing, Traditional Analytics & Business A...

Hybrid DB

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

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

Analytics on IBM zEnterprise

Improves Experience & Increases Drives greater insight.

Business Critical Analytics

Data Warehousing

Data Transformation

Business System / OLTP

Transactions in

Improved business performance out

Provides an end to end Solution
- IBM DB2 Analytics Accelerator
- IBM Cognos Business Intelligence
- IBM Cognos TM1
- IBM SPSS Predictive Analytics
- IBM zEnterprise Analytics System 9700/9710

Delivers on business critical analytics
- Timely, accurate, secure data
- Availability, scalability, performance
- Rapid deployment & expansion
- Reduced cost and complexity

Evolves with the business
- Start where you want
- Grow without re-architecting

- **Supports the Big Data Requirements for**
- Volume, Velocity, Varity and Veracity
- Simplified integration of hadoop, streaming and transactional data

IBM DB2 Analytics Accelerator

- Transparent to the application

- Inherits all zEnterprise DB2 attributes

- No need to create or maintain indices

- Eliminate query tuning

- Fast deployment and time-to-value

Blending zEnterprise and Netezza technologies to deliver unparalleled, combined

What's new in
DB2 Analytics Accelerator V4.1

Delivering critical insight at the speed of business

Accelerate a broader spectrum of queries

- Static SQL, multi-row FETCH, and multiple encodings on the same Accelerator

Improve Enterprise Robustness & Scalability

- Enhanced workload balancing
- Improved incremental update performance
- Enhanced monitoring

Enhance High Performance Storage Saver

- Improved ease of use
  - Built-in restore, better access control for archived partitions and protection of moved partitions

Supports new DB2 and PureData Technology

- DB2 11
- PureData Analytics N2001 and N2002 hardware

DB2 Analytics Accelerator

Accelerates the query and response time required for business critical customer interaction

300 Mixed Workload Queries

Customer Table
~ 5 Billion Rows

30 of the Mixed Workload Queries took minutes to hours

270 of the Mixed Workload Queries

Executes in DB2 returning results in seconds or sub-seconds

Successfully accelerated the problem queries

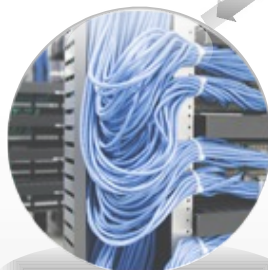# Analytics on zEnterprise

Rich Data Mining

Cost Effective Solutions

Mobile Reporting

Enterprise Planning

BI Consolidation

Operational Customer Support

Cognos BI, SPSS and TM1 for zEnterprise

IBM

Business analytics abilities

Cognos BI for zEnterpise

Business intelligence

SPSS for zEnterprise

Predictive analytics

TM1 for zEnterprise

Performance management

Business outcomes/benefits

- Understand your current state and your potential state
- Monitor results and fine-tune your business
- Inform strategy with a view into the future

- Predict customer segment and category affinity
- Market Basket Analysis to identify the next best offer for the customer
- Overlay browsing history onto purchase history to profile customers

- Reporting, analysis, operational & financial planning and consolidation.
- Product profitability solutions across customers, business lines and channels
- Sales Performance Management to improve pay-for-performance programs and efficiency in incentive compensation processes

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The consumer has taken charge...

1. **Customers have lost confidence in institutions**
   - . 76% of customers believe companies lie in advertisements
   - . Growing trust gap in many consumer focused industries

2. **Technology is changing how customers interact**
   - .Social media changed purchaser influence; opinions viewable instantly
   - .Mass customization and personalization of products and services

3. **Customer expectations have changed**
   - . Focus is on value, transparency and accountability
   - . Customers want to be seen holistically across the enterprise

4. **Institutions need to rediscover their customers**
   - . Consumers are experiencing brands in new ways though new channels
   - . Micro-targeting: the move beyond 1 on 1 is accelerating

If we don't take care of our customers, someone else will.

Negative Customer Experience Costs the Bottom Line!

- Attracting **a new customer costs 5 times as much** as keeping an existing one.

- **86% of consumers quit doing business with a company because of a bad customer experience**, up from 59% 4 years ago.

- For every customer complaint, there are **26 other customers who have remained silent.**

- Happy customers who get their **issue resolved tell about 4 to 6 people** about their experience.

- **A dissatisfied consumer will tell between 9 and 15 people** about their experience. About 13% of dissatisfied customers tell more than 20 people.
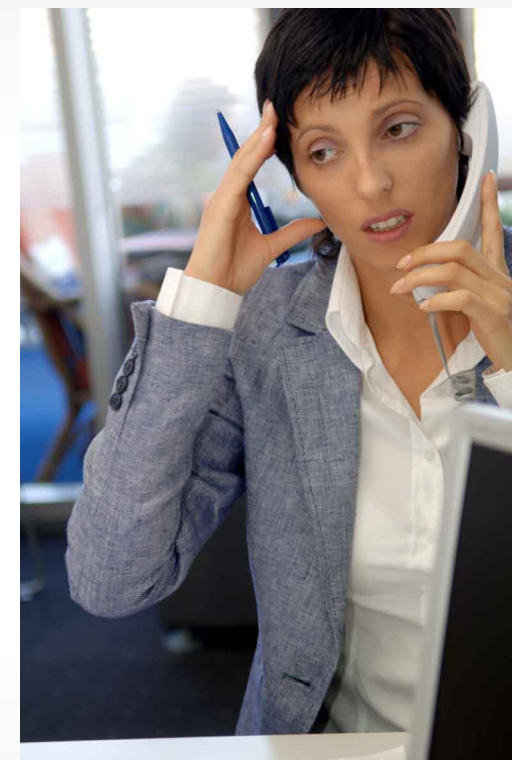
1 Source: White House Office of Consumer Affairs, Washington, DC
2 Source: Harris Interactive, Customer Experience Impact Report
3 Source: Lee Resource Inc
4 Source: White House Office of Consumer Affairs, Washington, DC
5 Source: Lee Resource Inc.

Analytics on IBM zEnterprise

Drive greater insight ▭ Improve Experience ▭ Increase Up-sell ▭ Decrease Risk

Business Critical Analytics

Data Warehousing

Data Transformation

Business System / OLTP

Transactions in

Improved business performance out

Enables a Superior Customer Experience

- Provides the breadth of analytics required to acquire, grow and retain

- Insights from all forms of Data

- Extends the same qualities of service required for business critical applications to analytics

- In-database scoring for both historical data and real-time transactional data

- Proven to scale to support the volume of transactions required for real-time scoring

- Accelerates the query and response time required to meet today customer service expectations

A Single Integrated Solution
for Enhanced Customer Service

A Single Integrated Solution
for Enhanced Customer Interaction

- **2/3 of business transactions for U.S. retail banks run directly on mainframes**

- **80% of world's corporate data resides or originates on mainframes**

- Businesses that run on System z
  - 25 of the top 25 worldwide banks
  - 23 of the top 25 U.S. retailers
  - 9 of the top 10 global life/health insurance providers
  - 64% of Fortune 500
  - 45% of Fortune 1000
  - 71% of Fortune Global 500

- The System z mainframe can run over a thousand virtual Linux images on a single frame the size of a refrigerator

- 1,300+ ISVs run System z today, with more than 275 of these selling over 800 applications on Linux

- The downtime of an application running on System z equates to approximately 5 minutes per year

When you think mainframe, you think IBM. The company has not been shy about boosting the attributes of the System z.

www.itbusinessedge.com

Insights from all forms of Data

Information Infrastructure

Structured:
DB2 Analytics Accelerator

Unstructured:
PureData System for Hadoop

Streaming:
InfoSphere Streams

Secured Information Hub

Insights

zEnterprise

Delivering insights to business users across the enterprise

In-database scoring for both historical data and real-time transactional data

Support for both in-transaction and in-database scoring on the same platform

End to end solution

Customer Interaction

Data In

Business System / TP

Application w/latest data

DB2 for z/OS

ETL

R-T, min, hr, wk, mth

DB2 for z/OS Data Historical Store

Copy

SPSS Models

For Linux on System z

Scoring Algorithm

Real-Time Score/ Decision Out

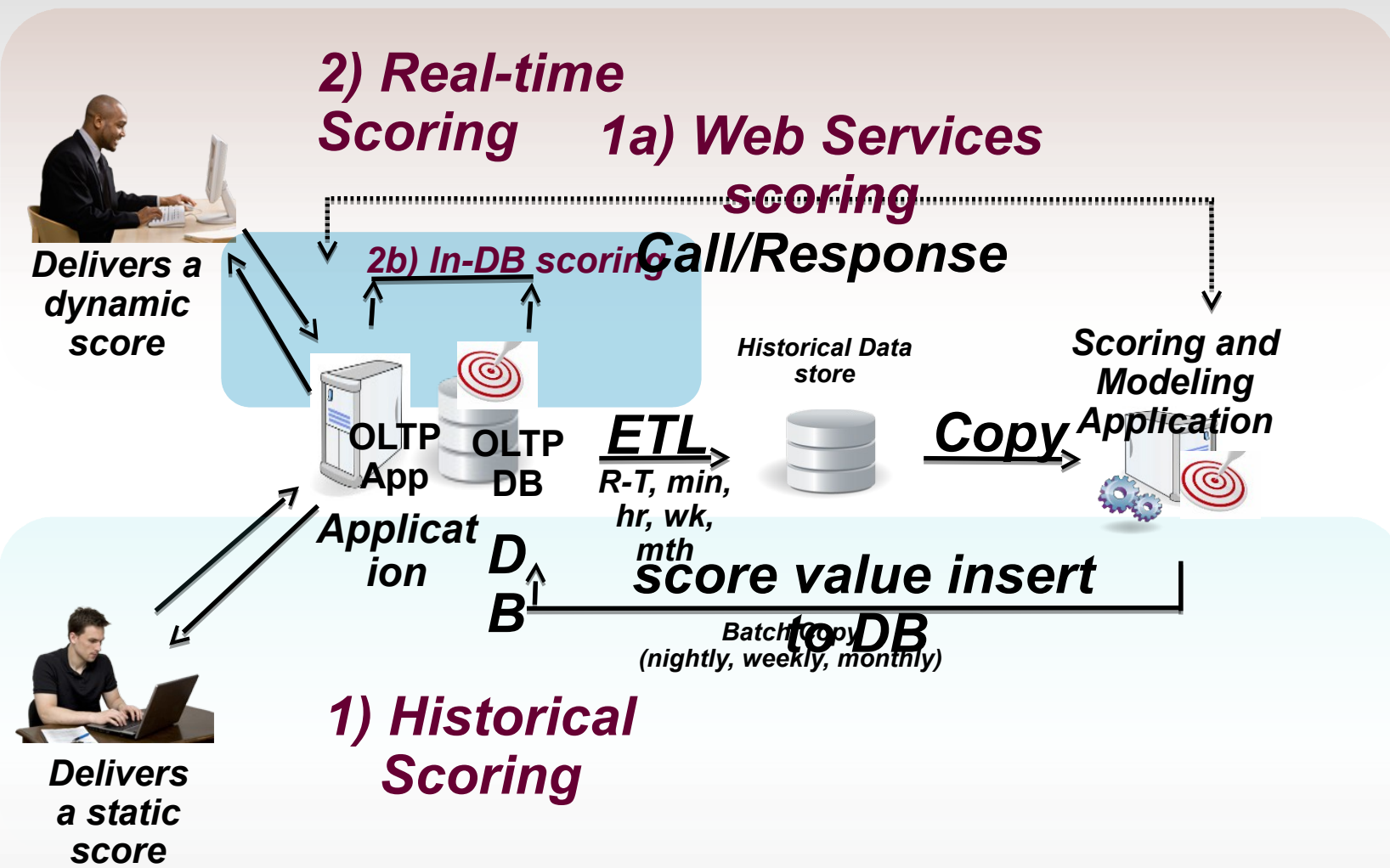Meet & Exceed SLA

Reduced Networking

Consolidates Resources

Proven to scale to support the volume of transactions required for real-time scoring

✓ Meets most demanding workload
 • 3K to 5K transactions per second requested

✓ Meets stringent SLA requirement
 • Small additional CPU cost to score

SPSS Scoring Adaptor for DB2 for z/OS
zEC12 Throughput

SPSS Scoring Adaptor for DB2 for z/OS
CPU Utilization Distribution
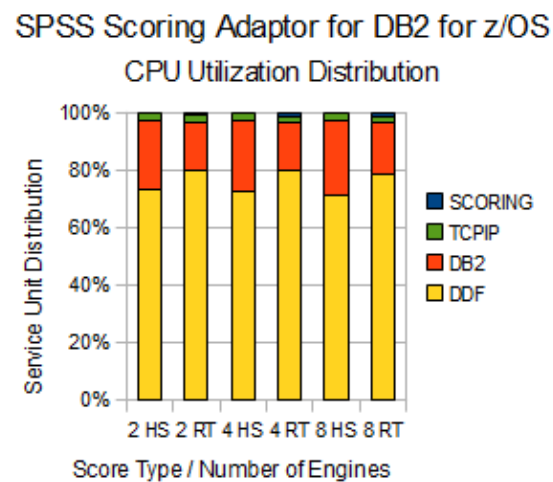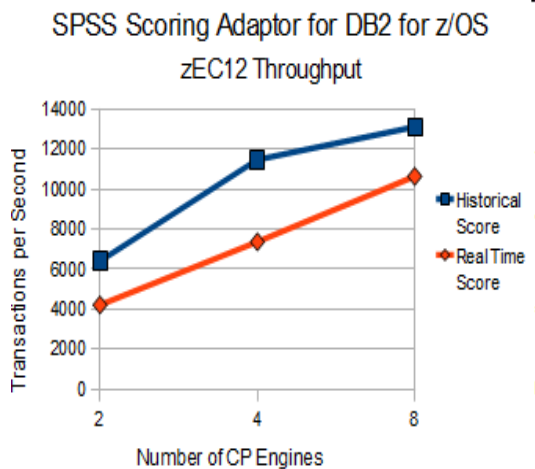
✓ Provides best value
 • Most accurate score is calculated in real time

Scoring Options with a CICS/DB2 Application

2) Real-time Scoring

1a) Web Services scoring

Scoring thru app

2b) In-DB scoring

Call/Response

Delivers a dynamic score

Historical Data store

Scoring and Modeling Application

OLTP App   OLTP DB

ETL

R-T, min, hr, wk, mth

Copy

Application

DB

score value insert to DB

Batch Copy
(nightly, weekly, monthly)

1) Historical Scoring

Delivers a static score

Industry	Sample Enhanced Customer Service Use Cases
Banking	Monitor credit card usage in real time to proactively detect/prevent fraud
Insurance	Score claims in real time to immediately identify fraudulent claims and identify up-sell opportunities
Government	Combine the details of a current crimes in progress with lessons learnt from past crimes to determine the safest course of action for the officer
Retail	Combine today's purchase details, with current market information and historical purchase patterns to determine the best upsell opportunity when they are ready to spend money.
Telco	Combine today's complaint with the current account status and previous behavior to determine best upsell

Pulling all data together to change the business outcome

"*Unable to work*"

Work Status

Facebook Post

"*Dude – awesome vacation*"

Make payment or investigate

Deterrent for fraudsters - Cost Savings for the business
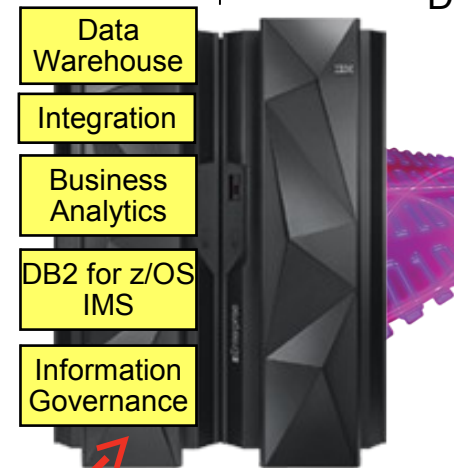
Data from Social Media sites analyzed with Text analytics

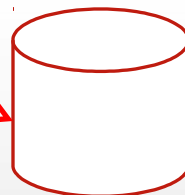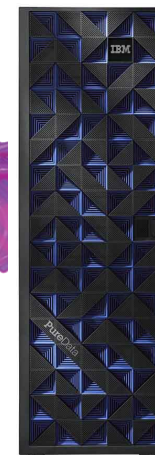Refined Search parameters from OLTP environment

zEnterprise

DB2 Accelerator

Data Warehouse

Integration

Business Analytics

DB2 for z/OS IMS

Information Governance

Hadoop or agency

Result Set for further processing

Data Warehouse + modeling applications

Result set uploaded or directly imported into OLTAP DBMS

Business innovation with zEnterprise Analytics

Diminishes infrastructure sprawl

The county deployed IBM Cognos® Business Intelligence in a Linux environment on its existing IBM System z® mainframe platform. Provides 24/7 access to analytics for key services such as courts, jails and the fire Scalable platform provides government for three million across the county.

"System z provides such huge advantages over a distributed server landscape, you can create a new Linux system very quickly, without worrying about whether it will affect the performance or stability of your existing systems."

Business innovation with analytics on zEnterprise

Diminishes infrastructure sprawl, reduce costs, deliver business value

"In just four years, Blue Insight has consolidated 100+ analytic environments into one, has grown to support 500+ applications, with 450,000+ global users, drawing information from over 660 sources. Producing over $5 million in eff savings and delivering over $3 business value from sales char supply chain optimization to early defect detection for HW and services, to name just a few"
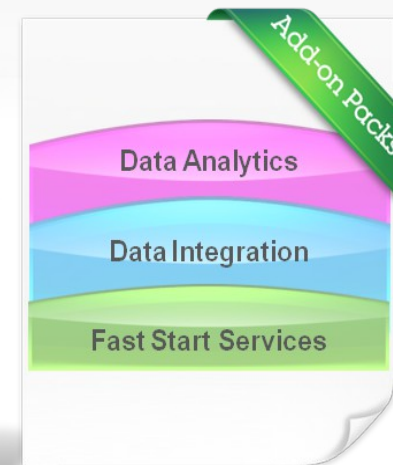
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IBM zEnterprise Analytics System 9700

A cost-competitive, integrated combination of hardware, software and services to deliver business

Data Analytics

Data Integration

Fast Start Services

Add-on Packs

Preselected	Pretested	Solution Priced
To deliver a comprehensive, end-to-end, flexible solution	To meet business critical analytic demands	For deployment as an add-on to an existing zEnterprise system or as a new system

Learn More!

- *Visit the zAnalytics Website*

- *Join the zAnalytics Networking Community*