

Using New Database Technologies to Drive Competitive Advantage

*Colin White
President, BI Research
TDWI and IBM Webinar
September 17, 2015*



Sponsor



Speakers

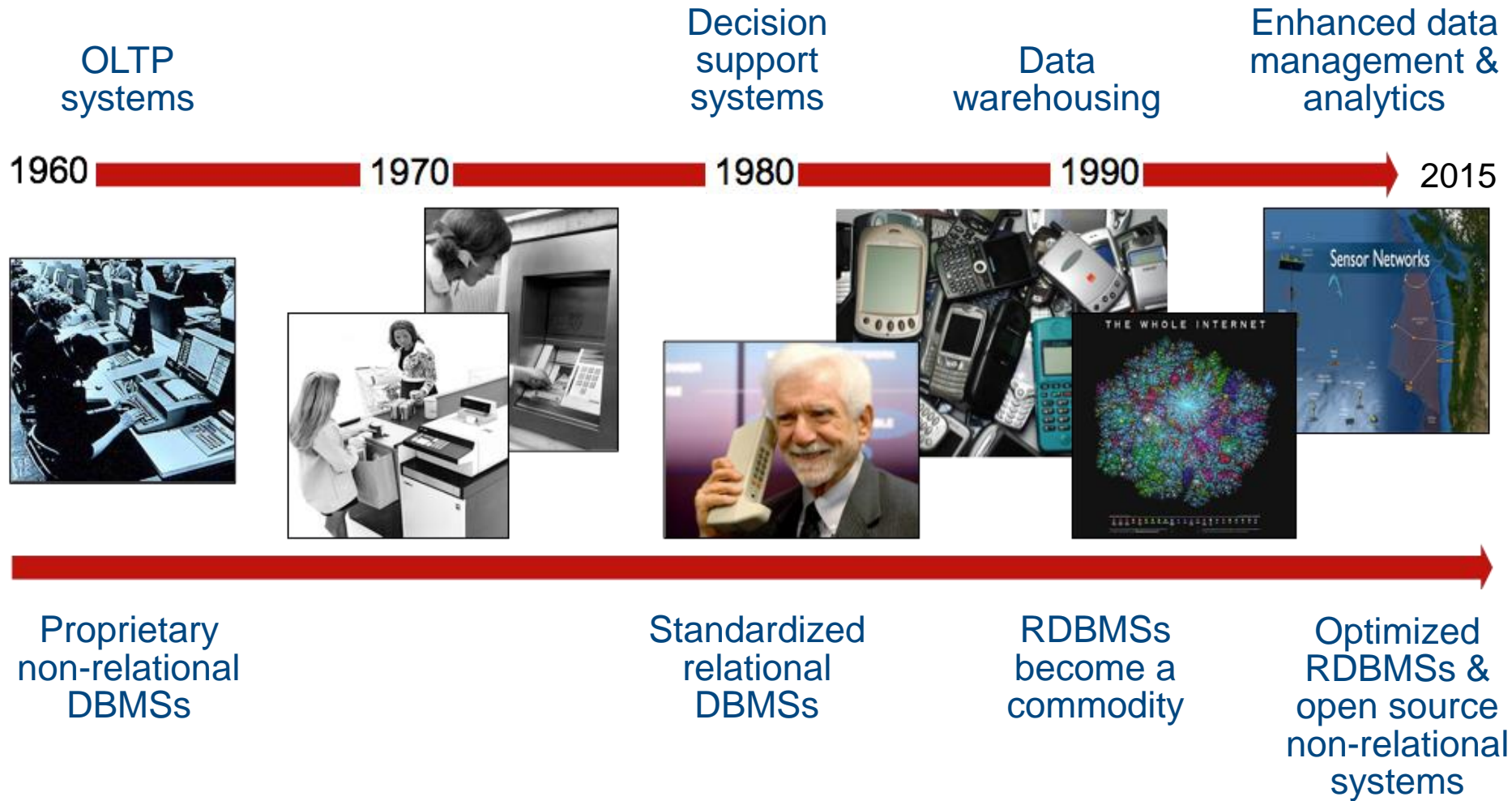


Colin White
President,
BI Research



Chetan Chaturvedi
IBM

Over 50 Years of Innovation



Customer Example: Sabre 1960-1962



The first Sabre system was installed on two IBM 7090 computers, located in a specially designed computer center in New York

The mainframe system processed 84,000 telephone calls per day

The system took 400 person-years of development effort at a cost of almost US\$40 million

Travel Has Changed!



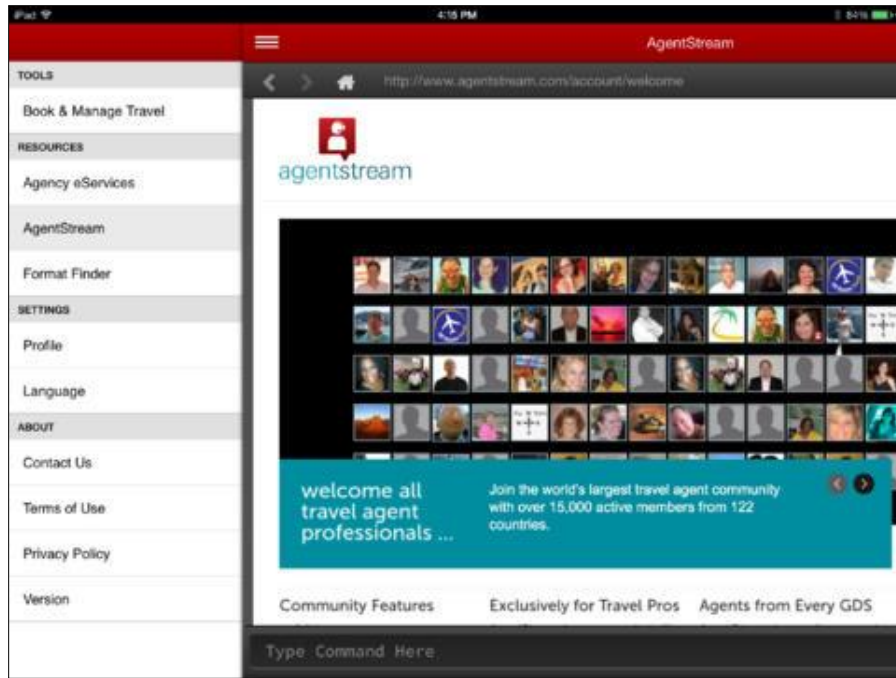
Sabre Today

Sabre | Travel
Network.

Sabre | Hospitality
Solutions.

travelocity

Sabre | Airline
Solutions.



More than 57,000 travel agencies around the world log into a Sabre desktop each day

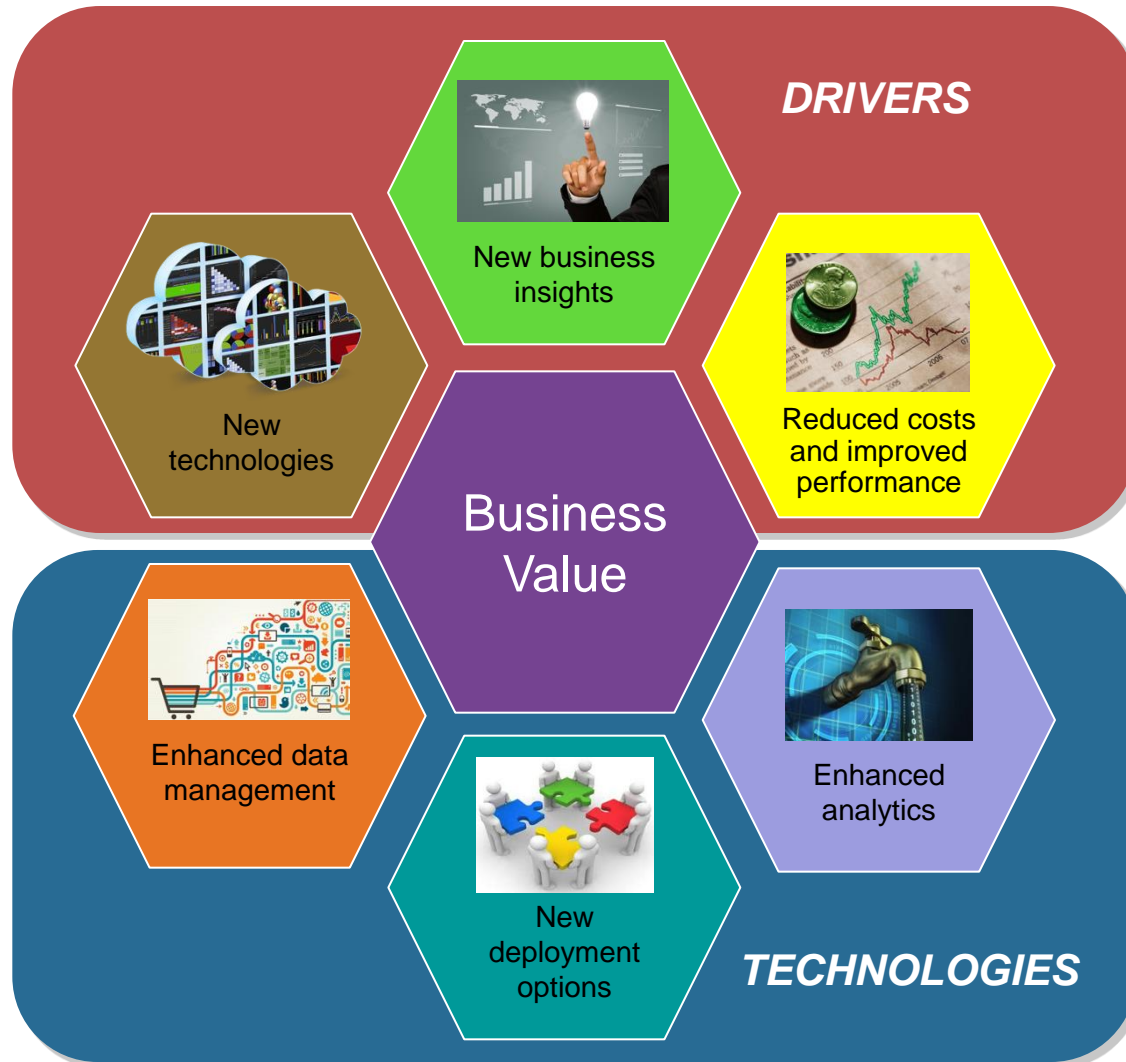
The Sabre system is available 24 hours a day, 7 days a week

The system processes more than 42,000 transactions/second

Airline iPhone Internet App



New Technologies Can Provide Significant Value



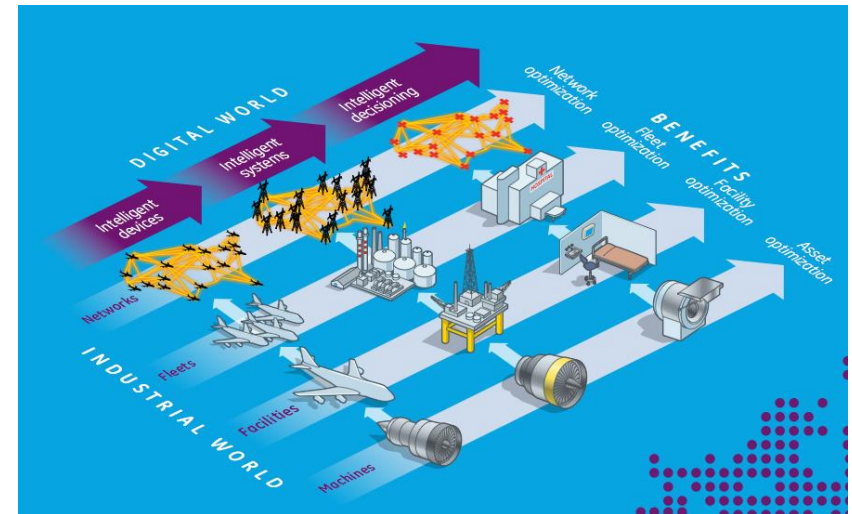
New Business Insights

Today

- Situational 1-to-1 marketing: micro-segmentation, cross-channel analysis, analysis of influential factors
- Customer experience and perception management
- Fraud detection, risk management and compliance

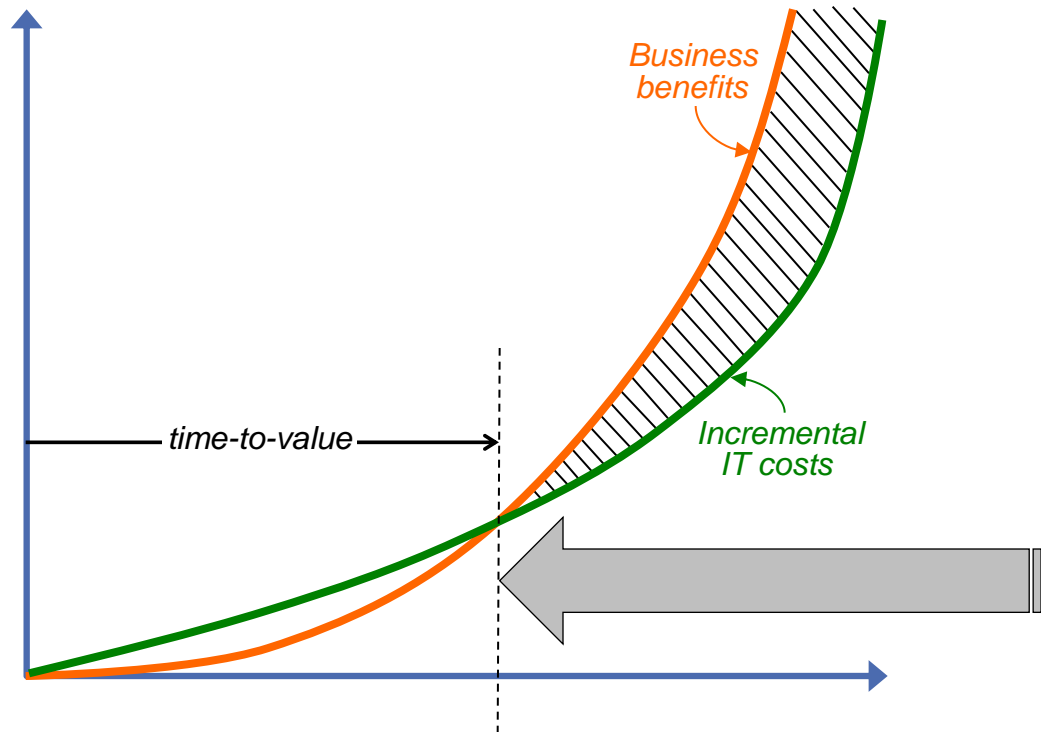
The Trend

- The “Internet of Things:” the processing and analysis of sensor and event data (healthcare, telecommunications, financial services, engineering, etc.)



GE: "Industrial Internet: Pushing the Boundaries of Minds and Machines"

Economics: Improving Time to Value

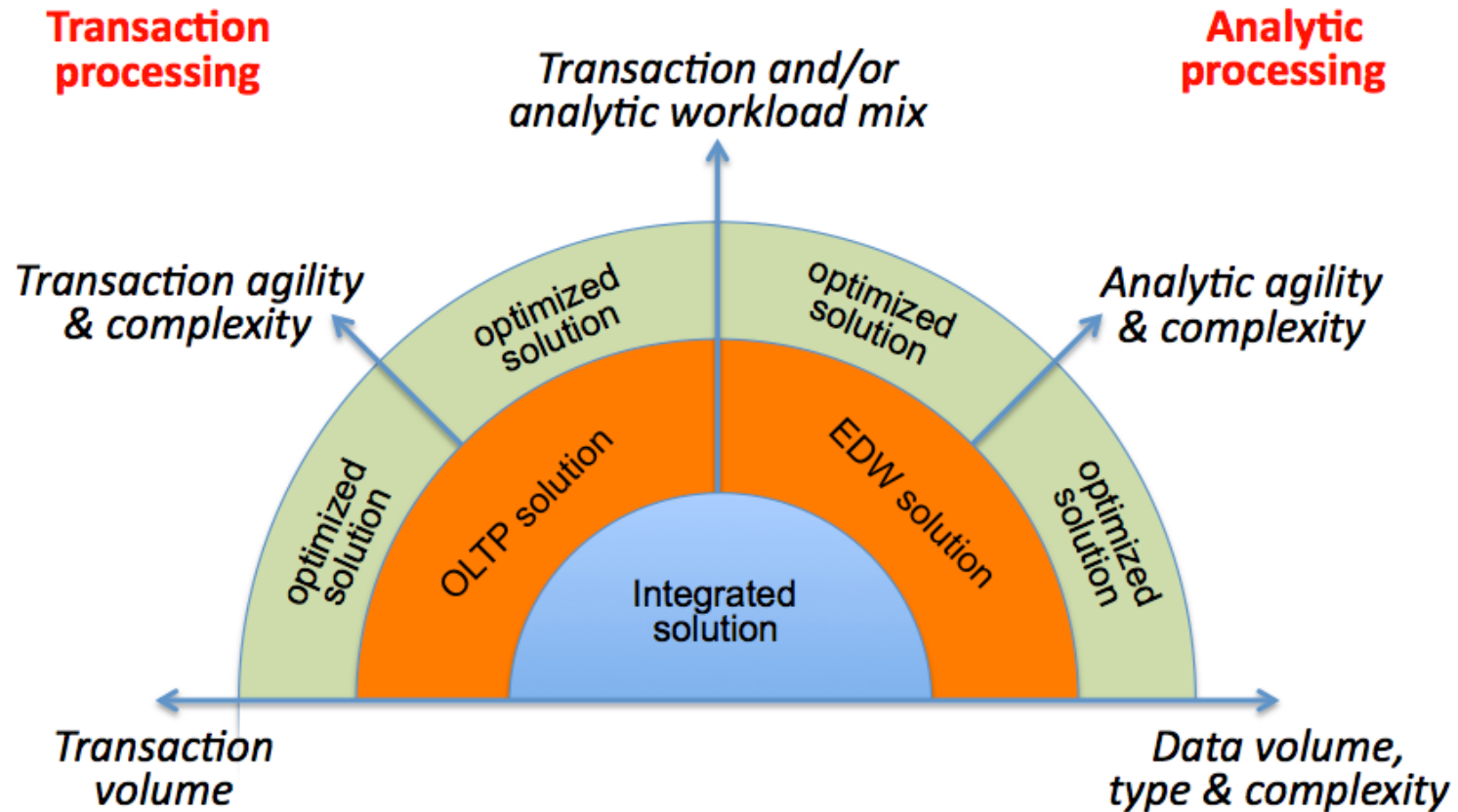


New technologies enable new applications and make possible what was not possible before

Reduced hardware and software costs

Improved price/performance

Workloads: One Size Does Not Fit All Anymore



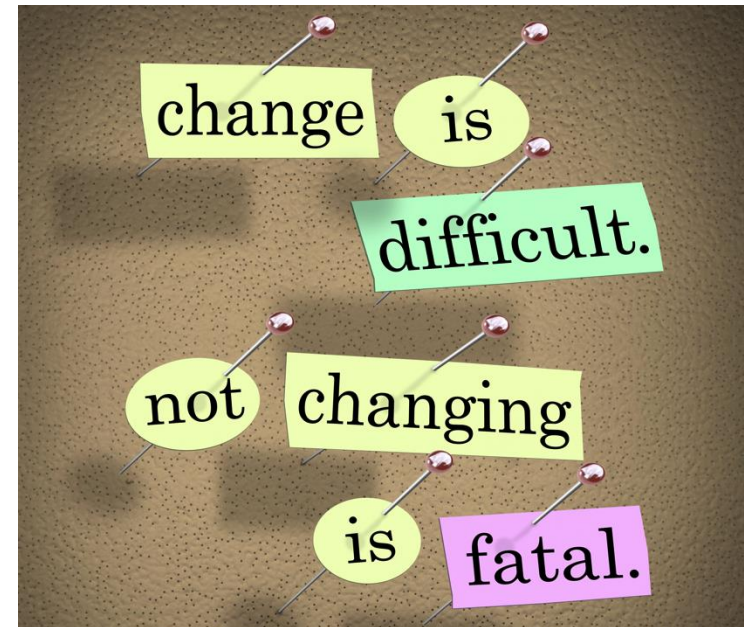
Massive Disruption in IT

OLTP is experiencing significant growth in transaction volumes

Analytic processing is experiencing significant growth in data volumes, the types of data being processed and in the types of analytics being performed

These changes are leading to highly complex and mixed workloads – stretching the capabilities of IT systems and resources

Careful technology selection and system design is critical



New Technologies: Enhanced Data Management



New data types, e.g., for multi-structured data

New storage structures, e.g., JSON, columnar

In-memory data

Enhanced data compression

In-database analytic functions

Hardware exploitation

Intelligent optimization and workload management

Relational and non-relational solutions

The Role of Non-Relational Systems

Handle data, schemas, and processing that are difficult to support using a traditional RDBMS – may require a higher skill level and deployment resources

Volume ←  *Complexity*

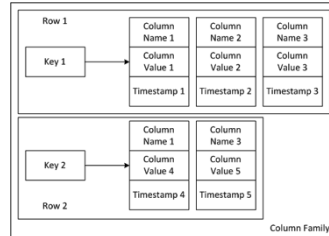
Key/Value Pair

Column Family

Document

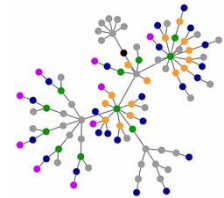
Graph

key		value
Apples	Date	2011-20-29
Apples	Qty	60
Apples	Supplier	Figoni
Asparagus	Date	2011-10-30
Asparagus	Qty	34
Asparagus	Supplier	Giusti Farms
Onions	Date	2011-10-27
Onions	Qty	66
Onions	Supplier	Pastorino
Yams	Date	2011-11-03
Yams	Qty	52
Yams	Supplier	Iacopi Farms



```
{
  "_id": "biking",
  "_rev": "AE19EBC7654",

  "title": "Biking",
  "body": "My biggest hobby is mountainbiking. The other day...",
  "date": "2009/01/30 18:04:11"
}
```



Many types of products (e.g., Hadoop), APIs and languages (e.g., Java, MapReduce, R, SQL)

The Role of Hadoop

Has moved beyond batch (i.e., MapReduce) processing to support a wider range of application use cases

Classic and independent vendors have joined the race to support Hadoop and build applications and services on Hadoop

Not just for Internet businesses anymore – many traditional businesses have Hadoop projects in evaluation and in production

Key platform for deploying a data lake/refinery and/or a data archive

May 29, 2014
Hadoop Market to Grow 25x by 2020, Report Says
George Leopold



Datanami.com

The global market for Hadoop along with related hardware, software, and services is expected to reach \$50.2 billion by 2020, driven by the unrelenting expansion of raw, unstructured, and structured data, a market watcher forecasts.

Allied Market Research said the global Hadoop market accounted for about \$2 billion in revenues in 2013, and is slated to increase by \$48.2 billion over the next seven years. That corresponds to a 58.2 percent compound annual growth rate (CAGR) for Hadoop through 2020.

TDWI Survey on Hadoop

In your perception, what would be the most useful applications of HDFS if your organization were to implement it? Select four or fewer.

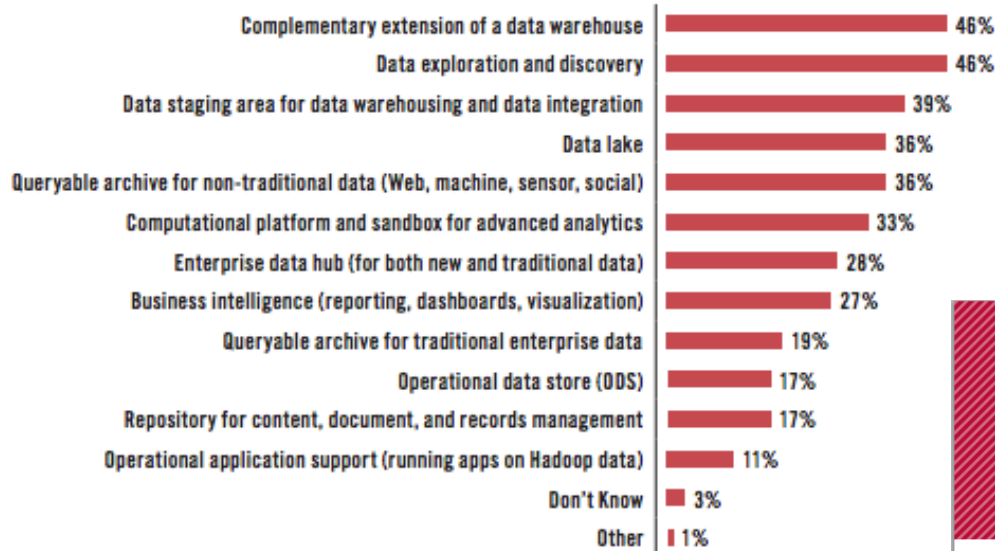


Figure 1. Based on 743 responses from 207 respondents. 3.6 responses per respondent on average.

TDWI RESEARCH

SECOND QUARTER 2015

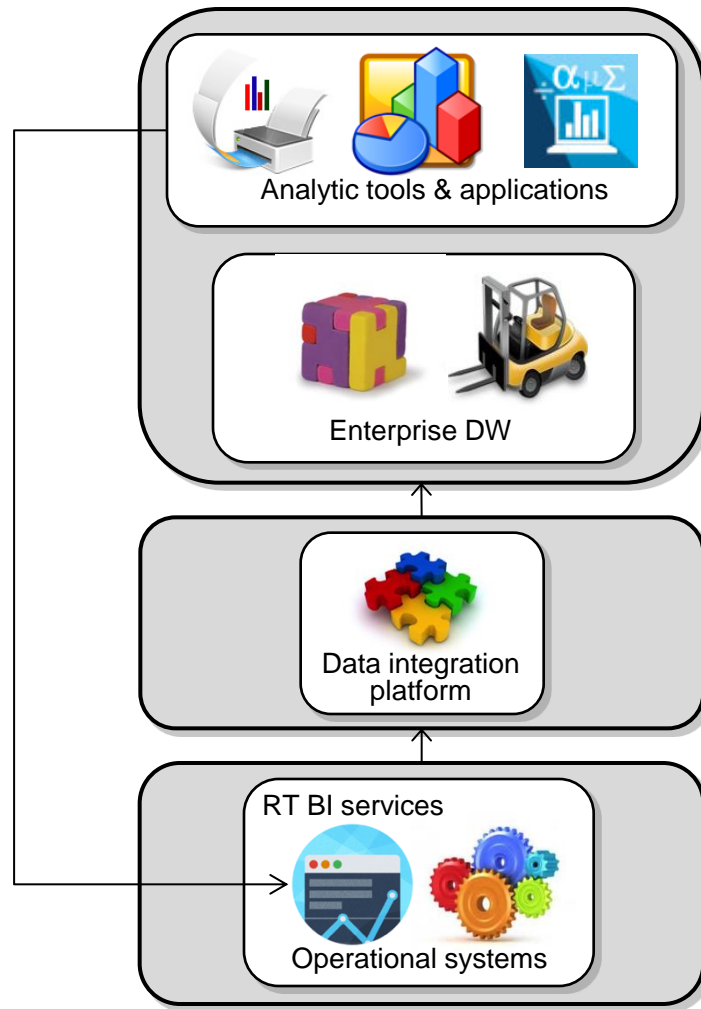
TDWI BEST PRACTICES REPORT

Hadoop for the Enterprise:

Making Data Management
Massively Scalable, Agile,
Feature-Rich, and Cost-Effective

By Philip Russom

Enhanced Analytics: The Traditional EDW



1. Data must be integrated into the EDW before it can be analyzed
2. Process can be time consuming and IT can become a bottleneck
3. EDW initiatives are often IT and not business driven
4. Results are often not what users want
5. Leads to short-term LOB initiatives and data silos that reinvent the wheel

Solving the Problem

Need to modernize the EDW environment to leverage technology for business value

Continue to use analytics to improve existing operational processes

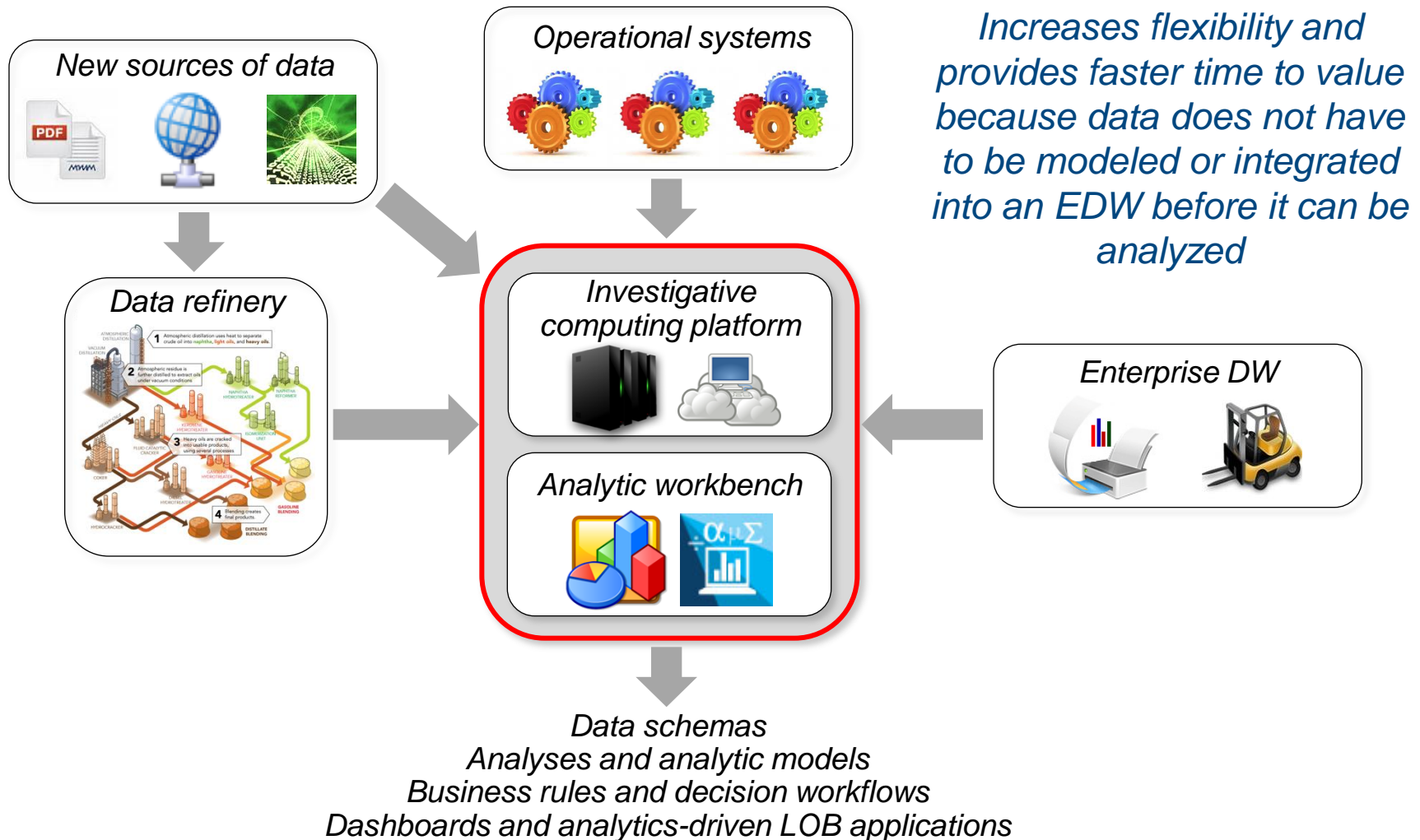
But also at the same time look for new opportunities to address changes in the business climate and business goals

Invest in investigative computing (i.e., data discovery or analytics R&D)

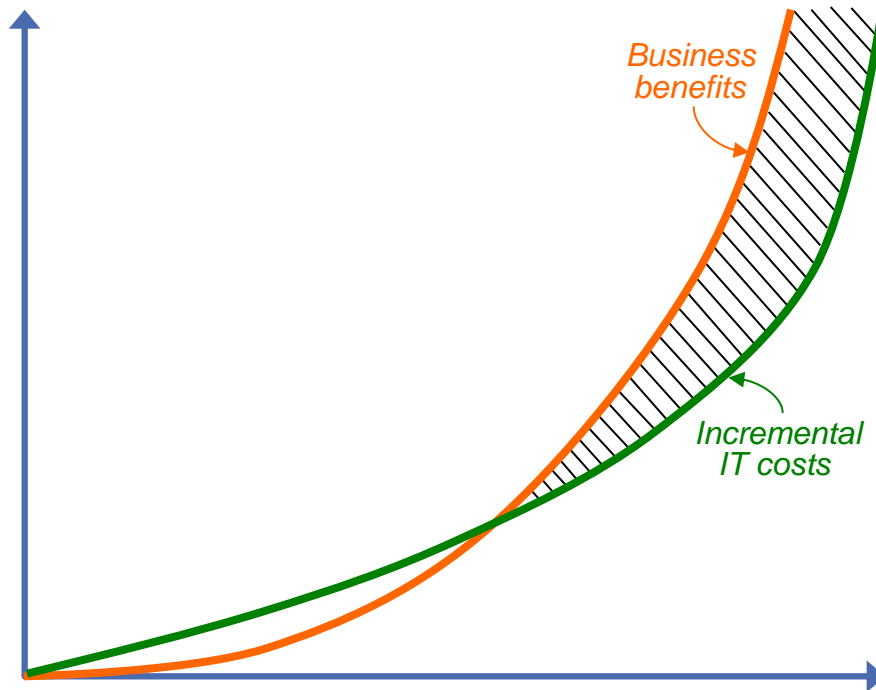
Adjust governance policies and procedures to support the enhanced EDW environment

Develop an analytics roadmap based on business needs and goals

Enhanced Analytics: Investigative Computing



Economics Revisited



Business Benefits

- Tangible – increased revenues, reduced costs
- Intangible – improved customer satisfaction, reduced risks, enhanced reputation

Incremental IT Costs

- Upfront software and hardware purchase + IT installation, operation and support costs
- IT training, development and administration costs
- Consider new deployment options such as appliances and cloud computing

The Rise of Cloud Computing

Provides pay-as-you go, on demand and elastic scalability for prototyping, developing and deploying many IT projects

Reduces upfront IT costs and enables companies to scale IT resources as required, while paying only for the resources used

Cloud technologies are maturing and organizations are overcoming their data security issues and concerns

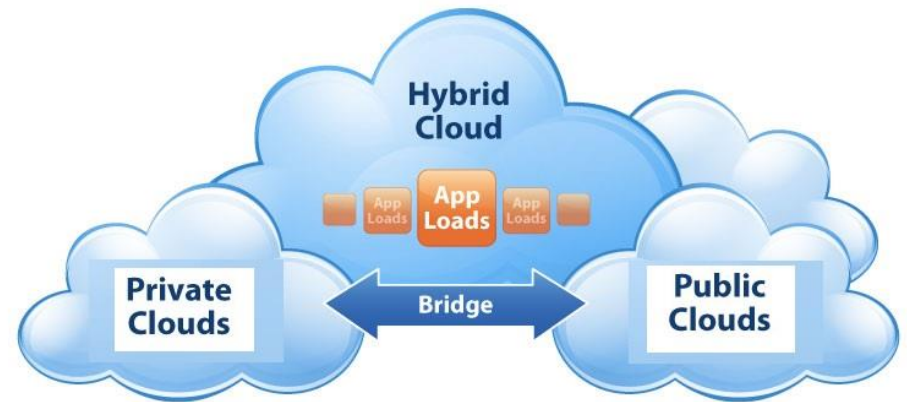
Key issue is the complexity of integrating cloud and on-premises data and the inability of many cloud services to efficiently and rapidly move data into and out of the cloud environment



Sources: Cisco and Forbes

IBM Perspective on the Cloud

“Data is the WHAT
Cloud is the HOW
Insight is the WHY”



Bob Picciano, Senior VP of the Information & Analytics Group, IBM Insight 2014

Summary: Gaining Value from New Technologies

Managers don't have to be technical experts, but they need to:

- Understand the fundamental principles well enough to appreciate the business opportunities, communicate with technologists and evaluate proposals for projects
- Be willing to invest in new technologies, new types of data and experimentation, and supply the required resources



Understand how to gain competitive advantage (or parity) from new technologies in the context of the corporate strategy and that of competitors

Maintain momentum over competitors

Collaborate with, and examine projects in other organizations

Webcast with TDWI



Chetan Chaturvedi
Program Director, Analytics and Database Solutions
September, 2015
chetan.chaturvedi@uk.ibm.com

IBM's definition of what is happening in the market

“Data is the WHAT
Cloud is the HOW
Insight is the WHY”



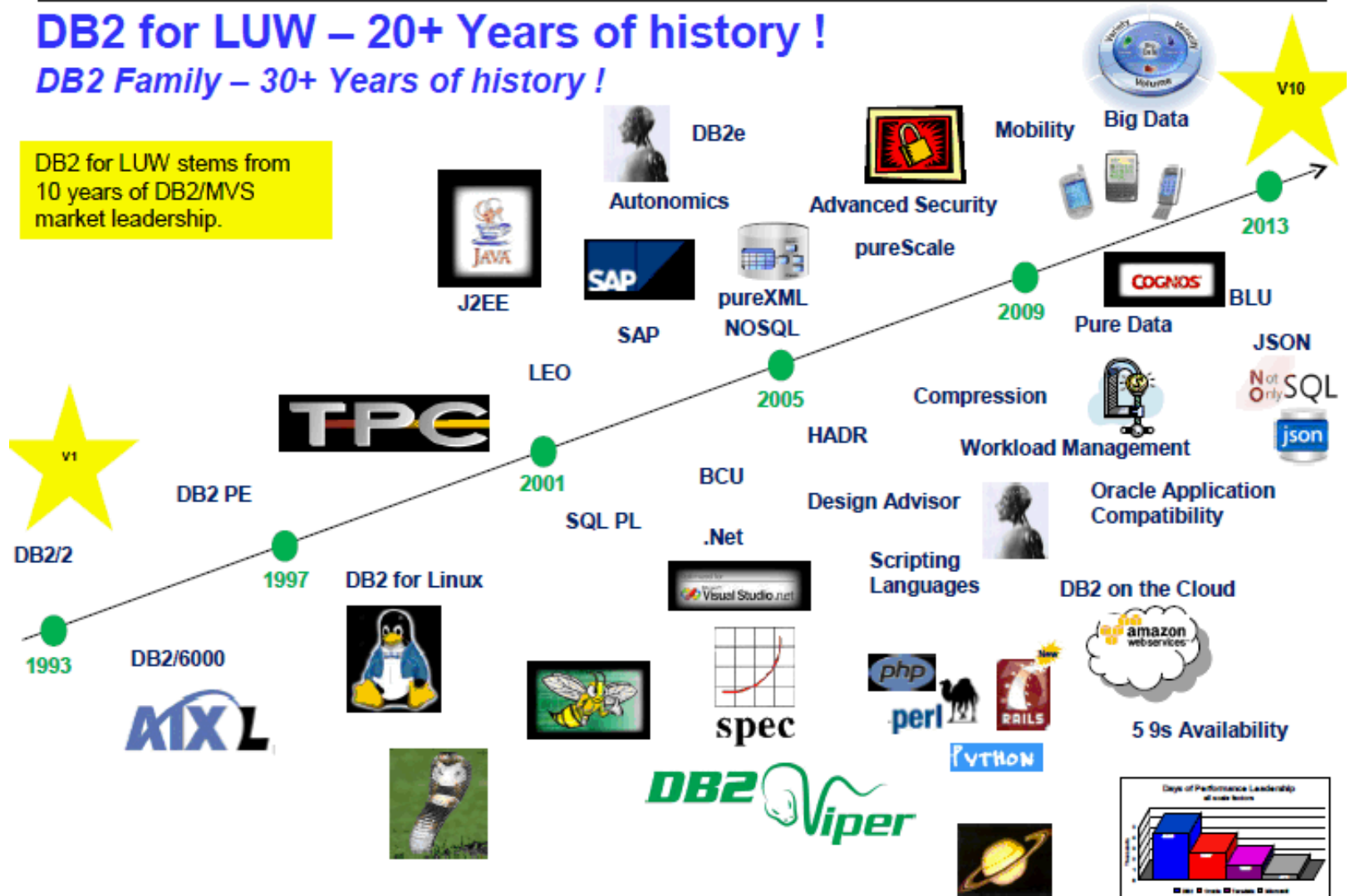
Bob Picciano, Senior VP of the Information & Analytics Group, IBM Insight 2014

Data is becoming the world's new natural resource, transforming industries and professions (Ginni Rommety – CEO, IBM)

DB2 for LUW – 20+ Years of history !

DB2 Family – 30+ Years of history !

DB2 for LUW stems from 10 years of DB2/MVS market leadership.

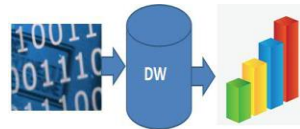


Why do clients buy, and love, DB2 ?

High-end Warehousing and Analytics

- Ability to scale from GBs to PBs of data
- 37x-70x performance gains for analytics and reporting
- 10x compression rates
- Load and Go simplicity; Application Transparent
- Real-time warehousing; columnar; in-memory
- High Availability and Disaster Recovery
- Available as appliance, in the cloud or software only
- BLU Acceleration and Data Partitioning Feature (DPF)

- DB2 – all editions
- dashDB
- PureData for Operational Analytics



Continuous Business Availability for OLTP

- 24x7x365 Continuous Availability – No down time
- Protects from planned and unplanned outages
- Scales to 100+ members
- Application transparent
- Supports multi-tenancy
- Available as appliance, in the cloud or software only
- pureScale and HADR

- DB2 – all editions
- Pure Application System



Next Generation Workloads

- Not only SQL (NOSQL)
- Interact with mobile devices
- Positioned for Big Data applications
- Run workloads in the cloud
- Native XML (pureXML), JSON, RDF Triple Graph support
- MongoAPI, SPARQL, XQuery
- Support of hadoop and BigSQL

- dashDB
- Big View
- DB2 – all editions



Ability to handle all workloads

- DB2 is the only database in the industry designed to handle both high end OLTP and high end warehousing / analytics / reporting workloads
- DB2 can easily handle enterprise data warehouse (EDW), operational data store (ODS), operational analytics and mixed workloads
- DB2 is also designed to handle next generation workloads such as cloud, big data and exchange of data from mobile devices. DB2 can handle both structured and unstructured data
- DB2 provides full continuous availability for all workloads

When do clients buy, and love, DB2 ?

Best Database for SAP

- Over 10 years of tight integration with SAP
- An inexpensive alternative to SAP HANA
- A great alternative to SAP Sybase and Sybase IQ
- 10x compression rates
- 25x better performance
- Integrated with SAP cockpit
- BLU Acceleration certified
- pureScale and HADR certified
- Advanced Security



- DB2 Enterprise Server Edition
- DB2 Advanced Enterprise Server Edition

Low Risk Alternative to Oracle

- Oracle Application Compatibility
- Oracle Applications run “as-is” with DB2
- Native PL/SQL stored procedure compiler
- Significant cost savings for clients upset with Oracle pricing
- Storage savings with 10x compression
- Rich security capabilities
- Integrated workload management
- Can handle any workload



- DB2 – all editions

Cognos/SPSS and DB2

- 25x better performance on top of dynamic cubes
- 80x better performance from dynamic cubes
- 10x compression rates
- BLU Acceleration
- Cognos BI Dynamic Cubes
- Positioned for Big Data applications
- Run workloads in the cloud
- SPSS for predictive analytics



- DB2 Advanced Editions (AWSE & AESE)
- dashDB

DB2 for Big Data

- 37x better performance with BLU Acceleration
- 10x compression rates with BLU Acceleration
- SQL access to all data with BigSQL
- Analyze high volumes of data in motion with Streams
- Access to all data with Cognos
- Advanced Text Analytics with Watson Explorer
- Integrated traditional warehouse with hadoop
- Data movement across hadoop and DB2
- Advanced security for entire environment
- Data virtualization layer

- Big View



DB2 Performance & Scalability means happy business

The ANIXTER logo is displayed in a bold, sans-serif font within a light gray rectangular box.

"The scalability and transparency of the [pureScale] cluster could ultimately be huge for us. It means we can add capacity and integrate new applications at any time, with no coding and without having to retune the database or manually rebalance workloads."

-- Bernie O'Connor, Director of Information Technology

The ANIXTER logo is displayed in a bold, sans-serif font within a light gray rectangular box.

"Performance is very impressive, and so is the resilience of the cluster. If a server goes down, we have continuous access to the data through the remaining servers and the failing server typically recovers in seconds."
-- Bernie O'Connor, Director of Information Technology

pureScale TCO – Application Consolidation



"DBAs who before spent 7.5 hours a day moving databases from one system to another just because demand changed can now focus their time on helping the business get more value out of the data. Almost half of our 11 DBAs spend time daily just maintaining the systems and keeping them running because the databases are in isolated environments. Once I have all our applications moved to DB2 pureScale, this [time spent on maintenance] will be eliminated."

-- Robert M. Collins Jr. (Kent), Database Engineer, BNSF Railway Inc.



"With IBM DB2 pureScale, we'll be able to consolidate 30 database servers down to three or four ... That's a tremendous savings in terms of power costs, maintenance and support costs, licensing fees, floor space, and so on. We project reduction of database server expenses of over 135 percent with IBM DB2 pureScale database software."

-- Robert M. Collins Jr. (Kent), Database Engineer, BNSF Railway Inc.

DB2 for Analytical Workloads

A green circular badge with the word "New" in white text.

Get the answers you need in the moment

- **Get real-time answers to ALL questions with instant insight into historical and “as it happens” data**

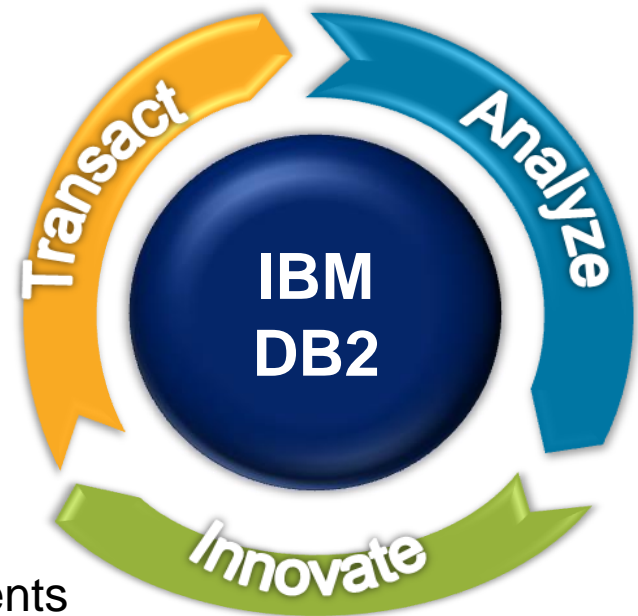
- Change the economics of continuous availability with broad infrastructure choices at every price point

- Improve performance of transactions and analytics while reducing complexity and overhead

- Get fast time-to-value using skills you already have for Oracle database

- Superior performance at lower cost for SAP environments

- **Delivered as DB2 10.5.0.4 (Fixpak 4 on top of DB2 10.5)**



DB2 delivers the competitive edge for your business

Fast Transactions You Can Depend On

Deliver superior service at a price you can afford

- Protect your business from planned and unplanned outages*

New *Change the economics of continuous availability* with options at every price point

New *Get real-time insight into operational data* without compromising performance

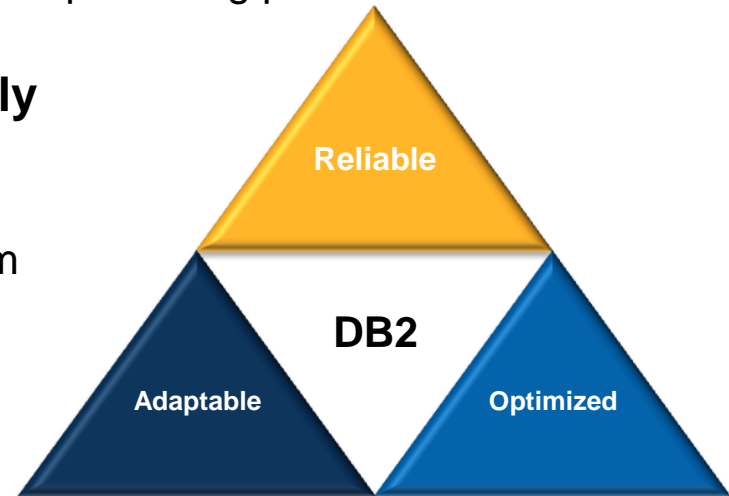
Adapt to changing business needs, seamlessly

- Expand or remove capacity based on transactional workload
- Pay only for the resources you use when you use them

New *Leverage broader infrastructure choices*

Streamline operations

- Free your applications from database complexity
- Improve IT productivity with autonomies
- Modernize your data platform with existing skills and IT resources



* Based on IBM design for normal operation with rolling maintenance updates of DB2 server software on a pureScale cluster. Individual results will vary depending on individual workloads, configurations and conditions, network availability and bandwidth.

Competitive Advantage with DB2 with BLU Acceleration

Fast Answers. Simply Delivered.

New

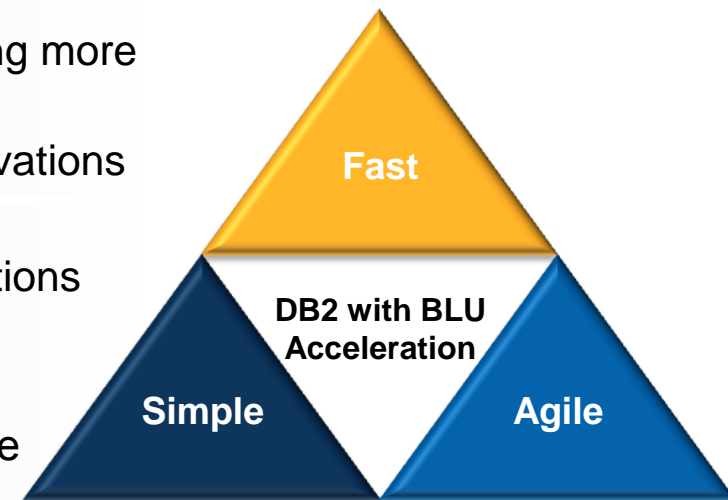
- **Instant insight from real-time operational data** for growing revenue, reducing cost and lowering risk
 - 35x to 73x faster analytics, with some queries running more than 1400x faster
 - Next generation in-memory with IBM Research innovations

New

- **Simplified IT landscape** with reporting and transactions in the same system
 - No need for indexes, aggregates or tuning
 - Operational simplicity with “load and go” performance

New

- Available for on-premises or via the cloud
 - “In one of our largest customer databases, we saw a compression ranging from **7x to 20x** as compared to the uncompressed tables ” - Mike Petkau, Director of Database Architecture & Administration, TMW Systems
- **Simple, low-risk upgrade** from Oracle Database



DB2 with BLU Acceleration at Handelsbanken

Full service bank for private and corporate customers
Founded in 1871 with operations in 24 countries

100x improvement
in performance of one of the queries
Up to 82% compression



“BLU Acceleration is very lucrative for us because it’s very simple to get up and running. The first query ran within 6 hours.”

“We don’t have to tune it with index or table spaces or anything. Just load the data and run the queries to see the results.”

**Phillip Kallander – Chief Technical Architect for
Data Warehouse and Analytics, Handelsbanken**

“The BLU Acceleration technology has some obvious benefits: *It makes our analytical queries run 4-15x faster and decreases the size of our tables by a factor of 10x.* But it's when I think about all the things I don't have to do with BLU, it made me appreciate the technology even more: **no tuning, no partitioning, no indexes, no aggregates.**”

—Tom DeJuneas, IT Team Manager, Coca-Cola Bottling Co. Consolidated

 **DB2 with BLU Acceleration**





plansee

GROUP



5mm

1/4"



36%

How much **additional compression** BLU Acceleration provided.

40%

Time to run product material and warehouse reports **dropped by** this amount.

94%

Reduction in disaster recovery time (RTO) from previous solution.

**16
&
12**

Hours to migrate 150 InfoCubes to DB2 BLU and number of **months** to full ROI.

Thank You



Audience Questions?



Contact Information

If you have further questions or comments:

Colin White, President, BI Research
colin@bi-research.com

Chetan Chaturvedi, IBM
chetan.chaturvedi@uk.ibm.com