

IBM Smarter Analytics

Infrastructure for zEnterprise

Transforming your business to be Information Driven

Caryn Meyers
IBM System z Business Intelligence Marketing Manager



Drowning in a sea of data...

..with no information



1 in 2 Business leaders say they don't have access to the information they need to do their jobs

1 in 3 Organization leaders frequently make decisions based on information they don't trust, or don't have

220% Organizations competing on analytics substantially outperform their peers

33% Revenue growth and 12X more profit growth for organizations that apply advanced analytics

Sources:

- The Guardian, May 2010
- IBM IBV/MIT Sloan Management Review Study 2011. Copyright Massachusetts Institute of Technology 2011

Analytics Shifts to Pervasive Operational Workload

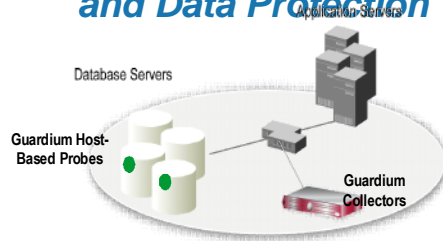
- ***Enterprises are modernizing and extending functionally***
 - Better decisions from the right information
 - Informed decisions at the point of contact
 - Consistency of information across organizations
- ***Which is driving operational characteristics requirements***
 - Cost of downtime is escalating
 - The impact of unauthorized intrusion of private information is overwhelming
 - Stringent Service Level Agreements
- ***Newer applications - demanding lower latency of data***
 - Businesses want the most up-to-date information they can get
 - Yesterday's information was good yesterday
- ***While focusing on reducing costs and consolidating***
 - Lower costs through reduced complexity
 - Simplified environment with easier administration
 - Lower SW costs, elimination of redundant servers and resources



System z: The **INFORMATION HUB** of the Enterprise

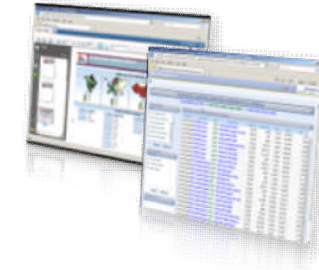
Easy to manage Infrastructure

Data Administration and Data Protection



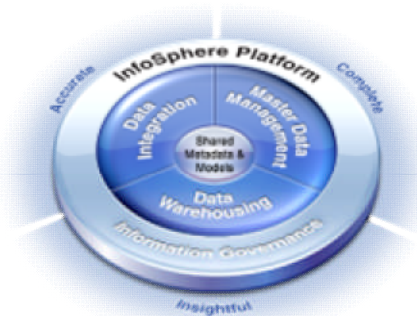
IBM Optim and
Guardium Software

Dashboards / Reporting



IBM Cognos
Software / QMF
ISV: SAS/IBI

Master Data, Data Warehouse and Data Integration



IBM InfoSphere Software

IBM Smart Analytics System 9700

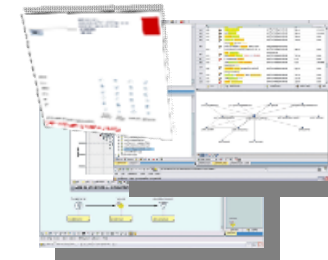


Query Accelerator



IBM DB2 Analytics
Accelerator

Data Mining and Statistics



IBM SPSS Predictive
Analytics Software

The IBM zEnterprise Smarter Analytics Foundation is designed to enable a data-centric approach towards business analytics by easing the integration of all aspects of decision management into operational systems



Analytics software. These are the tools that deliver actionable insights from data.

Predictive View



Data warehouses, marts, etc. These sources support reporting and predictive model creation.

Historical View



The operational systems that house the book of record. These sources are critical to day-to-day business processes.

Real-Time View

A Closer Look: Elements of the IBM zEnterprise Smarter Analytics Foundation

IBM zEnterprise Analytics System 9700 / 9710



- A highly competitive solution specifically designed to support a complete business analytics and data warehouse environment on System z
- A customizable and integrated solution of hardware, software and services that enables rapid integration of Decision Management into operational systems
- Combines the availability and security of System z with the characteristics of an appliance that enables mixed workload analytics to drive business optimization with information-led actionable decisions

IBM DB2[®] Analytics Accelerator



- A workload optimized appliance that enables the integration of business insights into operational processes
- Unprecedented response times enable 'train of thought' analyses frequently blocked by poor query performance
- Deep integration with DB2 z/OS[®] provides transparency to all applications
- Queries are automatically executed in the most efficient location
- Appliance hands-free operations, eliminating most database tuning tasks
- Included in the IBM zEnterprise Smart Analytics System 9700 (optional element of the 9710)

IBM zEnterprise BladeCenter[®] Extension



- Extends System z qualities of service to distributed applications accessing data or applications hosted on System z, facilitating lower overall cost and an improved user experience
- Preserves existing application architecture: no modifications required for operating systems or applications
- An integrated solution: infrastructure is built and tested at the factory
- Improves the connectivity between distributed applications and IBM System z through isolated, secure, redundant and automatically configured high-speed network connection

IBM zEnterprise Analytics System 9700

Mixed Workloads for Next Generation Business Analytics

An integrated solution designed and tested to support rapid deployment of business analytics across the enterprise



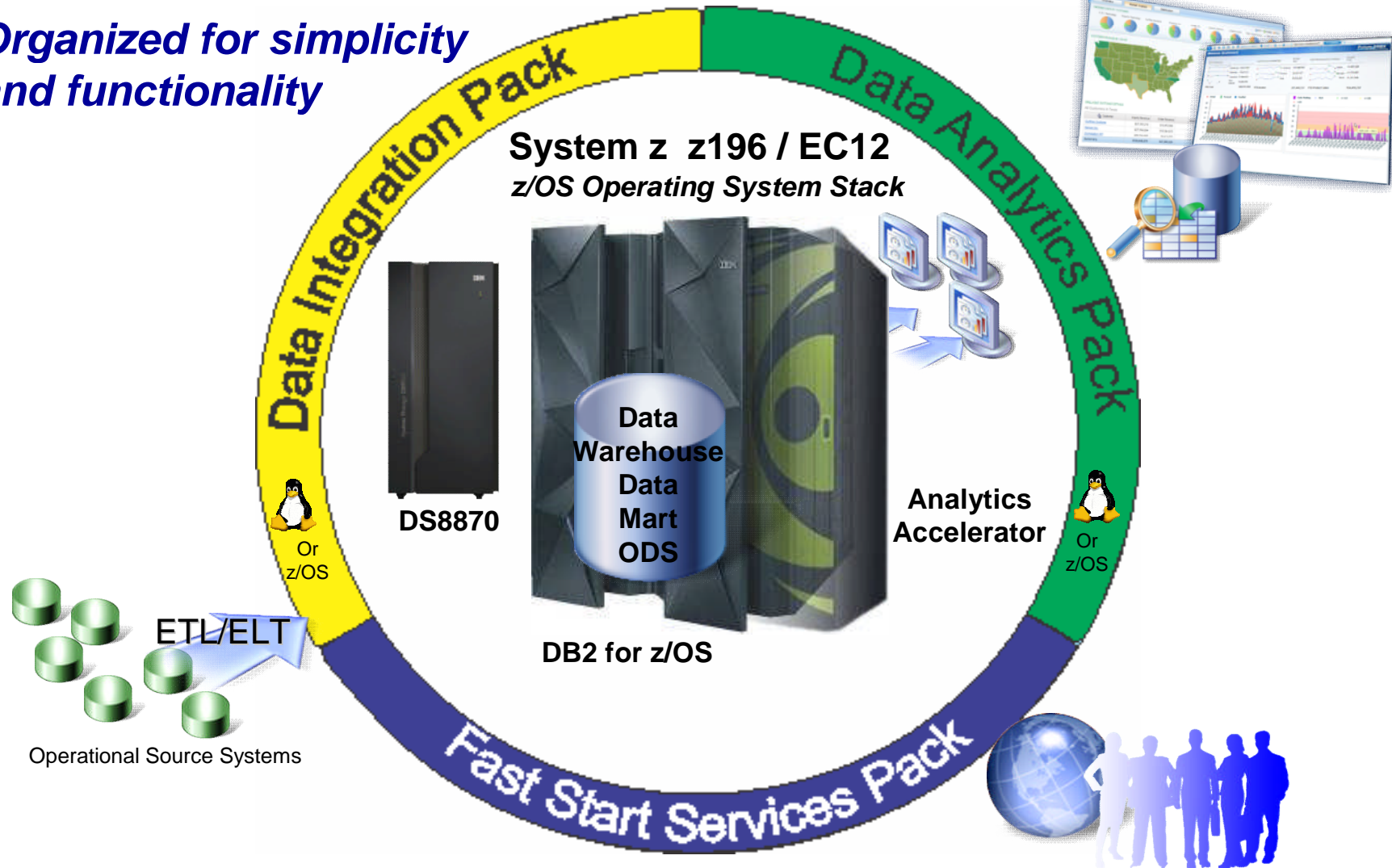
***Analytics Infrastructure
in-a-box***

- ***Integrated offering of hardware, software, and optional services***
- ***Secure, Available Business Analytics***
- ***Simplified administration***
- ***Optimized software stack***
 - *OS, DB2, Utilities, InfoWarehouse, Cognos, SPSS*
- ***Plus OPTIONAL PACKS –***
 - ***To create end-to-end solution***

IBM zEnterprise Analytics System 9700

Flexibility in Critical Data Decision Systems

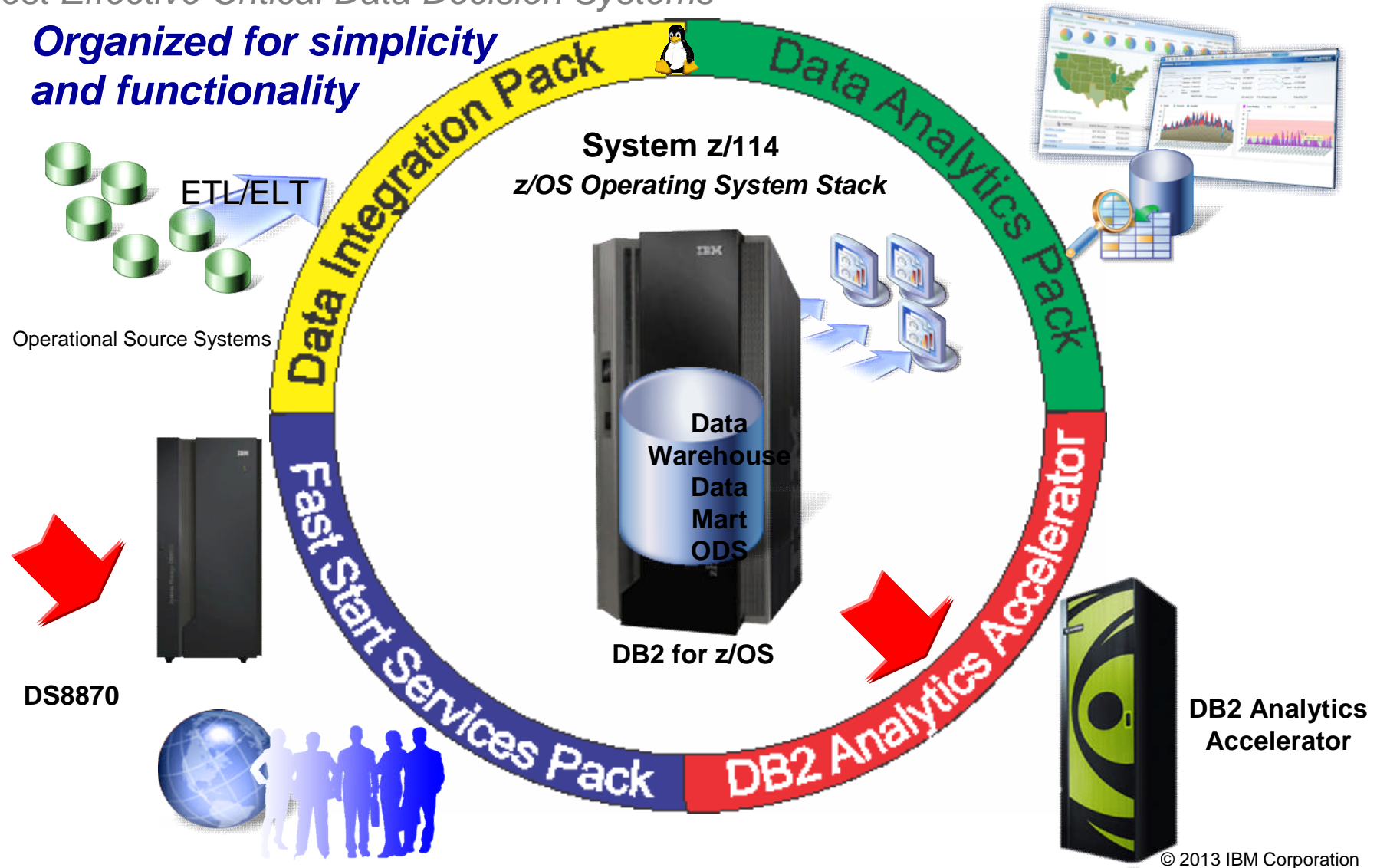
**Organized for simplicity
and functionality**



IBM zEnterprise Analytics System 9710

Cost Effective Critical Data Decision Systems

Organized for simplicity and functionality



Data Analytics Pack

Delivering information when, where, and how each user needs it



■ Delivers information where, when and how it is needed

- Self-service reporting and analysis
- Individualized by user
- Automated delivery of information in context
- Author once, consume anywhere

■ Full range of BI capabilities

- Query, reporting, analysis, dashboarding, realtime monitoring

Data Integration Pack

Delivers data integration capabilities, and includes a common metadata server to support reuse and enhanced governance, as well as capabilities to support creating managing project blueprints, to help improve project visibility and decrease project risk.

■ Information Server for Data Integration:

- Discovery
- Metadata Workbench
- DataStage
- BluePrint Director
- Data Architect
- InfoServices Director
- FastTrack
- Change Data Capture

DB2 Analytics Accelerator V3

Further extending the features



Blending System z and Netezza technologies to deliver unparalleled, mixed workload performance for complex analytic business needs.

More insight from your data

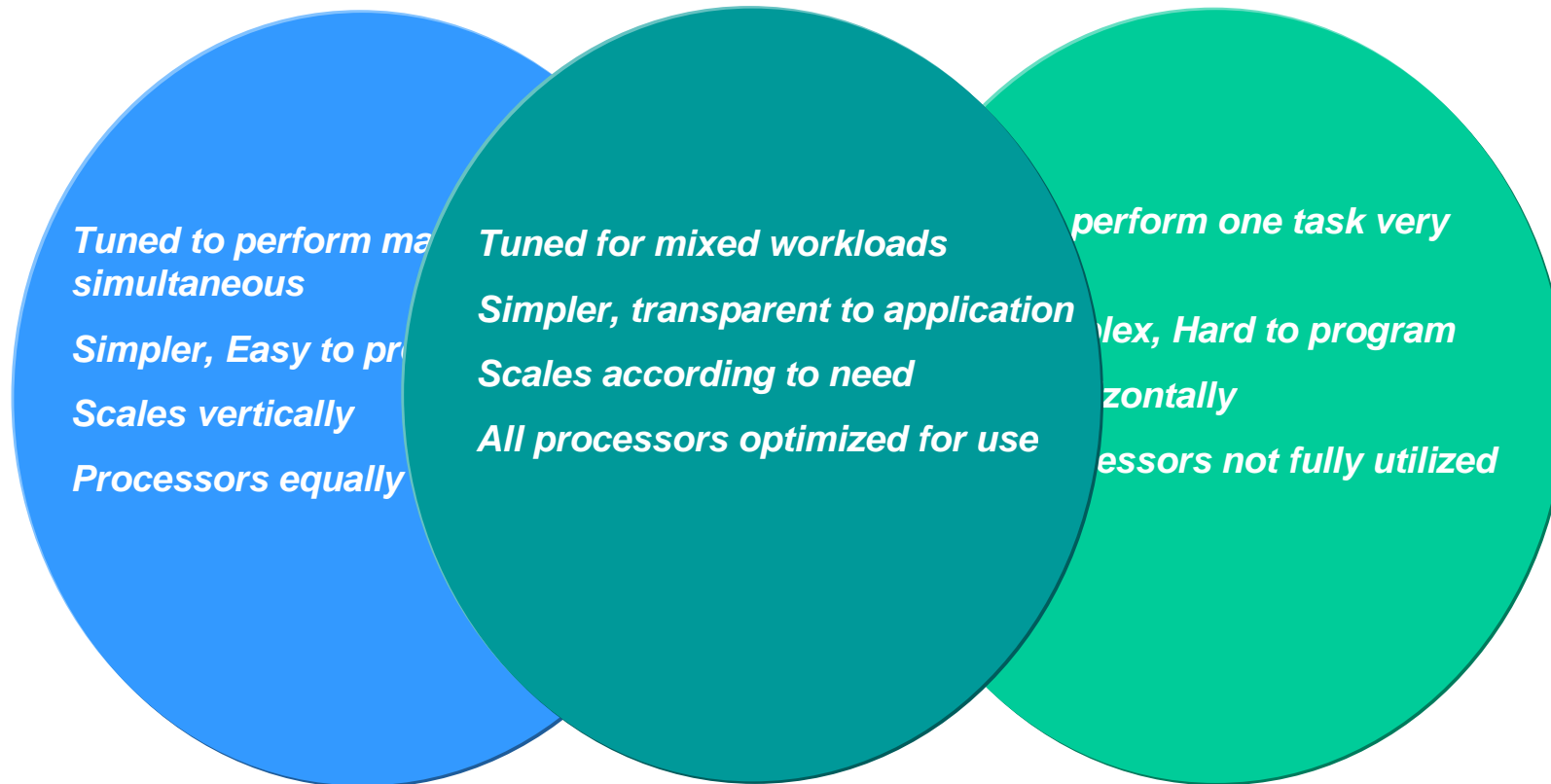
- Unprecedented response times for “right-time” analysis
- Complex queries in seconds rather than hours
- Transparent to the application
- Inherits all System z DB2 attributes
- No need to create or maintain indices
- Eliminate query tuning
- Fast deployment and time-to-value

DB2 for z/OS : Mixed Architecture – Hybrid Computing

Hybrid Parallel Processing (HPP)

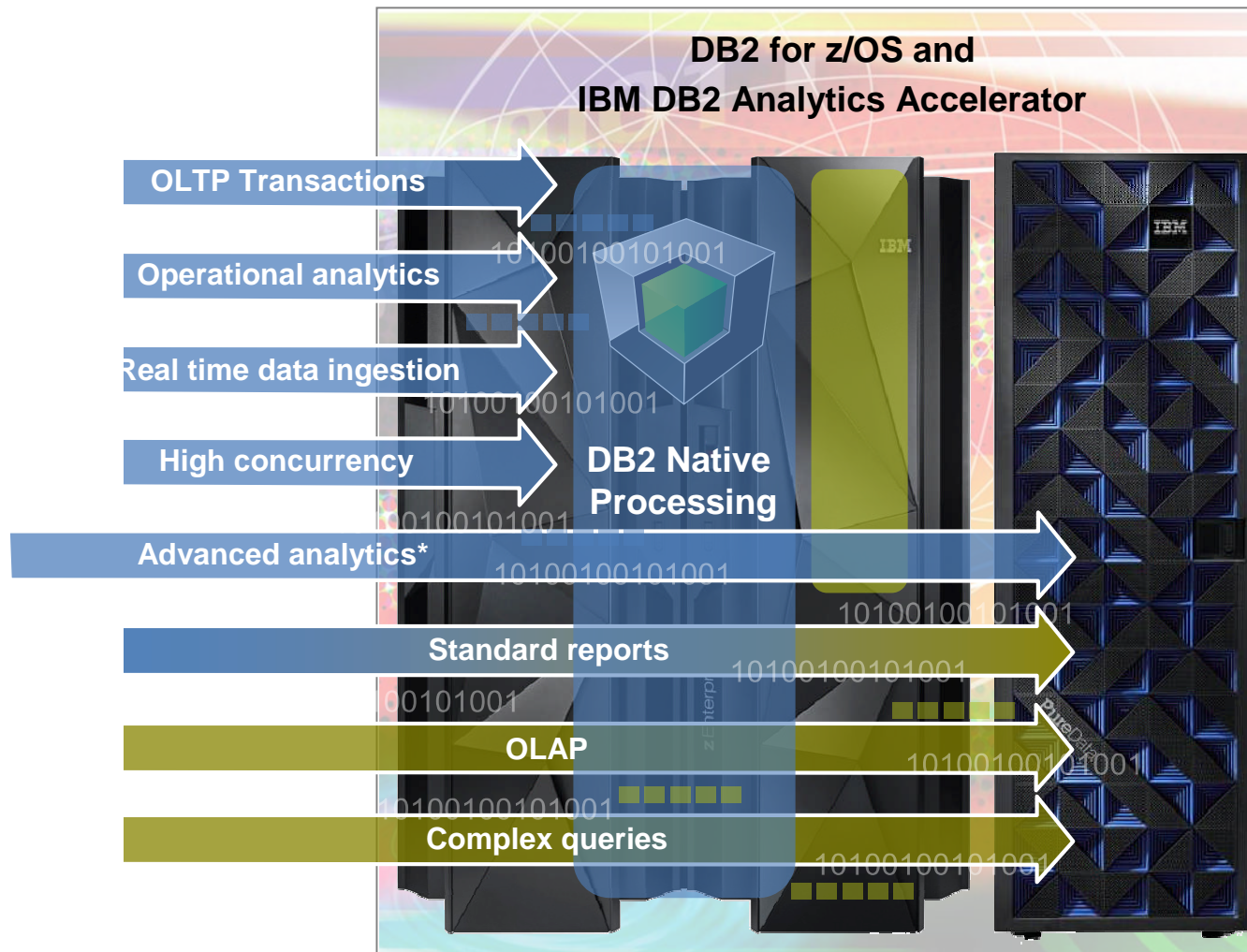
Symmetric Multiprocessing (SMP)

Massively Parallel Processing (MPP)



Most data warehouses have a mixture of queries that require the unique capabilities of both SMP and MPP.

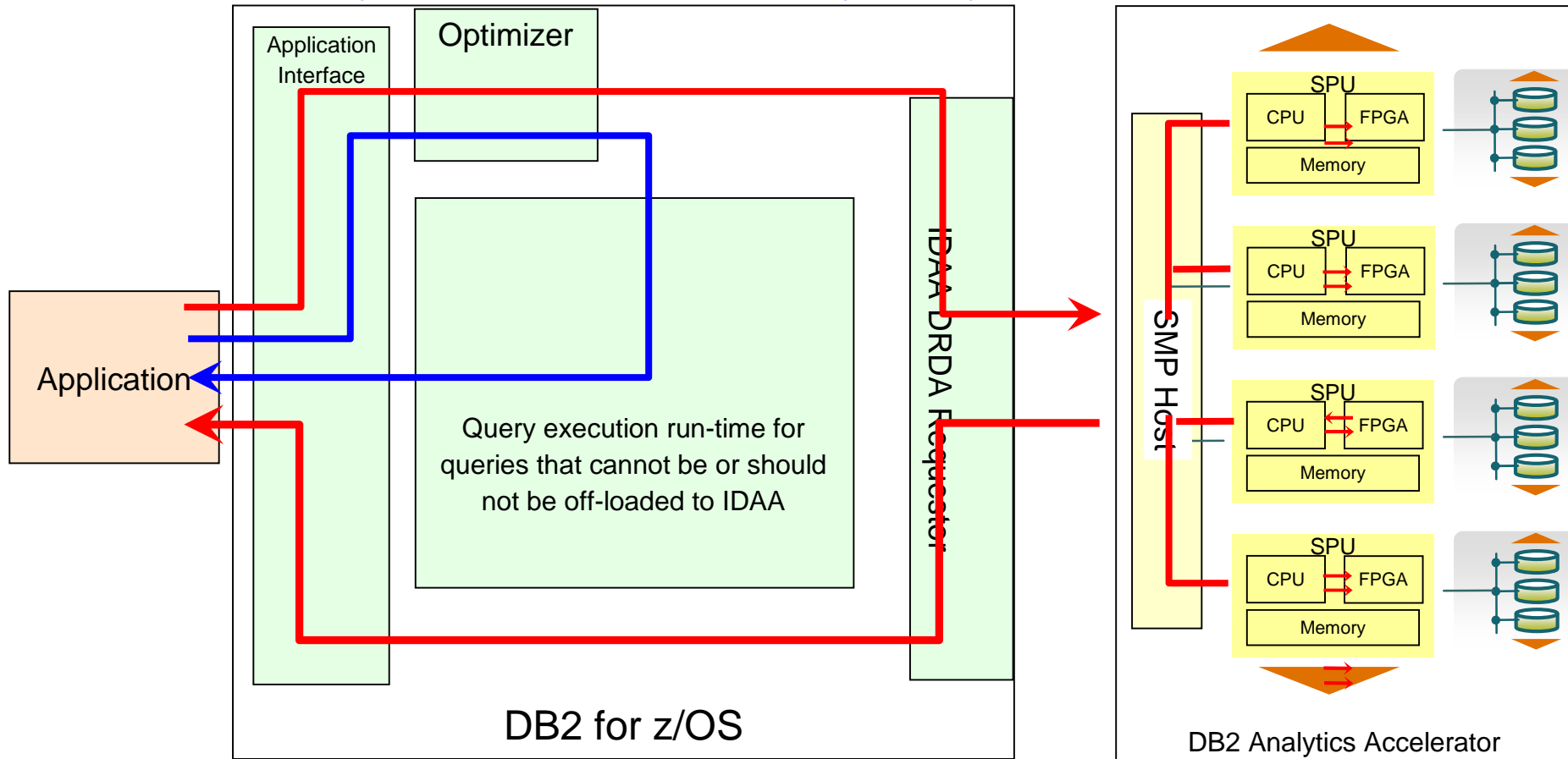
Did you know: DB2 for z/OS delivers a single, workload-optimized system for both operations **AND** warehousing?



- **Simplification**
- **High fidelity data**
- **Competitive price/performance**
- Dynamic routing for most efficient fit for purpose execution architecture
- Combines the strengths of both System z and Netezza technology
- Merges operational and data warehouse into a single optimized environment
- Single environment for security, logging, back-up, and recovery

Combining the Best...

...transaction system with the best analytics system



—————> Queries executed without DB2 Analytics Accelerator
 —————> Queries executed with DB2 Analytics Accelerator

DB2 Analytics Accelerator V3

Lowering the costs of trusted analytics



What's New?

- **High Performance Storage Saver**
 - Store a DB2 table or partition of data solely on the Accelerator.
- **Incremental Update**
 - Enables continual updates to Accelerator data.
- **zEnterprise EC12 Support**
 - Supports zEnterprise EC12, z196, z114
- **Query Prioritization**
 - Brings System z workload management prioritization down to the individual query
- **High Capacity**
 - Support has been extended to include the entire Netezza 1000 line (1.28 PB)
- **UNLOAD Lite**
 - *Reduces z/OS MIPS consumption, by moving the preparation off System z.*

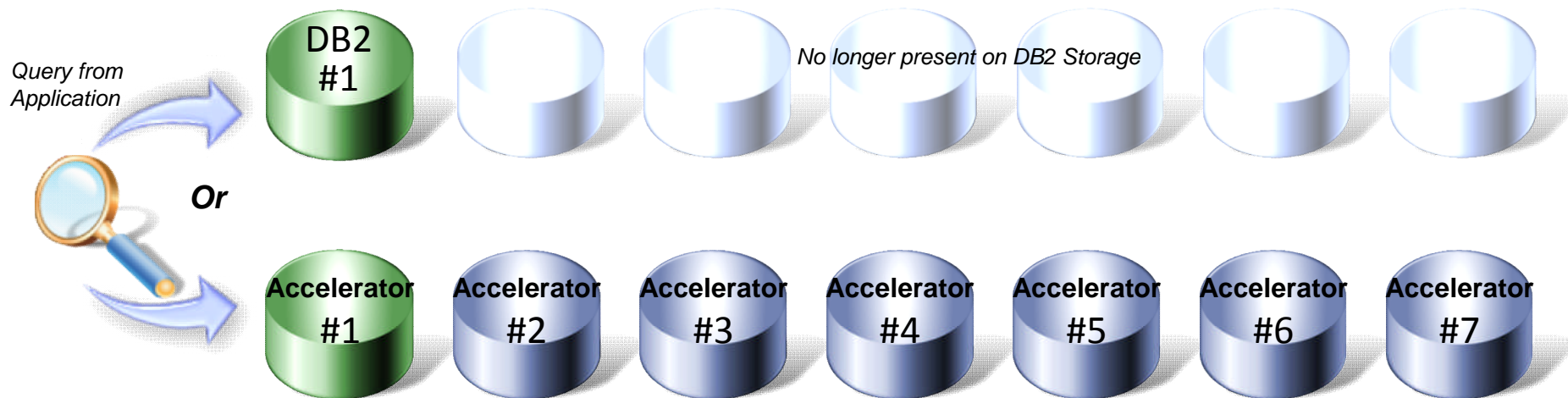
High Performance Storage Saver

Reducing the cost of high speed storage

⑩ Time-partitioned tables where:

- only the recent partitions are used in a transactional context (frequent data changes, short running queries)
- the entire table is used for analytics (data intensive, complex queries).

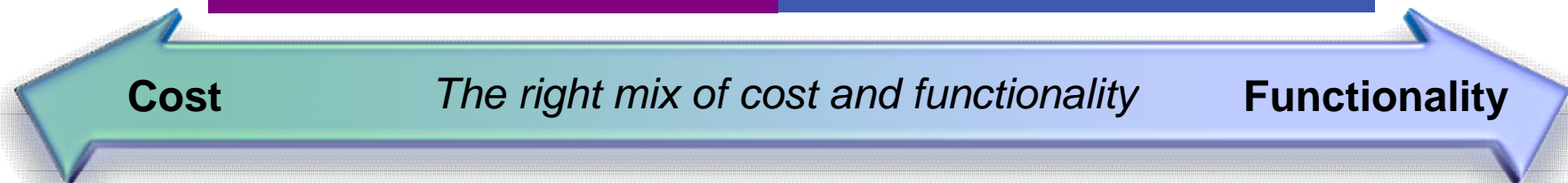
⑩ DB2 partitions are deleted after the High Performance Storage Saver are created on the accelerator



Storage options to match data needs

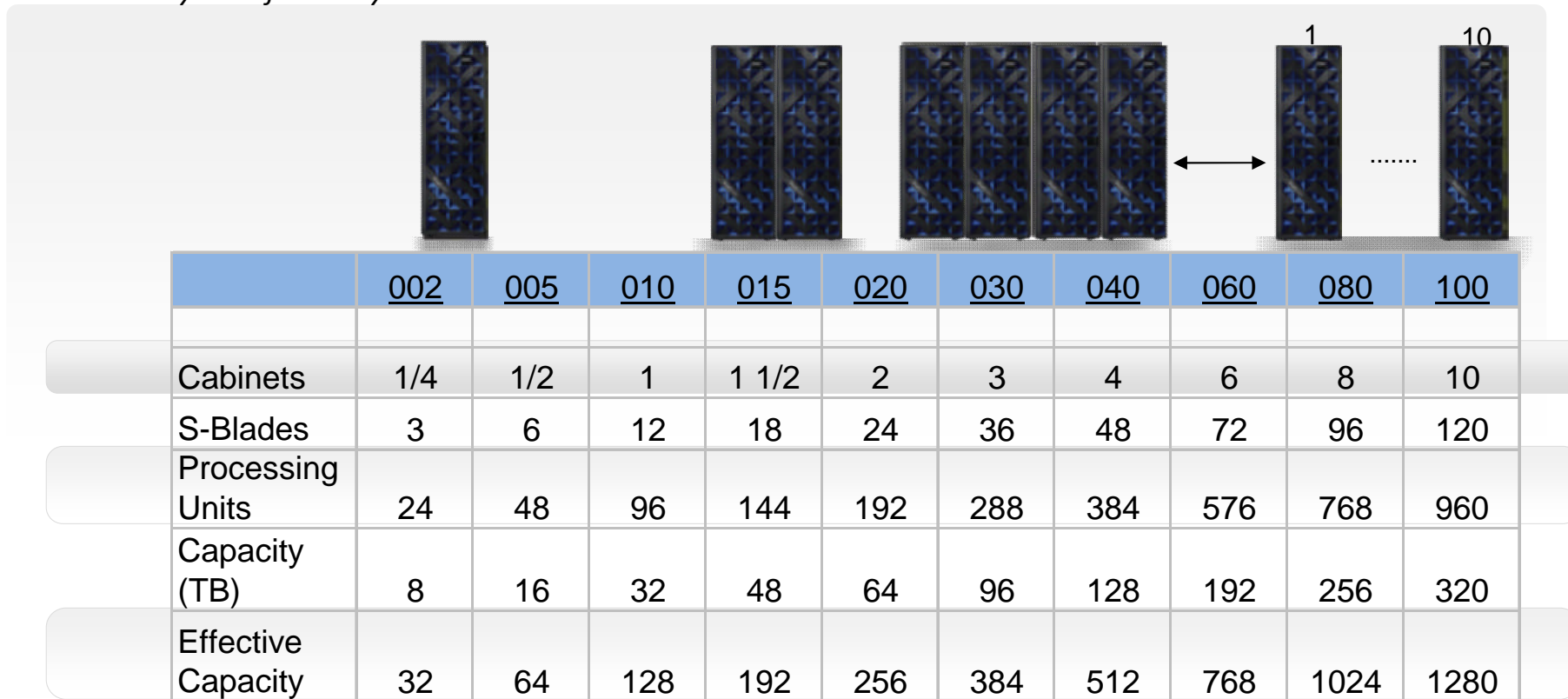
Optimized in both price and performance for differing workloads

High Performance Storage Saver	Database Resident Partitions
Single Disk Store	Dual Disk Store
<ul style="list-style-type: none"> • Only stored on Accelerator storage (Less Cost) • Optimized performance for deep analytics, multifaceted, reporting and complex queries • Only full table update or full partition update from backup • Same high speed query access transparently through DB2 	<ul style="list-style-type: none"> • Stored on both DB2 and Accelerator storage • Mixed query workload with transactions, single record queries and record updates with deep analytics, multifaceted, reporting and complex queries. • Full table, full partition update, Incremental update from DB2 data • Same high speed query access transparently through DB2



N1001 Systems and Sizes

PureData System for Analytics N1001

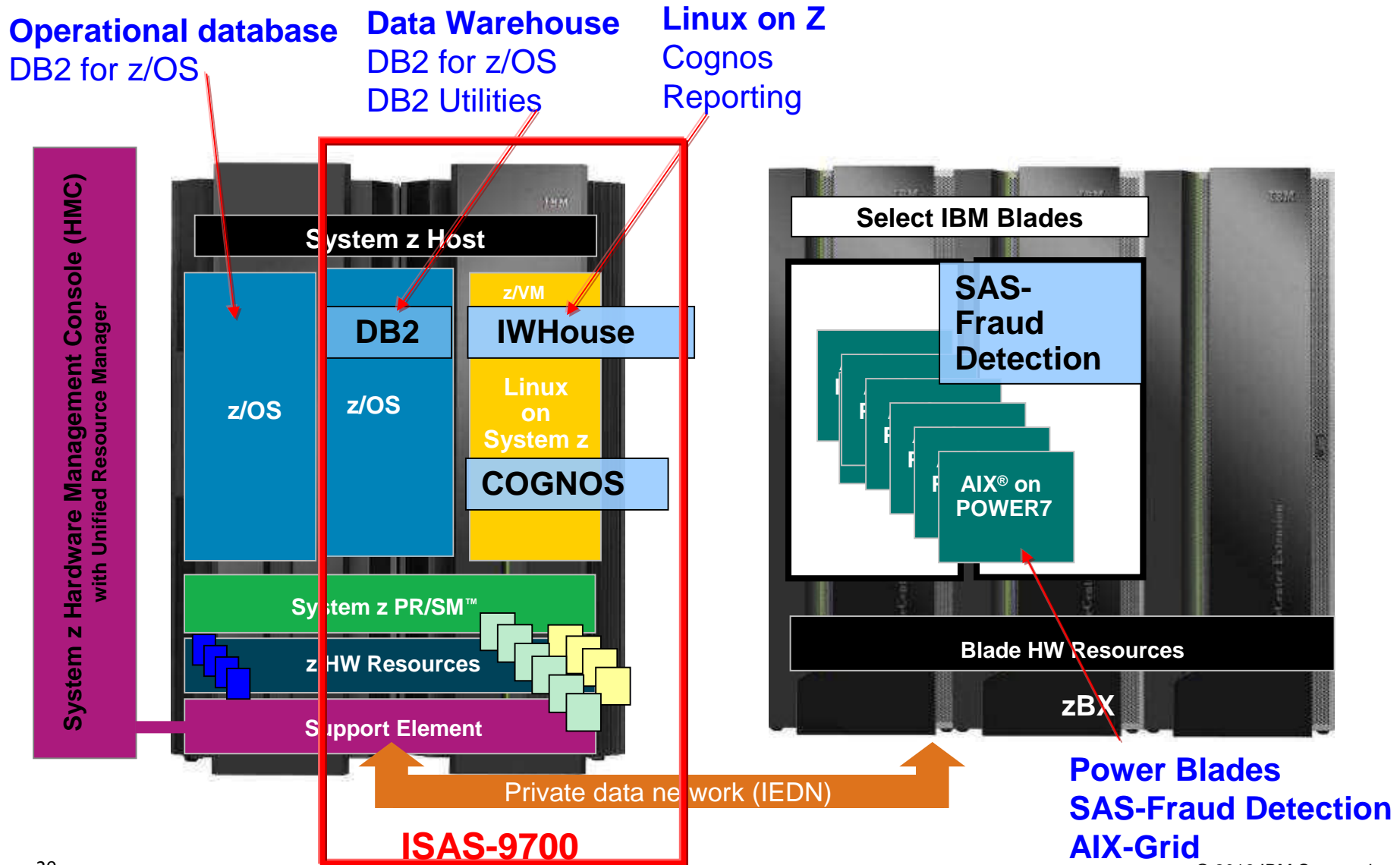


Predictable, Linear Scalability throughout entire family

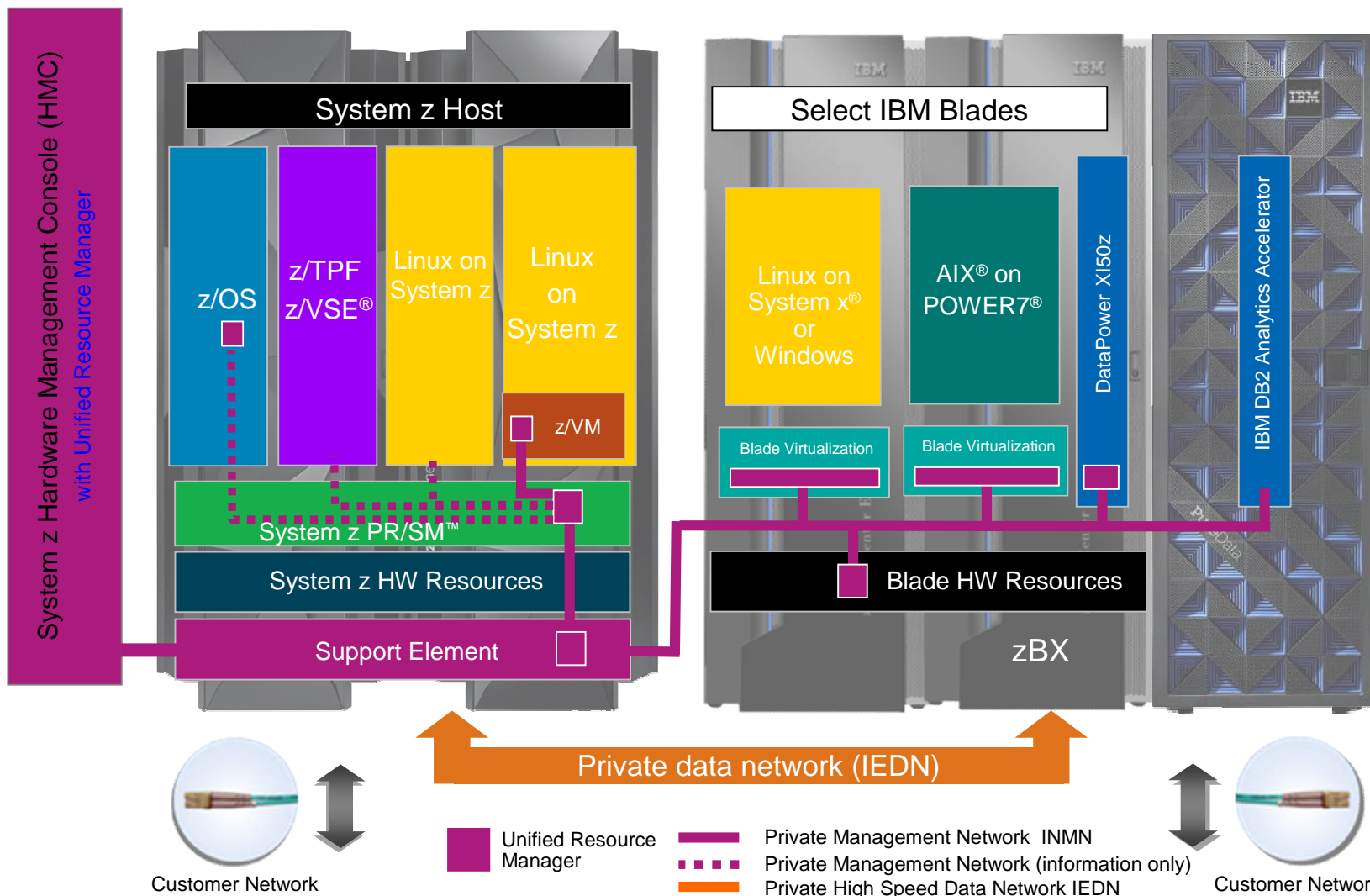
Capacity = User Data space
 Effective Capacity = User Data Space with compression

*: 4X compression assumed

End-to-end Business Analytics - Fraud Detection



zEnterprise contains all processing required for decision management within a single system image



IBM Analytics Tools:

*Making complex
business information
...understandable*



Translate data from various corporate systems into:

- Deliver information where, when and how it is needed
 - Self-service reporting and analysis
 - Individualized by user
 - visually rich presentations
 - gauges, maps, charts, and other graphical elements
- Integrated results from multiple sources, combined in a more meaningful way
- While delivering integrated offerings designed to optimize performance
.....***Delivered into the hands of business users***

Answering the questions – “Why?”

- **Reporting**
 - full breadth of report types
 - Access via email, portal, MS-Office, search and mobile devices etc.
 - Easy Integration of info from external sources
 - Push data and formats to other tools such as Excel



- **Analysis**
 - guided exploration
 - Easy click-through to details
 - Extreme query performance with the IBM IDAA

- **Dashboards**
 - at-a-glance - highly visual and intuitive
 - high impact views of complex info
 - operational, tactical, strategic
 - Designed to help monitor, measure, and manage corporate performance

“How are we doing?”



- **Advanced Analytics**
 - Statistical analysis and trending
 - Forecasting and key measurements
 - In DBMS scoring and temporal data with DB2 for z/OS
 - Integration with SPSS

BI Mobility – QMF/Cognos

*Making information
...accessible!*



*Mobile, real-time,
and portable.*

- **Advances**

- Leverage mobile technology to accelerate delivery of interactive analytics to executives and frontline workers
- Address challenges of compressed decision cycles with real-time analytics
- Integrate analytics in everyday work and in workflow to inform business processes

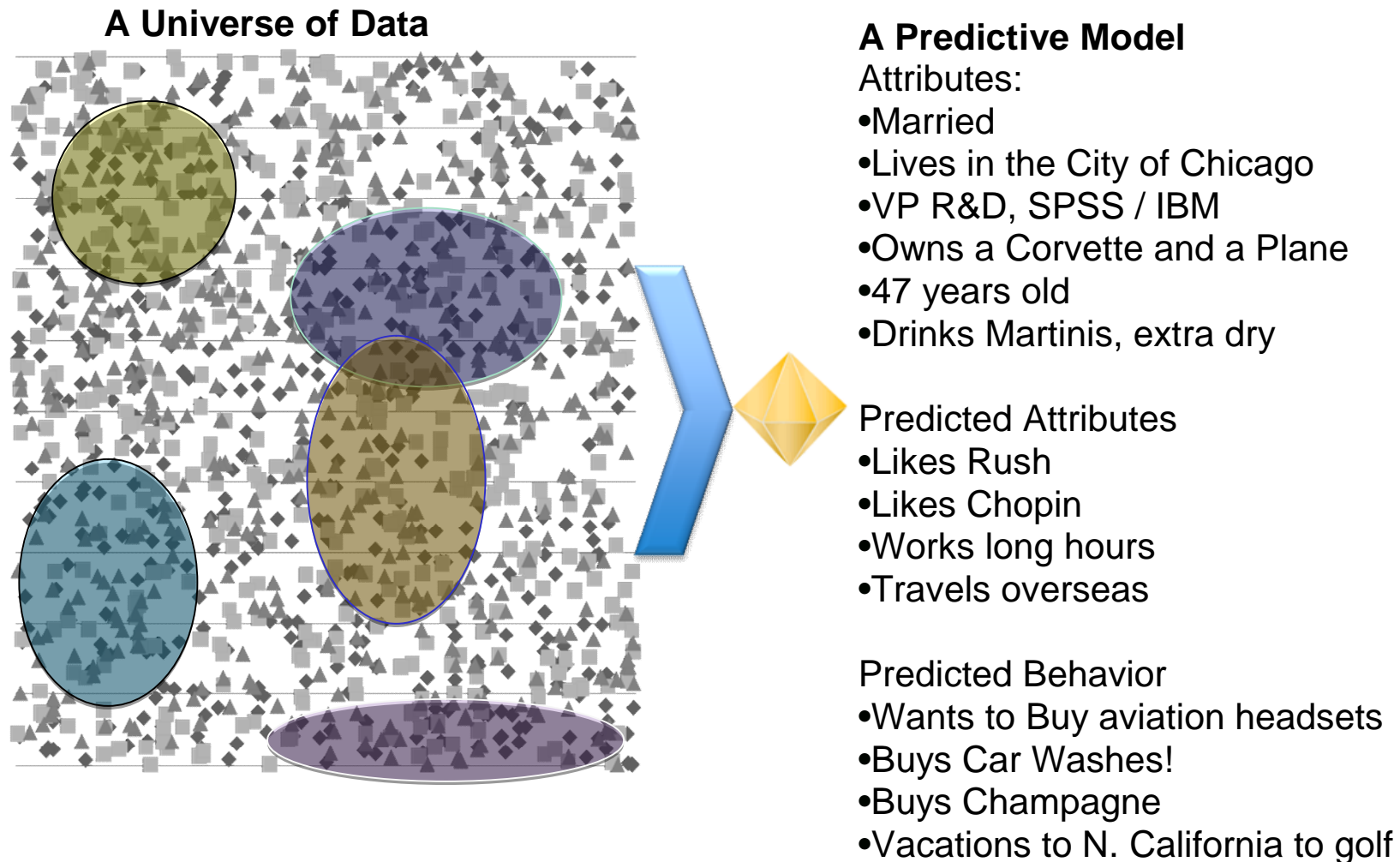
- **Key features**

- Mobile interaction on iPhone and iPad
- Interactive, disconnected reports
- Real-time monitoring of in-flight information
- Mashups
- Business-driven workflow



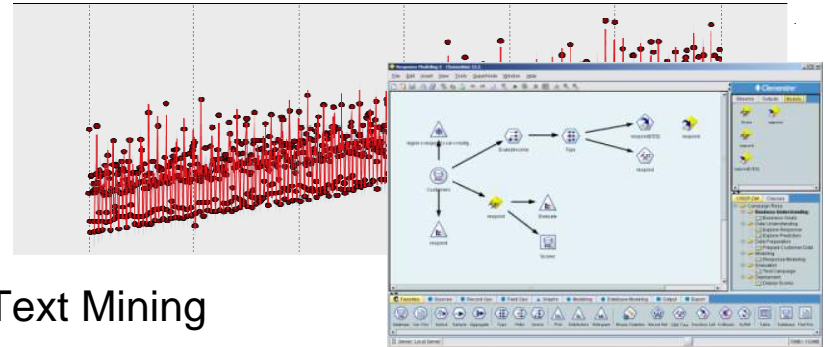
Taking Predictive Analytics to the Next Level

Predict the Behavior of the Next Case by modeling



IBM SPSS –

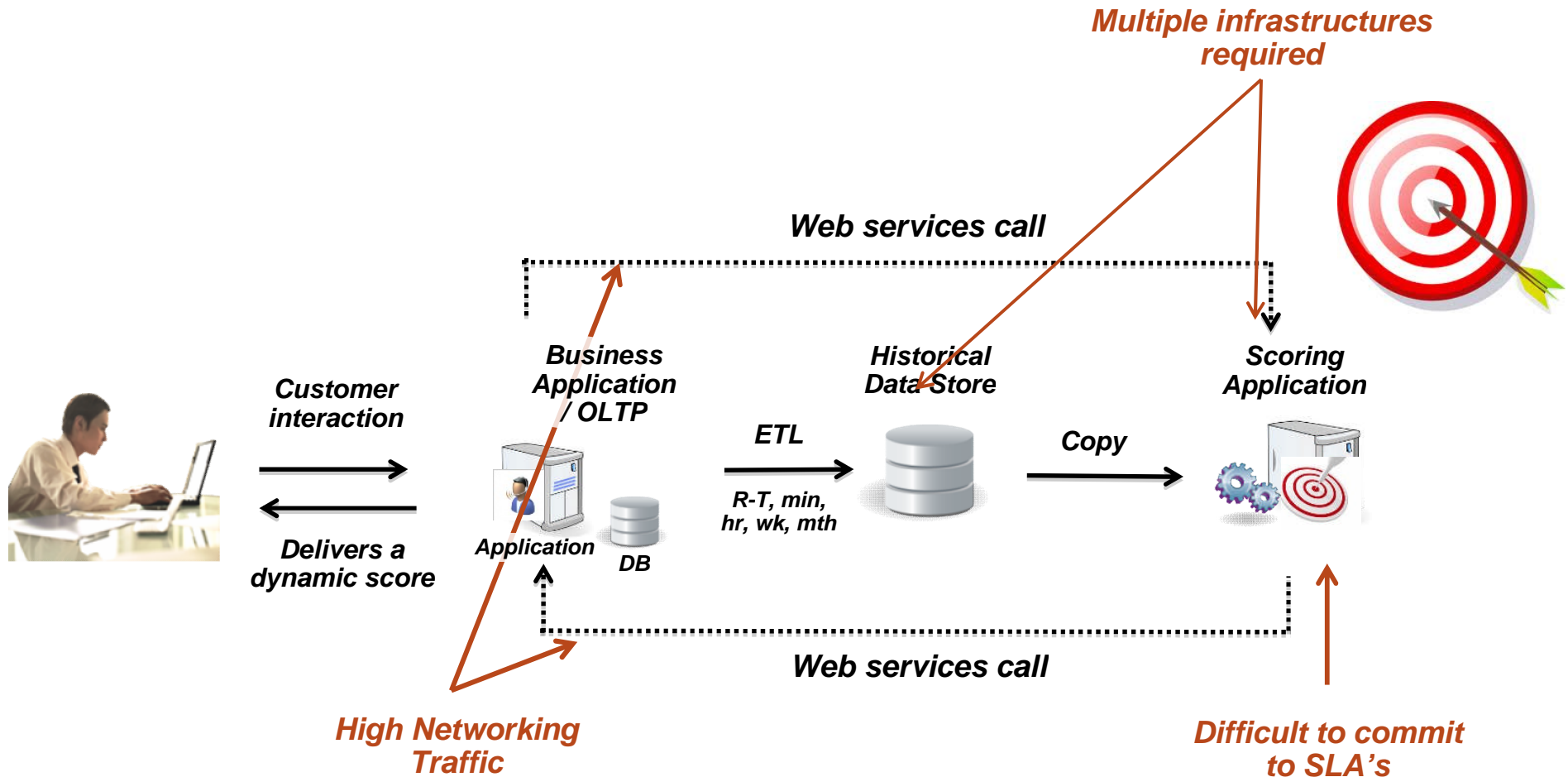
*Making information
...predictive*



- High-performance data mining and text analytics workbench
 - Set of mining algorithms that provide insight and prediction
 - Identify patterns and trends in data that can be used to optimize business decisions
 - Cognos integration of SPSS models
- Benefits
 - Maximize Analyst Output
 - Create Practical Solutions Faster
 - Open & Efficient Architecture
 - Data mining within standard databases
- Data/Text Mining
 - natural language processing
 - heuristic rules
 - statistical techniques
 - to reveal meaning in text
- Collaboration & Deployment Services
 - Flexible enterprise foundation for managing and deploying analytics throughout the organization
 - Benefits
 - Automates analytical processes
 - Securely share and reuse analytic models
 - Streamlines delivery of analytical information on a scheduled or real-time basis

WEB-DEMO of MODELER at: <http://ibmtvdemo.edgesuite.net/software/analytics/spss/demos/modeler/>

The Impact on Real-time Scoring



IBM Smarter Analytics – Anti-Fraud, Waste and Abuse Solution***Anti-fraud, Waste and Abuse Solution******For Healthcare – For Insurance***

Detect suspicious transactions **prior** to payment, minimize loss from overpayments, and recommend method of intervention

Solution overview

Provide prepayment fraud detection with adaptive system that learns from the latest data

- Detect suspicious transactions using predictive models and smarter business rules
- Harness analytics to recommend best method of interaction for each transaction

Solution benefits

- Dramatically reduce costs from fraud and abuse
- Pay valid transactions faster and with greater certainty
- More efficient use of investigative resources reduces costs and increases rate of return

Business Outcomes

- State government stopped fraud prior to payment and saved on average \$220 million annually
- Healthcare provider significantly reduced false positive rate from 79 percent to 29 percent
- Organizations applying predictive analytics are 2.2 more likely to outperform their peers¹.

Workload Assessment

- **Customer**
 - Collects information from dynamic statement cache, supported by step-by-step instruction and REXX script (small effort for customer)
 - Upload compressed file (up to some MB) to IBM FTP server
- **IBM**
 - Import data into local database
 - Quick analysis based on known DB2 Analytics Accelerator capabilities

Key contact: Data Warehouse System z/Germany/IBM

Report for a first assessment:

- **Acceleration potential for**
 - **Queries**
 - **Estimated time**
 - **CP cost**

IBM Smart Analytics Opt
Center of Excellence, Datawarehouse on

Query Summary

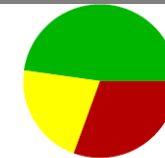
	Total	With potential	Uncertain	W/o potential
Queries	23	11 (48%)	5 (22%)	7 (30%)
Query Blocks	23	11 (48%)	5 (22%)	7 (30%)
Elapsed Time	144801.47	106821.61 (74%)	8150.21 (6%)	29829.66 (21%)
CPU Time	21300.25	11420.12 (54%)	1453.14 (7%)	8426.98 (40%)

Queries	23	100%
... no eligible blocks	7	30%
... not read only	0	0%
... with very large dim.	1	4%
... with quant. pred.	0	0%

Leaf Query Blocks	23	100%
... with aggregations	23	100%
... with UDFs	0	0%
... with unsupported functions	6	26%
... with unsupported join types	0	0%
... with very large dimensions	1	4%

Start trace time: Apr 2, 2010 9:41 AM
 End explain time: Apr 2, 2010 4:37 PM
 Min stmt cached: Apr 2, 2010 9:44 AM
 Max stmt cached: Apr 2, 2010 4:37 PM

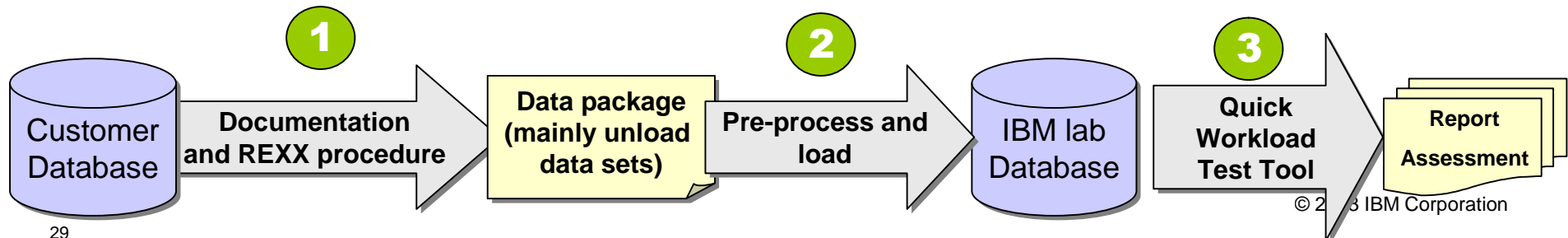
Disclaimer: Information provided in this document is for information purposes only and does not guarantee characteristics nor imply supported features of IBM products. V20100331
 Schema: IGBURG -- Date: 4/12/10 -- Page: 1



Query blocks with acceleration potential
 Query blocks with uncertain potential
 Query blocks without acceleration potential



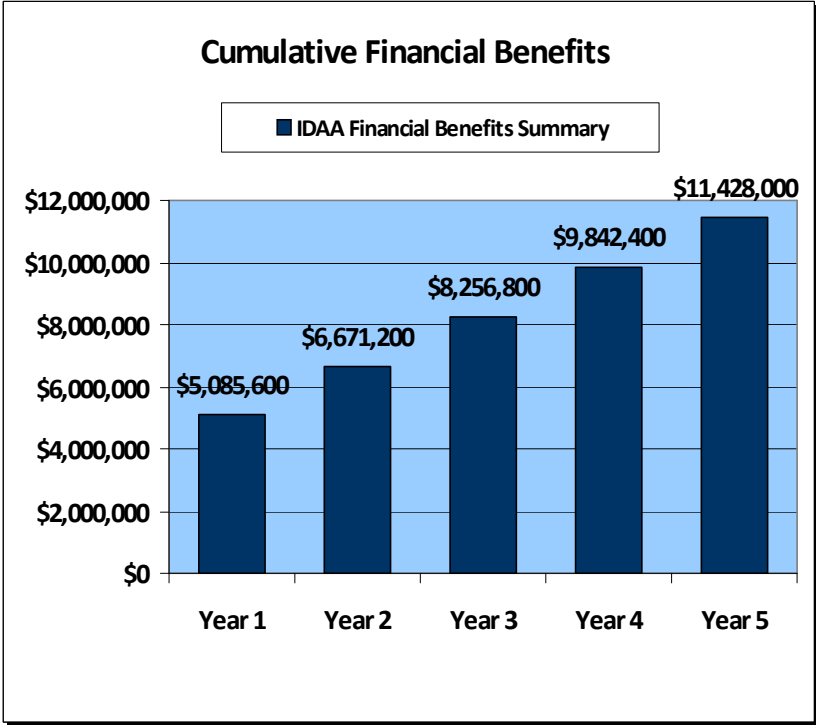
Elapsed time with acceleration potential
 Elapsed time with uncertain potential
 Elapsed time without acceleration potential



Client Value Engagement: 5-Year: Analytics Accelerator Solution Benefits

The following benefits were determined through the CVE process based on on-site interviews, conference calls and questionnaires. All of the benefits can be achieved through proper implementation as determined by the solution blueprint within this CVE final deliverable

System Z CPUs	\$7.00 Mil
IT Administrator Productivity	\$.292.5 Mil
Speed BI Development Projects	\$.562.5 Mil
BI Analysis Productivity Enhancements	\$1.638 Mil
Remove IT Infrastructure	\$1.935 Mil



Would you like to know more...

about how zEnterprise business intelligence and analytic offerings will enable your enterprise to become information-driven?

www.ibm.com/systems/zbi

Innovate with data insights

Turn ideas into action



Data is growing at an astounding rate and extracting value from it can be a daunting task. Enterprises are transforming and driving new business revenue, increasing profits, and making targeted offers to clients by integrating analytics into their core business processes. Suddenly, a customer inquiry turns into a new opportunity for a service or product. How can System z help you do this in business?

Special offer

[Clabby Analytics/Enterprise Computing Advisors: Choosing IBM zEnterprise for Next Gen Business Analytics Applications \(473KB\)](#)

Listen to these Podcasts

▶ Finding data to solve business questions

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- ☎ Call IBM: 1-866-883-8901
- Priority code: 101AS13W

IBM TechChat Series



IDC
Analyze the Future

WHITE PAPER
The Business Value of Predictive Analytics
Sponsored by: IBM zSeries

Author: Henry D. Morris
Date: June 2011

EXECUTIVE SUMMARY

An asset management firm is able to increase its marketing offer acceptance rate by 300%, an insurance company is able to identify fraudulent claims 30 days faster than before, a manufacturer is able to anticipate equipment maintenance issues, a bank is able to identify 50% of fraud cases within the first hour, and a communications company is able to increase customer satisfaction as measured by net promoter score by 25%.

These are just a few examples of the use of predictive analytics at organizations evaluated by IDC. As interest continues to build, we have defined as the "predictive economy," or the convergence of intelligent devices, social networking, pervasive cloud-based monitoring, and analytics, there is a significant decrease in the ability of managers to rely effectively only on experience or intuition to make decisions. The six change-related trends we are tracking are becoming and relevant, while the demand to respond faster and with greater insight to ongoing internal and external events based on facts is increasing.

Analytics techniques can be broadly segmented into those focused on information access and presentation and those focused on predictive analytics related to specific decisions. These techniques are complementary, and in the new intelligent economy, it is not only access to information but the ability to analyze and act upon it that create competitive advantage in commercial transactions, enable sustainable management of communities, and provide appropriate distribution of social, healthcare, and education services.

Predictive analytics may capture the thoughts of quantitative analysts pondering our endless offerings somewhere in the bowels of your company. Or it may trigger some silent nerves from a client or customer. The reality is that most managers (and staff) are not fully comfortable with the prospect of developing predictive models on their own — nor should they be. Clear knowledge in data mining and statistics analysis is not a widely available commodity. Yet an increasing number of managers in a growing number of organizations are acknowledging that predictive analytics can play an important role in enabling better decision making to support better interaction with customers, optimization of operations, and anticipation and mitigation of risk and fraud.

To find the latest whitepapers from –
consultants, analysts, solution architects

Contact local IBM zEnterprise Sales contact
to arrange a follow-on session
WW contact: joys@us.ibm.com

Thank You!

