

# IBM Smarter Analytics

## Infrastructure for zEnterprise

Transforming your business to be Information Driven

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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***

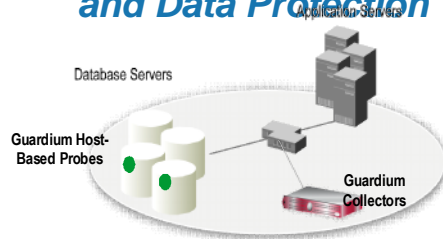
- ***Enterprises are modernizing and extending functionally***
  - Better decisions from the right information
  - Informed decisions at the point of contact
  - Consistency of information across organizations
- ***Which is driving operational characteristics requirements***
  - Cost of downtime is escalating
  - 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

*Master Data, Data Warehouse  
and Data Integration*



IBM InfoSphere Software

IBM Smart Analytics System 9700

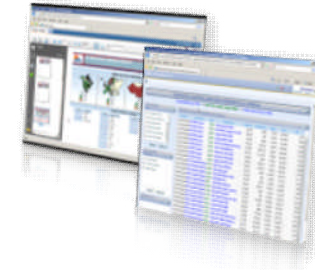


*Query Accelerator*



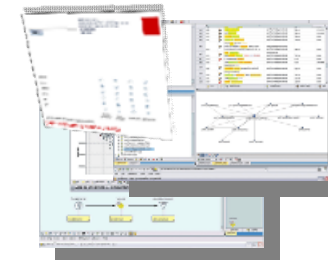
IBM DB2 Analytics  
Accelerator

*Dashboards / Reporting*



IBM Cognos  
Software / QMF  
ISV: SAS/IBI

*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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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*



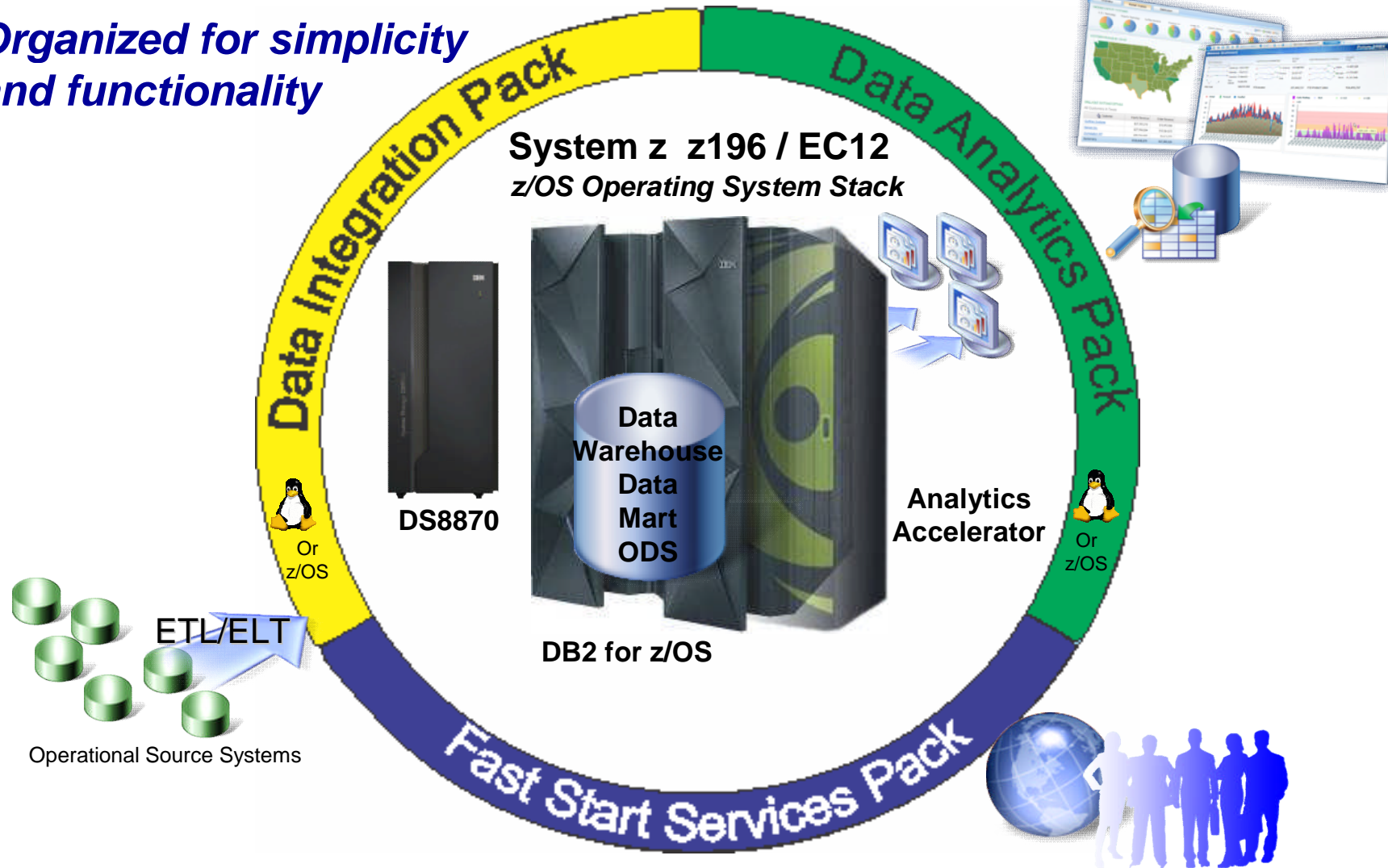
***Analytics Infrastructure  
in-a-box***

- ***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**

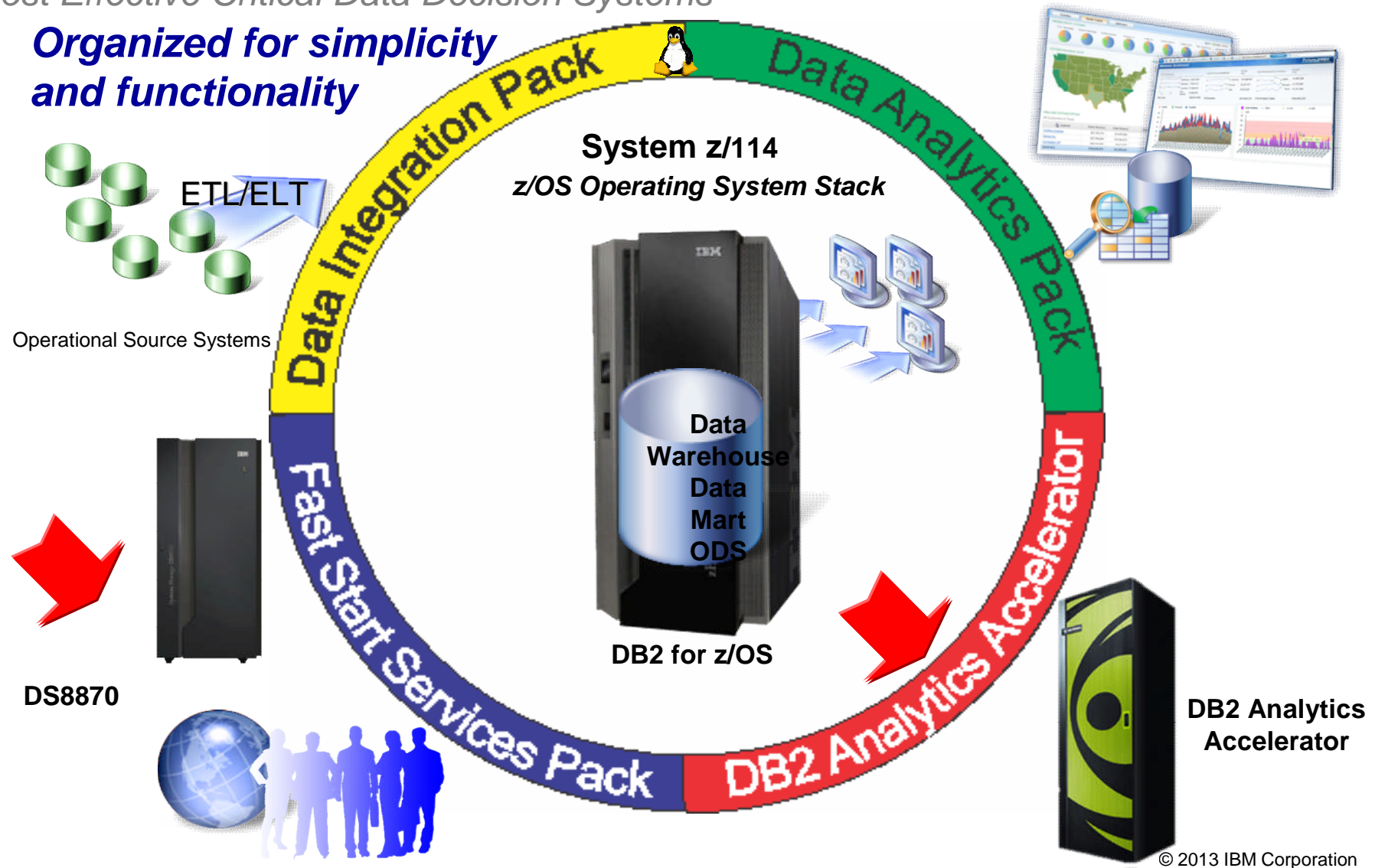




# IBM zEnterprise Analytics System 9710

*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***

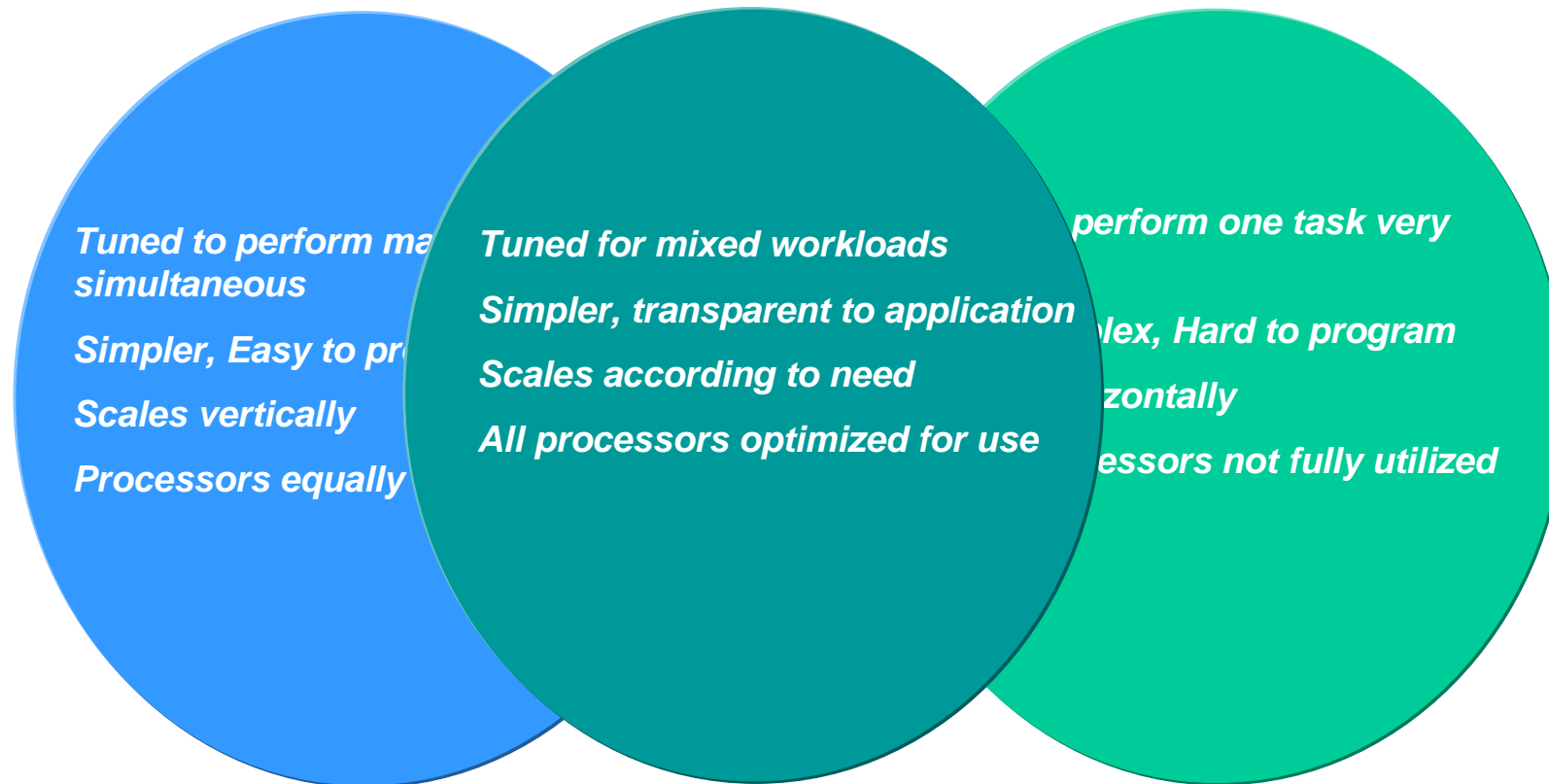
- Unprecedented response times for “right-time” analysis
- Complex queries in seconds rather than hours
- Transparent to the application
- Inherits all System z DB2 attributes
- No need to create or maintain indices
- Eliminate query tuning
- Fast deployment and time-to-value

## DB2 for z/OS : Mixed Architecture – Hybrid Computing

Hybrid Parallel Processing (HPP)

Symmetric Multiprocessing (SMP)

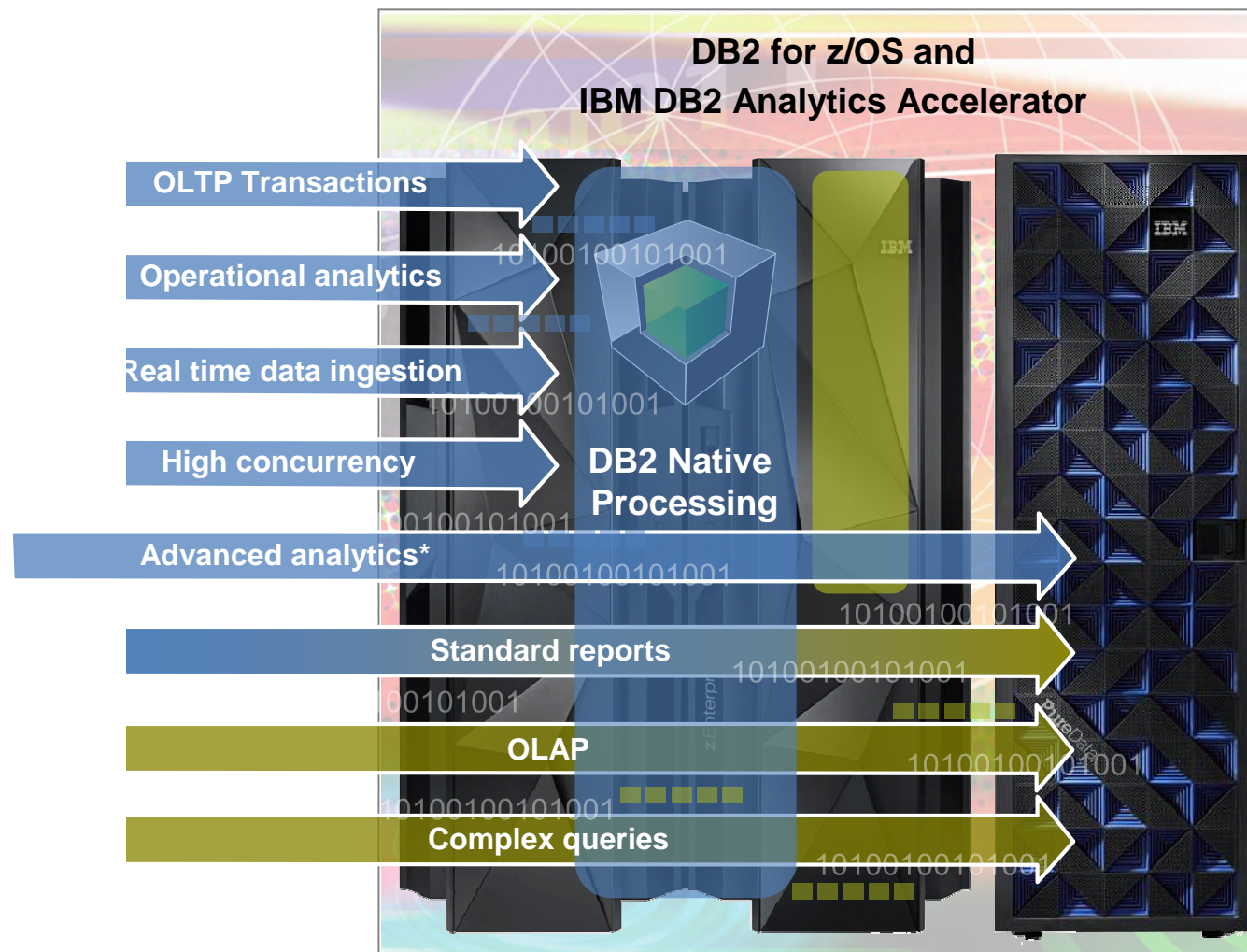
Massively Parallel Processing (MPP)



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



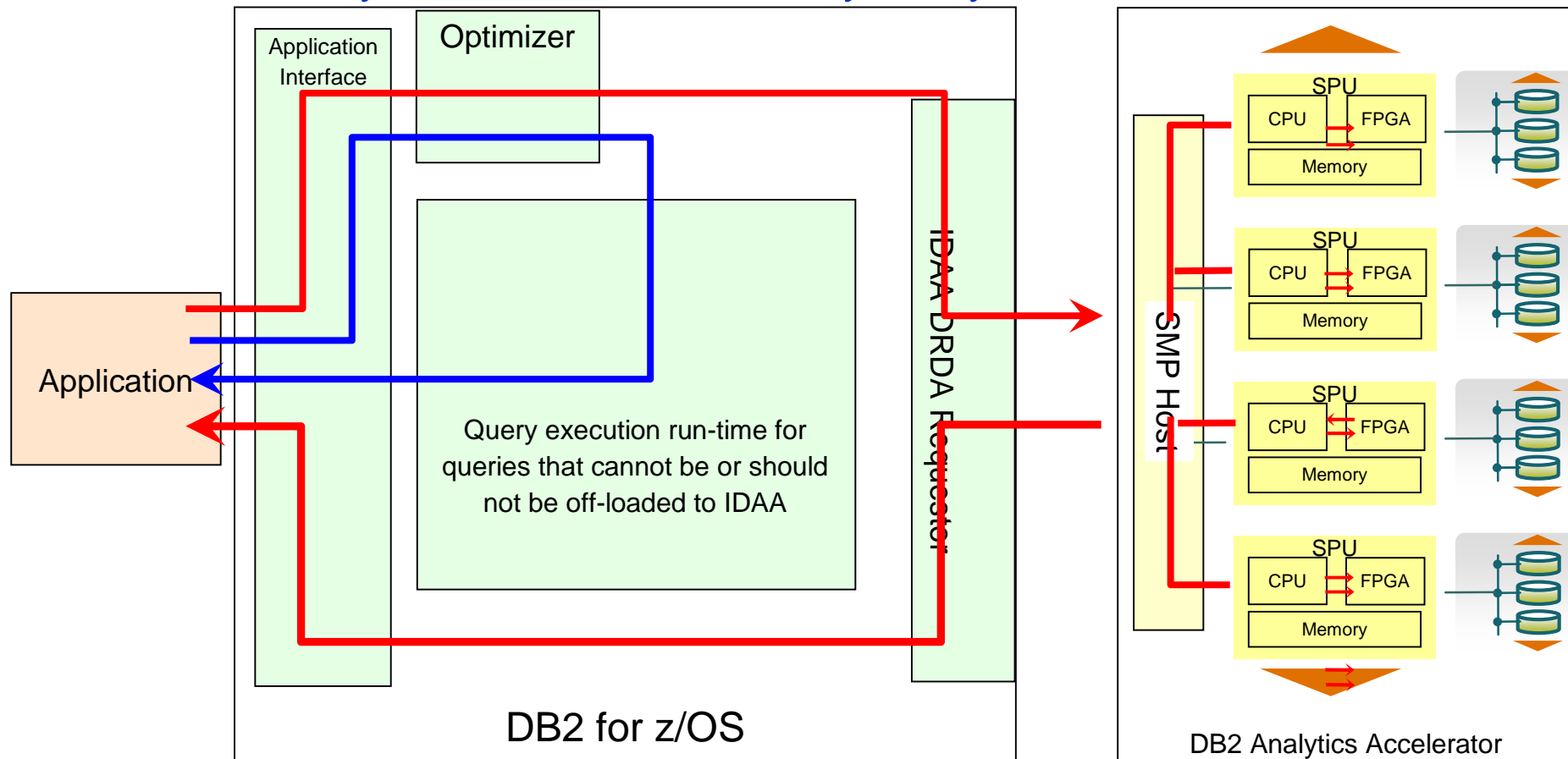
Did you know: DB2 for z/OS delivers a single, workload-optimized system for both operations **AND** warehousing?



- **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.*

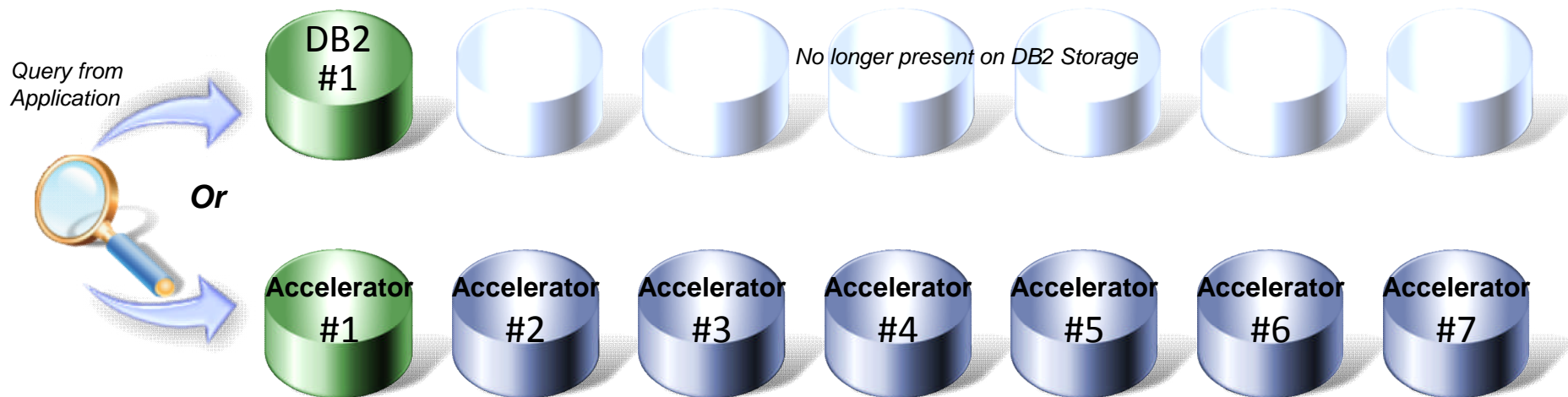
## High Performance Storage Saver

*Reducing the cost of high speed storage*

### ⑩ Time-partitioned tables where:

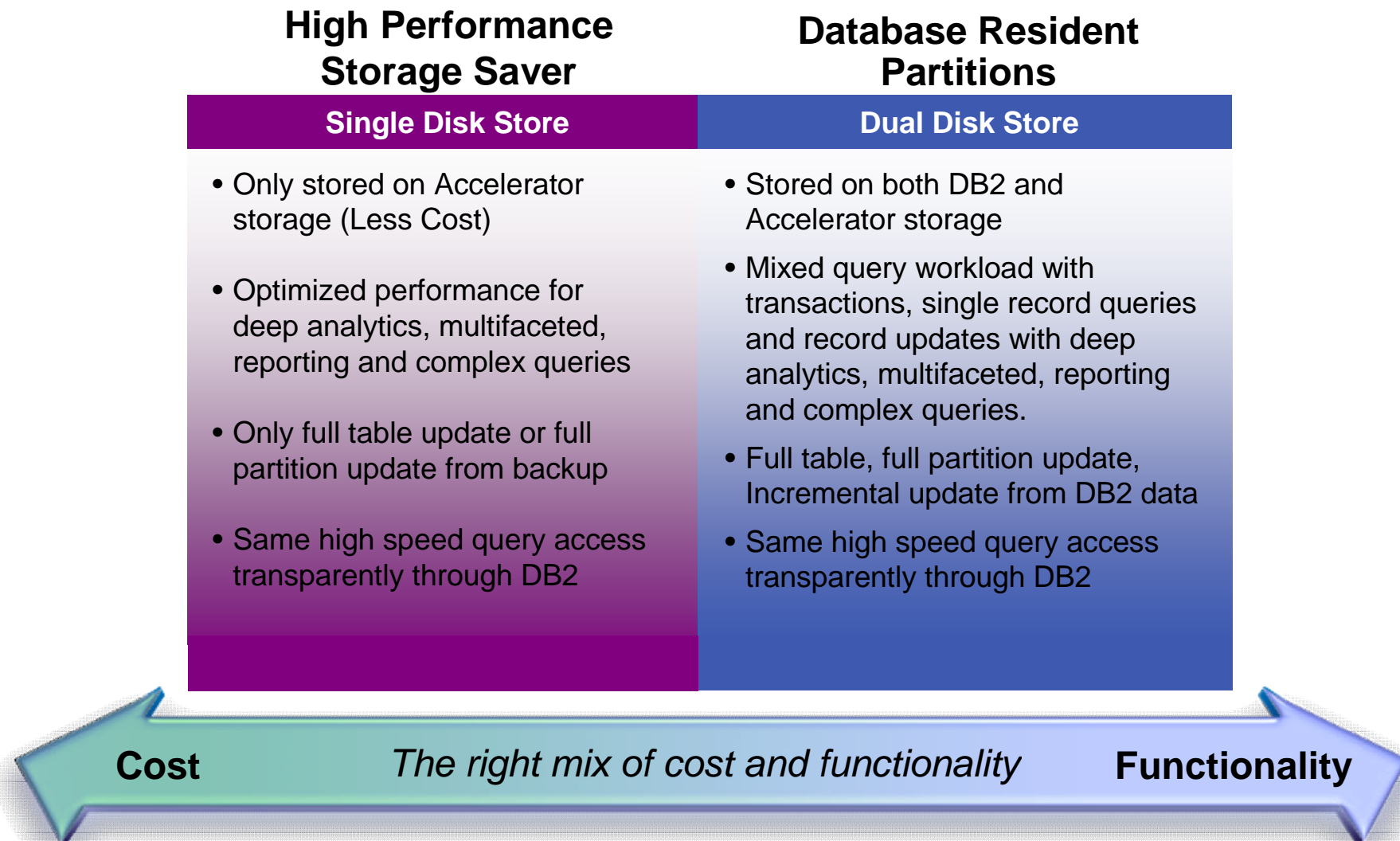
- only the recent partitions are used in a transactional context (frequent data changes, short running queries)
- the entire table is used for analytics (data intensive, complex queries).

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



## Storage options to match data needs

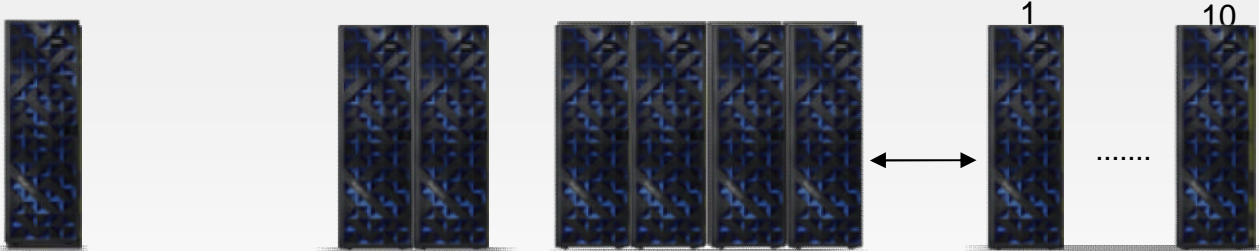
*Optimized in both price and performance for differing workloads*





# N1001 Systems and Sizes

PureData System for Analytics N1001



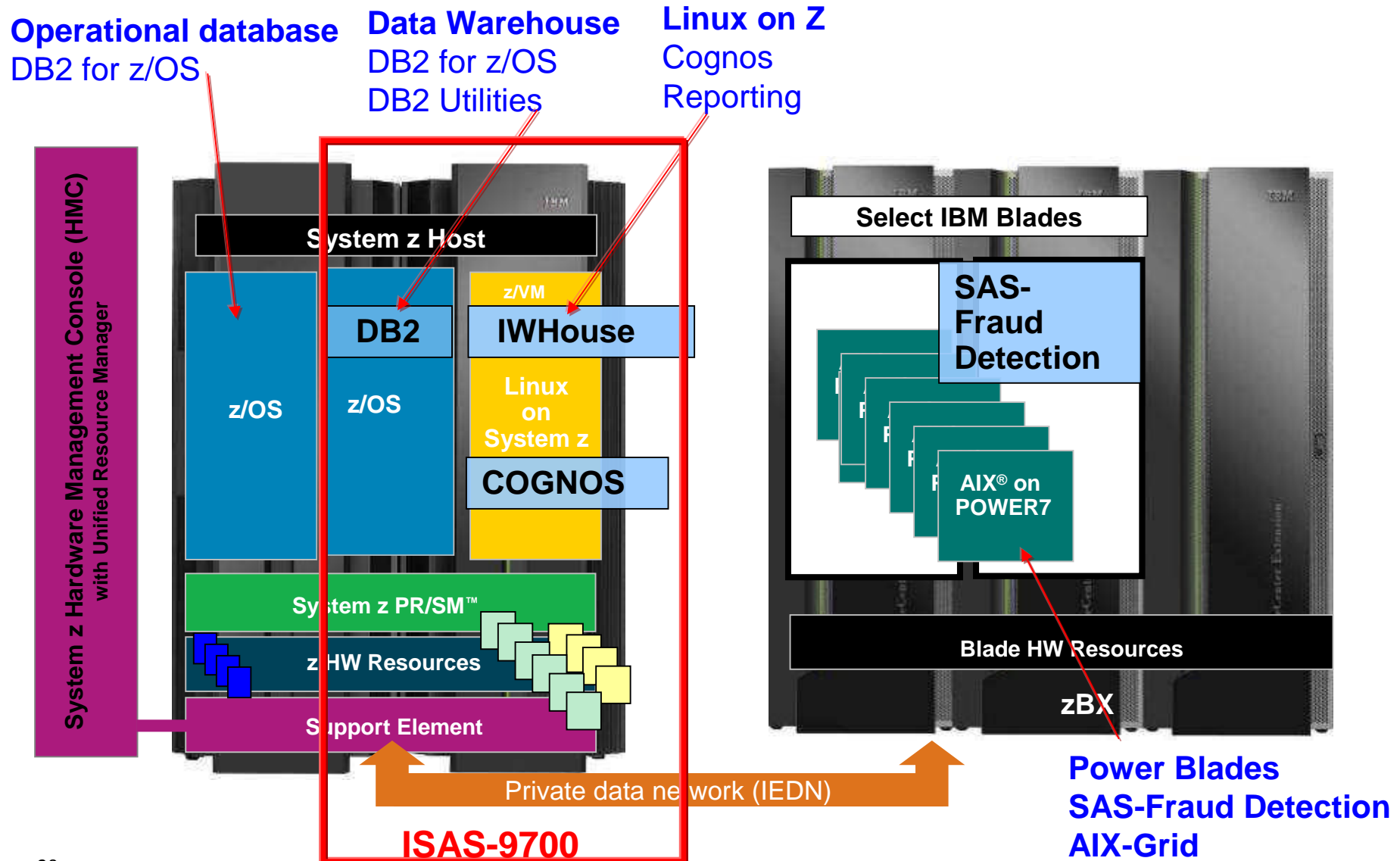
	<u>002</u>	<u>005</u>	<u>010</u>	<u>015</u>	<u>020</u>	<u>030</u>	<u>040</u>	<u>060</u>	<u>080</u>	<u>100</u>
Cabinets	1/4	1/2	1	1 1/2	2	3	4	6	8	10
S-Blades	3	6	12	18	24	36	48	72	96	120
Processing Units	24	48	96	144	192	288	384	576	768	960
Capacity (TB)	8	16	32	48	64	96	128	192	256	320
Effective Capacity	32	64	128	192	256	384	512	768	1024	1280

**Predictable, Linear Scalability throughout entire family**

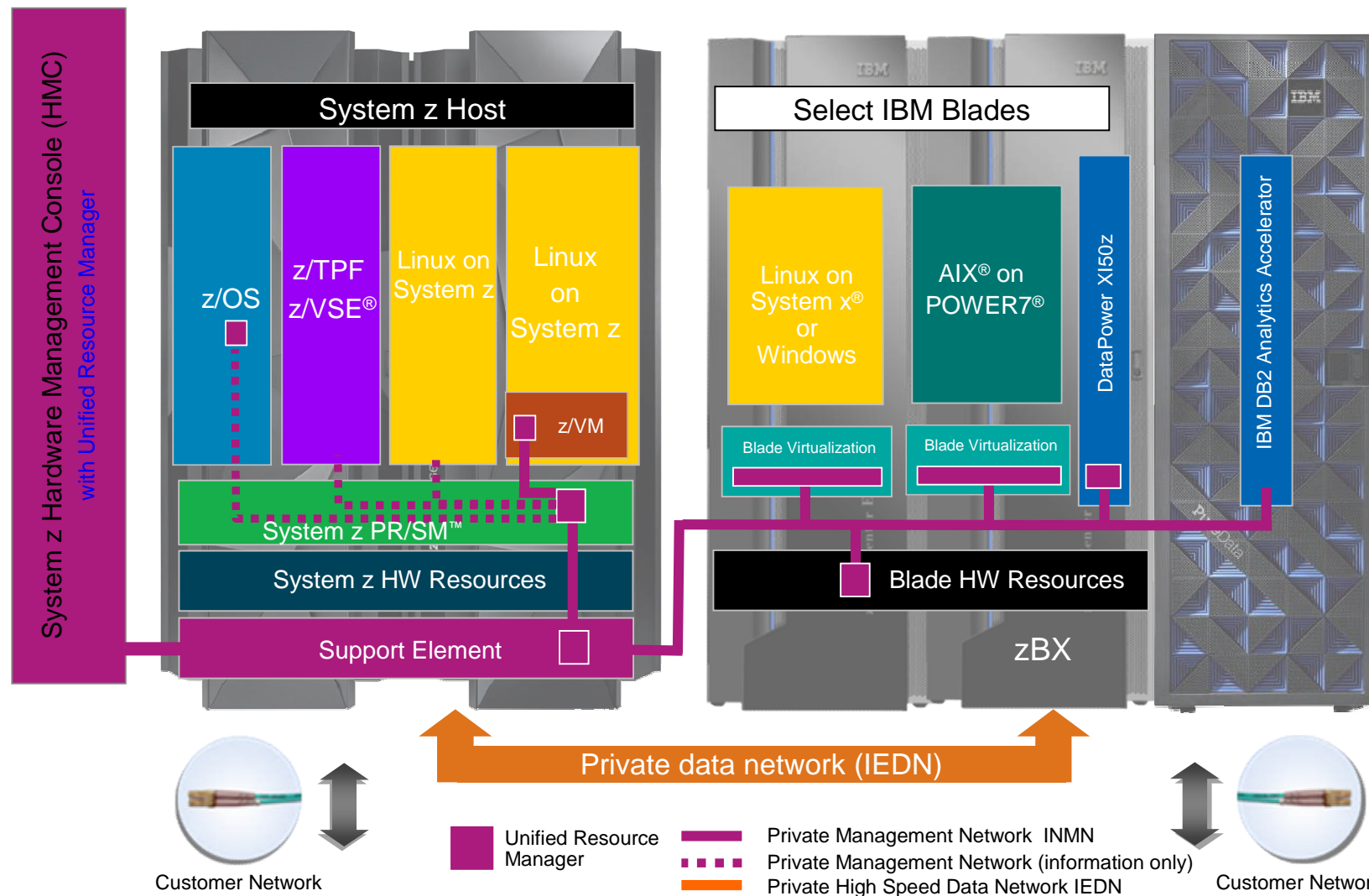
Capacity = User Data space  
Effective Capacity = User Data Space with compression

\*: 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

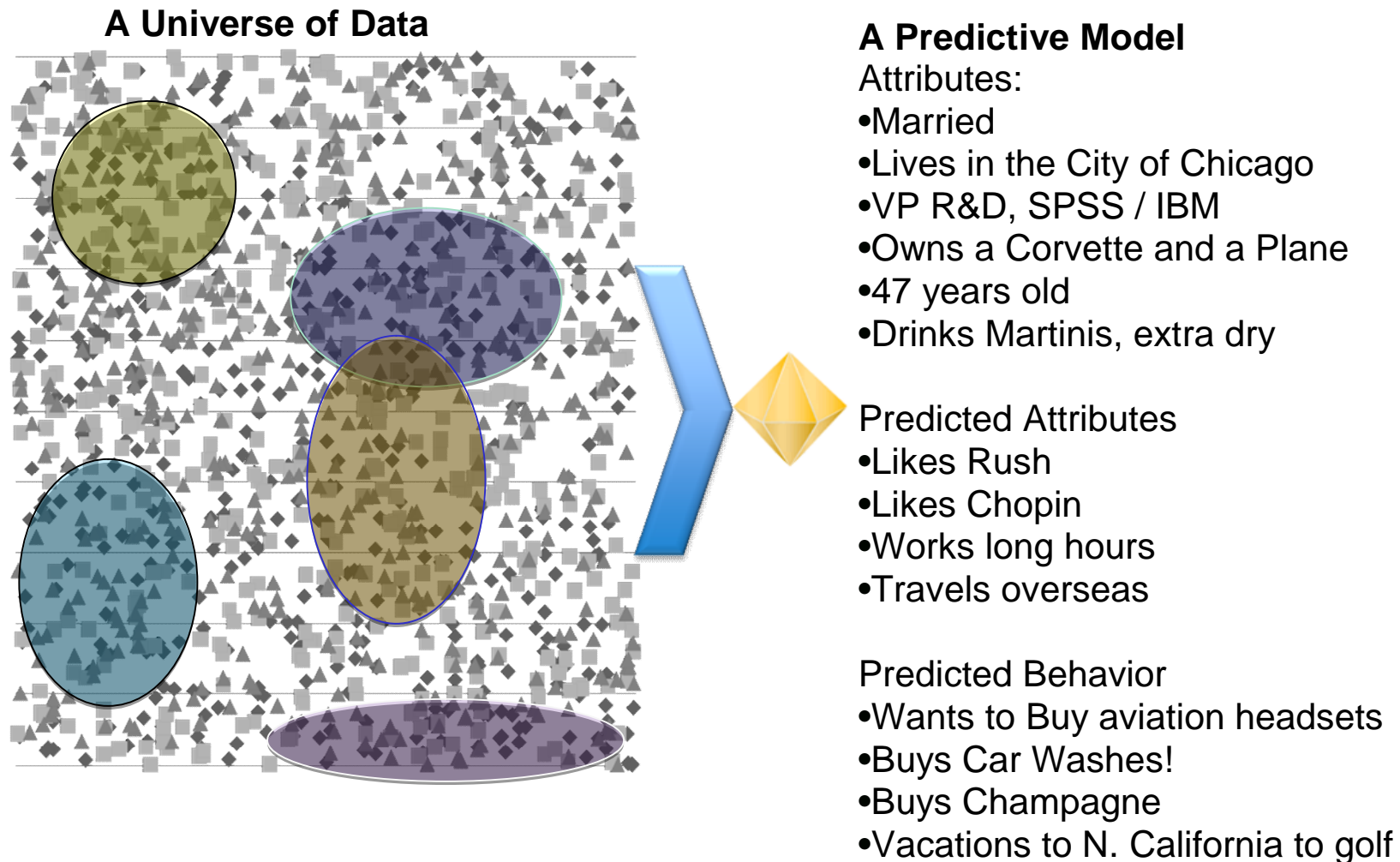
- **Key features**

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



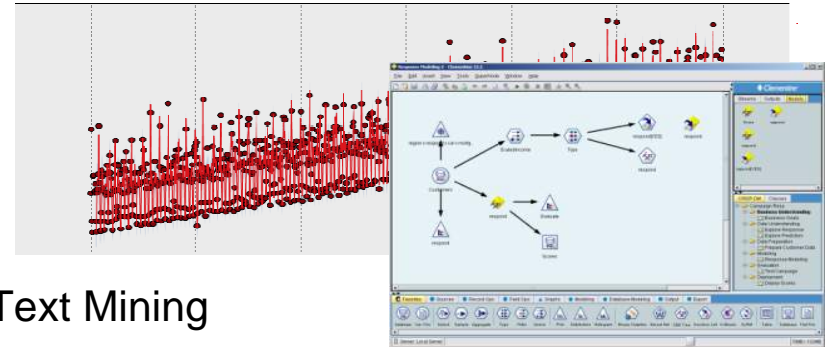
# Taking Predictive Analytics to the Next Level

*Predict the Behavior of the Next Case by modeling*



# IBM SPSS –

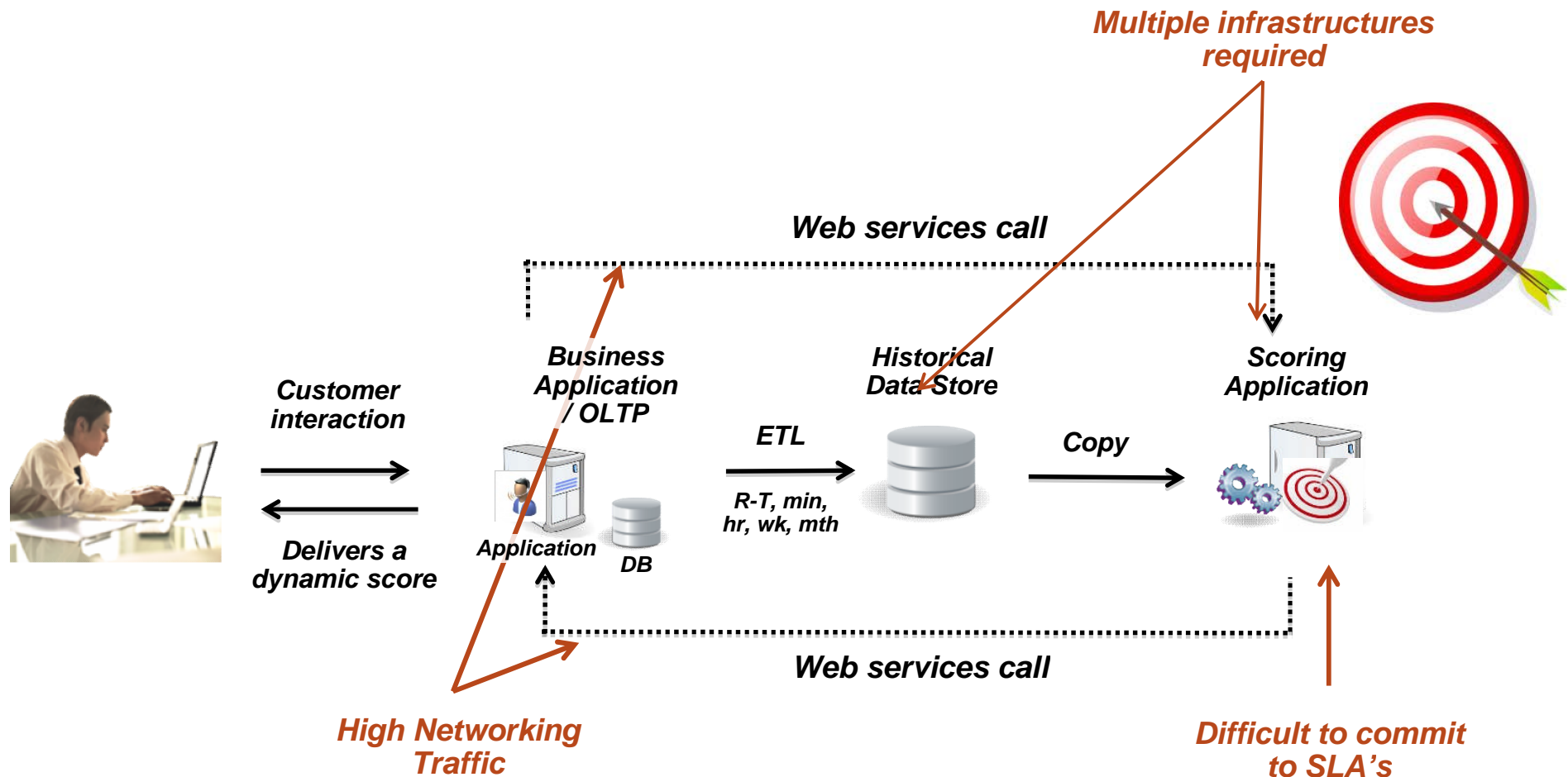
*Making information  
...predictive*



- 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 peers<sup>1</sup>.



# 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

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%

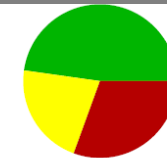
  

Leaf Query Blocks	23	100%
... with aggregations	23	100%
... with UDFs	0	0%
... with unsupported functions	6	26%
... with unsupported join types	0	0%
... with very large dimensions	1	4%

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

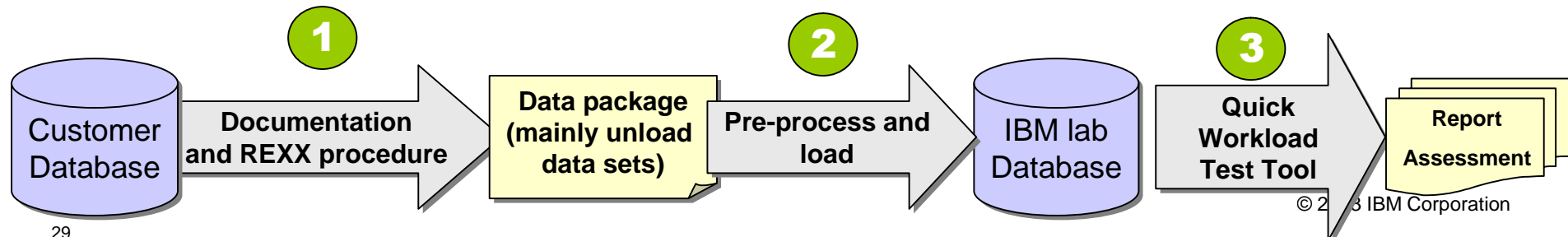
Disclaimer: Information provided in this document is for information purposes only and does not guarantee characteristics nor imply supported features of IBM products. V20100331  
 Schema: IGBURG -- Date: 4/12/10 -- Page: 1



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



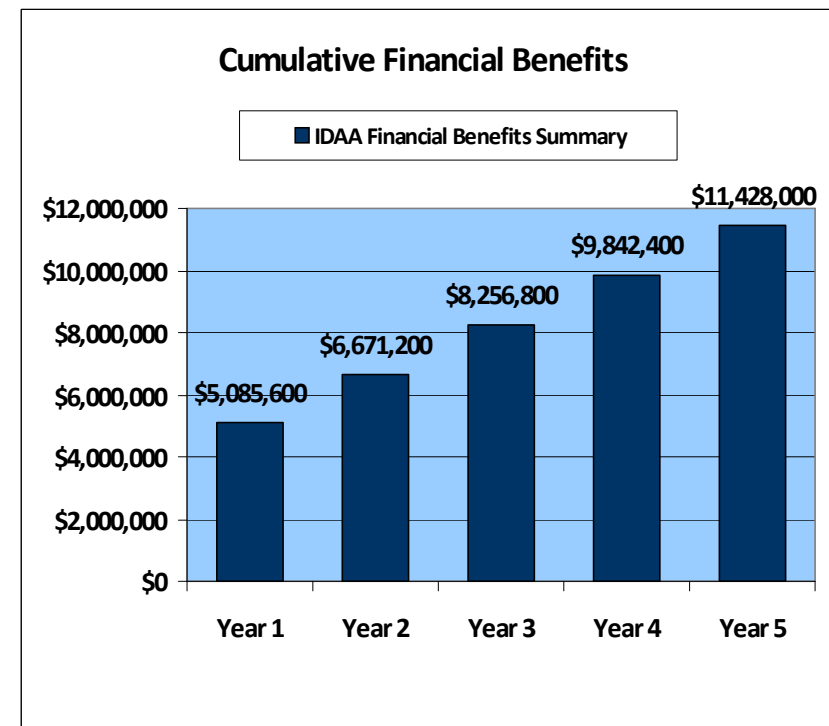
Elapsed time with acceleration potential  
 Elapsed time with uncertain potential  
 Elapsed time without acceleration potential



## 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](http://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?

**Contact IBM**  
 Chat now  
 Email IBM  
 Find a Business Partner  
 Call IBM: 1-866-883-8901  
 Priority code: 101AS13W

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

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**IBM TechChat Series**  




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consultants, analysts, solution architects

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

# Thank You!

