



# Maximizing the business impact of DB2 for z/OS and IMS in your enterprise

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## Topic Outline

- **Part 1: Solution introduction**
  - Why IBM DB2 for z/OS and IMS Tools?
- **Part 2: Core Solutions**
  - Database Administration
  - Utilities Management
  - Performance Management
  - Technology to solve problems
- **Part 3: Strategic Initiatives**
  - Modernization of DB2 and IMS tools
  - Areas of focus and research
- **Part 4: Summary**





# The Inefficiencies of traditional computing get in the way...

More than  
**70%**

of budgets on average is spent on ops and maintenance – and this percentage is growing<sup>2</sup>

**2/3**  
of companies

go over schedule on their project/ solution deployments<sup>3</sup>

IT complexity is  
**doubling**

every two years at its current pace<sup>1</sup>

“Our IT systems have become complex and difficult to manage, and as a consequence IT is increasingly finding itself in the position of being a barrier to innovation rather than an enabler of it.”

– The Bathwick Group, The road to Smarter Computing

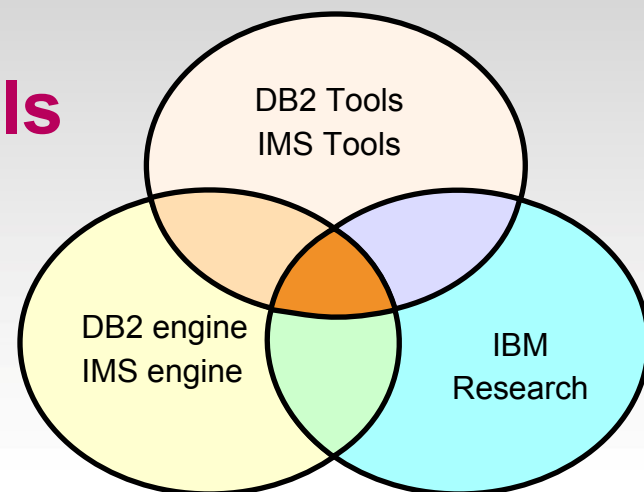
1 Enterprise Systems Journal, “5 Best Practices for Reducing IT Complexity”)

2 IDC Analyst Matt Eastwood, IDC Directions Presentation, 2011

3 IBM Market Intelligence Time-To-Value Study, National Analysts, November 2011

# Introduction to DB2 and IMS Tools

- **Significant development to help you:**
  - Reduce operating and personnel costs
  - Improve business resiliency
  - Take advantage of your existing investment
- **How is this realized?**
  - Technology that significantly reduces CPU, elapsed time. etc
  - Increase zIIP eligible workloads
  - Support new IMS and DB2 versions – beta, GA and beyond
  - Provide more value for game-changing technology with features in your current product set
- **Remain flexible and responsive**
  - Adjust plans to accommodate customer requirements
  - Provide world class support across all aspects, from development to client teams
- **Bottom Line**
  - We succeed if we help our customers be successful with DB2 and IMS





# Roadmaps for Ongoing Investment



## DB2:

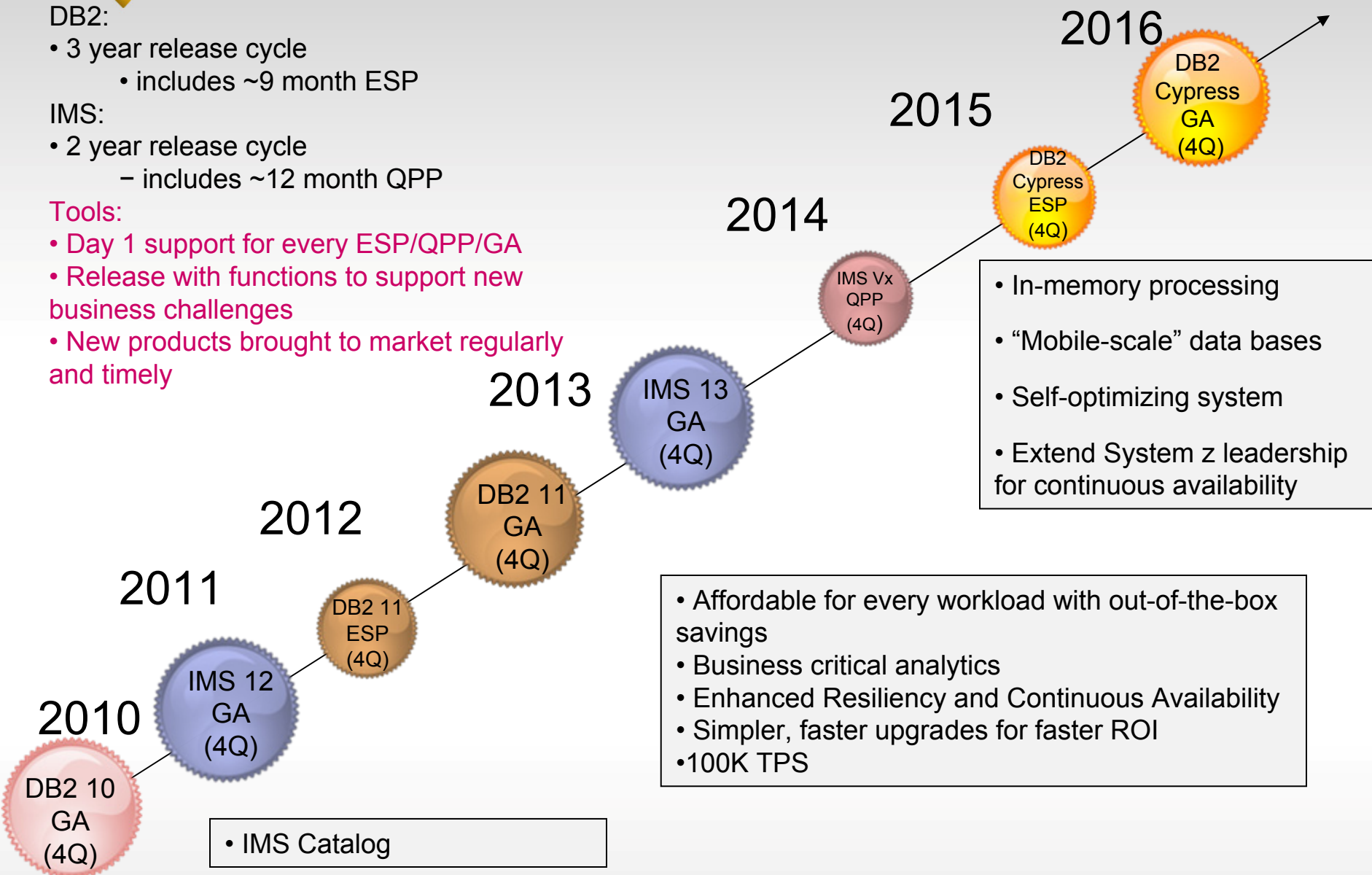
- 3 year release cycle
  - includes ~9 month ESP

## IMS:

- 2 year release cycle
  - includes ~12 month QPP

## Tools:

- Day 1 support for every ESP/QPP/GA
- Release with functions to support new business challenges
- New products brought to market regularly and timely



• IMS Catalog

- In-memory processing
- “Mobile-scale” data bases
- Self-optimizing system
- Extend System z leadership for continuous availability

- Affordable for every workload with out-of-the-box savings
- Business critical analytics
- Enhanced Resiliency and Continuous Availability
- Simpler, faster upgrades for faster ROI
- 100K TPS



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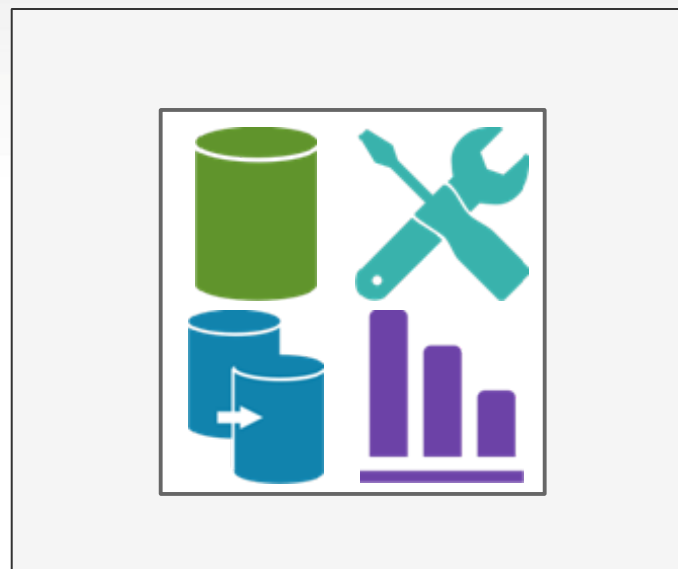
## DB2 and IMS Tools Solution Packs

- **Simplified offerings in each of the key solution areas:**

- Database Administration
- Utilities Management
- Performance Management
- Recovery Management

- **Value:**

- Complete solution for all needs rather than having to purchase multiple products
- Simplified install and maintenance
- Build intelligence into when and how actions are performed
- Optimize performance and resource utilization associated with DBA activities to reduce TCO







## DB2 Administration Solution

- **Provide solution that deals with the daily tasks as well as the unexpected interruptions**
  - Find problem quickly and solve it even faster
- **Manage data growth without interruption or risk**
- **Address shrinking IT budgets and reduced personnel**
  - Enable less experienced staff to correctly perform complex tasks
  - Automation to reduce errors & allow experts to focus elsewhere
- **Reduce negative impact changes can have on business**
  - Minimize impact of changes that affect database, application and availability
  - Standardize and track changes throughout application lifecycle
- **DB2 Analytics Accelerator support**
  - Full management capabilities of both Accelerator appliance and accelerated objects via familiar ISPF interface
  - Automatic reload of an accelerated table after schema change
  - Displays data currency info to help manage Accelerator refresh
- **Fully support all new functions and features in DB2 !**
  - Support from beta to GA and beyond
  - No interruption to your applications or business

### Navigate, manage change & track

“Our users are very satisfied with the navigation, intuitive features between products.”

“With the IBM Administration Tools we no longer face the issue of lack of DB2 currency.”

“Impressed with responsiveness of IBM field and support teams over that of 3rd party vendor to resolve any technical issues.”



## IBM DB2 Utilities Strategy

- **Data Integrity**
- **Version currency**
  - Exploit new features for improved availability & efficiency
- **zIIP offload**
- **Maniacal focus on Utilities performance**
- **Unparalleled investment in utilities**
  - Major performance, availability and feature enhancements delivered both on release boundary and in the maintenance stream
- **Advanced management features available**



## DB2 Utilities Solution

- Reduce utility CPU usage and elapsed time by up to 50%\*
- Eliminate 100% of CPU and elapsed time by avoiding unnecessary utility processing
  - Dynamically schedule work only if necessary
- Fastest and most flexible DB2 Unload in the market to modernize data movement
- Extended online data load capability
- Set company-wide DB2 utility standards
  - Utilities run the first time... every time
  - Enforced and auditable
  - Set one policy
    - Thousands of very old, un-tuned Utilities can be tuned without changing a line of JCL
    - Easily adopt DB2 Utilities features in DB2 10 and DB2 11
- Full support for ALL DB2 function

\* With zIIP engine

### Optimize, control manage & automate

*IBM beats or matches performance with other vendors for:*

- Using less CPU
- Reducing elapsed time
- More zIIP offload

*"DB2 Sort is an easy to install product which can be integrated in maintenance processes with no modifications. DB2 utilities in our shop benefit from significant CPU time reductions and additional zIIP offload, which also leads to a lower batch window frame."*

*During recent product evaluation, customer saw improvements in utility sort processing of:*

- 70% reduced Sort CPU
- 45% Sort CPU offload to zIIP
- 20% reduction in Elapsed Time

# DB2 Performance Solution

- **Integrate business priorities directly**
  - Monitor KPIs (key performance indicators) to better reflect end user experience
  - New version support a key
  - Allocate resources according to business priorities
  - Continually drive down TCO
- **Improve application performance proactively**
  - Get query recommendations, optimize statistics, create appropriate indexes
  - Optimize results for entire workloads, not just single queries
  - Prevent performance problems before they occur
- **Ensure SLAs and user satisfaction are achieved**
  - Handle all workloads and all access types
  - Pinpoint and isolate problems to correct instantly

## Identify, diagnose solve & prevent

“The integration of OMEGAMON for DB2 with GUI solutions is **light years** ahead of its competition”

“...the Pennsylvania Department of Transportation has realized a 10-fold ROI by reducing MIPS usage and man hours in our DB2 z/OS environments.”

“It gives us a different way to look at things, not only more info that we can use easily, but by bringing up exceptions that we have never looked at. Some of the things have been in production for a few years...we didn't even know we could do better.”

# Tools for IMS

- **IMS DBAs / SysProgs must become more efficient**
- **Experienced IMS DBAs and SysProgs that started with IMS are able to retire**
  - New IMS DBAs and SysProgs take years to become “experienced”
  - Industry wide – modern employees spend less time in a single role
- **Yet, the need for expert IMS (DBA / SysProg) skills is growing**
  - IMS isn’t going away; usage is growing, Bigger, more complex systems with more distributed connectivity
  - Demands for 24x7 high performance operation continue to increase
  - Increasing system complexity makes planning, maintaining, and troubleshooting more difficult and time consuming
- **Everybody can benefit from IMS cost savings**
  - Significant reduction in SW license costs
  - Reduced CPU and reduced batch window reduction
  - Improved administrator productivity
  - Improved system and data availability
  - Administering their valuable IMS systems with more autonomies through a modern (Web UI) interface



# IMS Tools Solution Packs



## IMS Database Solution Pack

- ❖ Autonomics
- ❖ IBM Administration Console

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- ❖ DB Reorg Expert
- ❖ HP Unload
- ❖ HP Load
- ❖ HP Prefix Resolution
- ❖ Index Builder
- ❖ HP Image Copy
- ❖ HP Pointer Checker
  - IMS DB Repair Facility
- ❖ IMS Library Integrity Utilities



## IMS Fast Path Solution Pack

- ❖ Autonomics
- ❖ IMS Administration Console

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- ❖ HP FP Utilities
  - FP Advanced Utilities
  - FP Online Utilities
- ❖ IMS DB Repair Facility
- ❖ IMS HP Image Copy
- ❖ IMS Library Integrity Utilities



## IMS Recovery Solution Pack

- ❖ IMS Administration Console

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- ❖ DB Recovery Facility
- ❖ HP Change Accumulation
- ❖ HP Image Copy
- ❖ DRF Extended Functions



## IMS Performance Solution Pack

- ❖ IMS Administration Console

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- ❖ IMS Connect Extensions
- ❖ IMS Performance Analyzer
- ❖ IMS Problem Investigator





## European financial institution switches to IBM DB2 Tools

**A worldwide financial company wanted to reduce software costs but maintain or increase performance and guarantee business resiliency**



- **Their objective:**

- Consolidate on one vendor, especially for utilities to reduce duplicate software costs.

- **Benefits**

1. Financial – Significant savings by removing OEM software licenses (millions)
2. The IBM DB2 tools enabled them
  - Business resiliency with complete support across DB2 tools and utilities for new versions of DB2, including those released in maintenance stream
  - Working relationships with development and account team to have their input acknowledged and realized
3. Attracted to modernization and autonomies strategy
  - Wanted to work with vendor who is focused on DB2 and has a strategy with continued investment



## Health Insurer switches to IBM IMS Tools

A very large East Coast health insurer replaces 25 ISV IMS tools (4 different tool suites) with IBM IMS tools in **6 months**



- **Their objective:**

- Improve the scalability, stability, efficiency, maintainability, and availability while lowering the costs of their IMS environment

- **Benefits**

1. Financial – Significant savings by removing OEM software licenses (millions)
2. The IBM IMS tools enabled...
  - Moving to a 24 X 7 online availability – improved business continuity/availability
  - Consistent toolset and standards across all IMS environments
  - Best practices for IMS workloads as a result of the project implementation
3. Reduced contention





# Managing the IMS and DB2 for z/OS environment

## Customers have been coming to IBM for help

- **More secure in long term future of IBM**
- **IBM offers competitive initial price and renewals**
- **Ongoing relationship with client team and IBM**
- **Customers want to consolidate on one vendor**
  - IBM develops the database, want the closeness of support with tooling
- **Customers want to reduce software costs, but not sacrifice performance**
- **Customers count on currency support from DB2 and IMS**
  - Customers do want to migrate on their time schedule to fit business needs
  - Do not want an interruption of business from non-supported featured implemented in application



## Additional Areas of Investment

- **Protecting your data**
  - Guardium for z/OS
- **Simplified test using production data**
  - Optim Workload Replay
- **Shared SQL data collection technology across monitoring, auditing and workload replay solutions**
- **Fast replication to streamline data movement**
  - DB2/IMS Cloning Tool
  - DB2/IMS Recovery Expert



# Defense in depth to protect the data

Technology to protect data at the source



## Optim Data Privacy

- Masking to protect sensitive data

## Guardium

- Vulnerability Assessment
- Monitoring activity
- Alerts and prevention of attacks
- Audit and reporting for compliance

## Optim Database Encryption

- Address data breach risk

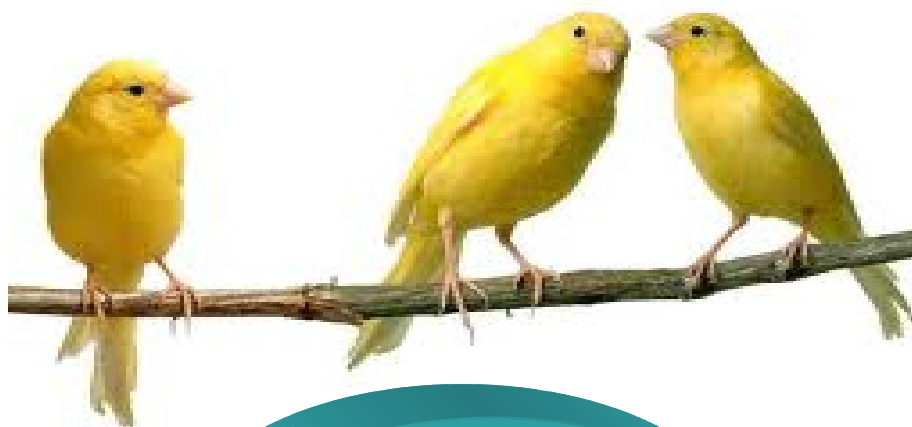
## Optim Data Growth Solution

- Data Retention and archiving

***Attacks have moved beyond external hacks to internal breaches***



# IBM's Common SQL Collector Strategy



DB2 query monitoring and reporting

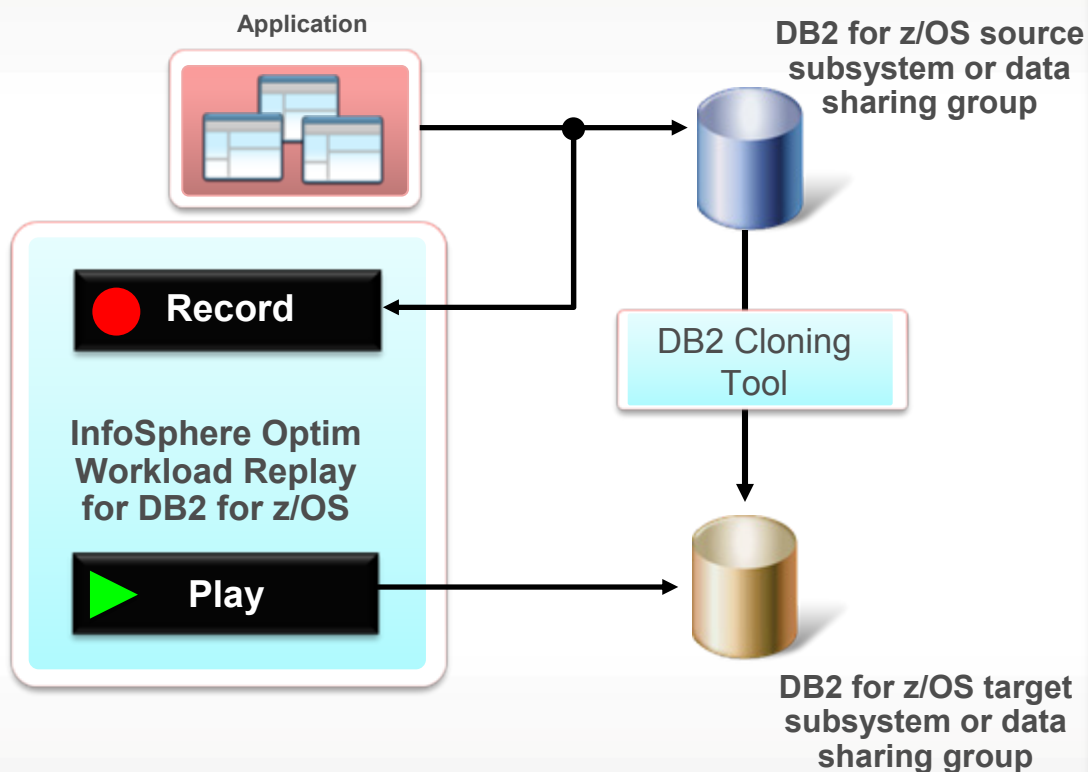
DB2 workload capture and replay

DB2 auditing



# InfoSphere Optim Workload Replay

Capture production workloads and replay them in testing environments



## Requirements

- Minimize unexpected production problems
- Shorten testing cycles
- Develop more realistic subsystem testing scenarios

## Benefits

- Identify subsystem problems sooner with validation reports and performance tuning
- Use actual production workloads for testing rather than fabricated scenarios
- Extend quality testing efforts to include the data layer



## DB2 & IMS Cloning Solution

- **Clones at DB2 subsystem AND at object level**
  - Renames and catalogs the data sets, fixes the volume internals
- **Clones at IMS subsystem AND at IMS Database level**
  - No need to repeat the entire installation and system generation processes
  - Huge savings when copying/cloning IMS HALDBs
- **Clones improve business availability and costs**
  - Dramatically reduces costs of traditional methods
    - Uses dramatically less personnel time
    - Can automate operations
    - DB2 & IMS no longer need to be shut down or conditioned the long traditional way
  - Disk vendor independent
- **Uses any snap, mirror or PIT copy**

*“Extreme availability  
with low cost”*

***Insure, modernize  
optimize & protect***

“It used to take 72+ hours to clone an IMS subsystem, now it takes 30 minutes”

“It took 2 days, using 2 people to clone 6 DB2 systems for a total of 96 days per year. Now it takes 1 person 30 minutes for a savings of 84 person days per year”

“We cloned a 20TB system (7200 volumes with 59,000 data sets) in 18 seconds, 11 minutes for the renaming”.



## DB2 & IMS Recovery Solutions

- **Eliminate daily backup costs**
  - Gain value from fast replication devices
- **Widest range of backup and recovery options**
  - Recovering from a dropped object to a major disaster --- and everything in between
- **Fastest and most cost-effective recovery solution in industry**
- **Protect critical DB2 and IMS objects and data with an recovery insurance policy**
  - Extensive validity checking guarantees a complete and accurate backup
- **Take advantage of intelligent Recovery Manager**
  - Analyze all resources and provide optimized cost-based recovery in real time
- **Minimize risk of changes in application introducing costly errors**
  - Health check function validates the ability to recover to selected points

*“Highest availability with lowest cost”*

***Insure, modernize optimize & protect***

*CPU Usage almost eliminated, replacing costly image copies with System Level Backup:*

*One SLB = multiple image copies*

*5 TB system backup up in .41 seconds*





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# Market Opportunities and Challenges

## Infrastructure Ready



...organizations fully prepared for new digital trends like cloud, mobile, social and analytics (CAMS)<sup>(1)</sup>

## Incorporating Big Data



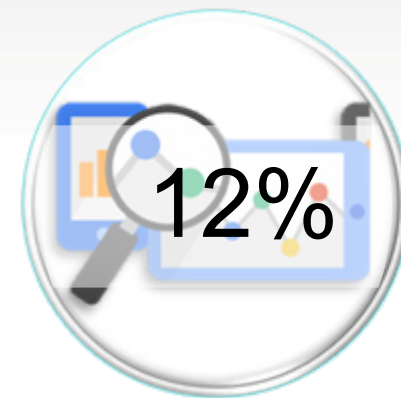
...into their normal operations are planning to use data integration and data warehouses to do it<sup>(2)</sup>

## Cloud Ready



...software will be built for cloud delivery in 2014<sup>(3)</sup>

## Data Analyzed



... of the data companies already have, leaving 88% of it on the cutting-room floor<sup>(4)</sup>

### Sources

1. IBM\_Institute\_for\_Business\_Value - Date published : 09/01/2014

2. Gartner , "Big Data Adoption in the Logical Data Warehouse", Mark A. Beyer | Ted Friedman - Date published : 02/07/2013

3. IDC, "Directions 2014, Information is Everywhere", Robert Mahowald, Date published: 03/17/2014

4. Forrester, "The Forrester Wave: Big Data Hadoop Solutions" Mike Gualtieri and Noel Yuhanna, Date published: 02/28/2014

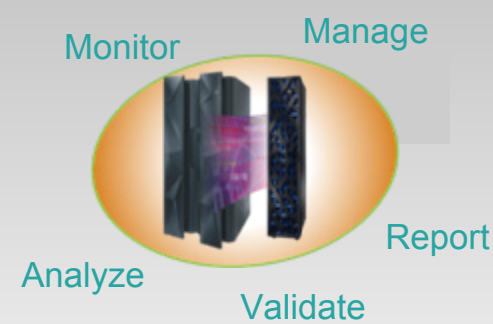


# DB2 Analytics Accelerator

Enabling a Hybrid Transactional / Analytics Environment on System z

- **Delivers incredible value out of the box**
  - Accelerates complex queries, up to 2000x faster
  - Minimizes latency
  - Complements existing investments
- **Questions you may ask to maximize your investment**
  - Do I have a workload that would benefit from the Accelerator?
  - How can I improve on my Accelerator utilization?
  - How do I determine which objects are best suited for acceleration?
  - Can I populate the Accelerator with data from other platforms?
  - How can I manage Accelerator data currency more effectively?





## Value added with IBM DB2 Tools

Surround IBM DB2 Analytics Accelerator with DB2 Tools for z/OS to maximize your analytics investments and their impact on your business

- **Accelerator performance monitoring, analysis and reporting**
  - OMEGAMON XE for DB2 Performance Expert on z/OS
- **Accelerated query identification, comparison and segregation**
  - DB2 Query Monitor for z/OS
- **Query candidate selection, access path visualization and analysis**
  - InfoSphere Optim Query Workload Tuner for DB2 for z/OS
- **Administer your IDAA appliances quickly and easily**
  - DB2 Administration Tool, DB2 Object Comparison Tool
- **Provide additional ways to access data for Analytics on z**
  - IDAA Loader



## IT Modernization – Overview

- **The need:**
  - Organizations need dramatic re-design, centralization and modernization of tools and workflows to meet the expectations of the next generation and keep pace with the demands of their business
    - Growing complexity while containing costs
    - Need to extend skill set to other users across tasks to increase productivity
- **Solution – Simplified & centralized management of IMS and DB2 z assets**
  - Quickly view and manage DB2 and IMS from one view
  - Autonomics improves the efficiency and accuracy of managing DB2 and IMS for all levels of staff
  - Fast, easy diagnosis and problem resolution helps to keep DB2 and IMS optimized



## IT Modernization – Vision

**Modern console provides autonomies, central management of database systems, and extensibility to analytics and cloud, enabling customers to deliver higher business value for their company**

**Unified strategy for automating and optimizing DB2 for z/OS and IMS capabilities to address the needs of the next generation of enterprise customers**

### Usability

Single web interface to administer DB2 for z/OS and IMS simply and quickly

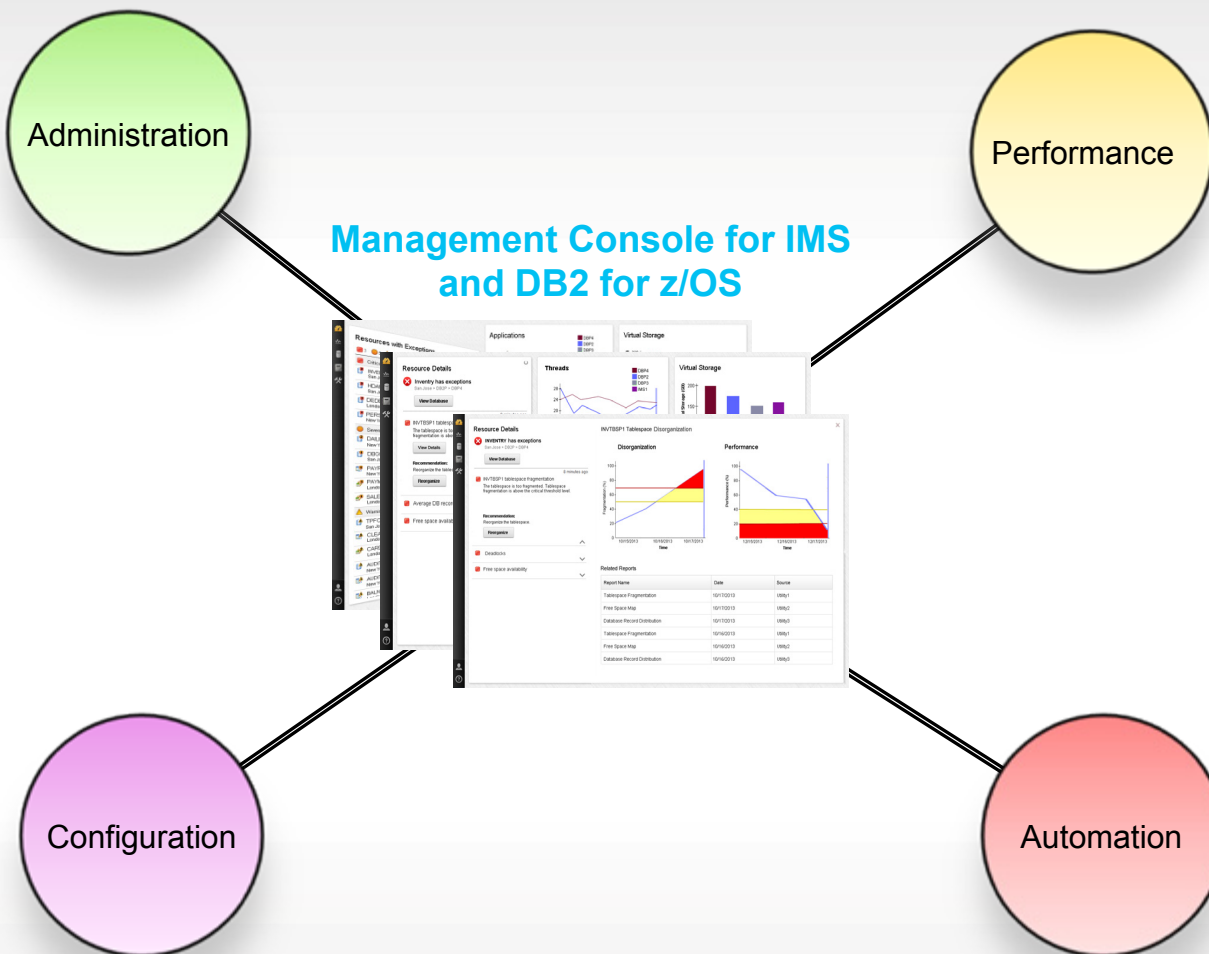
### Autonomics

Automate basic administration to give freedom to work on higher business value tasks

### Extensibility

Extend to other capabilities and environments such as analytics, cloud & mobile

# Management Console for IMS and DB2 for z/OS





# IBM Management Console for IMS and DB2 z/OS

- **Provides a single, holistic easy-to-use interface to manage IMS and DB2**
  - Zero-install web-based interface
  - Consolidate information from IMS, DB2 and tools to from across the entire enterprise
  - Reduced time for problem identification and resolution through tight integration with IMS and DB2 Autonomics
  - Dramatically reduced learning curve for new users of IMS and DB2

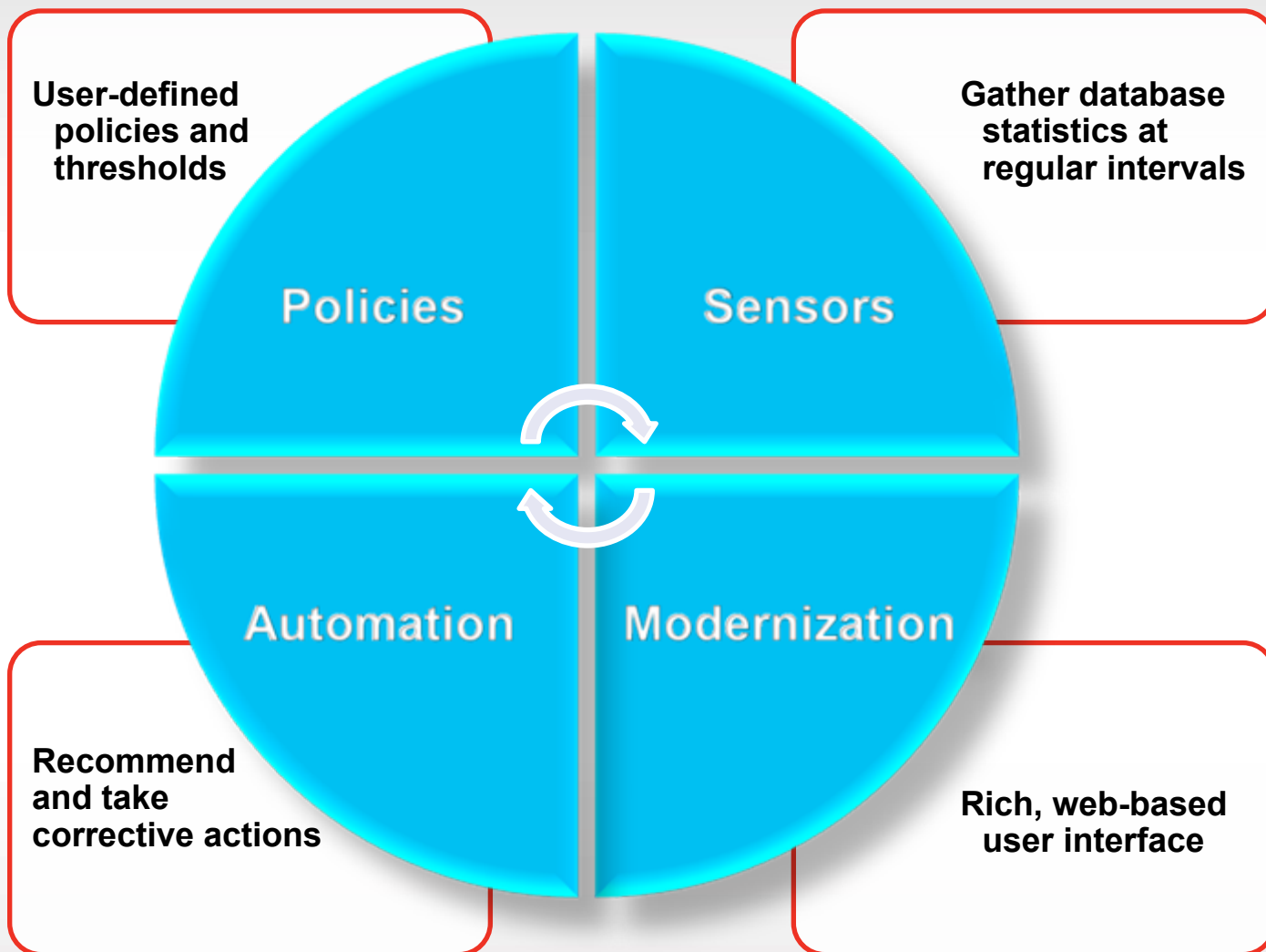
The screenshot shows the IBM Management Console for IMS and DB2 z/OS interface. It features a navigation pane on the left, a main content area with several panels, and an integrated help window on the right. Callouts point to specific features:

- Enterprise-wide Navigation:** Points to the navigation pane on the left.
- Object Health and Autonomics:** Points to the 'Properties' and 'Symptoms' panels in the main content area.
- Graphical Visualization of data not possible in ISPF:** Points to a line chart titled 'Overflow Records Since Reorganization'.
- Integrated Help:** Points to the help window on the right, which displays detailed information about overflow records.

**BUILT ON eclipse**

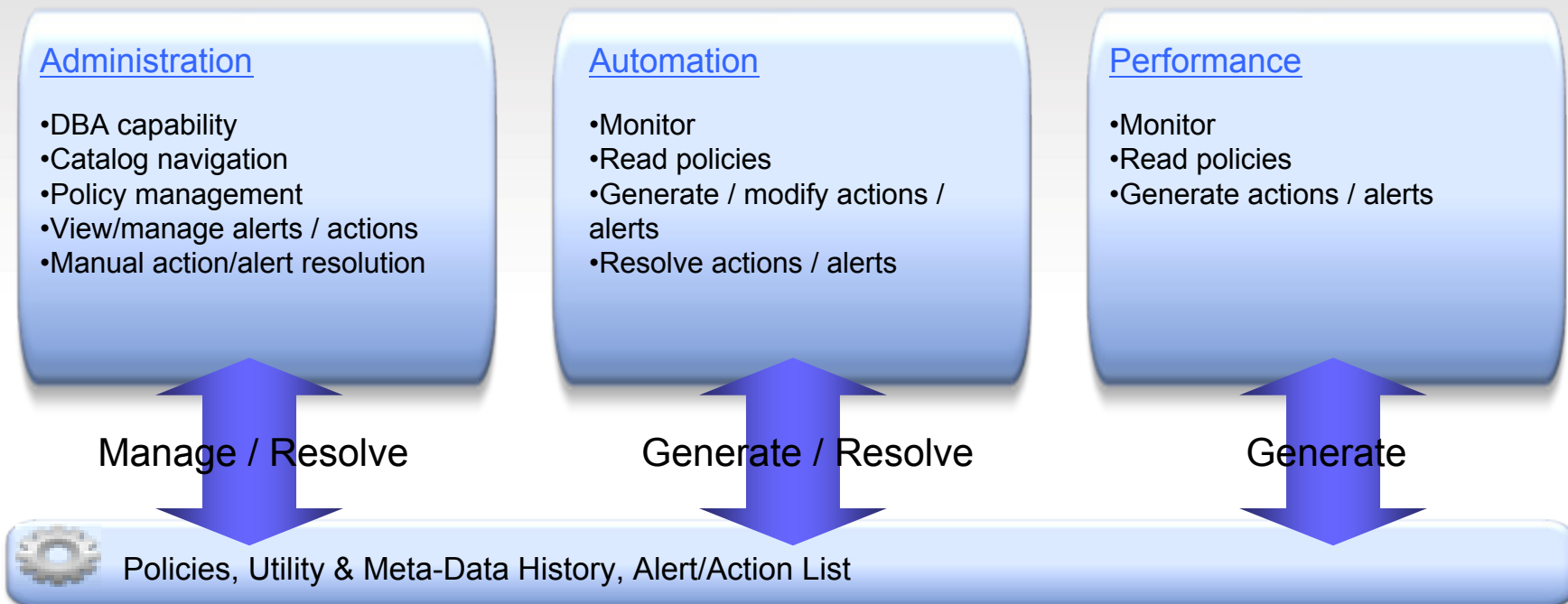


# Autonomics Vision – Putting information to work for you





# IT Modernization Architecture



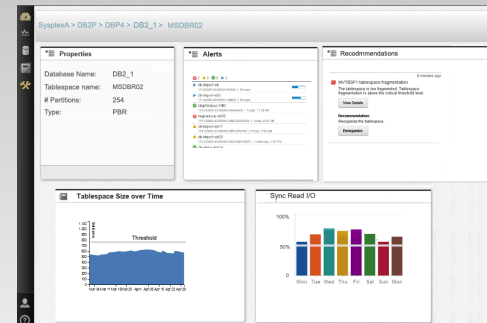
- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>▪ Policy view &amp; management</li> <li>▪ Automation management</li> <li>▪ 3270: full set of DBA functions</li> <li>▪ Administration Console: web UI &amp; catalog navigation</li> </ul> | <ul style="list-style-type: none"> <li>▪ Monitor data metrics</li> <li>▪ Consume policies &amp; historical meta data</li> <li>▪ Create alerts &amp; utility recommendations</li> <li>▪ 3270: generate utility JCL</li> <li>▪ Administration Console: web UI &amp; submit utilities via stored procedures</li> <li>▪ Modify alerts &amp; utility tasks following action</li> <li>▪ Maintain historical information</li> </ul> | <ul style="list-style-type: none"> <li>▪ Application &amp; subsystem performance data analysis</li> <li>▪ Consume policies</li> <li>▪ Create alerts &amp; utility recommendations to be enacted via automation or administration</li> </ul> |
|---|--|---|



# Management Console Summary

**Provides a single, holistic easy-to-use web-based interface for DB2 & IMS management**

- Leverages the latest web technologies for a richer user experience
- Access from anywhere via the Internet
- Integrates a context sensitive help system as a learning aid for new administrators
- Dramatically changes the appearance and impression of DB2 and its Tools



- "I really like the slidey flippy - it's all on one page." "Really like the wow factor" (US Insurance company)
- "...this cannot come out fast enough. This will help with our offshore resources." (lower skill level and high turnover). (US Insurance company)
- "You are going to make me look good with this product." "This is really cool" (US Agriculture company)
- "Like the 'helicopter view' of multiple systems and their state (Swedish Bank)
- "I like the ability to monitor databases, notify by email, ease of use" (US Energy company)
- "Like the dashboard concept for both IMS and DB2 in one picture (WW Financial Services company)

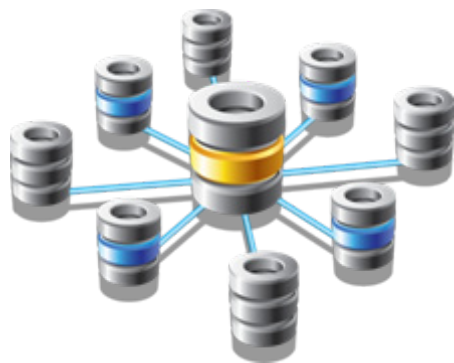


# Business & Industries are Being Transformed by IT



Mobile

Systems of Record



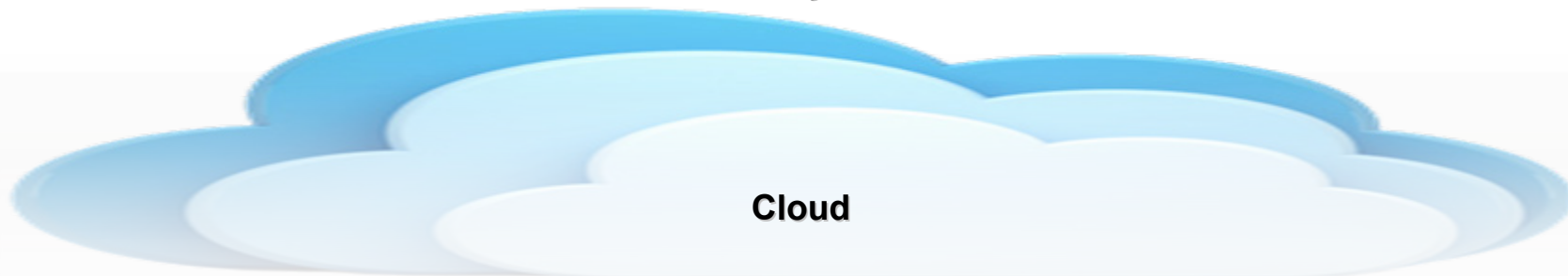
Systems of Engagement



Big Data & Analytics



Cloud



## How does Cloud impact z?

- In the cloud, clients need to manage anywhere from 10s to hundreds of large backend systems
- Cloud drives increased usage of data maintained on **System z**
  - 80% of the world's corporate data resides or originates on mainframes
  - Transactions are the #1 data source analyzed in big data initiatives
  - 91% of CIOs said new customer client-facing apps (engagement apps) either are or will access data and apps that exist on the mainframe
- In turn, this is driving increasing demands on the **System z and IMz skill base**



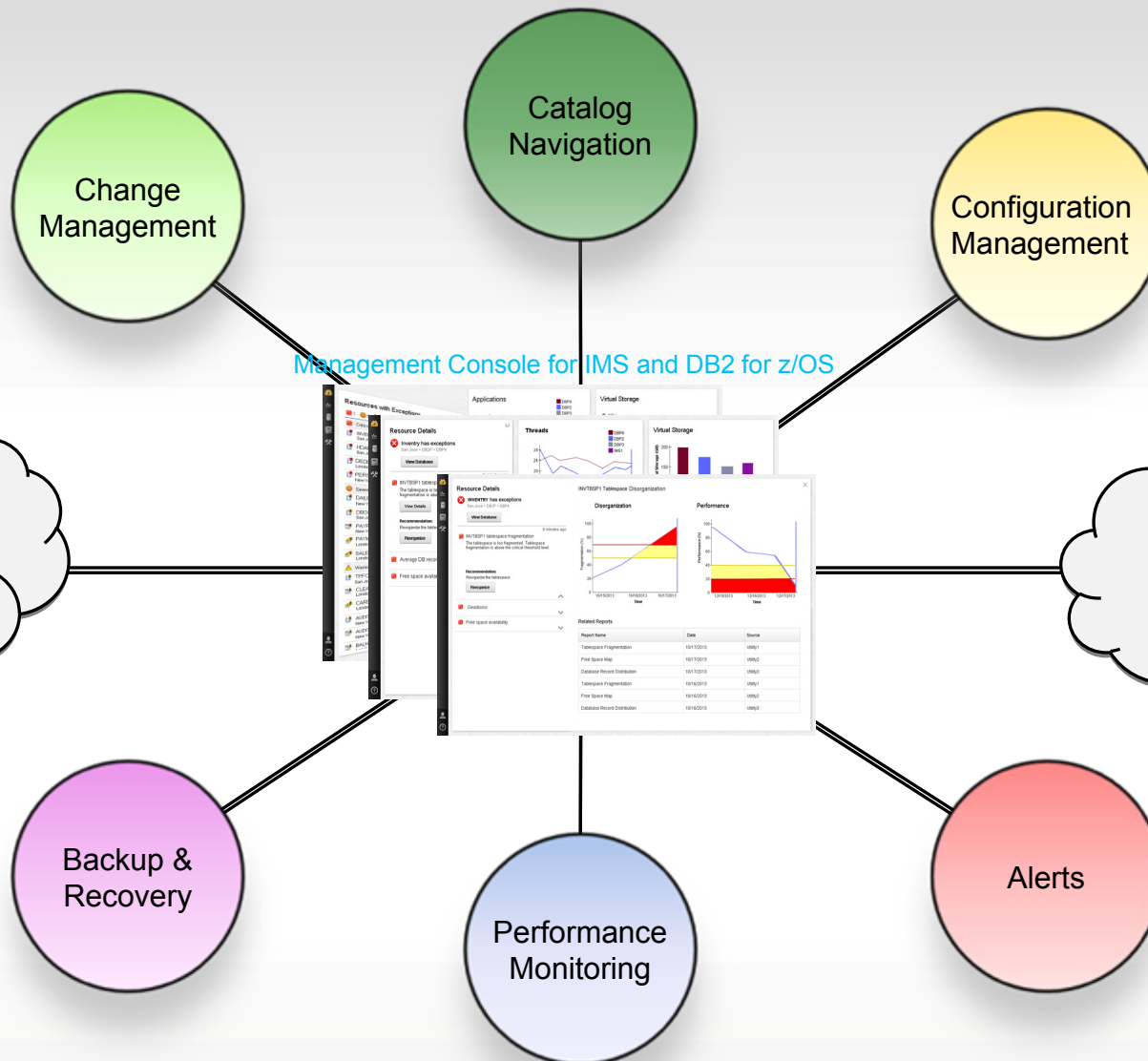
Mobile



Big Data  
&  
Analytics



# Vision



Private Cloud

Management Console for IMS and DB2 for z/OS

Public Cloud

Cloud Provisioning for DB2 and IMS

Cloud-based Services for DB2 and IMS

Backup & Recovery

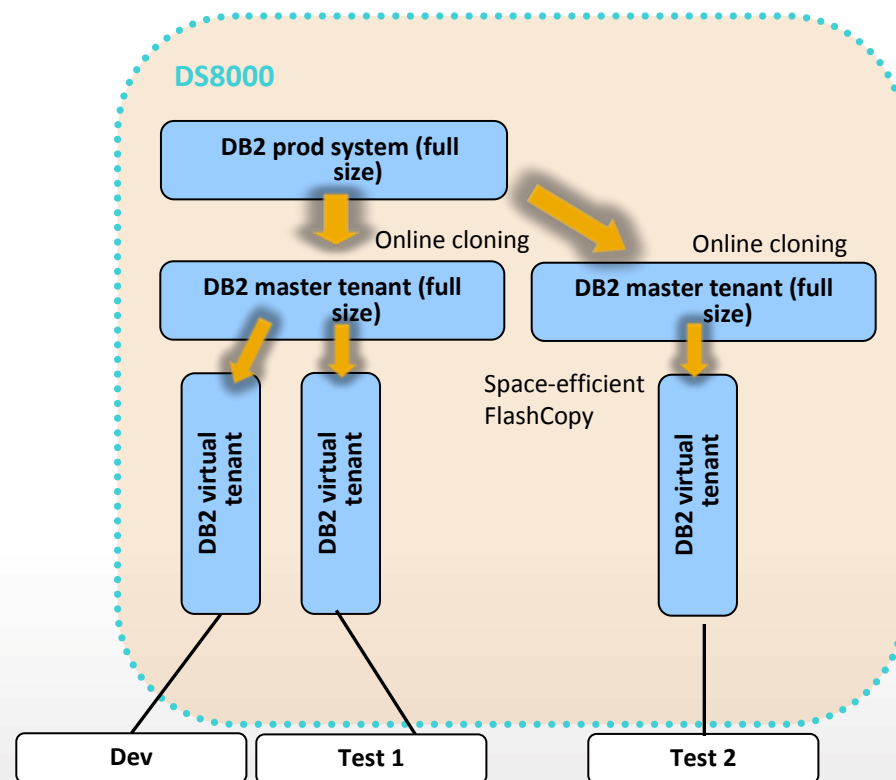
Performance Monitoring

Alerts



## DB2 & IMS Cloud Requirements

- Ability to easily create multiple systems from a single source system for testing purposes
- Lightweight, small clone footprint
- Non-disruptive creation and removal of cloned systems
- Ability to reset clone to initial or any later state
- Each clone to operate independently of each other and of source





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# Investment makes a difference



Only Archiving for DB2 & IMS

Only Encryption for DB2 & IMS

Only System Level backups for DB2 & IMS

Only Auditing for DB2 & IMS

Only Cloning for DB2 & IMS

Data masking for DB2

Only End to End SQL performance monitoring

Only Workload Replay Soln

Only Stored Procedure monitoring for DB2

Only IDAA query level monitoring

Only Common SQL Collector

Only IDAA real time and batch monitoring

1<sup>st</sup> with zIIP support

Only Utility syntax monitor: Utils run the 1<sup>st</sup> time every time

Only IDAA workload recommendation





## IBM Database Tools

- **Our focus is to help maximize your IT investment**
  - Lower costs, higher data availability and increased efficiencies
  - Free up staff and resources to drive business growth and optimization
- **IBM in the unique position of building the Tools for the Database**
  - Close relationship between Development and Tools
  - Focused on incorporating the best technology to help manage growth and complexity while lowering costs on the platform
  - “Day 1” support for new DB2 and IMS releases
  - Broadest portfolio to meet and exceed your business requirements
- **Committed to the long-term future of the System z platform**
  - Investment exceeds all other vendors combined
  - Our on-going effort is to reduce cost of System z platform
- **Bottom Line ... “We succeed if we help you to be successful with DB2 and IMS”**



The words "Thank You" are written in a large, 3D, light blue font. Each letter is filled with a different photograph of a diverse group of people, including men and women of various ethnicities, smiling or looking thoughtfully at the camera. The letters have a slight shadow, giving them a three-dimensional appearance.

**Sarah Karger**

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