



Providing Information on Demand

– Leveraging the Value of the Mainframe

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VP IM Mainframe Software



Information Management is Evolving

Disconnected Silos of Information



*Rich Standards,
Flexible Architecture*

*Dynamically Deliver
Information*



70% of people's time can be spent finding relevant information

60%+ of CEOs say they need to do a better job leveraging information

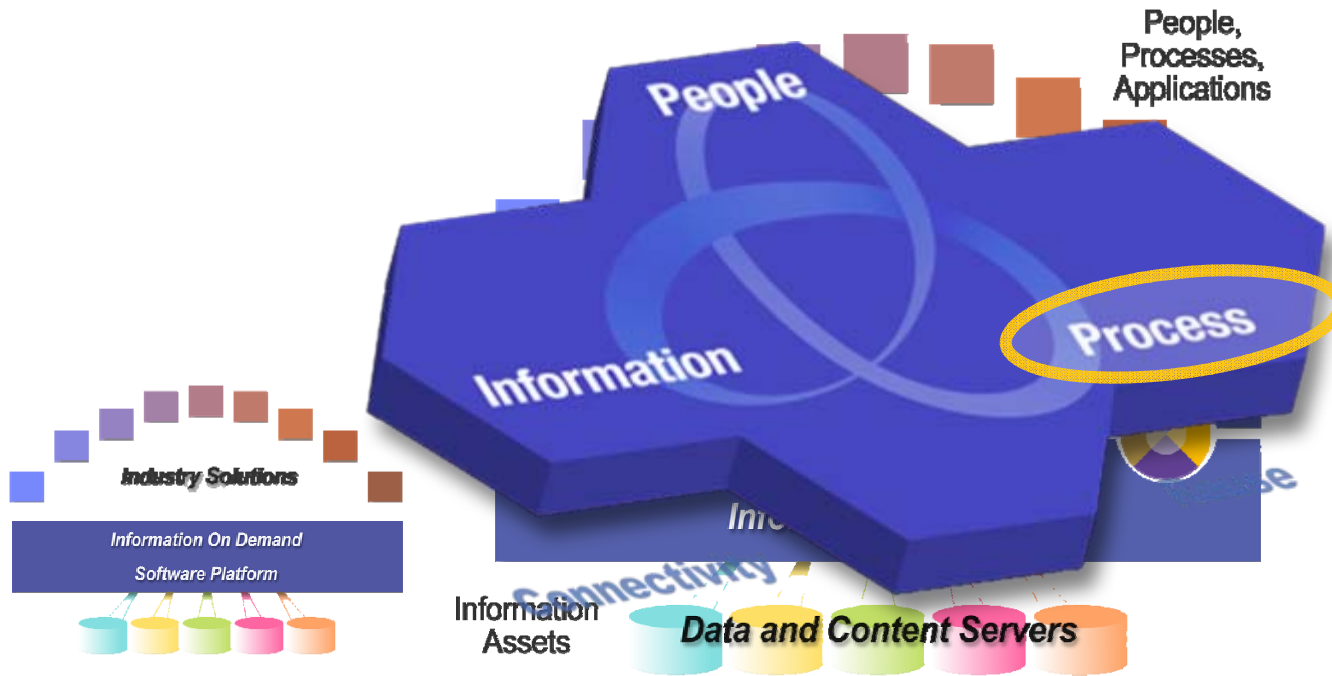
5X More Value creation by organizations effective at using information

Delivering information in context to optimize business processes, applications and productivity



Information Needs to be Provided On Demand

Information is Key to Service Oriented Architectures



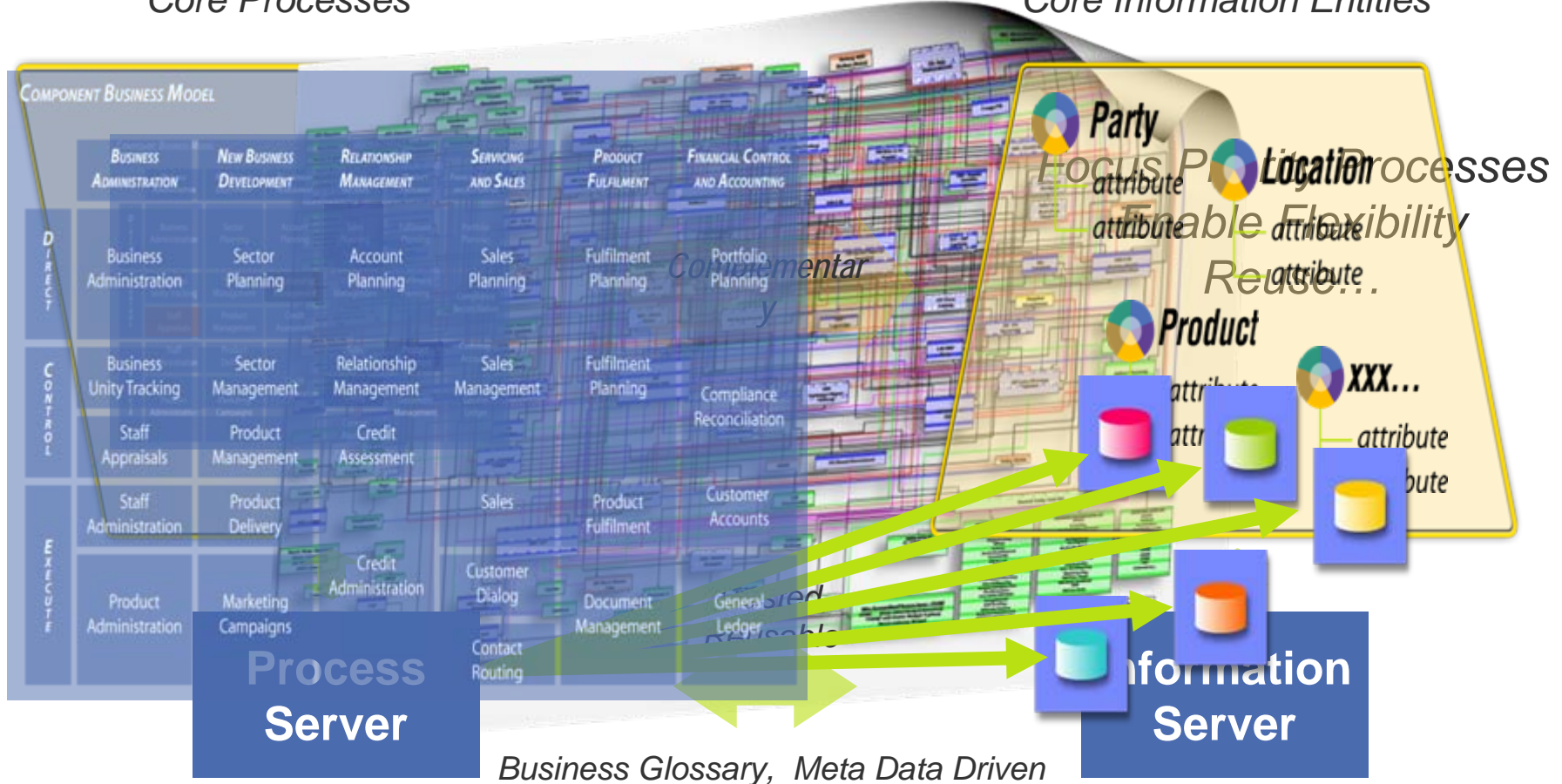
Delivering Information as a Service

The Challenges of Complexity

Where Do “Core Processes” Go to Get Information?

Core Processes

Core Information Entities



The Need for Information Servers

*Today's
Inflection
Point*



- Trust**
- Productivity**
- Collaboration**
- Scalability**
- Reuse**

IBM Information Server

The Gearbox for Master Information

- **A New Kind of Platform**
 - Delivers trusted information to processes, and applications
 - Foundation for SOA
 - Dramatically Simplifies Integration
- **Innovative Technology**
 - Metadata-driven integration
 - Breakthrough productivity
 - Industry-leading scalability
 - Rich, bi-directional connectivity
- **Based on Experience**
 - 5,000+ Integration Clients
 - 75 Clients in Beta Program
 - 35+ Partners Enabled...



Delivering IBM Information Server on Native System z

Phase 3 – Complete the Platform!

IBM Information Server

Unified Deployment

Understand



Discover, model, and govern information structure and content

Cleanse



Standardize, merge, and correct information

Transform



Combine and restructure information for new uses

Deliver



Synchronize, virtualize and move information for in-line delivery

Unified Metadata Management

Parallel Processing

Rich Connectivity to Applications, Data, and Content



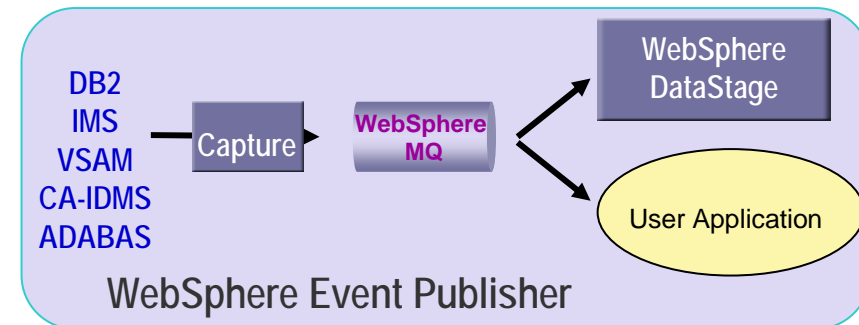
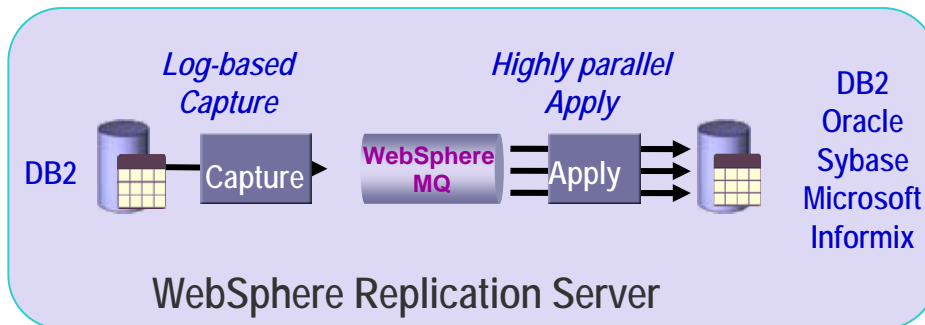
WebSphere Replication Server and WebSphere Event Publisher

▪ WebSphere Replication Server

- Provides a solution for: Continuous Availability, Workload Balancing, Application Integration
- Key Features: extremely low latency, peer to peer support, transformation and filtering of data
- New! MQ bundled on all platforms, SQL expression support, integration with Classic Replication Server

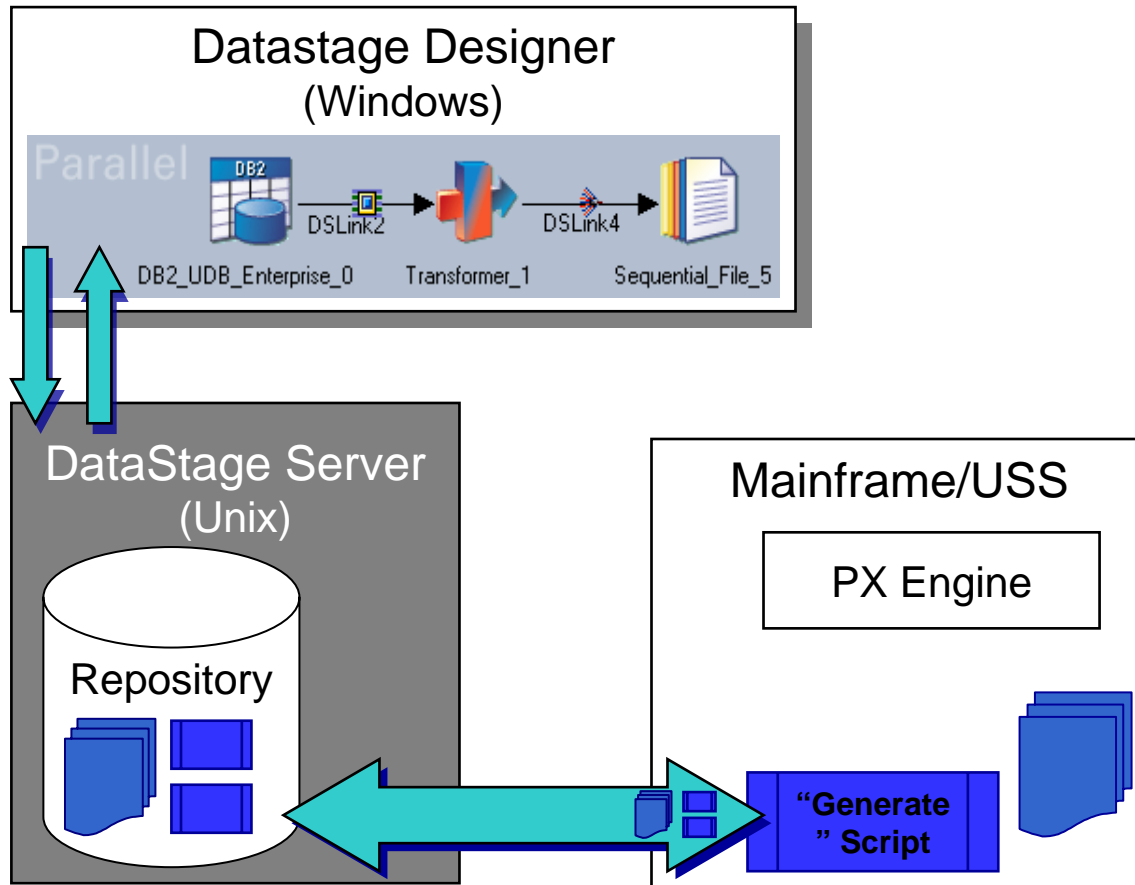
▪ WebSphere Event Publisher

- Near real time sourcing for data warehousing, data driven application messaging
- Publishes data events to a message queue using an XML self describing format
- Individual Event Publishers available for DB2 and Classic sources



DataStage for z/OS – Today

Step 1 (Development)

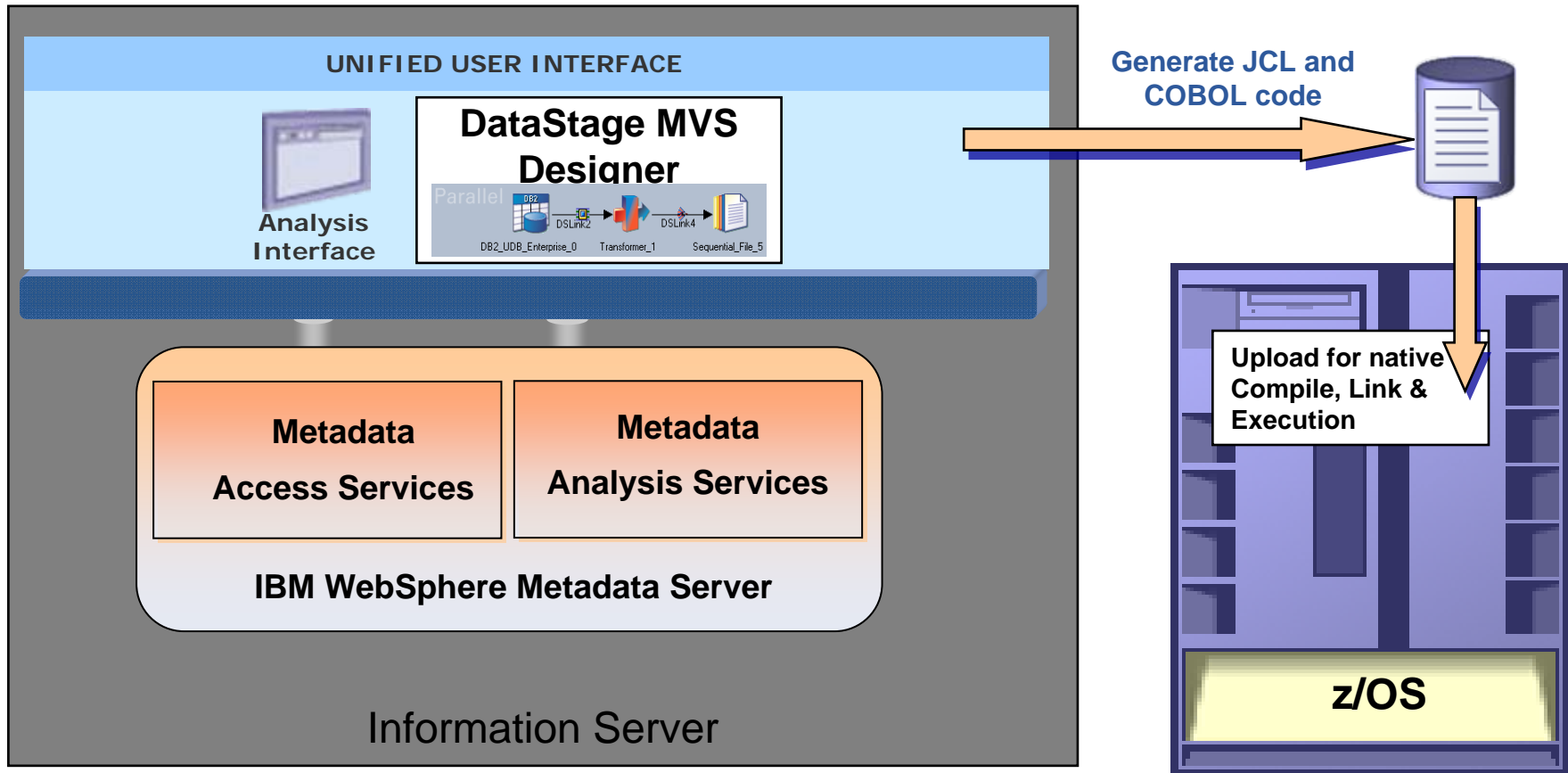


1. Compile

- > Generates osh, c++, generate and run scripts
- > Transfers files to USS and executes generate script
- > Reports status back

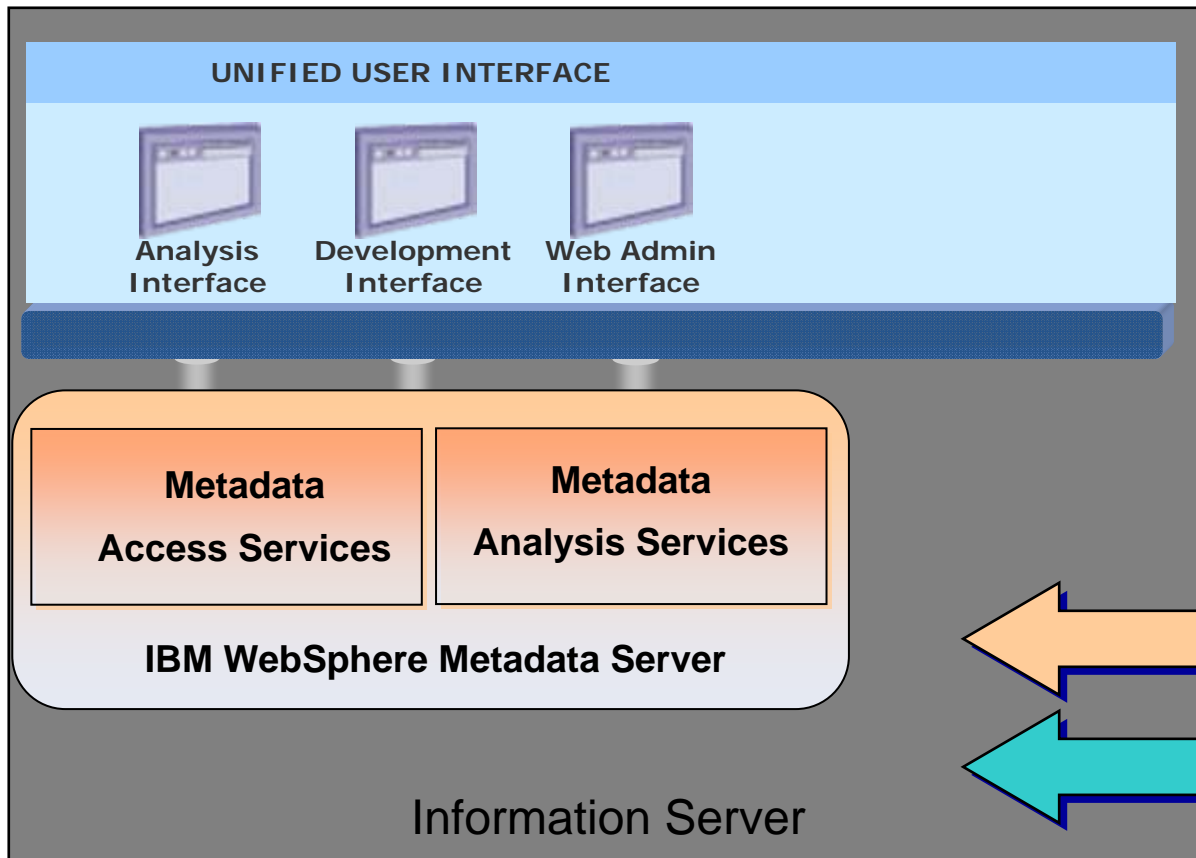
DataStage MVS – Today!

Phase 1 of System z Information Server Delivery

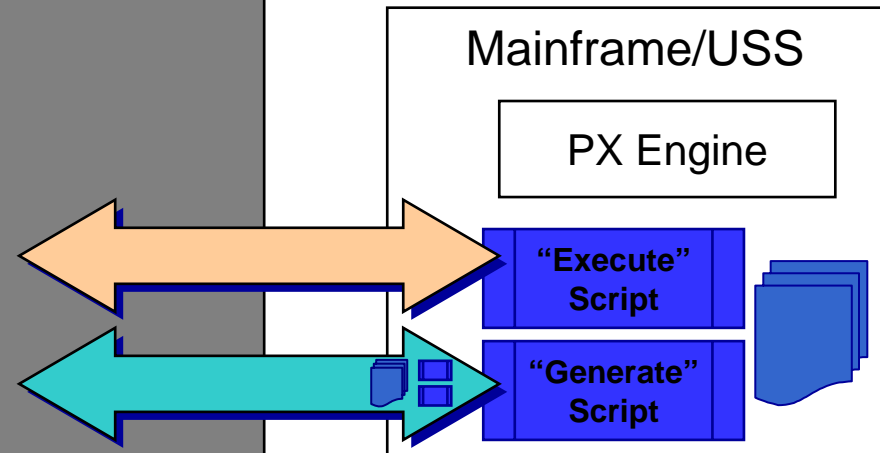


DataStage and QualityStage for z/OS – 2007

Phase 2 of System z integration with Information Server

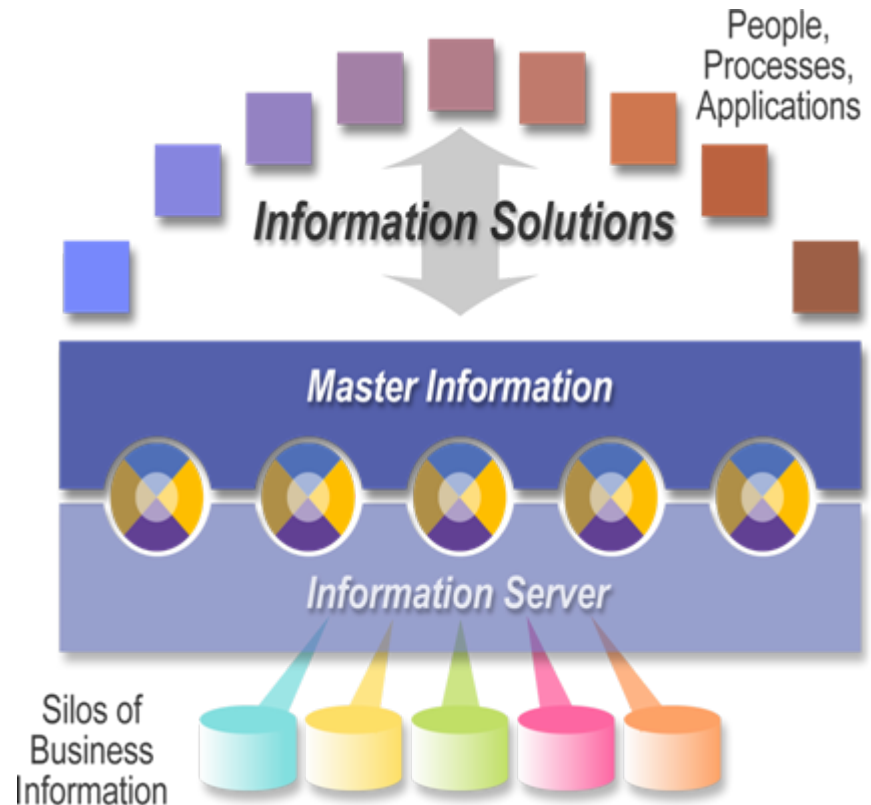


- Information Server Design and Development infrastructure
- Native z/OS Deployment

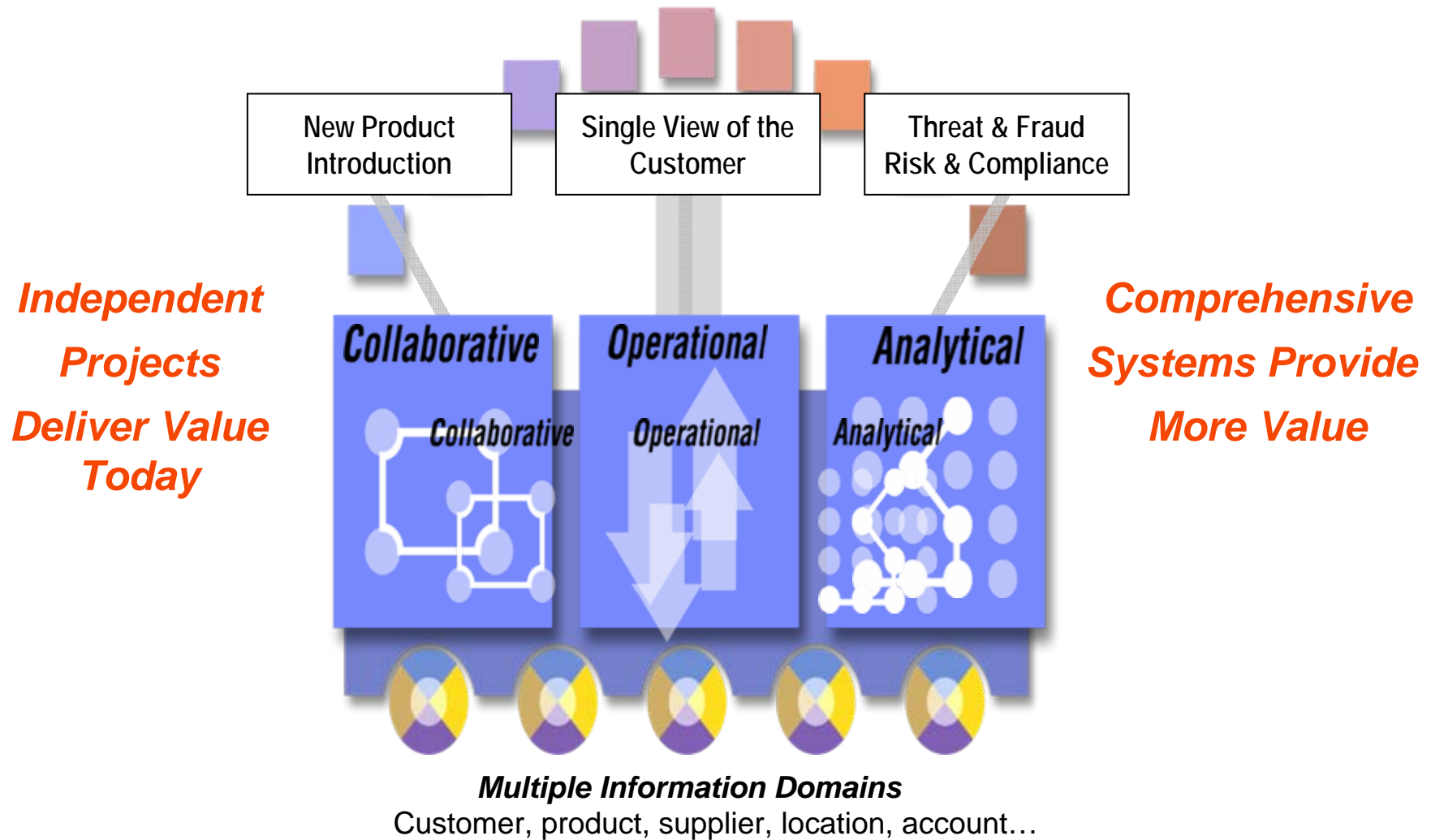


Information Solutions Delivers Business Innovation

- **Configure solutions to address our clients toughest Information Intensive Business Challenges, such as:**
 - Customer-centricity
 - Product and service optimization
 - Risk & compliance
 - Threat & fraud intelligence
- **Built from an integrated system for Multi-form Master Data Management**
 - *Multi – Domain (Partner, Product, Customer, Account, Location*
 - *Multi – Style (Collaborative, Operational , Analytical*
- **Based on IBM Information Server**



Master Information... Delivering New Business Value

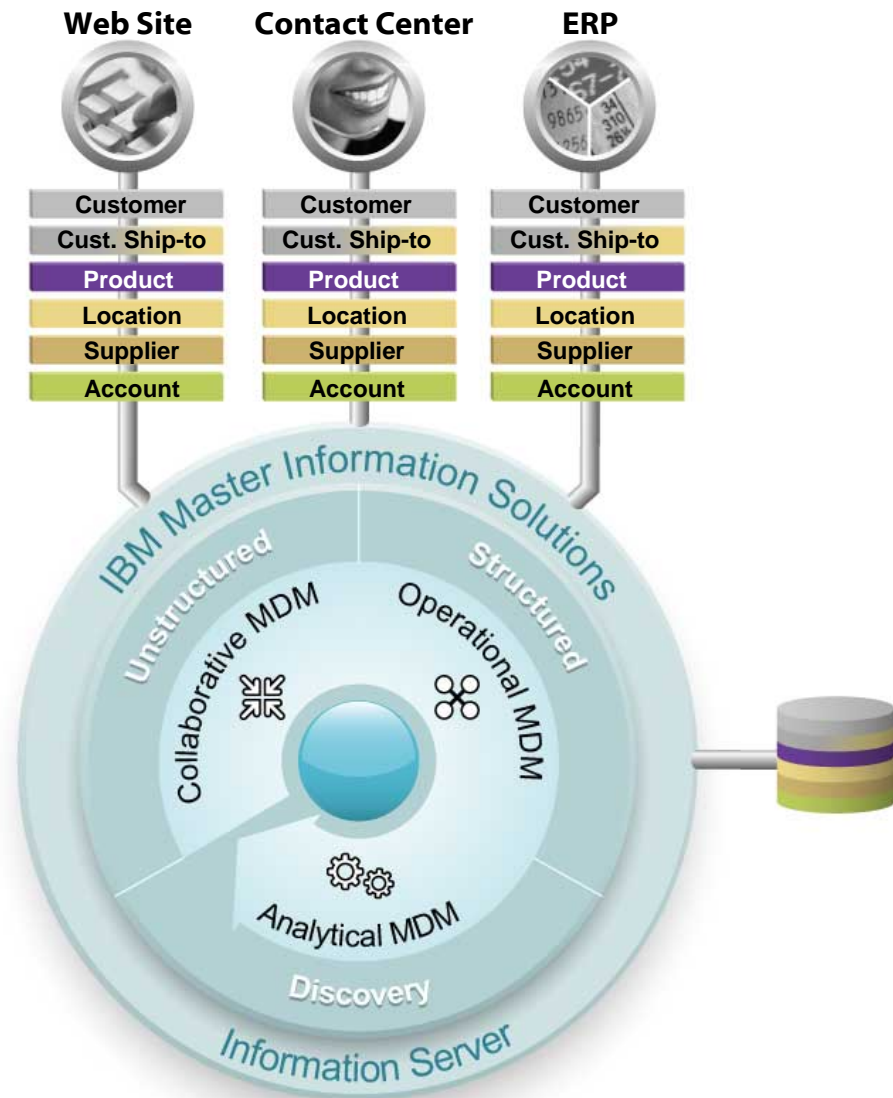


IBM Multiform Master Data Management

- **Multi – Domain**
 - Partner
 - Product
 - Customer
 - Account
 - Location

- **Multi – Style**
 - Collaborative
 - Operational
 - Analytical

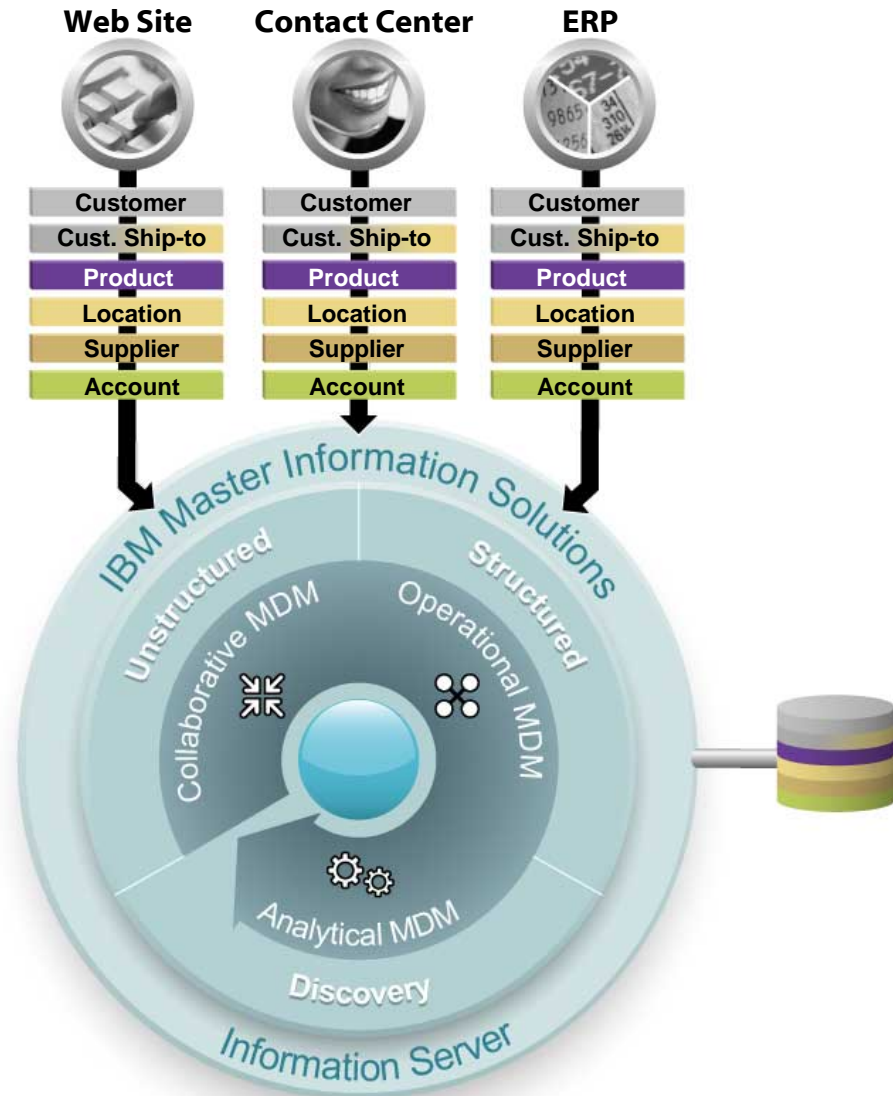
- **Multiple Business Processes**
 - New Product Introduction
 - Customer Centricity
 - Householding
 - ...



IBM MDM manages a complete data lifecycle

- **Collaborative MDM** publishes rich information into the data lifecycle
- **Operational MDM** ensures a consistent and synchronized set of processes via web services
- **Analytical MDM** leverages an enterprise master view to gain insight into your business processes

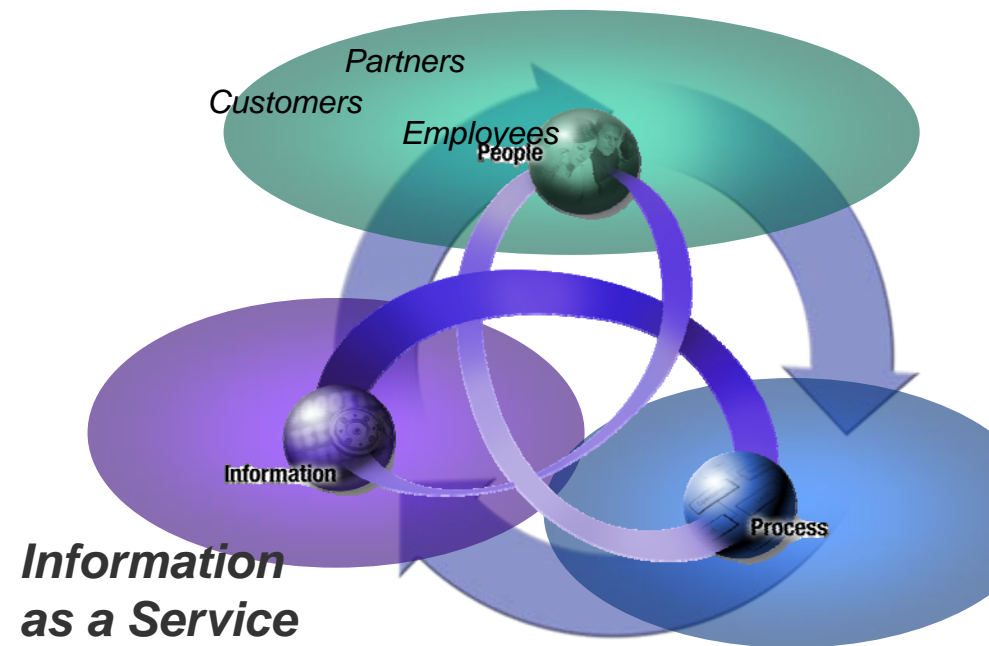
IBM MDM business services integrate with application business processes to provide accurate and complete master data



SOA - People, Process and Information

MDM In The Context Of SOA

- **Reuse:** one source of the truth across the enterprise
- **Service-level integration:** master information available across all business processes
- **Rule management:** maintain control over quality and flow of information across user communities



DB2 V8 and IBM zIIP can add value to database work

▪ Portions of the following DB2 for z/OS V8 workloads may benefit from zIIP*:

1. ERP, CRM, Business Intelligence or other enterprise applications

- Via DRDA over a TCP/IP connection (enclave SRBs, not stored procedures or UDFs)



2. Data warehousing applications*

- Requests that utilize parallel queries, including star schema

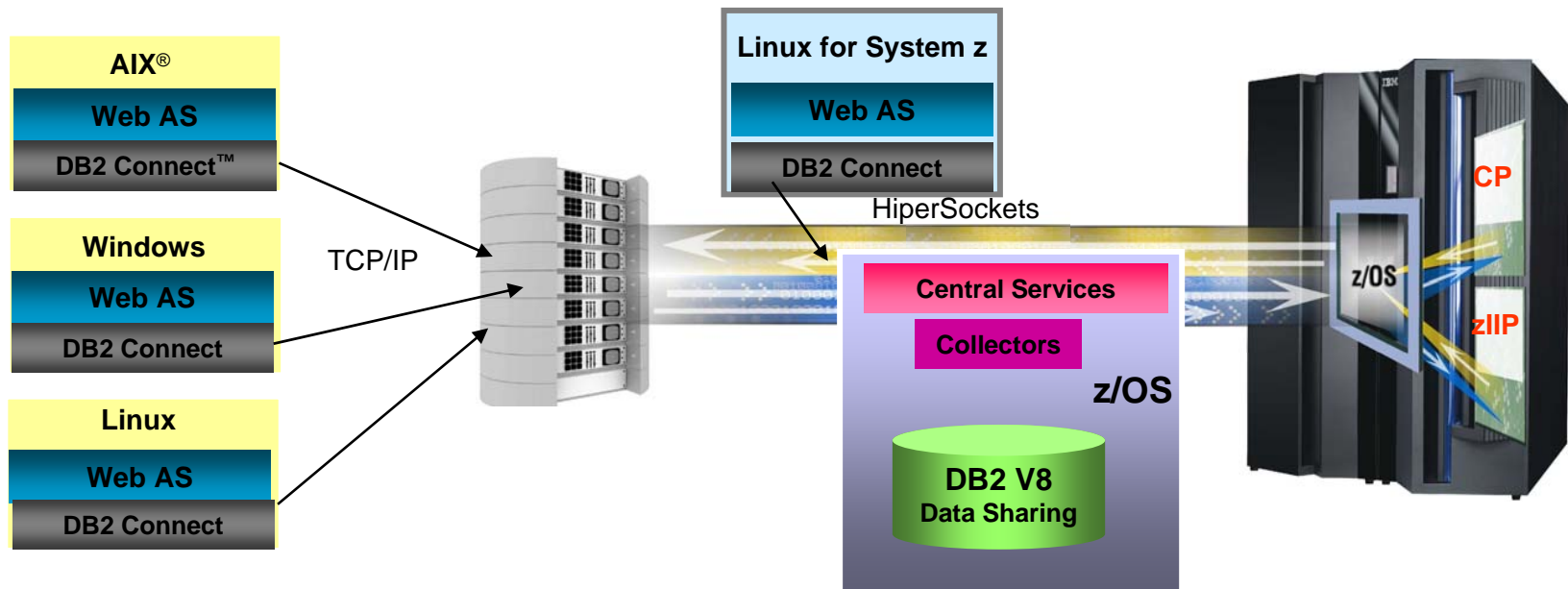
3. DB2 for z/OS V8 utilities LOAD, REORG & REBUILD*

- DB2 utility functions used to maintain index maintenance structures

* The zIIP is designed so that a program can work with z/OS to have all or a portion of its enclave Service Request Block (SRB) work directed to the zIIP. The above types of DB2 V8 work are those executing in enclave SRBs, of which portions can be sent to the zIIP.

Example for zIIP data serving workload SAP solutions

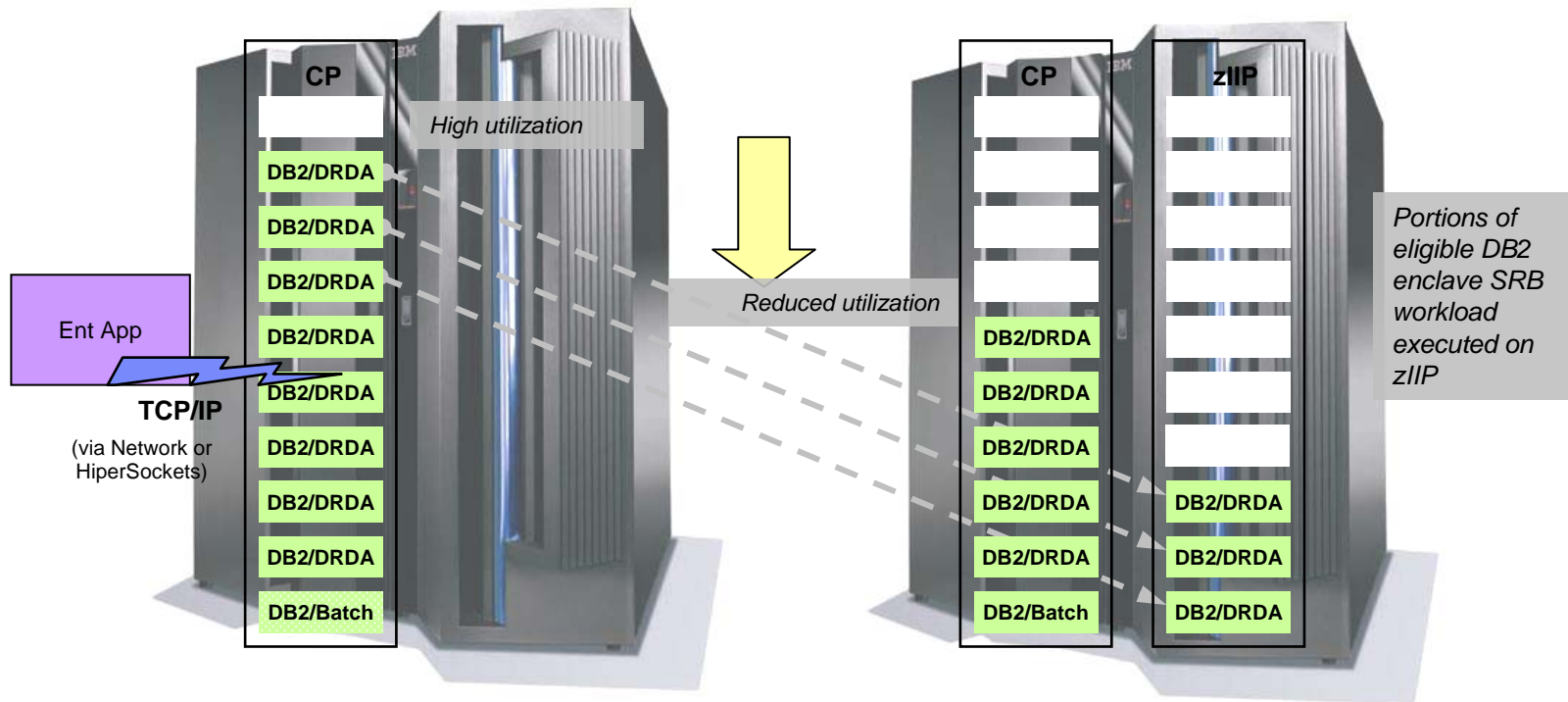
- **SAP NetWeaver based SAP Solutions** can exploit the benefits of the IBM zIIP



May enable growth of System z9 SAP workloads through resource optimization

Example for Distributed Applications

Enterprise Applications that access DB2 for z/OS V8 via DRDA over a TCP/IP connection will have portions of these SQL requests directed to the zIIP



For illustrative purposes only. Actual workload redirects may vary

Large financial services company is delighted with zIIP

Issues

- **Mission critical data is on DB2 for z/OS. Data is highly scalable and available, is secure, and has centralized management, backup, and recovery BUT**
- **... Pressure to reduce the cost of distributed database calls (DRDA)**
 - ERP application currently uses DB2 on z/OS for its data store
- **... Data warehouse performed outside of the mainframe, causing multiple copies of disparate data**
 - Potentially compromising security, management, backup & recovery

Solution

- **Five (5) System z9 Integrated Information Processors (zIIPs) were purchased.**
 - Simple installation of DB2 and z/OS maintenance
 - No code changes to the application
 - No configuration changes to DB2
 - zIIP activated automatically without any tuning requirements
 - DB2 workload was dispatched flawlessly
 - Customer quotes:
 - "The overhead of zIIP was monitored and appears to be insignificant"
 - "The response time improved with the available capacity of the zIIP"
 - "zIIP utilization reached 97% (avg over 15 min) & saturated the zIIP."

Results

- **The System z9 utilization was significantly reduced as workload was redirected to the zIIP**
 - Software [ISV] costs were significantly reduced.
- **Investigating Business Intelligence/ Data Warehousing on System z**

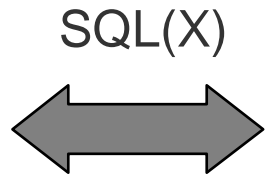
DB2 9 for z/OS – Addressing corporate data goals

- **Decrease Complexity and Cost**
 - Fast table replacement
 - Partition by growth
 - Table append
 - Volume-based COPY/RECOVER
 - Optimization Service Center
- **Evolve Your Environment & SOA**
 - Integrated pureXML
 - WebSphere® integration
- **Improved IT Infrastructure In Support of Compliance Efforts**
 - Trusted security context
 - Database roles
 - Auditing capabilities
 - Encryption improved
- **Simplify development and porting**
 - Many SQL improvements that simplify
 - Native SQL stored procedures
 - Default databases and table spaces
 - Automatic unique indexes to support primary keys

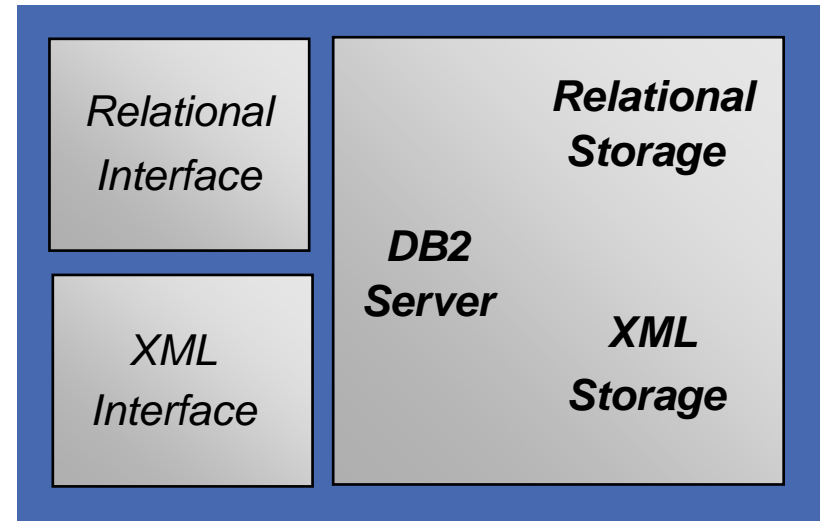
XML Capabilities Inside the Engine pureXMLtm

Performance, Performance, Performance

CLIENT



SERVER



Native storage Schema Index Functions Utilities

SQL: Productivity, DB2 family & porting



- XML
- MERGE & TRUNCATE
- SELECT FROM UPDATE, DELETE, MERGE
- INSTEAD OF TRIGGER
- BIGINT, VARBINARY, BINARY, DECIMAL FLOAT
- Native SQL Procedure Language
- Nested compound
- Optimistic locking
- LOB File reference variable & FETCH CONTINUE
- FETCH FIRST & ORDER BY in subselect and fullselect
- INTERSECT & EXCEPT
- Many new built-in functions, caseless comparisons
- Index on expression
- Improved DDL consistency
- CURRENT SCHEMA

Regulatory Compliance in DB2 9 for z/OS

Key implementations

- Network Trusted Contexts
- Roles
- Improved auditing
- Instead of triggers
- Secure Socket Layer
- Data Encryption



DB2 9 for z/OS Performance Improvements

- **Performance / Scalability Enhancements**
 - Especially Insert, Update & Delete
- **Query / Access Path Performance Enhancements**
- **Significant CPU time reduction in most utilities**
- **Other Performance Enhancements**
 - Native SQL procedure, index compression
 - LOBs, Varchar
- **Synergy with new hardware: zIIP, MIDAW, DS8000, ...**
- **Improved virtual storage usage Below 2GB DBM1**

Online Schema Evolution → Database Definition On Demand

- Online reorganization with no BUILD2 phase
- Fast replacement of one table with another
- Table space that can add partitions, for growth
- Improve ability to rebuild an index online
- Rename column and index
- Modify early code without requiring an IPL
- Alter table space and index logging
- Create & alter STOGROUP SMS constructs
- Alter column set default

Optimization Service Center and Optimization Expert

- **Index Advisor**
- Analyzes a workload and recommends indexes
 - Enabling you to select the best index to optimize query and application performance
- These recommendations can be implemented immediately
- Future: recommends MQTs and partitioning

- **Key value areas:**
 - Lowers Total Cost of Ownership by optimal exploitation of DB2 for z/OS
 - Increases Quality of Service by proactively solving problems before they occur
 - Decreases reliance on zSeries specific skills through autonomies and open tools

Optimization Service Center (OSC)

- Visual Explain
- Stats Advisor
- Service SQL
- Visual Plan Hint *

Optimization Expert (OE)

- Index Advisor
- Query Advisor
- MQT Advisor *

* scheduled for future release

Today's IBM DB2 Tools Product Portfolio

Utilities Management

- DB2 Utilities Suite
- DB2 Automation Tool
- DB2 Automation Tool SAP Ed.
- DB2 Cloning Tool
- **DB2 High Performance Unload**

Database Administration

- DB2 Administration Tool
- DB2 Object Compare Tool
- Data Encryption for DB2 and IMS
- DB2 Thread Expert
- DB2 Storage Management Utility
- DB2 Administration Toolkit SAP Ed.
- DB2 Audit Management Expert
- **DB2 Change Management Expert**

Performance Management

- OMEGAMON XE DB2 Performance Expert
- OMEGAMON XE DB2 Performance Monitor
- DB2 Buffer Pool Analyzer
- DB2 Query Monitor
- DB2 SQL Performance Analyzer
- DB2 Performance Toolkit SAP Ed.
- **DB2 Performance Expert**

Application Management

- DB2 Path Checker
- DB2 Bind Manager
- **DB2 Data Archive Expert**
- **DB2 Table Editor**
- **DB2 Web Query Tool**
- **DB2 Test Database Generator**

Recovery Management

- Application Recovery Tool for IMS and DB2 Databases
- DB2 Archive Log Accelerator
- DB2 Change Accumulation Tool
- DB2 Log Analysis Tool
- DB2 Object Restore Tool
- **DB2 Recovery Expert**

Information Integration

- WebSphere Classic Data Event Publisher
- WebSphere Classic Federations Server
- WebSphere Classic Replication Server
- **WebSphere Data Event Publisher**
- **WebSphere DataStage**
- **WebSphere Quality Stage**
- **WebSphere Replication Server**

Available on zSeries and multiplatforms (LUW)

Currently available only on multiplatforms (LUW)

DB2 for z/OS Tools – Delivering Customer Value

2004

- **DB2 V8 Exploitation**

- **New Tools**

- DB2 Test Data Base Generator
- DB2 II Classic Federation

- **New Releases/New Function**

- DB2 Administration Tool
- DB2 Archive Log Accelerator
- DB2 Object Comparison Tool
- DB2 Automation Tool
- DB2 SQL Performance Analyzer
- DB2 Query Monitor
- DB2 Log Analysis Tool
- DB2 Object Restore
- DB2 High Performance Unload
- Major new function delivered via PTFs for DB2 Admin and DB2 Object Compare
- DB2 Data Propagator for z/OS
- DB2 Replidata for z/OS

2005

- **New Tools**

- DB2 Thread Expert
- DB2 Administration Toolkit the SAP Edition
- DB2 Automation Toolkit the SAP Edition
- DB2 Performance Toolkit the SAP Edition
- Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS
- Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS
- WebSphere DataStage for z/OS
- WebSphere QualityStage for z/OS

- **New Releases/New Function**

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2006

- **New Tools**

- DB2 Recovery Expert
- DB2 Audit Management Expert
- DB2 Cloning Tool
- DB2 Optimization Expert
- DB2 Space Management Utility
- Regulatory Compliance Tools Suite

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2007

- **DB2 V9 Exploitation**

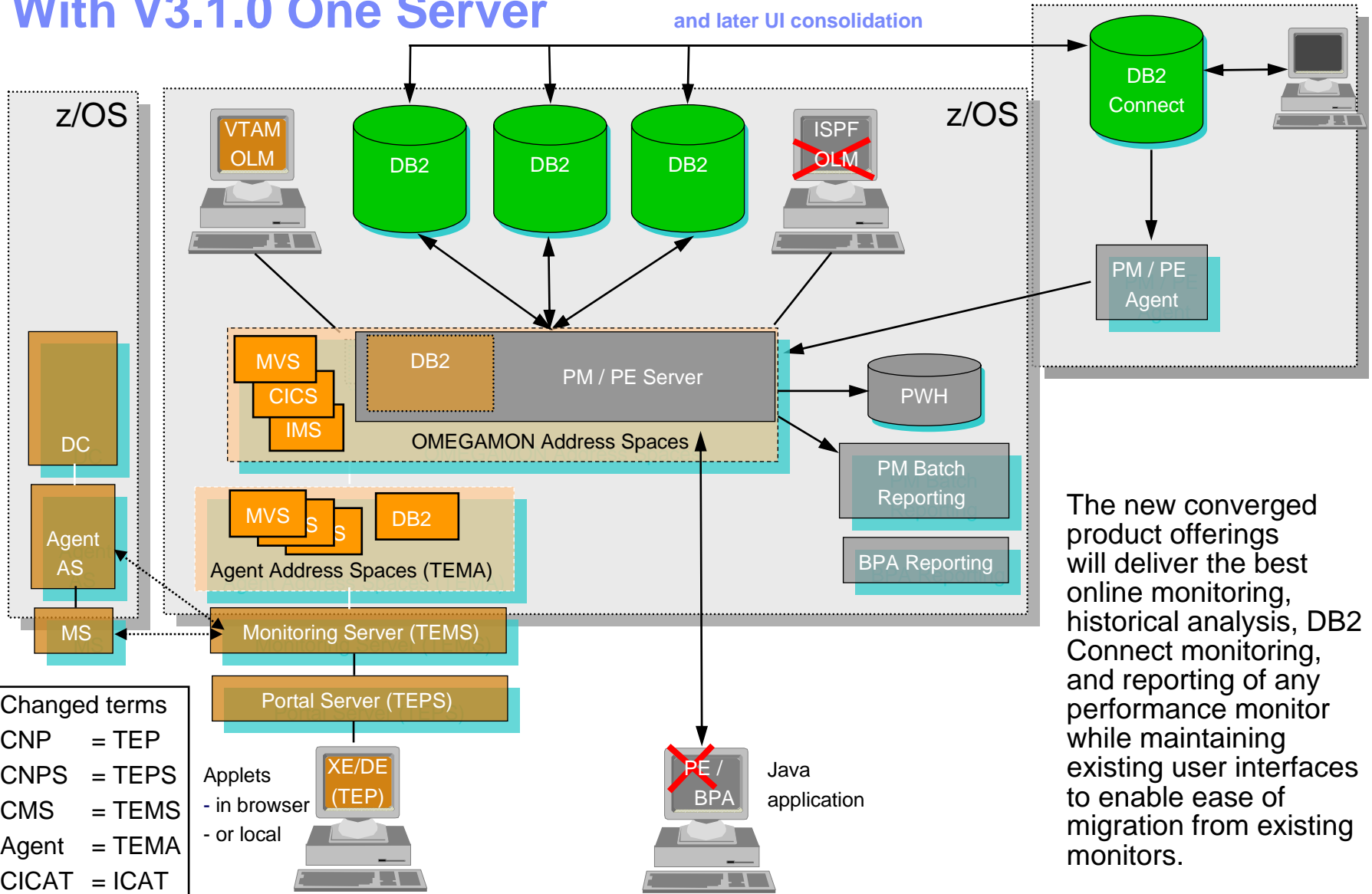
- **More New Tools**

- **More New Releases**

- **Continued focus on Lowering our customers TCO of DB2 and Autonomic Computing**

With V3.1.0 One Server

and later UI consolidation



The new converged product offerings will deliver the best online monitoring, historical analysis, DB2 Connect monitoring, and reporting of any performance monitor while maintaining existing user interfaces to enable ease of migration from existing monitors.

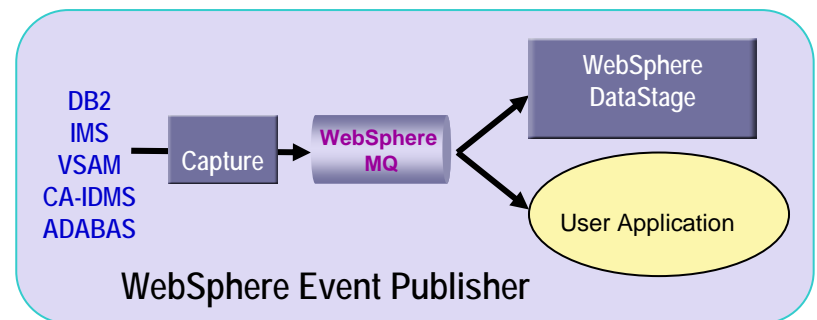
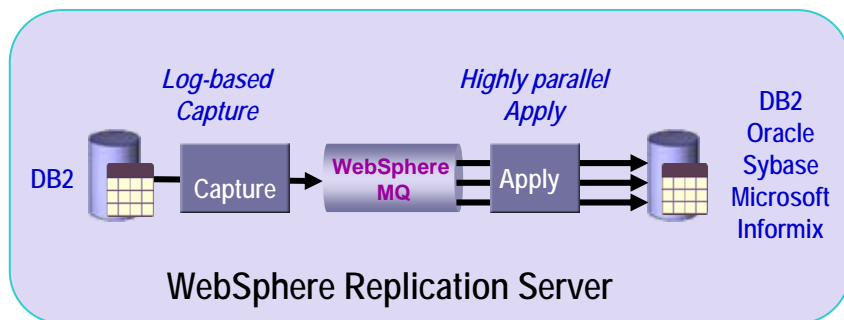
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Regulatory Compliance Suite

- **Encrypt sensitive Data**
- **Protect sensitive data for use in QA**
- **Save data for future audits and to comply with retention rules**
- **Audits -- discover who did what, where and when**

Utilizing Application Transformation Tooling for IMS

Transform User Experience

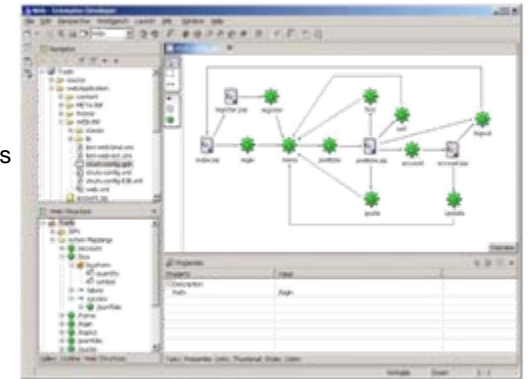
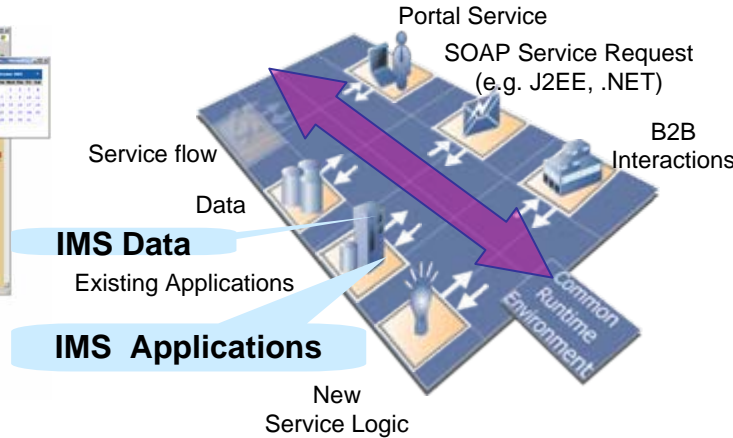
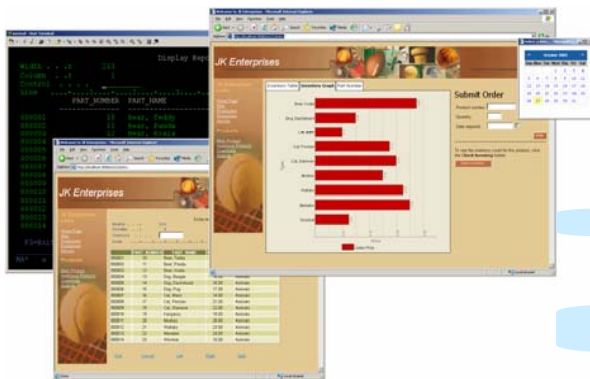
Enhance user interface and workflow for quick return on investment

Transform Application Connectivity

Improve business processes and develop customer, partner and supplier relationships using Web services and Java connectors

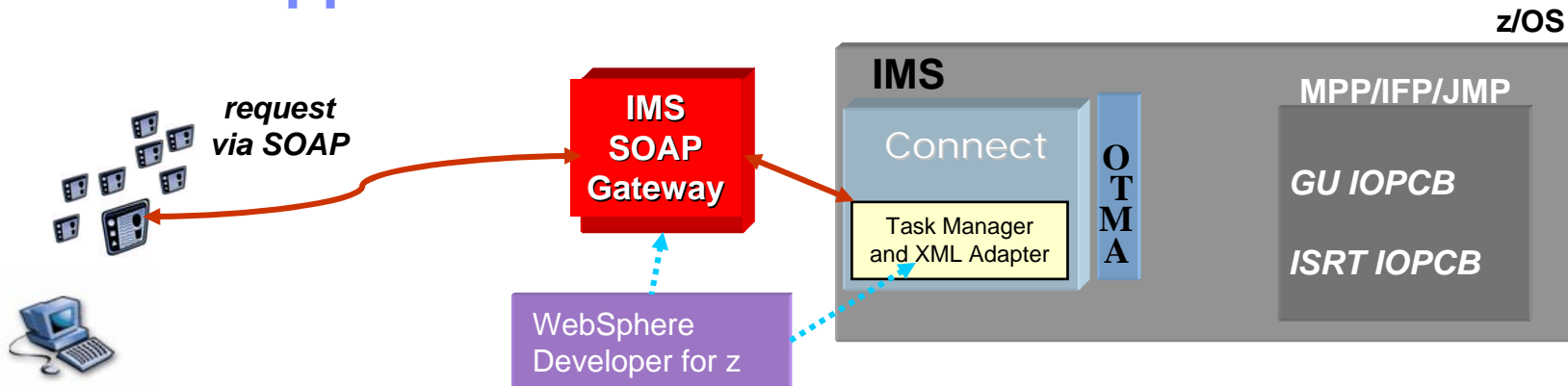
Transform Application Architecture

Update and extend mission-critical applications as services, leveraging their core value in new ways



Single integrated delivery vehicle across application transformation styles

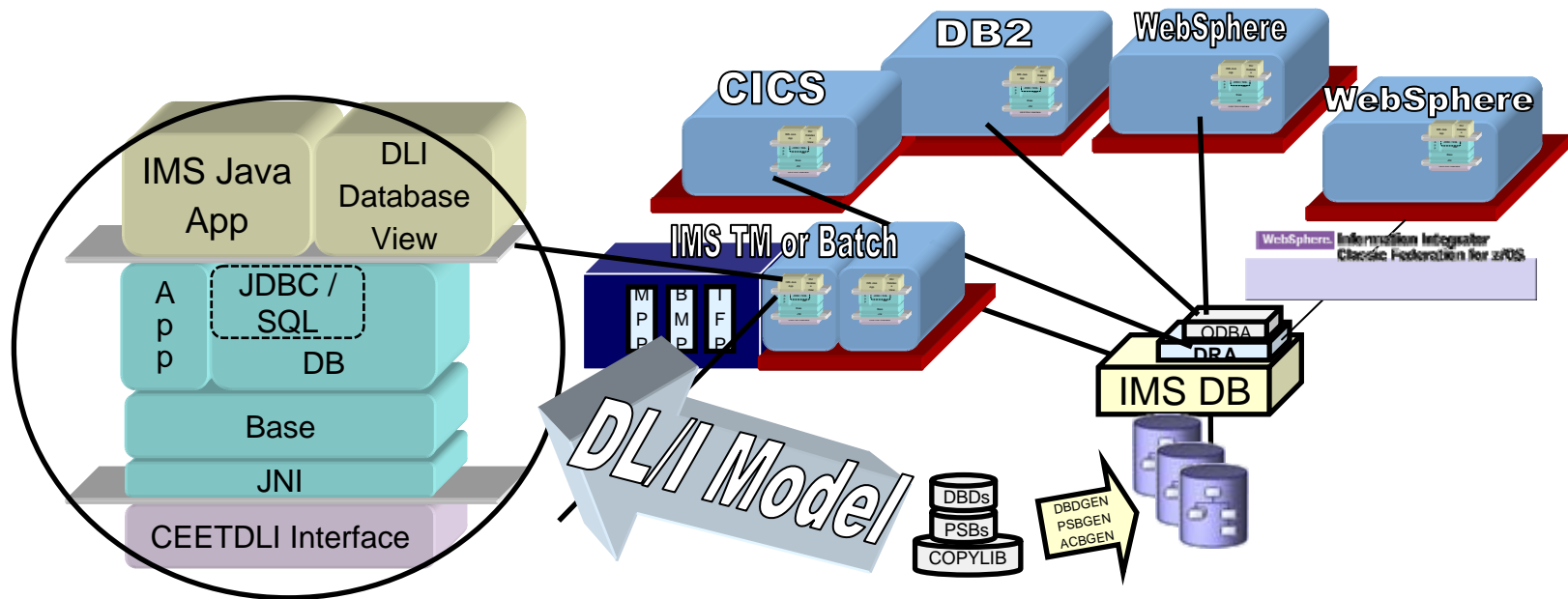
Broadened IMS Application Integration with IMS SOAP support



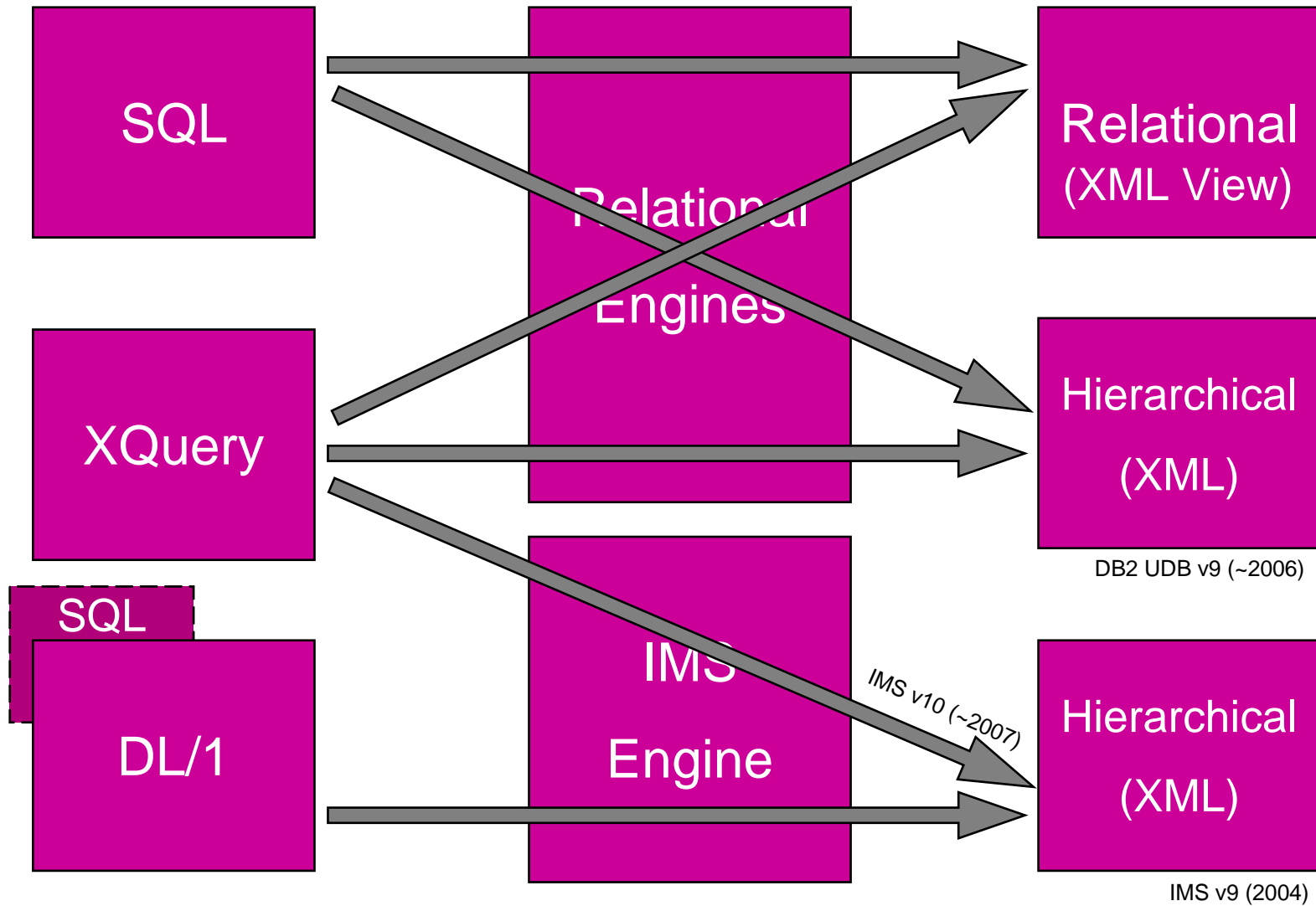
- **Enables Reuse of IMS Applications as Web Services**
 - Support WebService specifications
 - Leverages open standards and utilizes flexible tooling support
- **Provides IMS Transaction Interoperation with Client Applications**
 - Independent of location, programming language, and platform
 - SOAP Clients can be Microsoft .Net, SAP, Java, etc.
- **IMS SOAP Gateway R9.2 GA August 2006**
 - *Security enhancements*
 - Downloadable at <http://www.ibm.com/ims>
- **Task Manager/XML Adapter available Oct 2006 through IMS V9 service stream**

Easing Tooling for IMS Database Access with DLIModel Utility GUI

- DLIModel Utility first shipped with IMS V8
 - IMS Java tooling support
- DLIModel Utility GUI initial Technology Preview, **Updated 6/06**
 - Simplifies application development, visually representing IMS data
 - Downloadable through <http://www.ibm.com/ims>

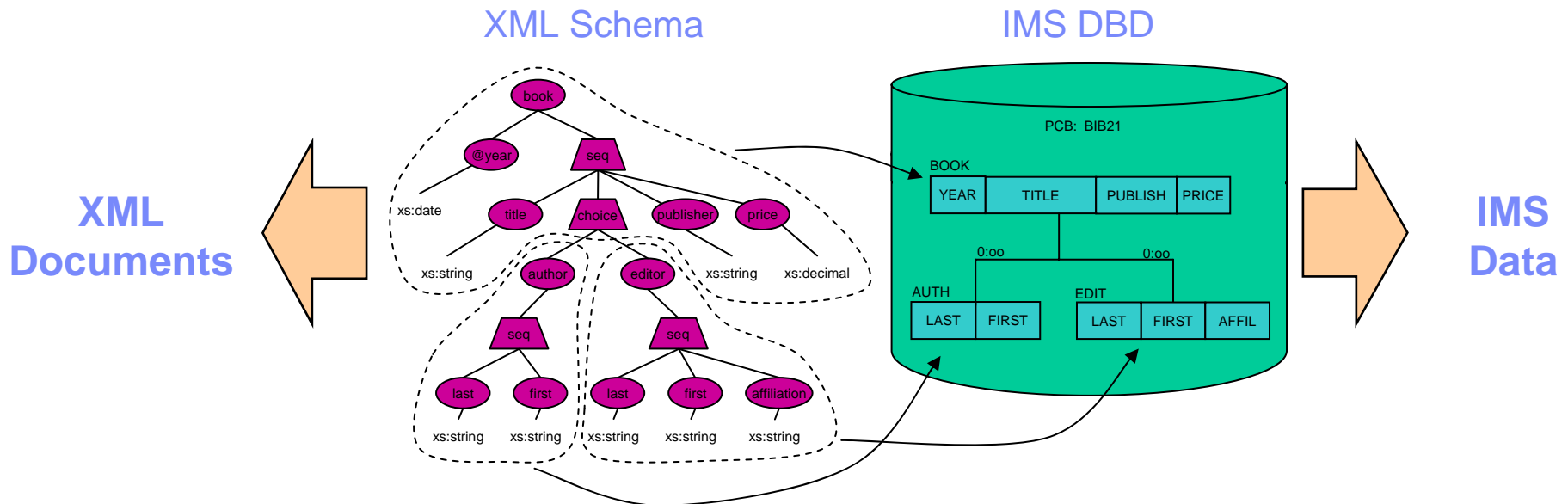


Road to Interoperability through XQuery



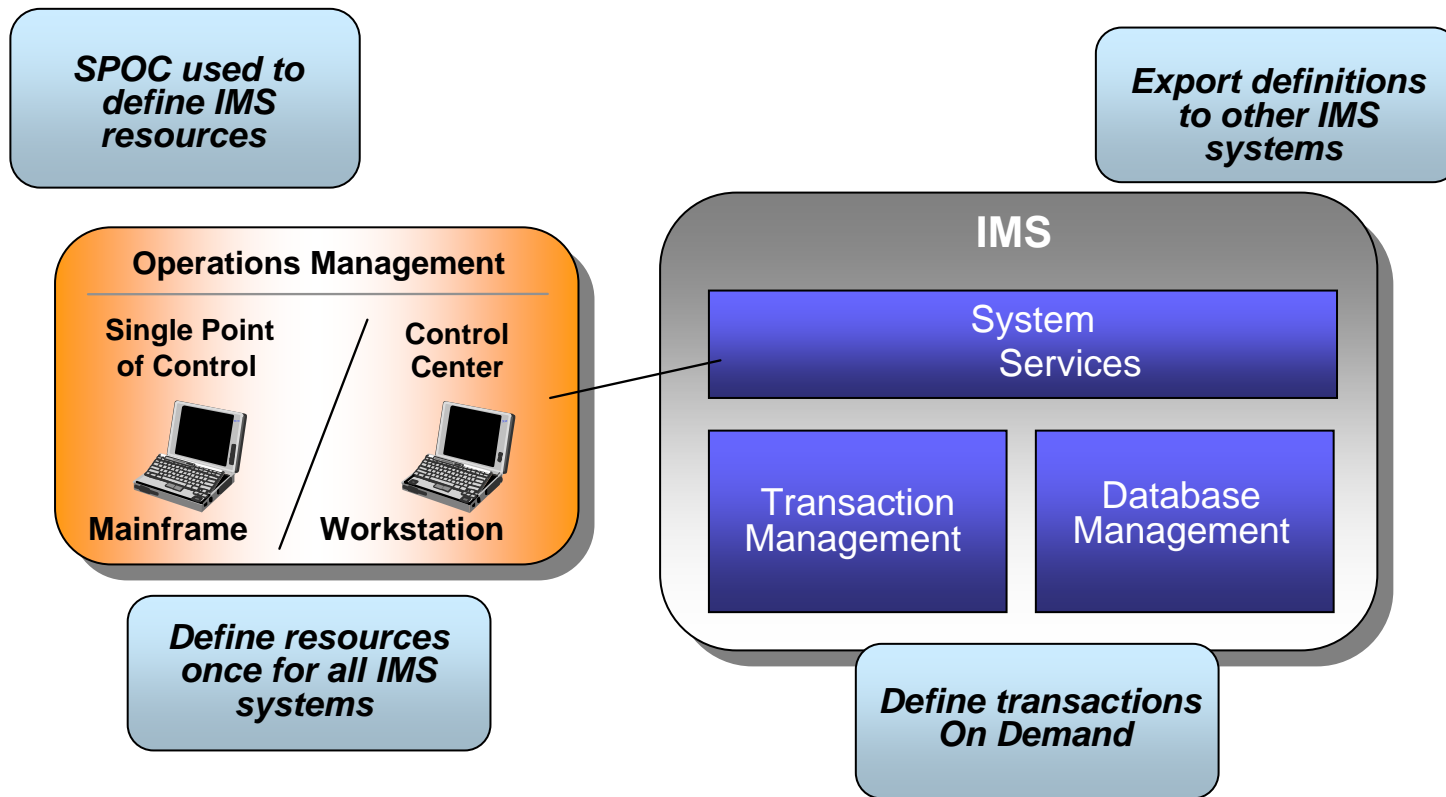
IMS XML Database

- Introduces a way to view/map *native* IMS hierarchical data to XML documents
- Aligns IMS Database (DBD) with XML Schema
- Allows the retrieval and storage of IMS Records as XML documents with ***no change*** to existing IMS databases
- Query IMS data using industry standard XQuery



IMS V10 Dynamic Resource Definition

Simplifies definition of IMS resources



Today's IBM IMS Tools Product Portfolio

Database Administration

- Data Encryption for IMS and DB2 Databases
- IMS Database Repair Facility
- IMS HALDB Conversion and Maintenance Aid
- IMS Hardware Data Compression Extended
- IMS Library Integrity Utilities
- IMS Parameter Manager
- IMS Sequential Randomizer Generator

Recovery Management

- Application Recovery Tool for IMS and DB2
- IMS DEDB Fast Recovery
- IMS Database Recovery Facility
- IMS High Performance Change Accumulation
- IMS High Performance Image Copy

Utilities Management

- IMS Database Control Suite
- IMS High Performance Fast Path Utilities
- IMS High Performance Load
- IMS High Performance Pointer Checker
- IMS High Performance Prefix Resolution
- IMS High Performance Unload
- IMS Index Builder
- IMS Parallel Reorganization

TM Management

- IMS Command Control Facility
- IMS ETO Support
- IMS High Performance System Generation Tools
- IMS Queue Control Facility

Information Integration

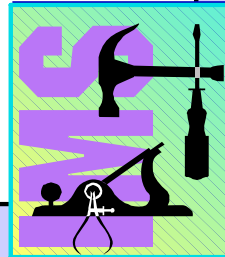
- IMS DataPropagator
- WebSphere II Classic Event Publisher for IMS
- WebSphere II Classic Event Publisher for VSAM
- WebSphere II Classic Event Publisher for CA-IDMS
- WebSphere II Classic Federation for z/OS

Performance Management

- IMS Buffer Pool Analyzer
- IMS Performance Analyzer
- IMS Problem Investigator
- IMS Network Compression Facility
- Tivoli OMEGAMON XE for IMS

Application Management

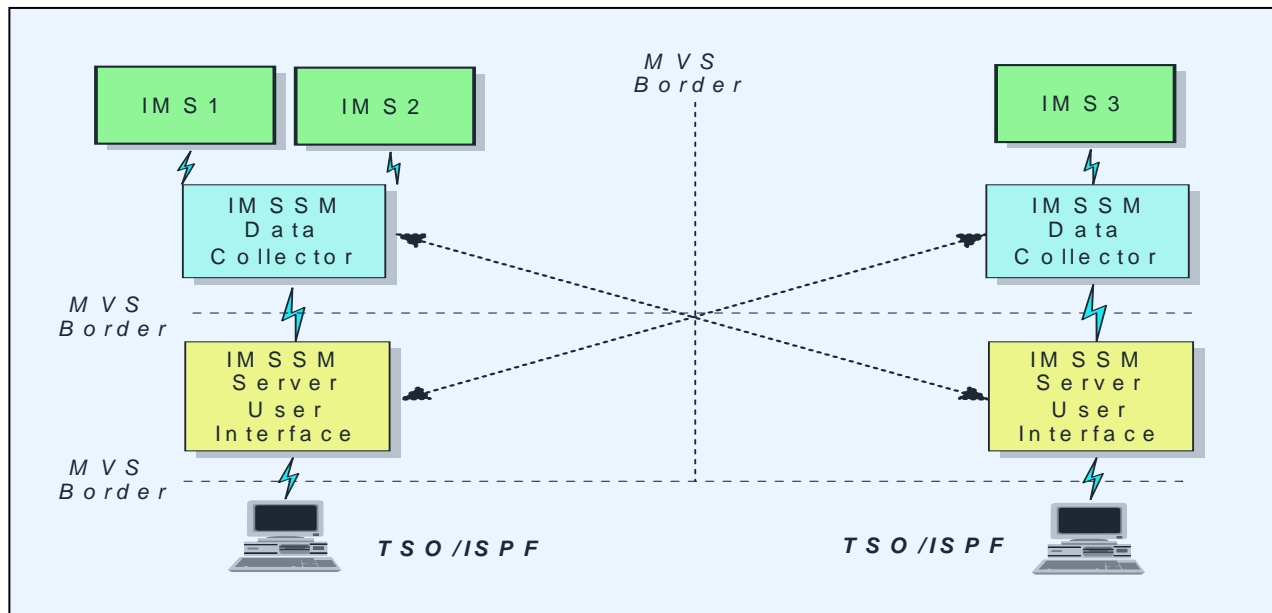
- IMS Batch Backout Manager
- IMS Batch Terminal Simulator
- IMS Connect
- IMS Connect Extensions
- IMS MFS Reversal Utilities
- IMS Program Restart Facility



Managing large IMS complex systems

IMS Sysplex Manager Improves IMS availability and scalability

- Real-time management of IMS Sysplex
- Single system image for operation of IMS in Sysplex environment
- Simplified User Interface to reduce operational complexity a
- Displays of IMS address spaces, CF structures, & resources
- Supports IMS DB/TM, DBCTL, and DCCTL for IMS V8, V9, ...

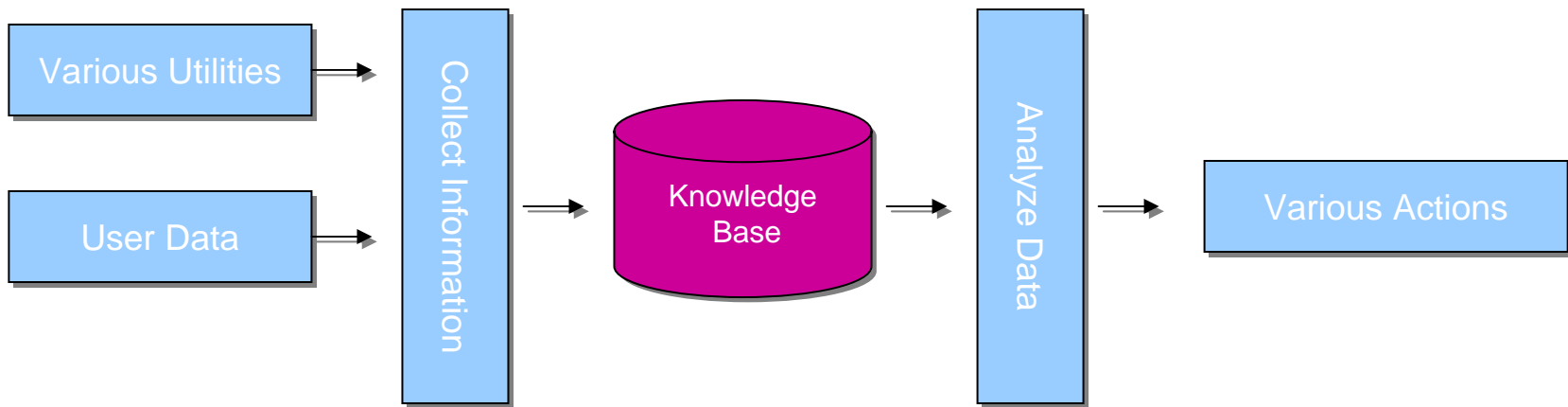


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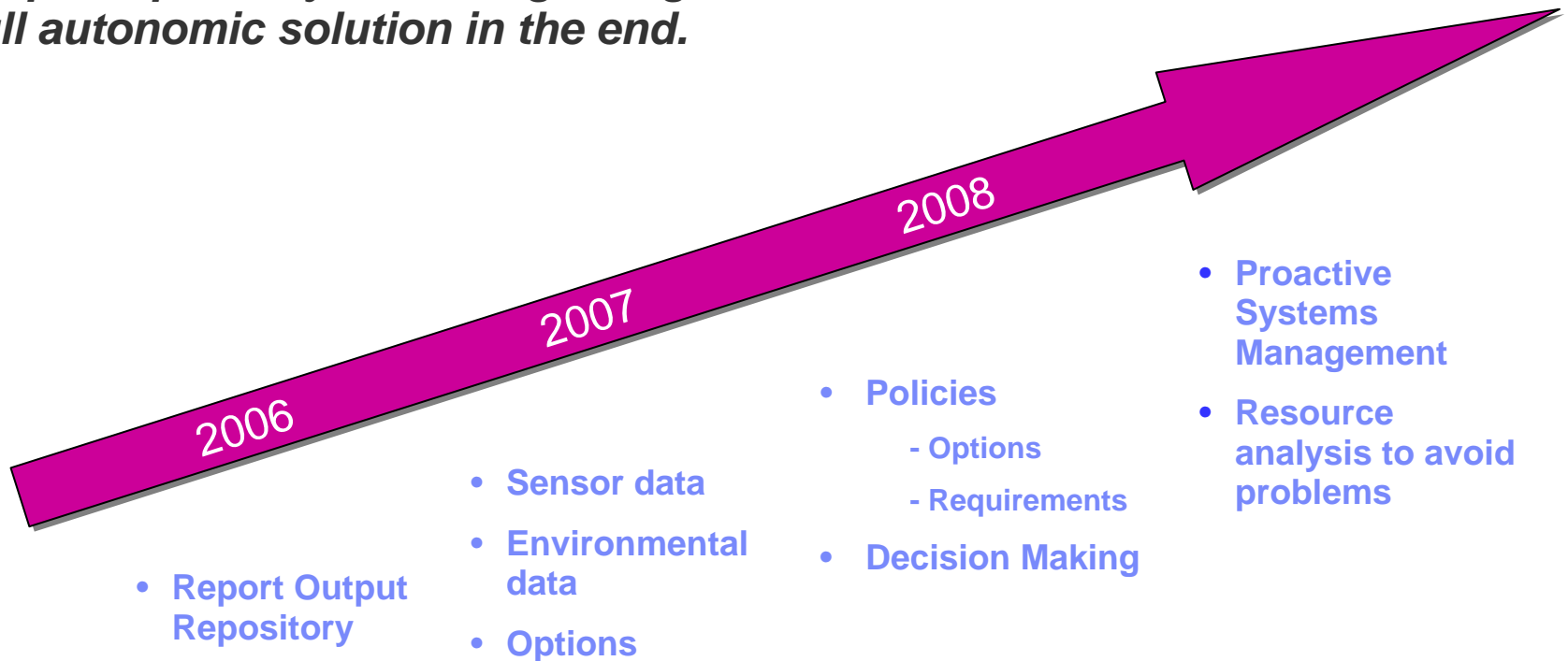
Looking Forward - Automation

- More Automation
- Smart Tools
- Knowledge Base



Looking Forward – Knowledge Base

The IMS Tools Knowledge Base is going to evolve from a pure report output repository in the beginning to a full autonomic solution in the end.



IMS: Providing Information On Demand

- Providing high performance, scalable, available, reliable and secure solutions
- Easing Integration with New Technology for a Service Oriented Architecture
- Simplifying Installation and Management

IMS: Continuing to Deliver the Best ...

IMS V7

- Large DB
- High Avail. DB
- IMS Java
- Rapid Restart
- IMS Connect V1
- New IMS Tools

IMS V8

- Extend DB Connectivity
- Enhance Sysplex Operations
- Simplify Install Process
- IMS Connect V2
- Enhance IMS Tools

IMS V9

- On-Line Reorg
- Enh Commands
- Reduced Sysgen Efforts
- DBRC Enh
- Fast Path Enh
- XML DB
- Integ IMS Connect
- Enh IMS Tools

IMS V10

- Systems Enh
- Operations Enh
- DBRC Parallelism
- MSC Bandwidth
- Incremental Application Dynamic Resource Definition
- Enh Connectivity
- XQUERY
- Enh IMS SOAP

IMS N

- Sysplex Enh
- DBRC Enh
- Enhanced Dynamic Resource Definition
- HALDB/OLR extensions
- Fast Path extensions
- XML DB enh
- Enh Dist DB Connectivity

IMS N+1...

- Sysplex Availability Enhancements
- Autonomic Management Enhancements
- Enhanced Dynamic Resource Definition
- Config Mgmt Enh
- Enh Connectivity

Database

Systems

Database

Systems

Database

Systems

Also delivering Service and Enhancements, with periodic Service Update (SUP) refreshed deliverables, and New/Enhanced Tooling.

- **Providing high performance, scalable, available, reliable and secure solutions**
- **Easing Integration with New Technology for a Service Oriented Architecture**
- **Simplifying Installation and Management**



Summary

- **IOD – complementary to SOA**
- **Information in motion for business value**
- **Sustained and growing investment in z software**
- **Deep synergy with System z and z/OS for industry leading TCO**
- **Tools that exploit our data bases as soon as they are available**
- **Total commitment to your success with z**

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