



# IMS State of the Union

## Tridex Inaugural IMS SIG



Greg Lotko  
Director, IMS Product  
IBM Silicon Valley Laboratory  
San Jose, California



# Securing your investment in IMS

## Keeping IMS

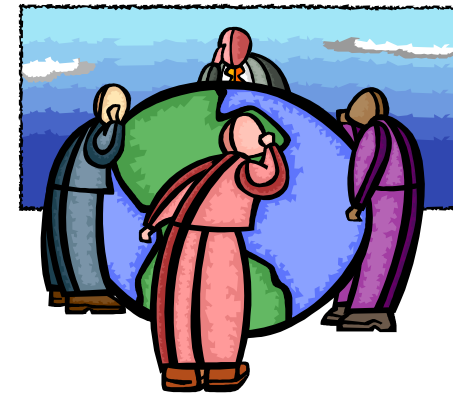
### THRIVING

- Your Success is Our Success
- Being Responsive



### VITAL

- Listening/Addressing Your Needs
- Ensuring Quality



### RELEVANT

- Leveraging Latest Technologies
- Planned Evolutionary Rollout



... Well Into the Future

# The IMS Leadership Team

## Senior Management Team

Greg Lotko  
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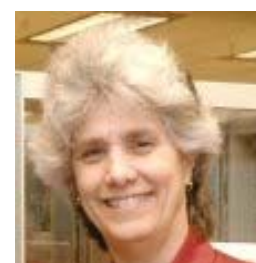
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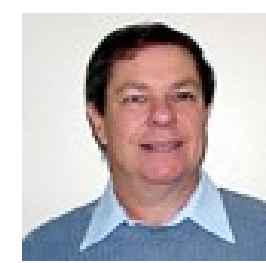
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# The IMS Leadership Team

## Line Management Team



Mauricio Adames  
Manager IMS Systems  
Dev/Service



Brian Baker, Manager  
IMS Transaction Mgmt  
Dev/Test/Service



Steve Zozaya, Manager  
IMS DBRC/RSR  
Dev/Test/Service



Angela Migliaccio,  
Manager IMS SOA  
Dev/Test/Service



Gene Haberman,  
Manager IMS FF DB  
Dev/Test/Service



Paul Fung, Manager  
IMS Systems  
Dev/Test/Service



Ron Blake, Manager  
IMS FP, XML DB  
Dev/Test/Service



Troy Reed, Manager  
IMS Systems and  
Performance Test



Judi Vera  
Manager  
IMS Development Tools



Joy Spohn, Manager  
IMS Worldwide  
Technical Support



Dave Moore, Manager  
IMS Worldwide  
Technical Support



Rick Herder,  
Manager IMS User  
Centered Design



Tim Hogan  
Manager IMS  
User Technology

# *The IMS Team... Building skills for today AND TOMORROW - We aren't just gray hairs!!!*



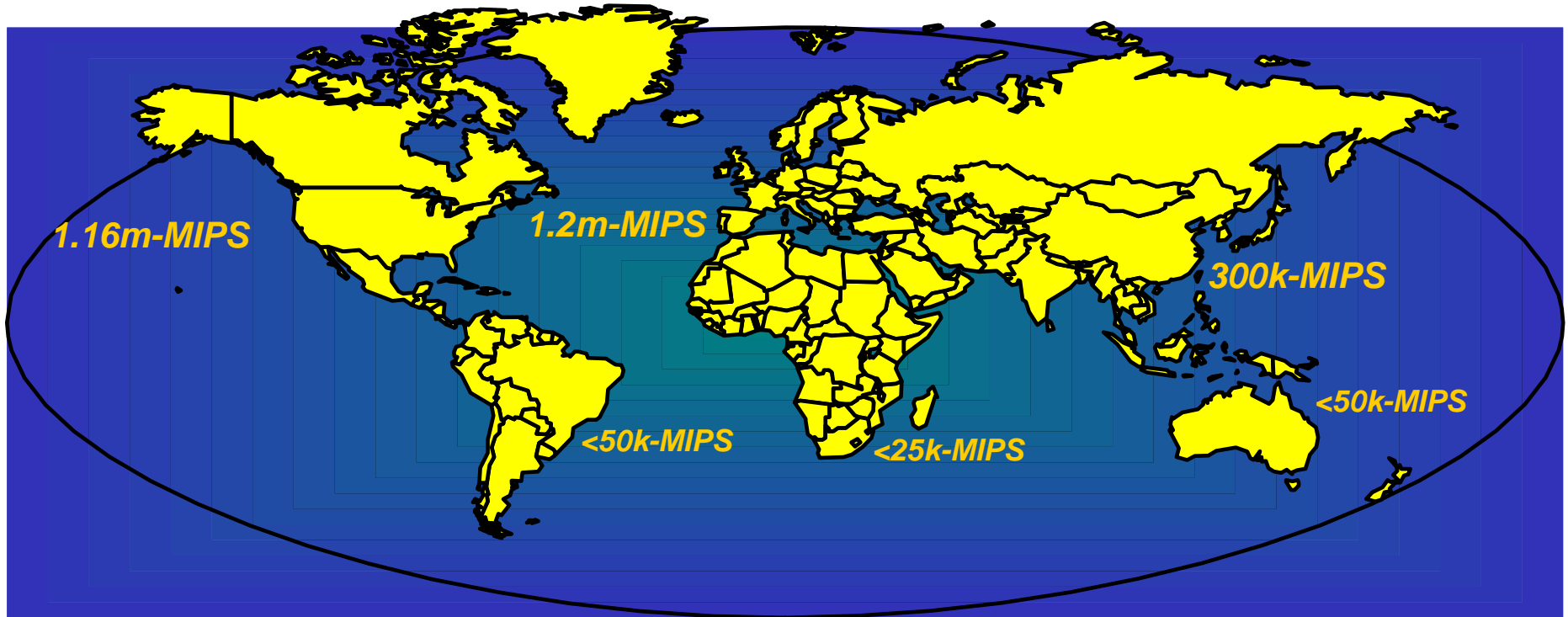
# *The IMS Team... Building skills for today AND TOMORROW - We aren't just gray hairs!!!*



# *IMS is CORE to our Client's businesses*

- Usage statistics continue to rise
  - Clients have exceeded 100 million trans/day
  - Clients process almost \$3 trillion/day in customer transaction
  - Multiple Clients have gone > 10 years without an unplanned outage
  - Asian bank has exceeded 300,000,000 savings accounts on-line
  
- Client investment in IMS
  - Applications continue to expand
    - Databases growing in both size and number
    - Transaction volumes continually rise
  - New applications integrating IMS data across the business

# IMS: The World depends on it !!!



**38 Years of Proven Quality, Performance and Commitment**

**Over 2.6 million MIPS  
running IMS !!!**

## IMS Growth

- IMS MIPS Growth (> 25%/year)
- V to V upgrades V7 V8 V9
- New license growth

**THANK YOU for your business !!!**



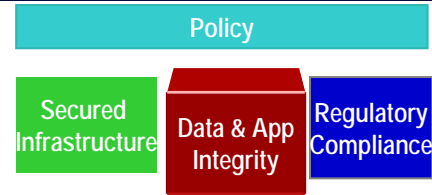
## Challenges

- ▶ **Data center consolidation**
  - from mostly non-IBM environment
  - from distributed environment
- ▶ **Thousands of stations (sessions)**
- ▶ **300+ million accounts**
- ▶ **Production throughout 2003 - 2006**
  - Drastic increases in amount of data
  - Exponential increases in transaction volume
- ▶ **"High availability essential"**

## Solution

- ▶ **IBM Parallel Sysplex**
  - Initial 2 way data sharing implementation migrated to 4 way
- ▶ **IMS Data Base**
  - HALDB for large DB's requiring multiple secondary indexes
  - Fast Path DEDB's for both large DB and efficiency
  - Fast Data Base Recovery function for high availability
- ▶ **PPRC/GDPS planned for remote site backup**
- ▶ **Automatic Restart Manager (ARM) used for quick image restart**
- ▶ **IBM Tivoli System Automation tool used for subsystem startup/shutdown/etc.**

# Integrated IMS Security and Integrity



- Organizations are seeking more and more very comprehensive security approaches
- Built in Security of the z platform and IMS continue to address the full spectrum of security requirements -- World Class security server
- IMS Transactions and Resources protected with RACF, Secure Socket Layer (SSL), etc.
  - IMS follow-on requires RACF or equivalent; Security Maintenance utility (SMU) no longer supported
- Data is protected at IMS segment level and DB2 row level
- IBM Data Encryption for IMS and DB2 Databases
  - Enables Storage Area Networks (SANs) safely while complying with privacy and security regulations worldwide.
  - Exploits z/Series and S/390 Crypto Hardware features, resulting in low overhead encryption/decryption.

RACF provides:

- . IMS user verification
- . IMS trans. authorization
- . Authorization to IMS control region resources

*Over 50B transactions per day run through IIMS*

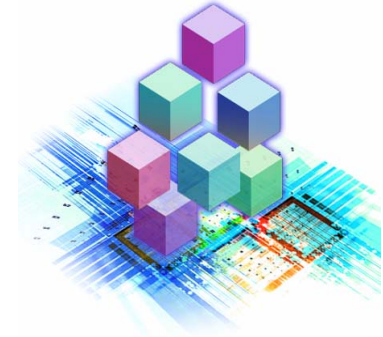
*IMS customers have run over 3000 days without an outage*



IMS benefits from transaction security through RACF

# *Service Oriented Architecture (SOA) Enables Integration and Collaboration*

- **Leveraging your existing IT investment**
  - Standard interfaces for asset reuse
  - Evolutionary, not revolutionary
- **Business and IT coupled together**
  - Business understanding for competitive advantage
  - Industry-centric
- **SOA requires a flexible & robust infrastructure to model, assemble, deploy and manage**
  - Open, Standards based
  - End to End integration of people, process, information
  - Seamless lifecycle from model, assemble, deploy, and manage
- **Skill and experience are important for your customer's success**
  - Leverage our best practices and experience
  - Our partners take us to the next level
  - Free offerings to get started (SOA Jumpstart & SOA Project Definition)

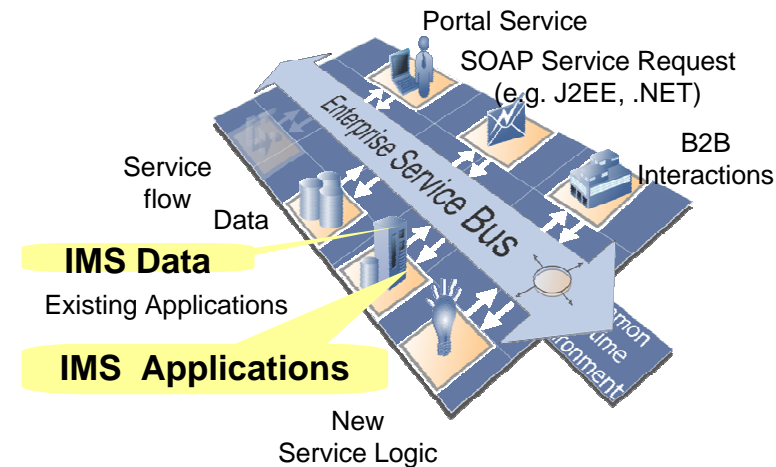


## *IMS Integrated On Demand Strategy:*

- **Protect customer investments by enabling access to IMS transactions and data**
  - Designed to support open integration technologies
  - Modernize IMS transactions and data
  
- **Fully integrate with WebSphere and Tools and utilize a common programming model for a service-oriented architecture (SOA) based on standards**
  
- **Encourage new application development by supporting standards – e.g. XML, SOAP, Java, JDBC, etc.**

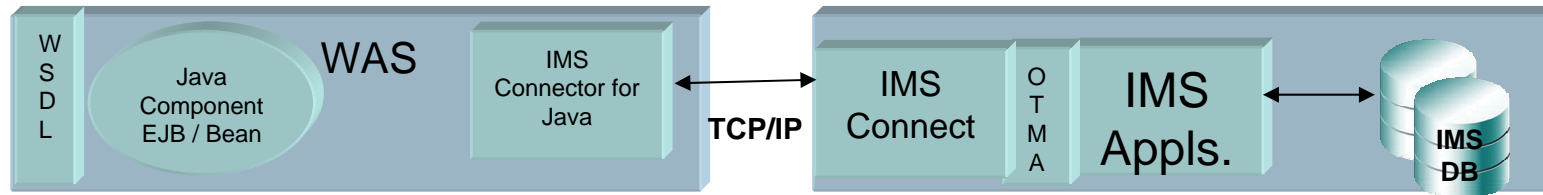
# IMS Transaction and Data Integration with Web Services and Service-Oriented Architecture

- **Web services -- Next step in the evolution, allowing programmable elements be placed on sites for distributed web access across platforms**
- **Enabled as Web services, unchanged IMS Transactions support a Services Oriented Architecture**
  - Leveraging past investments
  - Reducing new programming efforts
  - Aiding business process transformation
  - Aiding application integration with partners, suppliers, and customers
- **IMS C, Cobol and MFS-based Transactions enabled as Web services via WebSphere/Rational Servers/Tooling**
- **IMS Transactions enabled as Web services via IMS SOAP Support**

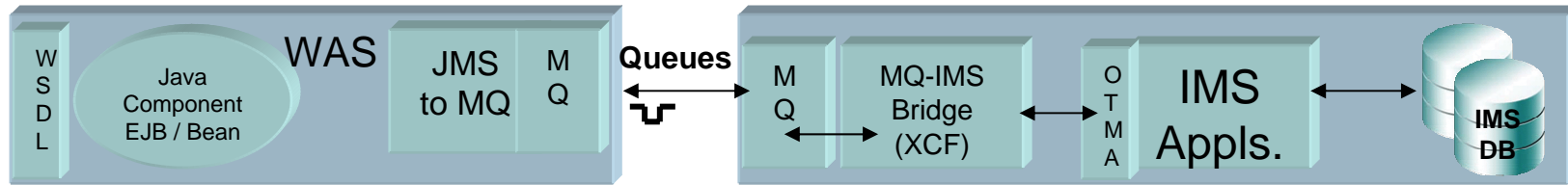


# IMS Web Services Integration Approaches

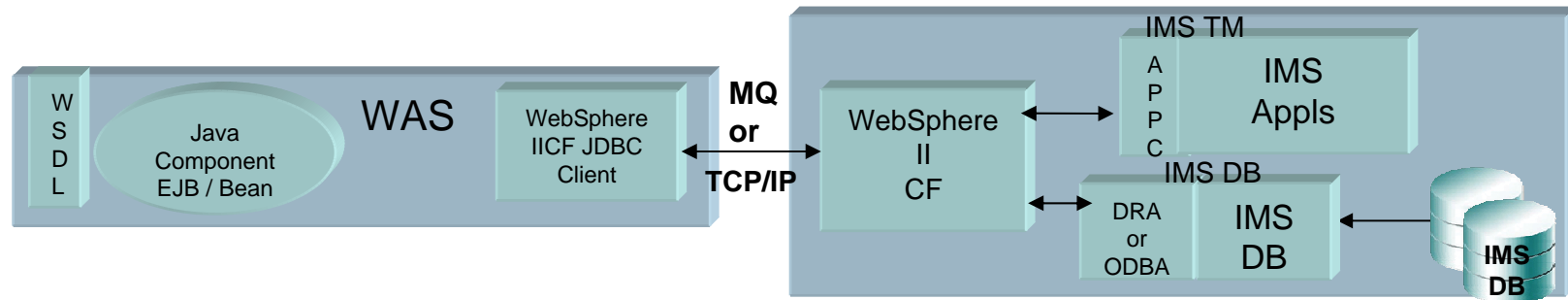
**IMS Connect /  
IMS Connect Java Client**



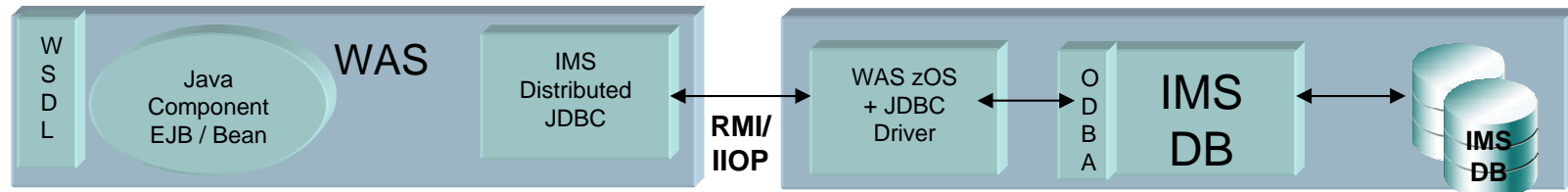
**WebSphere MQ/  
MQ/IMS Bridge**



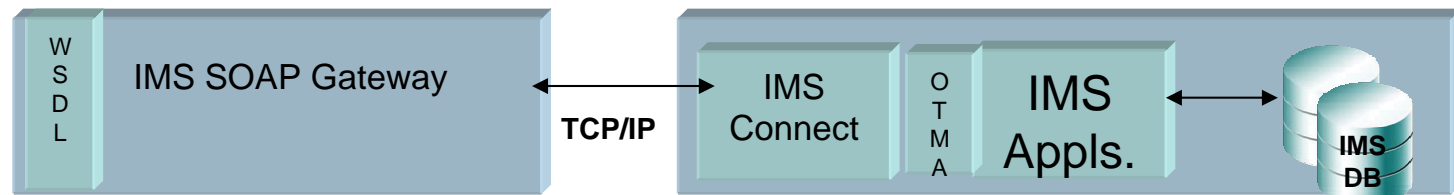
**WebSphere II CF**



**IMS Distributed JDBC**



**IMS SOAP Gateway**



# IMS Version 9

## Enabling Information On Demand Business Transformation

Integrated Connect Function  
for High Performance Access

XML Database support  
for Universal Information  
Interchange

Integrated HALDB  
Online Reorganization  
for Scalable/Available Data



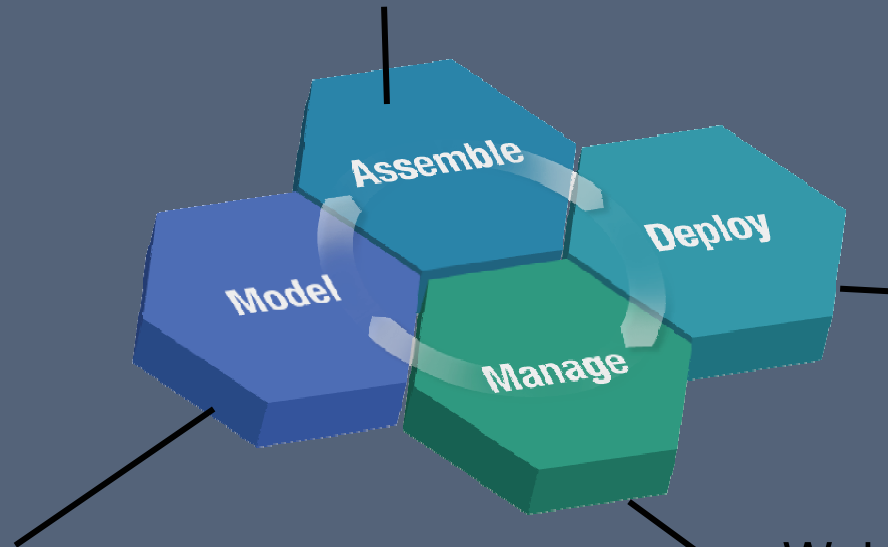
State-of-the-Art Tooling to  
Easily Develop/Deploy/Manage  
Applications at Low Cost

Publish IMS Transactions  
as Web Services for Better  
Business Process Integration

Generally available since October 2004

# Enhanced Application Tooling Strengthens the SOA Foundation for Transformation and Integration of Existing Applications and Data

Rational Application Developer  
WebSphere Developer for zSeries  
WebSphere Integration Developer  
Debug Tool and Debug Tool Utilities



WebSphere Application Server  
WebSphere Process Server  
WebSphere Message Broker  
WebSphere MQ  
WebSphere MQ Workflow  
WebSphere Information Integrator (II)  
WebSphere II Classic Federation  
WebSphere II Event Publisher

WebSphere Business Modeler  
Rational Software Architect

WebSphere Application Monitor  
Tivoli Composite Application  
File Manager  
Fault Analyzer



# *Enhanced IMS Management Tooling for Infrastructure Simplification*

## **Delivered in 2005**

- IMS Problem Investigator V1R2
- IMS High Performance Sysgen Tools V2R1
- IMS High Performance Image Copy V4R1
- IMS Connect Extensions V1R2
- IMS Database Control Suite V3R2
- IMS High Performance Fast Path Utilities V2R1
- IBM Tivoli OMEGAMON XE for IMS on z/OS V3R1
- IMS Sysplex Manager V1R1
- IBM Data Encryption for IMS and DB2 Databases V1R1



## **Delivered in 2006**

- DB Recovery Facility V3R1
- HP Change Accumulation V1R3
- IMS Performance Analyzer V4R1
- IMS Problem Investigator V2R1

# Continuing Enhancements for IMS V9

## Increased Ease of integration

- **IMS Connectivity enhancements**
  - Sysplex Distributor - reroute persistent socket messages, reroute and purge not deliverable
  - RAS enhancements
  - RACF Key ring support
  - JCA 1.5., WAS V6, WID/WBI V6
  - OTMA enhancements for Message Flood and ERE
- **ESAF/DB2SAF simultaneous access to same DB2**
- **IMS Java enhancements**
  - JDBC Deferred Program Switch support
  - GSAM database support in JBP regions
  - SQL enhancements – adds use of non-DBD-defined fields in WHERE clause
  - Serviceability/Performance enhancements

## Improved Systems Management

- **Sysplex Unresolved CQSPUT during CQS Resynch new message**
- **Operations Manager enhanced to pass FID for AOI conversion**
- **Log Edit User Exit to allow editing of trans message record in the IMS log data for additional security**

## Scalability

- **Fast Path Shared VSO Dual Structure diagnostic log records**
- **DBRC Retain position high key and Init.PART enhancement**
- **Syncplex Option helps synchronize failed Sysplex IMSs restart**
- **HALDB Partition Range Processing**
- **Allocation of DSAB/TIOT blocks about the 16 M line**

Volvo Group

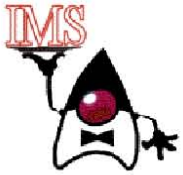
*... driven by imagination and  
Internet access to IMS data*

**VOLVO**

**Connect  
Extended  
Teams**

- Challenge:** Provide secure and easy access to technical drawings, technical data and financial information
- Solution:** Internet / intranet access to existing IMS data
- Benefits:** Maximize value of corporate data, maximize value of existing skills base and maximize value of existing investment to provide competitive advantage

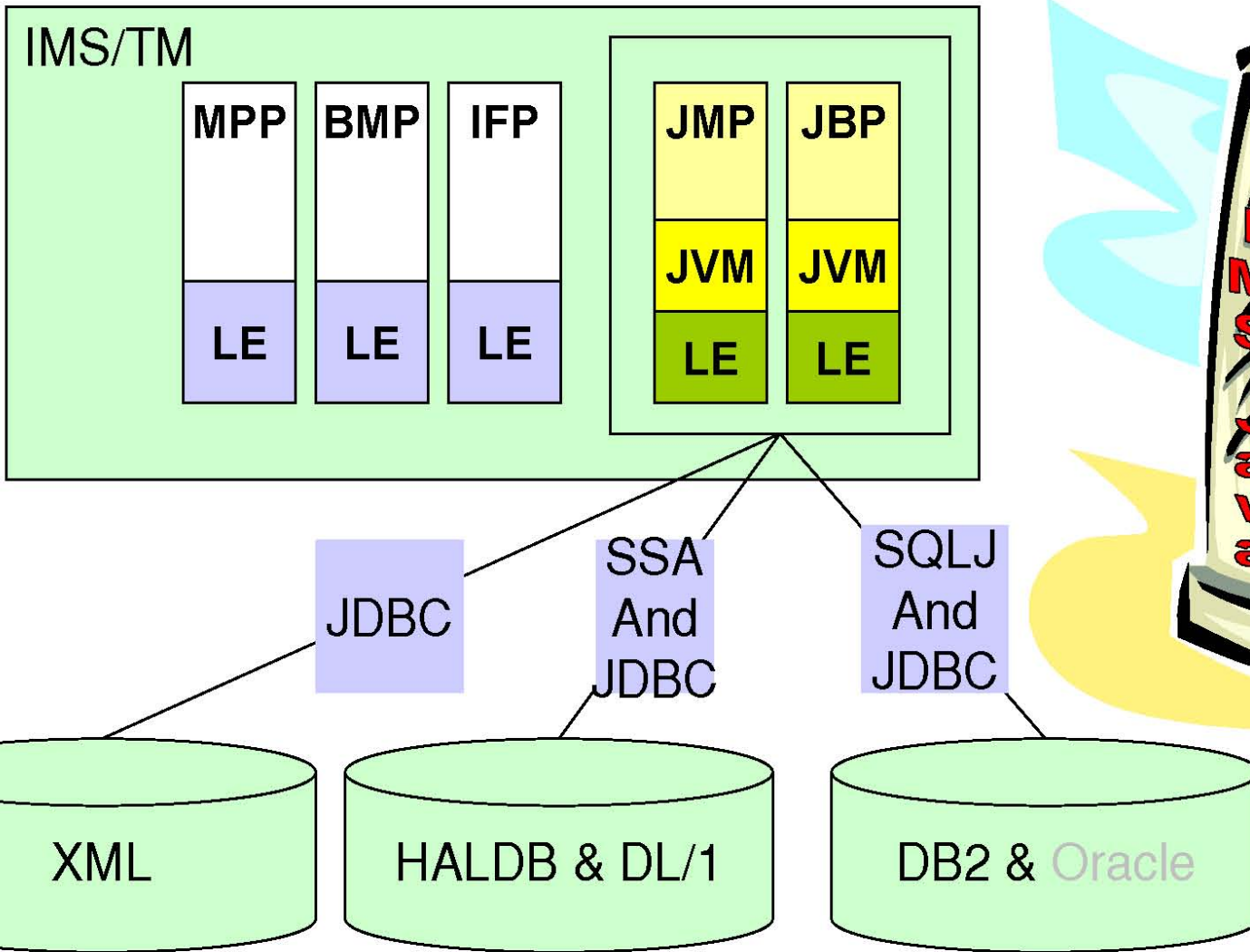
"IMS V9 enables Volvo to exploit Java applications in their development environment." - Volvo Information Technology



# Next Generation IMS Systems

## IMS Java Transaction Programs

LET'S MAKE SURE.



*And Wait...*

*There's a Lot More...*

➤ **Enhancing IMS Integration and Transformation with New Technology in a Service Oriented Architecture**

- IMS MFS Web Services and Web Enablement
- IMS SOAP Beta
- IMS DLIModel Utility GUI Technology Preview
- IMS XQuery Technology Preview
- IMS Application Tooling



➤ **Providing Continuing Enhancements for IMS V9**

- Increased Ease of Integration
- Improved Systems Management
- Scalability

➤ **Easing IMS Installation and Management**

- IMS V9 Service Upgrade
- IMS Management Tooling
- IMS V9 Installation Workshop

# Utilizing Application Transformation Tooling for IMS

## Transform User Experience

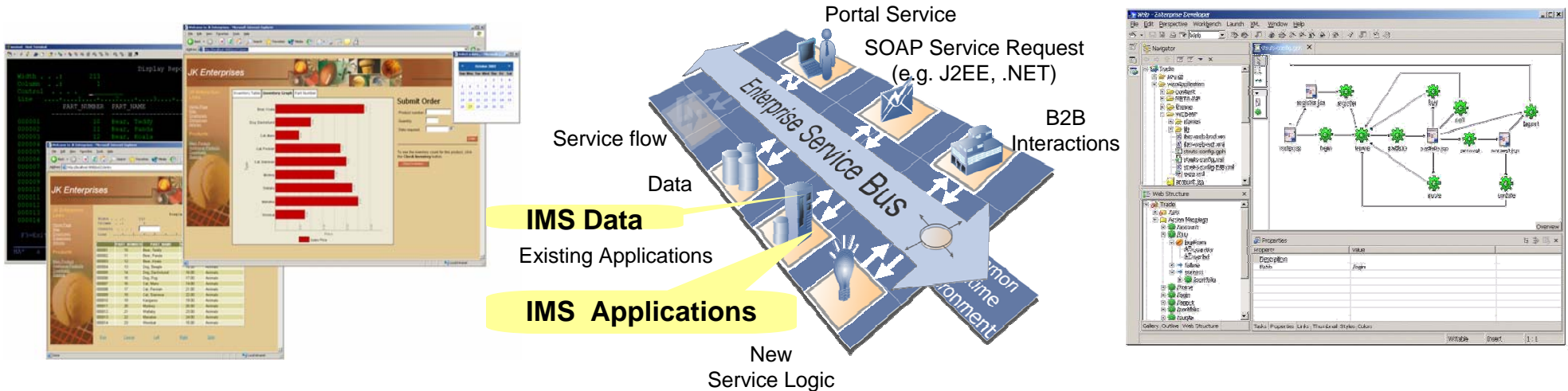
Enhance user interface and workflow for quick return on investment

## Transform Application Connectivity

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

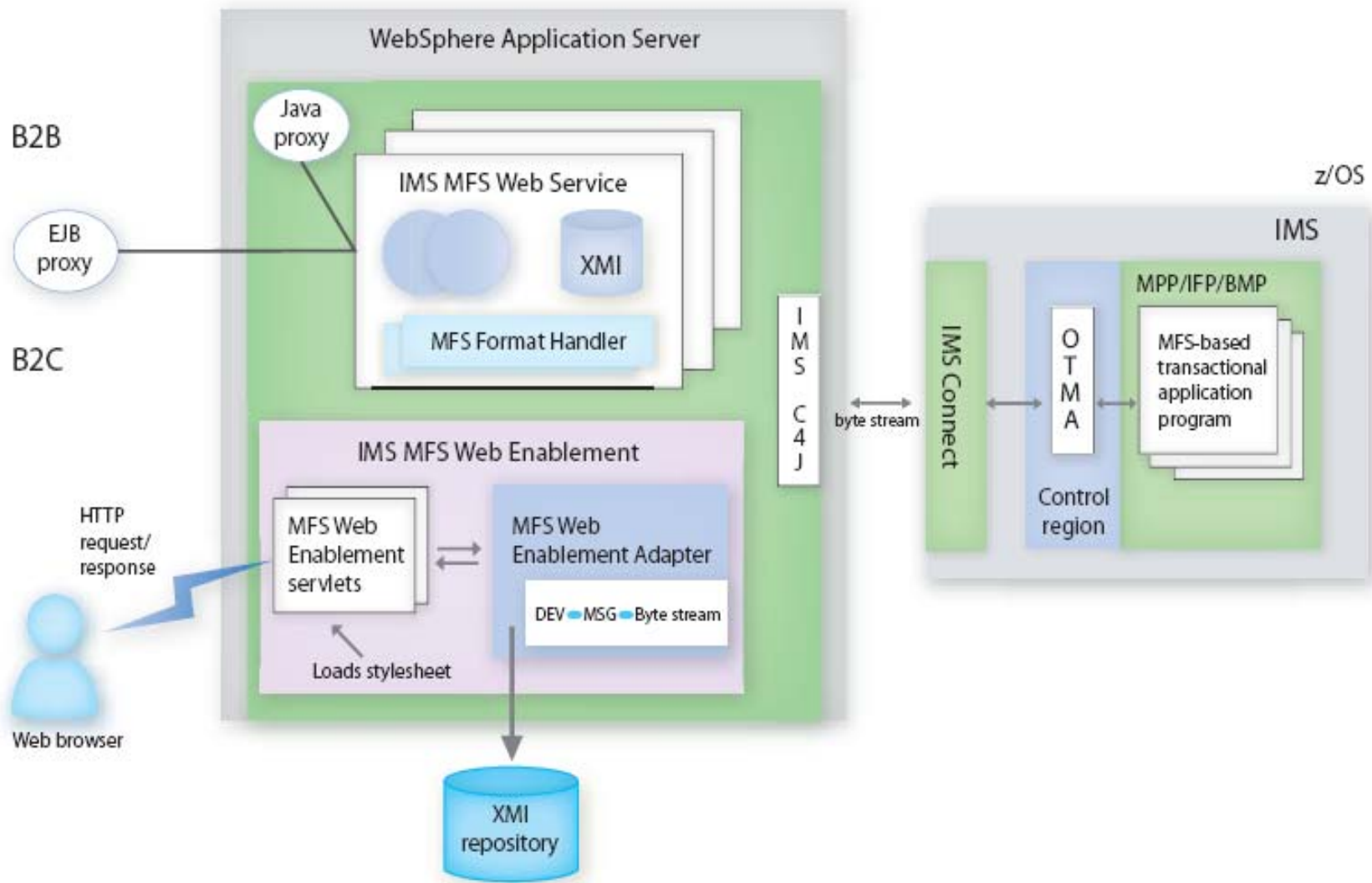
## Transform Application Architecture

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



*Single integrated delivery vehicle across application transformation styles*

# Enhanced IMS Application Integration with Modernized MFS-based IMS Transactions



For more information about IMS MFS Web Services and Web Enablement, go to <http://www.ibm.com/ims>

# Avnet

## Challenges

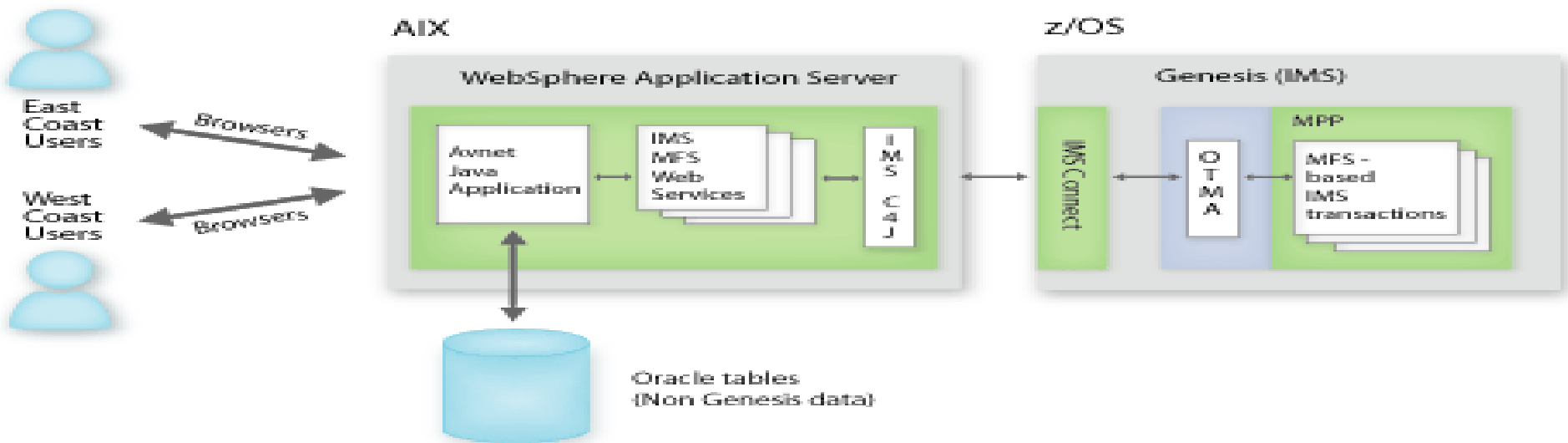
- Redevelop new Web services-based applications to access existing MFS-based IMS transactions in a B2B environment

## Solution

- IMS MFS Web Services

## Benefits

- Flexibility, ease of integration, and reduced total cost of ownership



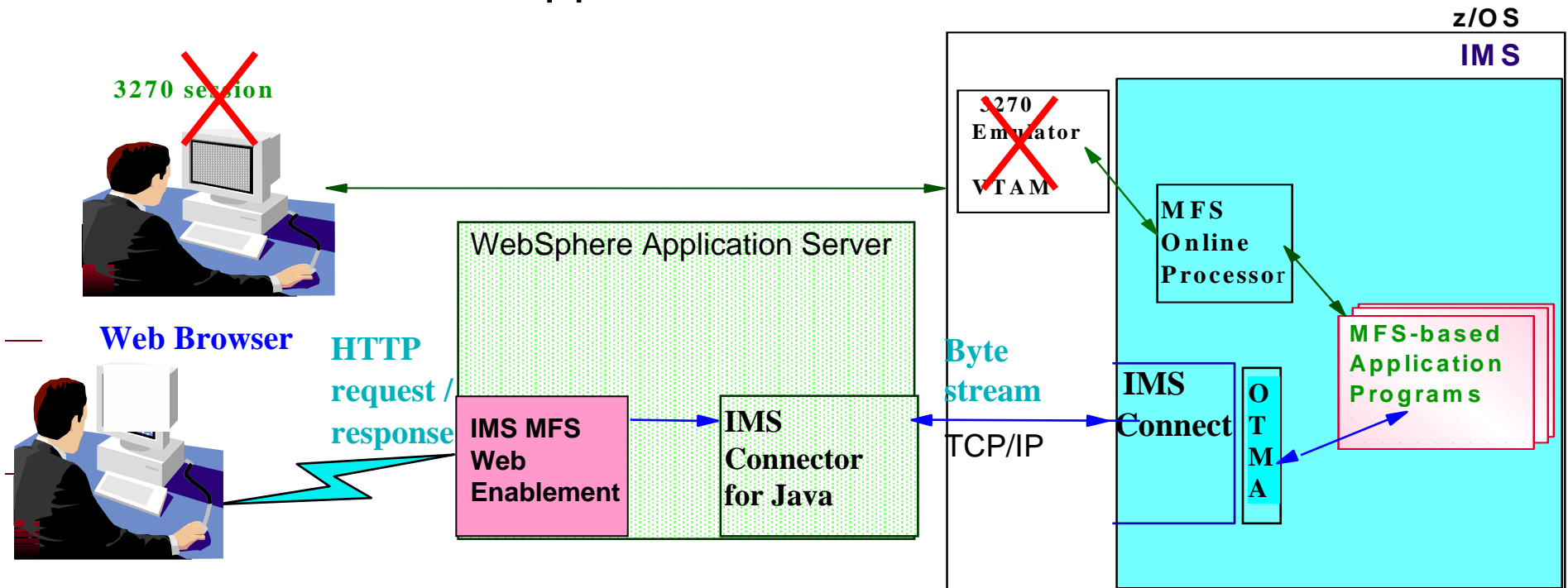
“a better application at a lower cost--and certainly more sustainable” Avnet





# Enhanced IMS Application Integration with IMS MFS Web Enablement

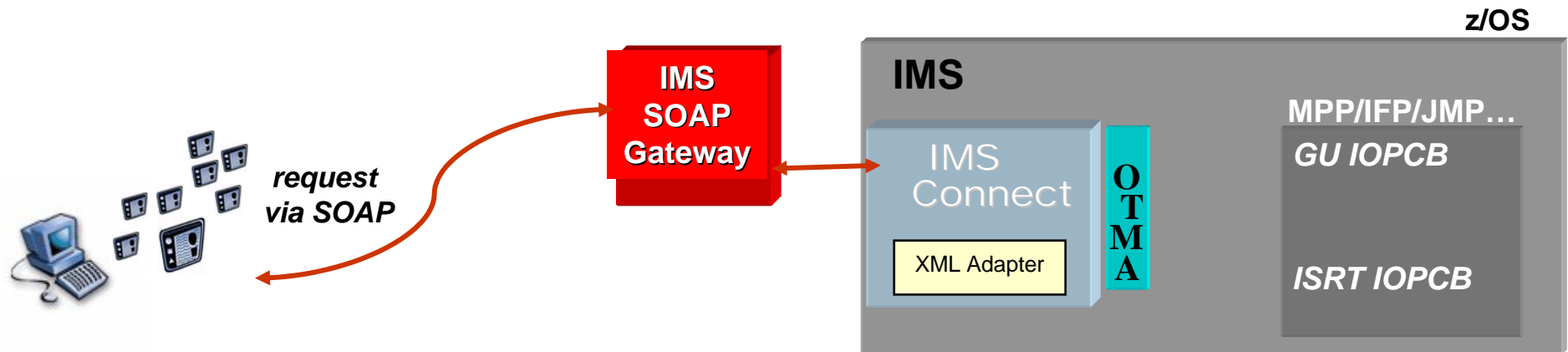
- Web-enables MFS-based IMS transactions in B2C environment
- Dynamic generated Web pages with customizable look and feel
  - Downloadable at <http://www.ibm.com/ims>
  - Provided for use with IMS V9 at no additional charge
  - Windows and AIX supported clients



# Broadened IMS Application Integration with IMS SOAP support

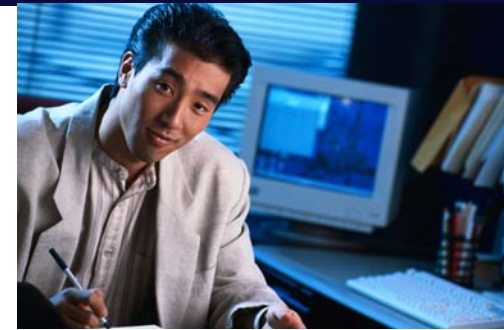


- **Enables Reuse of IMS Applications as Web Services**
  - Support WebService specifications
  - Leverages open standards and utilizes flexible tooling support
- **Provides IMS Transaction Interoperation with Client Applications**
  - Independent of location, programming language, and platform
  - SOAP Clients can be Microsoft .Net, SAP, Java, etc.



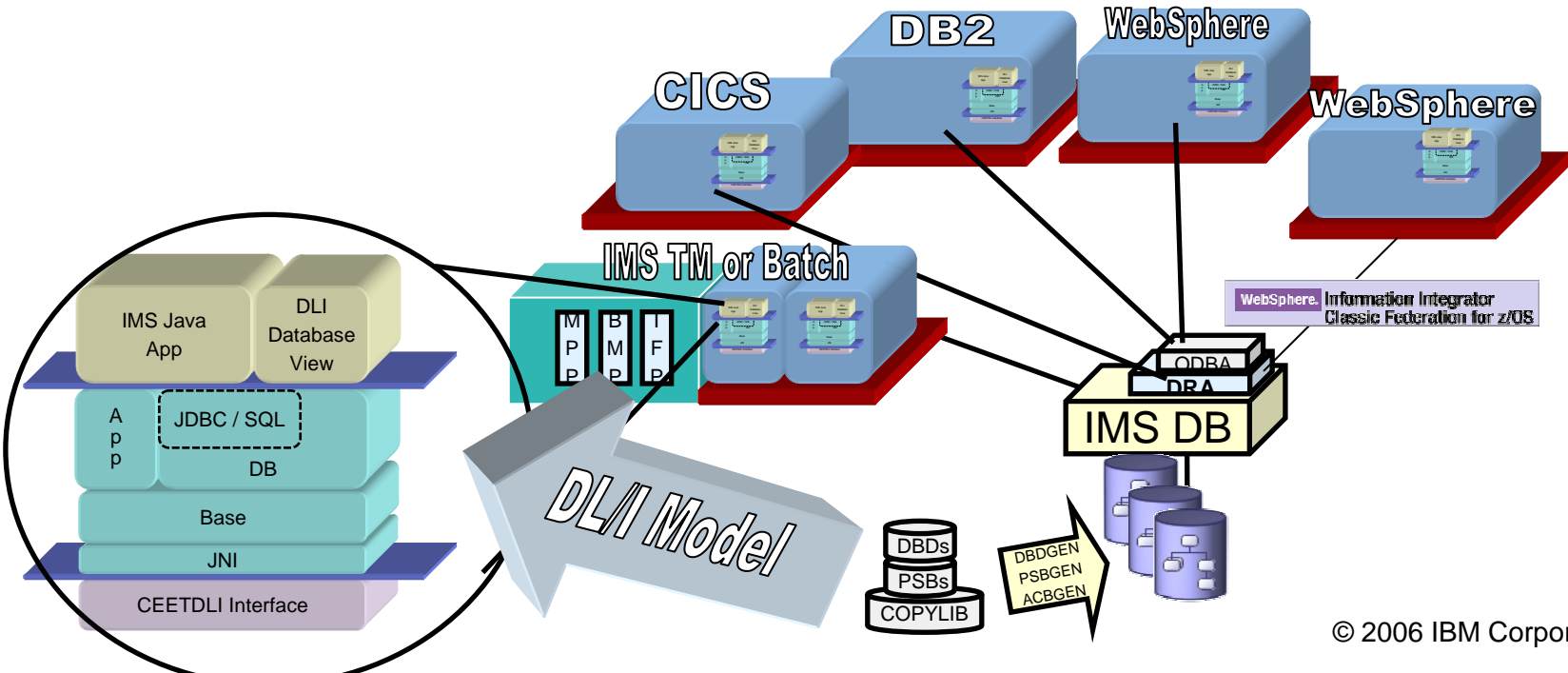
- **IMS SOAP Gateway GA December 30, 2005**
  - Downloadable at <http://www.ibm.com/ims>
- **XML Adapter Beta now in progress**

Follow-on



# 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 provided in 2004**
  - Simplifies application development, visually representing IMS data
- **DLIModel Utility GUI**
  - Technology Preview Refresh now available
  - Downloadable through <http://www.ibm.com/ims>



# *Enhanced IMS Data Access with XQuery*

## *Providing a standard XML Query language*

- **An SQL-like Query Language for Hierarchically-Structured Data**
- **Utilizes emerging W3C Standard**
  - Created by IBM, Oracle, Microsoft, and others
- **Technology Preview now available**
  - Downloadable through <http://www.ibm.com/ims> on alphaWorks -- an early adopter website for emerging IBM technologies in early stages of R&D.
  - Includes DBD, PSB, load job, sample applications and step by step instructions



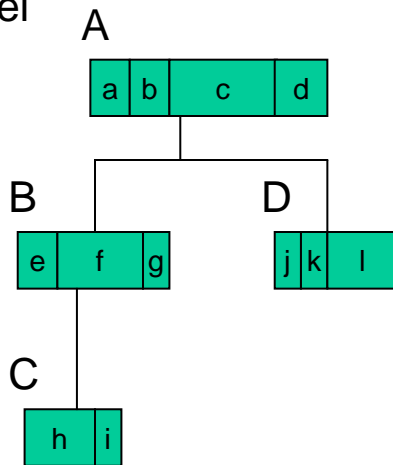
<http://www.alphaworks.ibm.com>

# Adding a new virtual layer

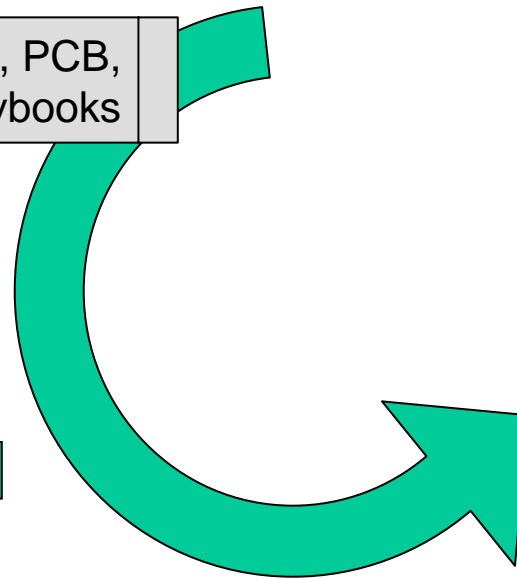
On Disk I/O



IMS Hierarchical Model

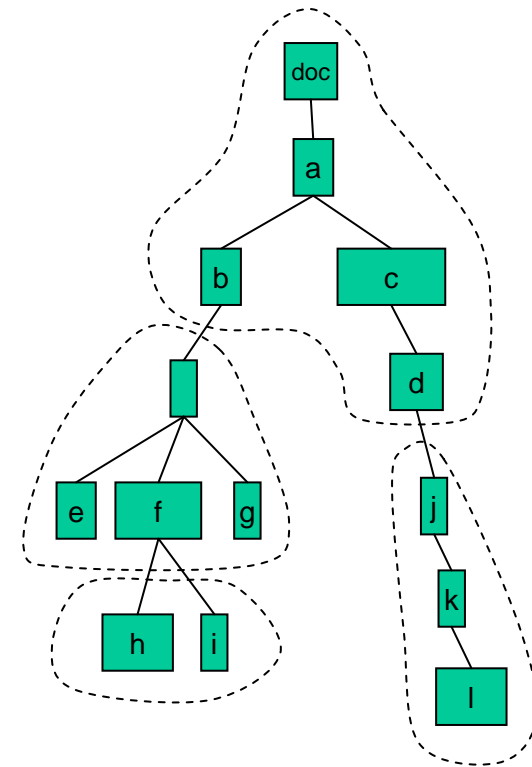


DBD, PCB, Copybooks



XML Schema

XQuery 1.0 XPath 2.0  
Data Model





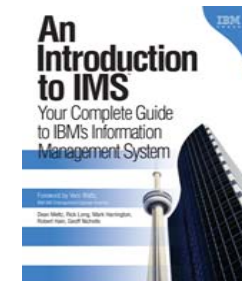
# Easing IMS V9 Installation and Management

## IMS V9 Installation Workshop (U3759)

- Perform actual installation and run IMS IVP in environment of choice
- Hints and tips for successful IMS system implementation and maintenance
- 3 day lecture lab
  - April 4, 2006 in Mainz, Germany
  - October 10, 2006 IBM Silicon Valley Laboratory



## New “Introduction to IMS” book available



**Additional IMS Education** also being made available through classes, seminars, webcasts, teleconferences at <http://www.ibm.com/ims>



**Migration and skills transfer and customized offerings** available at [ibmdds@us.ibm.com](mailto:ibmdds@us.ibm.com)

*And Still More to come ...*

# Enhancing Skills for IBM Mainframes

## ▪ Today

- Training your "in-house" skills
- Road shows and workshops
- Skills Vitality and certifications



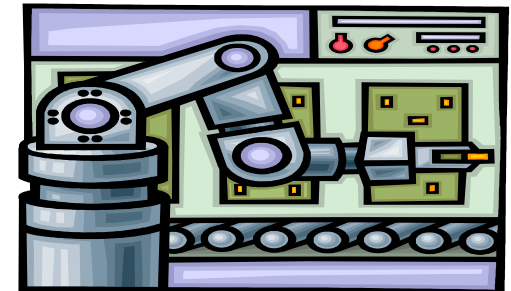
## ▪ Building 20,000 Skilled Mainframe Professionals by 2010

- IBM Academic Initiative for zSeries
- Educating university/college students worldwide
- New and updated courses



## ▪ Simplifying Software Management for Next Generation

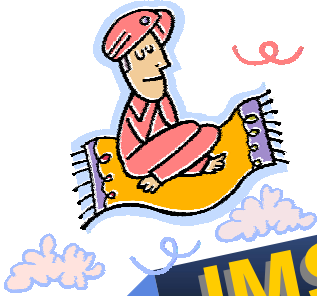
- Basics Information
- Easy to Use/Learn Portal
- Automated Tasks
- Integrated Software





# 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
- Fast Path Enh
- DBRC Enh
- XML DB
- Integ IMS Connect

- Enh IMS Tools

## IMS X

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

## IMS Y

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

## IMS Z

- 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.

## *Additional IMS Information at <http://www.ibm.com/ims>*



- Presentations/Papers, Newsletters, Fact Sheets, Announce Letters, Technical Support Information, Information Center, Information Roadmap, Training and Certification, Events, and additional documentation, plus
  - **Examples Exchange**
  - **Integration Solutions Suite educational presentations/demos**
- Redbooks/Redpieces - Release Guides, Sysplex Guides, Java Guides, etc
  - **IMS Connectivity In an On Demand Environment Redbook**



- “An Introduction to IMS” book
- WW IMS Technical Conferences and Seminars
  - **Information Management Tech Conf, The Hague, May 15-19**
  - **IBM Information on Demand 2006, Anaheim, October 16-20**



- **IMS Seminars coming to a city near you**
- **Webcasts and Teleconferences, with replay available**

# *IMS: For Your Information On Demand Business Transformation*

