

IBM Information
>>> On Demand

2006



IMS Trends and Directions

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



TAKE BACK CONTROL

IBM INFORMATION ON DEMAND 2006
October 15 - 20, 2006
Anaheim Convention Center
Anaheim, California

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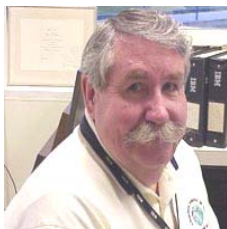
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The IMS Leadership Team

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Technical Support



**Dave Moore, Manager
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Rick Herder,
Manager IMS User
Centered Design



Tim Hogan
Manager IMS
User Technology

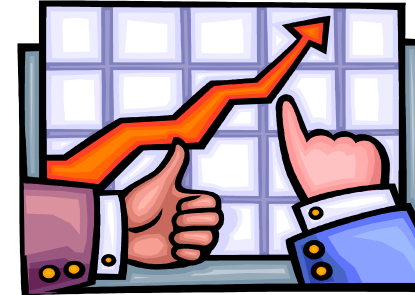


Securing your investment in IMS

Keeping IMS

THRIVING

- Your Success is Our Success
- Being Responsive



VITAL

- Listening/Addressing Your Needs
- Ensuring Quality



RELEVANT

- Leveraging Latest Technologies
- Planned Evolutionary Rollout

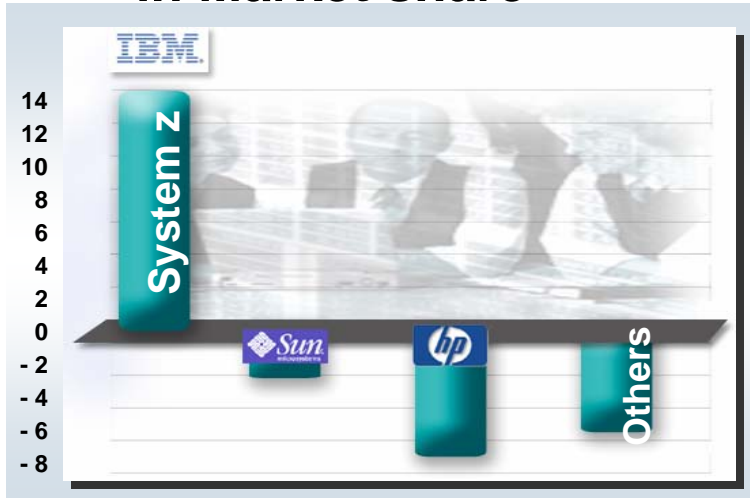


... Well Into the Future



z – A Growth platform for IMS customers

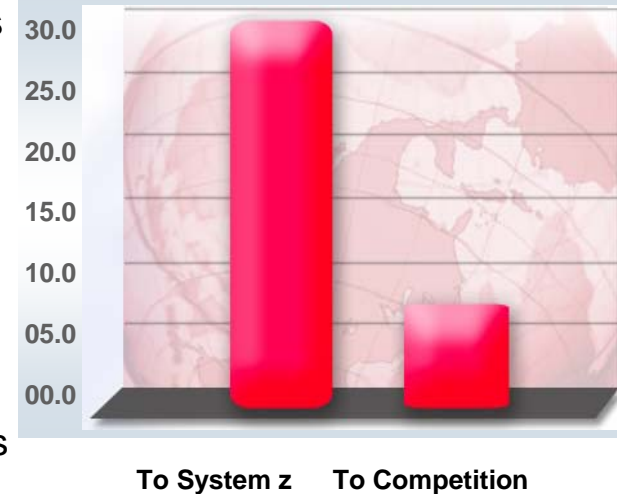
Five Year Change in Market share



DBMS Migration Plans

DBMS Migration Plans
Gartner Client Survey
 March 2006

- Nearly 30% intend to transition DBMS to z/OS
- Large percentage moving from Windows



Low Cost Operating Platform

■ Near-linear scalability	up to 900,000+ concurrent users
■ "Mean Time Between Failure"	measured in decades vs. months
■ ¼ network equipment costs	virtual versus physical
■ 1/25 th floor space	400 sq. ft. versus 10,000 sq. ft
■ 1/20 energy requirement	\$32/day versus \$600/day
■ 1/5 the administration	< 5 people versus > 25 people
■ Highest average resource utilization	> 70% versus < 15%
■ Highest concurrent workload	hundreds of applications versus few



z growth with IMS ... Why Now?

- Created significant market opportunity for ISVs to port applications to System z on a common code base
- System z marketplace opportunity exploding
 - Today more than 95% of the Top Fortune companies use IMS on z/OS
 - License/revenue growing on System z in 2006
 - SOA is driving expanded use and re-use of System z applications
 - As the new generation of Web applications mature, users want better security, scalability and reliability and lower cost / user
- IBM increasing investment and driving innovation around middleware on System z
 - Continually improving price performance
 - Enhancing support for open standards and common SQL language
 - XML providing new integration capabilities



Customers recognize the value of z and IMS



- Extremely High Availability and Overall Reliability
- Massive end-to-end Scalability
- Capacity on Demand
- Rock Solid Security
- Higher Utilization and Balanced System Design
- Advanced Virtualization Capabilities
- Highly Manageable, Responsive and Autonomic via Workload Manager and Intelligent Resource Director
- Utilizes Open and Industry Standards
- World-class Integrated Support

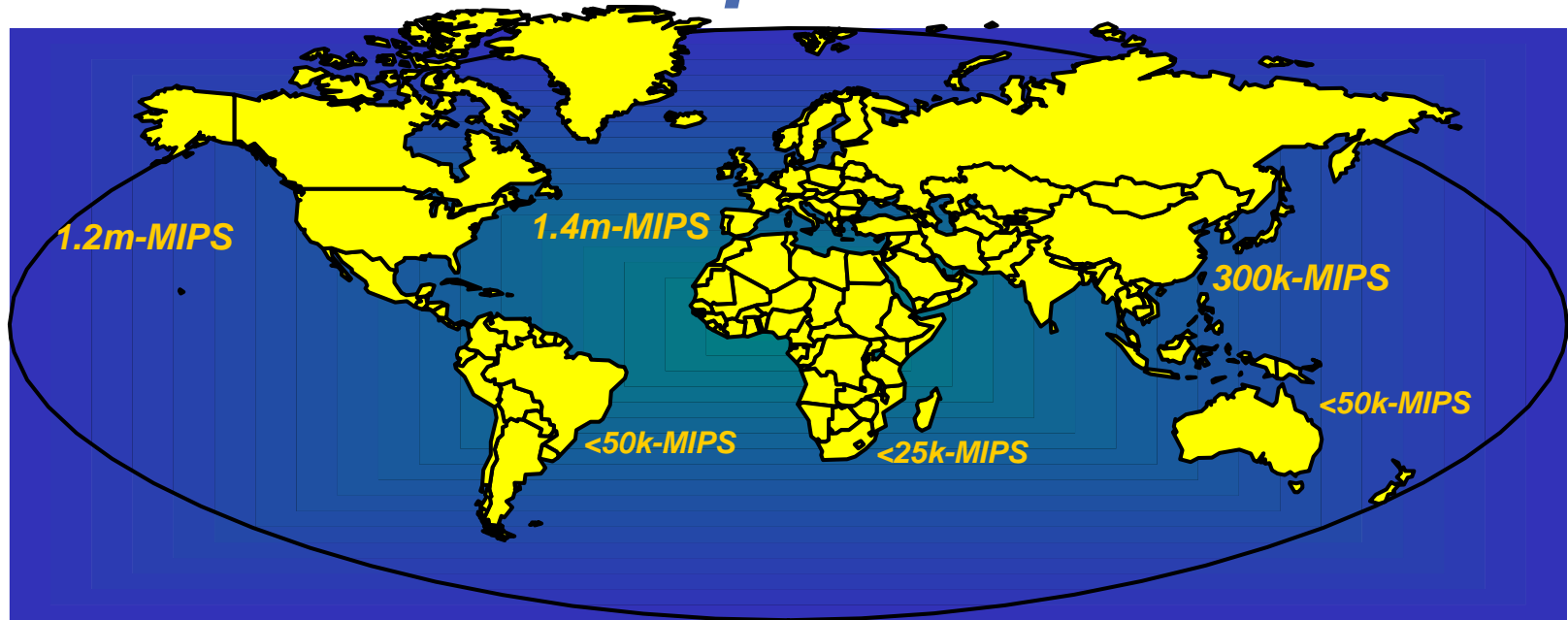


IMS is CORE to our Client's businesses

- **Usage statistics continue to rise**
 - Clients have exceeded 100 million IMS transactions per day
 - One client processes almost \$3 trillion/day in IMS customer transactions
 - Multiple IMS Clients have gone > 10 years without an unplanned outage
 - Asian bank has exceeded 300M+ savings accounts on-line in IMS
- **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 3 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 Operation Safety**
 - Keep improving Data Center's HA
 - Maturity of Process Management
- ▶ **Thousands of stations (sessions)**
- ▶ **375+ million accounts**
- ▶ **Production throughout 2003 - 2006**
 - Drastic increases in amount of data
 - Exponential increases in transaction volume
- ▶ **" End-to-end Monitoring & High Availability essential"**



Liu Tao

China Construction Bank

Solution

- ▶ **IBM HA Solution**
 - Planned GDPS/PPRC HyperSwap Manager
- ▶ **Applied ITIL to build data center management system**
- ▶ **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
- ▶ **GDPS/XRC implemented for data center disaster recovery**
- ▶ **Automatic Restart Manager (ARM) used for quick image restart**
- ▶ **IBM Tivoli System Automation tool used for subsystem startup/shutdown/etc.**



IMS: Providing Information On Demand to help Customers Respond to their Clients' Needs

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

IMS: Delivering the Best ...

IMS V7

- Large DB
- High Avail. DB
- IMS Java
- Rapid Restart

- IMS Connect V1
- New IMS Tools

Database

IMS V8

- Extend DB Connectivity
- Enhance Sysplex Operations
- Simplify Install Process

- IMS Connect V2
- Enhance IMS Tools

Systems

IMS V9

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

- Enhanced IMS Development and Management Tools

Database

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



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A New Era for Business

- People, organizations and economies are connected and highly interdependent
- Amount of data doubles every 12 months
- Energy costs rising



What we see ...

Geographic distribution of business - *The new norm*

- Work aligned to markets and customers
- Evolution of right-sourcing
- Leveraging distributed development

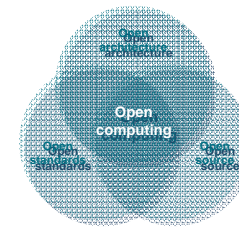


Accommodating compliance - *The new necessity*

- Management reporting, audit support
 - Sarbanes Oxley, HIPAA, 21CFR11, Basel II, EASHW
- IT, systems, project and product level accountability
 - ITIL, COBIT, COSO, ISO 900x, Six Sigma
- Development compliance level
 - Change management of assets, traceability
 - CMM/CMMII, RUP, DODAF



Open computing - *A new route to collaboration and innovation*



Modular systems - *Greater flexibility*

- Maximize investments: *Reuse components*
- Increase flexibility: *Interoperable systems*
- Accelerate initiatives: *Scalable and agile*



Customers require

For an on-demand, 24x7,
always-on world:

- Ability to run mixed workloads with End-to-End Business Processes
- Highly Automated
- Comprehensive Security/Compliance
- Available/Accessible 24x7
- Responsive, High Capacity/Thruput, and Nearly Unlimited Scalability
- Low Cost/Efficient IT



Across Industries and Internationally

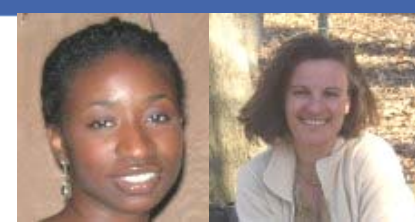
- Banking
- Government
- Transportation
- Healthcare
- Retail
-

“It's not only financial services firms that must cope with a magnitude rise in transaction volumes, data queries, and process complexity while bearing the weighty responsibility as long-term custodians of data”

— *Mike Kahn, The Clipper Group*



z, IMS and SOA work together to provide solutions for mixed workloads and end-to-end business processes

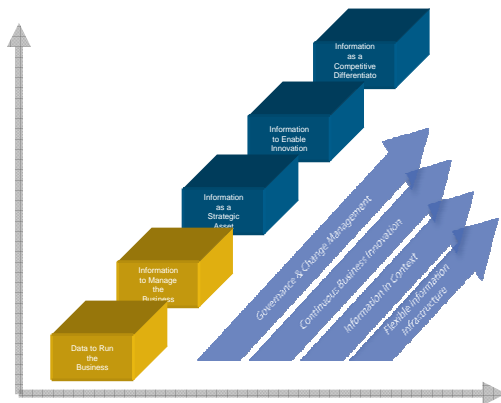


Malaika Paquot Helene Lyon

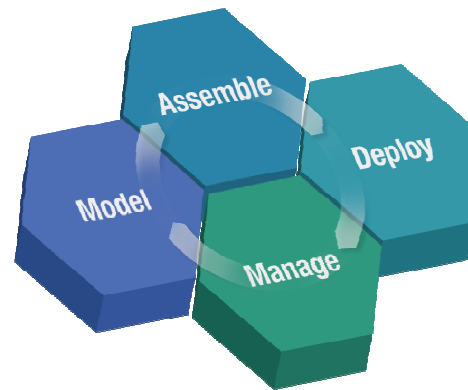
Information On Demand

SOA & Enterprise Transformation

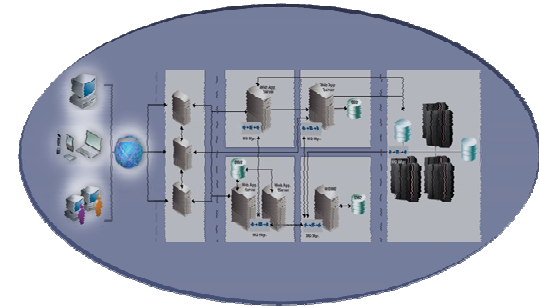
IT Service Management



Create new business value by transforming all forms of data into trusted information in business context — thereby reducing risk and improving business operations over the information lifecycle.



Enable SOA, delivering business flexibility through integration and transformation within and beyond the enterprise-core systems, applications, data and skills to be reused in end-to-end, cross-platform solutions to create new business processes and end-user applications



Continually adjust the end-to-end zSeries IT service management infrastructure to deliver high-performance in a volatile business climate

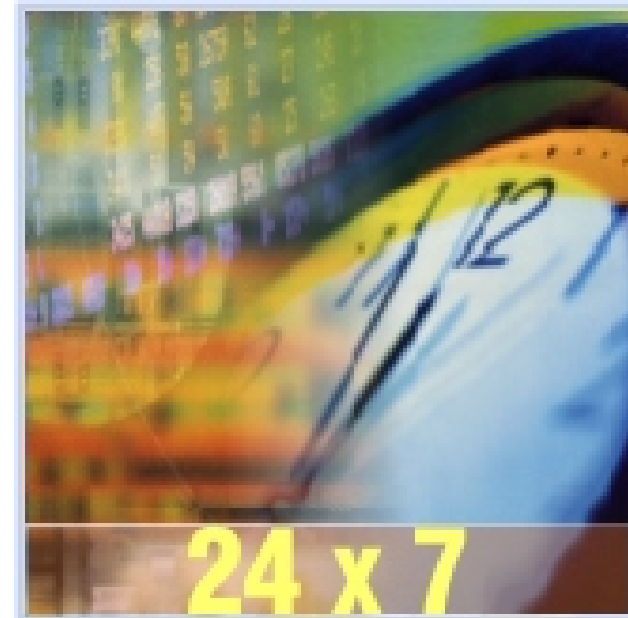


Unbreakable Security with z and IMS



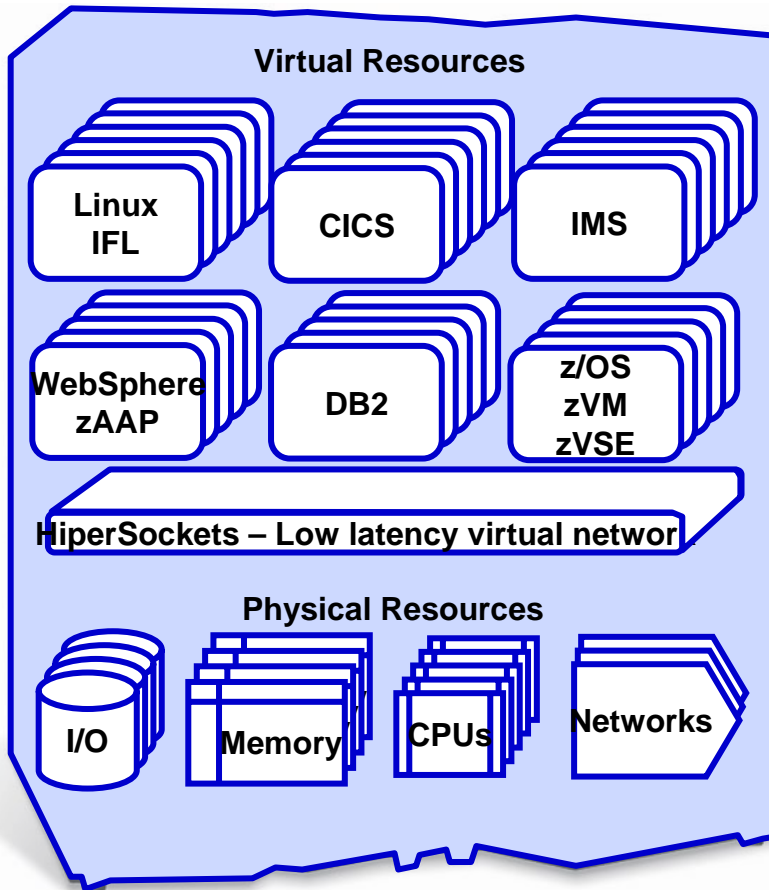
Robert Hain

- Built in security to address the full spectrum of security requirements
- Consistent policy based security management
- Extensible reach addressing virtually all functional domains and resources
- Designed to meet both current and evolving applications needs
- Addresses multiple resource types- applications, data, networks
- Capabilities that enable z to serve as a security vault
- Proven heritage and experience base
- Most importantly --- IT WORKS!



z virtualization delivers huge client value

System z is architected from the silicon up for virtualization



Best hardware resource utilization

- For multiple workloads
- Eliminates network latencies
- Optimizes mixed workloads
- Handles workload peaks

Efficient systems management

- High levels of automation
- Shared across 1000s of apps
- Designed for Transactional integrity
- High levels of availability/recovery



Easy to Scale Up

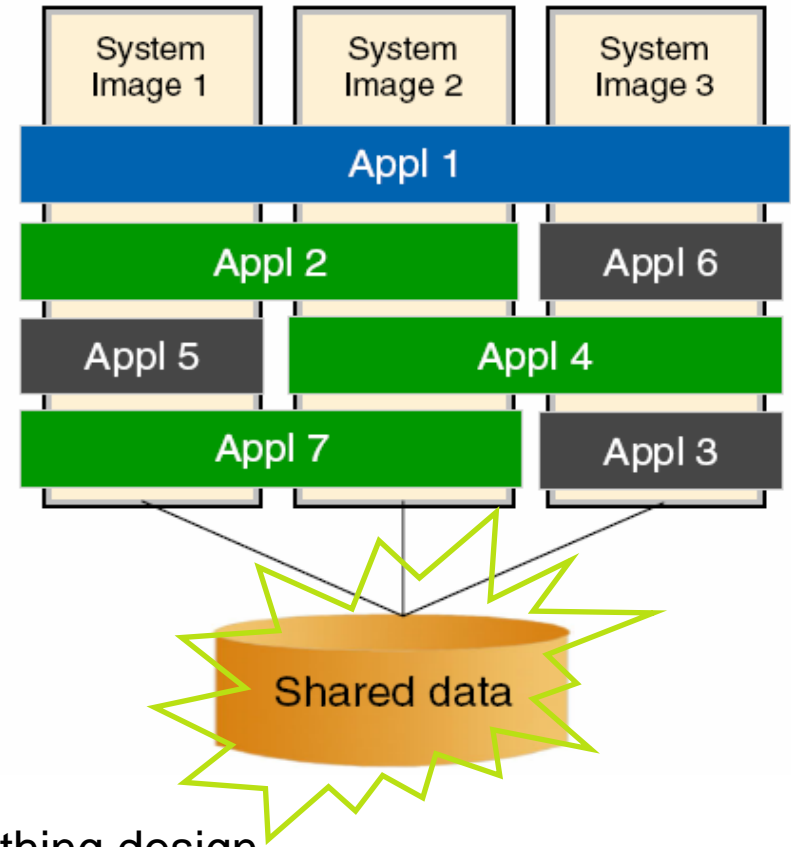
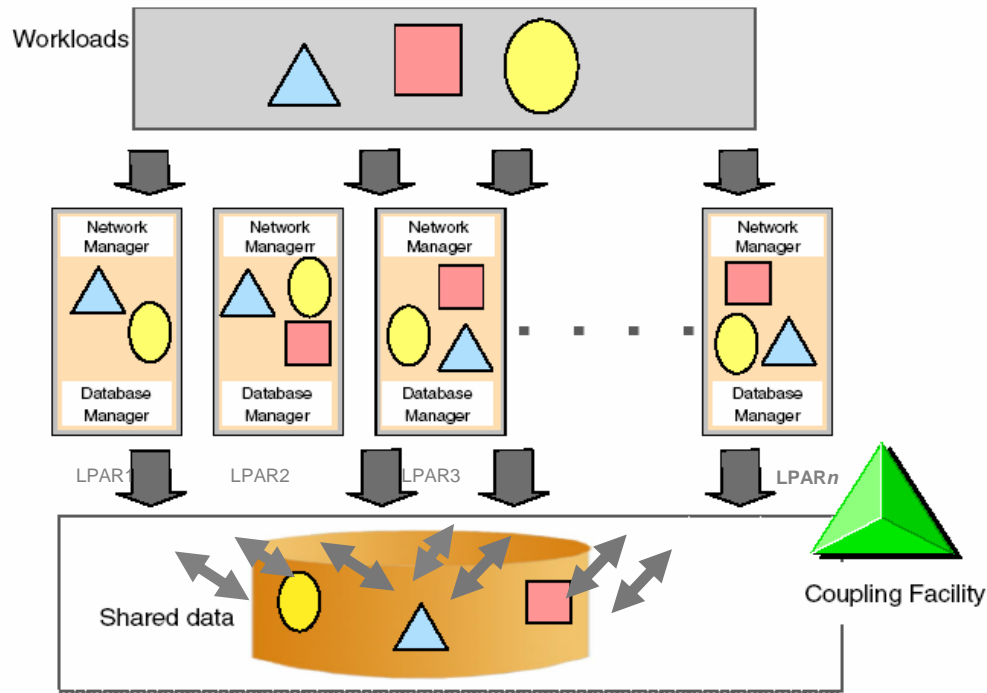
How do you grow capacity?



- Mainframe
 - Add MIPS on-demand
 - Adjust pricing on-demand
 - System autonomically adjusts
 - Load balancing
 - Robust I/O system
 - Robust processor and cache
- Distributed
 - Rearchitect – Re-distribute
 - Rebalance databases
 - Consider network impacts
 - Integrate new system into
 - Security policies
 - Disaster Recovery
 - Backup / Restore policies



Efficient Data Sharing and Access



- The mainframe's architecture is a share-everything design
- The Coupling Facility* provides the technology to shared data concurrently amongst different or similar workloads
- IMS Data, Message, and Network sharing provides for continuous availability/reliability



EDS

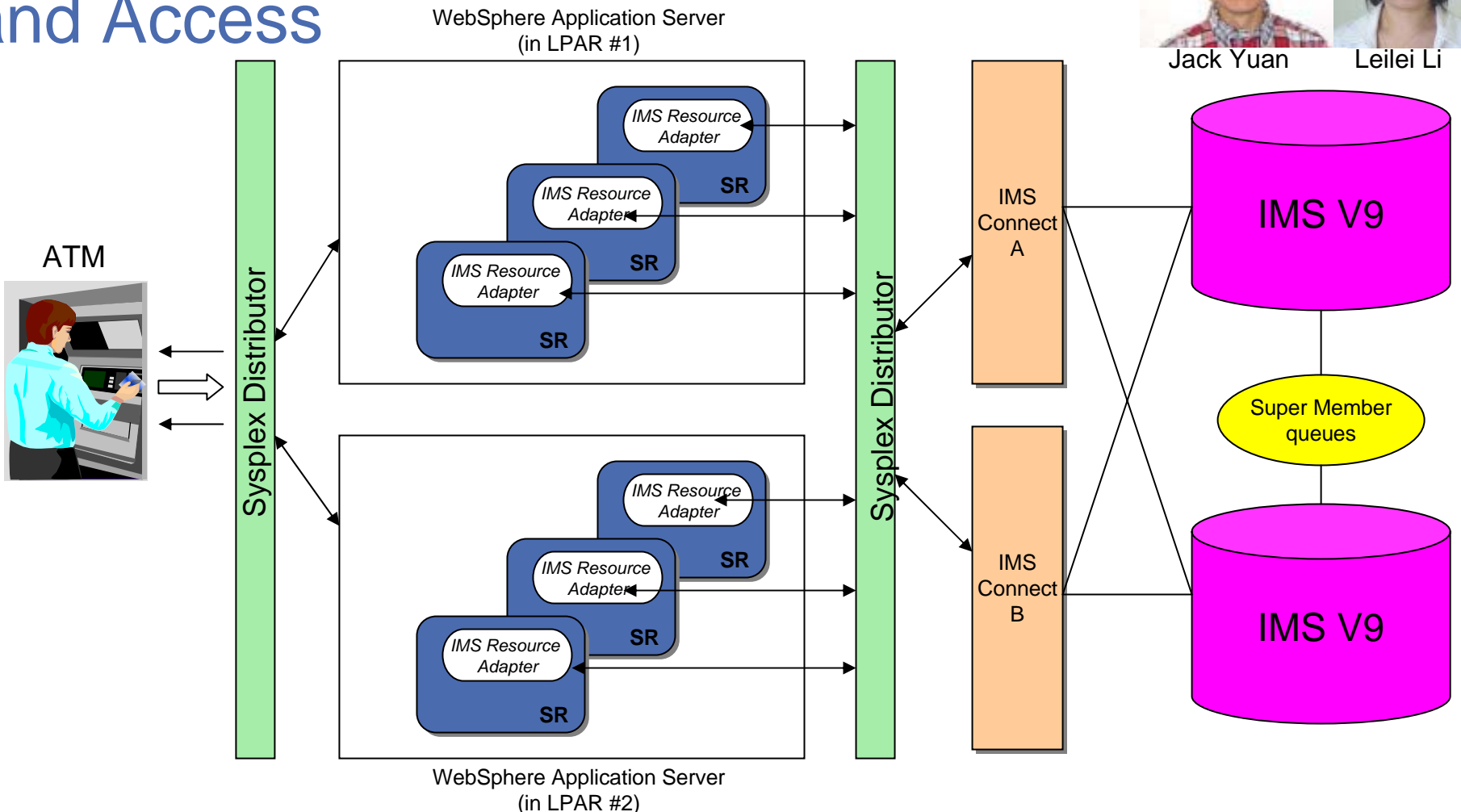
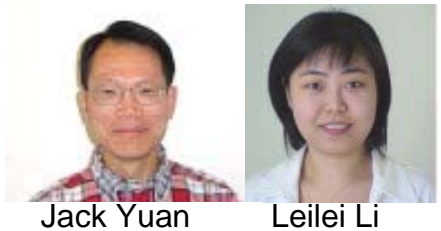
- Challenges
 - Increasing Availability Requirements
 - Shrinking Batch Window
 - Shrinking Maintenance Window
- Solution
 - Exploit IMS Data Sharing
 - Utilize options from Database Level Sharing to Parallel Sysplex Data Sharing
 - Individual solutions based on client's specific need
- Benefits
 - Met client requirements with most cost effective solution for their requirements



EDS provides a broad portfolio of business and technology solutions to help its clients worldwide improve their business performance. Our core portfolio comprises information-technology, applications and business process services, as well as information-technology transformation services.



Efficient Workload Management and Access



- IMS is enhancing support of z/OS Workload Manager and z/OS Sysplex Distributor for enhanced availability and performance



Main Components of TCO

- Hardware
- Software
- Power and Environmentalals
- People

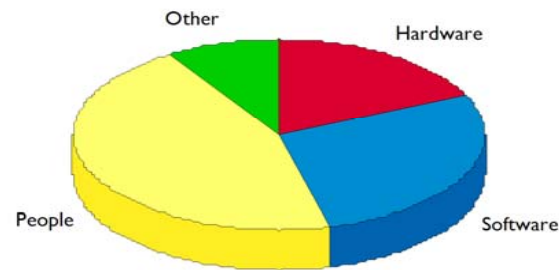
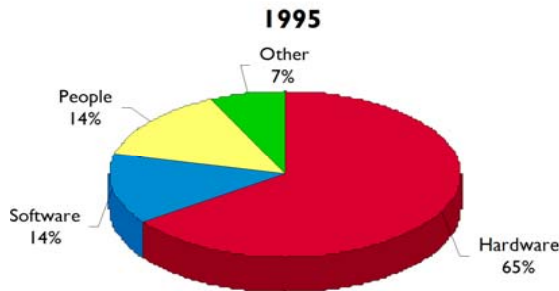
Distributed

Mainframe



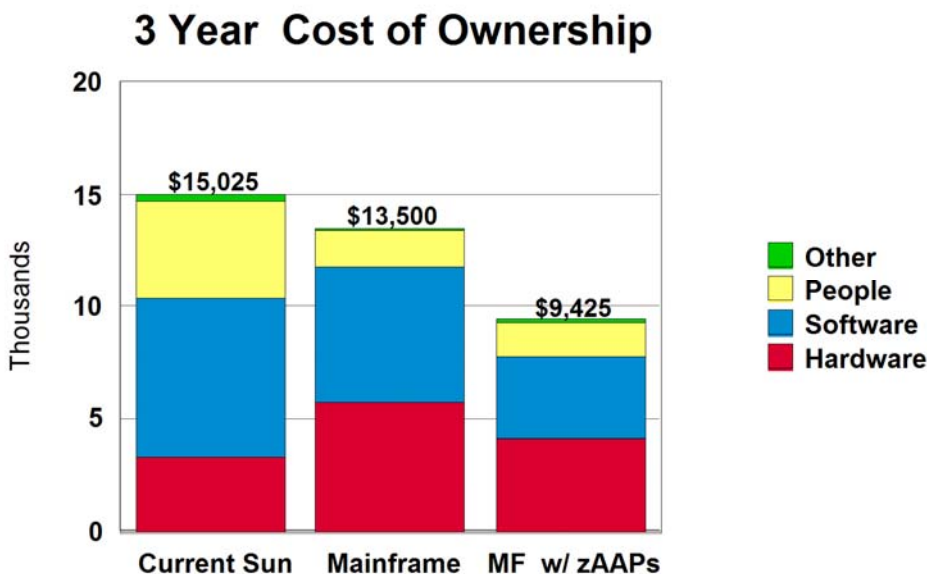
... and the profile is changing

People expense is now the dominant component



People costs are often *hidden* in distributed implementations

- In a recent typical study, a client thought they only had 24 UNIX servers
 - But these were just the PRODUCTION servers
 - In addition they had 49 servers for Development, Test and Disaster Recovery
- They needed 14 people to support these servers and \$7M software
 - Running at only 20% utilization
 - Each server cost \$20K per annum to support
- A comparable zSeries implementation would have required just 20 servers
 - Requiring 5 people to support
 - Using \$6M software (over 3 years)
- They thought the Solaris environment was 1/5 the cost of the mainframe...
...but in fact the **zSeries TCO was 37% less**



Easing IMS Installation and Management

“An Introduction to IMS” book available



New **Red**books in 2006

- SG24-6794 IMS Connectivity in an On Demand Environment
- SG24-7324 IMS Performance and Tuning Guide

IMS V9 Installation Workshop (U3759) available

- 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



New 2007 classes available

- IMS Connect
- IMS Version 10



2007 IMS Education Schedule available

at <http://www.ibm.com/ims> under Training/Certification

- Classes, seminars, webcasts, teleconferences

Migration, Skills transfer, Customized offerings at ibmdds@us.ibm.com

IMS V9 expands samples for existing and new functions

(eg. Interactive Dump Formatter, Enhanced Command Environment)

And More to come ...



■ Challenges

- IMS is used to control the manufacturing process for all semiconductors
- Roughly 16 million transactions per day
- High availability goal of 24 by 7, minimum of one year, is critical
- Yearly maintenance window of 2 - 4 hours (H/W and S/W)
- Local IMS modifications were required to obtain our high availability goal
- Must be able to quickly resolve problems
- Previously used proprietary methods for problem analysis

■ Solution

- Replaced proprietary tools with ones that use documented interfaces

■ Benefits

- The tailored IMS provides problem solving tools for the local environment
- Allows easier migration to new releases (both IMS and OS)



Mainframe Community Ecosystem

- zNextGen
- Customer Councils
- New IMS Users Groups
- Partners
 - 1,500 mainframe partners
- Academic Initiative
 - 20,000 new skills by 2010



**Mainframe Student Content Winners
Mohonk Mountain House, New Paltz, NY**



IBM Academic Initiative

- **250 Colleges/Universities Worldwide and 300 professors**
- **Developing majors, specialization tracks, certificate programs in enterprise computing:**
 - Houston County Community College (in development)
 - Pace University (under review)
 - University of Arkansas
 - Marist College
 - Northern Illinois State University
 - Northeastern University
- **Clarkson University including IMS Systems education in 2007**

Twelve System z courses

- [Introduction to the New Mainframe: z/OS Basics](#)
- Linux on System z
- Introduction to z/VM®
- [UNIX® System Services \(Module\)](#)
- [Basic Interfaces: ISPF \(Self-study module\)](#)
- [JCL](#)
- Assembler Language Coding
- VSAM (Module)
- [z/OS Transaction Management with CICS \(Module\)](#)
- z/OS Data Management with DB2
- An Introduction to IMS (Textbook)
- e-business with WebSphere Application Server for z/OS

Courses under development (in 2006)

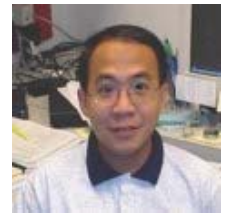
- Networking with z/OS
- Security with z/OS
- e-business with Java on z/OS
- Large scale commercial computing

eLearning materials

- Flash Demo for professors and students:
Learn about your future in Large Systems
- Interactive e-Learning module:
Careers in Mainframes
- Interactive e-Learning Module:
z/OS Basics (NEW)



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!!!



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



And more....



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IMS Integrated On Demand Strategy:



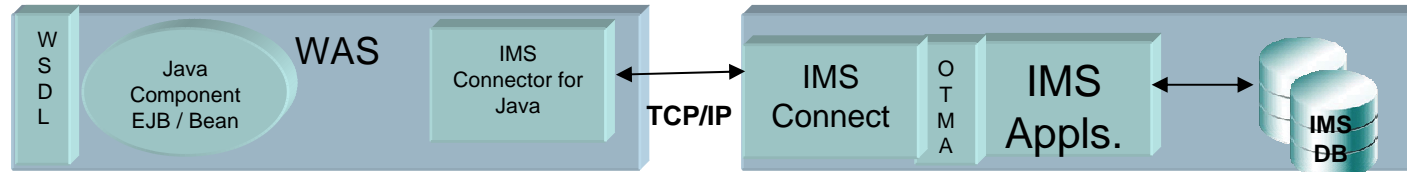
Shyh-Mei Ho

- 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.

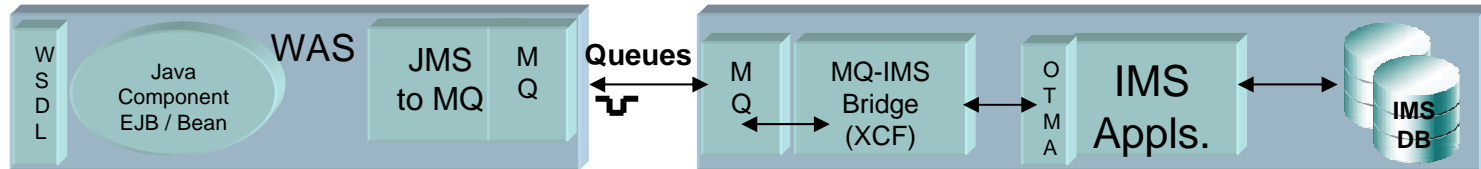


IMS Web Services Integration Approaches

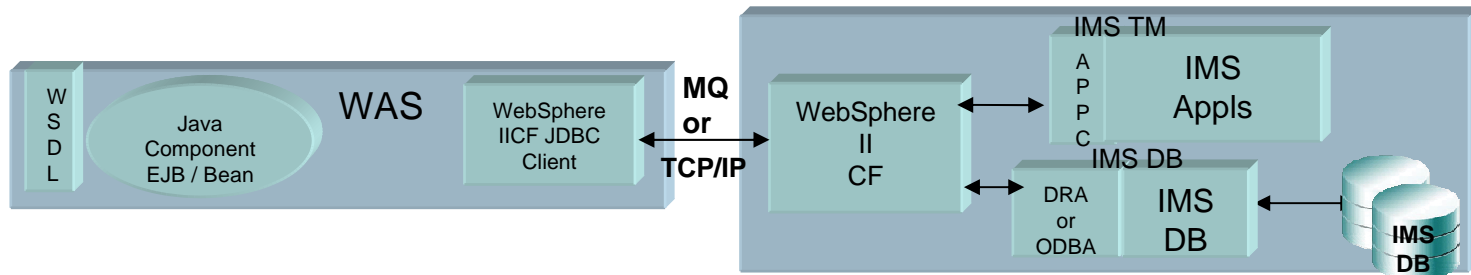
**IMS Connect /
IMS Connect Java Client**



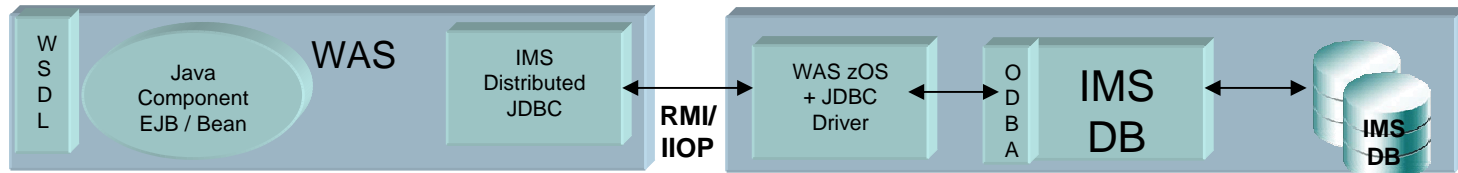
**WebSphere MQ/
MQ/IMS Bridge**



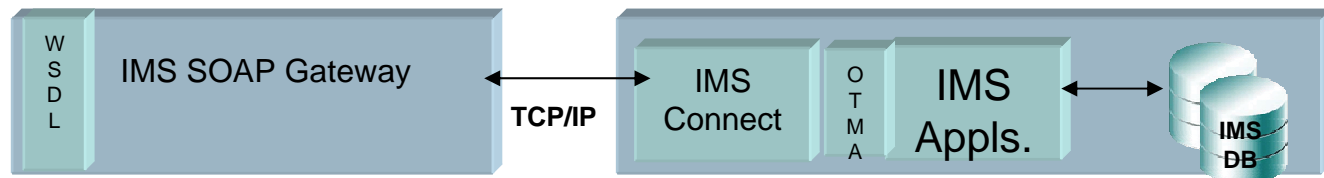
WebSphere II CF



IMS Distributed JDBC



IMS SOAP Gateway



IMS Version 9: Enabling Information On Demand Business Transformation

XML Database support
for Universal Information
Interchange

Integrated Connect Function
for High Performance Access

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



And Wait... There's More For You Now ... Before IMS Version 10

- **Enhancing IMS Integration and Transformation with New Technology in a Service Oriented Architecture**
 - IMS MFS Web Services and Web Enablement
 - IMS SOAP Gateway and XML Adapter/Task Manager
 - 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

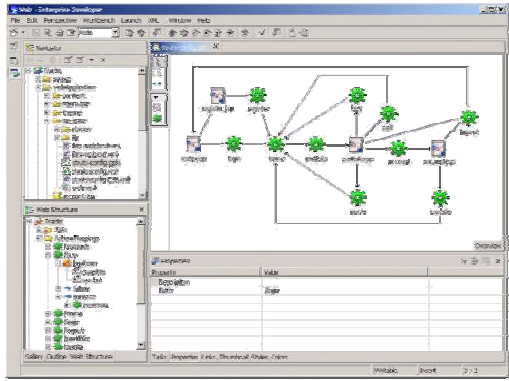
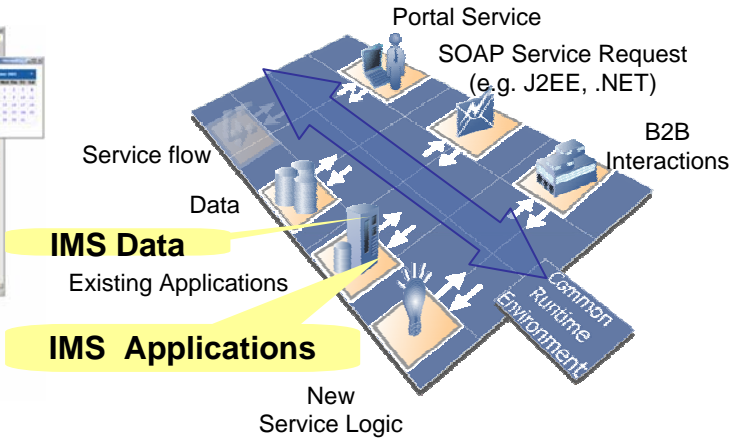
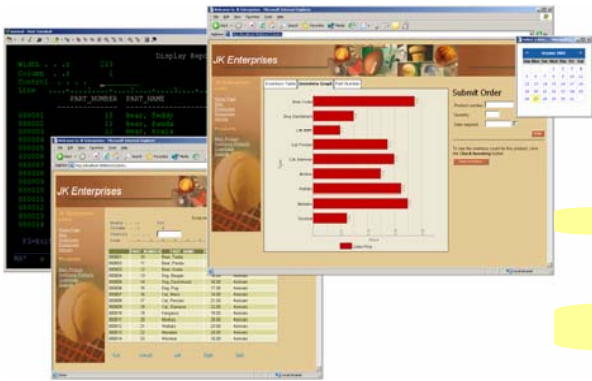
Enhance user interface and workflow for quick return on investment

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



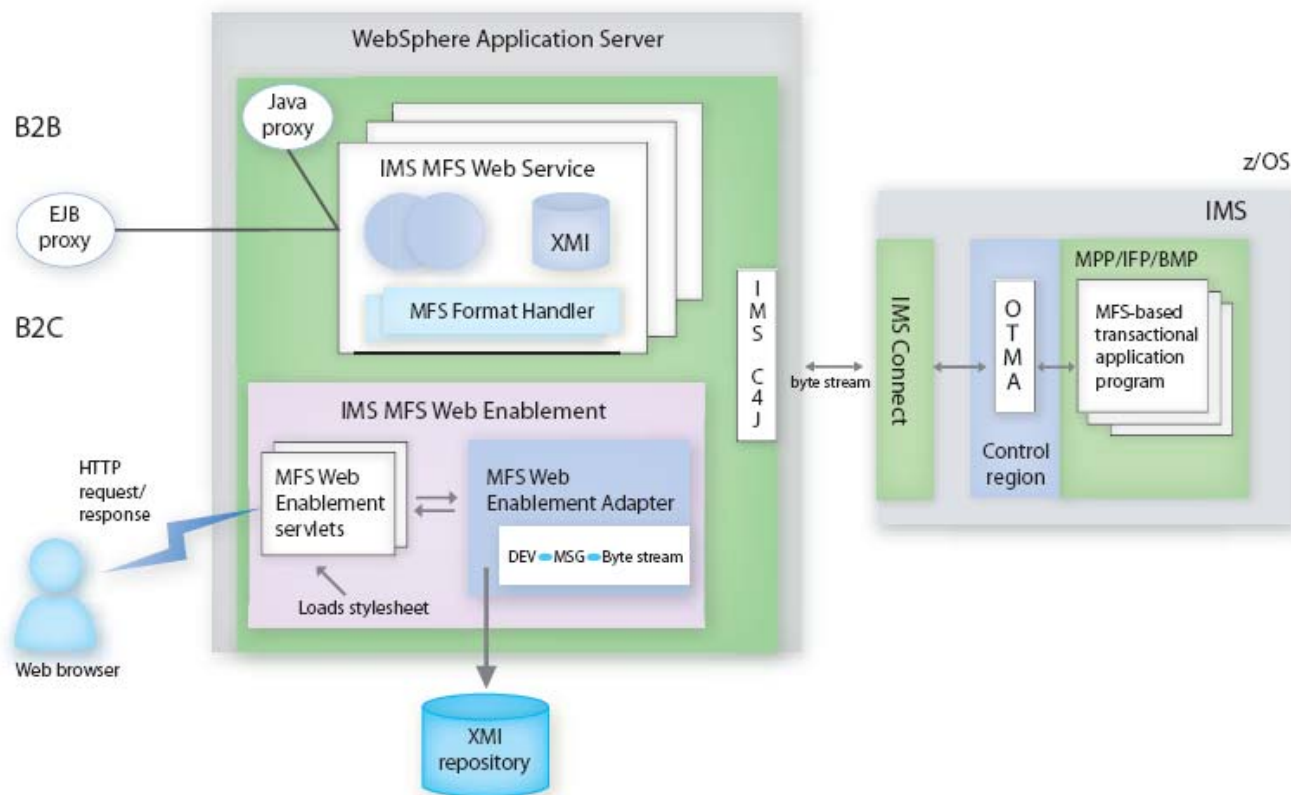
Single integrated delivery vehicle across application transformation styles





Kevin Lo

Enhanced IMS Application Integration with Modernized MFS-based IMS Transactions



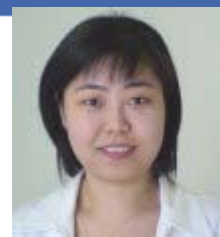
➤ **IMS MFS Web Enablement 9.2 GA 7/06**

- Display enhancements (Infopops in samples extended, dropdown list)
- WASz V6.0

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

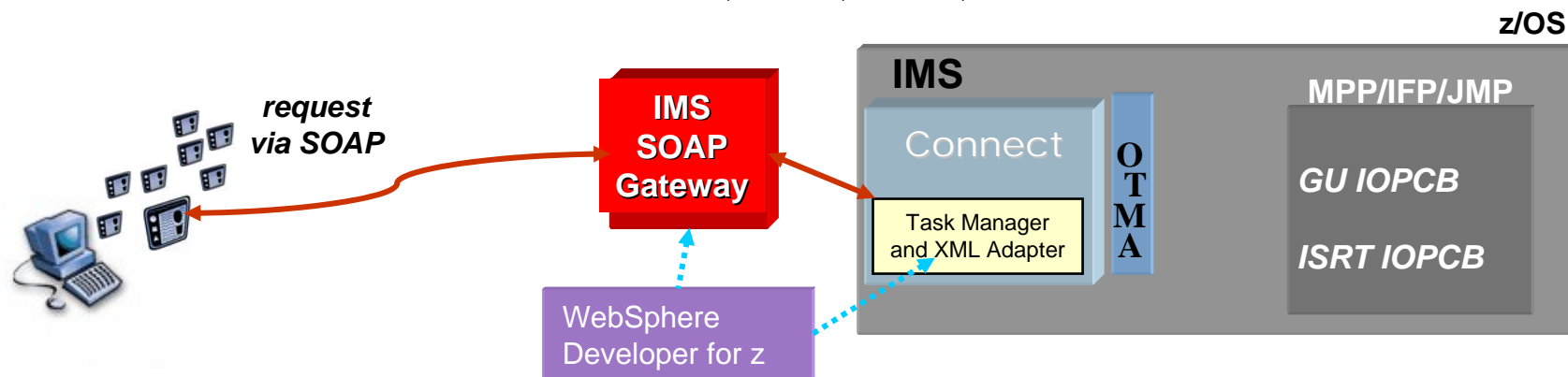


Broadened IMS Application Integration with IMS SOAP support



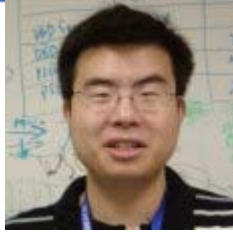
Leilei Li

- **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**

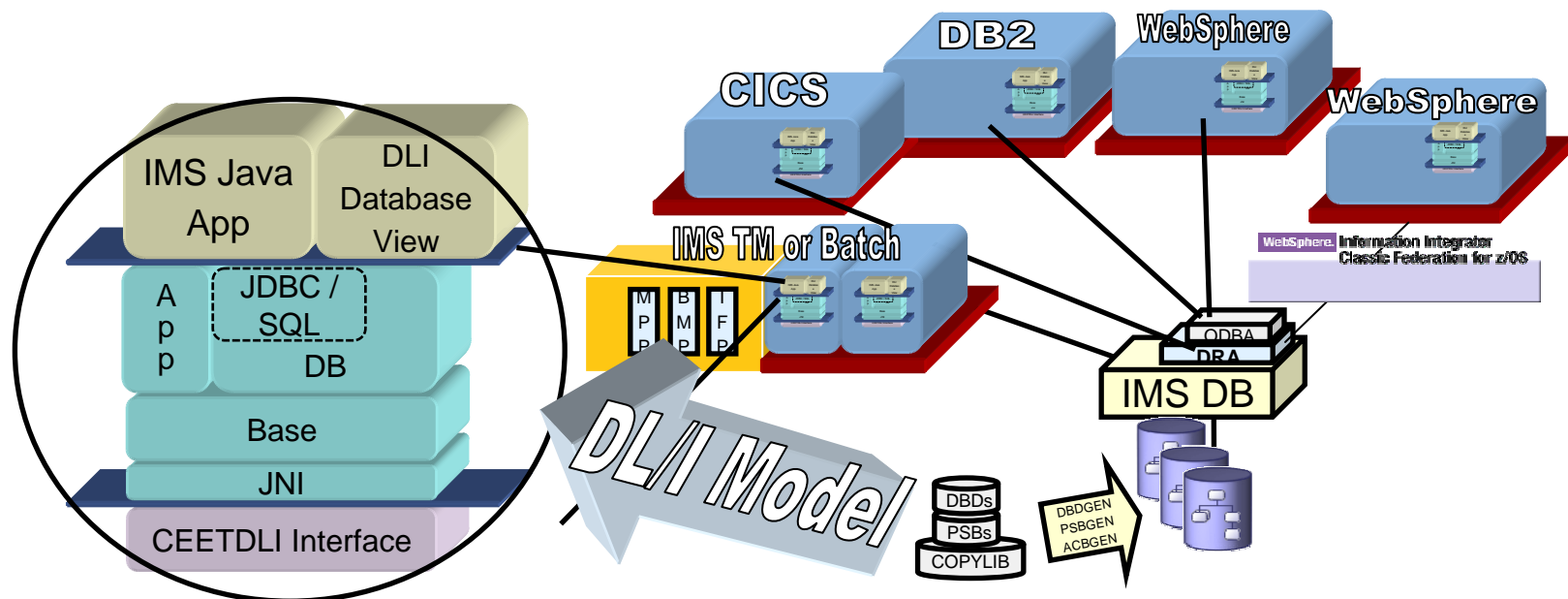




Kevin Wang

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>



The IBM Software Development Platform



Shyh-Mei Ho

Committed to Enterprise Development

The most complete, open, modular, and proven development solution for enterprise development

... that lets you leverage existing runtime and development infrastructure as well as new technologies when building applications

... that enables business-driven development by unifying business, operations and development teams across the organization

... with a comprehensive strategy for improving application quality and availability post-deployment



Continuing Enhancements for IMS V9



Rich Lewis

Increased Ease of Integration

- IMS Connectivity enhancements
 - **Send only Reroute, Send only w/ACK, Client appl NAK w/output Purge or Reroute ***
 - **XML Adapter and Task Manager ***
 - Sysplex Distributor - reroute persist socket msgs, reroute, purge not delivered, **Super member ***
 - RAS enhancements, RACF Key ring support
 - JCA 1.5. WAS V6, WID/WBI V6
 - **OTMA enhancements for Message Flood and ERE ***
- 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
- ESAF/DB2SAF simultaneous access to same DB2

Improved Systems Management

- Sysplex Unresolved CQSPUT during CQS Resynch new message
- Operations Manager enhanced to pass FID for AOI conversion
- Log Edit User Exit for additional security
- **PI/Stop Region ABDUMP ***
- **LOCKTIME enhancements ***

Scalability

- Fast Path Shared VSO Dual Structure diagnostic log records
- DBRC Retain Position High Key
- **DBRC Intent to Reorg and Init.PART enhancement ***
- Syncplex Option helps synchronize failed Sysplex IMSs restart
- HALDB Partition Range Processing, **Chg PROCOPT GON/GOT status code GG to BA ***
- **Allocation of DSAB/TIOT blocks about the 16 M line ***
- **XRF-GDPS Coexistence ***

* 2006



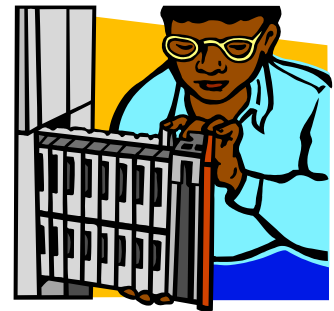
Easing IMS V9 Installation



John Butterweck

IMS V9 Service Upgrade (SUP) 4Q05, 4Q06 Availability

- Rebuild of IMS V9 base, incorporating all service into base
- Additional testing to ensure higher quality prior to availability
- Much less SMP/E processing required for new IMS V9 installs
 - Service already in base FMIDs
- Existing users not required to re-install
- Service provided in maintenance stream
- This is an alternative to ServerPac



Enhanced IMS Management Tooling for Infrastructure Simplification



Dan Wardman

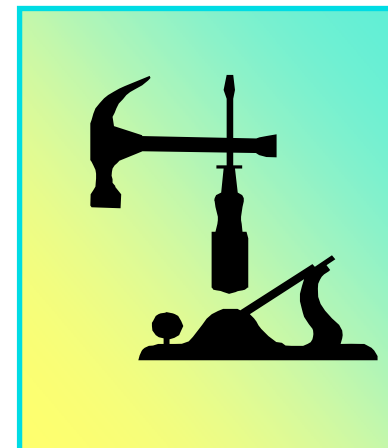
1H2006

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

2H2006

- IMS Sysplex Manager V1R2
- IMS High Performance Pointer Checker V2R2
- IMS Parallel Reorganization V3R2
- IMS Command Control Facility V2R1
- **IBM OMEGAMON XE for IMS for z/OS V4R1**

➤ And more to come this year...



Barclays Bank - IBM Fast Path Tools



Challenges

- We had Fast Path tools from two vendors
 - Result of a commercial deal
- Save money by displacing other vendor
- Getting the IBM tools fit for market

Solution

- Work with IBM to prove and enhance IBM's FP Tools
- Implement IBM's FP tools

Benefits

- Competitor's FP tools displaced
- Now using IBM's HPFPU tools



IMS Version 10

Enabling Information On Demand

Business Transformation

Parallel Recon Access for
High Performance/Capacity

XQuery for Universal
Information Interchange



Dynamic Resource Definition
to Simplify Change

Enhanced Tooling to
ease Development and
Data Access

Web Services for Better
Business Process Integration



IMS: The Continuing Journey ... with IMS Version 10



Barbara Klein

Easing Integration with New Technology for a Service Oriented Architecture

- Enhancing IMS XML and Web Services Connectivity
- Integrating Operations across Subsystems/Platforms

Simplifying Installation and Management

- Defining Resources Dynamically
- Easing Operations Management
- Easing Systems Management

Providing High Performance, Scalable, Available, Reliable and Secure Solutions

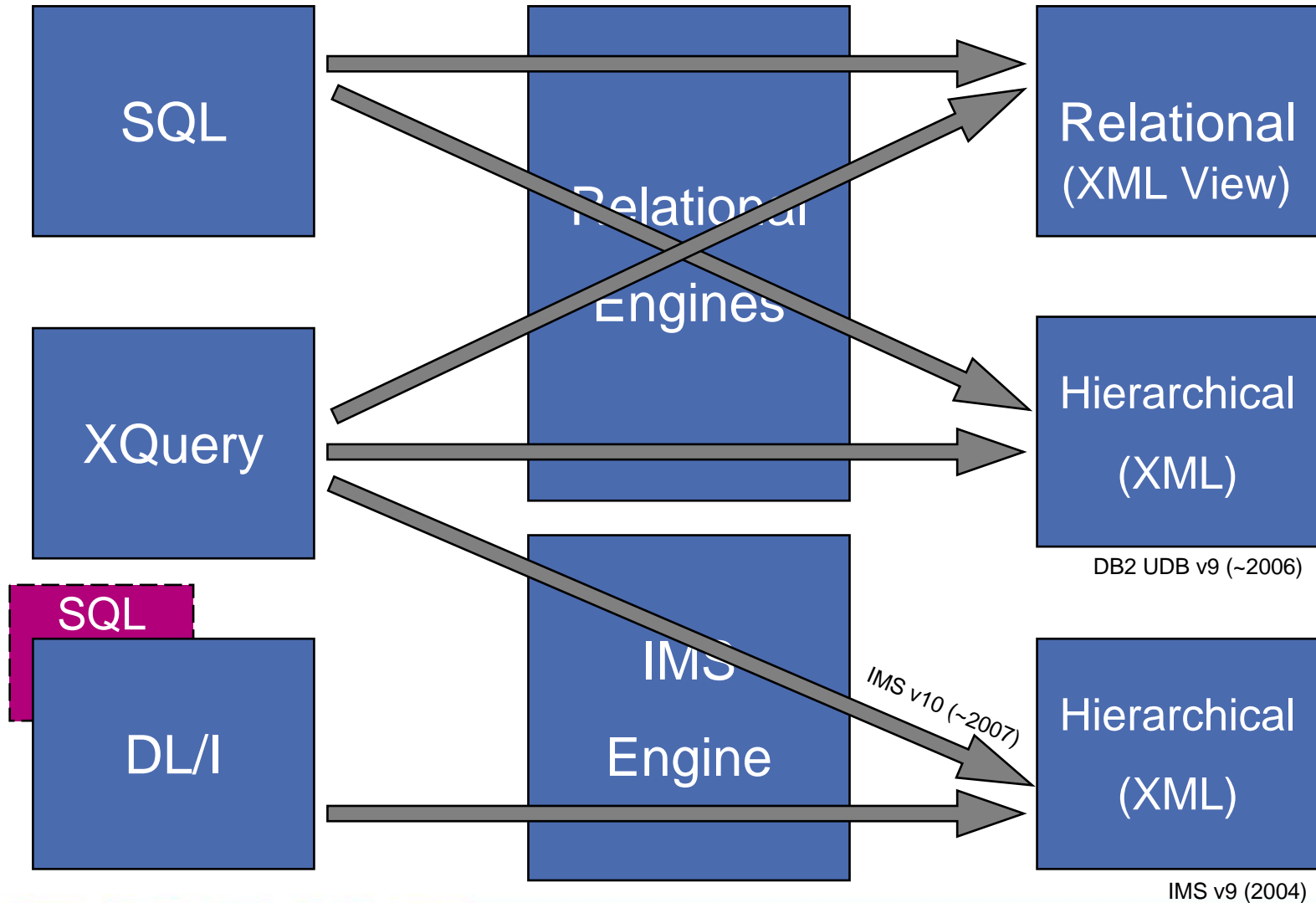
- Providing More Parallelism in DB Recovery Control
- Widening Bandwidth for Multiple Systems Coupling
- Enhancing Security



Road to Interoperability through XQuery



Chris Holtz

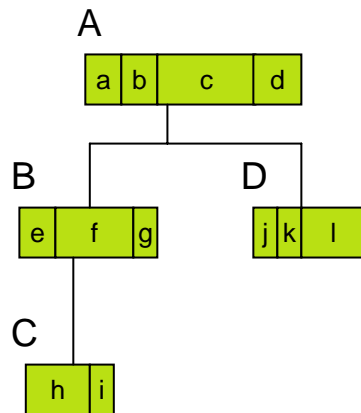


XML Visualization

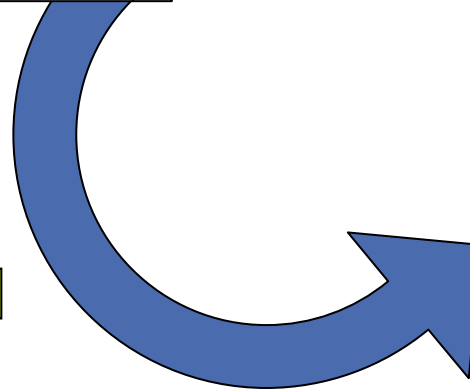
On Disk I/O



IMS Hierarchical Model

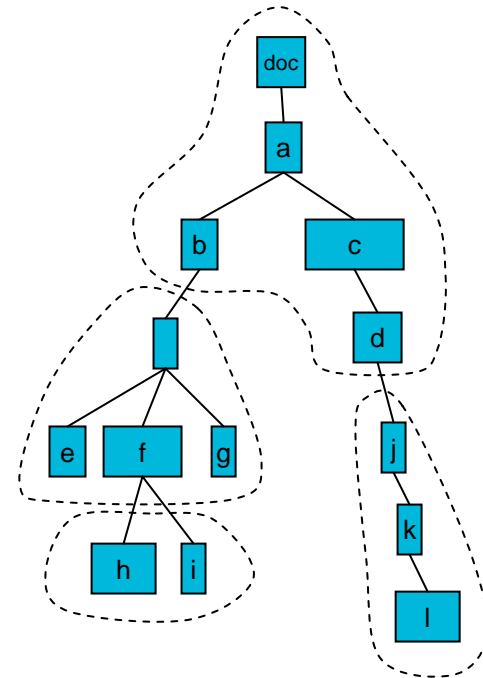


DBD, PCB,
Copybooks



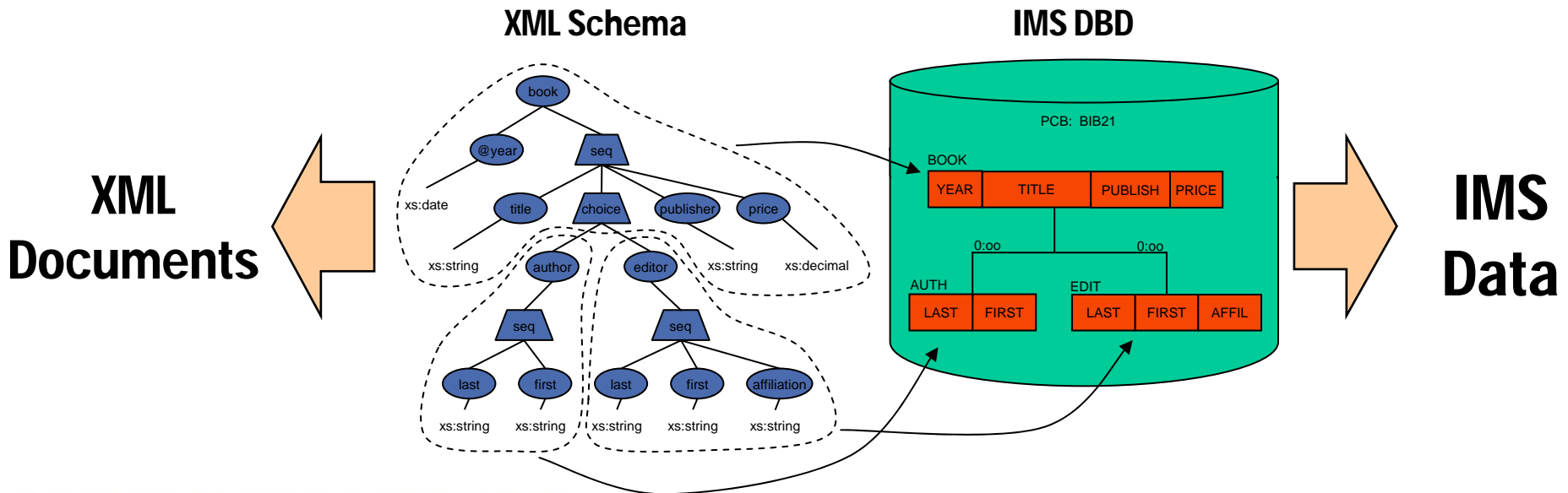
XML Schema

XQuery 1.0 XPath 2.0
Data Model



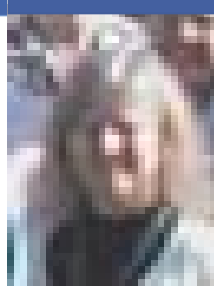
IMS XML Database

- 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

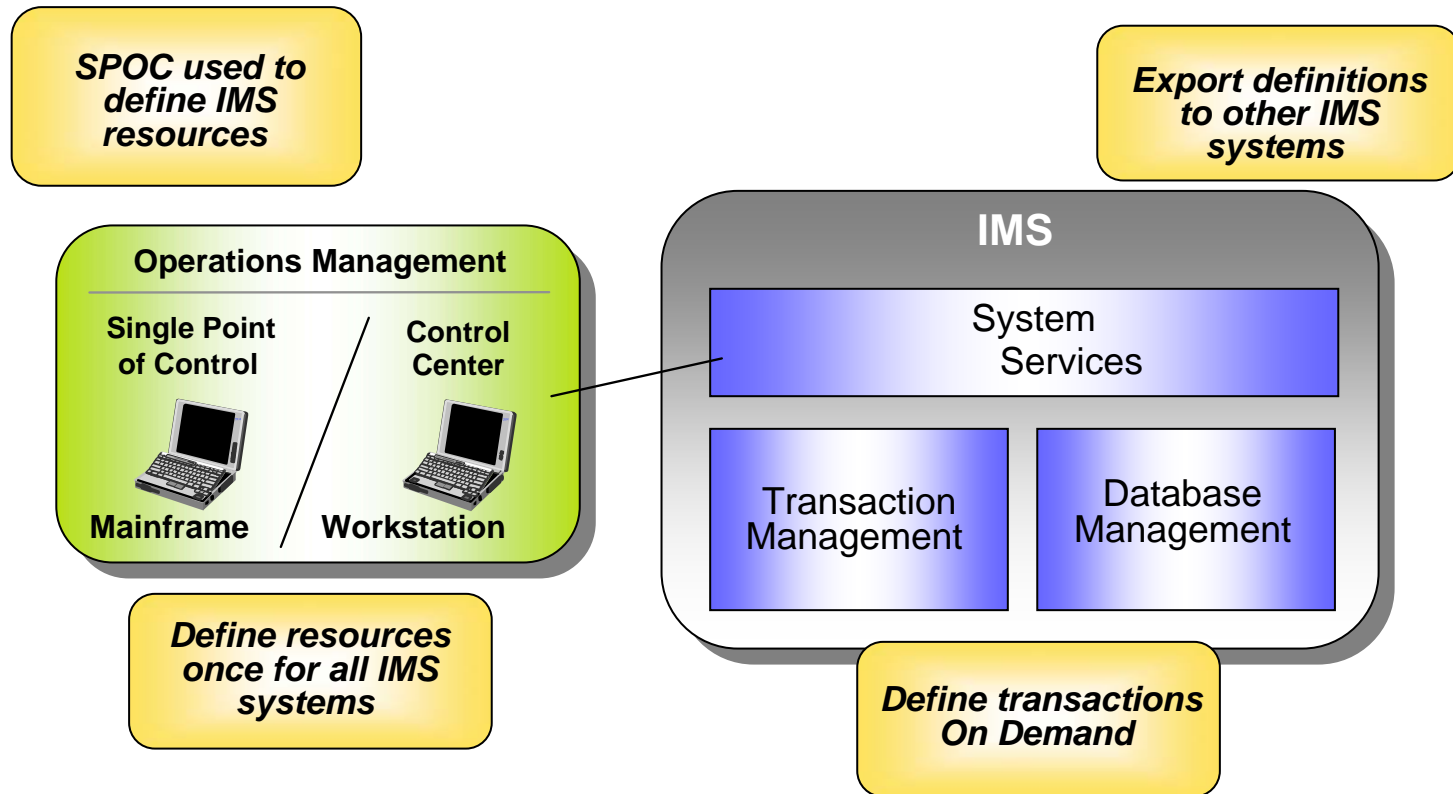


IMS V10 Dynamic Resource Definition

Simplifies definition of IMS resources



Diane Goff



IMS V10 Parallel RECON Access

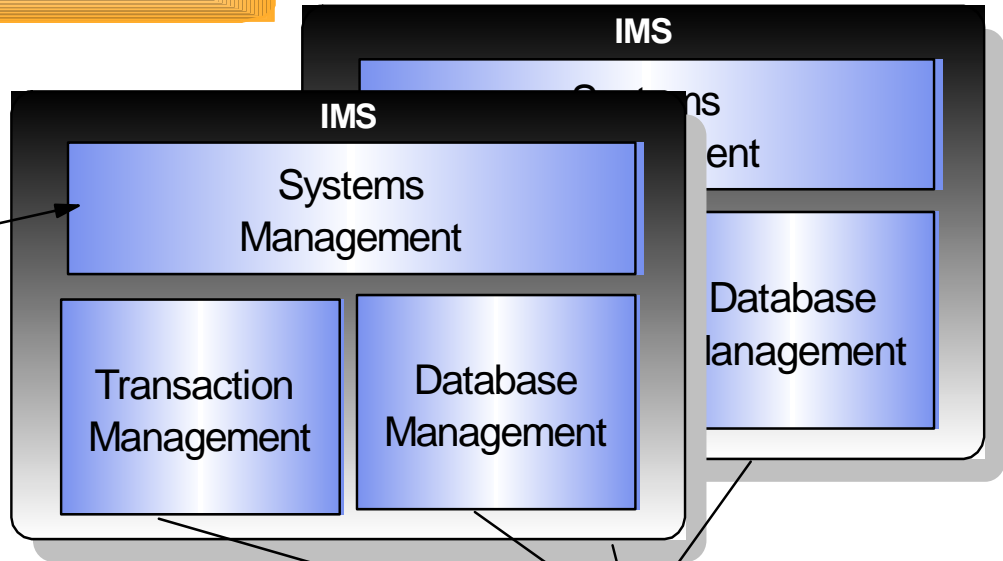
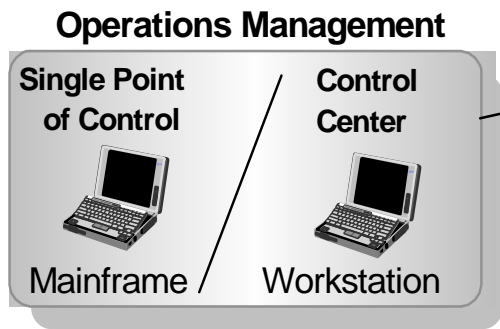
Improve REcovery CONtrol performance by reducing contention



Pat Schroeck

New operational procedures

Backout capability by logging in MVS



Each request handled as transaction

Requests handled concurrently



IMS V10 Prerequisites

■ IMS V10 Minimum Release Levels

f z/OS V1R7 (5694-A01)

S RACF (included in separately orderable SecureWay Security Server), or equivalent, if security is used

– High Level Assembler Toolkit (5696-234)

■ Additional key prerequisites for optional line items:

f IMS Parallel Recon Access

– z/OS 1.7 DFSMSStvs (separately orderable feature)

f IMS Image Copy 2 DFSMS Fast Replication support

– z/OS 1.8

– Hardware: 3340-FLC, 2105-E20, 2105-F20 and 2105-800

f IMS XML Adapter and SOAP Gateway

S WDz (2 Limited use licenses included for this. Ts&Cs in WDz license)

f Additional individual functions and connectivity requirements in the IMS V10 Release Planning Guide

IMS V10
Runs only on
64 bit Processors
(z800,z900, z990)



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 V8

- Extend DB Connectivity
- Enhance Sysplex Operations
- Simplify Install Process

IMS V9

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

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.

