

Information On Demand

IMS Trends & Directions



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Agenda

- ✦ **Focus areas for IMS**
- ✦ **IMS 10 and 11**
- ✦ **Application modernization**
- ✦ **Customer examples**
- ✦ **Looking Ahead**



Deploying on System z Provides Differentiated Value

Enabling intelligent IT that works for your business

*The New IBM System z10 Enterprise Class
and now also the System z10 Business Class*

*The power
of many . .*



*. . . the simplicity
of ONE*

Server Leadership: 40+ years in the making!

Mainframe utilization rates >80%; designed to sustain 100% peak workload utilization without service level degradation.

- ✦ **Processors, CPU speed, memory, network I/O**
 - ✦ Growth
 - ✦ Consolidation
 - ✦ Granularity
 - ✦ Access
 - ✦ Messaging speeds
- ✦ **Price/performance of specialty engines**
- ✦ **Just in Time capacity and management**
 - ✦ Adapt faster
 - ✦ Respond automatically
 - ✦ Deploy new

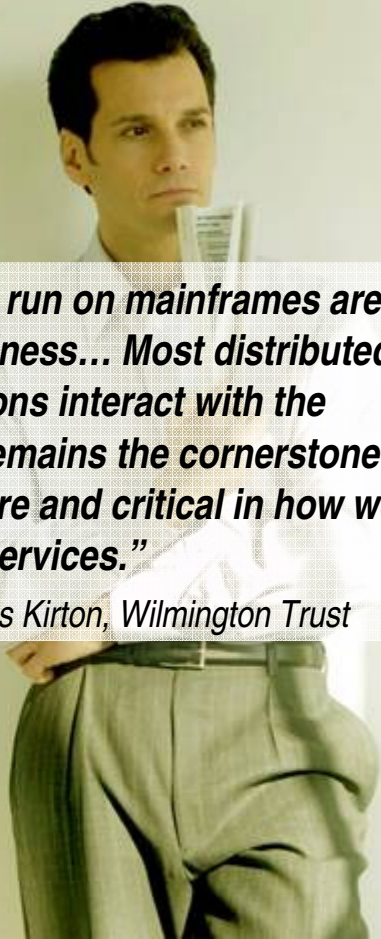
“Cost was driving factor in decision to IBM System z. We’ve cut operating costs significantly, ensuring sufficient processor capability to support Winn-Dixie for years to come. The mainframe is integral to our success.” Charlie Weston, Winn-Dixie



Customer Outlook for Mainframe Industry:

Annual Mainframe Survey Reveals Strong Need

Annual Worldwide Mainframe Industry Survey of 1,100 large mainframe customers



“Applications that run on mainframes are critical to our business... Most distributed systems applications interact with the mainframe, so it remains the cornerstone of our IT infrastructure and critical in how we deliver business services.”

Charles Kirton, Wilmington Trust

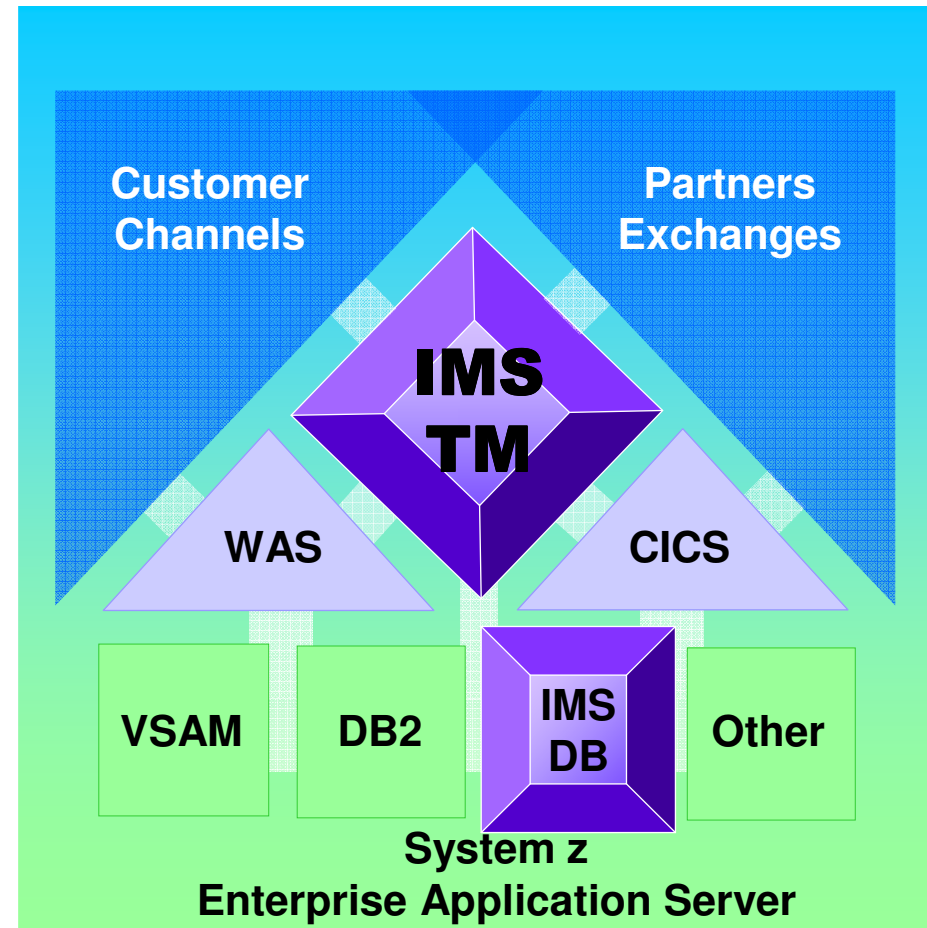
Highlights of survey include:

- ✦ Jump in customer optimism about mainframe future
- ✦ Having shared tools/applications spanning platforms considered very important
- ✦ Sharp decrease in predicting legacy or declining trends
- ✦ Mainframe labor costs much lower than general IT averages, particularly operationally efficiency, transaction performance, superior data serving, availability and security attributes.

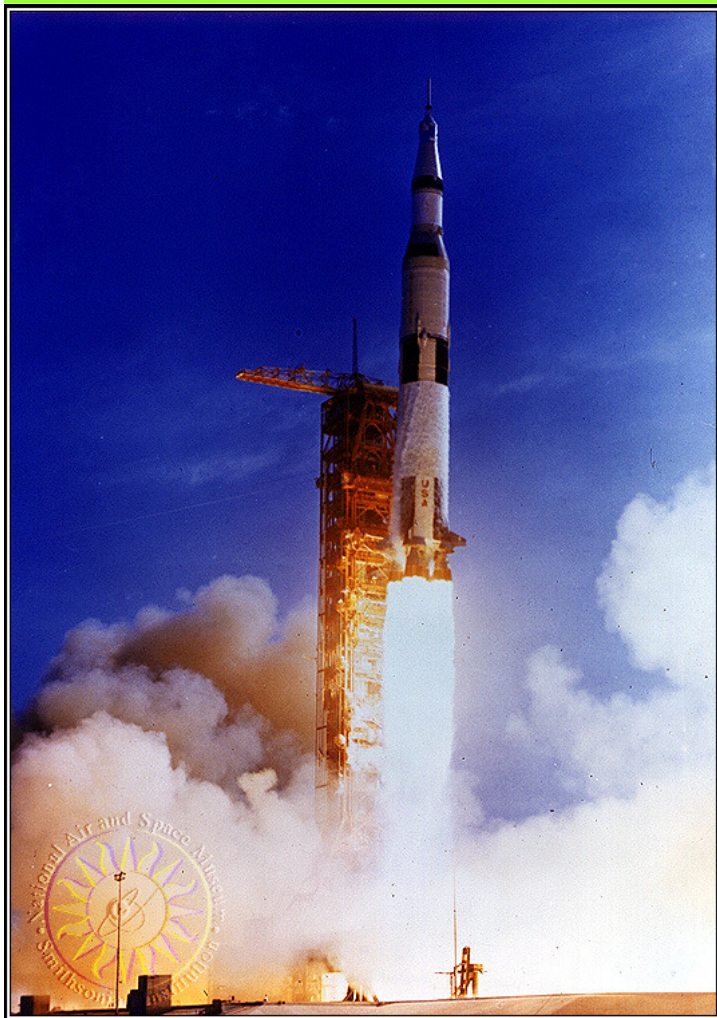
Survey conducted by BMC Software, as reported in Business Wire on 8/12/08

IMS – IBM's High-Performance Application and Data Server for System z

- * Integration focal point for SOA: key to a successful Enterprise Architecture
- * Remarkable performance
- * Rock-solid reliability and security – thousands of days without outage
- * Most cost efficient run-time environment
- * Integrated message queuing, transaction processing and data base management
- * Open, standard interfaces allowing 'any-to-any' connectivity and access
- * Fully integrated into today's A/D toolsets
- * Natural XML support
- * Flexibility and Investment Protection - Robust runtime support including JAVA, C, COBOL, PLI and Assembler



40 Years of Innovation with IMS



- ✦ IBM continues to invest in IMS
- ✦ Development capacity is growing
- ✦ IMS usage continues to grow
- ✦ Customer acceptance of IMS is strong
- ✦ Still the market leader in performance, throughput, availability
- ✦ Tremendous focus on legacy application renovation

“It seems like IMS has woken up”

- VP, large US financial company



IMS Systems Are Here To Stay

“Pre-relational databases don’t die, nor do they fade away.”

*“While industry watchers such as Gartner Inc. once encouraged customers to think about transitioning away from pre-relational DMBses, they’re now backtracking. In a recent report, Feinberg said organizations should also do a thorough cost/benefit analysis before embarking on any such migration...**the risks and additional costs entailed by migrating away from a pre-relational DBMS outstrip the costs.**”*

*“Odd though it may sound, there is **no reason for IBM not to continue to refresh IMS with the latest technologies**, to fit its users for integration into SOAs and event-driven architectures of the future.”*

Stephen Swoyer, Enterprise Systems, 11/06/2007

*“ ‘An ongoing IT fear is that IMS experts will become thin. I believe that **these fears are entirely overblown. One of the nicest features of IMS is its simplicity.** Unlike object-oriented programming, **IMS requires ‘relatively little training for programming or administration.** Big Blue has ample opportunity to keep on keeping on as far as IMS is concerned...’ ”*

*“Time and again, enterprises have found that **migrating** from an existing database to an enterprise-standard one **involves extraordinary time, effort, and risk.** Migrating **may involve a multi-year rewrite of dependent business-critical applications, somehow without affecting the IT organization’s imperative to ‘keep the business running.’** Small wonder that IMS is one of the ‘tough nuts to crack’ of today’s legacy modernization.”*

Wayne Kernochan, Illuminata Perspectives, 10/19/2007

“The new version of IMS is a great example of one of the things IBM does best: leverage its deep technical expertise to develop and deliver solutions for customers’ fundamental business challenges. In most large enterprises, heterogeneous I.T. infra-structures are the rule, not the exception.”

Charles King, Principal analyst at Pund-IT

“ IMS is one of the fine things to stick with.”

Curt Monash, database analyst

Where IMS is Unmatched



High Volume at Lowest Cost / TX for Mission Critical Work

✦ Extremely High Performance

- 22k transactions per second in production

✦ Life time transaction volumes in the billions

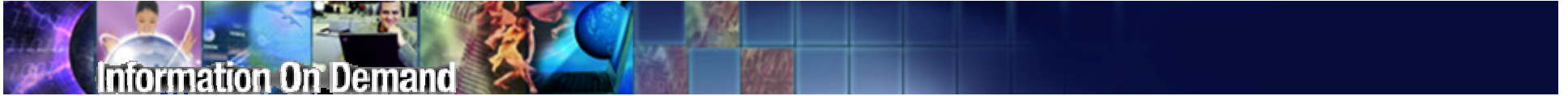
- Large package distribution company: 180 million tx / day in single image
- Theoretical: 3 Billion

✦ Very High Availability

- Large bank: 1.75 hours of down over 10 years of which 1.5 was planned; 0 hours of down time over the last 3 years
- Have seen in other customers (3000+ days no unplanned outages)

✦ Ideal when runtime costs are more important than ad-hoc usage

- 1/2 MIPS and 1/4 storage compared to relational technology
- Takes advantage of zAAP's for Java workload



Major Corporations Depend on IMS

- ✦ **Approximately 80% of the largest retail banks in the US, Germany, Japan, and Australia use IMS for their core banking**
- ✦ **Most large package tracking companies run IMS**
- ✦ **Most automotive companies use IMS to support the assembly lines (build lists, parts where used, parts)**
- ✦ **Most large insurance companies in the US and EMEA run IMS for policy billing and claims**
- ✦ **Most telecommunications companies use IMS**



FedEx



Initial Package Recording

- ✦ Branch Offices
 - ✦ FedEx
 - ✦ FedEx Kinko's
- ✦ Large Vendors
 - ✦ Amazon
 - ✦ Others
- ✦ Distribution Centers
 - ✦ Sorting trucks/depots
 - ✦ Airports
- ✦ Technology Networks
 - ✦ Regional domestic
 - ✦ Worldwide



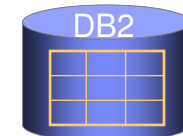
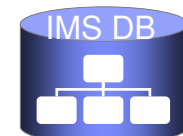
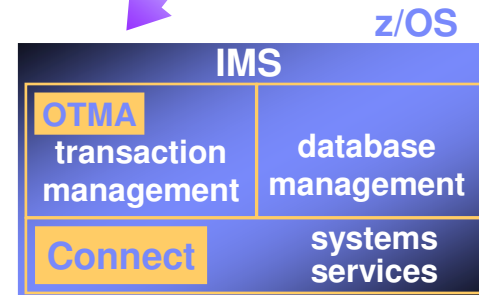
Applications for

- ✦ FAA flight plans
- ✦ Flight crews
- ✦ Assignment/Training
- ✦ Aircraft Maintenance

FedEx application servers

WebSphere MQ

200M
trans/day
thru Connect



Package Recording in Transit

- ✦ Points in travel
- ✦ Driver scanners



CECA



"IMS TM and DB is our most reliable front-end for our highest critical applications. Nowadays, I am excited to hear about the new features and functions coming in IMS 11 because it guarantees a long (another 40 years) and promised future."

Manuel Gomez, DBA, CECA



Challenge

- ✦ To integrate with the largest and the only international credit union-owned interbank network in Europe which connects the ATMs of credit unions in Austria, Belgium, France, Germany, Italy, Portugal, Sweden among others

Solution

- ✦ Implementing IMS Connect features
- ✦ IMS XRF

Expected Benefit

- ✦ Open up worldwide connectivity and serviceability
- ✦ Better positioning for future services



Ensuring IMS Quality

with Continuous Improvement

Customer Usage

Field Advocates
Technical Support
Conferences/Seminars
Customer Relationships
Customer Sat Surveys
Problem Resolution
Problem Tracking/Analysis

Development

RAS Team
Customer Requirements
Product/Offering/Arch/Release Teams
Agile/Iterative Development
Code/Design/Pubs Reviews
UT/FVT/SVT/PVT/Perf tests
Quality Metrics

Pre-GA Customer Validation

User Centered Design
Customer Advisory Council
Quality Partnership Program Design Validation
Beta/Preview Programs
Vendor Programs
QPP Test/Support
Redbooks

“I don’t remember the last time we had an IMS outage. IMS just works!” – IT Director, auto manufacturing company.



IMS Quality Partnership Program (QPP)



Advisory Group

- ✦ Guide content of future releases
- ✦ Feedback on design
- ✦ Product readiness

Early Testing

- ✦ More complex environments
- ✦ Functional, stress, and performance testing
- ✦ Production experiences
 - ✦ Testimonials



Enhancing Skills for IBM Mainframes

“A growing list of 50,000 worldwide students with mainframe computing training...a direct result of the ongoing resurgence of the mainframe, which continues to serve as a centralized secure powerful transaction engine for all the world’s top banks & multinational organizations. This demonstrates continued interest in mainframe computing, particularly where there is a lot of pressure to consolidate and reduce space. The mainframe is a great platform in terms of scale, performance, and energy efficiency.” marketwire, August 22, 2008

IBM Academic Initiative for z Series

- ✦ Building 20,000 Skilled Mainframe Professionals by 2010
- ✦ Educating university/college students worldwide
- ✦ New and updated courses





IMS Participation in the Academic Initiative

Customers are demanding supply of IMS skills

- ✦ Aging professionals in the industry
- ✦ Several colleges have plans to teach IMS
- ✦ Discussions happening with other colleges *

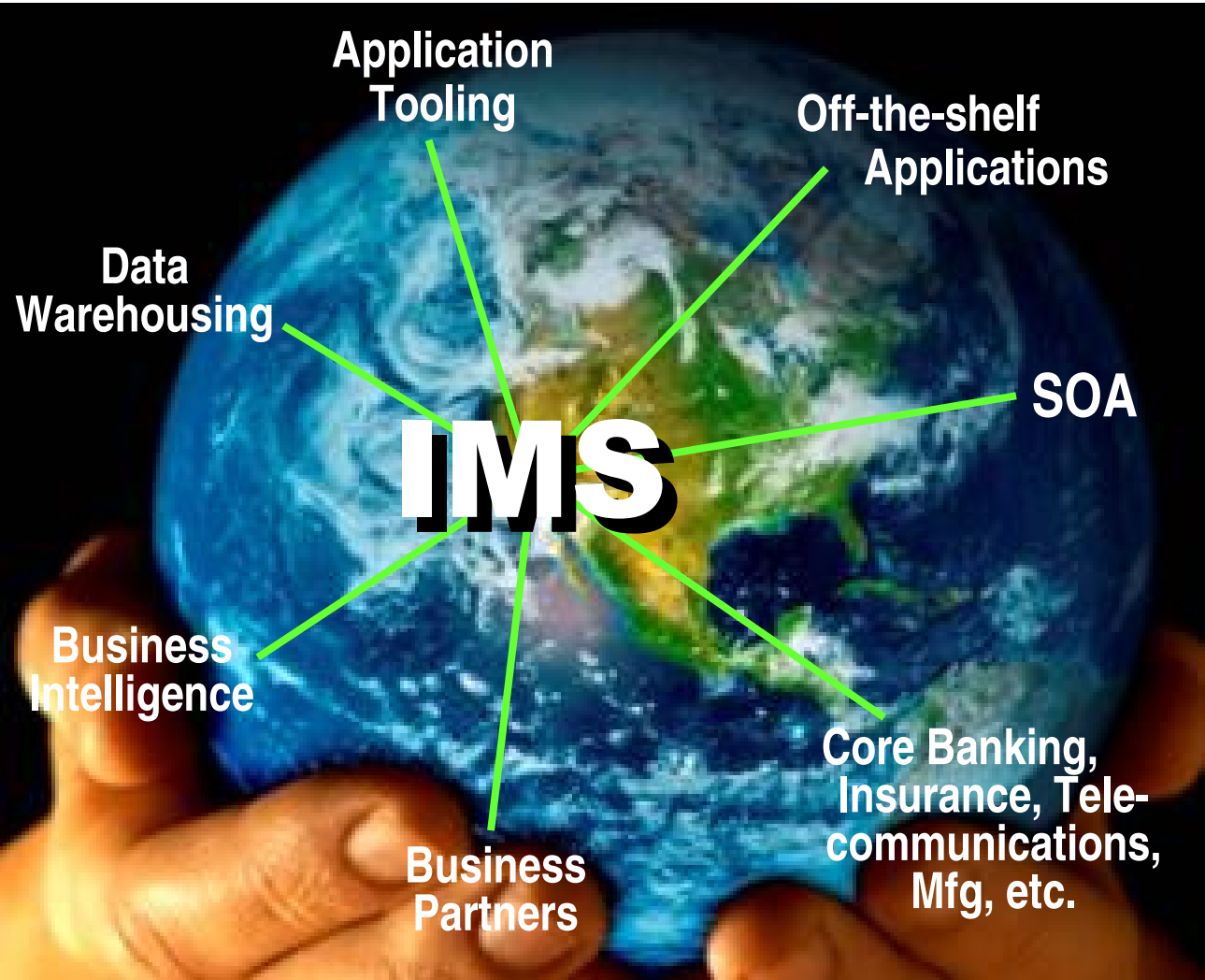
Colleges including Introduction to IMS

- ✦ University of Liepzig (Universität Leipzig)
- ✦ Marist College
- ✦ Ryerson Polytechnical Institute
- ✦ Tonji University
- ✦ National Taiwan University of Science and Technology *
- ✦ San Jose State University *





Expanding the IMS Ecosystem





The Team IMS Partner Program



- ✦ **Enable IMS Tools vendors and ISVs to provide “Day 1” support for their products**
- ✦ **Partner with ISVs or Resellers for Cooperative Marketing, Sales and Services**
- ✦ **Developer’s Program for Application package vendors to support IMS through PartnerWorld**
 - ✦ **What packages do our customers use with IMS?**
 - ✦ **What packages would they like IMS to run or integrate with?**



IMS BP Community Continues to Grow

The image displays a variety of logos for members of the IMS BP community. At the top, a red arrow labeled "Standardware" points from the GT Software logo towards the COA Solutions logo. Other logos include TATA (Leadership with trust), BankNet, RightOrder, Telcordia, Compuware (www.compuware.com), Peck Software, SERENA, ACI, UBS, ASG (Software Solutions), Fundi SOFTWARE, Mainline INFORMATION SYSTEMS, SOGETI, SCORT, Rocket, macro 4, ca (Computer Associates®), and SOFTWARE AG (THE XML COMPANY).



IMS Roadmap



New major version every 2-3 years

- ✦ IMS V10 GA October 2007
- ✦ IMS V11 – QPP started Jan 2009
- ✦ IMS V11+1 in development
- ✦ IMS V11+2 candidate items

SOA Connectors

- ✦ IMS TM Resource Adapter shipped with Rational Tooling
- ✦ IMS Web 2.0 support shipped with IBM Mashup Center
- ✦ Downloads from IMS website

Support

- ✦ Two current supported field releases
- ✦ N-2 release out of service 1 year after current release GA



IMS 10: Providing a Competitive Advantage

Over the years, upgrading to new versions of IMS has gone smoothly and without any application impact. Now, with IMS 10, we expect to further simplify our development environment which will help us reduce time-to-market for new services.

*Wang Chen, Manager, Database Technical Services
TD Bank Financial Group*

To extend our IMS applications, we are eagerly looking forward to IMS 10 for use with the IMS SOAP Gateway to call web services from an IMS application. We expect this improvement can help us create new business.

*Romain Capron, manager, System Engineers Group
MATMUT, a French Insurance Company*

IMS 10 allows Capitalia to quickly dispatch and satisfy any urgent request to generate and update IMS resources in much less time than previously required. The new features of IMS 10 are allowing Capitalia to reduce errors and resources needed to process information and has sped up the flow of business.

*Santino Di Liberti , DB/DC Manager
Capitalia*

Our primary requirements from IMS are data integrity, product stability (availability) and performance. IMS V10 continues to deliver all 3 for our environment of over 80 IMS FP subsystems. With more than 30 IMS Fast Path subsystems already converted to V10 we have experienced no production or pre-production Sev 1 or 2 issues related to IMS supporting our data integrity and product stability requirements. Enhancements such as DRD and MOLC provide much needed support for our High Availability initiatives.

a large US financial processing company



TD Bank Financial Group



“We need to make IMS applications truly 7x24, ease application development, and ease integration of IMS services with partner platforms.”
Wang Chen
Database Technical Services, TD Bank



Challenge

- ✦ Make IMS actively participate in SOA era

Solution

- ✦ IMS and IMS application 7x24 availability
- ✦ DRD for development environment
- ✦ Expand IMS Connect application integration options

Expected Benefit

- ✦ Provide top notch availability to business, reduce IMS environment setup time for application development, continuous improvement of IMS connectivity options



E. Sun Bank



Challenge

- ✦ Core banking systems built on IMS transaction and database for high efficiency
 - ✦ 143 mips z-server (80% - 99% utilization)
 - ✦ 1.5 million transactions / day

Solution

- ✦ IP-based IBM Enterprise Service Bus
- ✦ Exploit IMS SOA solutions based on IMS TM Resource Adapter and IMS Connect

Expected Benefit

- ✦ High performance throughput
- ✦ Meet demands leveraging IBM and IMS SOA



Aegon

IMS 10: A Small Shop Perspective



Objectives

- ✦ Migrate from V8 to V10
- ✦ Reduce Time for Cleanup
- ✦ Ease RACF conversion

Solution

- ✦ DRD IMS SYSGENS no longer required
- ✦ The IMS Security Management Utility is eliminated in favor of RACF security, allowing AGN security
- ✦ For us the Implementation of RACF Security Checking was no big deal



FIDUCIA IT AG



*Congratulations!
Winner of IOD Innovation Award:
Best solution powered by IMS*

“Overall, we feel that IMS 10 is a good and stable version. The support we received during the QPP itself was, in a word, “perfect.” Problems that were encountered within production systems were solved promptly. Finally, we have found that the CPU usage differential between IMS 9 and IMS 10 is non-existent.”

Wolfgang Strauch, FIDUCIA IT AG

Business Needs

- ✦ Improve IMS connectivity to partner institutions
- ✦ Reduce operational costs

Solution

- ✦ Upgrade to IMS 10
- ✦ Implement DRD, SMQ and MSC VGR support

Business Benefit

- ✦ Improved system availability and reliability with DRD and SMQ
- ✦ Improve systems connectivity with MSC VGR support
- ✦ Eliminated cost of 3rd party tools



Announcing:

IMS 11



IMS Key Themes



- ✦ **Facilitate modernization of IMS applications, compliance, standards**
- ✦ **Dramatically simplify administration and deployment, automation, reduce skill level for application development**
- ✦ **Support high transaction growth rates through performance, capacity, availability and recovery enhancements**



IMS SOA Strategy

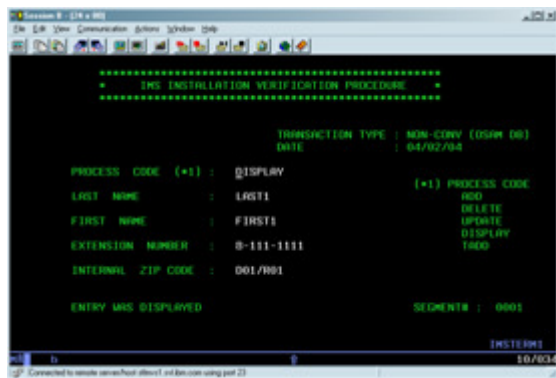


- ✦ **Protect customer investments by making it easy, flexible and cost efficient to reuse and modernize IMS applications and data**
- ✦ **Fully integrate with WebSphere/Rational servers and tooling in a service-oriented architecture (SOA) environment**
- ✦ **Encourage new application development by supporting standards – e.g. XML, SOAP, Java, JDBC, etc.**
- ✦ **Partner with ISVs to facilitate IMS-SOA exploitation**



Modernizing IMS Applications

- ✦ Web-enable mission critical applications
- ✦ Use modern programming languages – COBOL & Java Interoperability
- ✦ Progressive renovation vs “rip and replace”
- ✦ Dynamic and flexible development/test on distributed platforms
- ✦ Little to no IMS skill required



Rational software





Landesbank Baden-Württemberg (LBBW)



Challenges

- ✦ Business opportunities demanded that LBBW update its IMS-based brokerage application
- ✦ Very tight timeframe

Solution

- ✦ SOA-enable IMS application using GT Software's Ivory Service Architect
- ✦ Build new web-interface using IBM WebSphere

Benefits

- ✦ IMS and mainframe are the cornerstone of LBBW's SOA
- ✦ ~80% reuse of the IMS-based Web services for new applications
- ✦ Mainframe developers "learn SOA by doing" with Ivory



Lockheed Martin



Objectives

- ✦ Incorporate mainframe applications containing critical business logic into corporate SOA strategy
- ✦ Employ a standards-based approach

Solution

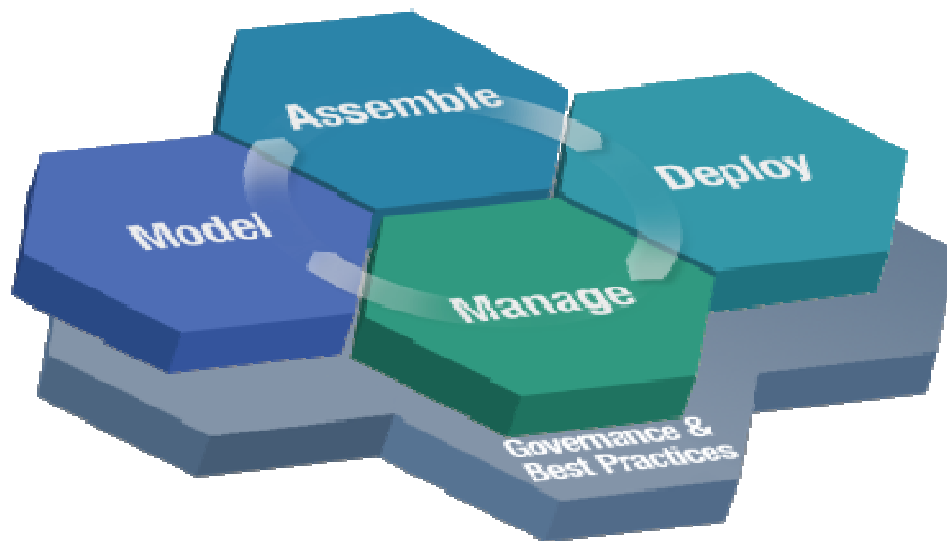
- ✦ Mainframe developers identify, orchestrate, and implement Web-services for IMS with Ivory
- ✦ LM Missile Systems using Ivory Service Architect to service-enable IMS manufacturing applications
- ✦ LM Aeronautics using Ivory Data Access to help migrate certain mainframe data and subsystems to SAP

Results

- ✦ SOA Architects outside the mainframe accept IMS and the mainframe as a key participant in Lockheed's SOA strategy
- ✦ High acceptance of IMS access through Web services by Java developers
- ✦ IMS services can now be reused, enabling mainframe SOA to spread to other business units



Supporting Application Modernization



- ✦ **IMS SOA seminars and workshops**
- ✦ **Awareness and education for application architects**
- ✦ **Demonstrate ease of modernizing IMS applications**
- ✦ **Capitalize on your investment in IMS!**



Northwest Airlines

After merger with Delta, Xth largest airline in the world



Environment

- ✦ Have been running a successful airline very efficiently and effectively with IMS/DB2 on z/OS as a backend technology and plan to continue on that path
- ✦ Why System z? Reduced operating costs; reduced operational and architectural complexity; ability to more easily consolidate workload due to merger
- ✦ Why IMS? Industry proven; can handle high volumes of transactions better than other solutions; excellent support from IBM

Business Objectives

- ✦ Integrate critical applications after merger
- ✦ Implement a distributed application front end using SOA on top of our existing z/OS

Solution

- ✦ Implement IMS/JDBC on z/OS to migrate non-critical applications to distributed technologies
- ✦ Allows NWA to better manage the risk of depleting technical experts within COBOL/DB2/IMS technology

Business Benefits

- ✦ NWA's technical infrastructure is much more open and able to integrate with all different types of technologies.
- ✦ Smoother integration of all critical applications running on zOS after merger with Delta



US Based Auto/Truck Manufacturer

Challenge

- ✦ Company is financially stressed
- ✦ Need to modernize and streamline with low cost and risk
- ✦ Looking to get the most out of what they have vs invest in new

Solution

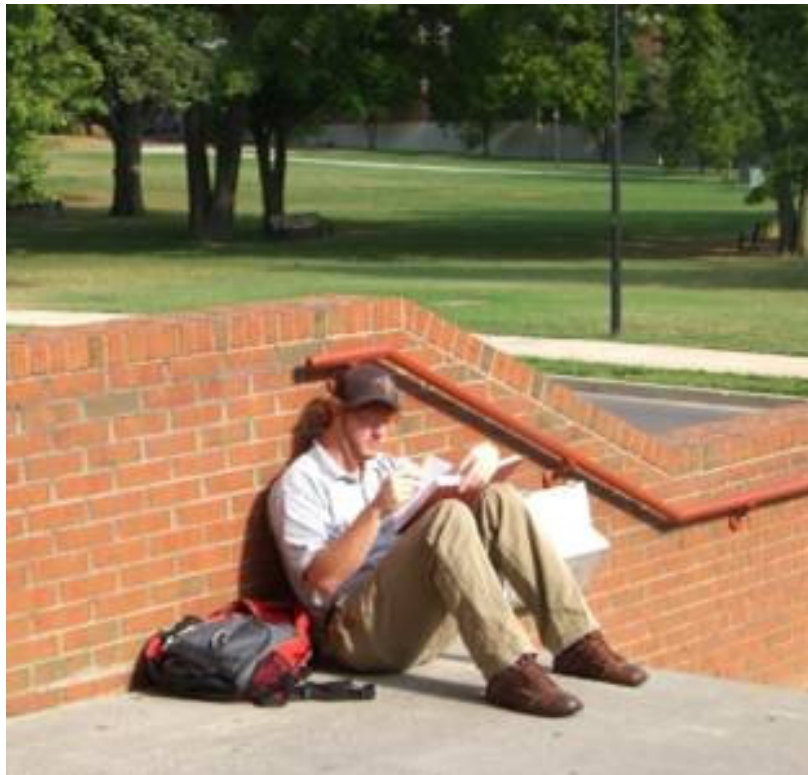
- ✦ Leverage existing mainframe and IMS investments
- ✦ Renovate/modernize Bill of Materials application
- ✦ At least 3 new applications slated for IMS

Benefit

- ✦ Take advantage of new programming techniques, tools and platforms
- ✦ Minimal throwaway and replace
- ✦ Extremely cost effective
- ✦ Keep the advantages of IMS and z – reliability, throughput, low cost per trans



Queens University



Business Needs

- ✦ Allow persons with Queen's employee IDs to review their bank account information and update that info if change needed

Solution

- ✦ Provide 2 Web Service interfaces:
 - ✦ Expose existing bank account information for persons with employee ids in the HR IMS database
 - ✦ Accept bank account info from another application and update appropriate records in the HR IMS database



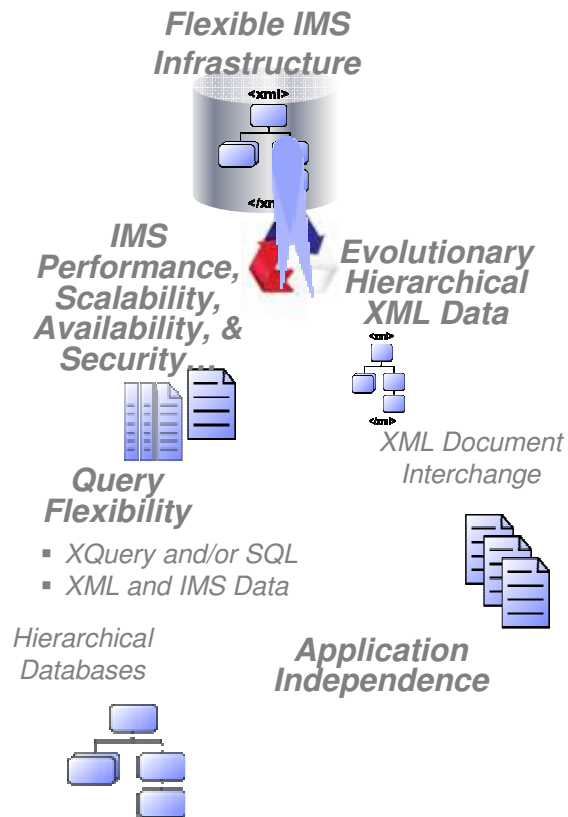
IMS Applications as SOA Web Services



- ✦ IMS applications can access, and be accessed by, other environments and data
- ✦ IMS 10 enhances application integration enabling
 - ✦ IMS applications as clients to interoperate with web services outside IMS
 - ✦ IMS transactions as Web services for conversational composite business applications, maximizing IMS re-use for rapid business innovation and reduced costs
- ✦ IMS 10 is being further enhanced for business transformation with
 - ✦ New Tools and Standards
 - ✦ Synchronous Callout
 - ✦ Simplified Interface
- ✦ IMS 11 optimizes connectivity for ultra-high availability and resilience



IMS and XML



- ✦ Hierarchical IMS offers a natural mapping for XML
- ✦ XML processing in IMS transactions available since 1999
- ✦ IMS Databases align with XML for storing XML data natively
- ✦ Retrieval and Storage of IMS records as XML documents require **no change** to existing IMS databases
- ✦ IMS 10 enables XQuery of IMS data
 - ✦ Enabling off-the-shelf, third-party tools
 - ✦ Offering standard, shareable integration of IMS with other industry databases
- ✦ IMS 11 broadens Java/XML tooling for easy development, access and web services for business transformation



IMS Data in an SOA



- ✦ IMS provides industry standard access to IMS data
- ✦ IMS 10 enables transparent integration of IMS data as web services for SOA
- ✦ IMS 10 provides a user-friendly interface for viewing and generating IMS data metadata for
 - ✦ Rapid application development
 - ✦ Reduced cost of development and ownership
- ✦ IMS 11 offers scalable, distributed and high speed local access to IMS data for cost effective access, growth, and resilience



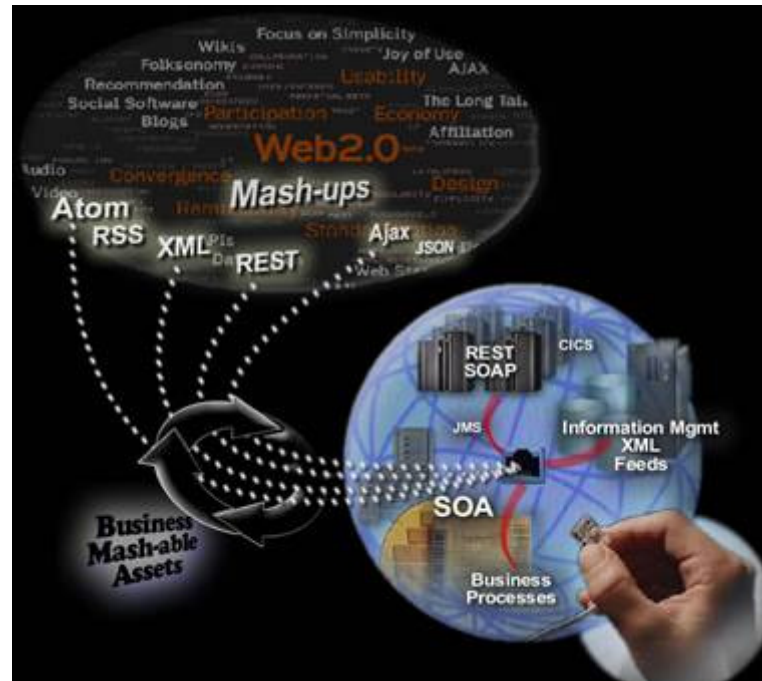
IMS and Web 2.0: Unleash and Reshape IMS

“I want my IMS Assets to be mashable...”

Enterprises will be **exposing** more services to the web, transforming the web into a platform...

...and **consuming** more services and feeds from the web.

...what should I keep in mind?”



Mashup Scenarios:

- ✦ Compose services (data or function) into a composite service
- ✦ Compose widgets / HTML segments into a composite UI or an application template
- ✦ Binding service (data or function) to the composite UI



Easing Use



- ✦ **IMS 10 eases installation by simplifying resource change**
- ✦ **IMS 10 simplifies management with broadened auditability and single point of control**
- ✦ **IMS 10 enhances automation, security, and serviceability**
- ✦ **IMS 10 is being further enhanced with**
 - ✦ **Management utilities to simplify change**
 - ✦ **Print Options to ease use**
- ✦ **IMS 11 streamlines installation/operations**
 - ✦ **New Dynamic Commands**
 - ✦ **User Exit Management Services**
 - ✦ **Advanced Syntax Checking**
- ✦ **IMS 11 continues to enhance usability, security and serviceability**



IMS and z: Lowering the Total Cost of Ownership

IBM provides specialized processors

- ✦ Strategic z/OS execution environment
- ✦ Increased system productivity, reducing general purpose processors demands and making capacity available for other workloads

IMS takes advantage of z application assist processors (zAAPs) for Java workloads

- ✦ Run at a lower total cost of ownership
- ✦ Transparently execute without application change





IMS and z: Eliminating Bottlenecks for Growth

IMS 10

- ✦ Reduces recovery control contention
- ✦ Improves multiple systems coupling bandwidth for improved efficiency, transaction performance, and output message response times
- ✦ Removes buffer and sequential dataset size limits
- ✦ Provides storage constraint relief
- ✦ Improves recovery with fast replication support

IMS 10 and z10 double throughput

IMS 10 is being further enhanced for more efficient application/data recovery, connectivity, routing, and clean up

IMS 11 optimizes ultra-high availability and systems performance

- ✦ Using 64-bit storage
- ✦ Easing creation of online recovery point
- ✦ Reducing CPU usage and elapsed time





IMS Directions

Operational

Alleviate bottlenecks

- ✦ 64 bit storage
- ✦ Multi-threading
- ✦ Improve buffer management

Lower cost per transaction

- ✦ Offload Engines
- ✦ Lower CPU consumption

Ensure Resilience/Availability

- ✦ Autonomic Response, Recovery, and Tuning
- ✦ Reduce Planned Outages
- ✦ Expand Reliability, Diagnostics, Performance

Applications

Ease Usability

- ✦ Dynamic Definition
- ✦ Eliminate Gens
- ✦ Simplify Interfaces

Speed Deployment

- ✦ Dramatically ease IMS development and test
- ✦ Integration with ISV packaged apps

Lowering Costs

- ✦ Reuse of Applications/Data

Enrich functionality

- ✦ Extend access
- ✦ Technological advancements



IMS Information and Education



- ✦ “*An Introduction to IMS*” book available
 - ✦ Update coming for IMS 11
- ✦ IMS on the Web: www.ibm.com/ims
 - ✦ IMS education schedule
 - ✦ Presentations, papers, newsletters, fact sheets, announce letters, redbooks
 - ✦ Schedule of seminars, webcasts and teleconferences
- ✦ Information center - enables search across IMS, DB2 and Tools documentation
- ✦ Additional technical support info at www.ibm.com/support/techdocs (search on IMS)
- ✦ Migration, skills transfer, customized offerings at ibmdds@us.ibm.com





Conferences and Events

IBM Information On Demand 2008
 October 26 - 31, 2008 - Las Vegas
 The Premier Information Management Global Conference
www.ibm.com/events/informationondemand

IMS Colloquium

DFW IMS Users Group

2008 IMPACT
 SMART SOA CONFERENCE
 APRIL 6 - 11 LAS VEGAS

IBM Information On Demand 2008
 June 3 - 6, 2008 The Hague, Netherlands
 EUROPE, MIDDLE EAST & AFRICA IOO CONFERENCE

Tridex

IBM System z Expo
 featuring z/OS, z/VM, z/VSE, Linux on System z
 13-17 October 2008
 Las Vegas, NV

IBM System z Technical Conference
 5 - 9 May, 2008
 Dresden, Germany

MIDWEST DATABASE USER GROUP

JG S **日本GUIDE/SHARE委員会**

SHARE
 Technology • Connections • Results

HarMundi GmbH
 Software-Services-Solutions

GSE
 GUIDE SHARE EUROPE

Interaction Australasia
 The IBM User Group
INTER ACTION



Fast.
Reliable.
Open.

re-THINK

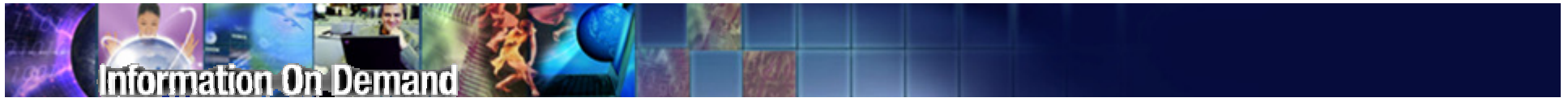
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