e-business powered by IMS

IMS
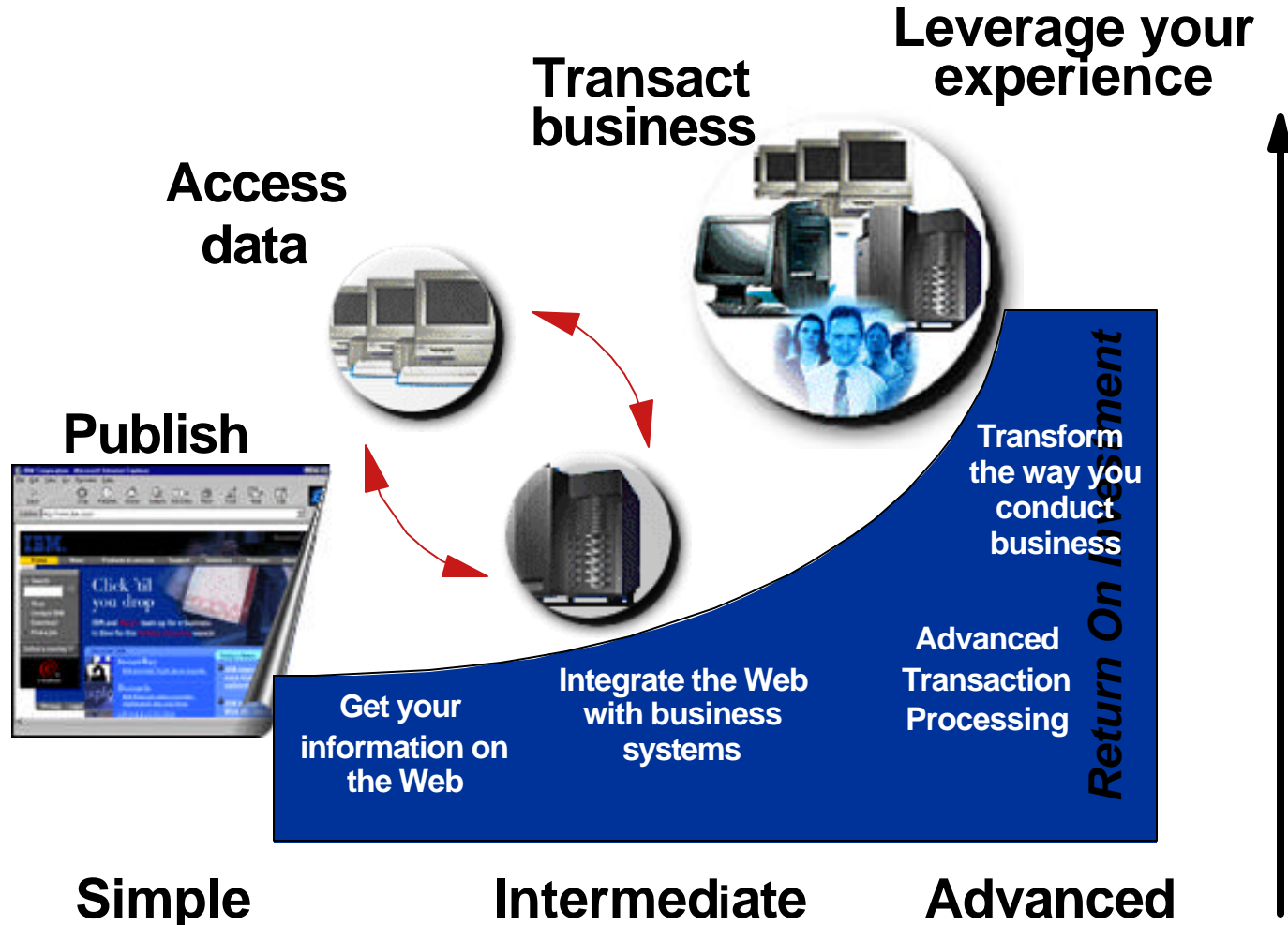
the world depends on it

IMS: Leading the 21st Century

Barbara Klein

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Integrating and Transforming Key Business Processes With Internet Technologies

e-business

Leverage your experience

Transact business

Access data

Publish

Transform the way you conduct business

Advanced Transaction Processing

Integrate the Web with business systems

Get your information on the Web

Return On Investment

Simple   Intermediate   Advanced

IMS
Ideal for e-Business

Performance/Capacity
- ✔ **Handling unpredictable volumes**

Availability
- ✔ **Continuous up time for applications**

Systems Management
- ✔ **High levels of security**
- ✔ **End-to-end transaction integrity**
- ✔ **Real time data currency**

Connectivity
- ✔ **Web**
- ✔ **Java**
- ✔ **Linux**

New Application Development
- ✔ **Java**
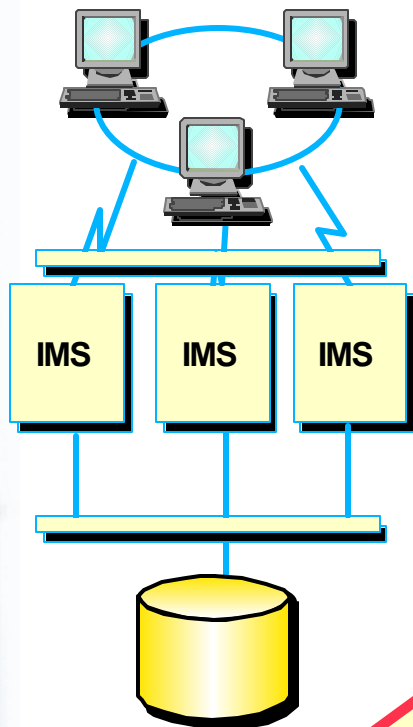- ✔ **XML**

e-business with IMS extends the investment

IMS Providing Integrated e-business Solutions

Ideal for e-business

- ✓ **Continuous Availability**
- ✓ **Systems Management**
- ✓ **Performance/Capacity**
- ✓ **Connectivity**

the world depends on it

IMS **IMS** **IMS**

Solutions

- **Parallel Sysplex Sharing**
- **Systems Management Function and Tools**
- **Open Access to IMS Transactions and Data**
- **Java Application Development Tools**

Strategic Open Access S/390 Enterprise Server

Benefits

- ✓ **Enable Customer Growth**
- ✓ **Enhance Workload Balancing**
- ✓ **Increase Availability; Ease of Use**
- ✓ **Preserve Current Application Investment**
- ✓ **Enable New Applications**

e-business

IBM

IMS Runs the World...

- **Most Corporate Data is Managed by IMS**
  - Over 95% of Fortune 1000 Companies use IMS
  - IMS Manages over 15 Billion GBs of Production Data
  - $2 Trillion/day transferred thru IMS by one customer
- **Over 50 Billion Transactions a Day run through IMS**
  - IMS Serves Close to 200 Million Users a Day
  - Over 79 Million IMS Trans/Day Handled by One Customer on a Single Production Sysplex, 30 Million Trans/Day on a single CEC
  - 120M IMS Trans/day, 7M per hour handled by one customer
  - 4000 Trans/sec (250 Million/day) across TCP/IP to a single IMS
  - 11,200 Trans/sec (nearly 1 Billion/day) with IMS Data/Queued sharing on a 2-CEC Sysplex
  - Over 3000 days without an outage at one large customer
- **In Top Ten Largest Revenue Producing "Software Company"**
- **Gartner Group Vendor Catalog entry**

"A large and loyal IMS installed base. Rock-solid reputation of a transactional workhorse for very large workloads. Successfully proven in large, Web-based applications. IMS is still a viable, even unmatched, platform to implement very large OLTP systems, and, in combination with Web Application Server technology, it can be a foundation for a new generation of Web-based, high-workload applications."

PMU - French Horse Racing

- **PRIX** D'AMERIQUE 2000
  - ▶ This 79th edition has seen the victory of General du Pommeau driven by Jules Lepennetier at a record speed of 1'12"6.
  - ▶ This 79th edition has seen the victory of the IMS Betting Application which reached 1100 transaction per second during half an hour!

- **IMS Betting Application Design**
  - ▶ 2 IMS subsystems without data sharing
    - – designed for 1400 trans/sec
  - ▶ Using IMS Fast Path TM
    - – Expedited Message Handler
  - ▶ Using IMS Fast Path DB
    - – 3 VSO DEDBs with SDEPs

BETTING
Where to bet
How to bet

INFO
Forthcoming race meetings
Programme
Results

DISCOVER
A day at the races
Live racing
The horse
French horseracing institutions

SIS-West/Swest

e-business

sweet

Providing 24-hour Availability

Problem: 24-hour Home Banking required redesign into 24-hour database update with minor or no change to existing applications

Solution: New design of IMS Fast Path Data Entry Databases

Benefits: Legacy applications needed little or no change, to allow:

- Consistent reporting from on-line Databases
- Reporting on any historical information for the given time period
- Vertical view to the data (changes over time)
- 24 hour update of Databases

IBM

Delivering Technology Leadership

IBM delivers at web speed...

- **2H00**
  - ▶ IMS V7 GA
  - ▶ IMS Connector for Java in VAJava 3.5
  - ▶ 21 IMS Systems/Data Mgmt Tools
- **1H00**
  - ▶ Program Restart Facility for IMS
  - ▶ IMS Perf Analyzer V2
  - ▶ IMS ETO Support V2
  - ▶ IMS Connector for Java in VAJava 3.0.2
- **2H99**
  - ▶ Dynamic Resource Control Facility
  - ▶ IMS V5/6 DB Fiber Optic Channel support
  - ▶ IMS V7 QPP
  - ▶ IMS Connector for Java in VAJava 3.0
- **1H99**
  - ▶ IMS V5/V6 Refresh
  - ▶ Tivoli Perf Reporter for OS/390
  - ▶ Systems Automation/390 IMS feature
  - ▶ IMS Classic Connect V2 for NT/AIX
  - ▶ Net.Commerce V3.1.2 for OS/390

e-business

IBM

IMS Systems/Data Management Tools
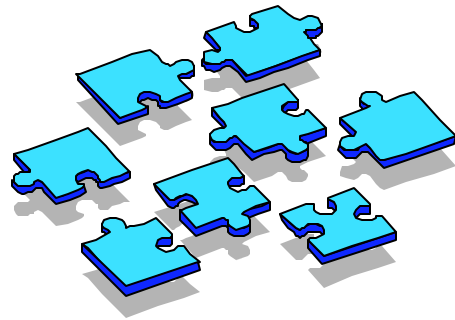
Administration
- ▶ IMS High Performance Load
- ▶ IMS High Performance Unload
- ▶ IMS Index Builder
- ▶ IMS Fast Path Basic Tools
- ▶ IMS Fast Path Online Tools
- ▶ IMS ETO Support
- ▶ IMS Library Management
- ▶ IMS Advanced ACB Generator
- ▶ IMS DB Repair Facility
- ▶ IMS HD Compression -Extended
- ▶ IMS High Performance Pointer Checker
- ▶ IMS High Performance Prefix Resolution
- ▶ IMS Sequential Randomizer Generator

Application Management
- ▶ IMS Program Restart Facility
- ▶ IMS Connect

Database Recovery and Replication Management
- ▶ IMS DEDB Fast Recover
- ▶ IMS Image Copy Extensions
- ▶ IMS Recovery Saver
- ▶ IMS DataBase Recovery Control Facilit

Database Performance Management
- ▶ IMS Performance Analyzer
- ▶ IMS Queue Control Facility

Manage Automate Monitor Tune...

Tucson Medical Center

"IBM Delivers Cost Savings and Improved Availability"

Challenge: Run extremely lean shop on mainframe with performance, availability, simplicity

Solution: Replace existing Tools with IBM IMS Tools

Benefits: IMS DBT Fast Unload (HSSR) is faster

IMS DBT Fast Reorg Reload is faster for HIDAM databases

IMS Index Builder is faster

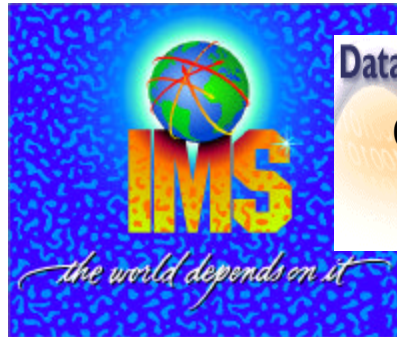Bonus of IMS Partition DB and still saved money
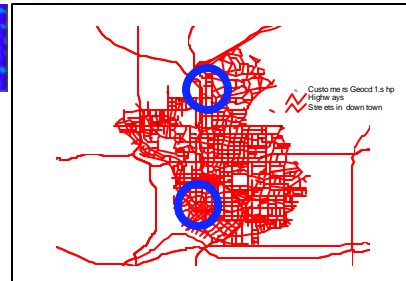
IMS Business Intelligence Tools

Extend the reach and value of your IMS data!

Classic Connect

IMS Data Propagator

IMS data includes "implicit" spatial information

Challenge: Provide IMS customers with advanced data integration and analysis capabilities leveraging existing IMS data assets.

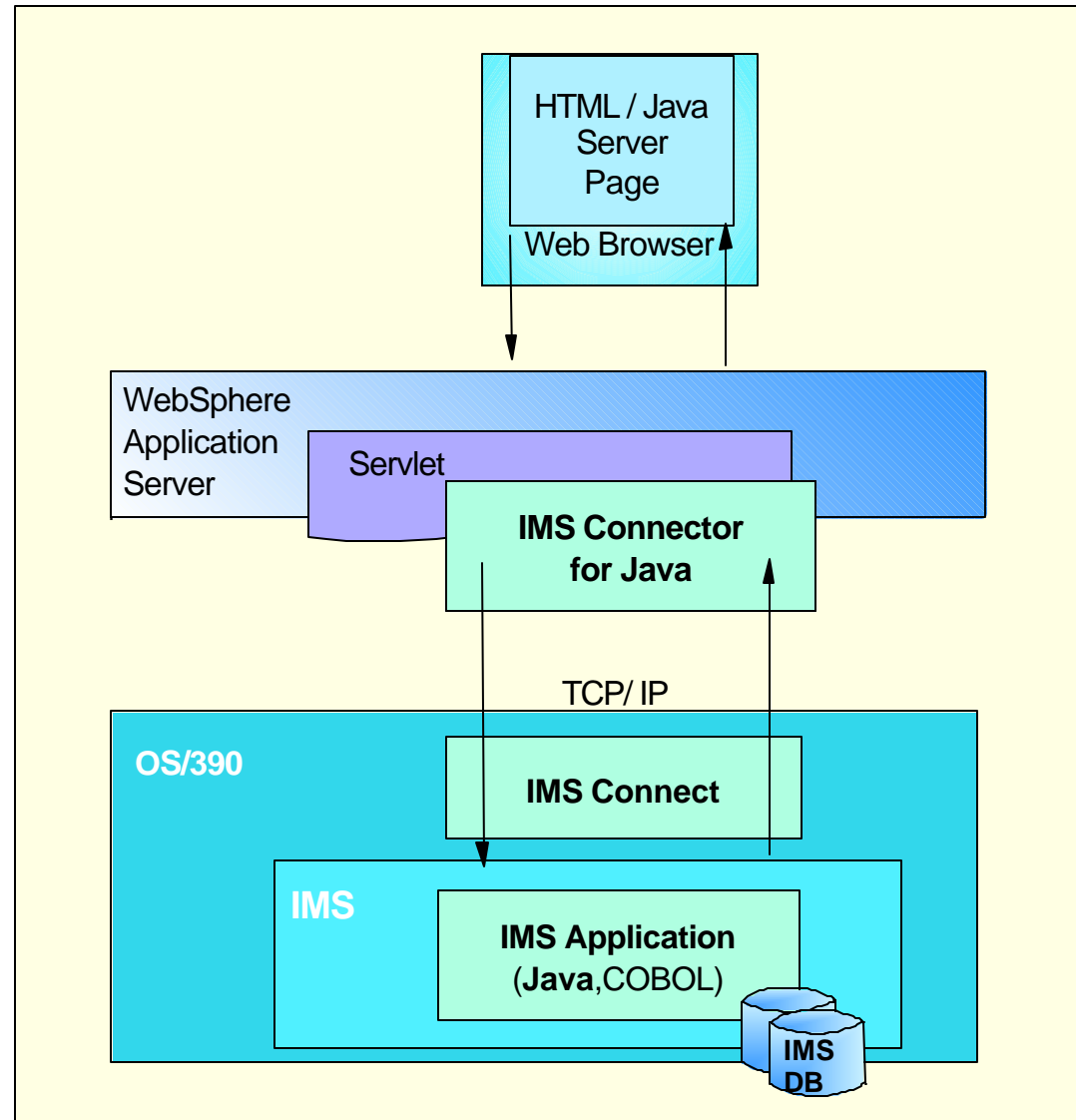**Solution:** DataJoiner Classic Connect, DB2 Spatial Extender, DataPropagator technologies

Benefit: New forms of analysis possible utilizing IMS databases. Easily integrate IMS data with other business data in the enterprise.
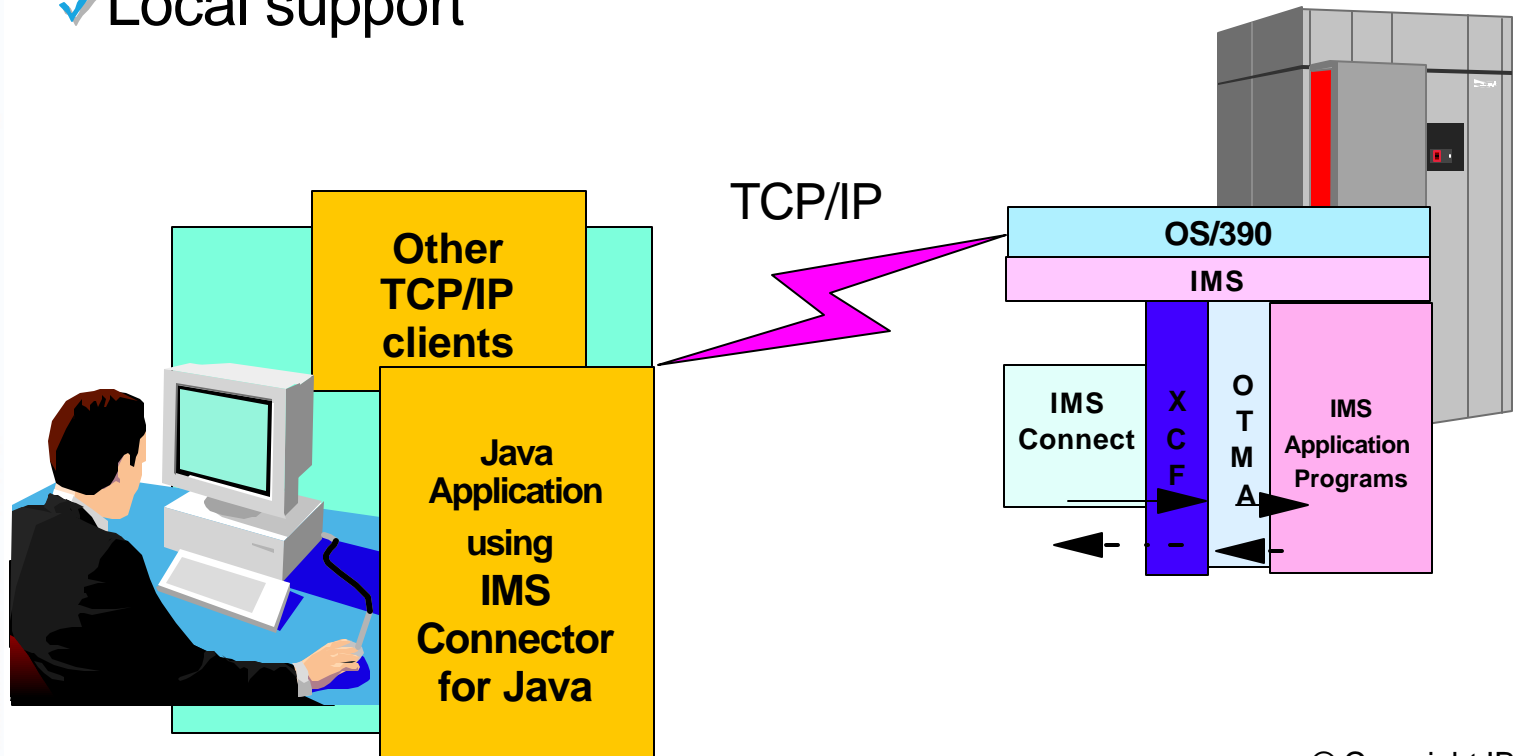
IMS e-business Application Development/Enablement Tools

IMS Connect for
High Performance access to IMS

- ✔ Improved performance with persistent sockets
- ✔ Enhanced usability with user exits and asynchronous output support
- ✔ Increased serviceability with Dump formatting enhancements
- ✔ Enhanced manageability with SMP installability
- ✔ Unicode
- ✔ Local support

Other TCP/IP clients

TCP/IP

Java Application using IMS Connector for Java

OS/390

IMS

IMS Connect

XCF

OTMA

IMS Application Programs

Merita Bank in Finland replaces SNA gateways by IMS Connect

Challenge:
- **To eliminate complex and error prone protocol conversion between TCP/IP based branch office network and SNA based host connection to IMS.**
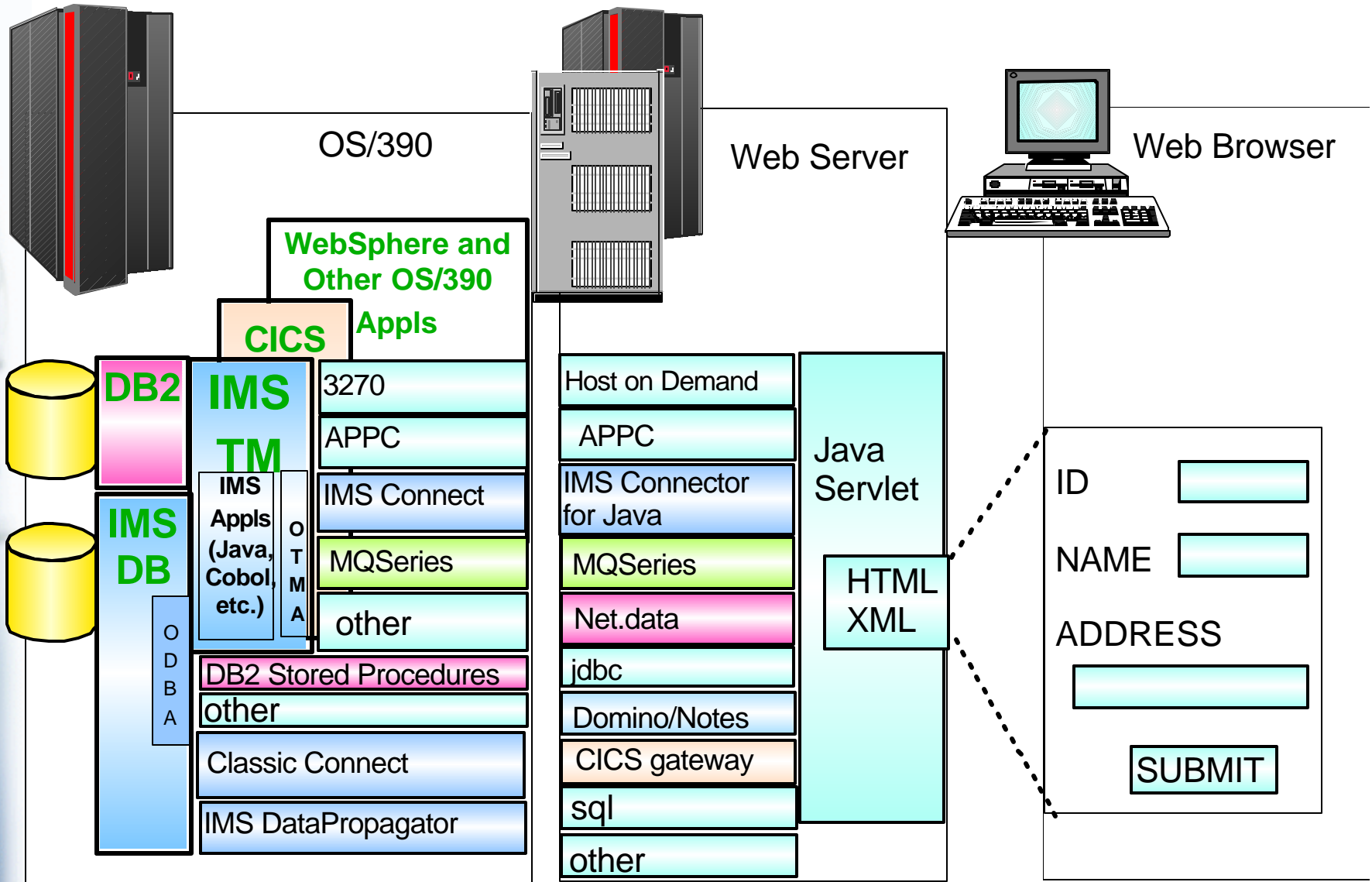
Solution:
- **IMS Connect**

Benefits:
- **Simplified network connections to IMS**
- **SNA Servers can be given up**
- **Increased availability and efficiency**
- **No changes needed in IMS applications**

Leveraging IMS Applications and Data

e-business

OS/390

Web Server

Web Browser

WebSphere and Other OS/390 Appls

CICS

DB2

IMS TM

IMS DB

IMS Appls (Java, Cobol, etc.)

OTMA

ODBA

- 3270
- APPC
- IMS Connect
- MQSeries
- other
- DB2 Stored Procedures
- other
- Classic Connect
- IMS DataPropagator

- Host on Demand
- APPC
- IMS Connector for Java
- MQSeries
- Net.data
- jdbc
- Domino/Notes
- CICS gateway
- sql
- other

Java Servlet

HTML XML

ID

NAME

ADDRESS

SUBMIT

IBM

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Sanlam South Africa

**First in Insurance South Africa
to implement Java Servlets on S/390**

Challenge: Allow commercial banks to execute IMS transactions which administer the ceding of life insurance policies

Solution: Write Java servlets using IMS Connect, WebSphere
Application Server, RACF and OS/390 HTTP server

Benefits: Banks could now administer the ceding of policies via the Internet without having to incur network infrastructure costs.

Caja Madrid

Developing a new banking application for deployment nationwide across 1600 bank branches

Challenge Build the new insurance and customer relationship management systems, deploy them on the branch network for over 9000 users

Solution VisualAge Pacbase and VisualAge for Java in conjunction with IMS and MQSeries

Benefits Investment protection

Smooth professional evolution of development staff

US Utility company

Building a cost-effective e-business Infrastructure with Java and XML

Challenge: Utility industry deregulation required differentiation by providing proliferating information to energy traders, providers, producers, consumers (e.g.. viewing account history online for reconciliation)

Solution: Establish generic e-business infrastructure based on thin-client architecture using XML and transaction processing between Internet client and existing IMS system through EJB, a Web Application Server Java Servlet, and MQSeries

Benefits: Enable device independence with respect to the client and to leverage its existing investment in legacy IMS transaction systems
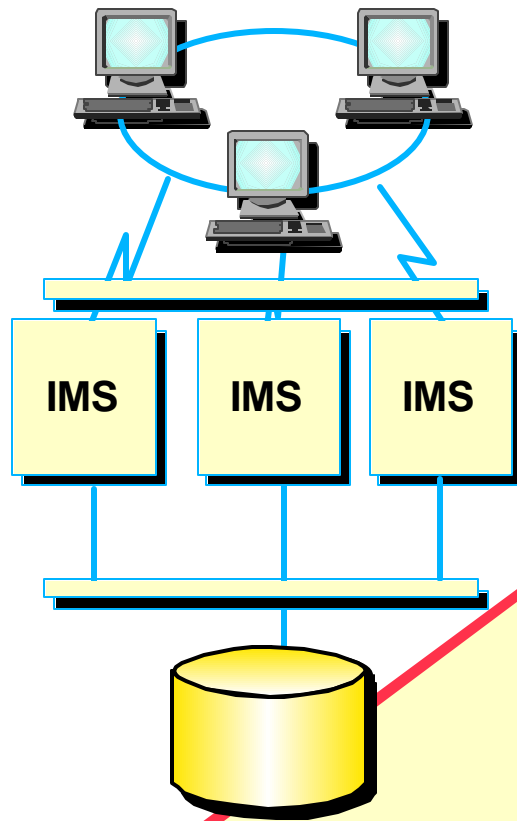
IMS - Version 7

Ideal for e-business
- ✓ Continuous Availability
- ✓ Systems Management
- ✓ Performance/Capacity
- ✓ Connectivity

IMS

the world depends on it

IMS   IMS   IMS

Enhancements

- – **Extended Large DB support**
- – **Enhanced DB recovery**
- – **Faster Restart with Multinode Persistent Sessions**
- – **Enhanced Systems Mgmt Tools**
- – **Enhanced Connectivity**
- – **IMS Java**

**Strategic Open Access
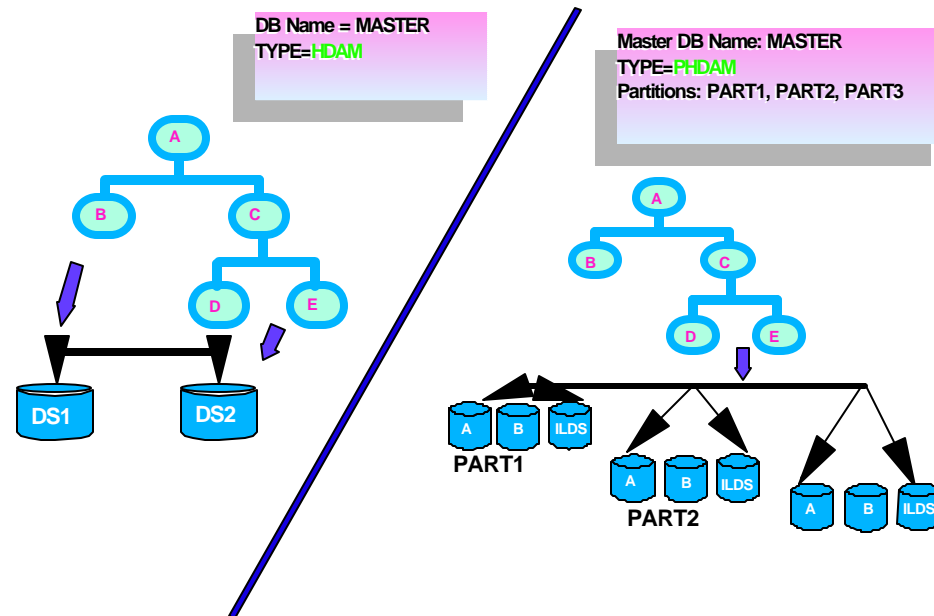S/390 Enterprise Server**

Benefits
- ✓ Enable Customer Growth
- ✓ Enhance Workload Balancing
- ✓ Increase Availability; Ease of Use
- ✓ Preserve Current Application Investment
- ✓ Enable New Applications

IMS V7 High Availability Large DB Support for IMPROVED CAPACITY & DATA AVAILABILITY

DB Name = MASTER
TYPE=HDAM

Master DB Name: MASTER
TYPE=PHDAM
Partitions: PART1, PART2, PART3

A
B   C
D   E

DS1   DS2

A
B   C
D   E

A   B   ILDS
PART1

A   B   ILDS
PART2

A   B   ILDS

✓ Extends IMS Full Function database size

➡ 1001 Partitions x 10 data set groups x 4G = 40 Terabytes

✓ Provides data availability through partition independence

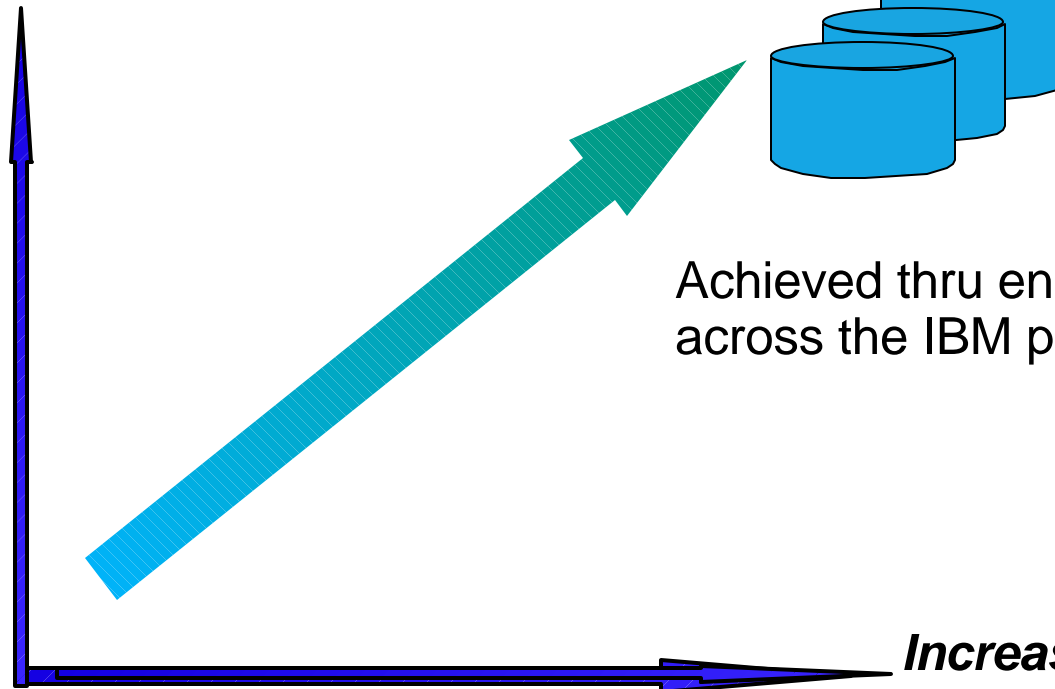✓ Provides easier manageability with smaller partitions of the database

IMS V7/Enterprise Storage Server Performance Evaluation

Increase in Bandwidth Availability

IMS Serving Mission-critical Applications and Data Access across the Enterprise and over the Internet

Achieved thru enhancements across the IBM product line.

Increase in Batch Window Availability

IMS V7 Java for Integrated e-business Application Development
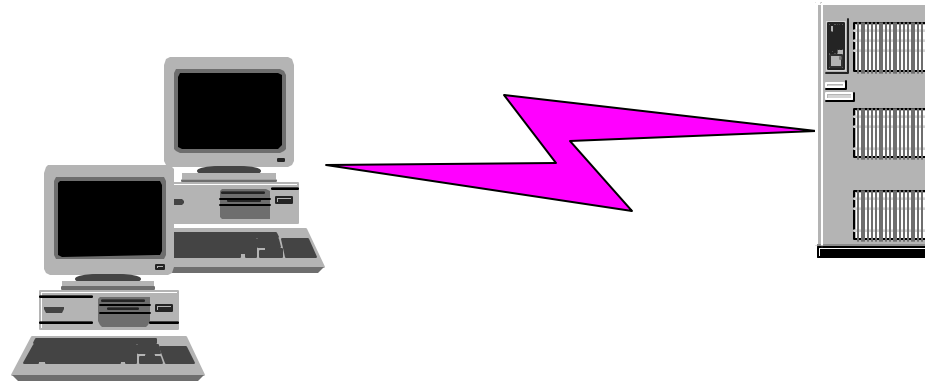
✓ Application programmer productivity
- Skills
  - Java access to IMS input/output message queues
  - JDBC to access IMS DB and DB2 data
- Tools
  - Uses VisualAge tools for development

IMS V7 Rapid Network Reconnect for IMPROVED AVAILABILITY

- ✔ Provides reduced network reconnect time after IMS, MVS, or VTAM failure in a sysplex environment
- ✔ Permits IMS TM to automatically reconnect terminal sessions following any kind of IMS failure and subsequent IMS restart

IMS Version 7

Availability
- Rapid Network Reconnect
- Enhanced Shared Queues/FP sharing
- SLUP session status
- RECON Upgrade/Coexistence
- I/O toleration
- Fast Path MADS enhancements

Performance/Capacity
- High Availability Large Database support
- DB Fiber Channel support
- DBRC enhancements
- Large DBRC Recon Record support
- MSC Descriptor Limit
- New Exits
- New execution parameters
- ACBGEN capacity/perf enhancements
- DBRC enhancements
- Fast Path Monitor support

Application Development
- IMS Java
- XML Support
- OTMA Callable Interface

Systems Management
- Tivoli Readiness
- ETO Autologon and Printer enhancements
- SHQs Associated Printer support
- RACF PassTicket
- USERID/LTERM clarification
- Deferred ACB open
- MSC exit usability enhancements
- Diagnostics/Serviceability enhancements
- Compatibility enhancements
- Installation enhancements
- Commands enhancements
- Migration
- Additional Operator Information
- Logger enhancements

# IMS Version 7 Status

- **IMS V7 General Availability 10/27/00**
- **Quality Partnership Program and Jump-start Program completed**
- **IMS Services Offerings Available**
- **Redbooks Now Available**
  - IMS Version 7 Release Guide (with Java section)
  - IMS Version 7 High Availability Large Database Guide
  - A DBAs View of Online Recovery Service
  - IMS Version 7 and Java Application Programming

IMS Online Recovery Service for IMPROVED AVAILABILITY

/RECOVER START
RECOVGRP BANKING

IMS A

IMS B

Log

Log

IMS
Databases
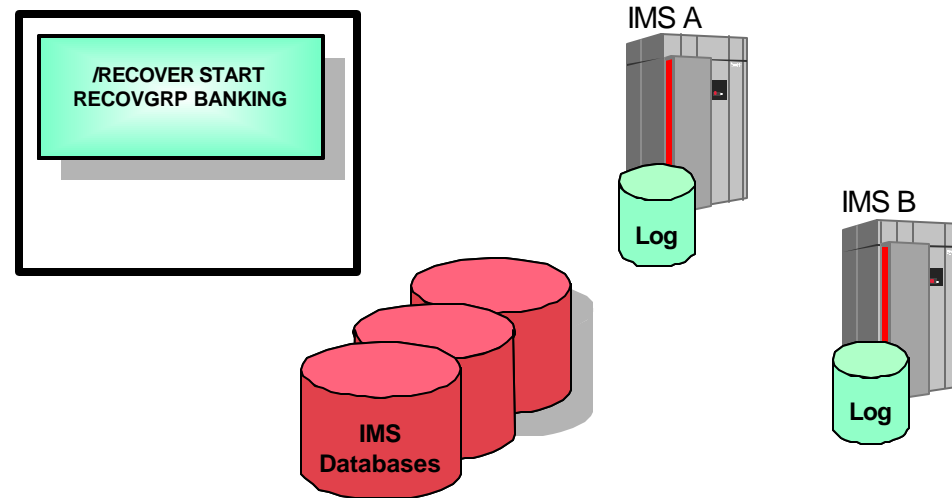
✓ **Increased performance in recovery situations**
  - Reduce the time that critical databases are unavailable

✓ **Increased flexibility in recovery options**
  - Perform 'logical recoveries' - true Point-In-Time recovery

✓ **Increased simplicity of the recovery process**
  - IMS manages the recovery

Next Steps in IMS Providing Integrated e-business Solutions

Ideal for e-business

- ✓ Continuous Availability
- ✓ Systems Management
- ✓ Performance/Capacity
- ✓ Connectivity
- ✓ Application Development

IMS **IMS** **IMS**

Strategic Open Access S/390 Enterprise Server

the world depends on it
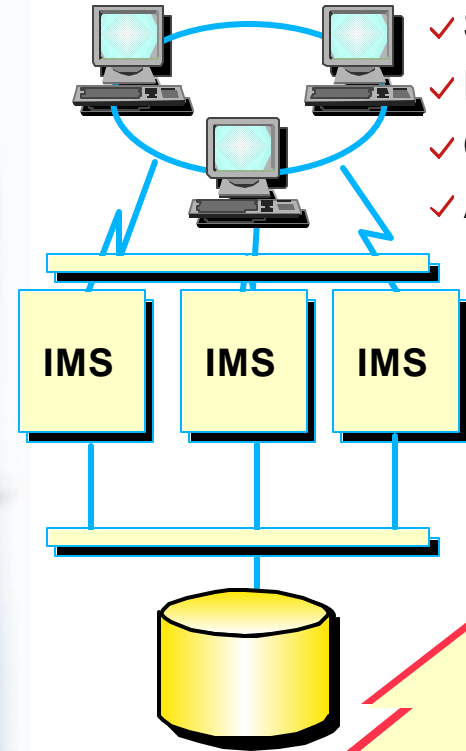
Enhancements

- Online Reorganization of DBs
- Sysplex Terminal Management
- Sysplex-wide Resource Mgmt
- Sysplex-wide Operations with Single Point of Control
- Enhanced DB Recovery Ctrl
- Simplified Installation Process
- Enhanced Systems/Data Mgmt Tools
- Enhanced XML

Benefits

- ✓ Enable Customer Growth
- ✓ Enhance Workload Balancing
- ✓ Increase Availability; Ease of Use
- ✓ Preserve Current Application Investment
- ✓ Enable New Applications

IMS Sysplex Requirements
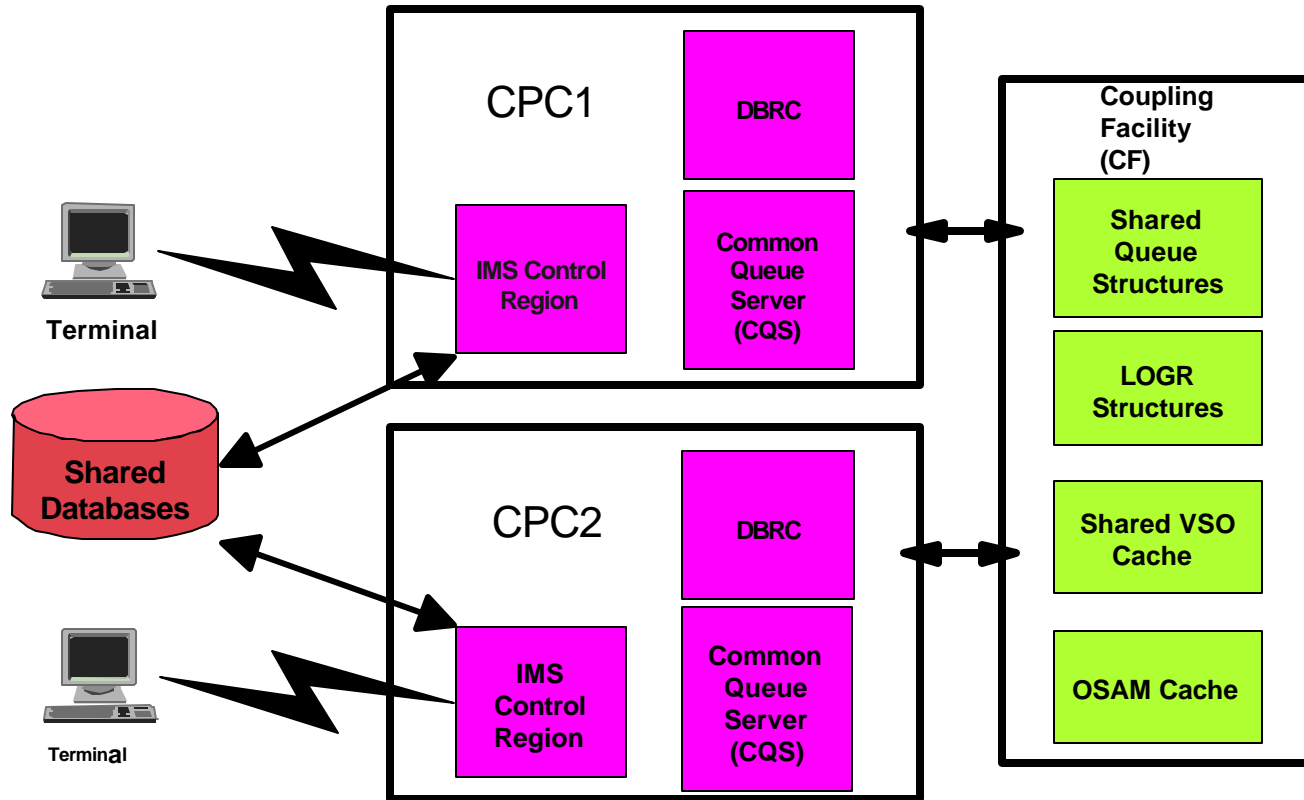
SYSTEMS MANAGEMENT REQUIREMENTS

- PRESENT A SINGLE SYSTEM IMAGE AND PROVIDE EASE OF USE THROUGH A SINGLE POINT OF CONTROL ACROSS THE SYSPLEX
- USERS NEED TO BE ABLE TO RESUME STATUS ON ANOTHER IMS IN IMSPLEX
- COORDINATE/MANAGE ONLINE CHANGE ACROSS THE IMSPLEX
- ADDITIONAL REQUIREMENTS

IMS Sysplex Next Steps

Common Service Layer (CSL)

Single Point of Control (SPOC)

Automation

Operations Manager (OM) — SCI

Structured Call Interface (SCI) — SCI

Resource Manager (RM) — SCI

Master Terminal

End User Terminal

IMS Control Region (DL/I, Dep Regions, DBRC) — SCI

SCI — **Common Queue Server (CQS)**

Shared Databases

Coupling Facility (CF)

- Resource Structure
- MSGQ Structures
- LOGR Structures
- Shared VSO Cache
- OSAM Cache
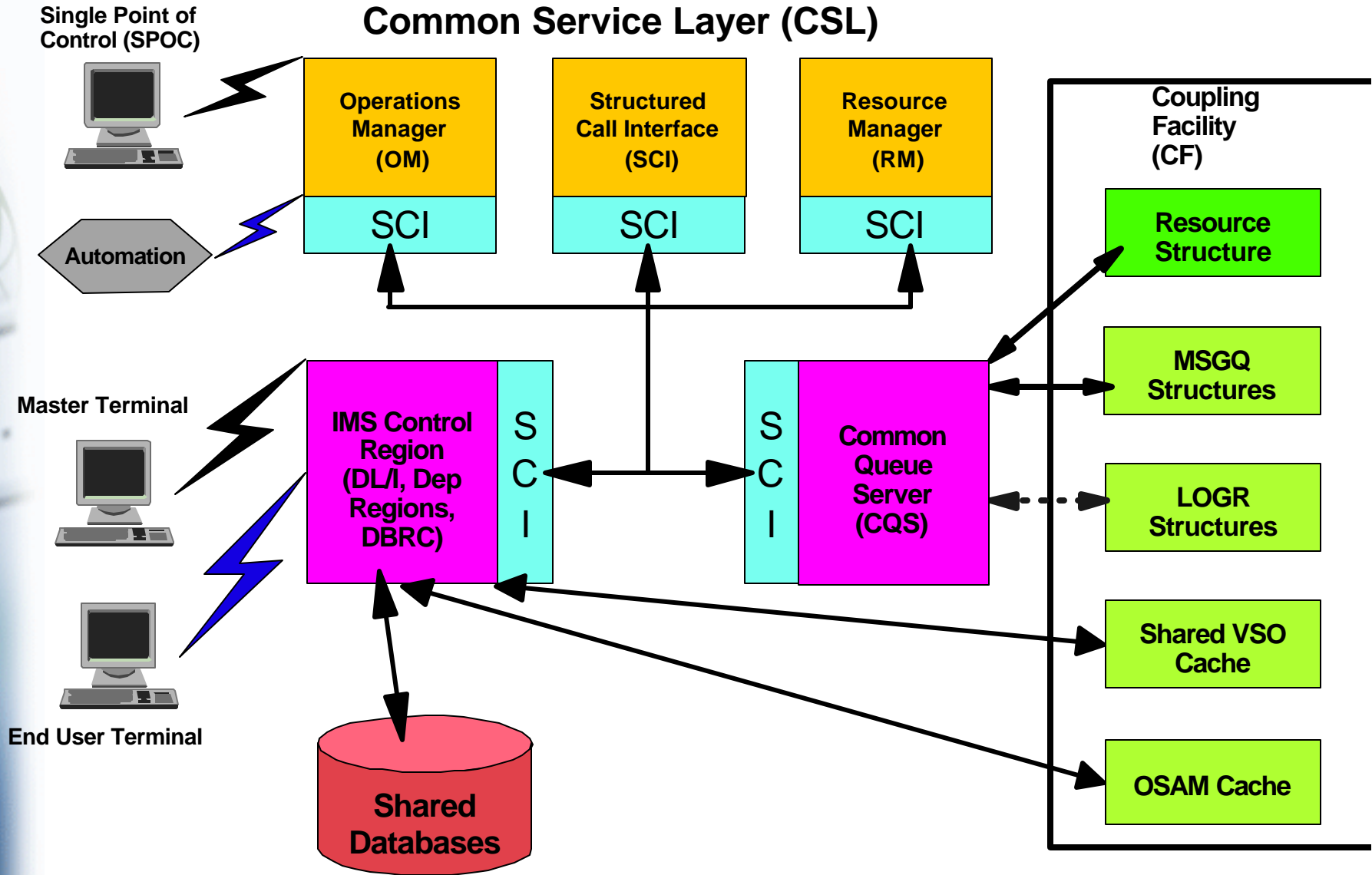
Strategic IMS Architecture

Goals:

- Restructure IMS components into independent units
- Provide scalability by allowing multiples of units
- Fully exploit parallel sysplex environment

GLOBAL SERVICE LAYER

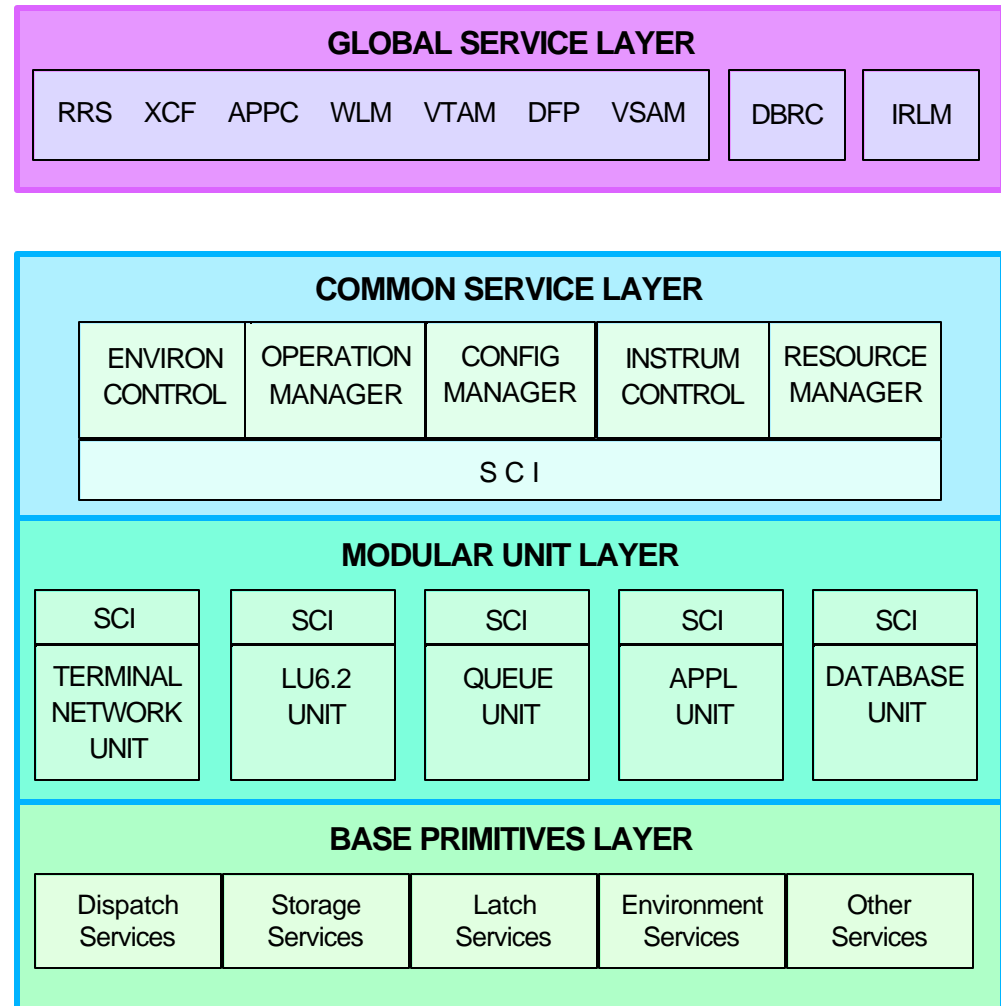| RRS	XCF	APPC	WLM	VTAM	DFP	VSAM	DBRC	IRLM

COMMON SERVICE LAYER

ENVIRON CONTROL	OPERATION MANAGER	CONFIG MANAGER	INSTRUM CONTROL	RESOURCE MANAGER

S C I

MODULAR UNIT LAYER

SCI	SCI	SCI	SCI	SCI
TERMINAL NETWORK UNIT	LU6.2 UNIT	QUEUE UNIT	APPL UNIT	DATABASE UNIT

BASE PRIMITIVES LAYER

Dispatch Services	Storage Services	Latch Services	Environment Services	Other Services

Maintaining IMS High Availability

Unscheduled outages (LWSH)

50 hr/mth

**Significant Improvements Since 1993
Still Need to Address Application Bottlenecks**

Application Bottlenecks, Batch Image Copies, Full Function Reorgs

Scheduled outages

9 hr/mth

Total outage <1% per year

6 hr/yr

Percent to go to full 7x24 (out of 356/24 =8760 hr/yr)

Full 7x24

11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
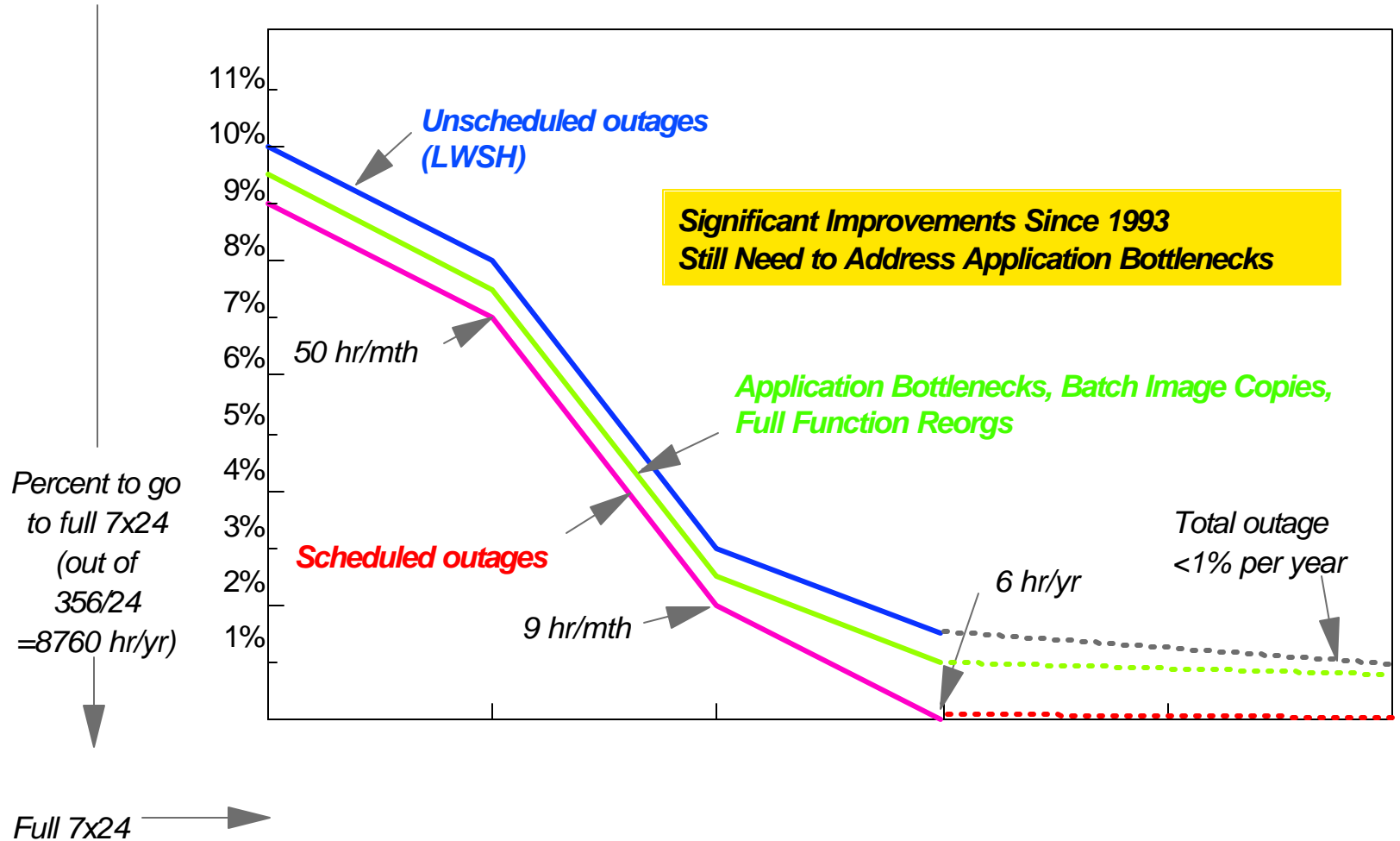
Cost of Computing Evolution

Chart legend:
- Operation (green)
- Application (yellow)
- System Software/Hardware (blue)

Past:
- Console w/Operators per Machine (Operation)
- 3GL Appl Development (Application)
- Bipolar Exploitation (System Software/Hardware)
- Total ~100

Present:
- Control with Multiple Console Images (Operation)
- Enhanced Middleware (Application)
- CMOS Exploitation (System Software/Hardware)
- Total ~75

Future:
- Single Operation using Enhanced Automation (Operation)
- Object Oriented Development (Application)
- Enhanced CMOS Exploitation (System Software/Hardware)
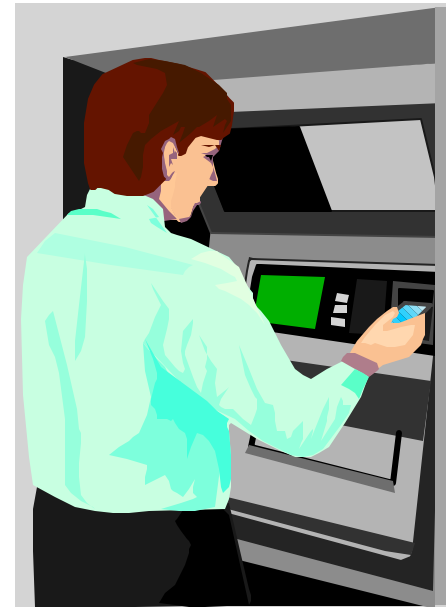- Total ~55

Total Cost of Ownership

Performance/Scalability

Availability

Education & Skills

Tools & Utilities

Systems Management

IMS: Serving the 21st Century with Information

Transformation and Integration

Supporting new business models with performance, availability, scaleability, speed of deployment. and enterprise application integration
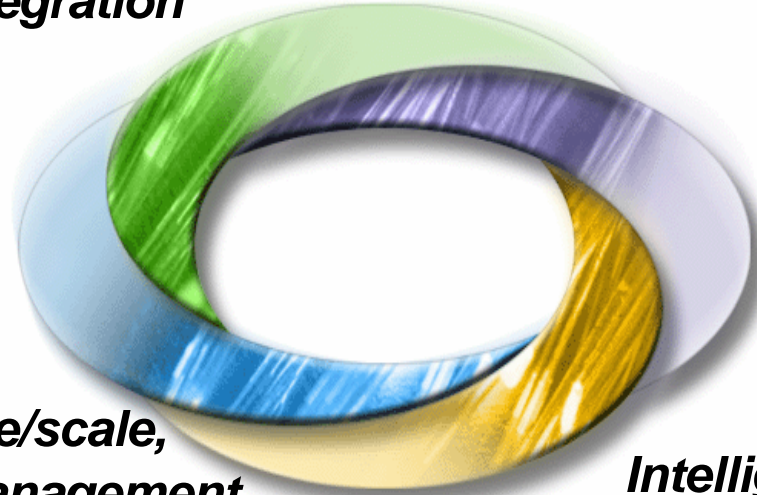
Leveraging Information

Perform/available/scale, content creation/management, turning data into intelligence, and access technology

Managing Technology

Intelligent connections, directories, security, end-to-end management

Organizational Efficiency

Unified messaging, real time collaboration, distributed, simplified access