

MAINFRAME SERVERS

IBM  server zSeries

**Software**



# CICS V2.2

## Novidades e Migração



Daniel Raisch

[raisch@br.ibm.com](mailto:raisch@br.ibm.com)

# Agenda

- .Posicionamento da Versao
- .Novidades
- .Pre-Reqs de Migracao
- .CICS Releases Status

**CICS: Fast Forward to the Future**

**CICS**

**CICS**

**CICS**

**CICS**



# Release Positioning

---

- *CICS Transaction Server for z/OS Version 2 delivers major enhancements that strengthen its support for e-business applications. Leading functions are support for Java SDK 1.3, and support for session beans conforming to the J2EE Enterprise JavaBeans (EJB) 1.1 programming model. CICS also provides a range of other important functions that can be used by applications written in other programming styles.*
- *CICS TS V2.2 is **recommended for all CICS customers**, for deployment in large-scale production.*

# Where e-business meets big business

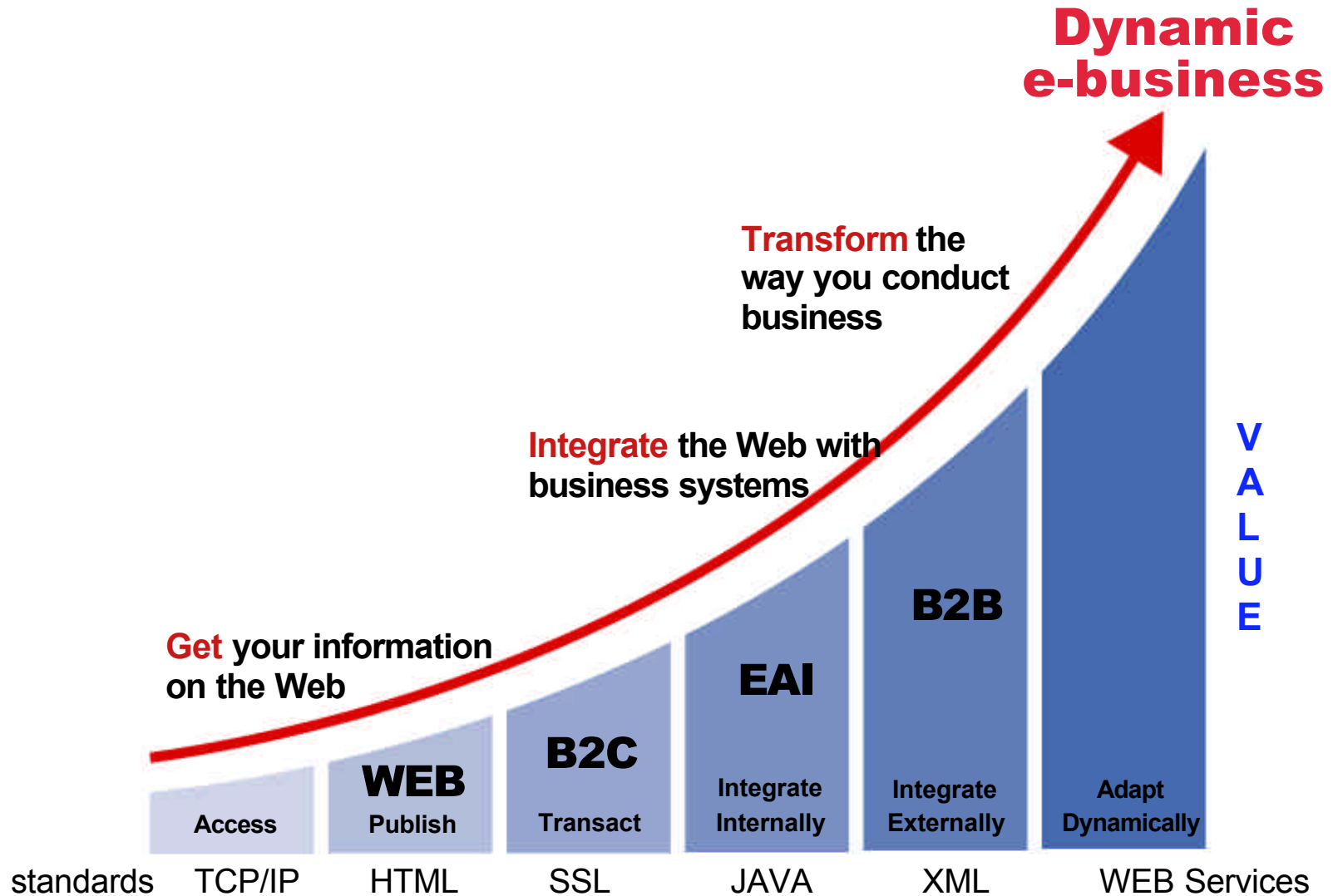


- ▶ QOS
- ▶ TCO
- ▶ ROI

e-business now mission critical

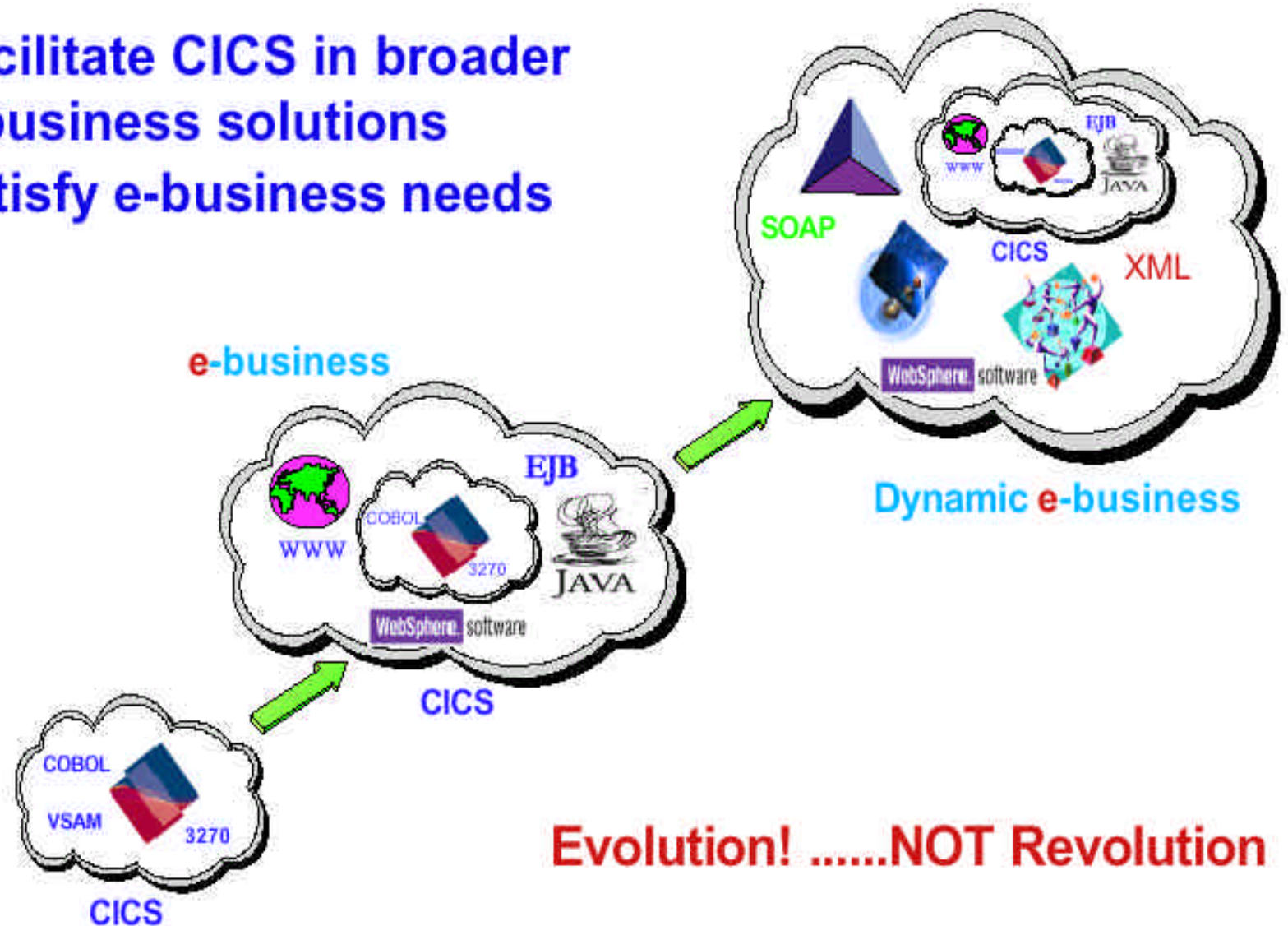
# Evolution of e-business:

## Business Value Driven by Open Standards



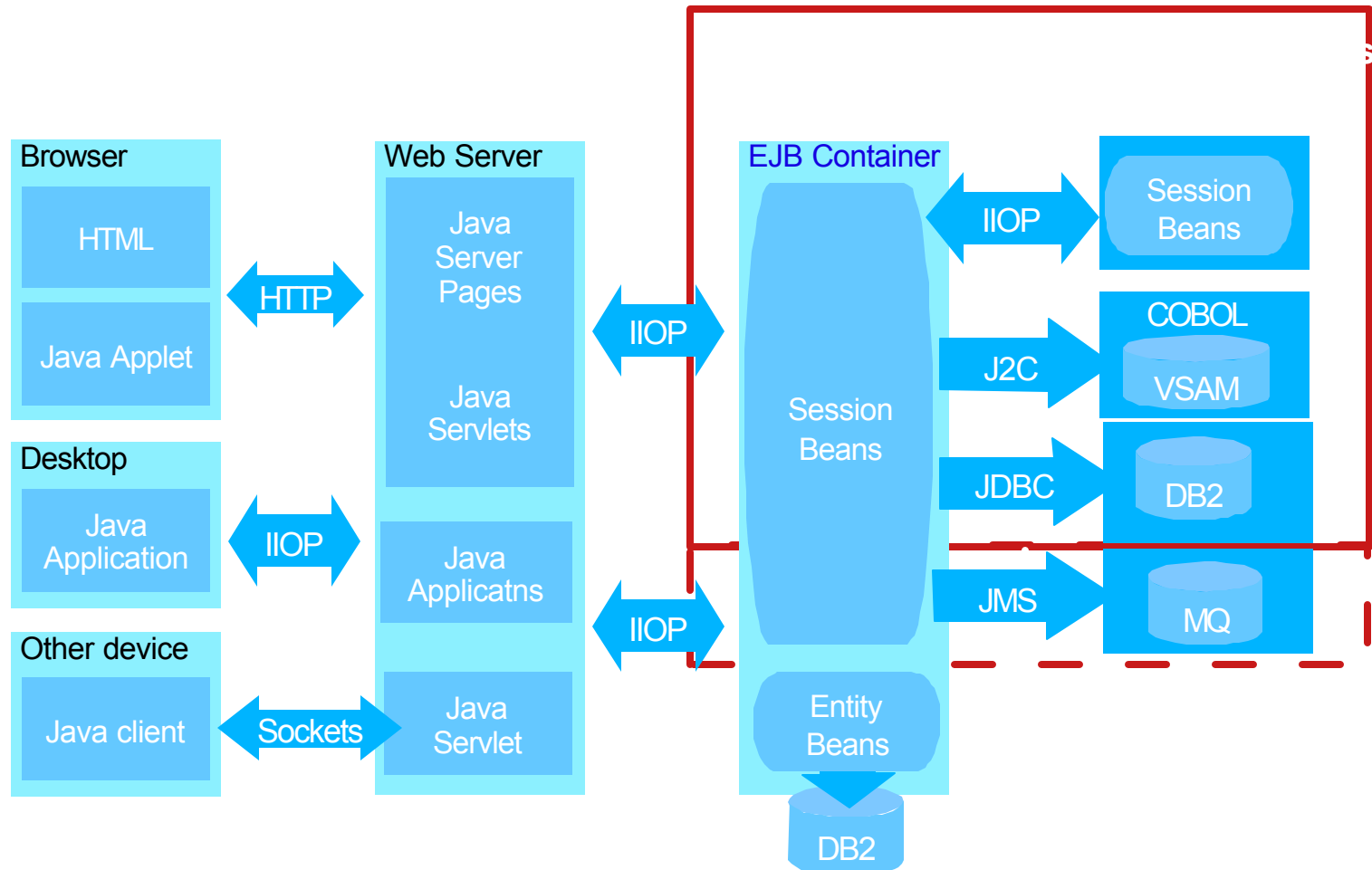
# CICS Directions

- Facilitate CICS in broader e-business solutions
- Satisfy e-business needs

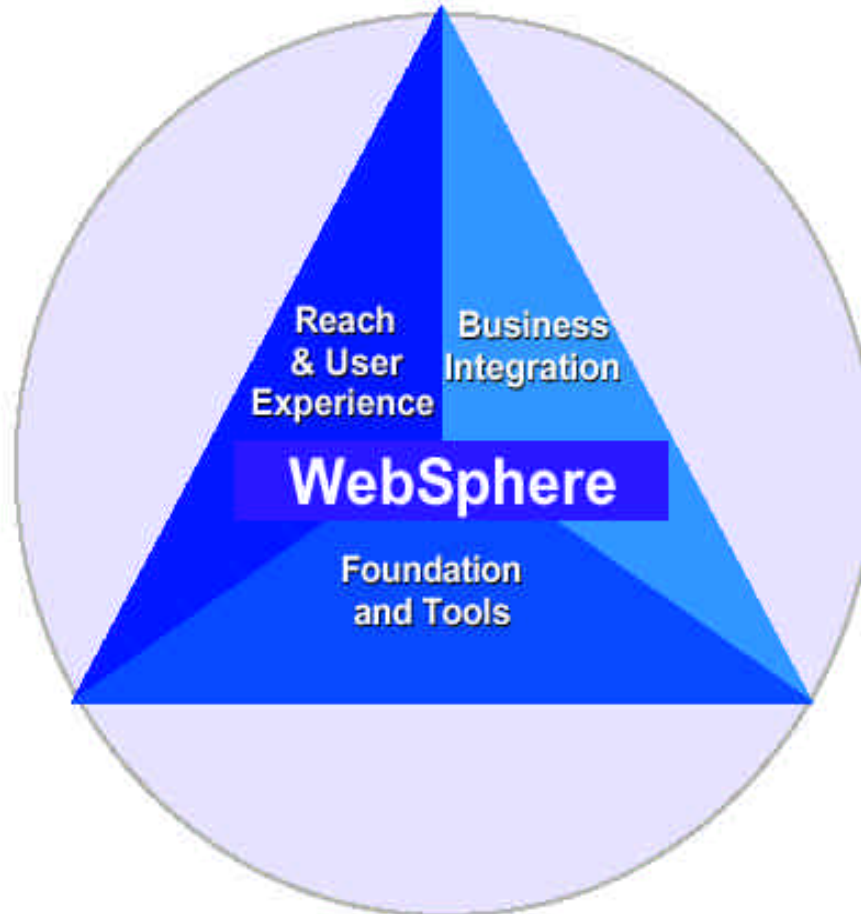


# IBM's Framework for e-business

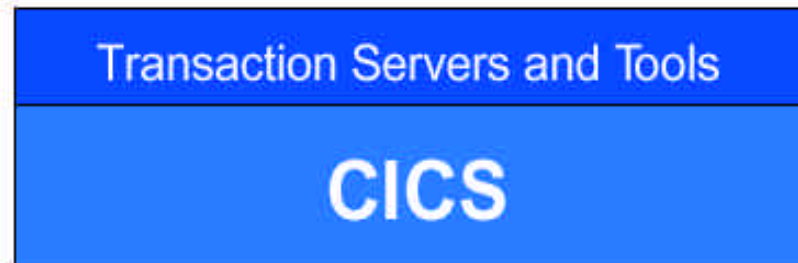
*... CICS provides appropriate elements of J2EE*



# Where e-business meets big business



Enterprise JavaBeans





# How can I Fast Forward to the Future...?

## How can I

- *Take my business to the Web?*
- *Exploit Java?*
- *Take advantage of EJBs?*
- *Re-use existing applications?*
- *Take advantage of XML and Web Services?*
- *Improve my Return On Investment?*

# CICS/TS Release Guide

## Business

- JB Support
- FORBA Full Support
- CICS Connector for CICS/TS
- Persistent Reusable JVM
- CICS Support for TCP/IP
- JB Deployment
- JB Security
- CI Over TCP/IP
- Linkable 3270 Bridge
- INS Connect Optimization(#)
- AVA Support (\*)
- CICS Web Support (\*)

## Management

- OTE
- CICS Access To DB2
- SIGNON Retention (#)
- Automatic Restart of CICS Servers (#)
- CF System Mngmnt Processes(#)
- Monitoring & Statistics
- MVS System Logger (\*)



## Classic

- CICS Info Center
- CICS Translators
- VSAM Record Lock
- RDO for DCT
- VSAM RLS (\*)
- RDO for TST (\*)
- RDO for RCT (\*)

# Exploit Java?



## CICS Programs in Java

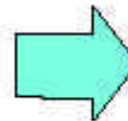
- Support for Java as a first class CICS programming language
- Access to CICS services from the Java language
- Interoperation between Java programs and programs in other languages

JCICS

HPJ



CICS Java program



```
import java.lang;  
.....  
// debit method  
public debit (int x)  
{ bal = bal - x; }
```

# The IBM Developer Kit for OS/390, Java 2 Technology Edition, V1.3.1

---

- **An Upgrade of the product to the SDK 1.3.1 level, with the incorporation of the SUN 1.3.1 level of code. This upgrade will include:**
  - Persistent Reusable Java Virtual Machine function
  - Security enhancements (not applicable to CICS)
    - Hardware Java Cryptography Architecture
    - Java Cryptography Extension (JCE), version 1.2.1
    - Java Secure Sockets Extension (JSSE), version 1.0.2
  - Enhancements to storage management (garbage collection)
- ***High Performance Java supported for migration purposes only***

# Exploit Java with CICS TS V2?

## Persistent Reusable JVM

### High performance Java based on serial reuse of JVM instances

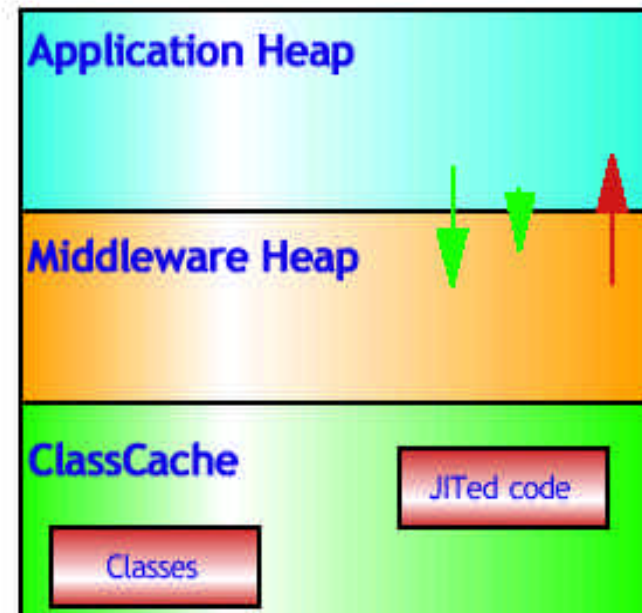
- ▶ Serial reuse reduces initialization costs
- ▶ Separation of application, middleware and system heaps
- ▶ Middleware reset for each transaction
- ▶ Optimized garbage collection for application heap

### JVM can detect badly behaved classes and take action

- ▶ JVM can provide full isolation
- ▶ JVM appears short-lived to application

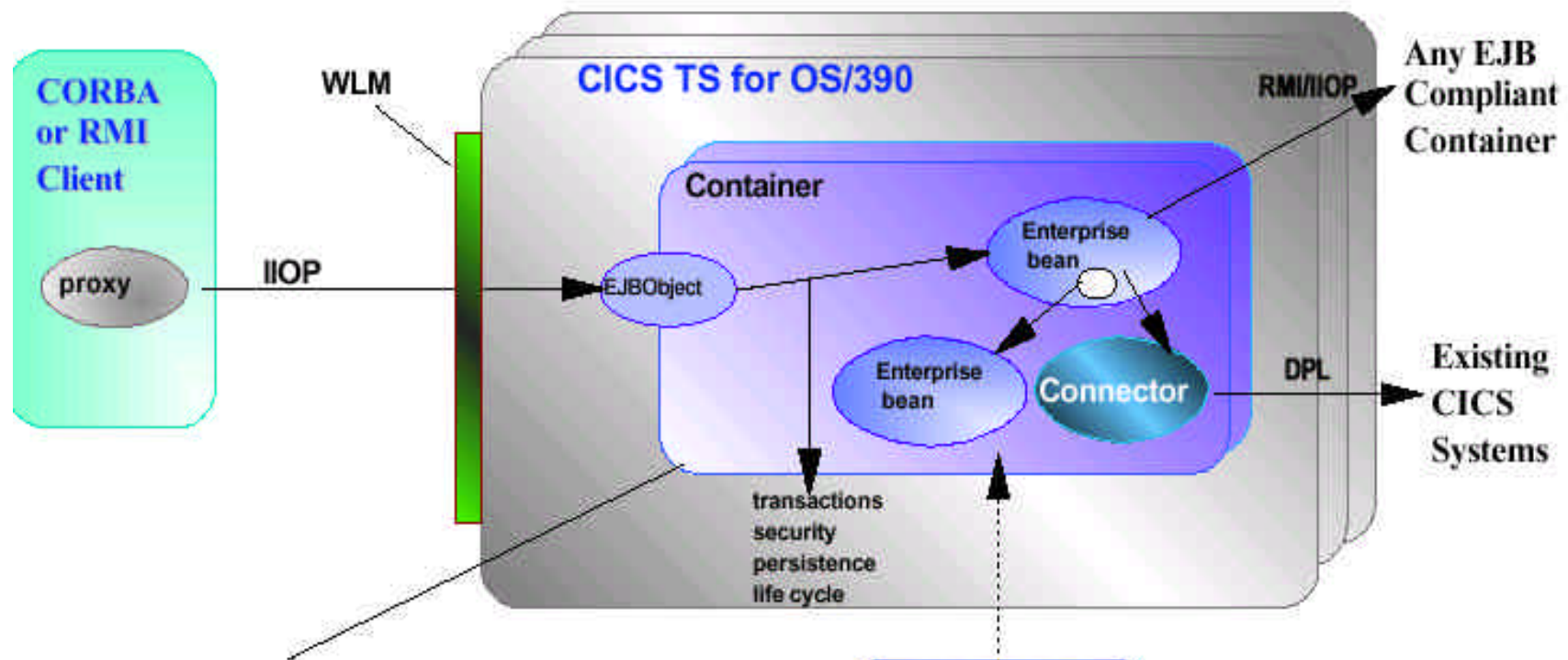
### CICS manages a pool of JVMs

- ▶ Multiple JVMs in single CICS region
- ▶ JVM runs under OTE TCB
- ▶ System management facilities



# Take advantage of EJBs?

## CICS EJB Runtime Support



CICS TS container provides:

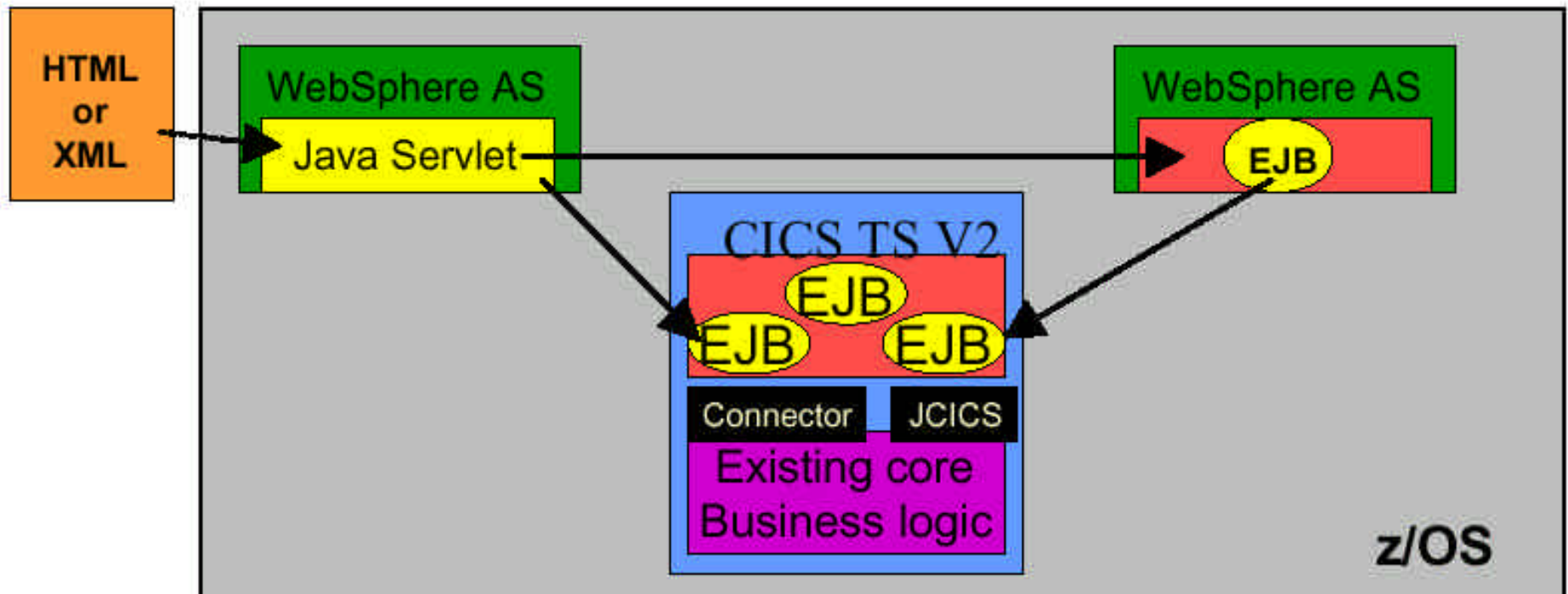
- runtime for Enterprise beans
- mapping of container functions to CICS-specific services
- uniform execution semantics



# CICS as an EJB Server

- End-to-end Java solution

- Client-side Java application using *new* server-side Enterprise Java Bean business logic in CICS



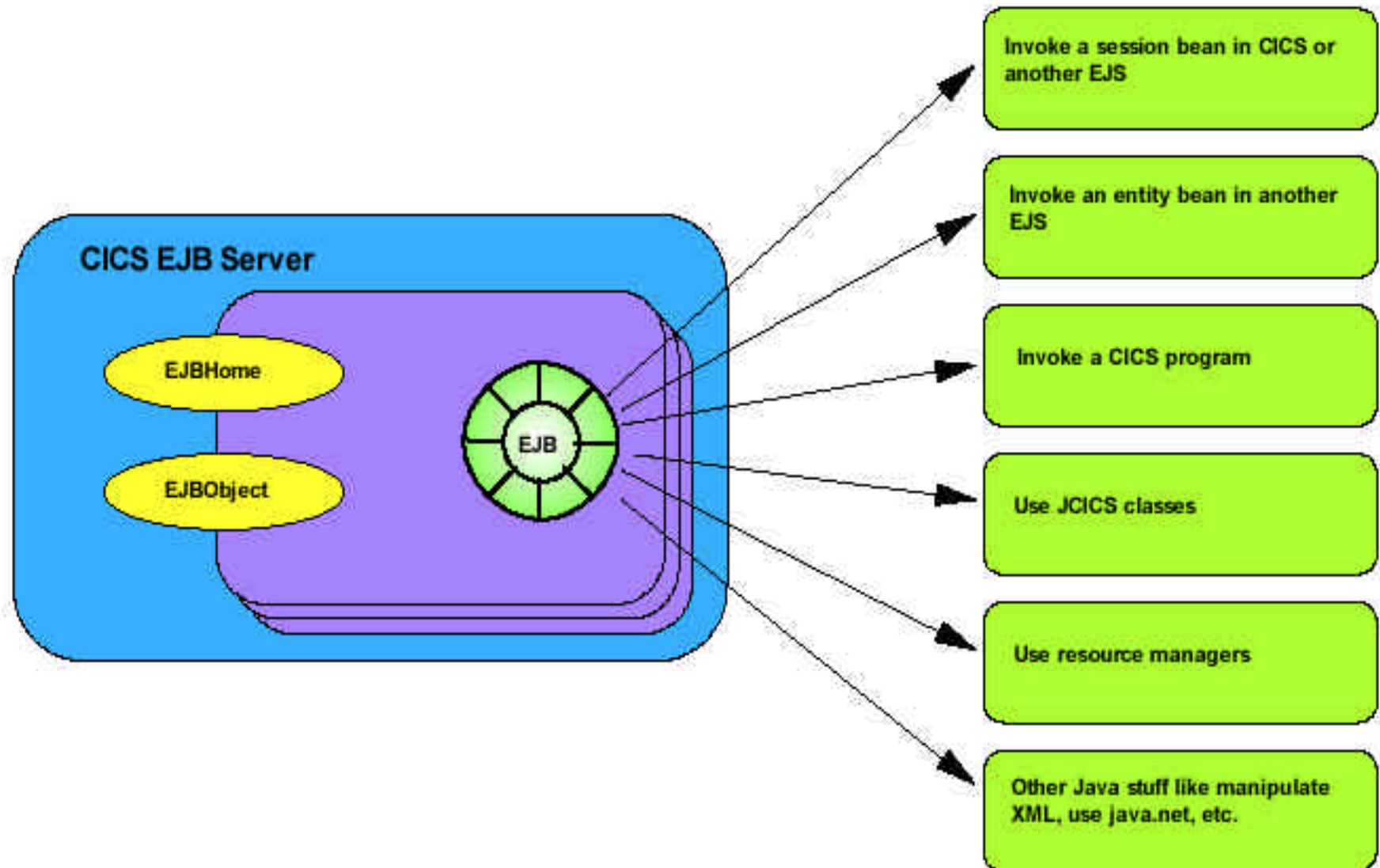
# Using EJBs in CICS

---

- **CICS will act as an Enterprise Java Server**
  - While continuing to support all existing CICS applications
- **CICS will provide the *appropriate set* of Java Enterprise APIs**
  - Will be able to host any session EJB that only uses these standard Enterprise APIs
- **CICS will also expose JCICS APIs to EJBs**
  - If you choose to use JCICS APIs then you tie your EJB to CICS but gain flexibility over using the standard Enterprise APIs
- **CICS will also expose *Common-Connector* APIs**
  - Allow access to existing CICS applications ..  
.. but will be supported on *all* IBM EJS implementations



# A bean in CICS can:



# ***CICS Transaction Server for z/OS V2.1***

## ***EJB Enhancements***

---

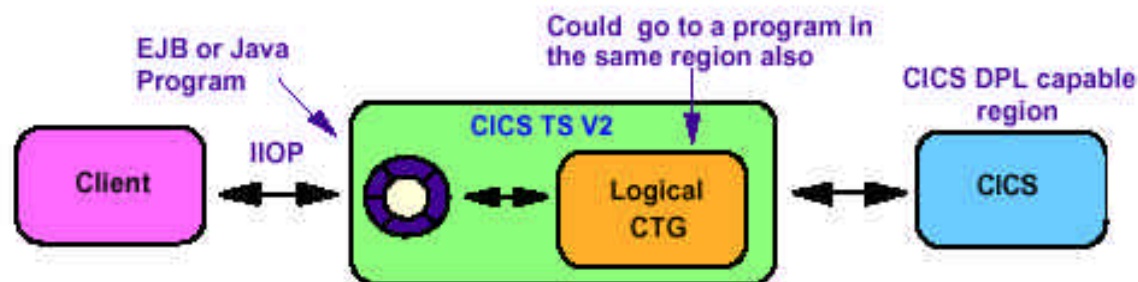
- **Functions**
  - EJB V1.1 Spec
  - RMI/IIOP
  - Use of the z/OS Persistent Usable JVM
  - JNDI using COSNaming - **LDAP**
  - JDBC and SQLJ
  - JCICS classes to access CICS programs and data
  - Connector for access to CICS programs
- **Application development and deployment**
  - Supports EJBs developed using any IDE (including VAJ)
  - CICS provided deployment tools
- **Performance, scalability, availability**
  - Sysplex and MVS/WLM enabled
- **Systems Management**
  - SPI commands, CEMT, CICSplex SM

# *CICS Transaction Server for z/OS V2.1*

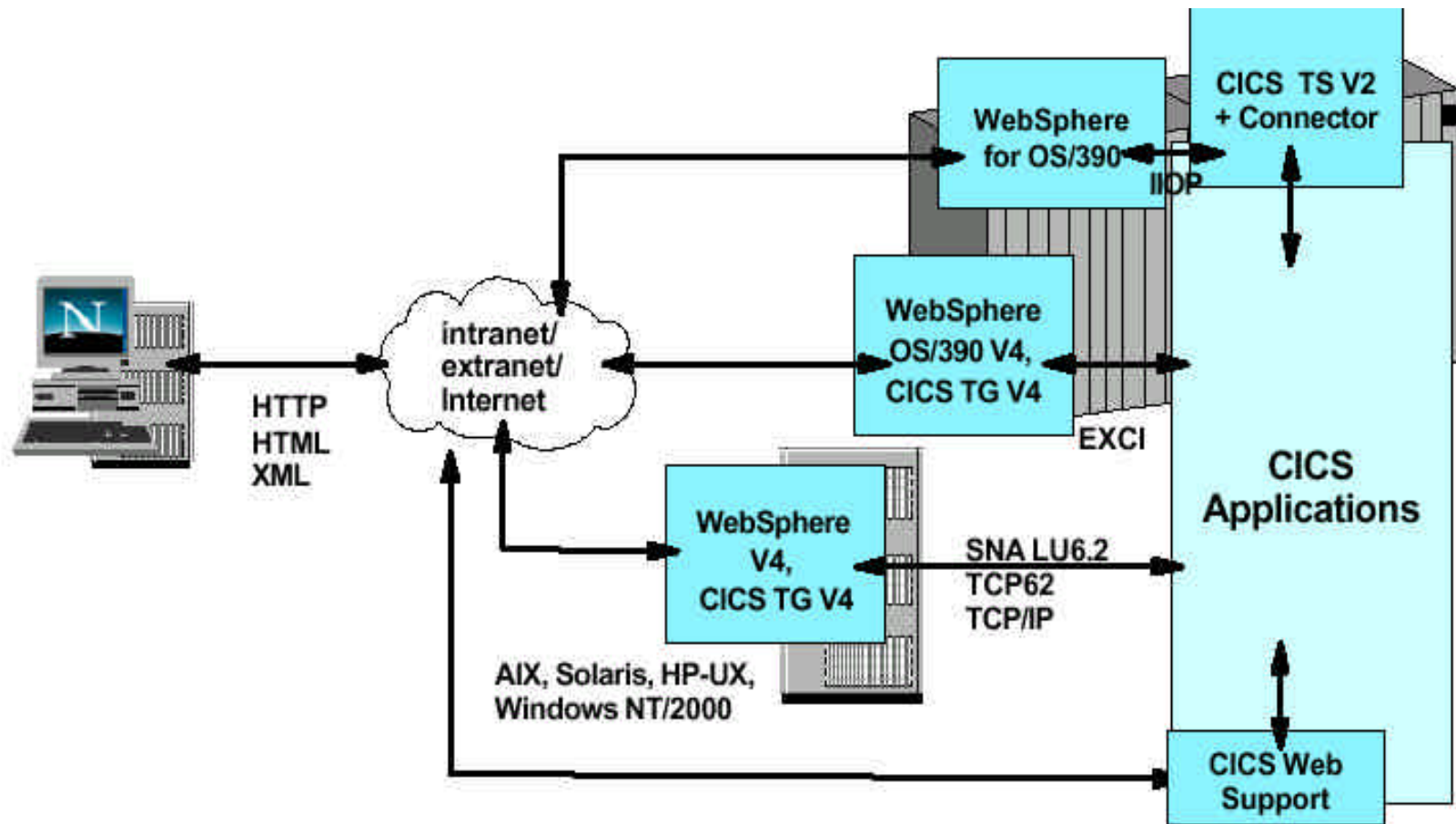
## *CICS Connector for CICS TS*

---

- **Enables a Java program running in CICS to connect to a CICS COMMAREA program running in a CICS TS Server**
  - Supported APIs
    - Common Connector Framework
    - CICS Transaction Gateway
  - Alternative to the use of JCICS Program Control classes
  - Java applications, or beans, are portable across the set of CICS connectors
- **Sample EJB application uses the CICS Connector for CICS TS**
  - Refer to the "Java Applications in CICS" manual in the Info Center



# WebSphere Access to CICS/TS



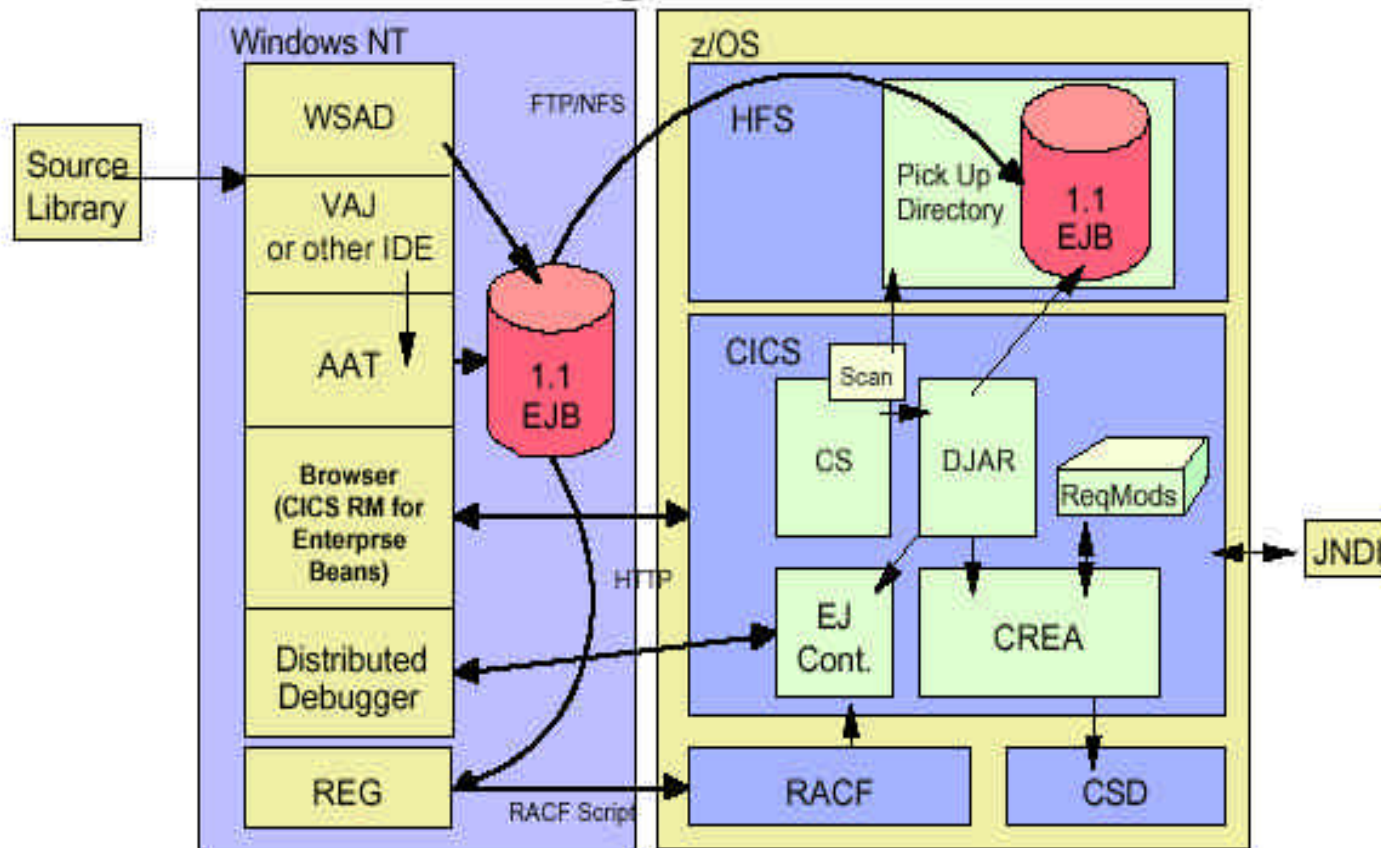
# ***ECl over TCP/IP***

---

- **Allows client applications using ECl to communicate with CICS using native TCP/IP**
  - No application changes required
    - Server or client programs
  - No SNA or TCP62 requirements
  - Supports
    - CICS Transaction Gateway V4
    - CICS Transaction Gateway V3
    - CICS Universal Clients V3
  - EPI not supported with native TCP/IP

# Deployment Tools

## “The Big Picture”



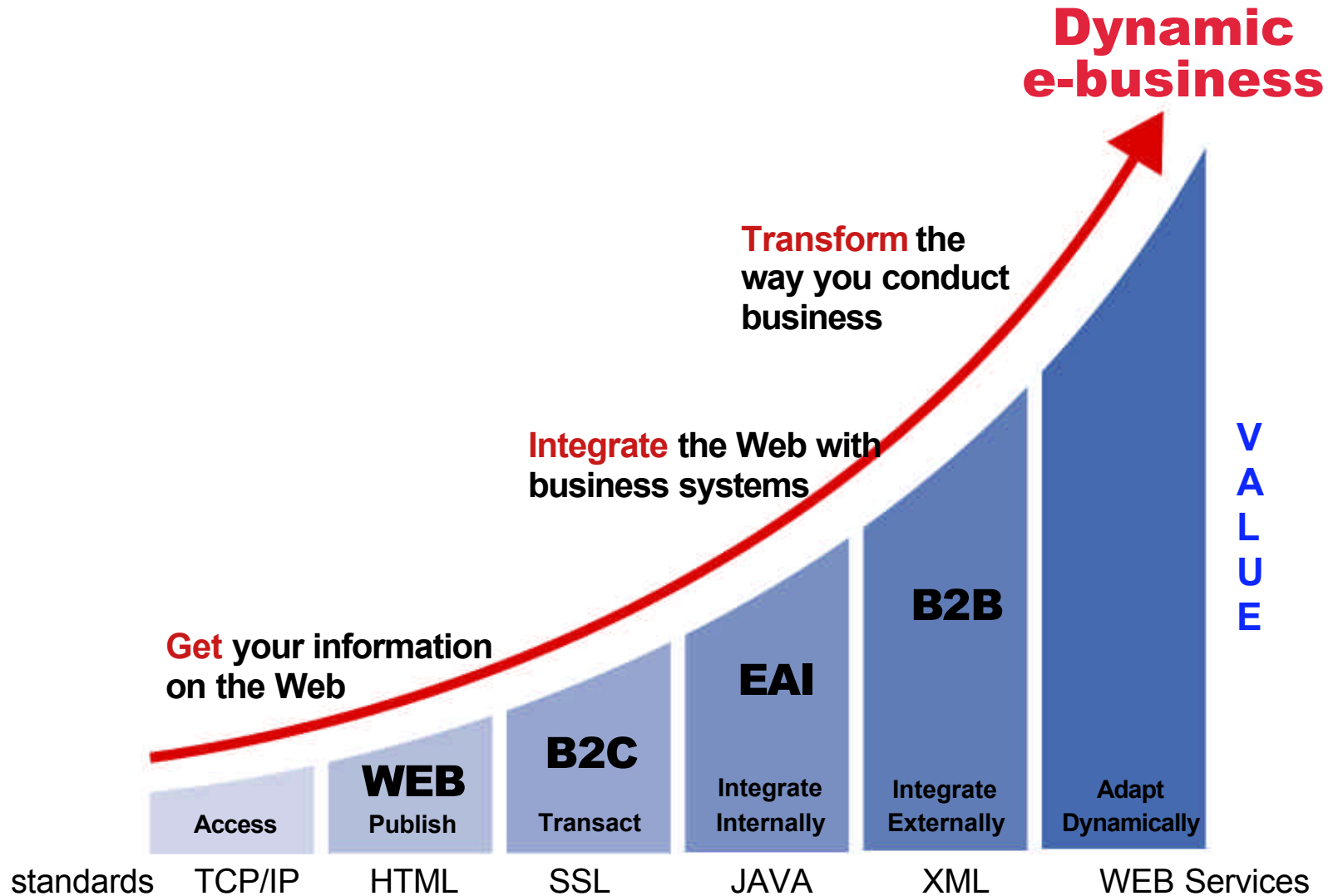
# ***EJB Deployment Tooling...***

---

- **Application Assembly Tool (AAT)**
  - AAT is a WebSphere developed tool
  - Used to transform ejb-jar file for deployment
    - Contains
      - *XML deployment descriptor*
      - *Enterprise bean classes*
      - *Additional classes in support of the container*
- **CICS Resource Manager for Enterprise Beans**
  - CICS supplied utility with web browser interface
    - Allows application programmers to manipulate EJB resources
      - *Install, publish and retract DJARs*
      - *View session beans with in DJAR*
      - *View JNDI status*

# Evolution of e-business:

## Business Value Driven by Open Standards





# Take advantage of XML and Web Services?

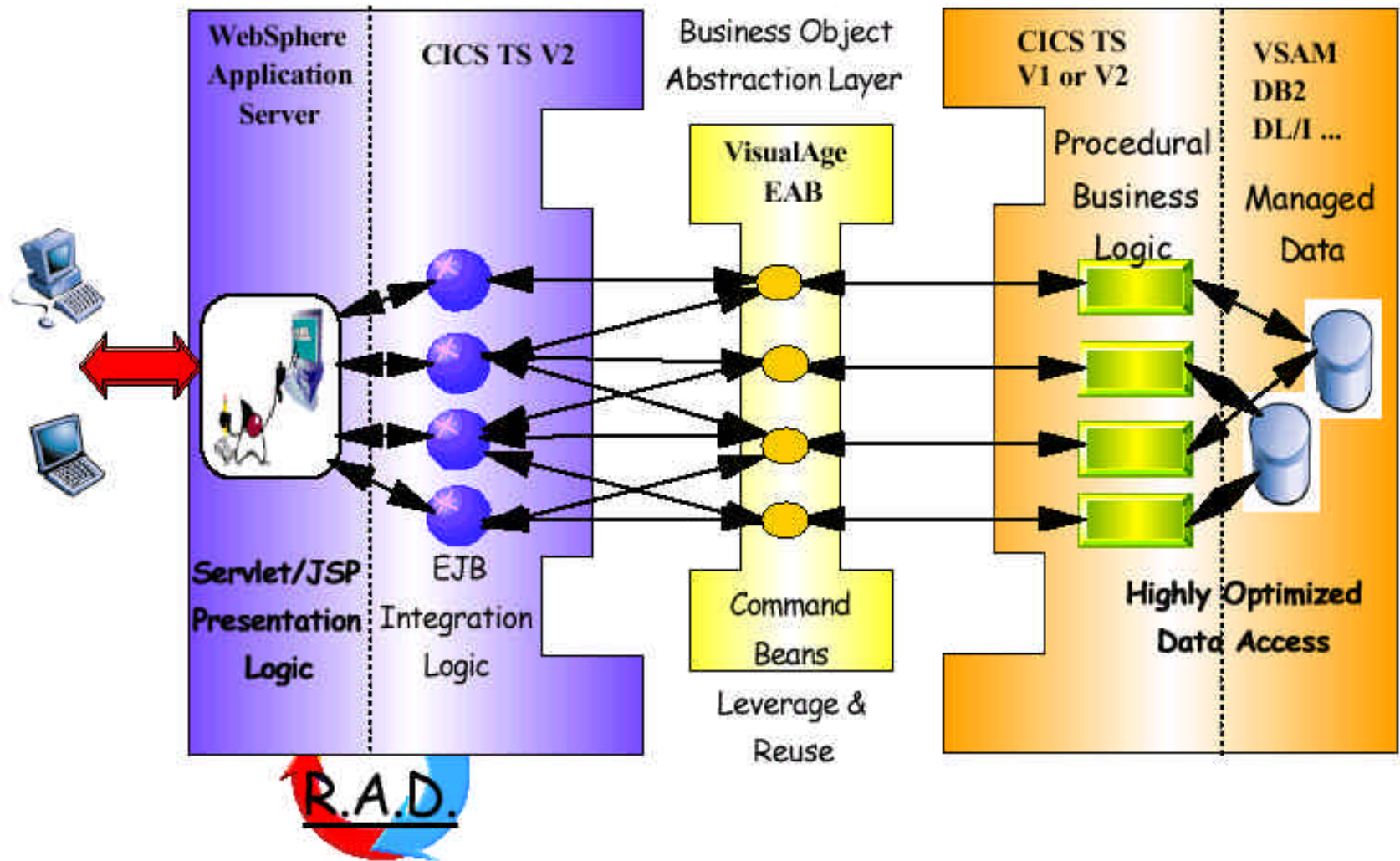
- **Allow CICS applications to be exposed as Web Services**
  - ▶ Extend use of existing applications
  - ▶ Support architecture-neutral clients
  - ▶ Allow CICS applications to act as clients of Web Services
- **Recent enhancements**
  - ▶ XML support for COBOL and PL/I
  - ▶ Business Partner Solutions
- **Future proposals**
  - ▶ Adapters for XML to COMMAREA conversion
  - ▶ Support for outbound HTTP

# Reuse Existing Applications?

- **CICS makes existing programs and 3270 applications into reusable components**
  - ▶ Extend use of existing assets
  - ▶ Enable OO client application programmers to exploit CICS applications
  - ▶ Rapid application development
- **Recent enhancements**
  - ▶ CORBA and EJB wrappering
  - ▶ Link 3270 bridge
    - Simple programmable access to 3270 transactions
    - Supports majority of BMS and 3270 applications
- **Future proposals**
  - ▶ Extend range of bridgeable applications
  - ▶ Enhance tooling for 3270 bridge

# Reuse existing applications?

## Wrapping CICS Procedural Programs as Session Beans



# ***IBM Enterprise COBOL and PLI for z/OS and OS/390 V3***

---

- **Integrated CICS Translator**
- **Unicode support**
- **XML Parsing support**

# Application Development Enhancements

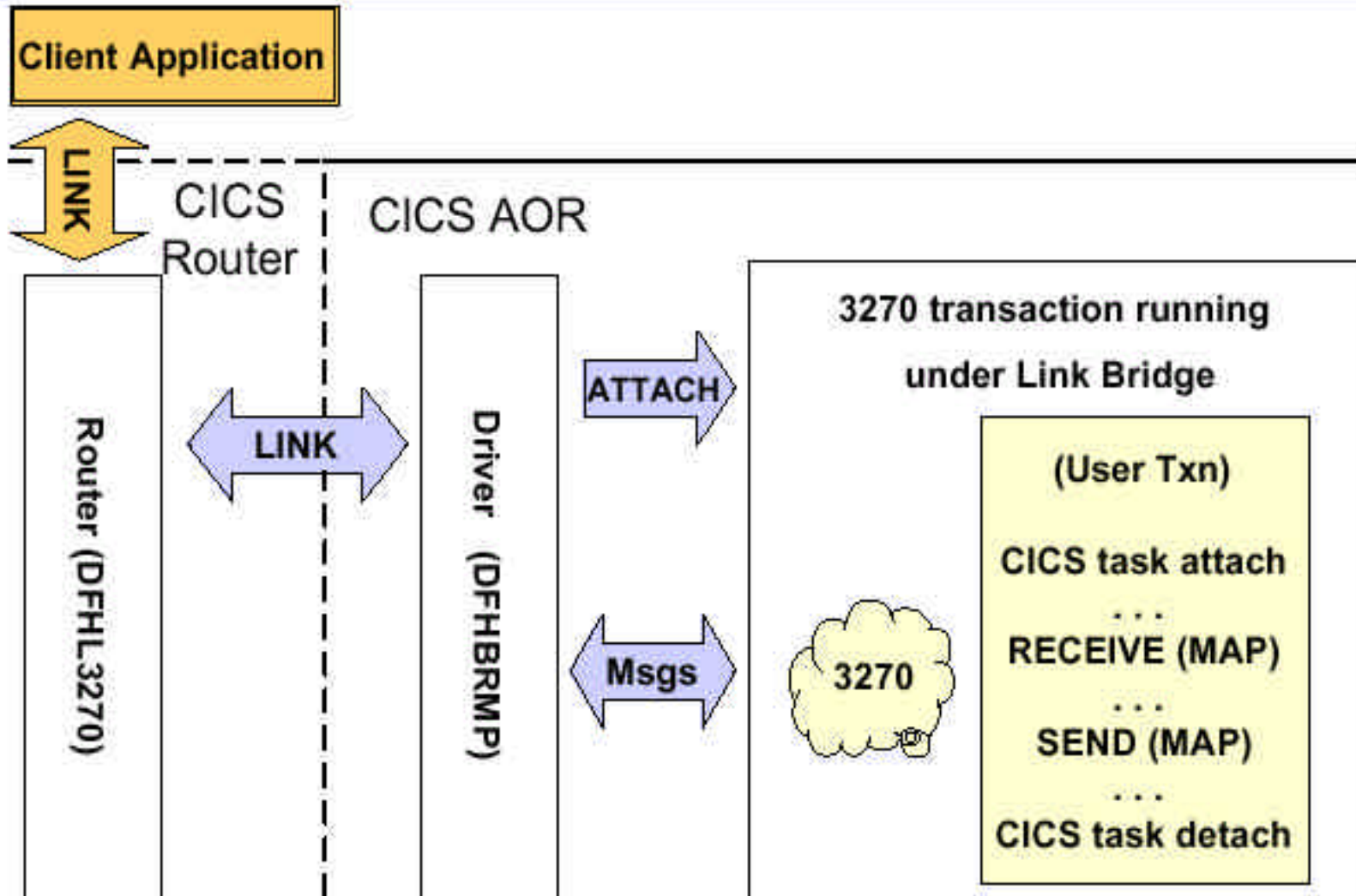
- COBOL and PL/I
  - ▶ Integrated CICS Translator
    - Eliminates the need for separate translate step
    - Eliminates the need for separate compile PROCs
    - Facilitates use of IBM Debug Tool
  - ▶ Unicode support
    - Translation to/from unicode and EBCDIC
  - ▶ XML parsing support
    - XML Enabler for COBOL and PL/I
  - ▶ Removal of support for non-LE compilers
    - CICS TS V2.2 does not ship translator
    - Future CICS will require LE run-time libraries

# Link3270 bridge

---

- **CICS supplied “wrapper” to allow invocation of 3270 transactions from a LINK, ECI, EXCI or DPL call**
  - **Simpler to use than the START BREXIT interface**
    - Link to CICS supplied module, DFHL3270, with a COMMAREA
  - **COMMAREA used to pass bridge headers and command vectors**
  - **Multiple modes**
    - Single shot (non-conversational)
    - Session mode (conversational and pseudo-conversation)
- **Workload balancing**
  - **Bridge facilities have affinity to an AOR**
    - New affinity type of “bridge”
      - *Lasts for duration of session (usually a pseudo-conversation)*
    - Affinity utility updated
    - DFHDYP has updated COMMAREA flags
    - CICSplex SM considerations

# Link3270 bridge...



# ***CICS Transaction Server for z/OS V2.1***

## ***Classic CICS Enhancements***

---

- **Enhancement to TCP/IP Support**
  - Outbound IIOp support
  - Persistent sockets
  - DNS registration
- **Extended SNA Support**
  - VTAM dynamic alias support
- **Automatic restart of CICS data sharing servers**
  - Exploitation of ARM by data sharing servers
    - Restart options controlled by ARM policy
    - Automatic restart & reconnection without operator intervention
- **Integrated CICS translator**
  - IBM COBOL & PL/I compilers include integrated CICS translation
  - Simplifies application development
- **Documentation**
  - New CICS Information Center



# ***CICS DB2 Enhancements***

---

- **Group Attach**

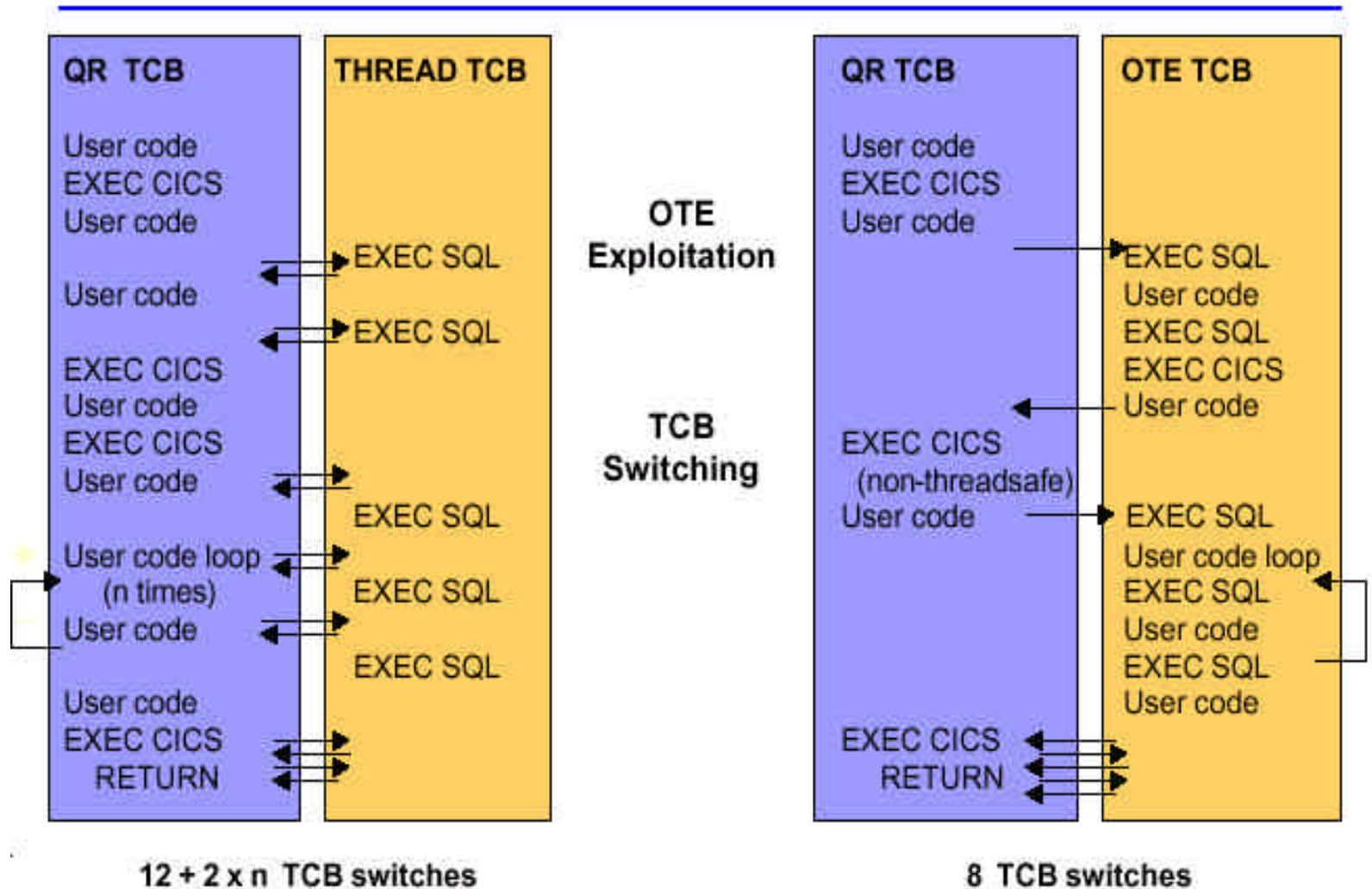
- Allows CICS to use DB2 Group Attach capability
  - Attach to any available member of a DB2 data-sharing group
  - Use a common DB2CONN definition for multiple CICS regions
  - Resynchronization implications
- Implemented via DB2GROUPID, RESYNCMEMBER options
  - On DB2CONN definition, INQUIRE and SET commands
- Requires DB2 V7 (for enhanced DB2 Group Attach function)
  - Wait for any member of group to initialize
  - New CONNECT types for CICS

# ***CICS DB2 Enhancements...***

---

- **DB2 OTE Exploitation**
  - CICS-DB2 Attach for CICS TS V2.2
    - Exploits TRUE's OPENAPI
    - Uses open TCBs for DB2 V6.1 and above
      - *DB2 V6.1 removes affinity of thread to TCB*
    - Uses privately-managed TCBs for DB2 V5.1 and below
      - *Current implementation*
  - Performance improvement for threadsafe programs
    - Run (mostly) on Open (DB2) thread TCB after first DB2 call
    - Switch to QR TCB for some CICS commands

# CICS DB2 Enhancements...



# *File Control Enhancements*

---

- **VSAM CI Deadlock Avoidance**
  - Major benefits
    - Record level locking for all VSAM files
    - Elimination of 'proximity' enqueue delays and deadlocks
    - No requirement for coupling facility
  - Implementation
    - Current
      - VSAM locks CI from READ UPDATE to REWRITE
      - CICS locks record from READ UPDATE to REWRITE, UNLOCK or SYNCPOINT
    - Version 2.2
      - CICS releases VSAM CI lock after READ UPDATE
      - At REWRITE, CICS re-obtains VSAM lock and updates
      - CICS record locking is unchanged

# ***Coupling Facility Structure Rebuild***

---

- **System-managed rebuild support for CF structures**
  - Recreate structures for scheduled maintenance
- **Requirements for rebuild support**
  - OS/390 V2.8 or higher on all images in the sysplex
  - APAR OW39892
  - Undamaged structure
  - Connectivity in at least one MVS image
- **CICS structures participating**
  - Temporary storage pools
  - Coupling Facility Data Table pools
  - Named counter pools

# *Sign-on Retention for VTAM Persistent Sessions*

---

- **Sign-on status preserved over persistent-session restart**
  - Single and multi-node sessions
  - CICS or VTAM failure
  - Selectively based on
    - SIT options
    - TYPETERM options
    - RACF profile
- **Implementation**
  - Normal operation
    - Sign-on, sign-off recorded in global catalog
    - Time-stamp record written every two minutes
  - Recovery
    - Sign-on status recovered from catalog
    - User signed on if meets requirements

# ***CICS Transaction Server for z/OS V2.1***

## ***CICS Information Center***

---

- **HTML representation of the CICS Library**
  - Accessed with a web browser
  - Extensive search capabilities
  - Bookmarks can be set
  - Shipped on a CD
- **Publication library information assigned to classes**
  - Tasks, Concepts and Reference
- **Existing CICS library available in both HTML and PDF formats**
- **Links from home page to IBM and CICS resources on the web**
  - e.g. Redbooks home page

# **CICS/TS 2.2 Pre'-Reqs**

- .OS/390 V2.10
- .Full USS Configuration
- .MVS Logger Definition
- .DB2 V5
- .WMQ V2.1
- .LE Compilers
- .SDK 1.3.1



# Release Guide

## Business

JB Support  
ORBA Full Support  
ICS Connector for CICS/TS  
ersistent Reusable JVM  
ICS Support for TCP/IP  
JB Deployment  
JB Security  
CI Over TCP/IP  
inkable 3270 Bridge  
NS Connect Optimization(#)  
AVA Support (\*)  
ICS Web Support (\*)

## Management

OTE  
CICS Access To DB2  
SIGNON Retention (#)  
Automatic Restart of CICS Servers (#)  
CF System Mngmnt Processes(#)  
Monitoring & Statistics  
MVS System Logger (\*)

## Classic

CICS Info Center  
CICS Translators  
VSAM Record Lock  
RDO for DCT  
VSAM RLS (\*)  
RDO for TST (\*)  
RDO for RCT (\*)

# Release Status

- CICS/ESA R410
  - ▶ EOC **December 31, 2002**
    - ▶ Announced December 12, 2000 (900-305)
- CICS Transaction Server for OS/390 V1R2
  - ▶ Announced September 9, 1997 (297-353)
  - ▶ Withdrawn from marketing September 8, 1998 (298-318)
  - ▶ EOC **December 31, 2002**
- CICS Transaction Server for OS/390 V1R3
  - ▶ Announced September 11, 1998 (298-318)
  - ▶ GA March 26, 1999
  - ▶ Will be **withdrawn from marketing December 31, 2002** (902-023)
- CICS Transaction Server for OS/390 V2R1
  - ▶ Announced March 14, 2001 (201-060)
  - ▶ GA March 30, 2001
  - ▶ EOC **June 30, 2002**
- CICS Transaction server for OS/390 V2R2
  - ▶ Announced March 14, 2001 (201-060)
  - ▶ GA January 25, 2002

# Summary

---

- **New CICS product - positioning CICS for the *future***
  - Java and EJB support
  - Availability and System Management
- **CICS will be key to making z/OS the premier EJB server**
  - Providing industry-leading performance, scalability, reliability, robustness
  - Enabling optimum reuse of existing applications, data and skills
  - Combining the strengths of CICS, WebSphere Application Server, and DB2

**MUITO OBRIGADO !!!!**

Daniel Raisch  
raisch@br.ibm.com