



VisualAge for Java

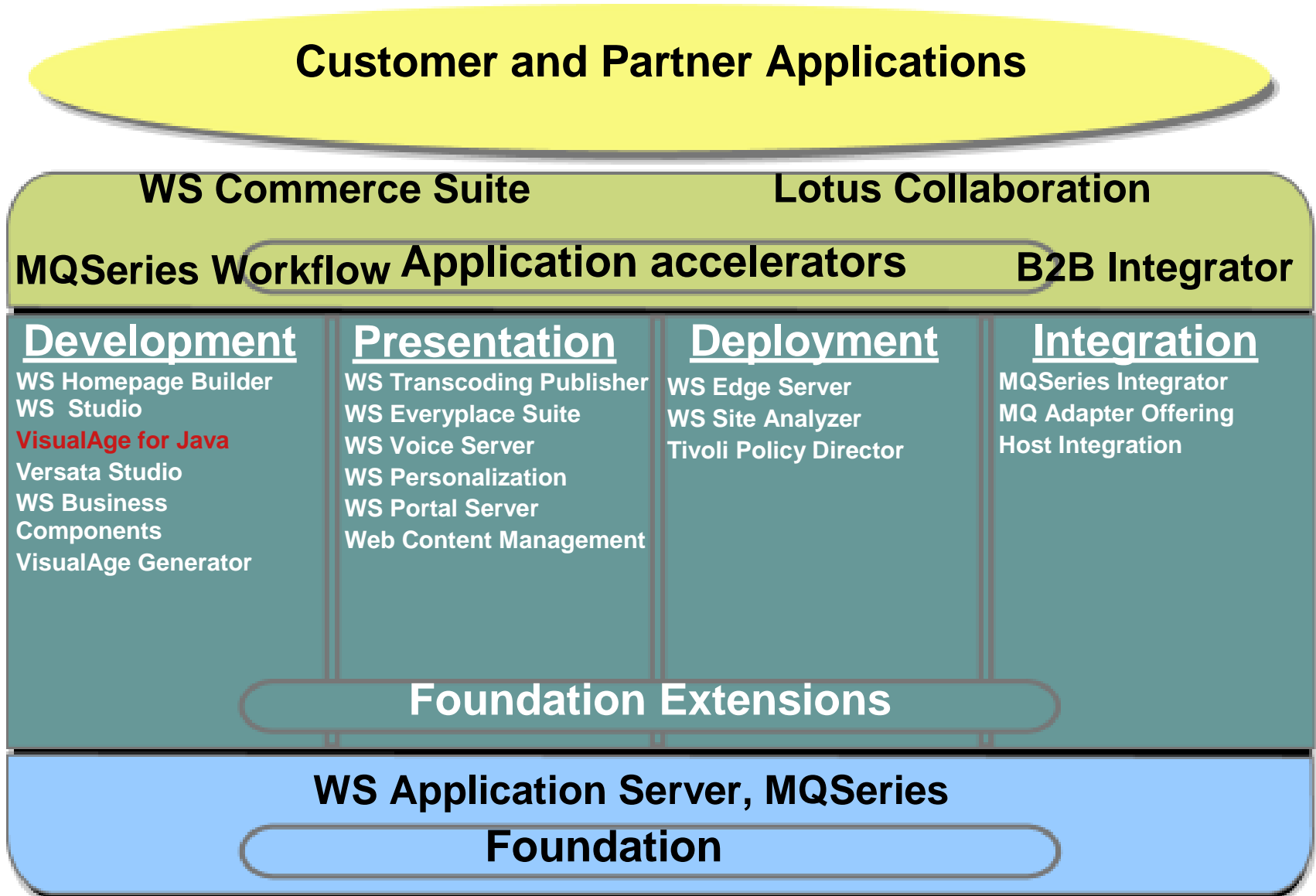
For Building Today's Dynamic
e-Business

Siobhan Fitzmaurice

WebSphere

■ the fastest way to dynamic e-business ■

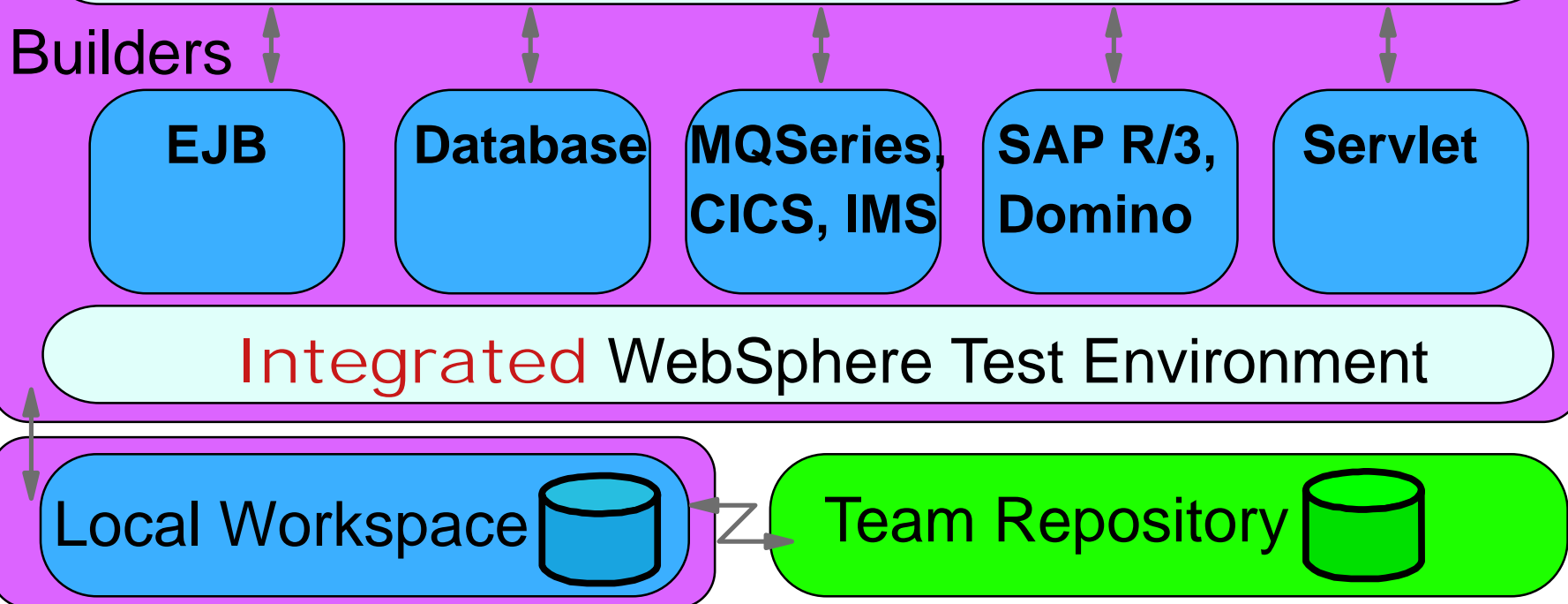
IBM WebSphere Platform for Dynamic e-Business



VisualAge for Java Enterprise

Developer Workbench

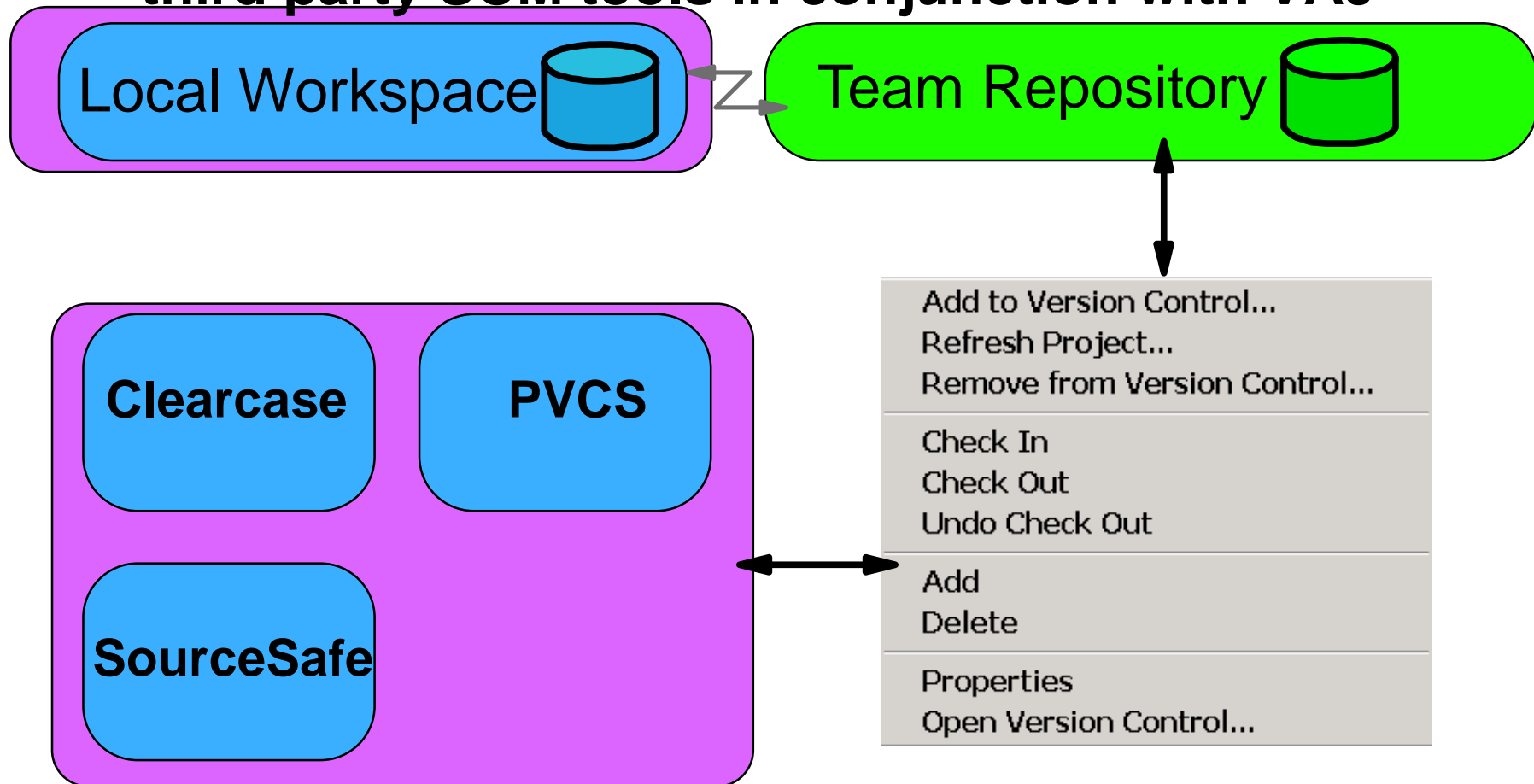
- Browse, Edit, Debug Java components (Visual/non-visual)
- Incremental Compiler, Code Assist
- Integrate with design tools (XMI)
- Built-in version control/configuration management
- Distributed Debugger (NT, OS/2, AIX, Solaris, HP-UX, OS/400, OS/390)



VisualAge for Java Enterprise

■ Team Development Environment

- ▶ **External SCM Support** allows you to use other third party SCM tools in conjunction with VAJ



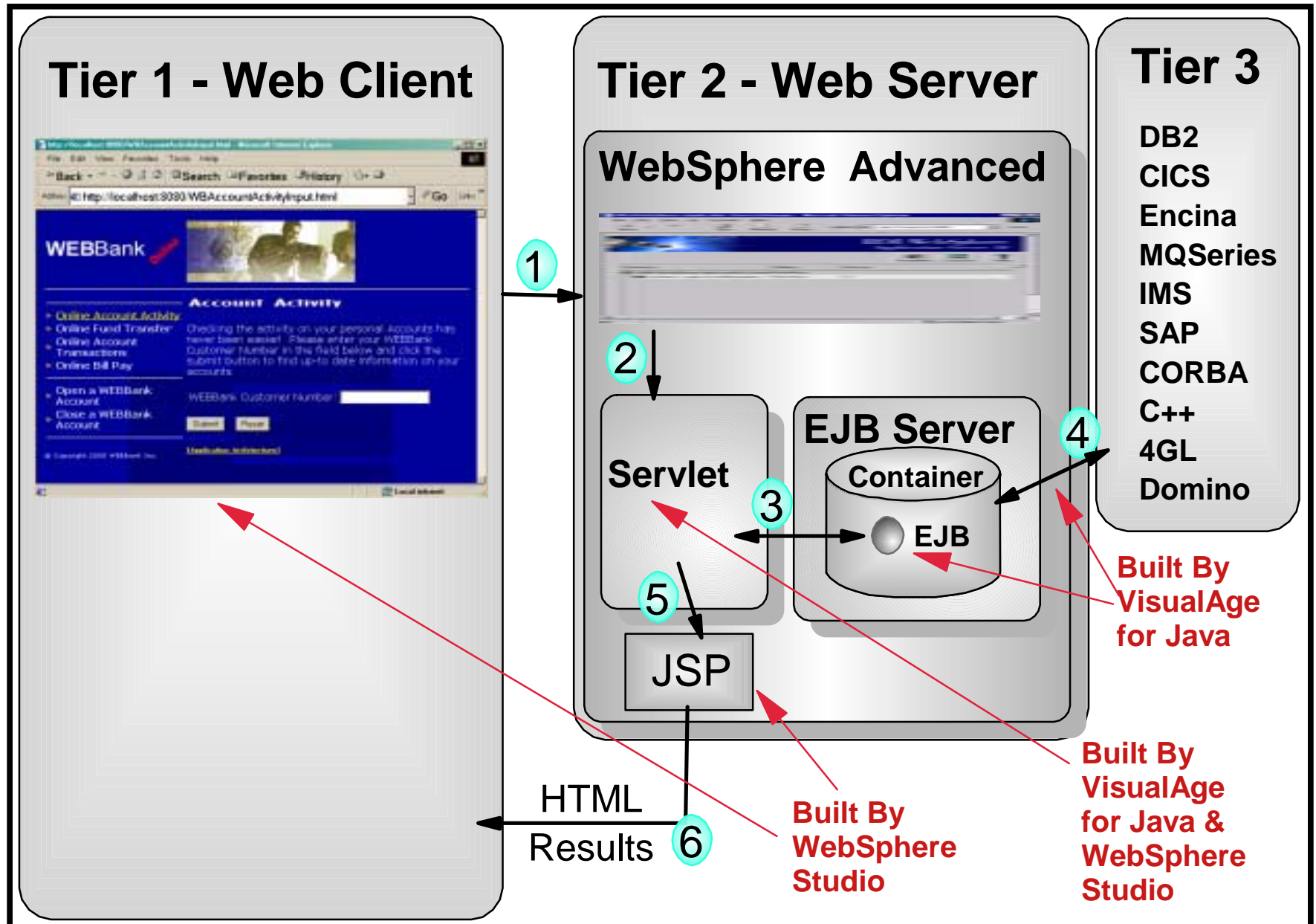


Professional	Enterprise	Features (partial list)
✓	✓	Support for JDK 1.2.2 and Swing 1.1
✓	✓	Integrated Development Environment
✓	✓	Visual Composition Editor
✓	✓	Data Access Beans
✓	✓	External SCM Support - Integration with Team Connection, Clearcase, PVCS, and Visual SourceSafe
✓	✓	Open Tool Integrators API
✓	✓	SQLJ Support
✓	✓	DB2 Stored Procedure Builder
✓	✓	WebSphere Test Env. (JSP, Servlet, JavaBeans)
✓	✓	Servlet Wizard
	✓	Team Programming Support
	✓	WebSphere Test Env. (JSP, Servlet, JavaBeans, <u>EJBs</u>)
	✓	EJB Development (code to EJB 1.0, deploy to EJB 1.1)
	✓	ET/390, ET/400 (Dev. on wkstn, Remote Debug, etc.)
	✓	Enterprise Access Builders (CICS, MQ, IMS, SAP R/3, HOD, Encina), Support for C++, IDL, Tivoli, Domino
	✓	Persistence Builder

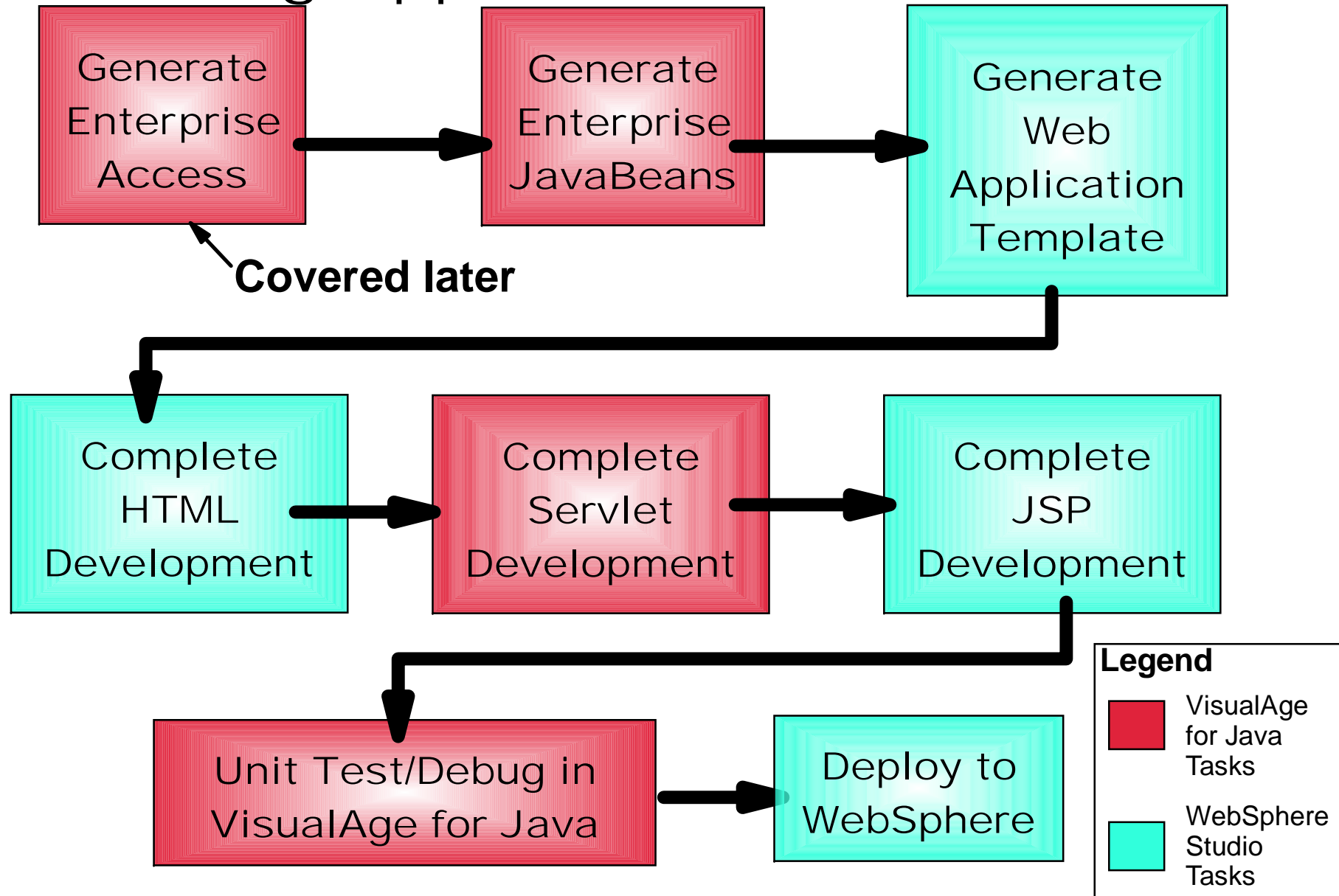
Productivity Features

- ★ **Incremental Compilation**
- ★ **Code Assist**
- ★ **Dynamic Debugging**
- ★ **Servlet Wizard**
- ★ **EJB Wizard**
- ★ **Scrapbook**
- ★ **Unit Test Environment**
- ★ **Enterprise Access**
 - ➔ **Now support J2EE Connector Architecture (Beta)**

Web Application Topology

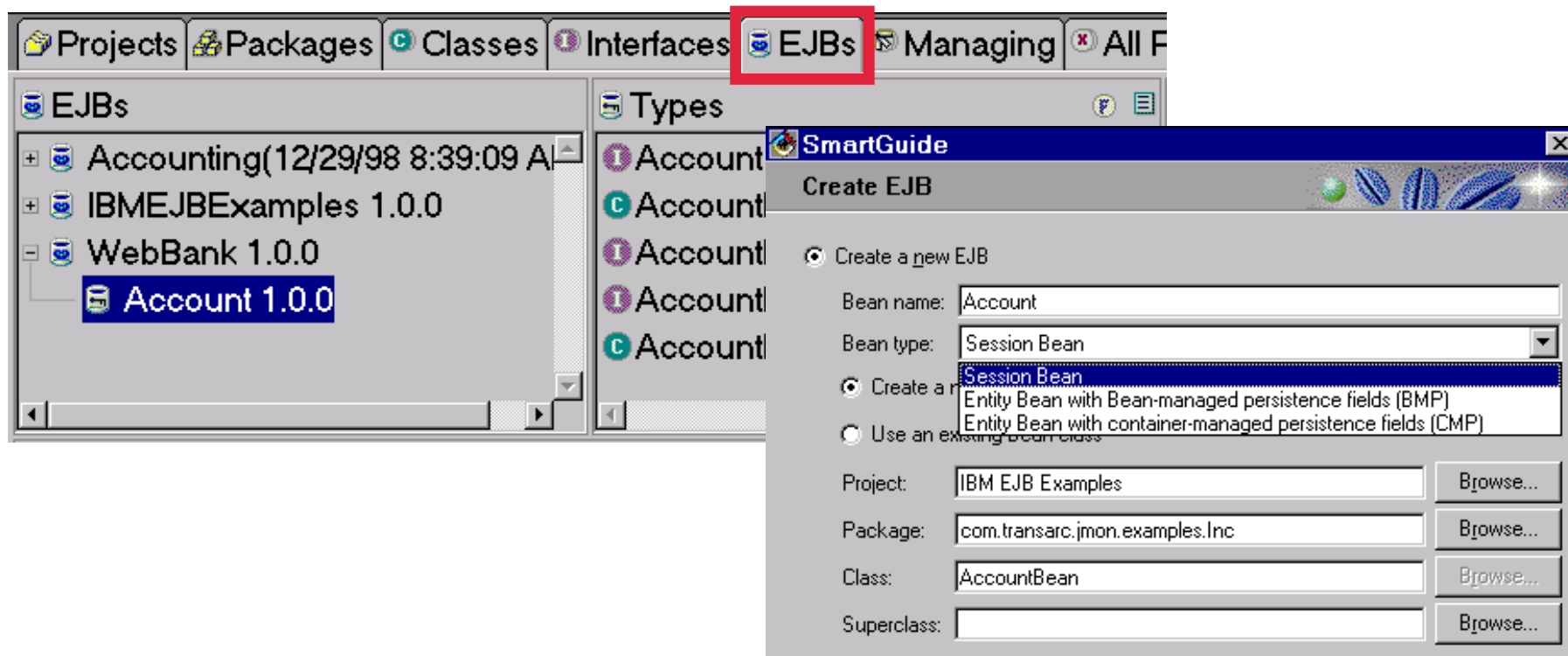


Building Applications



Creation/Development of EJB

- In VisualAge for Java, easily create session/entity EJBs
 - ▶ Vastly simplifies server and client EJB development



Creating EJBs

- **Quickly create Entity EJBs from existing database Schema or Object Model**
 - ▶ **Generates association relationships in EJB model**
 - e.g. Customer has 1:m Accounts

EJB Development - Mapping Approaches

■ Bottom Up

- ▶ Map existing databases tables to EJB entities

■ Top Down

- ▶ SmartGuide creation of EJBs
- ▶ Map Model to EJB Entities (Tech Preview)
- ▶ Generate Database/Tables from EJB Entities

■ Meet in the Middle

■ O/R Mapping

- ▶ Associations with cardinality (1:m, m:m, etc), Inheritance, etc.

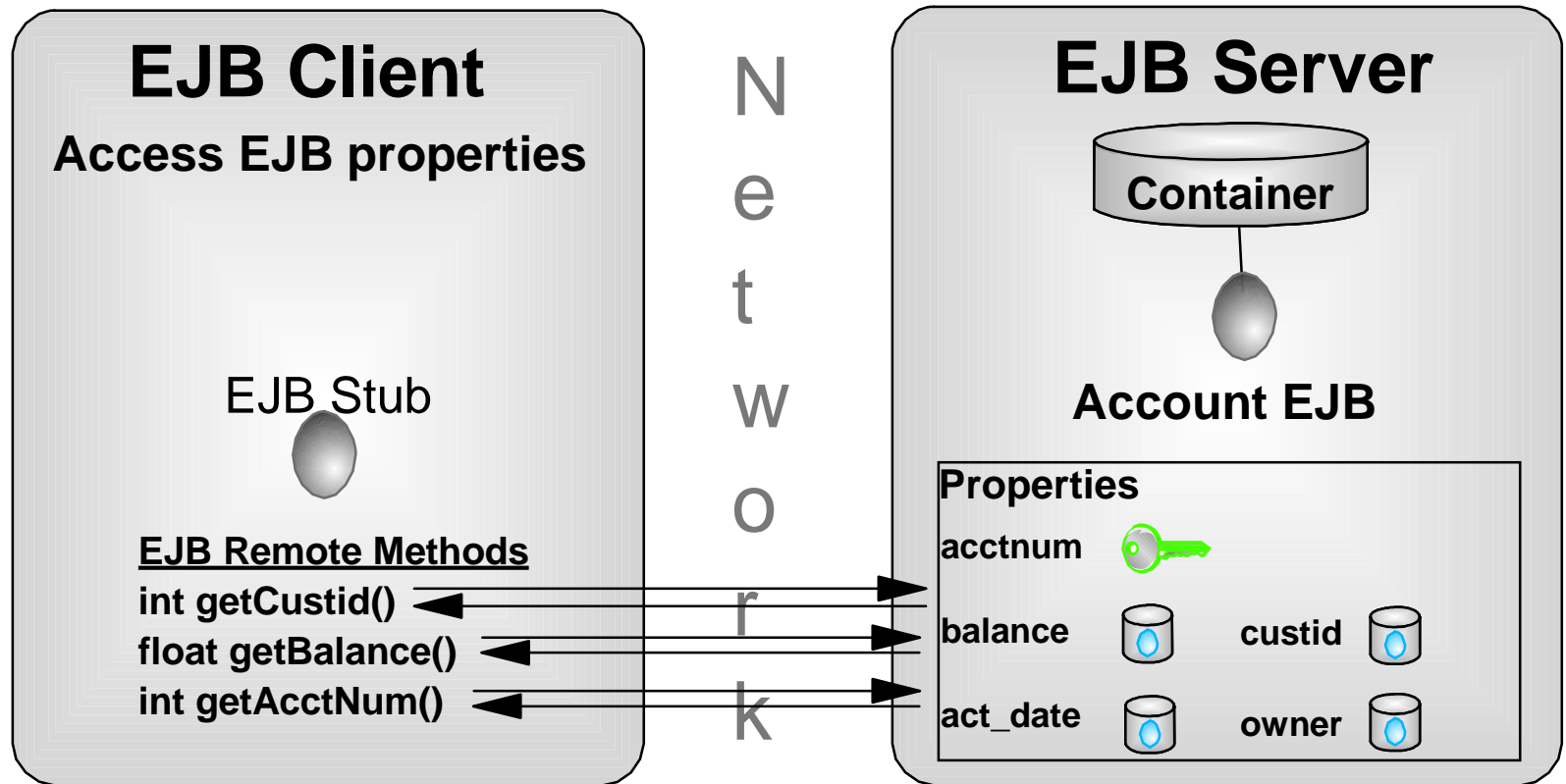
EJB Client Programming Model

- **Traditional EJB client programming model:**
 - ▶ Obtain a context to the name server
 - ▶ Look up the home of the enterprise bean using the name service context.
 - ▶ Create an enterprise bean instance from the enterprise bean home, which returns an enterprise bean proxy object.
 - ▶ Accesses the remote methods of the enterprise bean

Bottom Line: Lots of steps

EJB Client Programming Model

- Accessing the EJB remotely



Bottom Line: Performance may be an issue

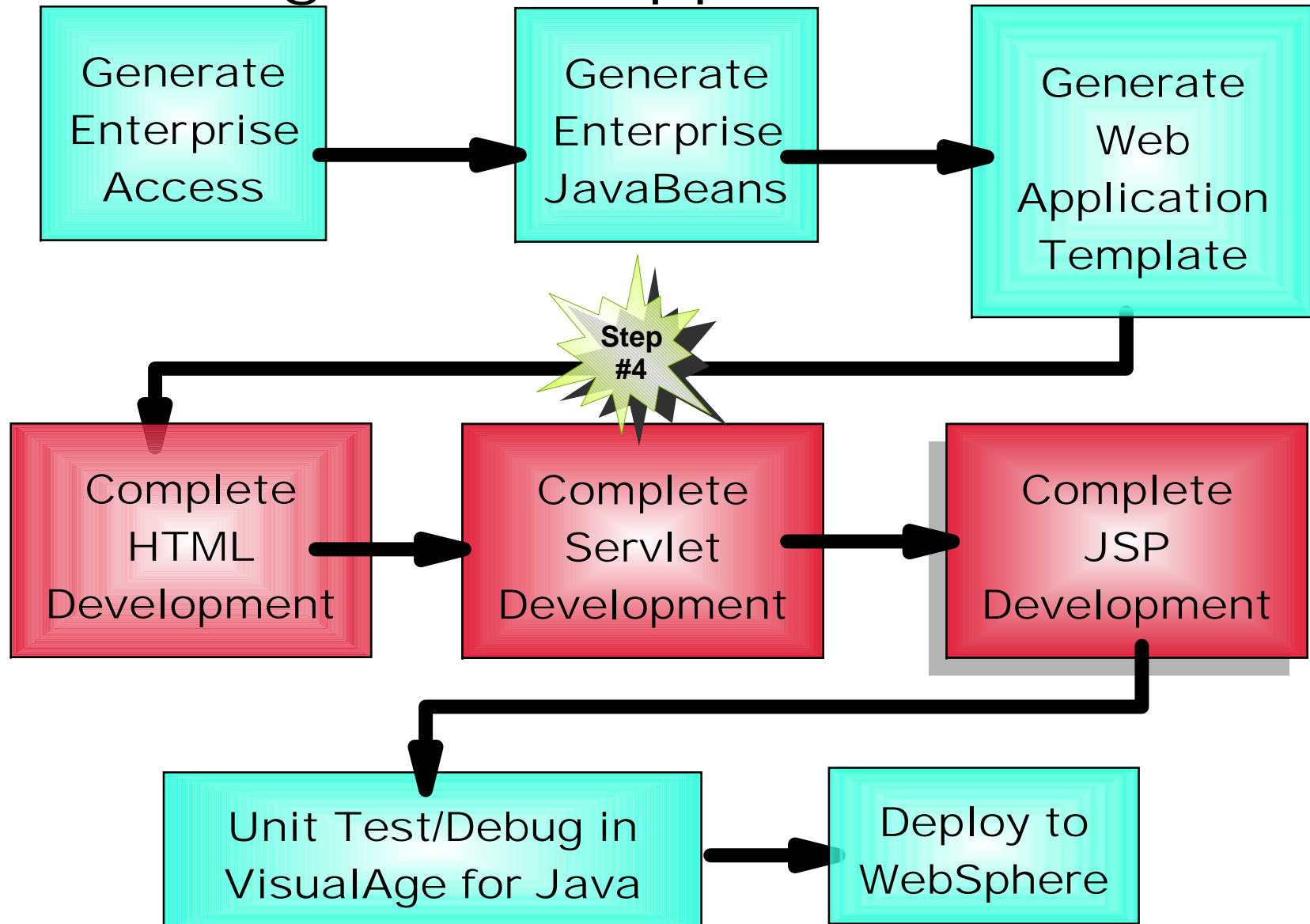
The Solution: Access Beans

- **Simplify the client EJB programming model**
 - ▶ **JavaBean wrapper for EJB client**
 - ▶ **Access EJBs like a JavaBean!**
 - **Home Interface methods mapped to JavaBean constructor**
 - **Remote Interface methods mapped to JavaBean methods**

Access Beans

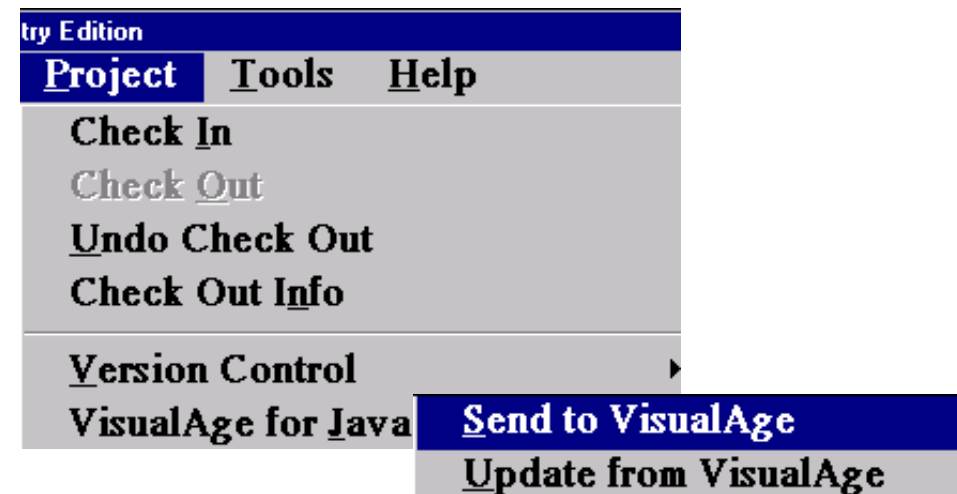
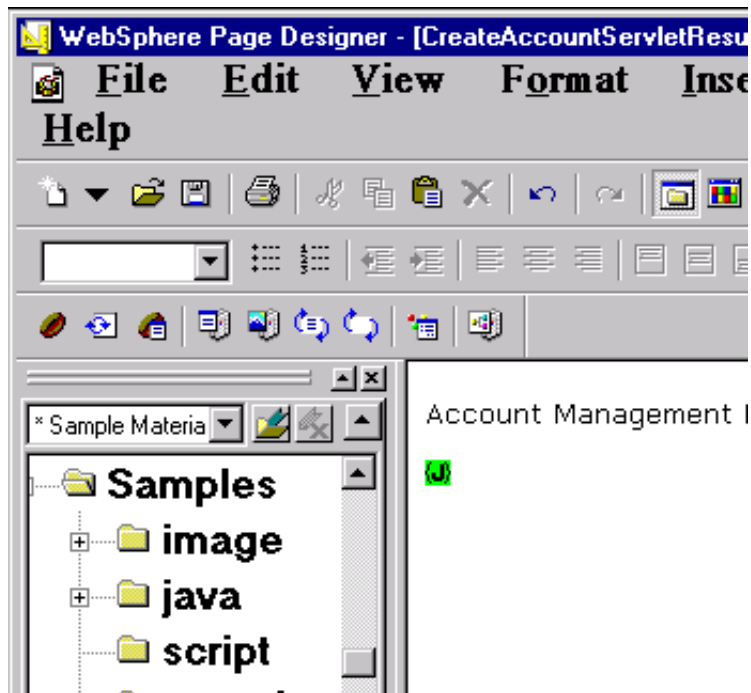
- **Optimize the client EJB access to EJB properties**
 - ▶ **Optionally cache properties on client**
 - **Access properties locally without going to server EJB**
 - **Methods generated to synchronize client cache with EJB**

Building a Web Application



Development of the HTML/Servlet/JSP

- Use WebSphere Page Designer to customize HTML/JSP
- Send generated servlet to VisualAge for Java for customization and testing

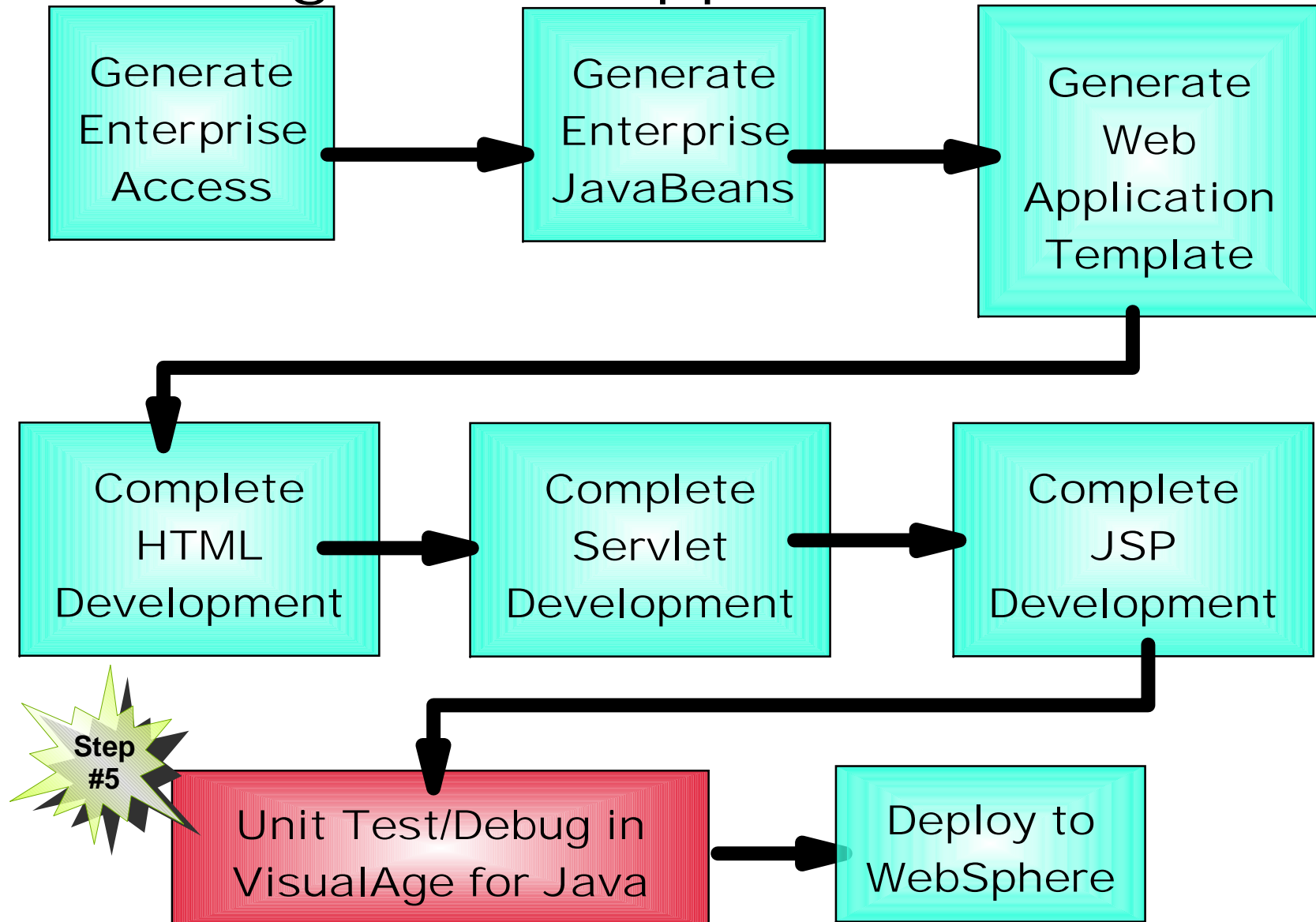


WebSphere Studio/VisualAge for Java Integration

- **Send components either way from either tool!**
 - ▶ **Send files from WebSphere Studio to VisualAge for Java**
 - ▶ **Send files from VisualAge for Java to WebSphere Studio**

<u><i>WebSphere Studio</i></u>	<u><i>VisualAge for Java</i></u>
<div style="background-color: #000080; color: white; padding: 2px;">try Edition</div> <div style="background-color: #000080; color: white; padding: 2px;">Project <u>T</u>ools <u>H</u>elp</div> <div style="padding: 2px;"> <p>Check <u>I</u>n</p> <p><u>C</u>heck <u>O</u>ut</p> <p>Undo <u>C</u>heck <u>O</u>ut</p> <p>Check <u>O</u>t <u>I</u>nf<u>o</u></p> <hr/> <p><u>V</u>ersion <u>C</u>ontrol ▶</p> <p><u>V</u>isualAge <u>f</u>or <u>J</u>ava ▶</p> </div> <div style="background-color: #000080; color: white; padding: 2px; text-align: center;"> Send to VisualAge </div> <div style="background-color: #000080; color: white; padding: 2px; text-align: center;"> Update from VisualAge </div>	<div style="padding: 2px;"> <p>Domino Access Builder ▶</p> <p>Domino AgentRunner ▶</p> <p>Enterprise Access Builder ▶</p> <p>ET/390 ▶</p> <p>ET/400 ▶</p> <p>External Version Control ▶</p> <p>Generate RMI ▶</p> <p>WebSphere Studio Tools ▶</p> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;"> <p>File Status in Studio</p> <p>Send to Studio</p> <p>Update from Studio</p> <p>Set Studio Project</p> </div>

Building a Web Application

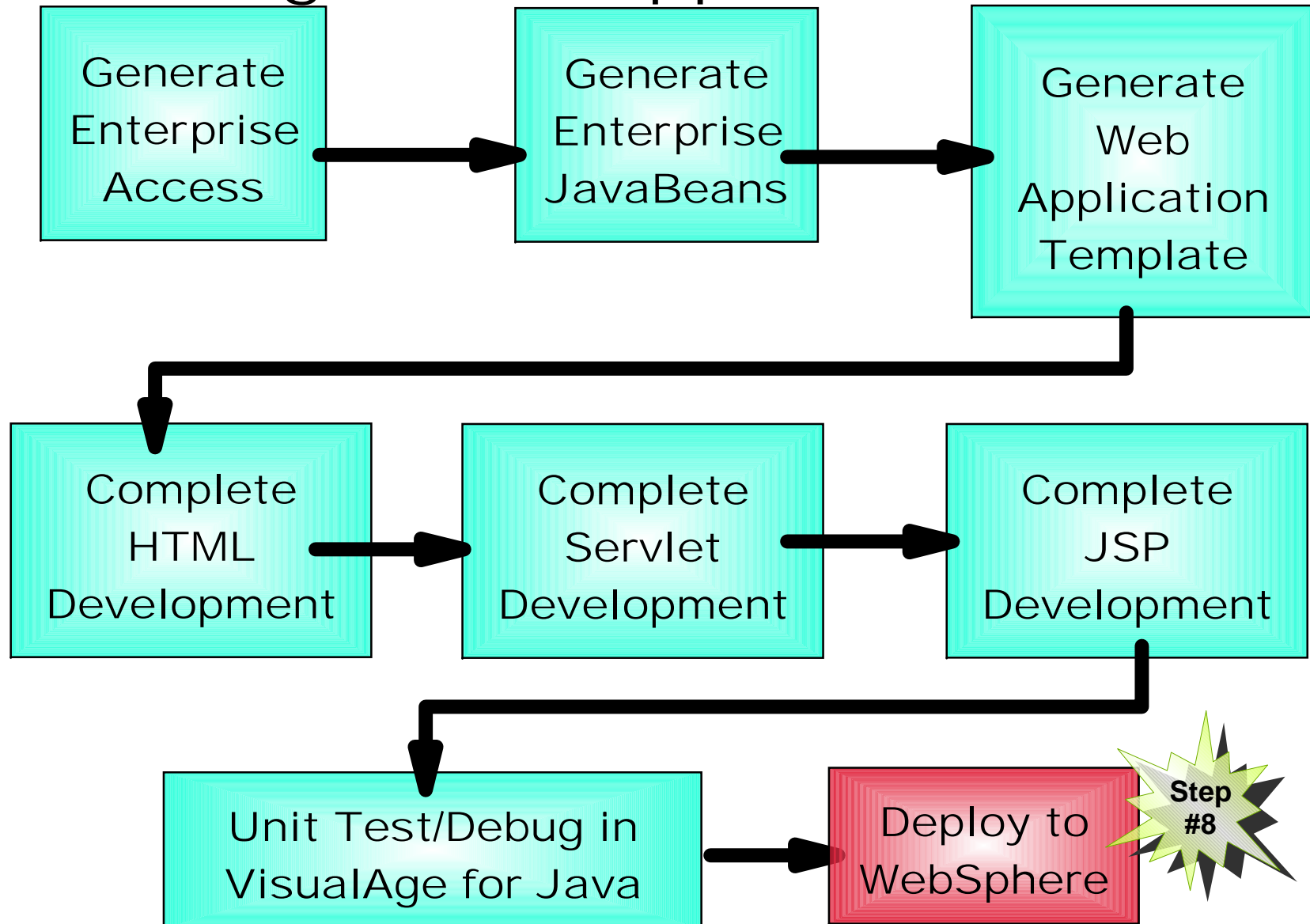


Unit Testing

■ WebSphere Test Environment

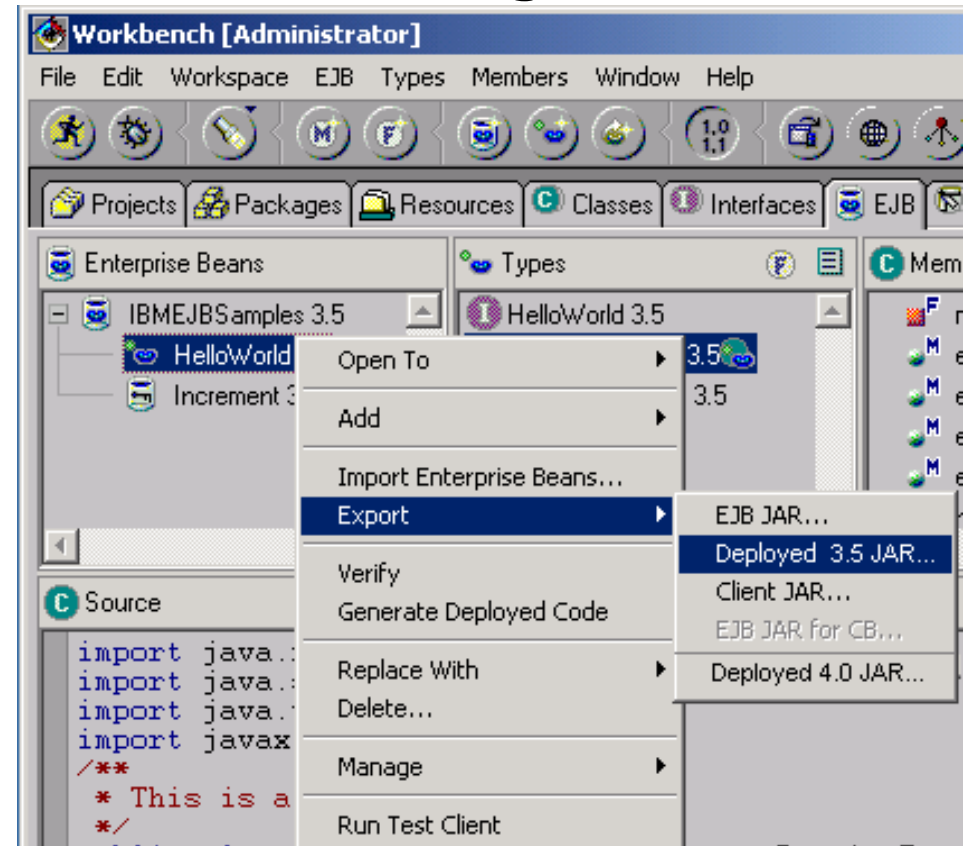
- ▶ Integrates WebSphere 3.5 Application Server into VisualAge for Java IDE!
- ▶ Unit Test/Debug Servlets/EJBs
- ▶ Unit Test HTML/JSPs
- ▶ Monitor Execution of JSPs
 - HTML sent to client
- ▶ VisualAge for Java is bundled with WebSphere Application Server 4.0 for unit testing

Building a Web Application



Deploying Web Applications using V4.0

- **WTE supports Servlet 2.2, JSP 1.1, EJB 1.0**
- **Export EJB 1.1 compliant JAR for WS 4.0**
- **Command-line EJB deployment to J2EE-Compliant WebSphere Application Server V4.0**



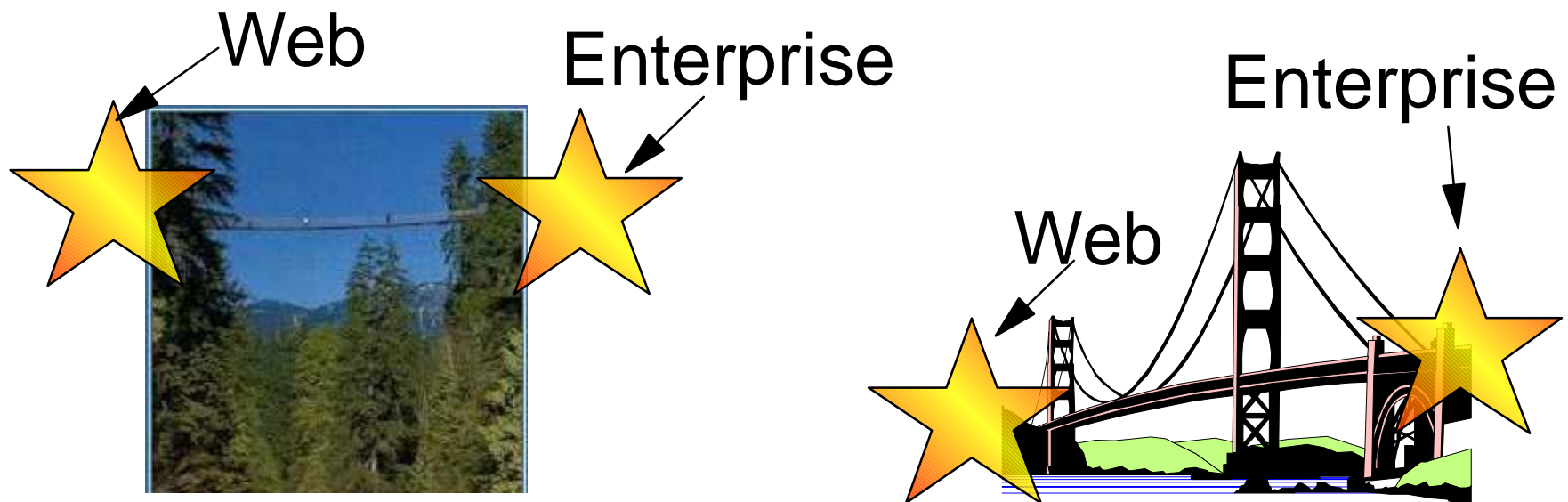
	Servlet 2.2	JSP 1.1	EJB 1.1	JCX 1.0
WebSphere V4 Runtime	Exploit	Exploit	Exploit	Exploit
VA Java V4 Tools	Exploit	Exploit	Tolerate	Exploit

What about that Enterprise Access?

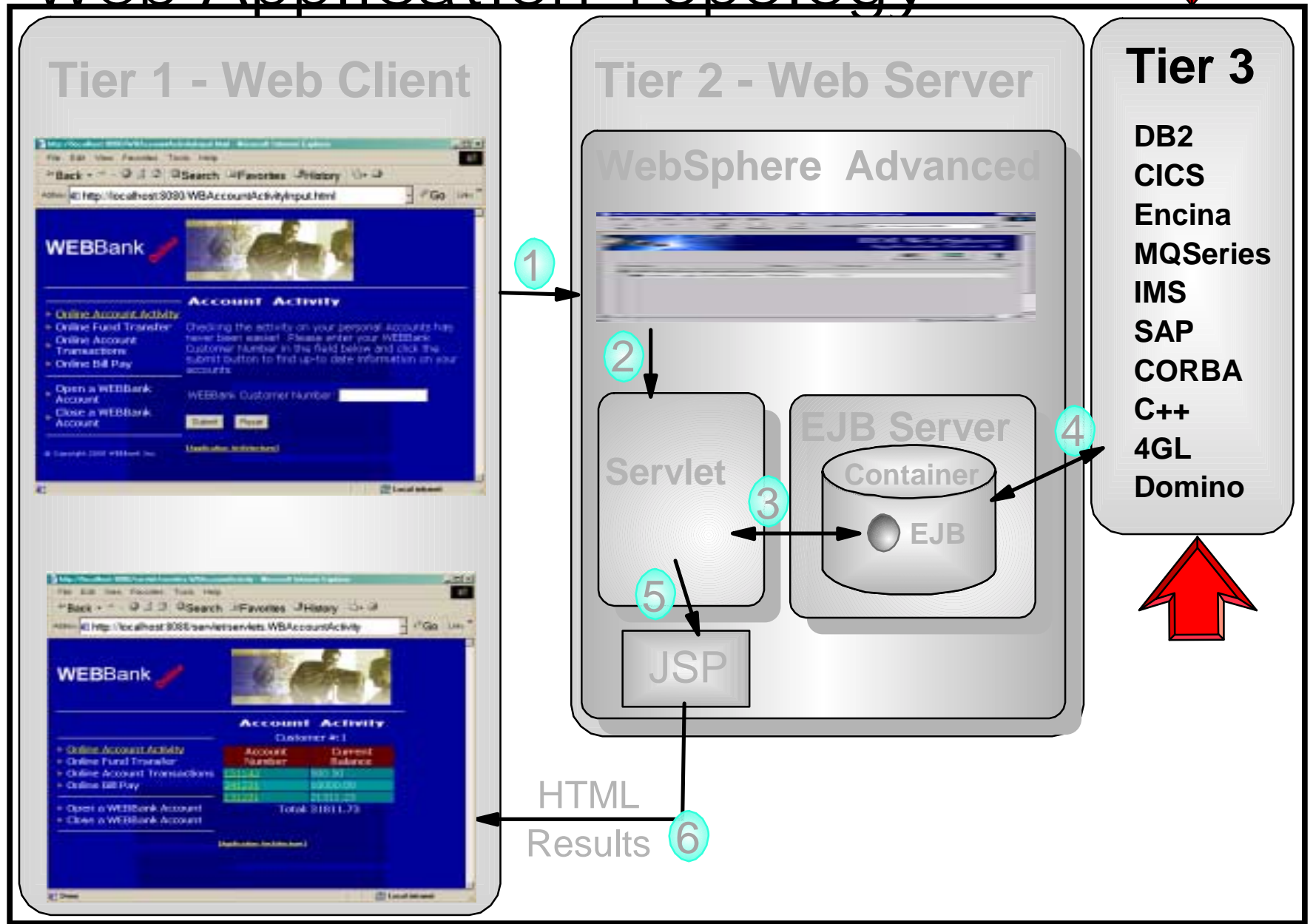


Questions You Must Ask Any Vendor

- **"How do you integrate into my business critical transactions, data or applications?"**
 - ▶ The answer can't be: "Link to the middleware APIs"
 - ▶ Weak links between the web and the enterprise will not help build business critical solutions



Web Application Topology



Enterprise Access Builder

- **Integrated solution for accessing:**
 - ▶ MQSeries, CICS, Encina, IMS, HOD, SAP R/3, PeopleSoft, JD Edwards and Oracle Applications

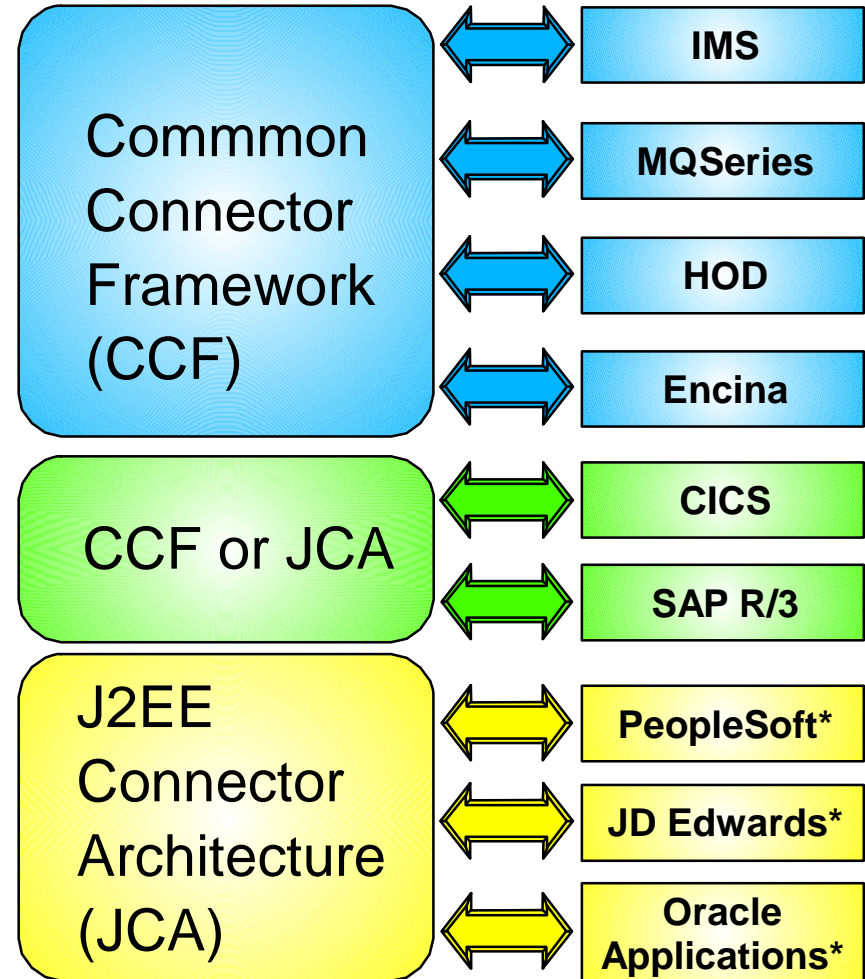
- **Developers do not worry about:**
 - ▶ Converting datatypes
 - ▶ Coding to middleware
 - ▶ Building data buffers (e.g. COBOL CommAreas)

Enterprise Access Builder

VisualAge for Java

Enterprise Access Builder Tooling

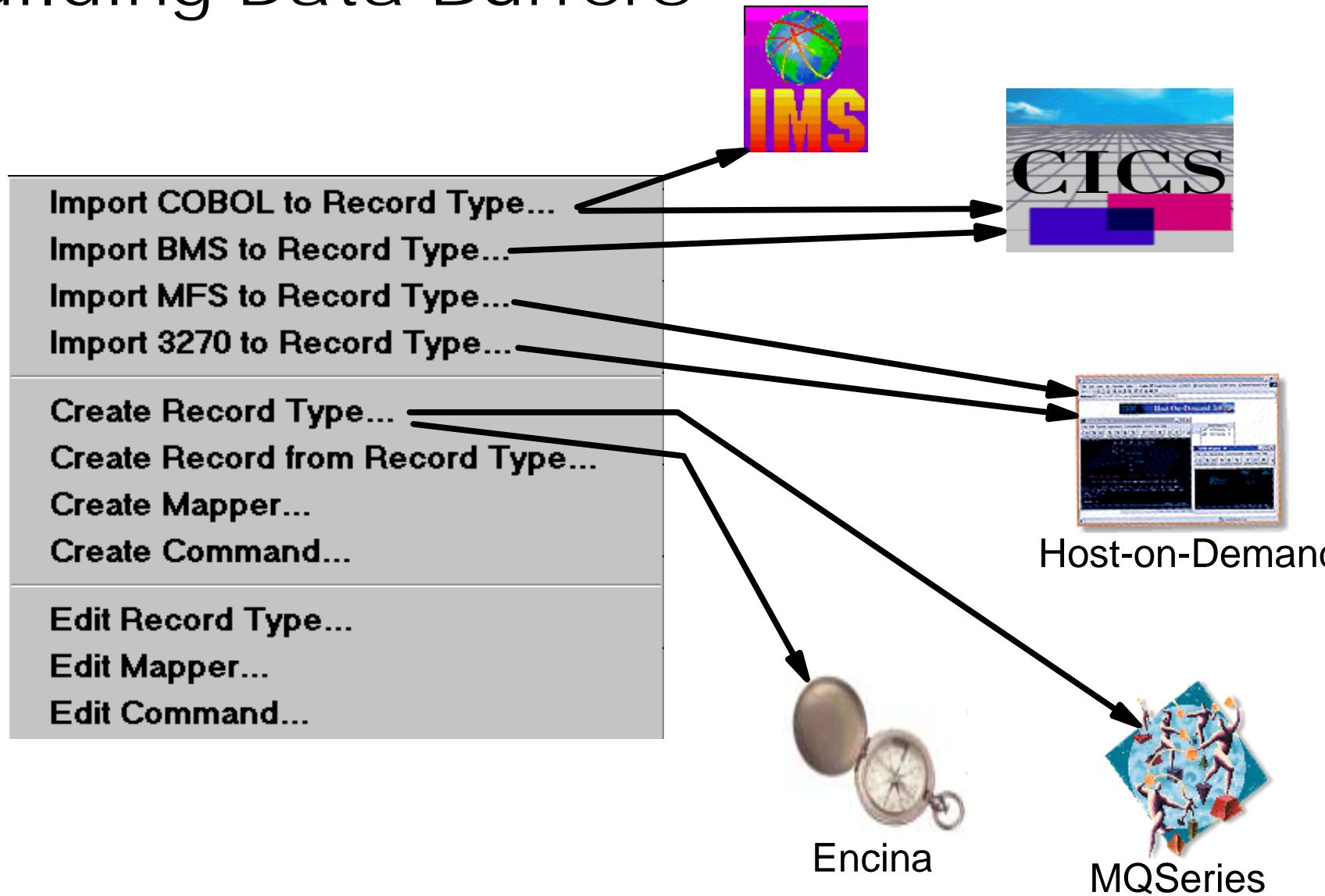
- ▶ Import COBOL SmartGuides
- ▶ Import 3270 SmartGuides
- ▶ Import BMS SmartGuides
- ▶ Command Editor
- ▶ Mapper Editor
- ▶ Navigators
- ▶ CCF to JCA Migration SmartGuides
- ▶ Other Built-in Tooling



* Currently Windows NT only

Use builders, not code to middleware APIs

Building Data Buffers



Enterprise Access Builder

- **Example: 3270 Importer SmartGuide**

The screenshot displays the '3270 Importer' application window. The main interface includes a menu bar (File, 3270, View, Selected), a toolbar with icons for file operations, and a central workspace. On the left, a 'Parsed Screens' tree lists several screens, with 'DALVMIC1LoginScreen' selected. A secondary 'Import' window is open, showing its own 'Parsed Screens' list and a 'Terminal View' pane. The terminal view displays a simulated 3270 terminal screen with a header, a main body of text, and a footer. Below the terminal is a 'Field Editor' table.

Name	Constant Value	Initial Value	Access
pos3_7	null	VV VV	<input checked="" type="checkbox"/>
pos3_22	MMMM MMM...	null	<input checked="" type="checkbox"/>
pos4_7	null	VV VV	<input checked="" type="checkbox"/>

Terminal View Output:

```

VVV VVV MMM MMMM MMM Help Desk: 888
VVVVVV MMM MMM MMM Use HELPM for
VVVVV MMM MMM I/T Info: V
VVVV MMM MMM Key UMEX II
VVV MMM MMM

IBM's internal systems must only be used for c
business or for purposes authorized by IBM
    
```

Field Editor Table:

Name	Constant Value	Initial Value	Access
pos3_7	null	VV VV	<input checked="" type="checkbox"/>
pos3_22	MMMM MMM...	null	<input checked="" type="checkbox"/>
pos4_7	null	VV VV	<input checked="" type="checkbox"/>

Copyright notice at the bottom: 5684-084 (C) Copyright IBM Corp.

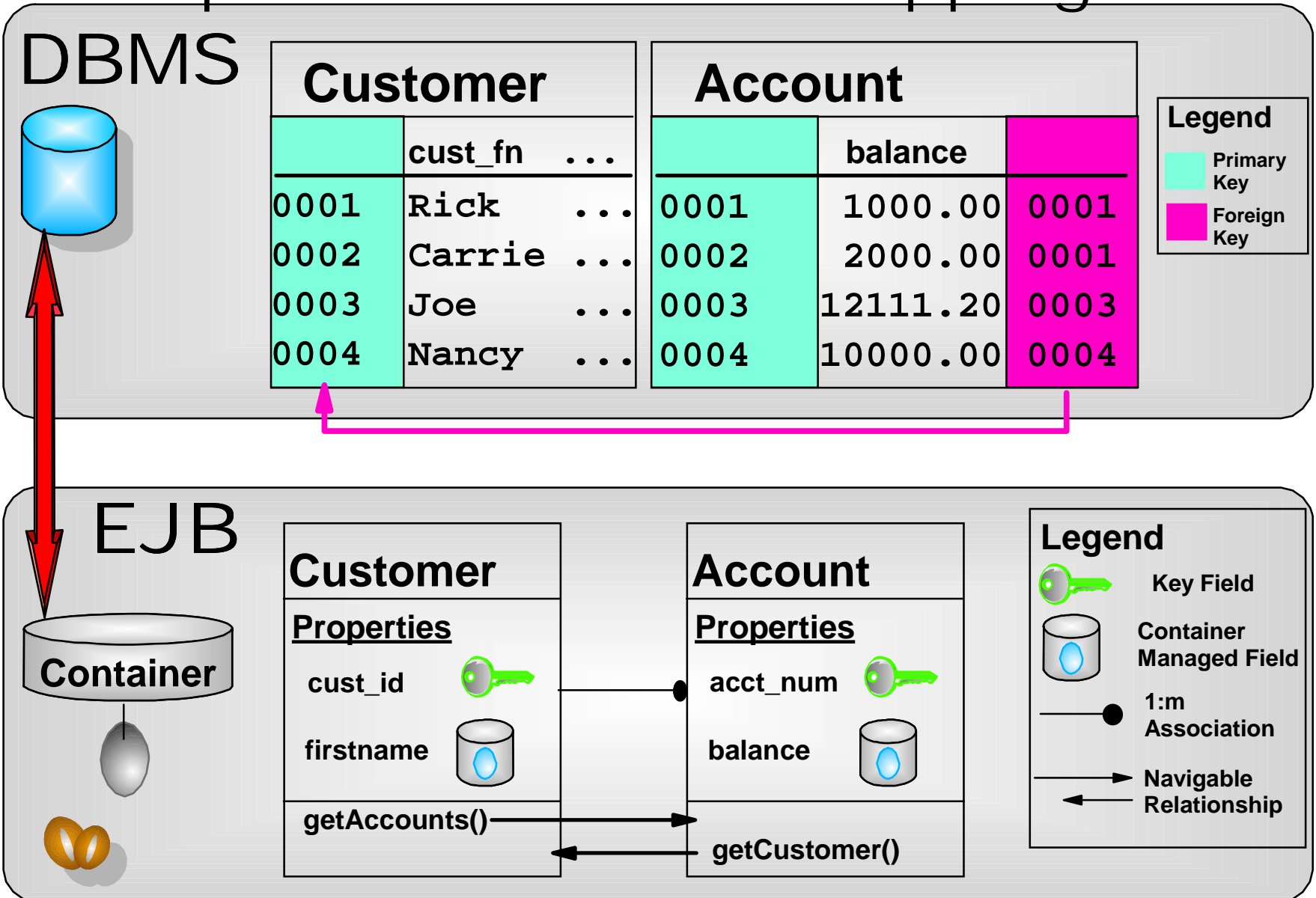
Many other Enterprise Solutions

■ Persistence Builder

- ▶ Object-Relational Mapping for EJBs or JavaBeans
 - Single Table
 - Secondary Table (multiple tables->1 component)
 - Inheritance mapping (Single Table, Root/Leaf)
 - Association mappings

All are provided in VisualAge for Java

Example - Association Mapping



Many Other Enterprise Solutions

- **Data Access Beans**
 - ▶ Create/Retrieve/Update/Delete support
 - ▶ Invoke Stored Procedures
- **SQLJ Development Environment**
 - ▶ Develop Java based SQLJ access to databases
- **DB2 Stored Procedure Builder**
 - ▶ Create/Test/Deploy stored procedures to DB2
- **IDL, C++, Tivoli, Domino, and more...**

So What Does This all Mean?

e-business References

VisualAge for Java's Success - Partners Developing for VisualAge for Java

■ Rational Partnership

- ▶ Rose for modelling, ClearCase for SCM, and others
- ▶ w3.developer.ibm.com/depts/spra/RATIONAL/downloads/IBM_alliance.pdf

■ Instantiations

- ▶ VA Assist Enterprise/J
 - IDE and Team server enhancements
- ▶ <http://www.instantiations.com>

■ Sitraka (formerly KL Group)

- ▶ JProbe - Java profiling tool
- ▶ <http://www.sitraka.com/>

■ Find many others on our partner Web site

- ▶ <http://www.ibm.com/software/ad/partners/>

VisualAge for Java's Success - Growing with Awards

internet WORLD
BEST OF SHOW
WebSphere Studio wins
"Best of Show"
for Web Application Development
October 1999

INFO WORLD
Our new Version 3.0 beta is
turning up the heat
on the competition!
Reviewed August 1999

JDJ
WORLD CLASS
AWARD
Version 2.0 is
"the ideal IDE for both
beginners and experts!"
Reviewed August 1999

REAL
WORLD
Awards
IBM & Allied Signal
Best Enterprise Application Information
Implementation
August 1999

SOFTWARE
Development
PRODUCT
EXCELLENCE
AWARD
VisualAge for Java wins
Software Development Productivity Award
July 1999

Best IDE
LIST OF SHOW
Applications Development '99
July 1999

JDJ
READERS
CHOICE
AWARD
Winner
Best Java IDE
Most Innovative Java Product
June 1999

InnoVator
Fireman's Fund & Allied Signal
1999 Innovator Award
April 1999

PC
EXCELLENCE
AWARD
(France)

1999
DOOP '99
BEST OF SHOW

COMPUTERWORLD
Highlight Product
December 1999

JDJ
EDITOR'S
CHOICE
AWARD
Finalist

CNET Builder.com
Best Java IDE for 1998
December 1998

PC
MAGAZINE
Technical
Innovation
Awards
1998
(United Kingdom)
Best Development Tool
November 1998

The Application
Development
Magazine
(United Kingdom)
Star Product
November 1998

INFO
WORLD
Spectator New Product
September 1998

E **PCWEEK**
ENTERPRISE
EXCELLENCE
Judges' Choice
September 1998

PC
MAGAZINE
EDITORS
CHOICE
(United Kingdom)
July 1998

BYTE
Outstanding Rating
May 1998

INTERNET
NET BEST
April 1998

Java World
Reviewers' Pick
April 1998

INFO
WORLD
Best of Test Center 1997
January 1998

users
choice
developer.com
December 1997
November 1997

BeyondComputing
Partnership Award
IS and USERS Organizations
October 1997

Windows
Stellar
September 1997

Windows
BY INTRANET
Solutions
BackOffice Magazine
Best of Show Select
August 1997

internet
World
Best of Show
for Java Tools
Web Innovations
June 1997

VisualAge for Java's Success - Applications in Production

- **"Reduces application maintenance by 70%"**
 - ▶ **Harvard University**
- **"Critical to our success"**
 - ▶ **Primerica Financial Services**
- **"V/A for Java a Secret Weapon-Remote Debugging 'a godsend'"**
 - ▶ **Schwab**
- **'No limitations on where we go'**
 - ▶ **Allied Signal**
- **"90% Productivity Improvement when coding UI"**
 - ▶ **Fireman's Fund**

Customer Success Stories

<http://www-4.ibm.com/software/ad/vajava/solutions.htm>

e-business at Schwab

Challenge:

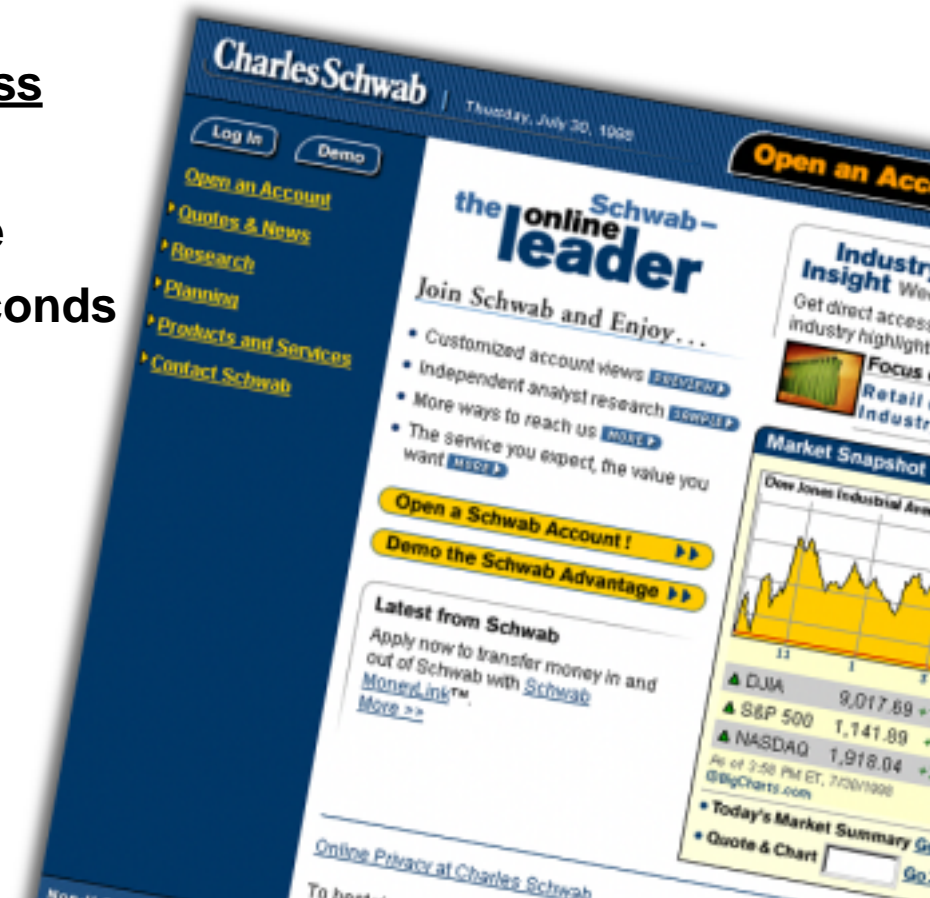
- Be the leader in online stock trading
- Compensate for unknown demand

Business Value:

- Leverage - existing transactions
- Transform - Schwab to an e-business
- Build - e.Schwab in 90 days
- Run - the leading online trading site
 - Day One - Add capacity in 60 seconds
 - 90 days - 100,000 accounts
 - Today - 1,800,000 accounts
 - More than 50% of business transacted online

e-business enablers:

- Websphere EE, CICS, DB2, VisualAge for Java

e.Schwab

e-business at Harvard University

Challenge:

- ▶ Aging applications in Registrar's Office
- ▶ Difficult to use and maintain

Solution:

- ▶ Create a new object-oriented application layer that leverages existing systems

Business Value:

- ▶ Users are productive in days, not months
- ▶ Application supports new users
- ▶ 70% faster maintenance

e-business Enablers:

- ▶ VisualAge for Java

Jonathan Clay, Chief Technologist at Nevo:

"VisualAge for Java *puts the "integrated" into IDE.* Everything you need for full-scale, professional development together in one complete package."

The screenshot shows the Harvard University website interface. At the top, it says "HARVARD UNIVERSITY" with a search bar and "INDEX". Below this, there are several news articles:

- HAPPENING AT HARVARD** (Dec 28, 1998): "Saving Plants That May Save Us" - The compound stopped AIDS dead in its tracks, but they nearly lost it. [More](#)
- First "Buddy-rama" Draws 200** - The Harvard chapter of Best Buddies hosted seven other chapters from around Massachusetts for the first-ever "Buddy-rama". [More](#)

On the right side, there is a navigation menu with links to various university departments and services:

- [About Harvard](#)
- [Academics](#)
- [Admissions](#)
- [Campus Life](#)
- [Alumni](#)
- [Directories](#)
- [Libraries, Museums](#)
- [Info Technology](#)
- [Administration](#)
- [Employment](#)

At the bottom, there are additional links: [Search Harvard University](#), [Alphabetic index of Harvard](#), [Contents of this web site](#), and [Frequently-asked questions](#). A footer note says "Selected resources beyond the Univ".

HomeDirect USA - Bekins Van Lines

Challenges

- Provide customized shipment-tracking information to their customers, including major e-commerce retailers and the end consumers
- Leverage their existing mainframe

Solution

- Web-based shipping and tracking system built with IBM WebSphere Application Server, IBM VisualAge for Java and IBM DB2

Business Value

- More than \$10 million (US) in increased revenue
- Reduced operating expenses of \$250,000 annually
- Improved customer service and satisfaction
- I/T development savings of approximately \$125,000



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Are you interested in Home Delivery for: Retail, Catalog, or E-commerce?



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www.homedirectusa.com

Contact Y2K

Experience Network Service

Some Final Thoughts

- **Look for tooling which:**
 - ▶ **Is integrated between tools in portfolio**
 - e.g. How easy is it to build an application from end-to-end? (HTML/JSP->Servlet->EJB->Legacy)
 - ▶ **Is integrated with a runtime**
 - ▶ **Supports the key features of a runtime**
 - e.g. Personalization

- **Enterprise connectivity means more than database integration**
 - ▶ **e-business applications need to connect with critical data, transactions and applications.**

Thank you!

- **VisualAge Developers Domain**
 - ▶ www.ibm.com/vadd
 - ▶ Online community for over 300,000 VisualAge developers!
- **VisualAge for Java Marketing Web Site**
 - ▶ www.software.ibm.com/ad/vajava
- **WebSphere Advisor Magazine**
 - ▶ www.WebSphereAdvisor.com
- **Redbooks**
 - ▶ www.redbooks.ibm.com