WebSphere Summit

Application Server and Programming Tools

Friendly Finance - I/T Requirements

WebSphere is the best infrastructure for your needs...

It has broad and deep support for standards, has a lower TCO, and WebSphere tools are twice as productive.

We need a strategic infrastructure for our ebusiness strategy.

We need to reduce I/T costs.

We need to respond quickly to new business requirements.

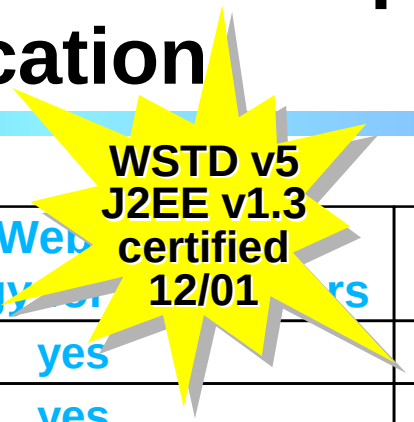
IBM

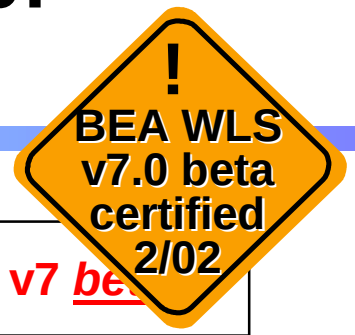
CIO

WAS Offers Broader and Deeper J2EE v1.2 Standards Support

J2EE v1.2 Specification	IBM WAS AE v4.0	BEA WLS v6.1
J2SE 1.2.2 (JDK)	yes	yes
EJB 1.1	yes	yes
JSP 1.1	yes	yes
Servlet 2.2	yes	yes
JNDI 1.2	yes	yes
JMS 1.0	supports exchange between multiple heterogeneous systems	supports WLS-to-WLS systems within same domain only
JDBC 2.0	XA drivers included to support DB2, Oracle, Sybase, Informix, MS SQL Server	XA driver support limited to DB2, Oracle, Sybase
JavaMail 1.1	yes	yes
Java Transaction API 1.0	two-phase commit supported with above DBs plus WebSphere MQ, Encina, CICS	requires EJB 2.0 (beta) for two-phase commit
RMI-IIOP 1.0	yes	yes, but has poor performance (T3 recommended and is default setting)

WebSphere Technology for Developers v5.0: First to J2EE v1.3 Certification





J2EE v1.3 Specification	IBM Web Technology for Developers	BEA WLS v7 beta
J2SE 1.3 (JDK)	yes	yes
EJB 2.0	yes	yes
JSP 1.2	yes	yes
Servlet 2.3	yes	yes
JNDI 1.2	yes	yes
JMS 1.0	yes (uses lightweight MQSeries for native support)	yes
JDBC 2.0	yes	yes
JavaMail 1.2	yes	yes
Java Transaction API 1.0	yes	yes
RMI-IIOP 1.0	yes	yes
JAXP 1.1	yes	yes
JAAS 1.0	yes	yes
J2EE CA 1.0	yes	yes

WebSphere Application Server: A More Complete J2EE Platform

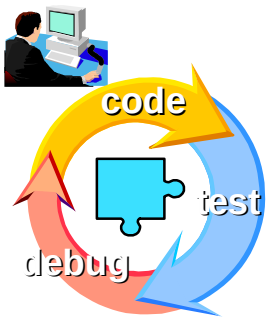
Feature Set	WAS v4.0 AEs	WAS v4.0 AE	WAS v4.0 EE	BEA WLS v6.1	Oracle 9iAS R1 EE
Java technology	☑	☑	☑	☐	☐
Full J2EE v1.2 support	☑	☑	☑	☐	☐
Connection mgmt/pool.	☑	☑	☑	☐	☐
XML parsing	☑	☑	☑	☐	☐
Expanded DB support	☑	☑	☑	☐	
Web services support	☑	☑	☑	☐	
Integrated HTTP server	☑	☑	☑	native only	☐
Directory services		☑	☑		☐
Application-level WLM		☑	☑	☐	☐
Clustering/cloning		☑	☑	☐	☐
Dynamic caching		☑	☑	JSP taglib only	☐
Distributed security		☑	☑		☐
Message Beans			JMS Listener	☐	
Business Rule Beans			☑		
Bi-dir CORBA interop.			☑		
ActiveX bridge			☑		
C/C++ asset integration			☑		
Globalization			☑		
Shared work areas			☑		

WAS also runs on more platforms *(Windows, Linux, UNIX, OS/400, zOS)*

Tools Productivity

WebSphere Studio Product Packaging Follows Role-Based Development

Java Programmer

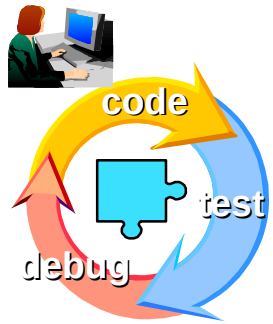


WebSphere Studio Application Developer (WSAD)

- Java IDE
- EJB Generator wizards
- DB Schema inspection
- Access Beans generation
- Unit Test Environment

Now available

Web Programmer



WebSphere Studio Site Developer (WSSD)

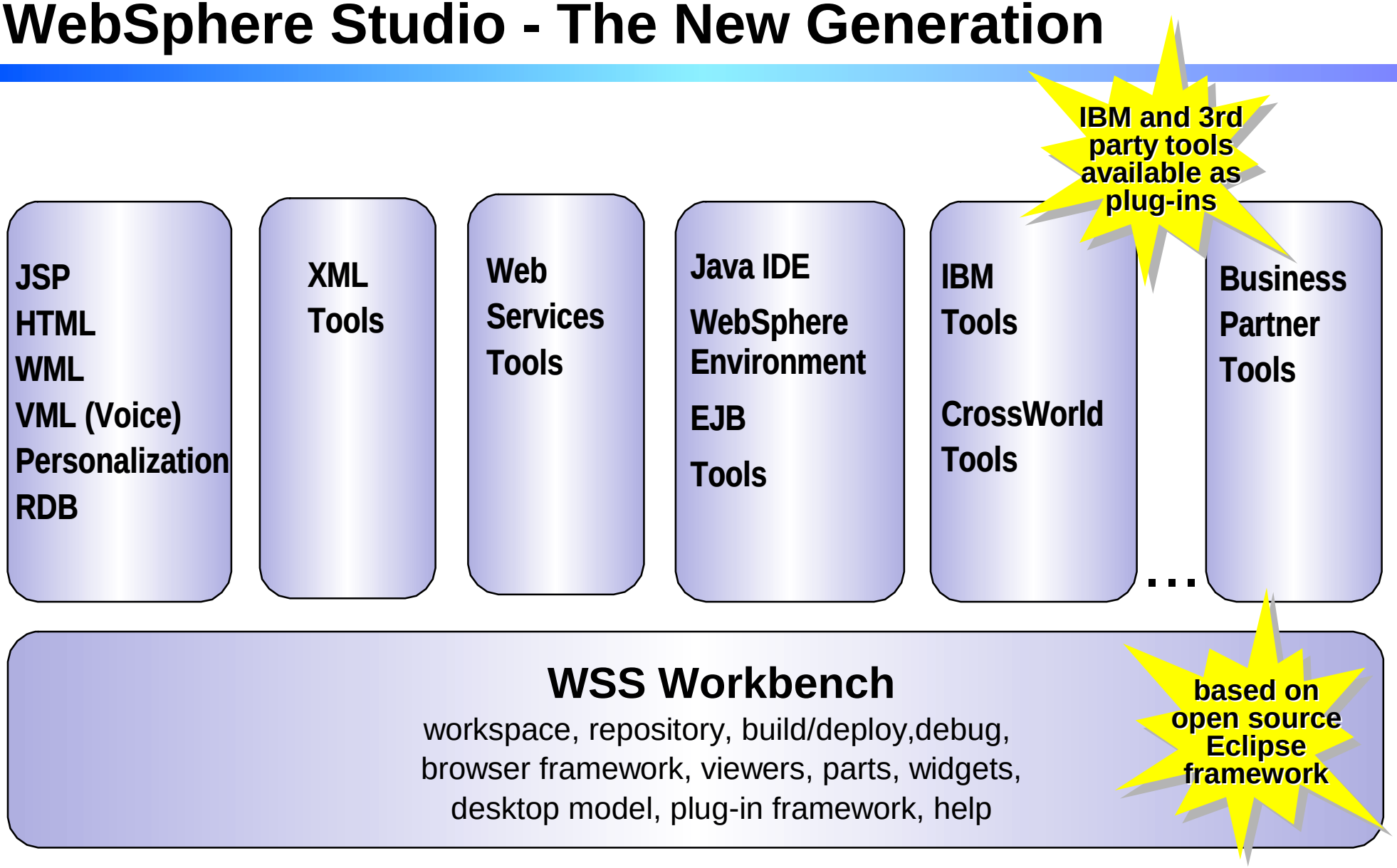
- WYSIWYG Editing JSP, HTML
- XML Tools
- Web Sevices consumption
- Unit Test Environment

Now available in beta!

Plus:

- *WebSphere Studio Workbench 1.0*
- *Additional IBM Plug-ins*
- *Additional Business Partner Plug-ins*

WebSphere Studio - The New Generation



- Developers can use their preferred tools from multiple vendors and be sure that they will all work together seamlessly

Use of Perspectives, Integrated Wizards Mean Greater Developer Productivity

Java

Create project,package,class,interface,documentation

Web

Create web project,servlet,HTML file, JSP file, CSS file, JavaBeans web pages, Database web page

EJB

Create an EJB project, EJB, Access Bean

Web Services

Create web services client, web service

XML

Create an XML file, XML schema, DTD, XML to XML mapping,

RDB to XML mapping, XML from SQL query

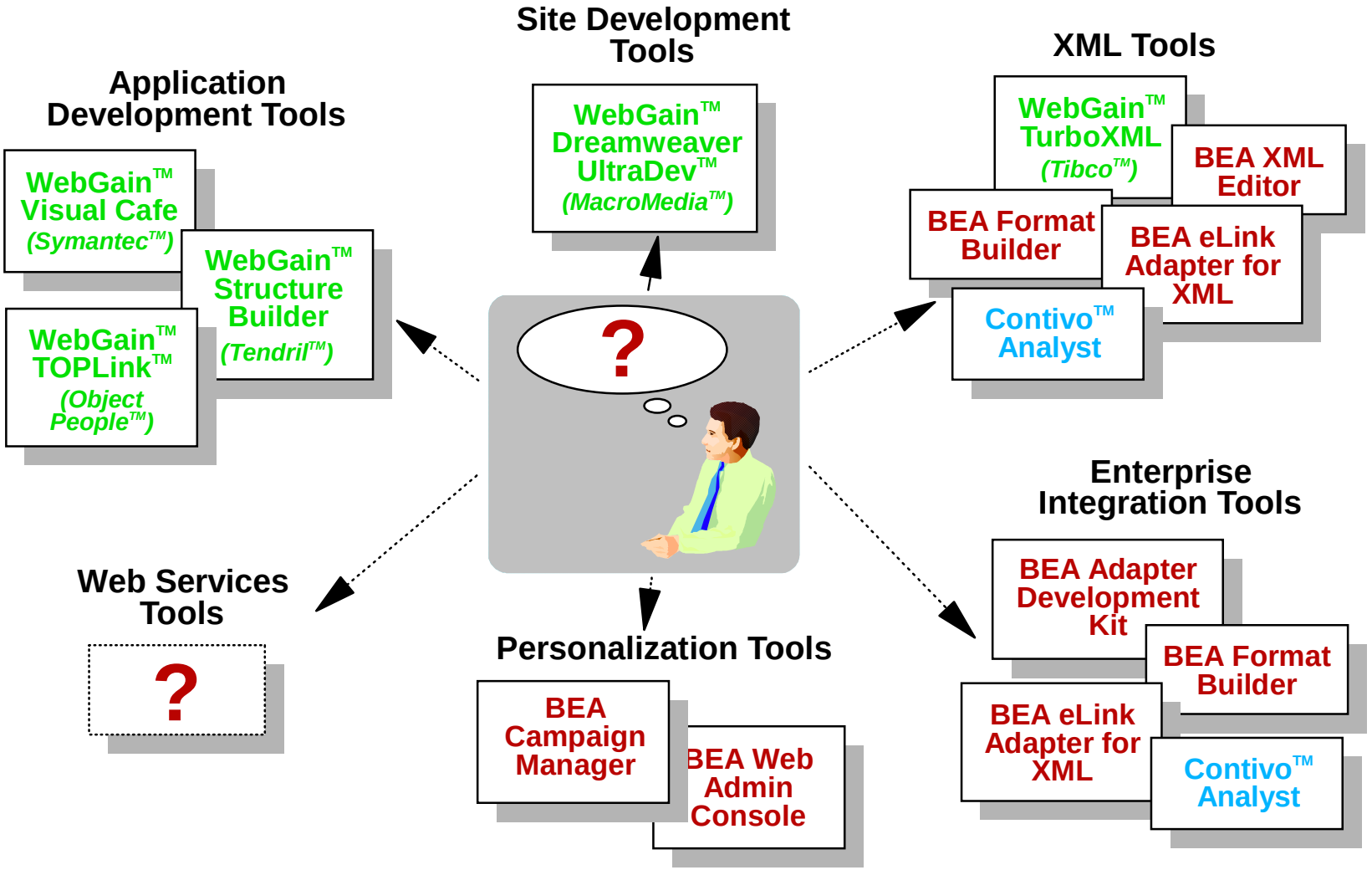
Example Projects

Web, EJB, and XML examples

JMS and J2C (coming soon!)

WebSphere Studio Application Developer

BEA Tools Strategy

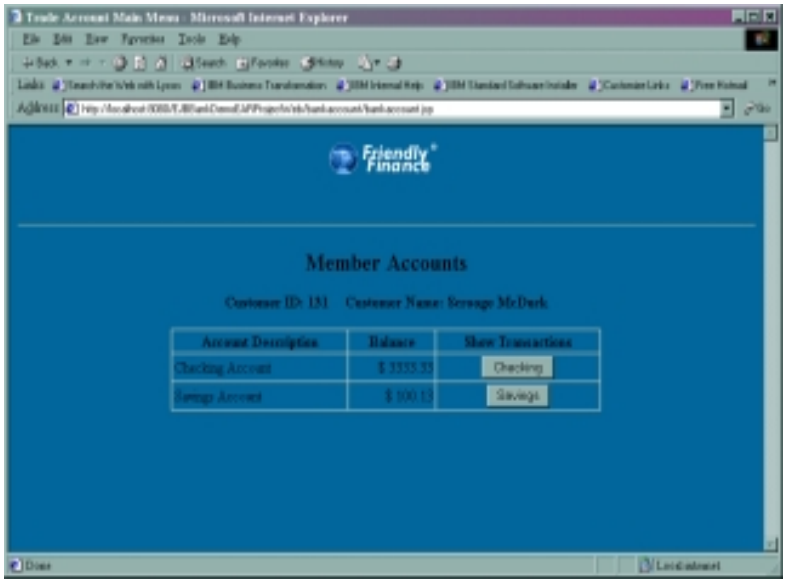


- Aggregation of different vendor tools via acquisition or partnering
- Incomplete and overlapping functionality
- Little to no integration between toolsets
- Large and continuous learning curve

Be Up to Twice as Productive with WebSphere

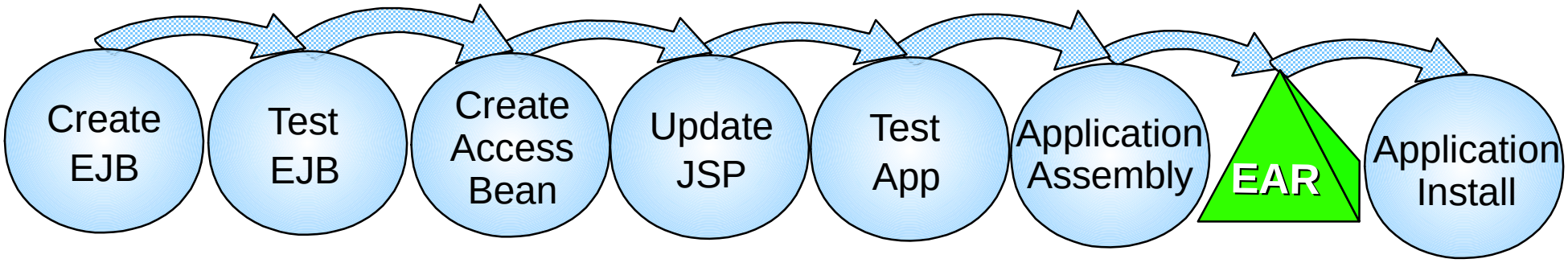
- WebSphere Studio Family
  - Integrated, comprehensive development environment for J2EE, XML, and Web Services standards
  - Wizards, Smartguides, and other code generators
  - Test utilities for unit testing
  - Integrated test, incremental compile, and debug for application testing
- WebSphere Application Server
  - EAR assembly tool
  - Easy Application deployment

Development Tasks

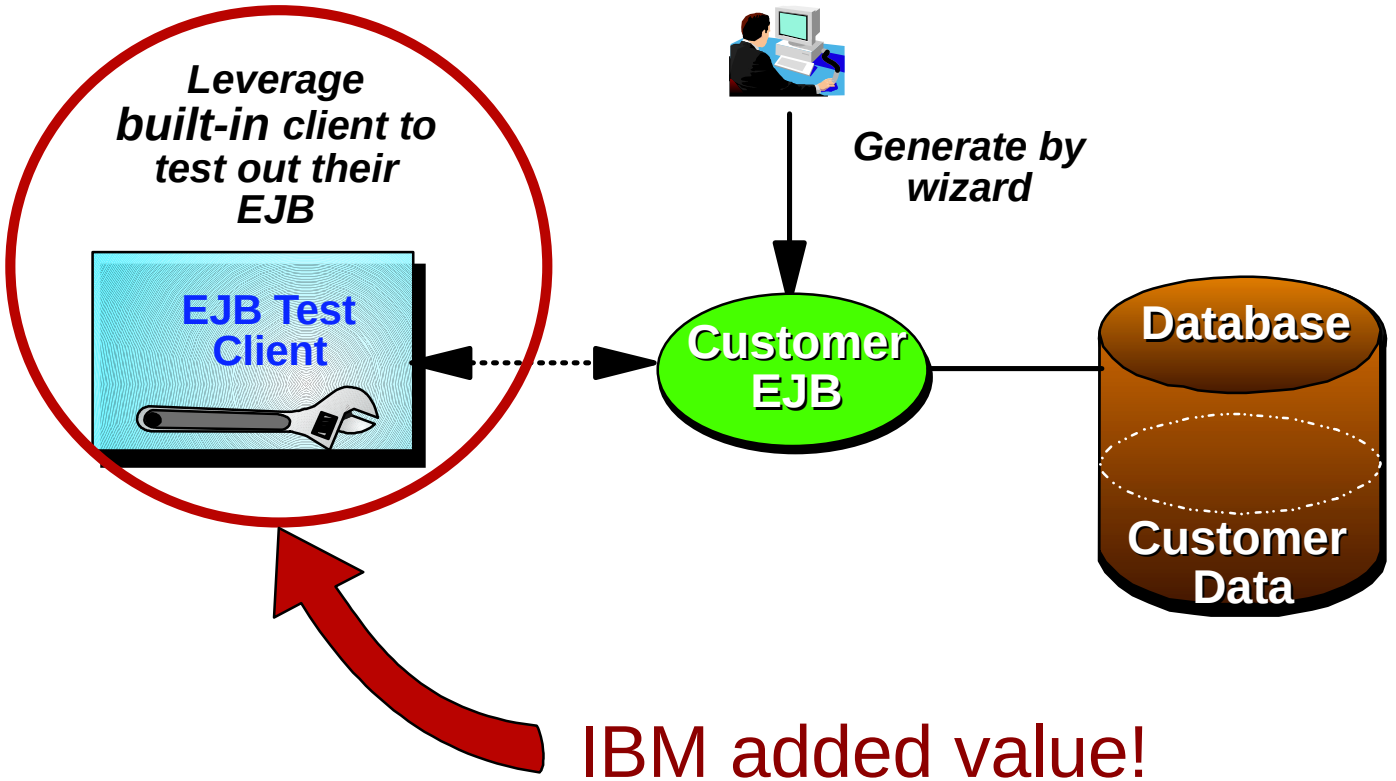


Friendly Finance Account Management

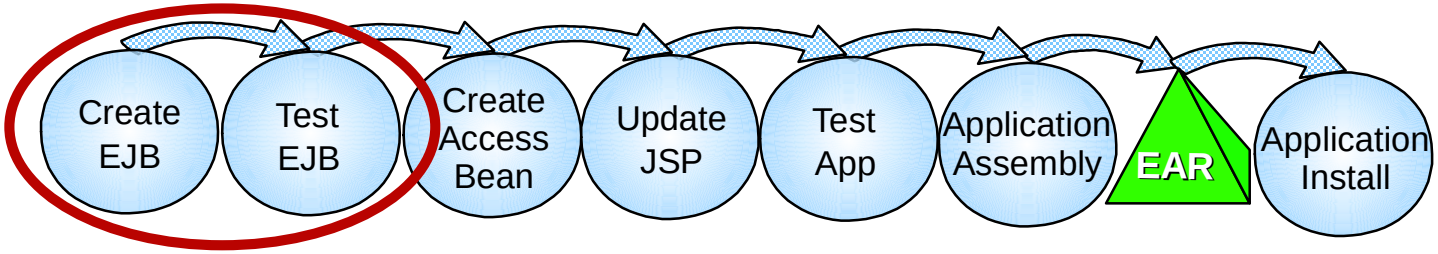
- *Login/logout*
- *Savings Account Balance*
- *Checking Account Balance*
- *Transaction History*



Generating and Testing EJB's with WebSphere



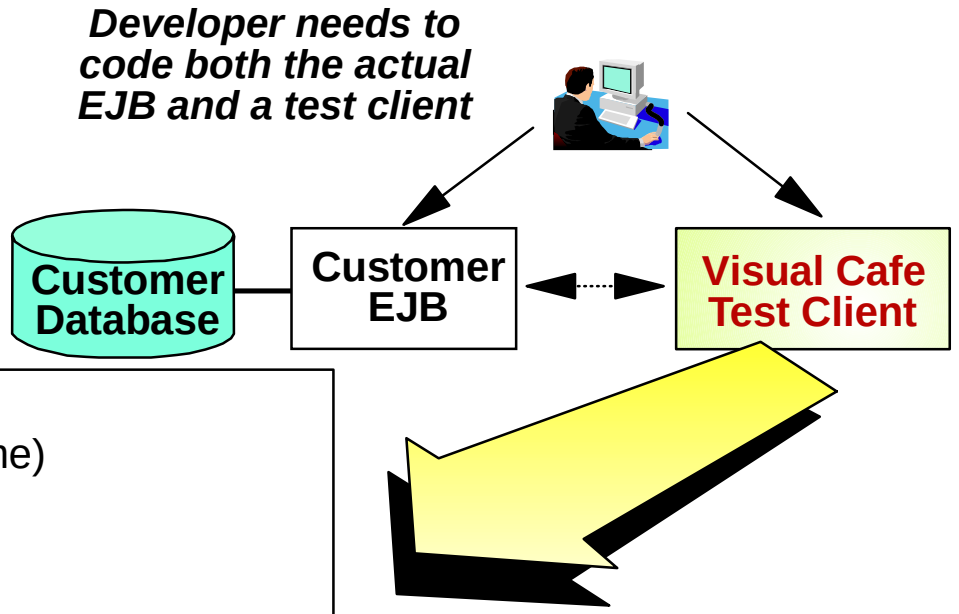
Development Tasks
Demo 1



- Show WebSphere Studio Application Developer
  - Perspectives - Help, J2EE, etc
- EJB
  - Generated by wizard from DB table
- Built-in WS 4.0 Test Environment
  - Test EJB using built-in intelligent test client

WebGain - What does it do?

WebGain offers minimal client skeleton.




```
try
{
 Context ctx = getInitialContext();
  CustomerHome home = (CustomerHome)
      ctx.lookup("Customer");
  Customer theEJB = null;
  try
  {
    CustomerKey primaryKey = new CustomerKey();
    // to do - initialize primary key fields
    theEJB = (Customer)
      home.findByPrimaryKey(primaryKey);
    // to do - call business methods
  }
```

add your own code here

add your own code here

EJB Client code "snippet" produced by Visual Cafe

WebSphere Tools - Test Environment

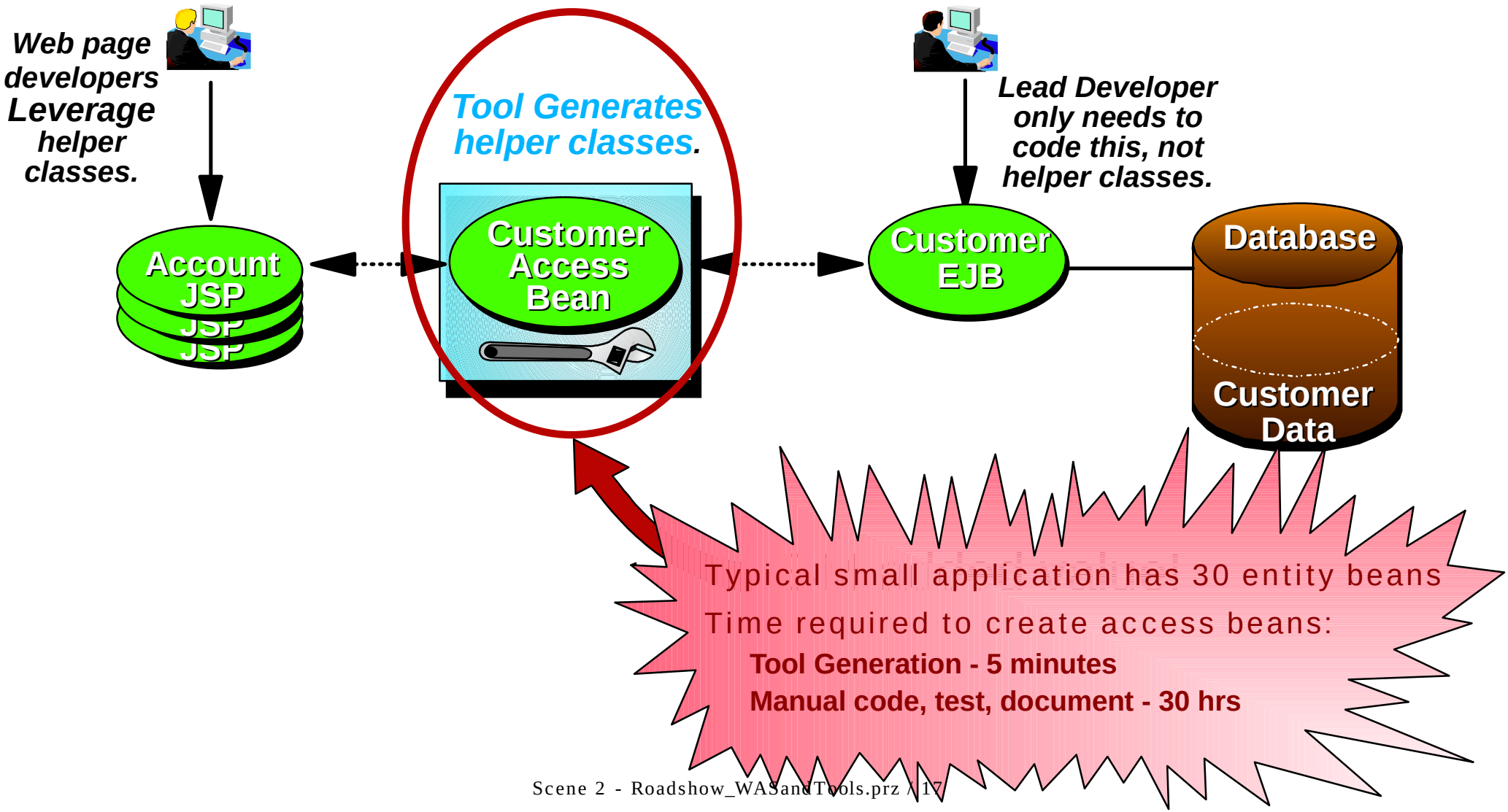
Scenario: Modify code in a J2EE application running in an Application Server

WebSphere Studio AD	*WebGain/WebLogic*
1. Start Debugger 2. Change Code 3. Incremental Compile 4. Continue application	1. Start Debugger 2. Change Code 3. Stop Debugger 4. Regenerate EJB 5. Recompile EJB 6. Redeploy EJB 7. Restart application (repeat debug steps to get to the same breakpoint)

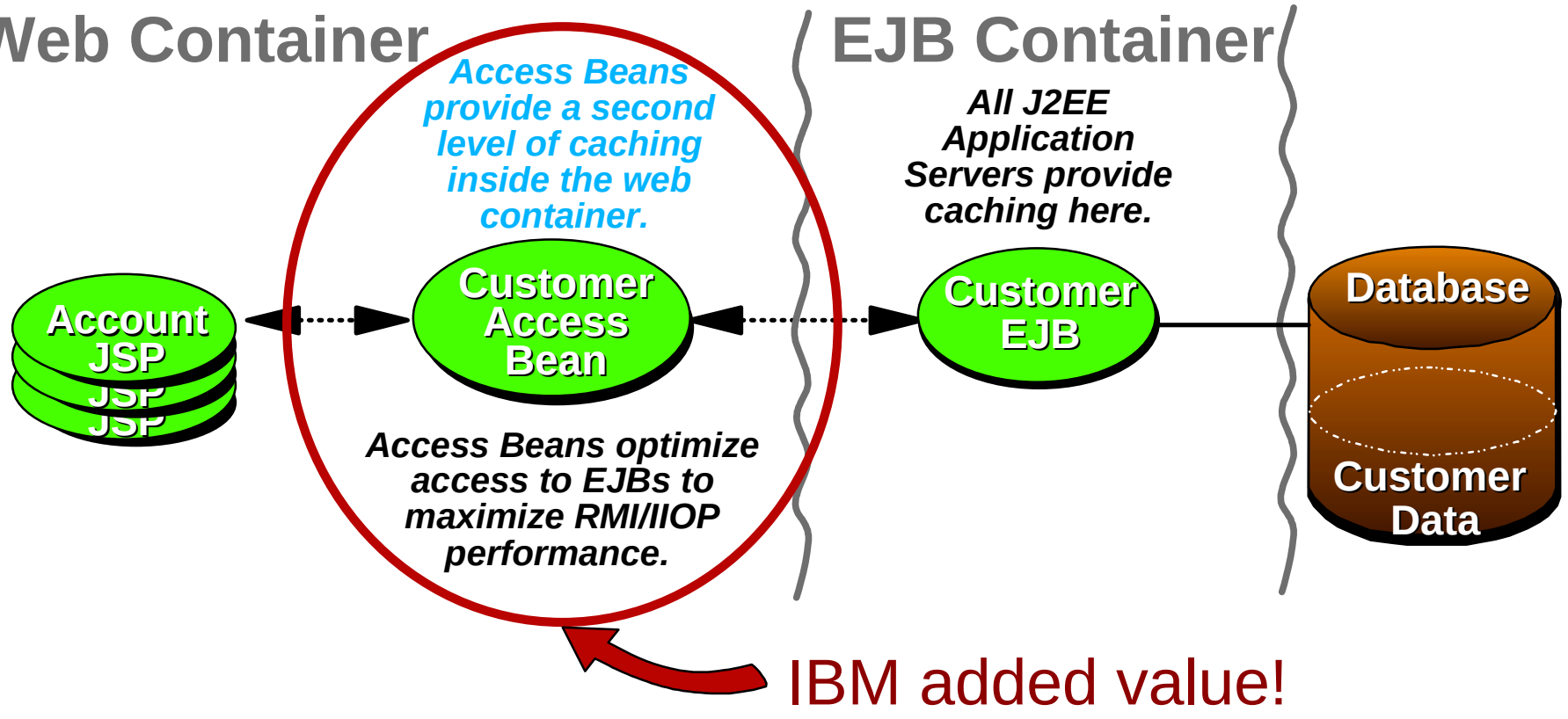
Time saved:
120 minutes per change task

WebSphere Access Beans

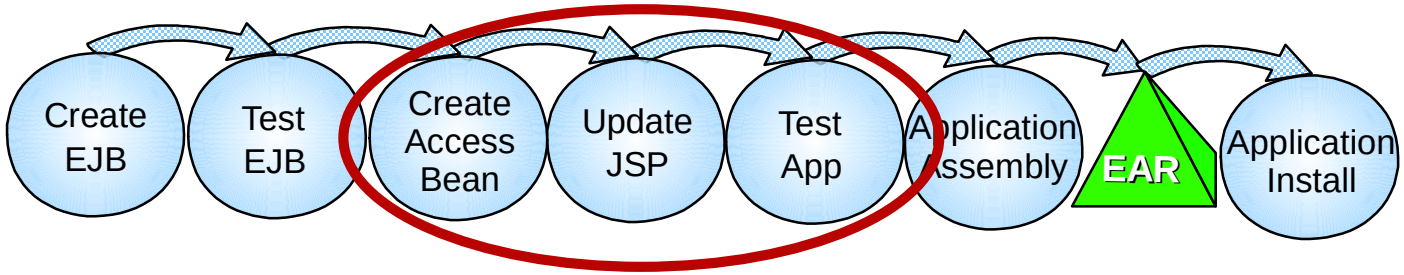
Access Beans Simplify Interfaces



Access Beans Improve Performance



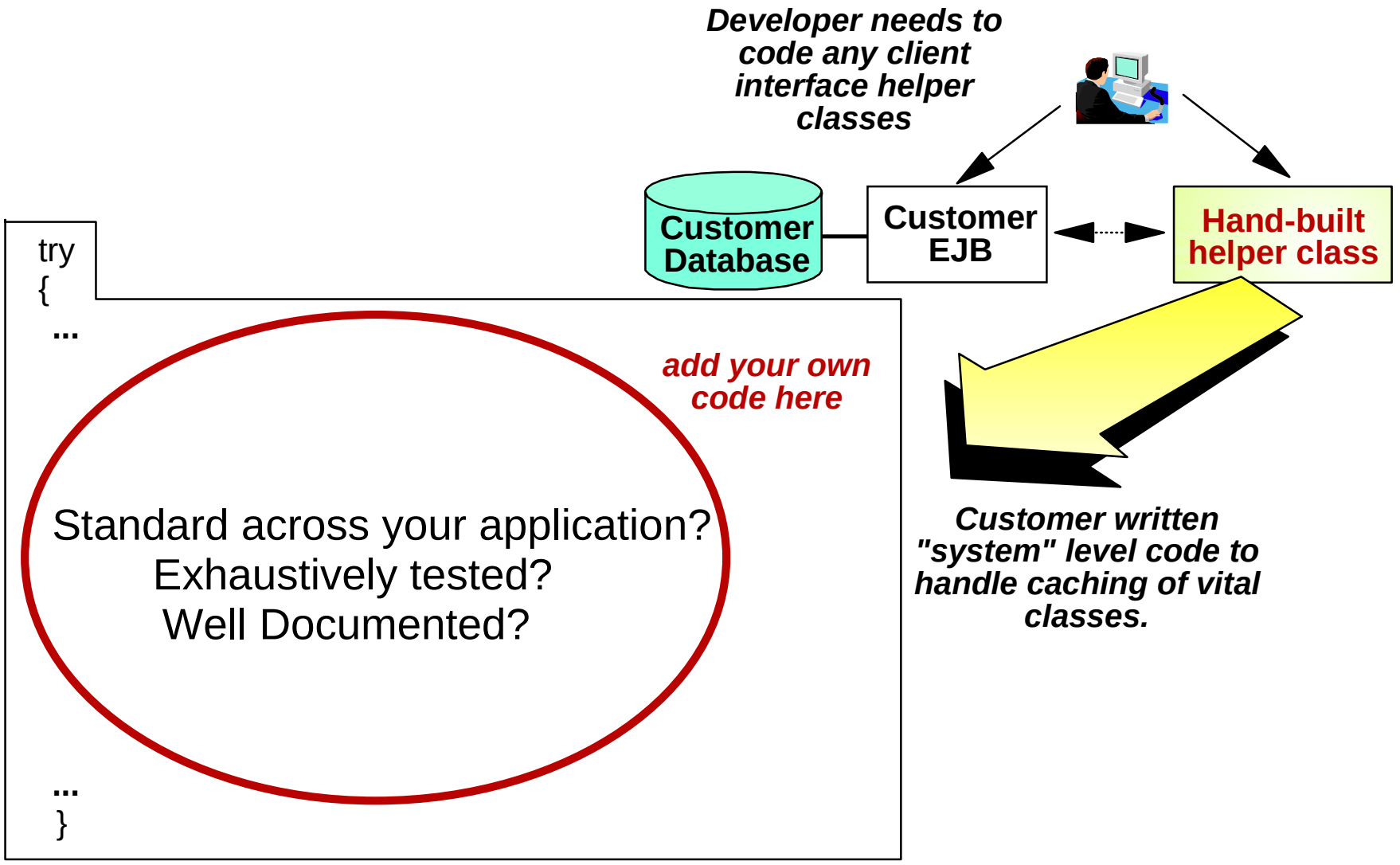
Development Tasks
Demo 2



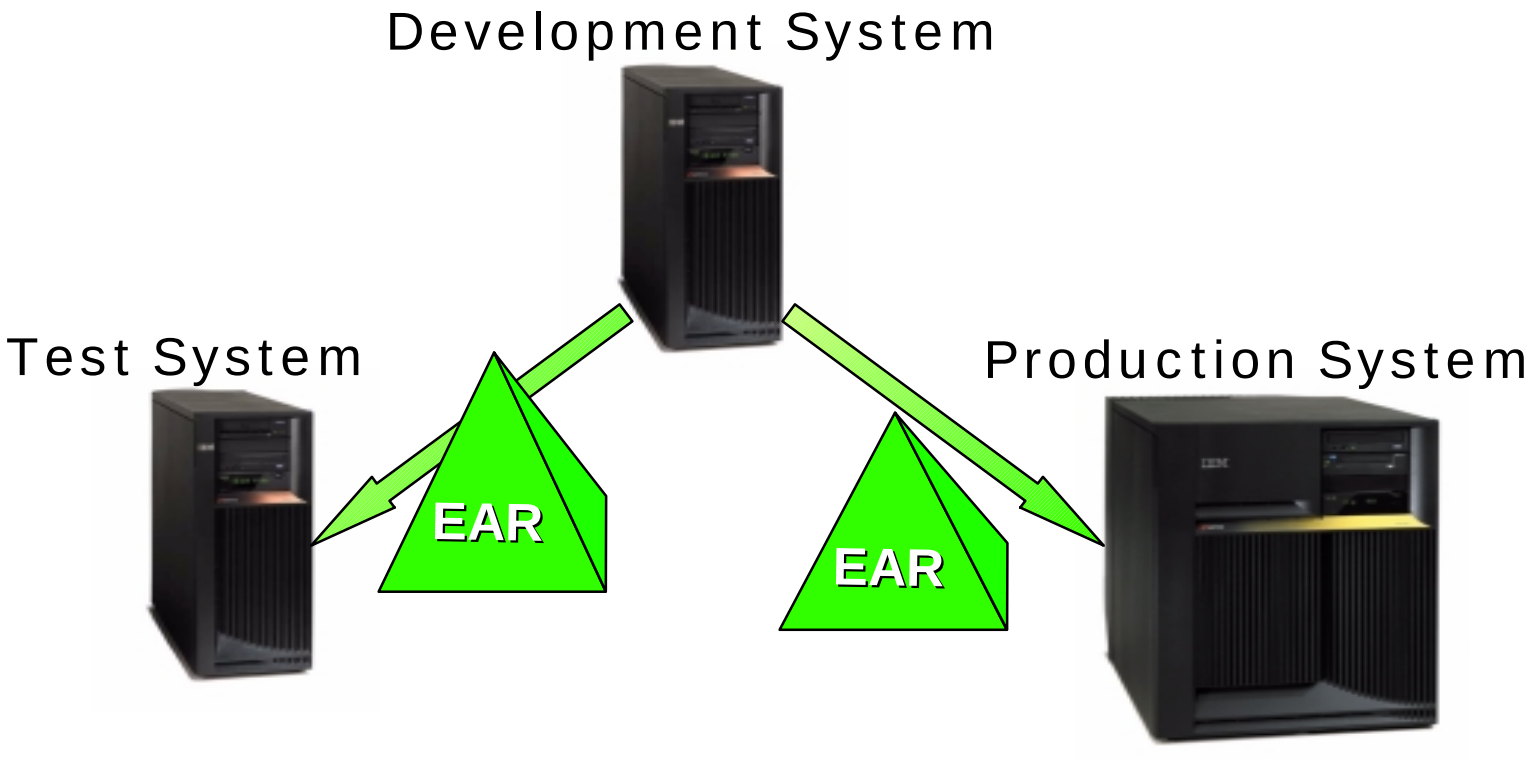
- Simple Access Bean Creation
- JSP Editor
- Test Environment & Built-in Browser

WebGain - What does it do?

WebGain offers no assistance for advanced caching



Application Assembly

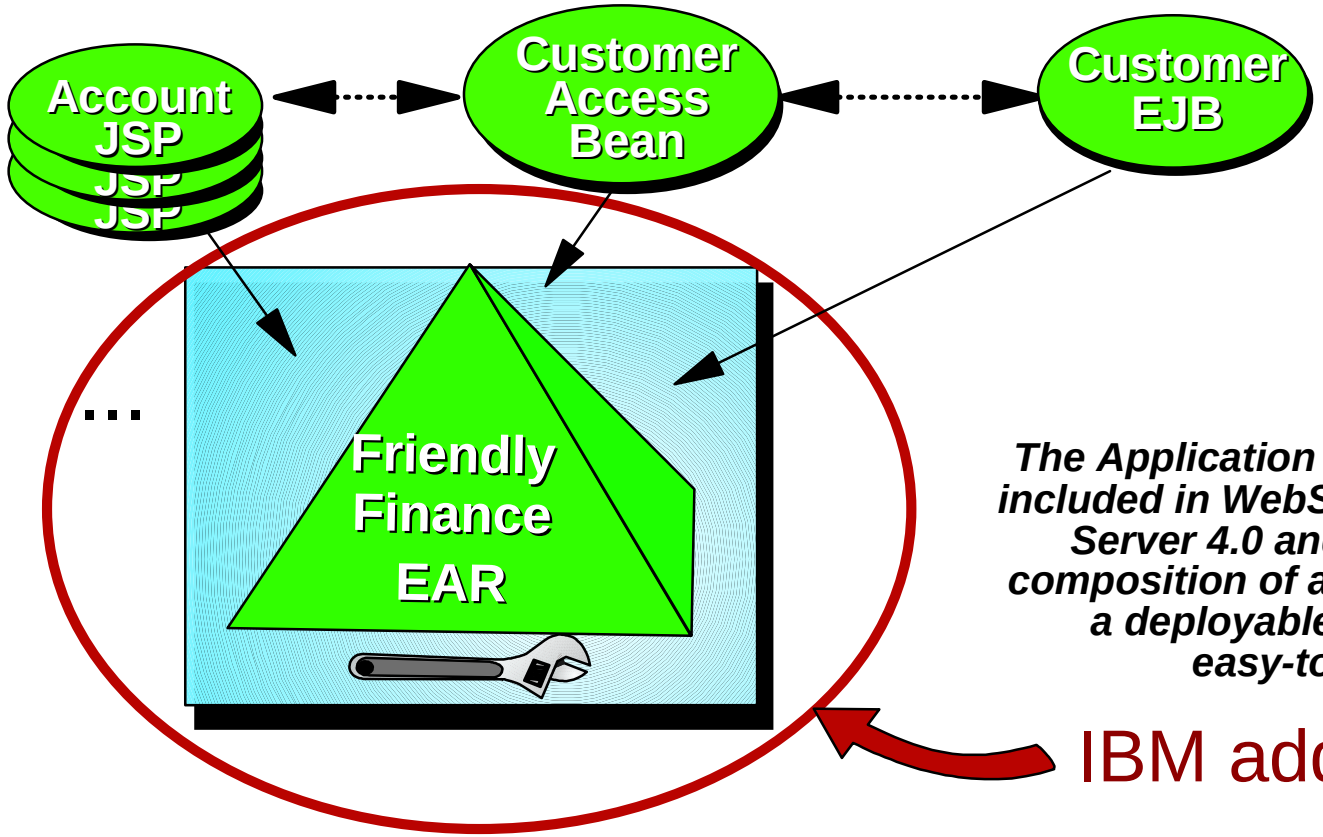


- An EAR file (Enterprise Application Archive) is the J2EE standard way to package applications
- An EAR file can be installed onto a server or group of servers.
- The overall process of taking an application from development to installed is called deployment

Assembling EAR Files

Preparing Enterprise Applications for repeatable deployment

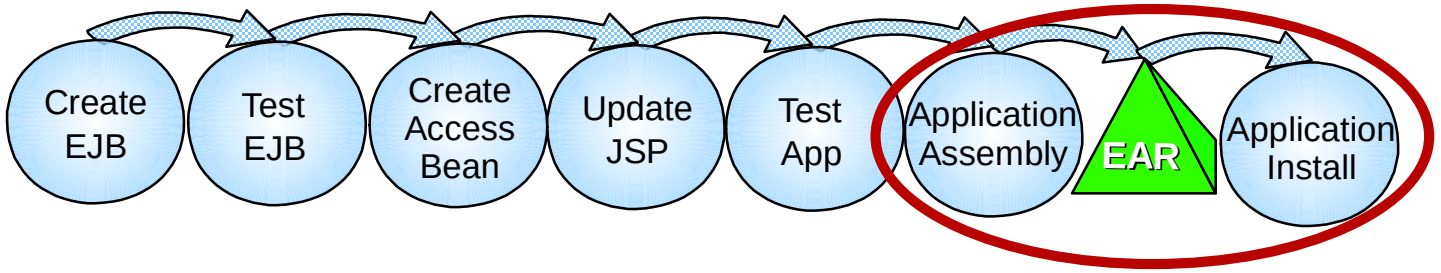
WAS Application Assembly Tool



The Application Assembly Tool is included in WebSphere Application Server 4.0 and supports the composition of an application into a deployable EAR with an easy-to-use UI.

IBM added value!

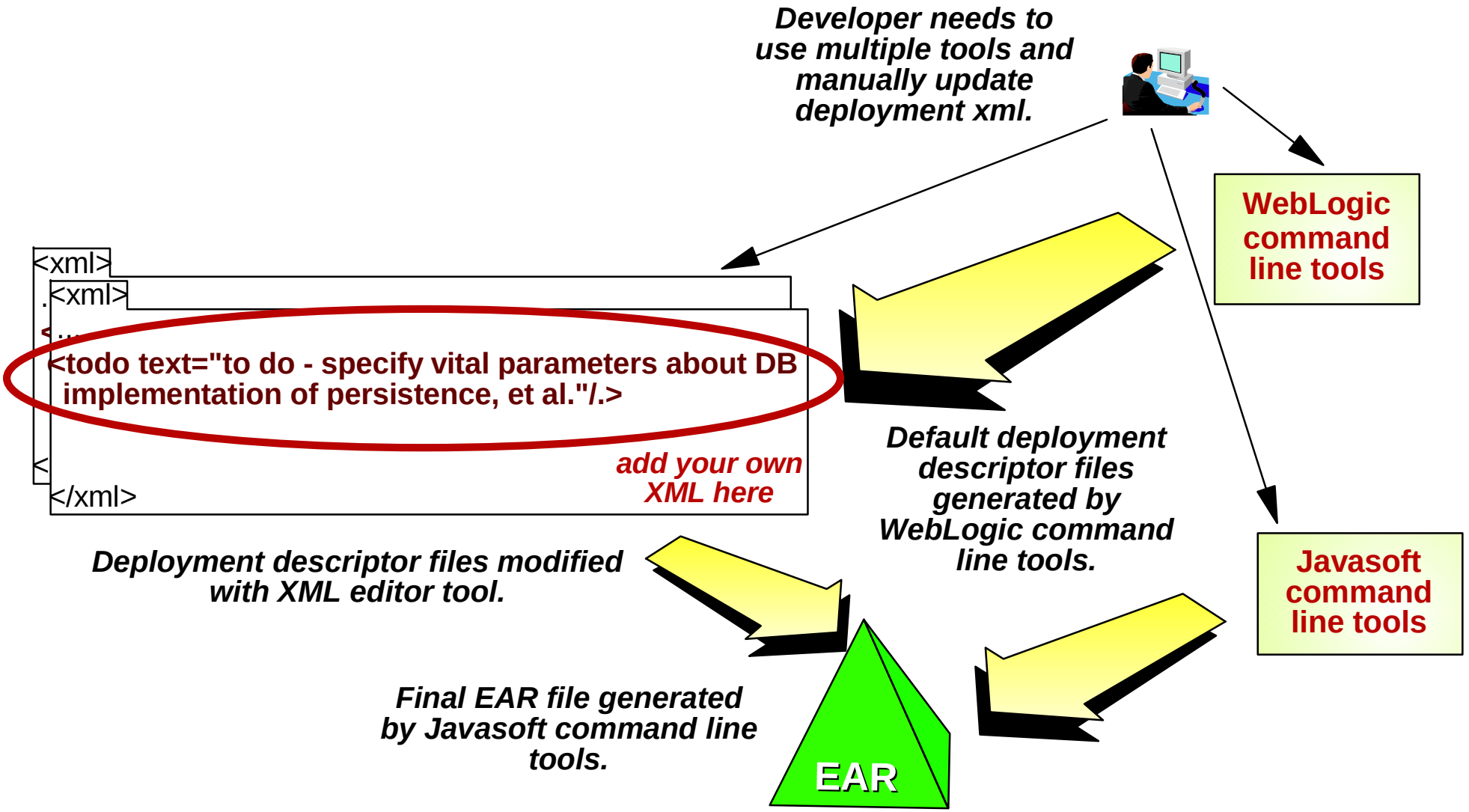
Development Tasks
Demo 3



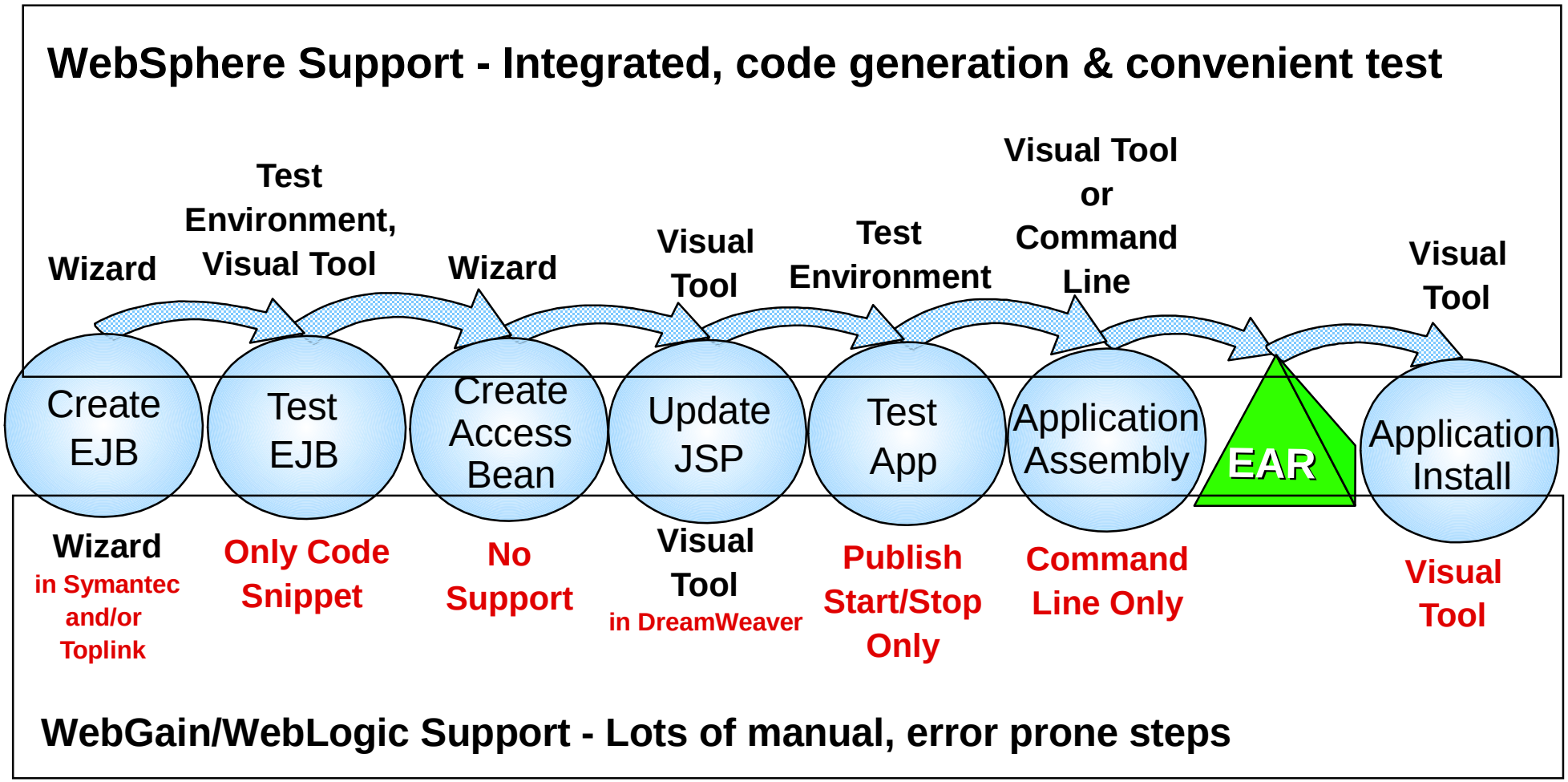
- Application Assembly Tool
- EJB Module Wizard
- Web Module Wizard
- Specify Deployment Parameters
- Save EAR File
- Application Install Wizard
- Select Server Groups for Modules

WebLogic - What does it do?

WebLogic support for EARs is **cumbersome and manual**



Support for Development tasks



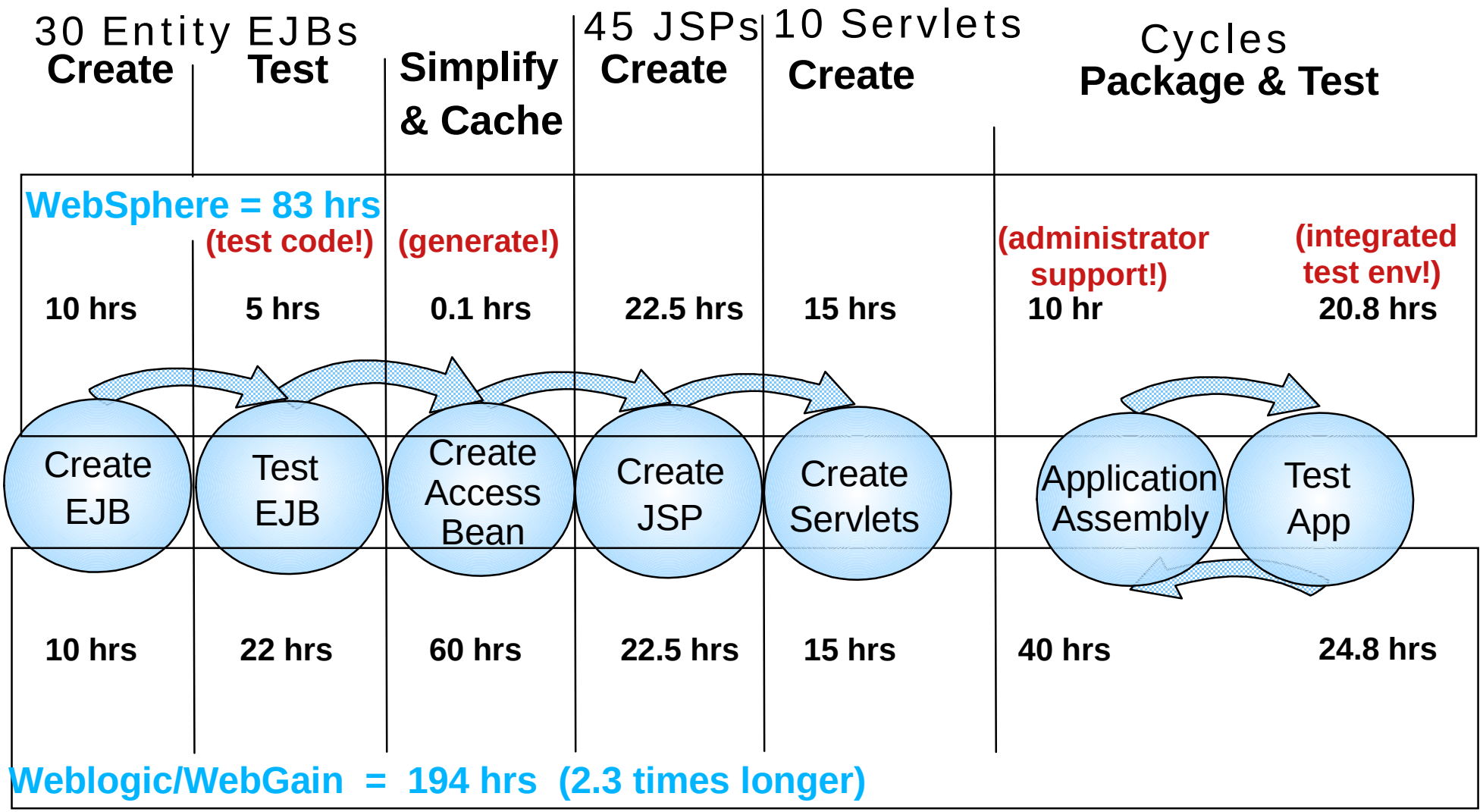
Be Up to Twice As Productive with WebSphere Tools

Tooling Feature	WebSphere Studio	WebGain™	JBuilder™/ JDeveloper™	Productivity Advantage
"Wizard" for generating EJB code	**yes**	**yes (VisualCafe™)**	**yes**	**same**
"Universal" test client for testing EJB	**yes**	**no**	**no**	**30 min/EJB**
Incremental compile (during devlpmnt & test)	**yes**	**no**	**no**	**up to 120 min/task**
Dynamic reload (during debugging session)	**yes**	**no**	**JSP only**	**up to 5 min per restart**
"Wizard" for generating JavaBean wrapper for EJB client for usage in JSP	**yes (Access Bean)**	**no**	**no**	**up to 60 min/EJB**
Local caching option to minimize remote fetches	**yes (Access Bean)**	**no**	**yes, but more difficult**	**up to 60 min/EJB**
Bean introspection when building JSP pages	**yes**	**yes (Dreamweaver™)**	**yes**	**same**
Enterprise Application Assembly GUI	**yes (WAS Utilities)**	**no**	**archive wizard only**	**up to 30 hours per project**

Support for Development tasks

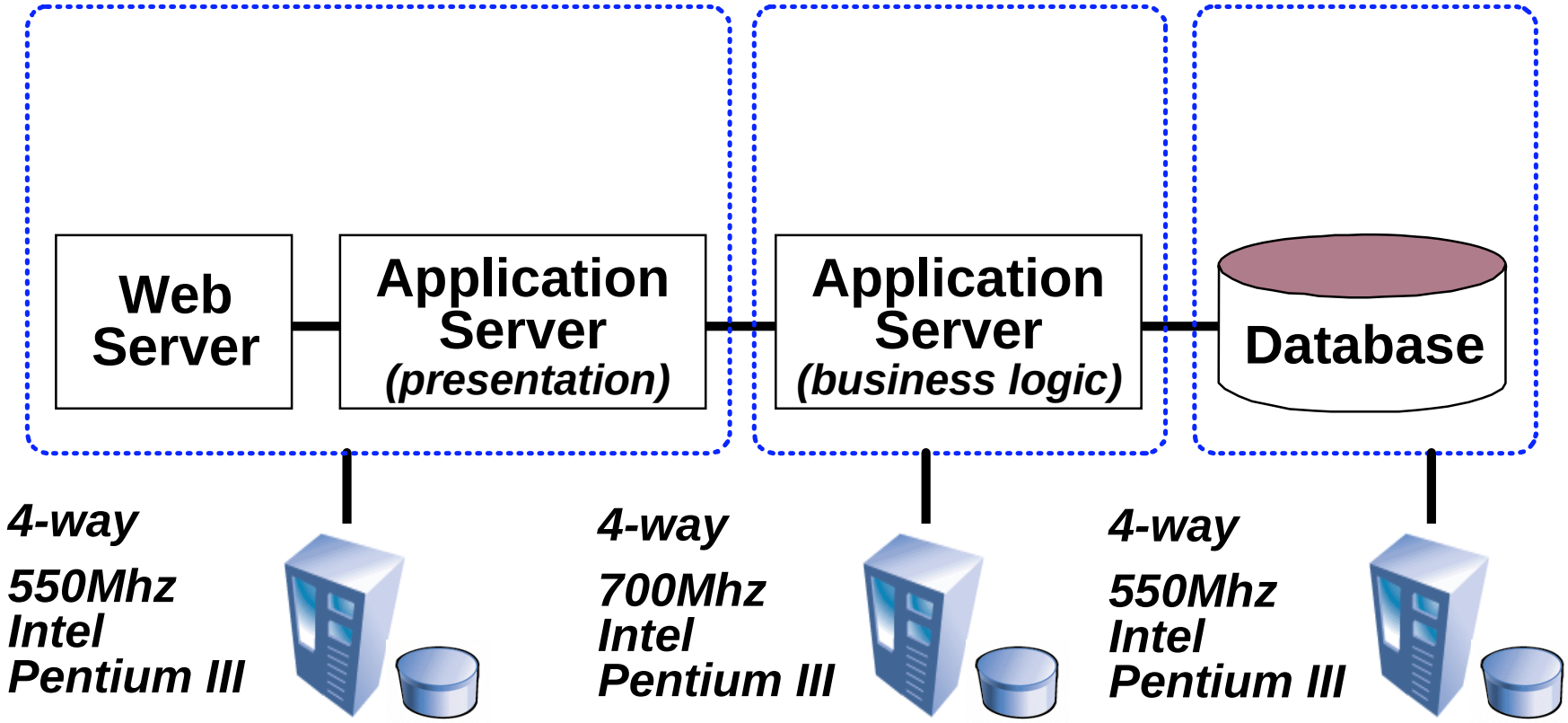
What sort of boost could a project get from IBM tools?

Example conversion of a midsize C++ application to J2EE.

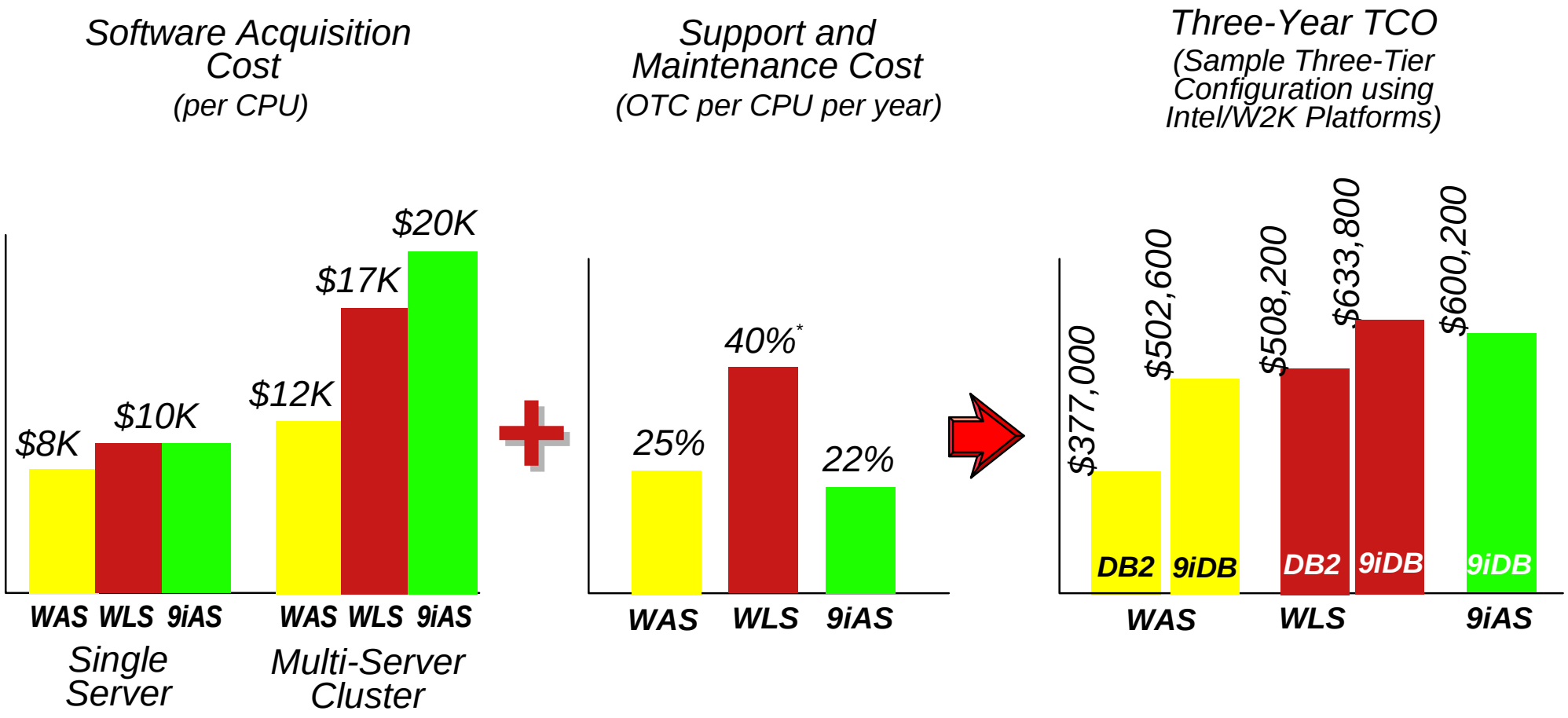


Total Cost of Computing (TCO) Comparisons

Three-Tier Configuration Example



WebSphere Offers Lower Total Cost of Ownership



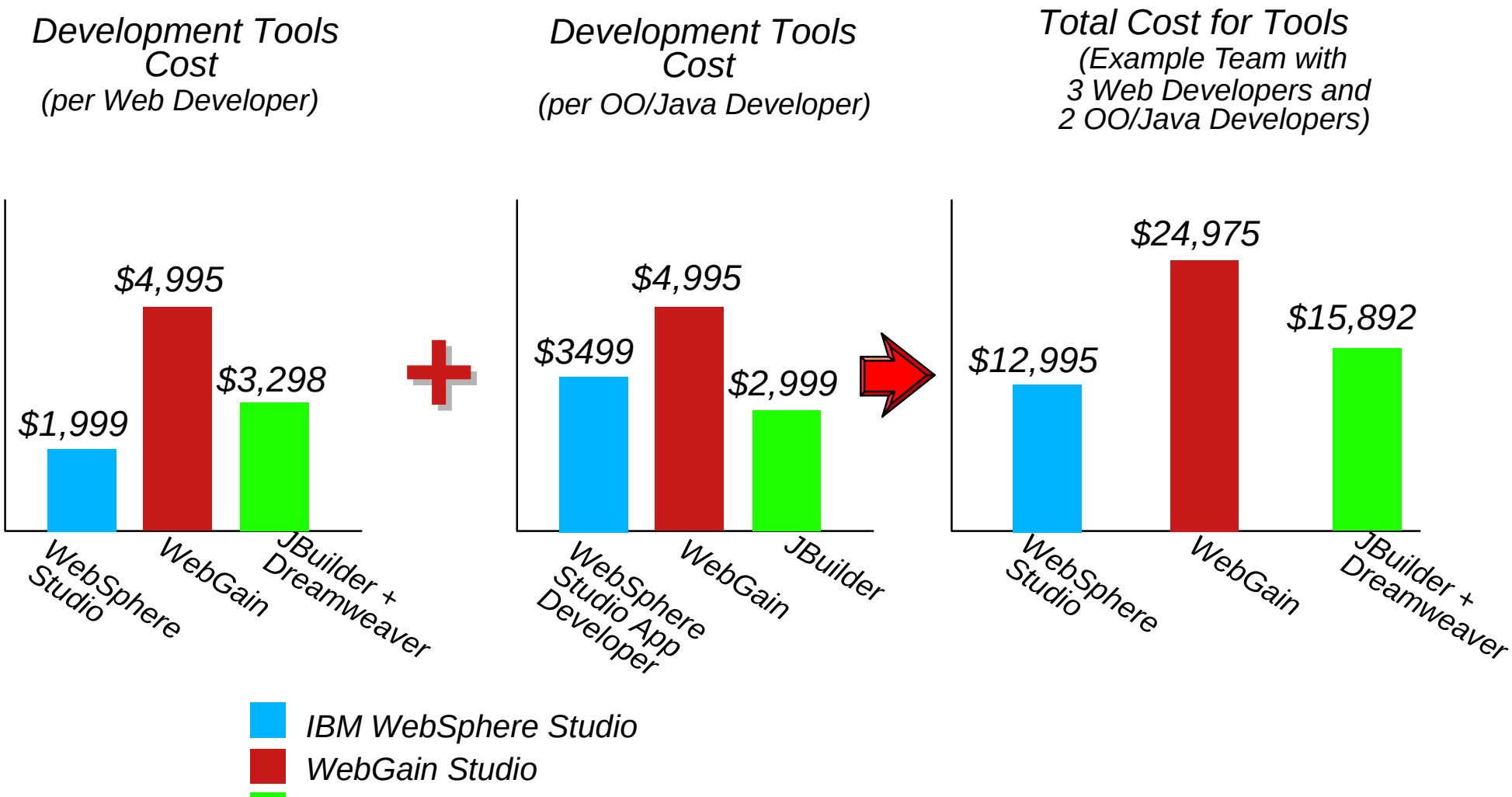
IBM WAS AE v4.0

BEA WLS v6.1

Oracle 9iAS R2

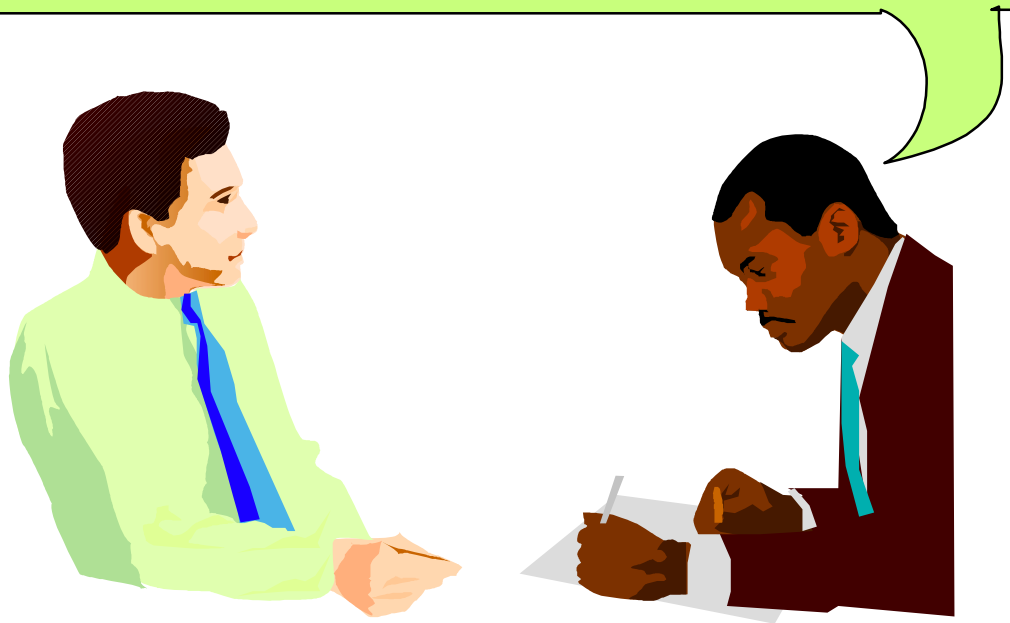
* *Estimate; 20% for support (actual) + 20% for maintenance/upgrades; BEA offers no subscription-based maintenance plan; upgrades purchased separately*

Lower Total Cost for Tools



WebSphere Advantages

- ✓ Broader and deeper support of standards
- ✓ Twice as productive
- ✓ Lower Cost



IBM CIO

A Question for BEA ...

How can BEA succeed as a strategic platform vendor without a tools strategy ?

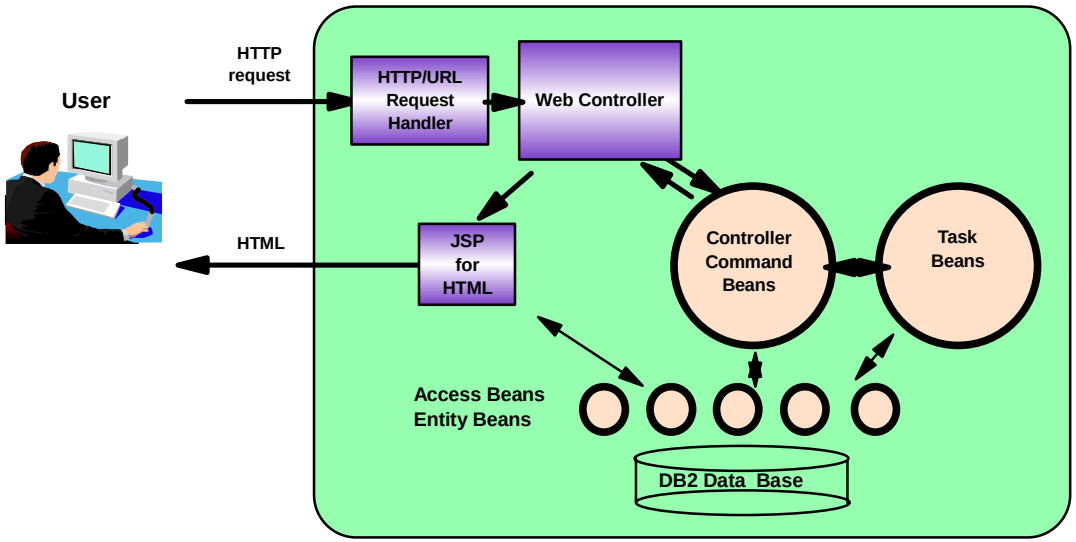
IBM

Thank You!

WebSphere Commerce Suite V5.1

A case study ...

Large sophisticated application
Rewrite existing C++ implementation as J2EE application
Used WebSphere Studio and Visual Age for Java
Completed in 9 months with 150 person development team (10KLOC/PY)
Performance was 1.8 times better than old version
1.1 million lines of code - *44% generated by VAJ*



456 Java Server Pages

200 Controller Command Beans

239 Data Base Tables

2151 Columns

Three-Tier Example: Configuration Details

Solution Component	IBM Acquisition Cost	IBM Maintenance/ Support Cost (3 year)	BEA Acquisition Cost	BEA Maintenance/ Support Cost (3 year)
Web Server	0	0	0	0
Application Server (presentation services)	$ 12,000 x 4 CPUs	$ 3,000 x 4 CPUs x 3 years (support & maint.)	$ 17,000 x 4 CPUs	$ 3,400 x 4 CPUs x 3 years (support) $ 3,400 x 4 CPUs x 3 years (maint.)
Tier 1 Svr H/W	~$ 20,000	~$ 2,000 (IOR - 3 years)	~$ 20,000	~$ 2,000 (IOR - 3 years)
Application Server (business logic)	$ 12,000 x 4 CPUs	$ 3,000 x 4 CPUs x 3 years	$ 17,000 x 4 CPUs	$ 3,400 x 4 CPUs x 3 years (support) $ 3,400 x 4 CPUs x 3 years (maint.)
Tier 2 Svr H/W	~$ 23,000	~$ 2,000	~$ 23,000	~$ 2,000
Database Server (IBM DB2)	$ 20,000 x 4 CPUs	$ 5,000 x 4 CPUs x 3 years (support & maint.)	$ 20,000 x 4 CPUs	$ 5,000 x 4 CPUs x 3 years (support & maint.)
Tier 3 Svr H/W	~$ 20,000	~$ 2,000	~$ 20,000	~$ 2,000
SUB-TOTAL	$ 239,000	$ 138,000	$ 279,000	$ 229,200
TOTAL	***$ 377,000***		***$ 508,200***	

Cost of Support is a Differentiator

IBM Support:
5% of OTC
(5x9)

IBM Maintenance:
20% of OTC
for upgrades as needed

25% of OTC
times 3 years

BEA Support:
20% of OTC
(5x12)

BEA Maintenance:
None - Pay for upgrade
Assume 20% of OTC
(ie. an 80% discount for each annual upgrade)

40% of OTC
times 3 years

WAS+DB2 costs 74%-93% of WLS+DB2

Configuration	IBM Price	BEA Price	IBM / BEA
Three-Tier *Web Server, Presentation* *Business Logic* *DB*	$ 377,000	$ 508,200	IBM 74% the cost of BEA
Two-Tier *Web Server, Application* *DB*	$ 246,000	$ 278,000	89%
Large SMP (12-way Sun)	$ 988,000	$1,084,000	91%
Two-Tier DMZ *Web Server* *Application Server, DB*	$ 483,452	$521,432	93%
Small SMP *(4-way Intel)*	$ 221,000	$ 253,000	87%

- *IBM pricing ranges from 74% to 93% the cost of BEA*

WAS+DB2 costs 58%-75% of WLS+Oracle

Configuration	IBM Price w/ DB2 UDB	BEA Price w/ Oracle 9i	IBM / BEA
Three-Tier *Web Server, Presentation* *Business Logic* *DB*	$ 377,000	$ 633,800	IBM 59% the cost of BEA
Two-Tier *Web Server, Application* *DB*	$ 246,000	$ 403,600	61%
Large SMP (12-way Sun)	$ 988,000	$1,460,800	68%
Two-Tier DMZ *Web Server* *Application Server, DB*	$ 483,452	$647,032	75%
Small SMP (4-way Intel)	$ 221,000	$ 378,600	58%

- ***BEA WebLogic Server v6.x ships with their own Oracle database drivers (jDrivers)***
  - a third-party DB2 UDB database driver is also included in the WLS package, but has some acknowledged configuration limitations

WebSphere Support for J2EE is Broader and Deeper

- Deeper implementations
  - RMI/IIOP
    - IBM RMI/IIOP better than BEA's
  - JMS (more on this later)
    - Better quality of service and multiplatform support
  - J2EE/CA (more on this later)
    - Better tools & more connectors
  - EAR (Enterprise Application Archive)
    - Application assembly and deployment tools in WAS

WebSphere Support for J2EE is Broader and Deeper

- Broader scope of distributed transactions supported
  - RMI/IIOP,CICS, IMS, TXSeries, Tuxedo, MQ, more XA JDBC drivers

JDBC drivers provided

	Database	Platform	XA
WAS 4.0	DB2	AIX, HP-UX, Linux, Solaris, Windows, OS/400	Yes
	Oracle	AIX, HP-UX, Linux, Solaris, Windows	Yes
	Sybase	AIX, HP-UX, Linux, Solaris, Windows	Yes
	Informix	AIX, HP-UX, Linux, Solaris, Windows	Yes
	MS SQL	Windows	Yes
WLS 6.1	DB2	Windows	Limited*
	Oracle	AIX, HP-UX, Solaris, Windows	Yes
	Sybase	AIX, HP-UX, Solaris, Windows	Yes
	Informix	AIX, HP-UX, Solaris, Windows	No
	MS SQL	Windows	No

* Database server has to be local

Example Team:

Developer Teams

Java Developers (2):
business logic,
model objects

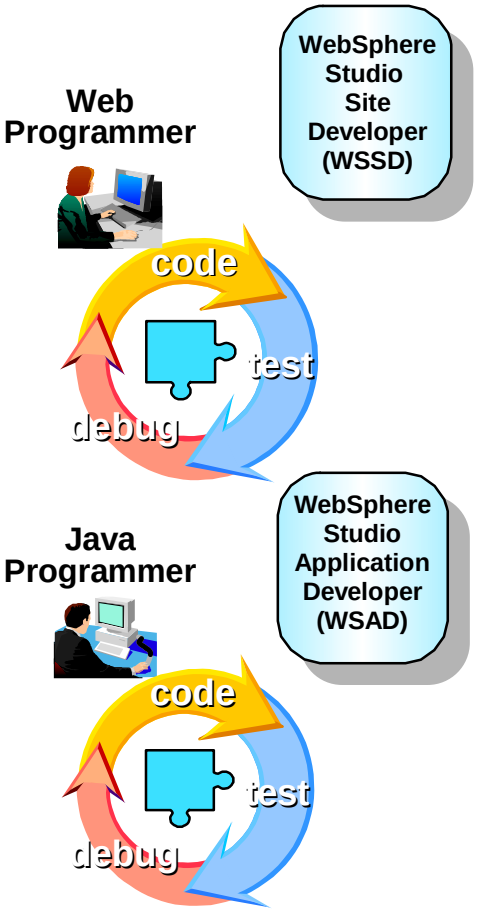
Web Developers (3):
graphic design,
usability

WebSphere Standards Support

- WebSphere Technology for Developers 5.0 beats BEA to J2EE 1.3 compatability
- WebSphere 4.0 supports all of J2EE 1.2 and many features of J2EE 1.3
- J2EE 1.3 is incremental, so you can start development on either version of WebSphere, depending on your needs.
- WebSphere support for J2EE is broader and deeper than BEA's
- WebSphere support for other KEY standards:
  - XML and Web Services standards
  - Corba/OMG
  - Eclipse tool workbench standard

Faster and less costly development

Future WebSphere Tools for Role based Development



WebSphere Studio Advanced Site Developer (WSaSD)

- **WSSD plus:**
  - Web Services generation
  - NL Toolkit

WebSphere Studio Enterprise Integrator (WSEI)

- **WSAD plus**
  - Enterprise Java Connector Builders
  - Microflows tools and support

Plus:

- WebSphere Studio Workbench 2.0
- More IBM Plug-ins
- More Business Partner Plug-ins