

Rapidly Build Java Systems for VSE and VM with IBM VisualAge Generator

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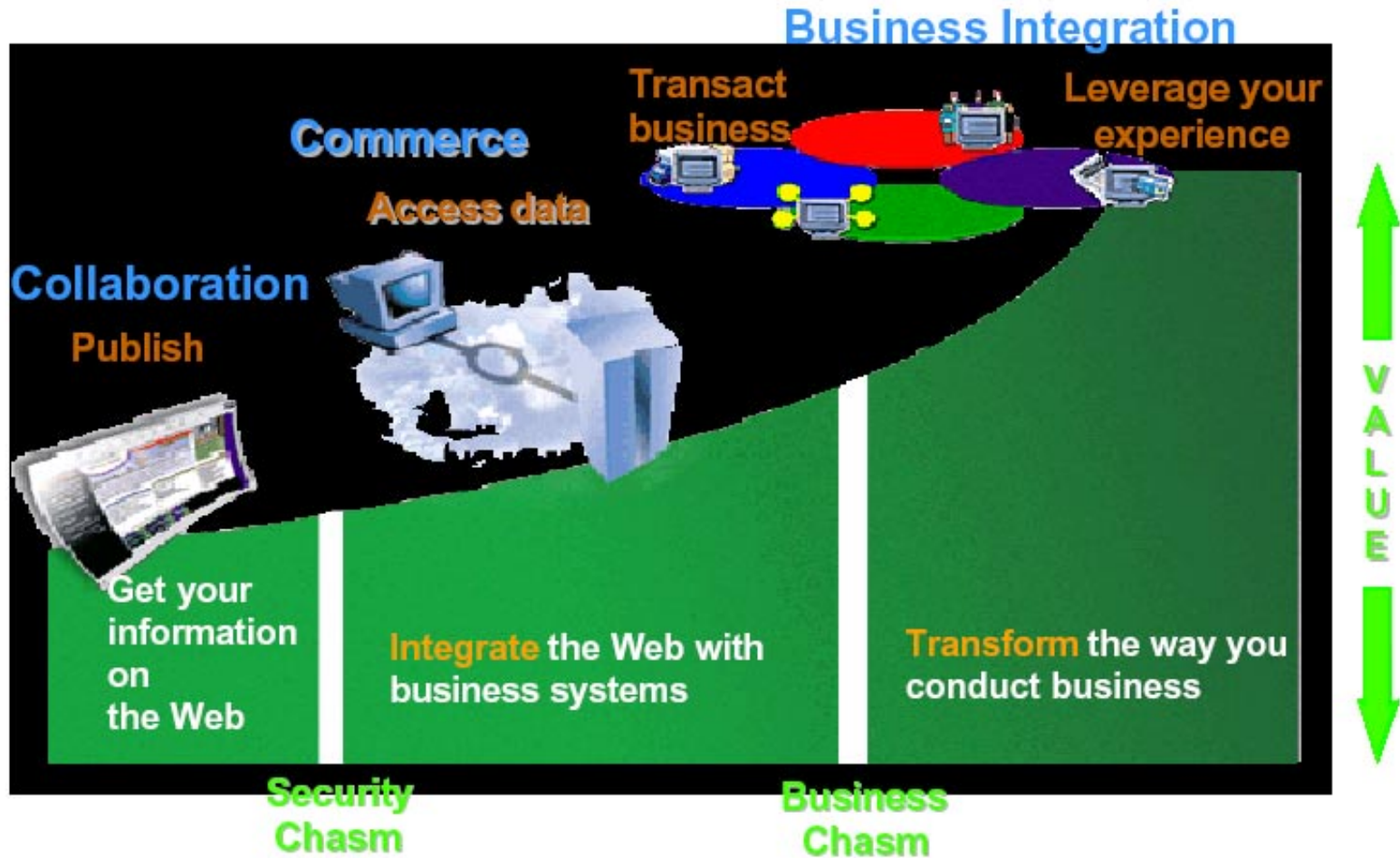
E58

Agenda

- Challenge of e-business Application Development
- VisualAge Generator as an e-business AD tool
- VisualAge Generator e-business RAD demo
- More of the Solution
- Directions and Futures
- Resources and Summary

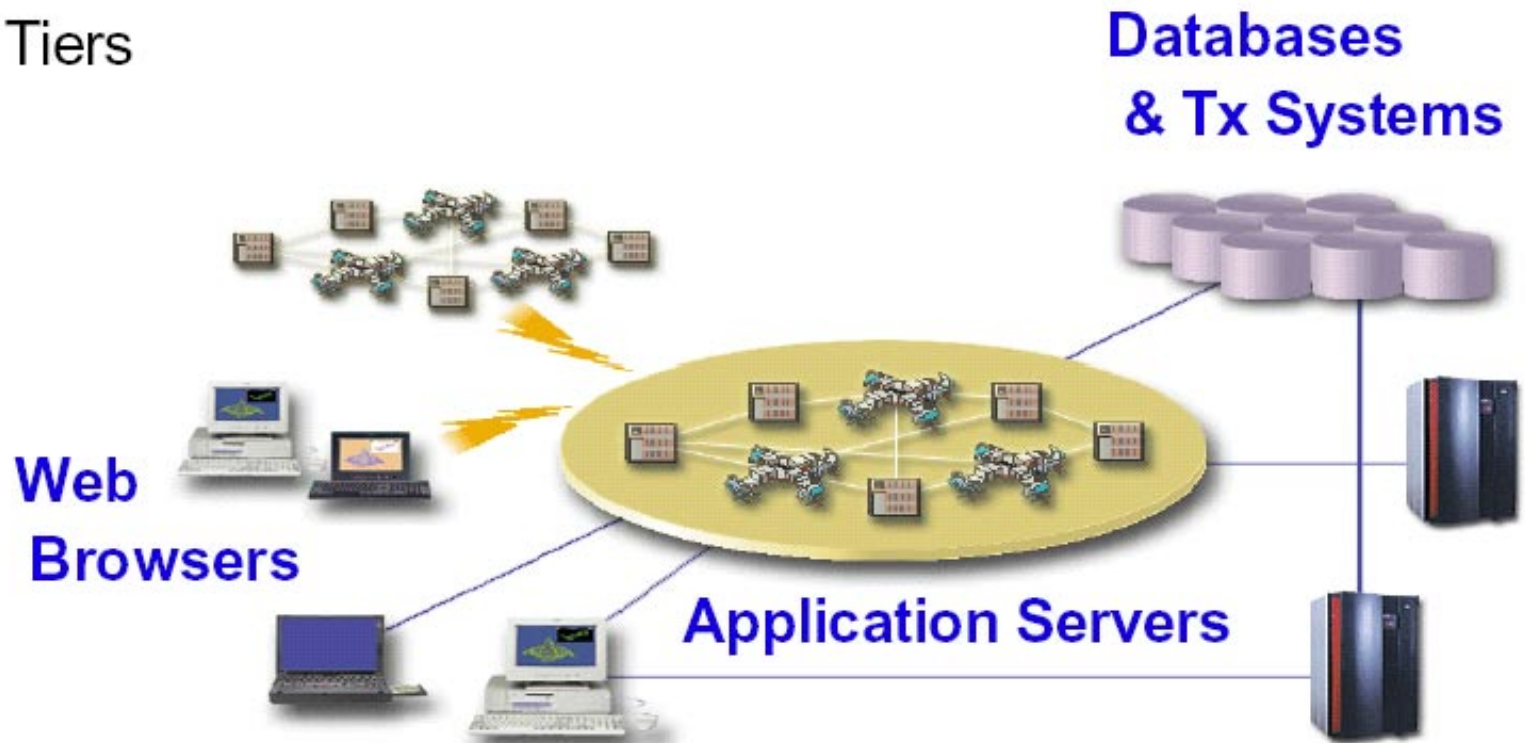
Challenge of e-business Application Development

Evolution of e-business

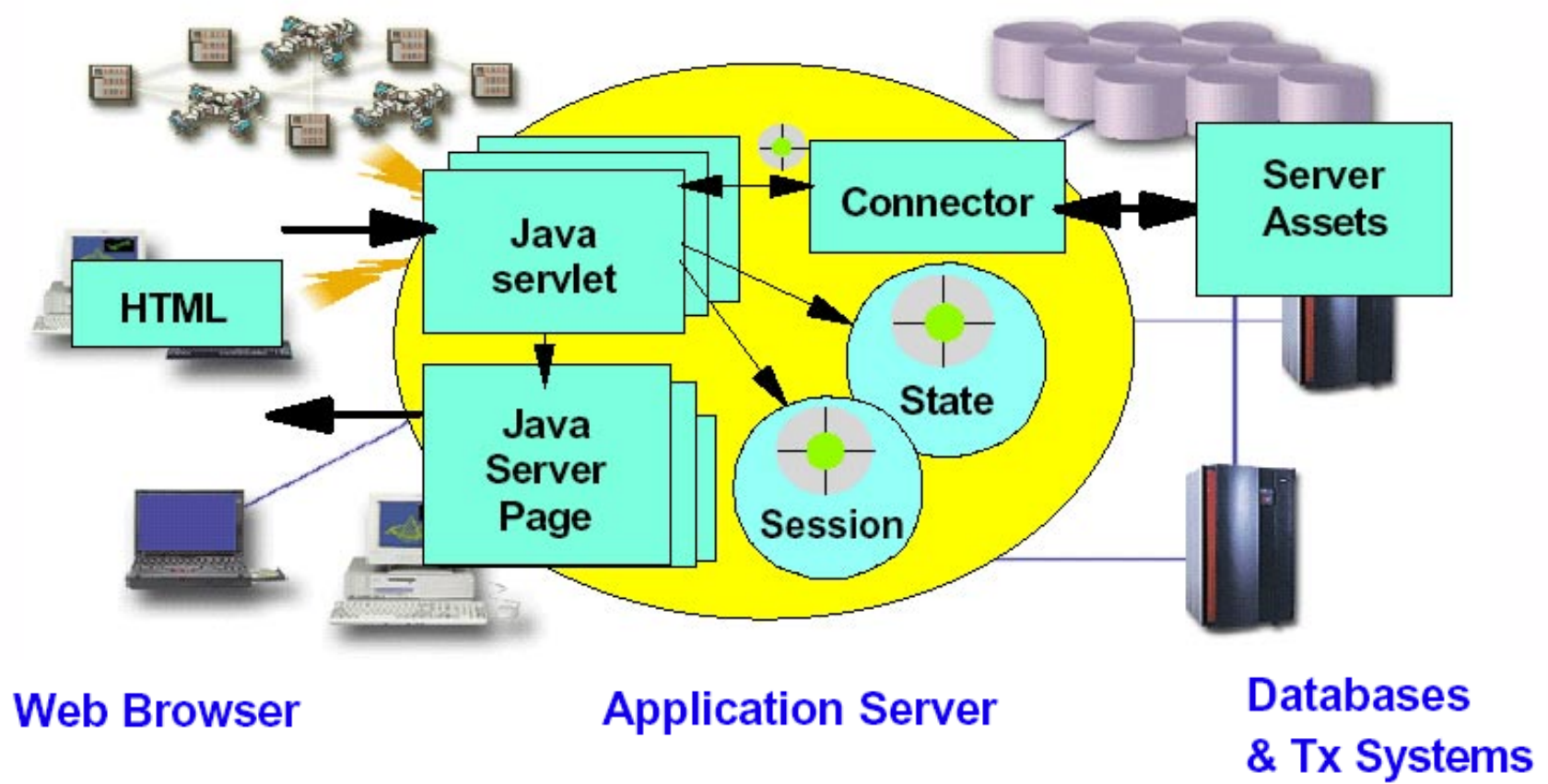


e-business Topology

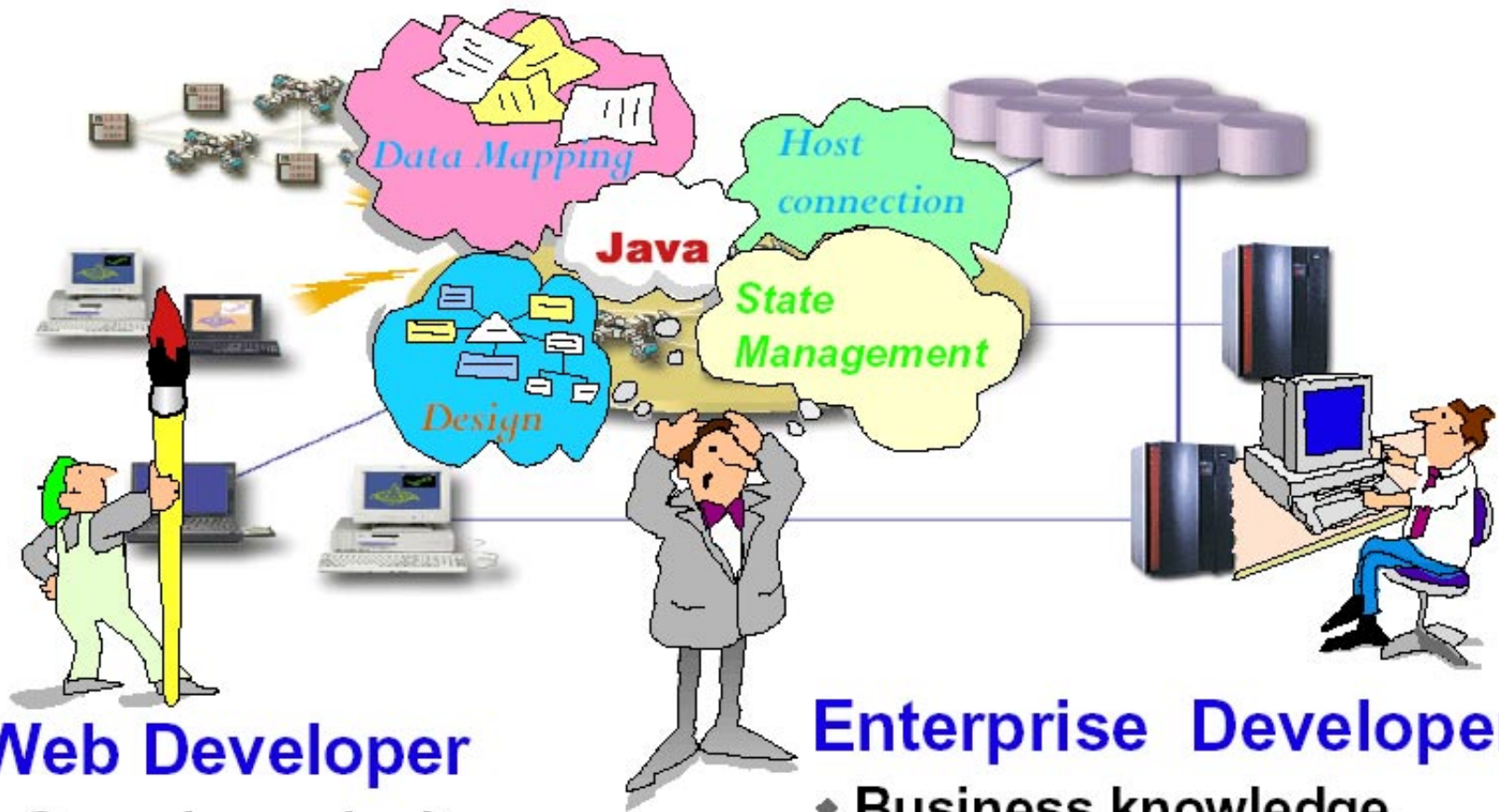
- Dynamic presentation
- Server driven content
- 3 Tiers



e-business Application Architecture



Who are the AD players?



Web Developer

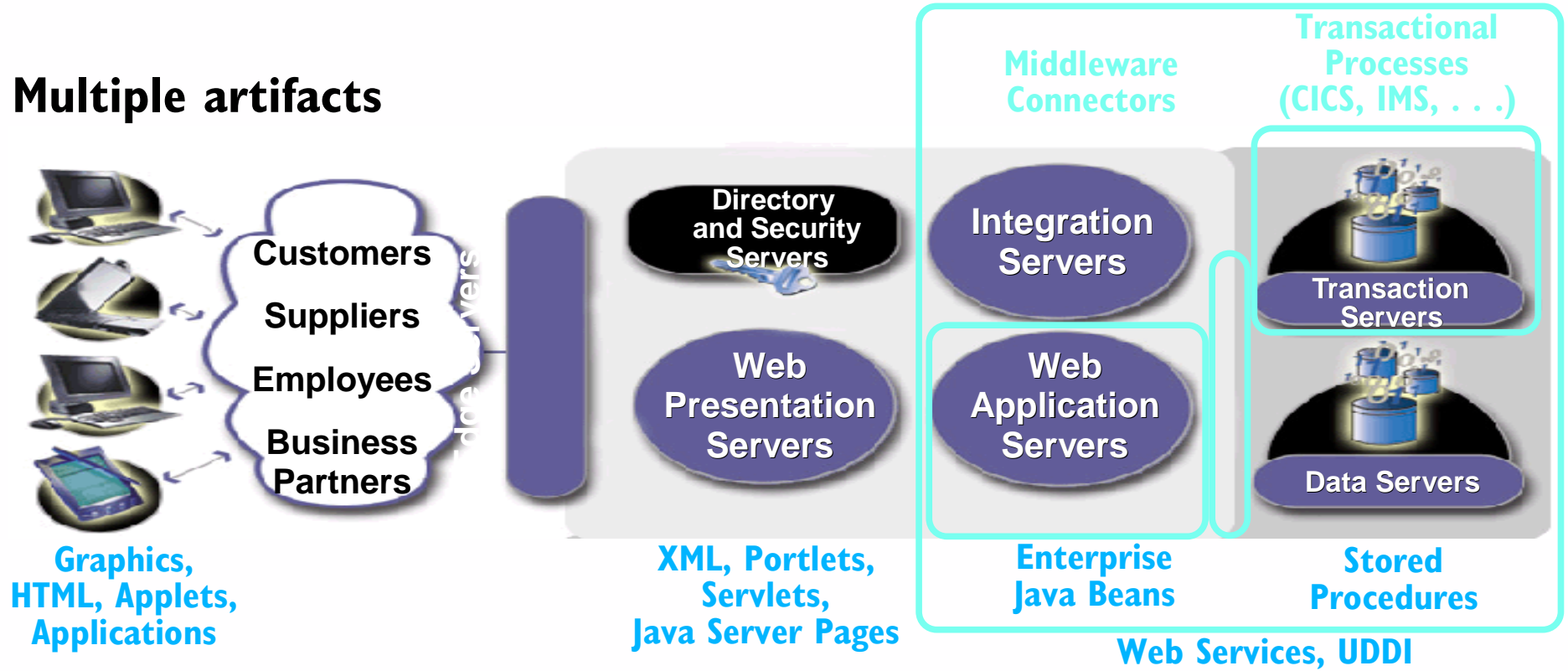
- ◆ Organize web site
- ◆ Design UI

Enterprise Developer

- ◆ Business knowledge
- ◆ Multi-user systems design

Who are the AD players, in detail?

Multiple artifacts



Application Modeling



Web Site Development



Java Development



XML & Web services Development



Portal Development



Enterprise Integration



COBOL, PL/I, 4GL Development



Application Development Challenges

- How can I leverage my current staff's skills while moving to a more distributed, web-enabled world?
- How can new staff build applications for mainframe and TP monitors?
- How can I ensure my new system can scale to meet my high volume transaction load?
- Can I build modern systems that integrate my existing applications, data and transactions?
- Can I build traditional and e-business systems with a single tool?
- How can I deliver systems in record time?

IDC says -

"VisualAge Generator V4: Setting the Standard for 4GLs in eBusiness Solutions"

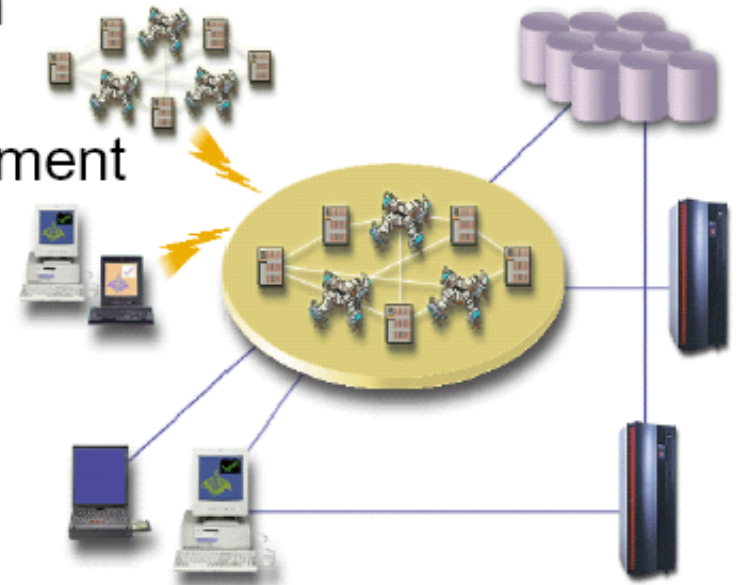
"As IBM's enterprise customers restructure for 21st-century e-business, software solutions such as VisualAge Generator make enterprise development more productive"

IDC Bulletin #18221 Dec 1999



The VisualAge Generator Solution

- Enable rapid application development by shielding the enterprise developer from the complexities of the implementation technology
 - ▶ High level specification and construction
 - ▶ Iterative development and test
 - ▶ Automated generation for target environment
- Benefits:
 - ▶ Leverage existing skills
 - ▶ Rapidly develop e-business applications
 - ▶ Provide *PC - Mainframe* scalability

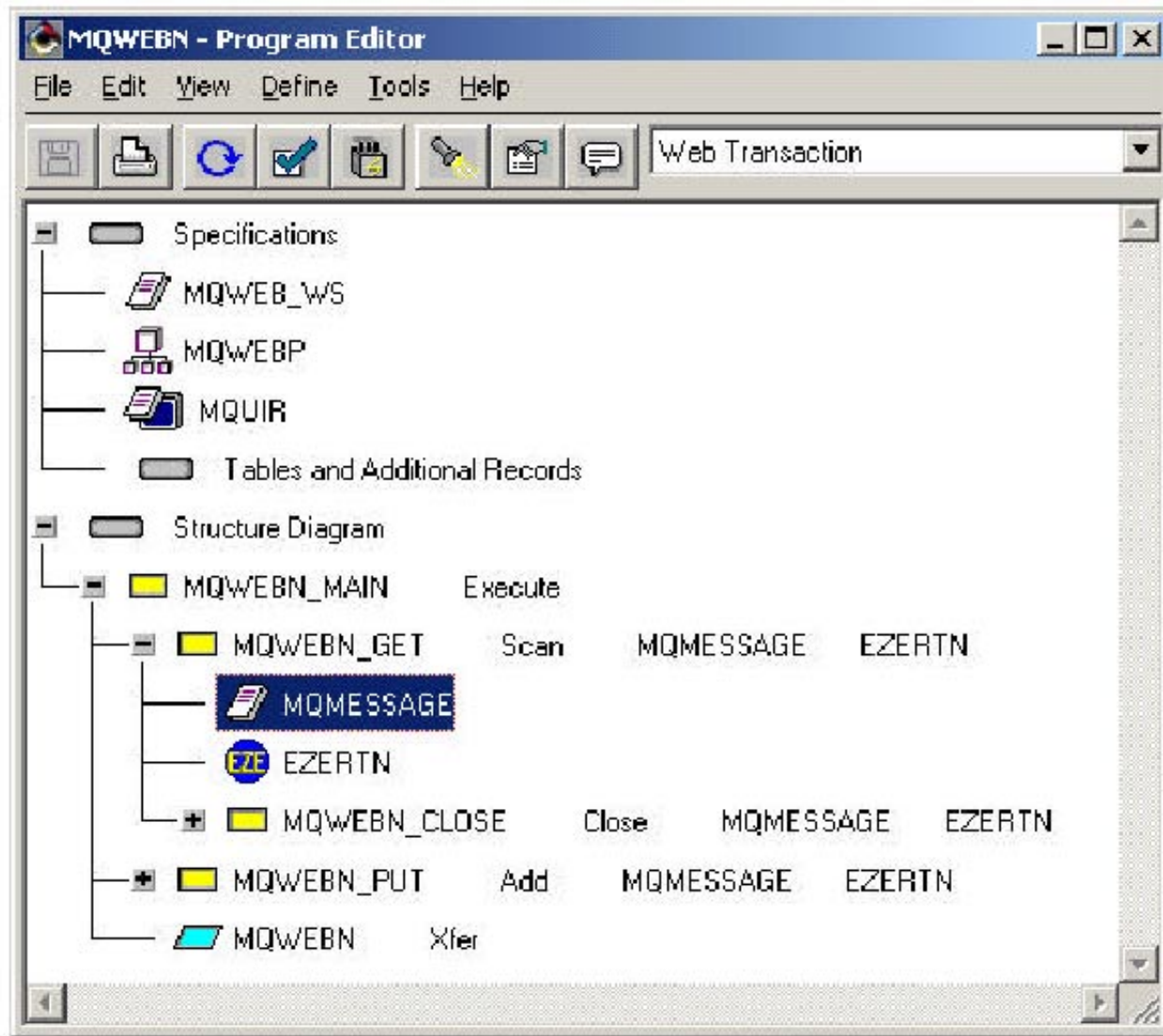


VisualAge Generator as an e-business Application Development Tool

High Level Specification and Construction

- Easy and quick to learn
 - ▶ Shields developer from underlying complexities
 - ▶ Language and construction similar to traditional development
- Program definition
 - ▶ consistent construction
 - ▶ differentiated by program type
 - ▶ Web Transaction, Called Batch, etc.
- I/O options
 - ▶ web browser access
 - ▶ CONVERSE customer_page
 - ▶ data access
 - ▶ INQUIRY customer_table

Program Definition



I/O Options

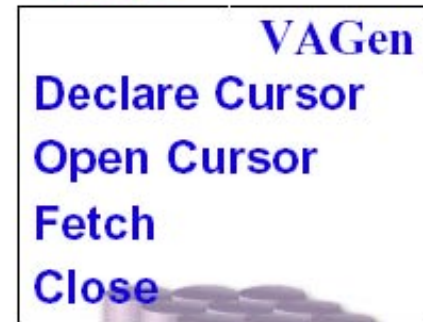
CONVERSE CUSTOMER_PAGE

WebSphere



INQUIRY CUSTOMER_TABLE

SQL



DL/I



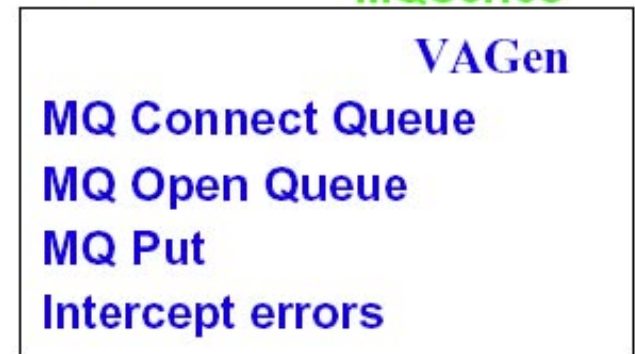
CALL CUSTPGM DATA

Communications

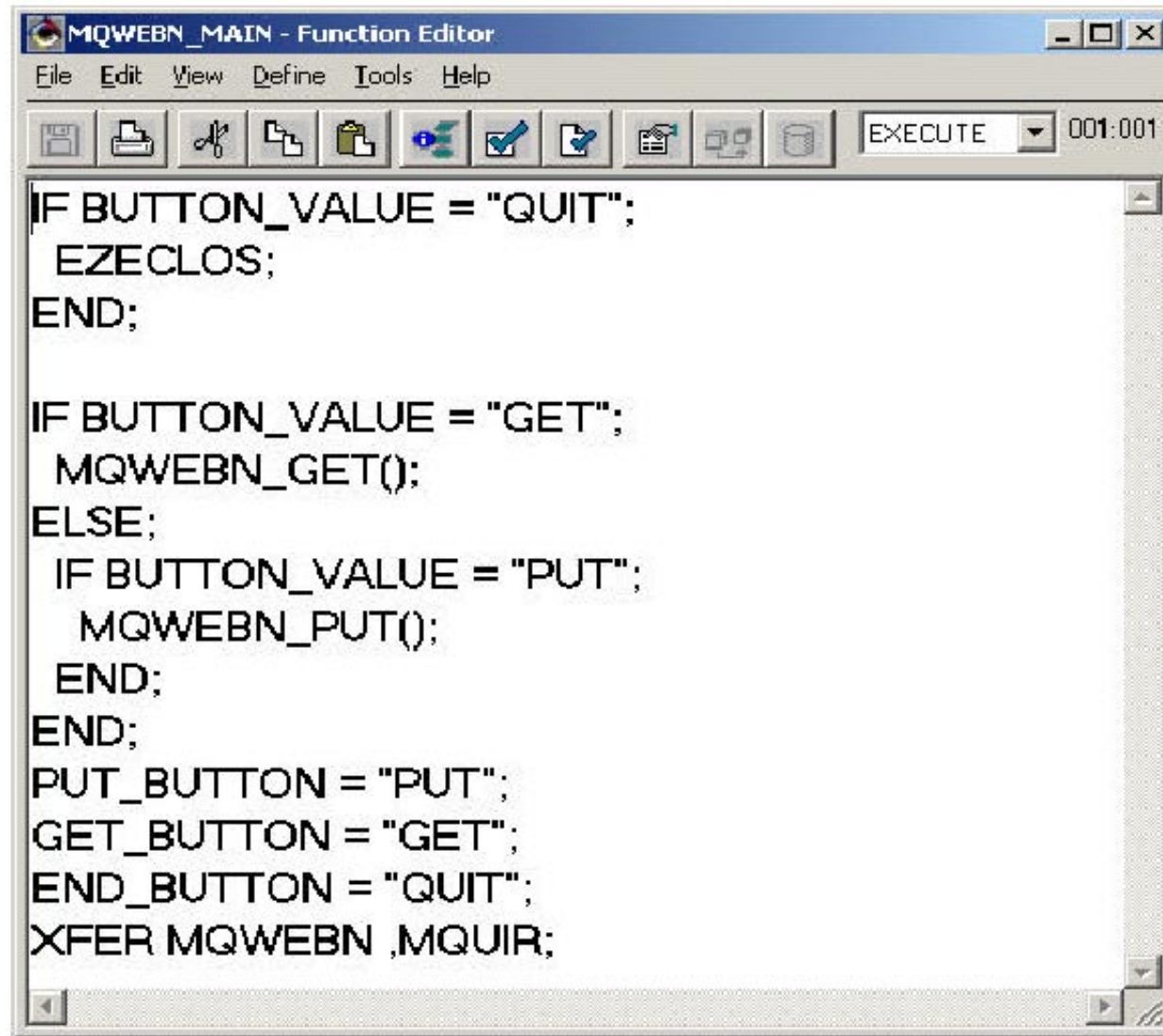


ADD CUSTINFO

MQSeries



Sample code - displaying a browser page



```
MQWEBN_MAIN - Function Editor
File Edit View Define Tools Help
EXECUTE 001:001
IF BUTTON_VALUE = "QUIT";
  EZECLOS;
END;

IF BUTTON_VALUE = "GET";
  MQWEBN_GET();
ELSE;
  IF BUTTON_VALUE = "PUT";
    MQWEBN_PUT();
  END;
END;
PUT_BUTTON = "PUT";
GET_BUTTON = "GET";
END_BUTTON = "QUIT";
XFER MQWEBN ,MQUIR;
```


Sample code - displaying a browser page

MQUIR - Record Editor

File Edit View Define Tools Help

User Interface Default Usa

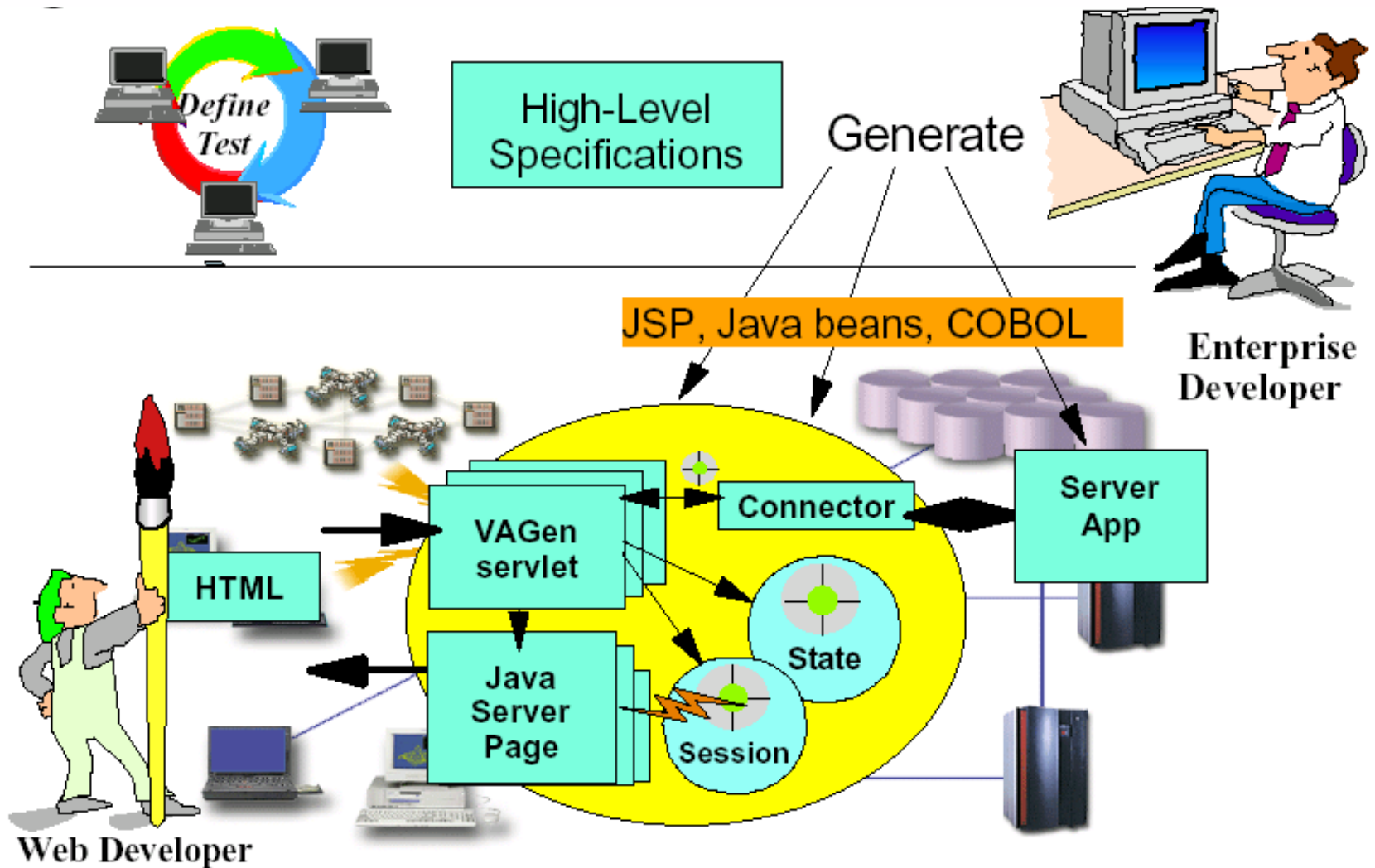
Name	Occurs	Type	Length	Decimals	UI Type	UI Properties	U
MQMANAGER	1	Char	48	0	Input/Output	Custom	↑
MQQUEUE	1	Char	48	0	Input/Output	Custom	↑
MESSAGE	20	Char	79	0	Output	Custom	↑
PUT_MESSAGE	1	Char	50	0	Input/Output	Custom	↑
PUT_MESSAGE_COUNT	1	Bin	4	0	Input/Output	Custom	↑
GET_MESSAGE_COUNT	1	Bin	4	0	None	None	↑
ERROR_MESSAGE	1	Char	79	0	Output	Custom	↑
GET_BUTTON	1	Char	4	0	Submit	Custom	↑
PUT_BUTTON	1	Char	4	0	Submit	Custom	↑
END_BUTTON	1	Char	4	0	Submit	Custom	↑
BUTTON_VALUE	1	Char	4	0	None	None	↑

Iterative Development and Test

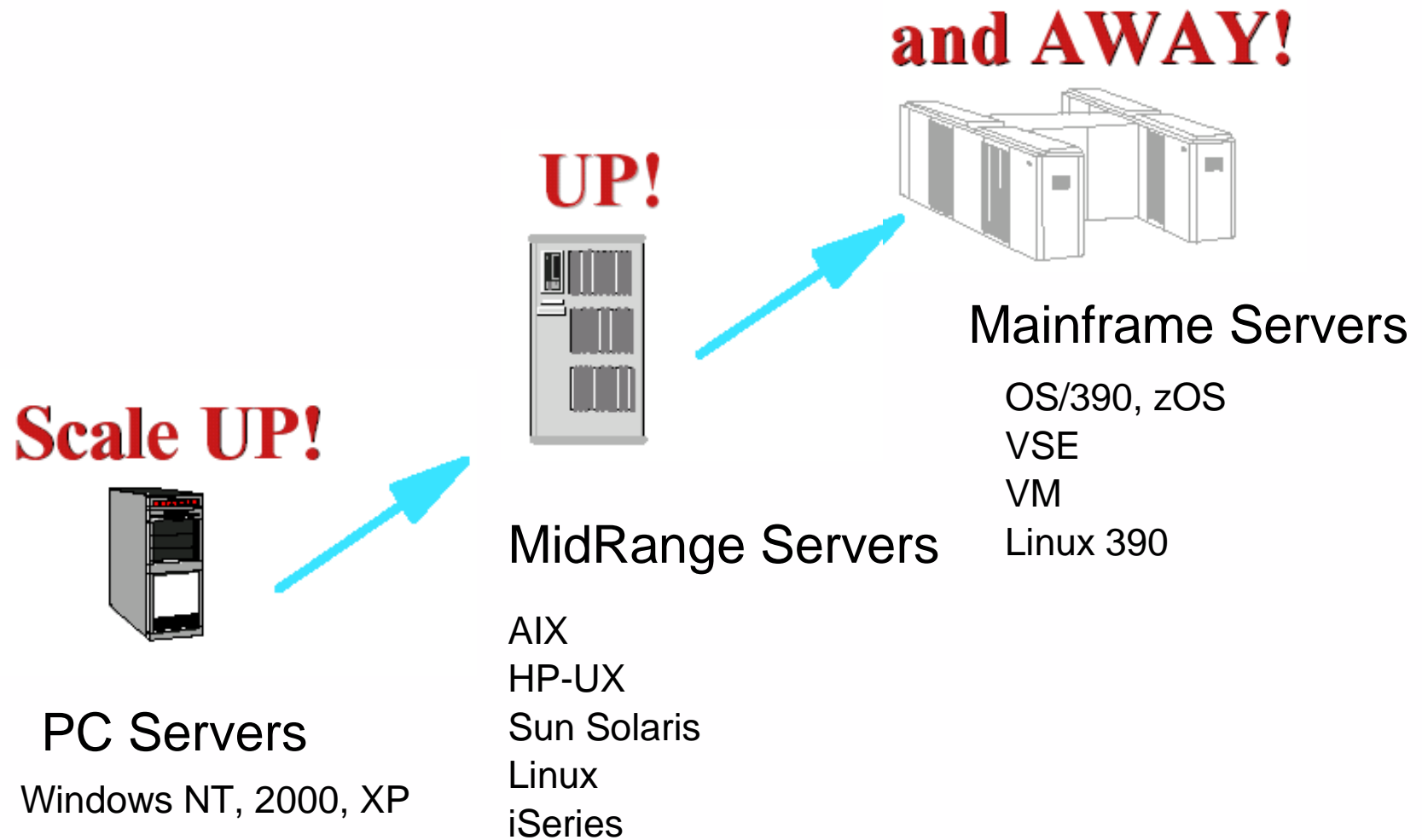
- Animate logical specification
 - ▶ no compilation required
 - ▶ partial definition for prototyping
 - ▶ change code on the fly during test
- Full control of test execution
 - ▶ control, breakpoints, watchpoints,
 - ▶ monitor execution and test coverage
 - ▶ display / Modify storage
- Independent of runtime environment
 - ▶ end-to-end functional verification on workstation
 - ▶ access to remote CICS applications
 - ▶ access to remote data - DB2, VSAM, DL/1



Automated Generation for Target Platforms



Scalability

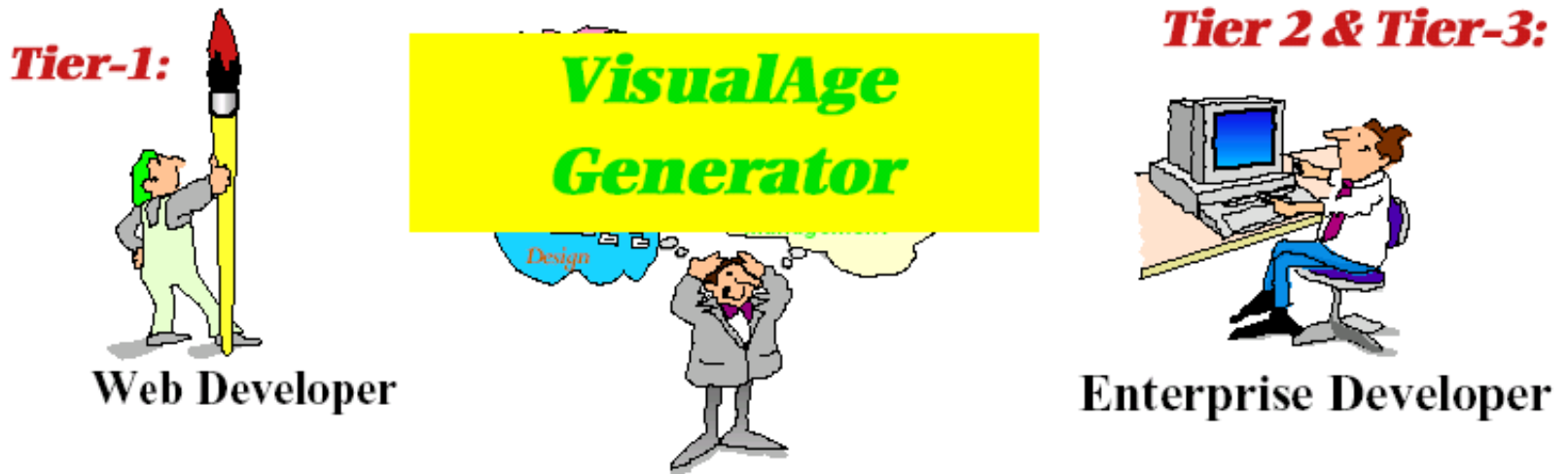


VisualAge Generator Demo

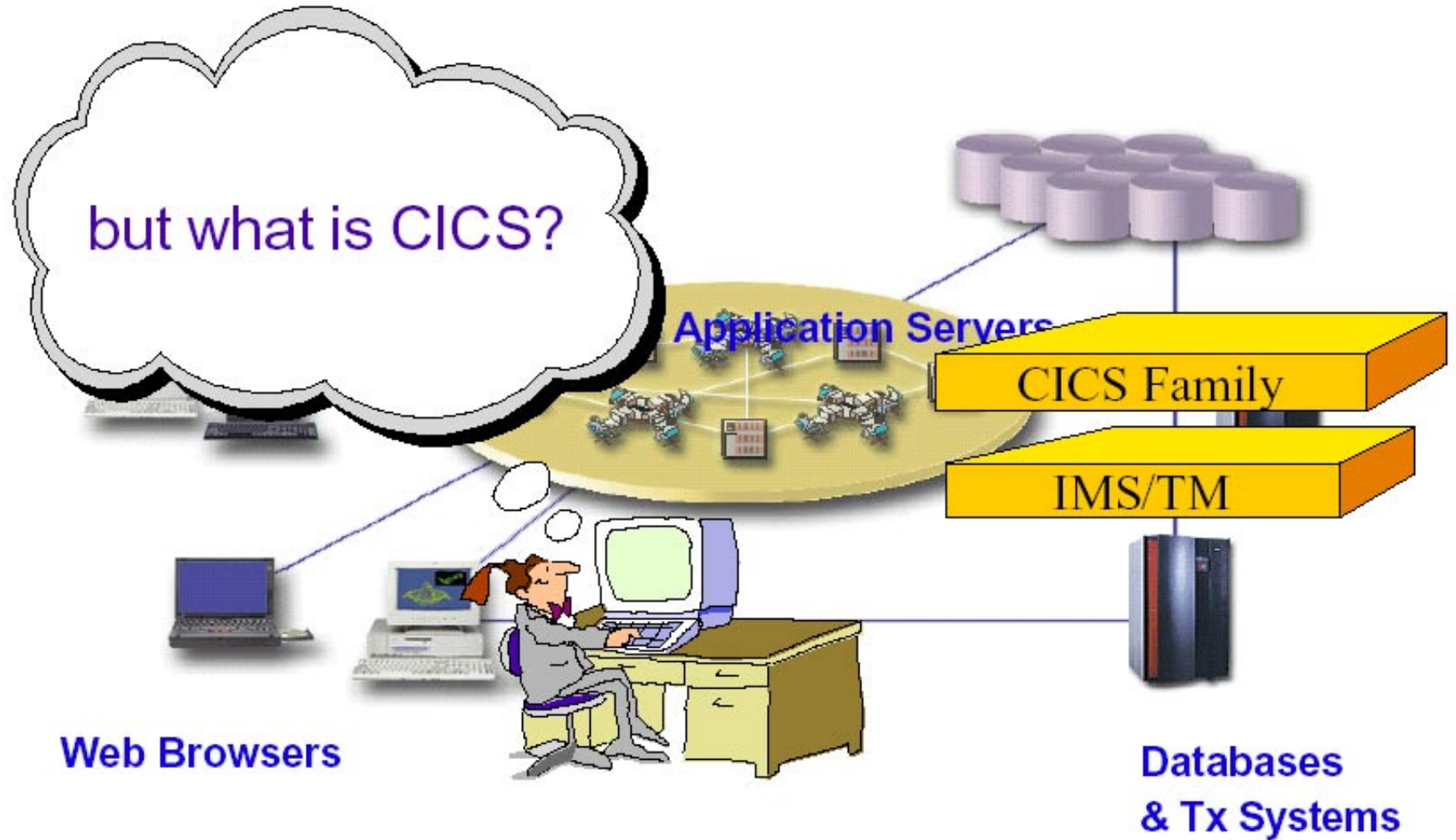
More of the Solution

e-Business RAD benefits

- "Fast path" for traditional programmers
 - ▶ No Java knowledge required
 - ▶ Handles web challenges
 - ▶ Simple and familiar programming approach
- Clear separation of concerns
 - ▶ Web user interface from business data/rules
 - ▶ Shields developer from Web UI design/development

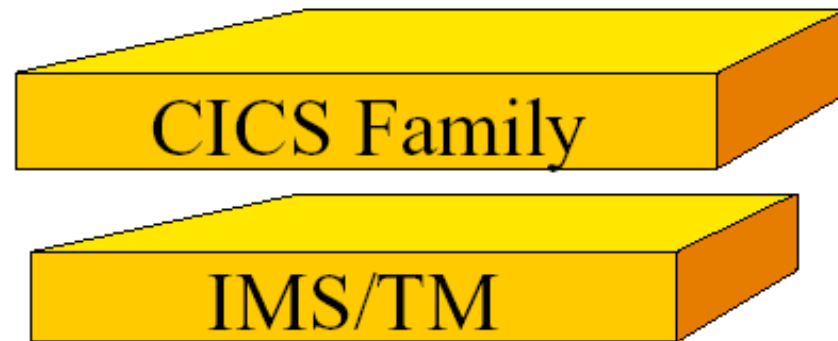


What about new staff? "I have Java Skills..."



Tier 3 Server Development

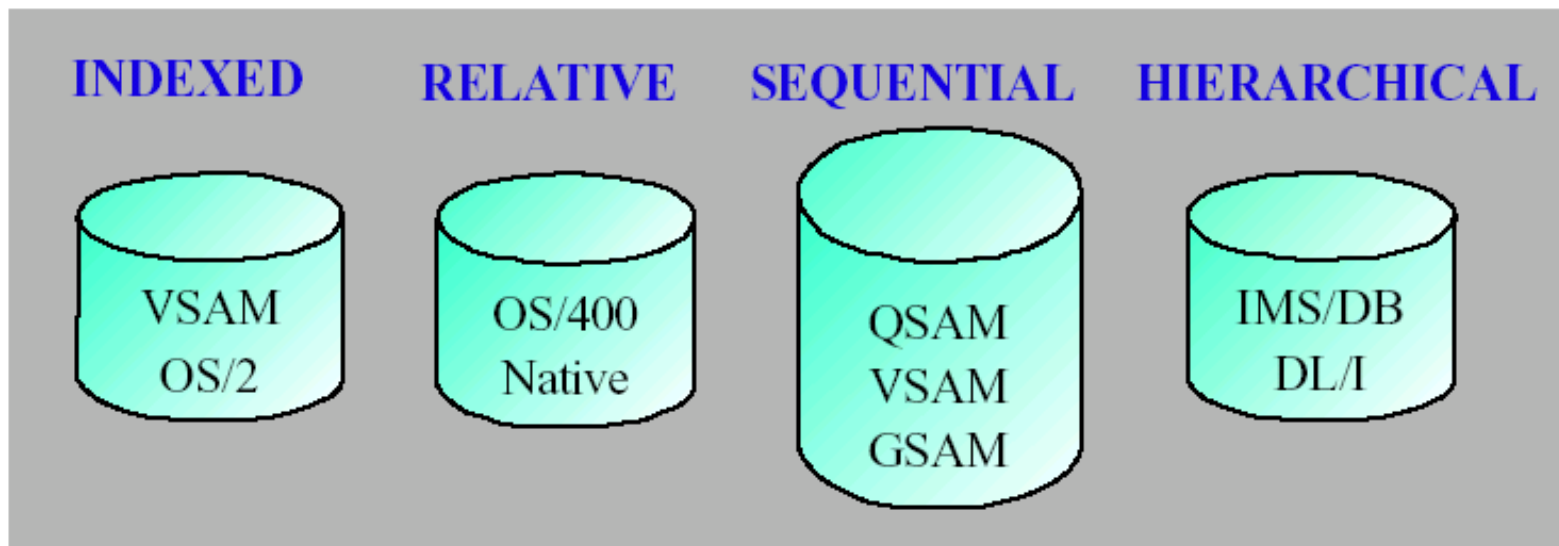
- Transaction Support Made Easy!
 - ▶ An answer to the lack of CICS and IMS skills available



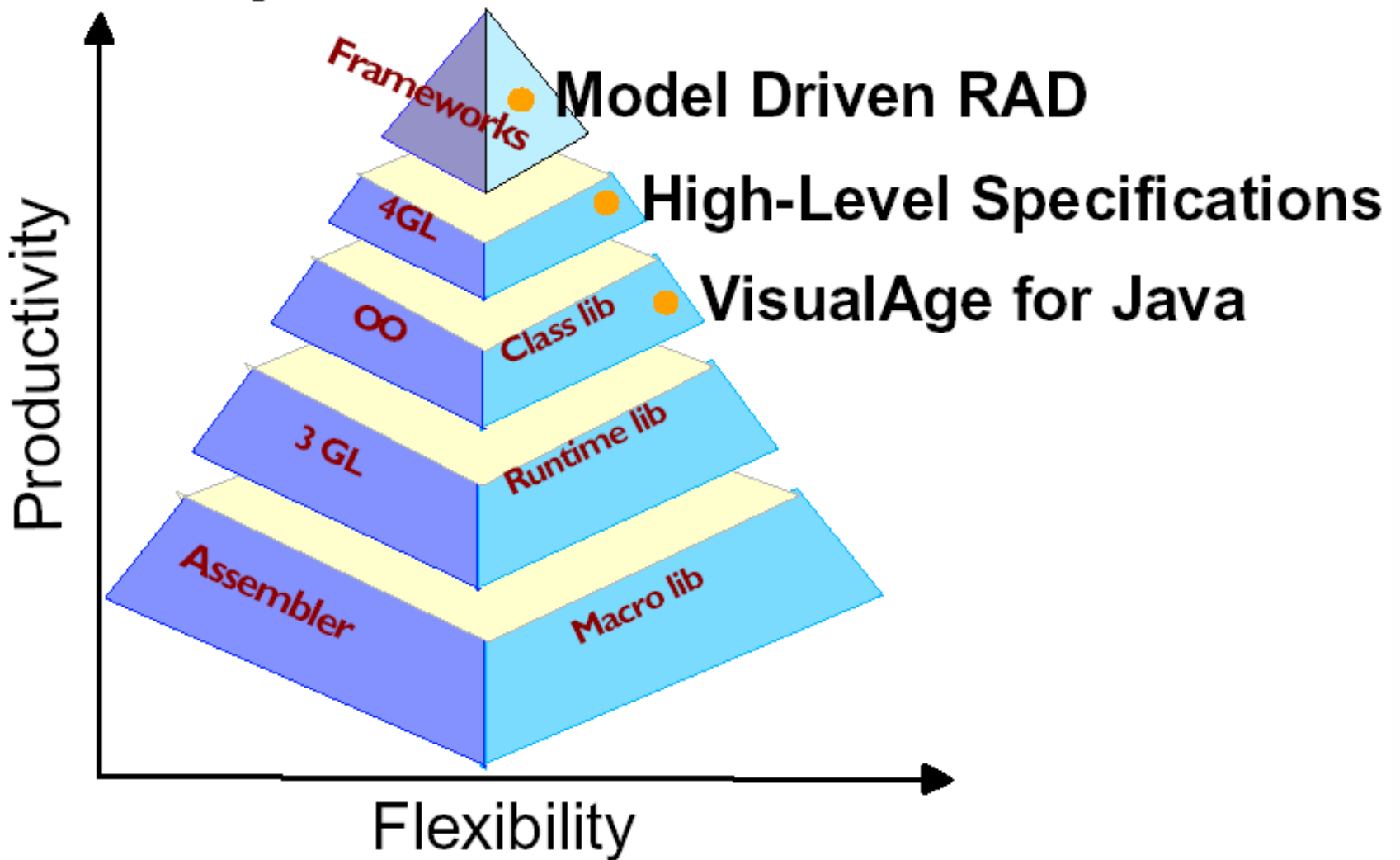
- Define with High-level specifications
- CICS or IMS/TM code automatically generated

Legacy Support

- Create green screen (3270, 5250, ASCII) and batch applications
- Integrate with existing applications
- Access legacy data



VisualAge Generator Developer



VisualAge for Java v4 Integration

- **Library Services**

- ▶ Software configuration management
- ▶ Version Control
- ▶ Team Development

- **Components**

- ▶ Java Beans
- ▶ Enterprise Java Beans

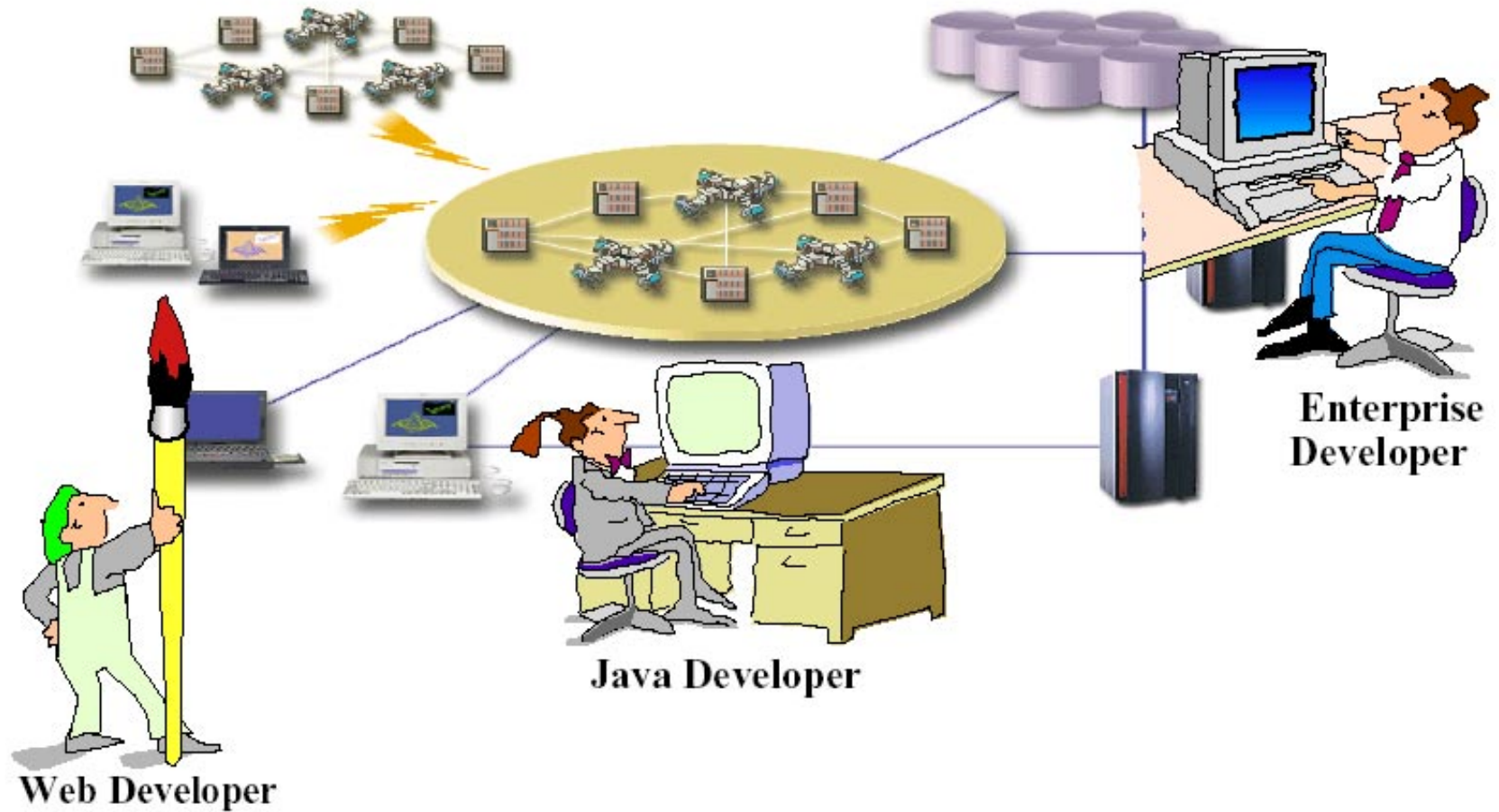
- **Facilitates skills transition to Java**

- ▶ Productive Immediately
- ▶ Build Java skills gradually

Java Server Generation

- **4GL Transformed into Java Server Programs**
 - ▶ Invocable from any Java client'
 - ▶ Access bean generation to facilitate invocation
 - ▶ Multiple Java server platforms supported
- **Generation of Improved Session EJB**
- **Database access via JDBC**
- **Can call C++ or COBOL programs**
- **Includes MQ Rapid Application Creation support**
- **Includes Web Rapid Application Creation support**
- **BENEFIT - Create a complete, pure Java application with virtually no knowledge of Java**

Cooperative Development



State of California - DHS

- 6 new programmers, 3 weeks of education
- 8 weeks of development, 4 weeks of testing
- IBM Services provided team leader
- Live in less than 6 months



High Productivity

- High-level specifications
 - ▶ Hides systems complexities
 - ▶ Reduced coding
- Iterative Development and Test
 - ▶ Test on workstation, no edit-compile-test
 - ▶ Independent of target environment
- Templates Application Builder
 - ▶ Complete applications from data model
 - ▶ Creates Text, GUI, Web applications
- Integrated Development Environment
 - ▶ Version Control, SCM
 - ▶ Team Programming

VA/Generator Packaging

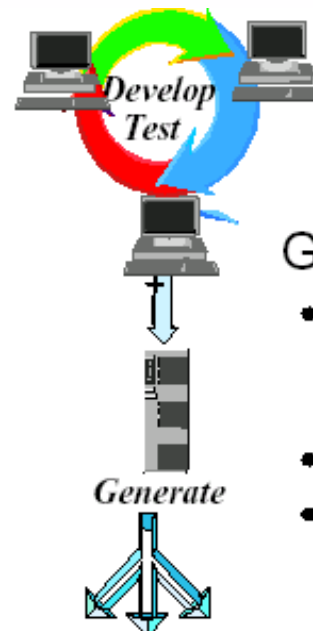
VisualAge Generator Developer

Rapid Development & Test

- High level abstraction specification
- Target platform neutral
- Shield complexity of target system
- Interactive test of logical specification
- Strong Team support

Generation

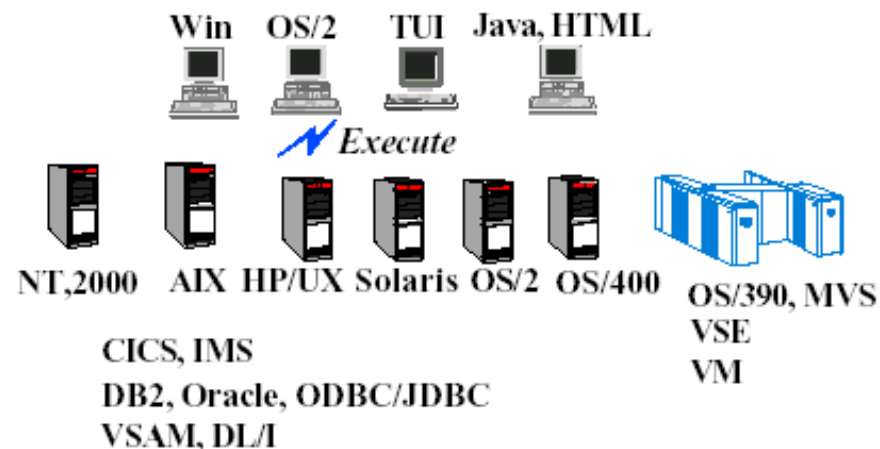
- Transform logical specification into optimized source for the selected target
- C++, COBOL, Java for server
- GUI, Java/JSP, TUI client



VisualAge Generator Server

Execution

- Exploit Transactional Systems
- Multiple execution Platforms
- Middleware transparency



For the developer...

- VisualAge Generator Developer V4.5
 - ▶ One for each developer
 - ▶ Product packaging contains:
 - ▶ VisualAge Generator Developer V4.5
 - ▶ VisualAge for Java, Enterprise Edition V3.5 (NT)
 - ▶ VisualAge Smalltalk Enterprise V5.0 (NT, OS/2)
 - ▶ VisualAge Generator Server- Single User License
 - ▶ May upgrade VA Generator Developer, VA Smalltalk or VA Java
 - ▶ Also part of the VisualAge Enterprise Suite product
- VisualAge Generator Templates Customizer V4.5
 - ▶ Optional
 - ▶ One for each developer who will customize Templates

For the server...

- VisualAge Generator Server product
 - ✓ one for each runtime server
 - ▶ VisualAge Generator Server for OS/2, AIX, Win NT, HP-UX & Sun Solaris V4.5
 - ▶ VisualAge Generator Server for OS/390, MVS, VSE and VM V1.2
 - ▶ VisualAge Generator Server for AS/400 V4R4
- WebSphere Application Server
 - ▶ Standard or Advanced
 - ▶ V3.0 or later
 - ▶ Windows NT/2000, AIX, Sun Solaris, AS/400, OS/390, Linux/390

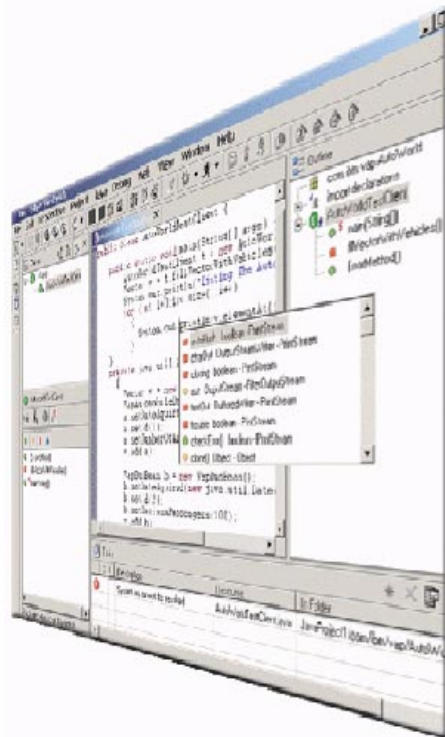
Directions and Futures

Historical Perspectives

- **VA/Generator has been around in one form or another since 1977**
- **Assumed its current form in 1994**
- **Most VisualAge products are migrating under the WebSphere Studio family**
- **VisualAge Generator function will be provided by WebSphere Studio Enterprise Developer later this year**
- **Modernized, complete application development environment for HTML, JSP, XML, Java, J2EE, assembly language, PL/I, COBOL, and EGL**

WebSphere Studio

- Single, comprehensive IDE with unprecedented flexibility and extensibility supporting all roles in e-business development
- Complete application server support
- Extend with support for other IBM middleware and servers
- Extend with partner tools to provide complete life cycle support



IBM Server & Middleware Tools

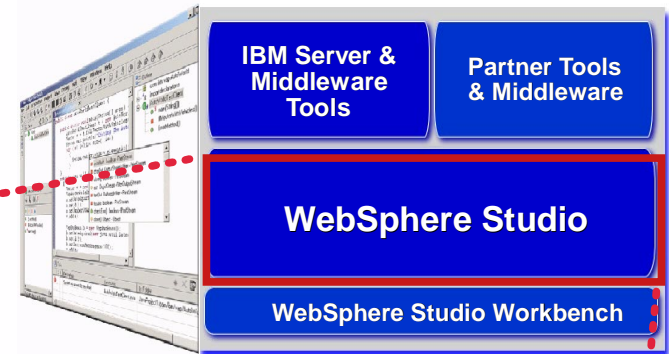
Partner Tools & Middleware

WebSphere Studio

WebSphere Studio Workbench

WebSphere Studio - Flexible Configurations

One IDE with multiple configurations that add functions and "perspectives" for specific developer roles



Resources and Summary

Resources

- **VisualAge Generator Site**

- ▶ www.ibm.com/software/ad/visgen
- ▶ All documentation, samples, available services, whitepapers, etc.

- **Past, Present, and Futures Whitepaper**

- ▶ <http://www-3.ibm.com/software/ad/visgen/library/pdf/VAGen-Future.pdf>

- **Conferences**

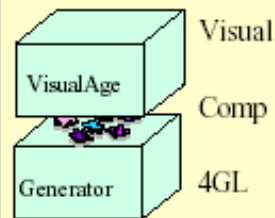
- ▶ The 2002 Americas Enterprise Development User Conference - Oct 16 - 18, 2002 in Chapel Hill, NC (register at VA/G site above)

- **Redbooks**

- ▶ Available for free in PDF format from www.ibm.com/redbooks
- ▶ VA/G V4 System Development Guide SG24-5467
- ▶ Building Enterprise Web Transactions using VA/G Java Beans and JSPs SG24-5636

Summary

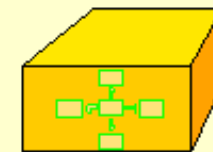
High Productivity



Iterative RAD



Model Driven RAD



Enterprise Breadth

Robust Development Environment



Multiple Platform Support



High Volume Transactions



Legacy Exploitation Rapid Integration



e-business Enablement



Web Rapid Development

Java Integration/Generation

VisualAge Generator

Summary

- **VA/Generator is a set of development tools that allow IBM's customers to -**
 - ▶ build high-volume, scalable servers
 - ▶ connected to almost any type client, including browsers
 - ▶ running on most popular platforms, including VSE
 - ▶ over most communications protocols
 - ▶ talking to most data stores
 - ▶ interacting with most transaction monitors
 - ▶ using mainly traditionally skilled programmers
 - ▶ that want to move toward e-business technology.