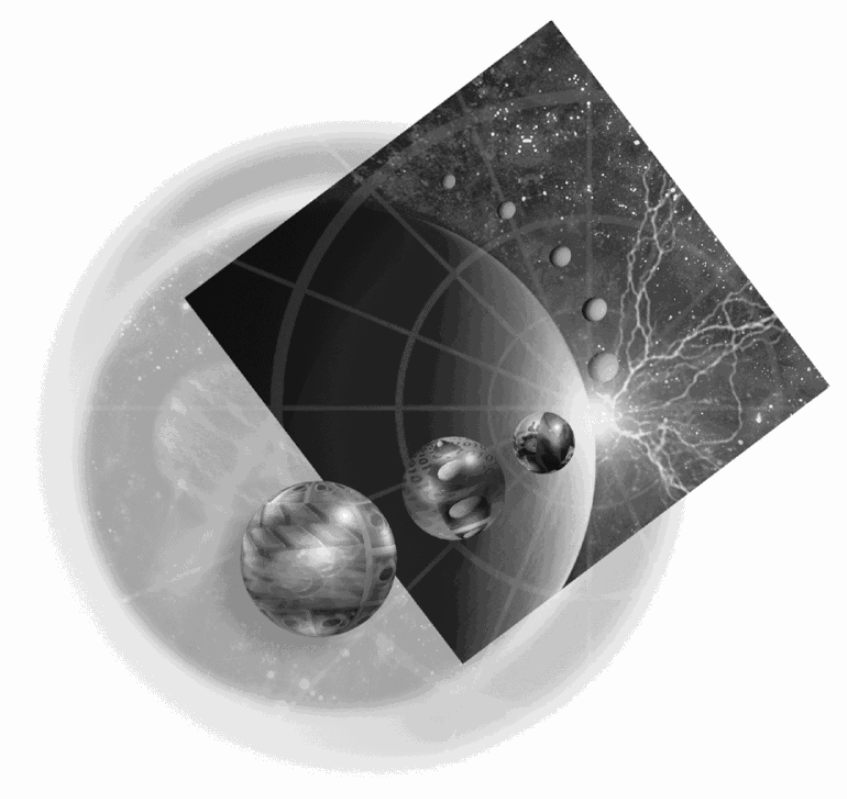
IBM WebSphere Studio Enterprise Developer 5.0



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WebSphere software

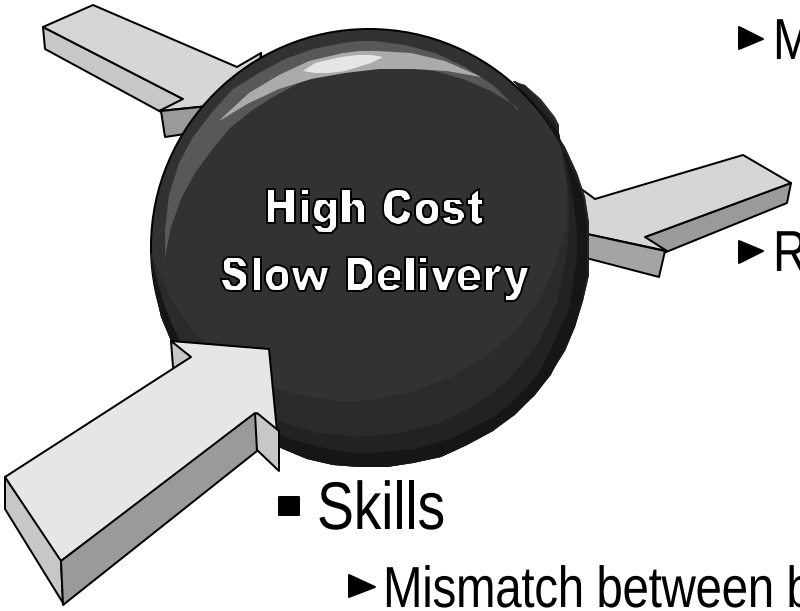
IBM

Agenda

- **Websphere Studio *Enterprise Developer* Overview**
  - Struts Tools
  - EGL
  - IDE for zOS
- **Summary of WHAT we delivered and WHEN**

Key AD Challenges

- Complexity of technology
  - New application design/development methodologies
  - many new API, tools, standards
  - Integration
- Legacy
  - Maintenance consumes resources
    - legacy AD technology and processes = low productivity
  - Reuse of old systems is hard
    - understanding
    - extracting



- Skills
  - Mismatch between business knowledge and technology knowledge
  - Retraining is long and hard

Key AD Challenges

- Complexity of technology
  - ► New application design/development methodologies
  - ► many new API, tools, standards
  - ► Integration

•EGL
•Websphere Studio Workbench

- Legacy
  - ► Maintenance consumes resources
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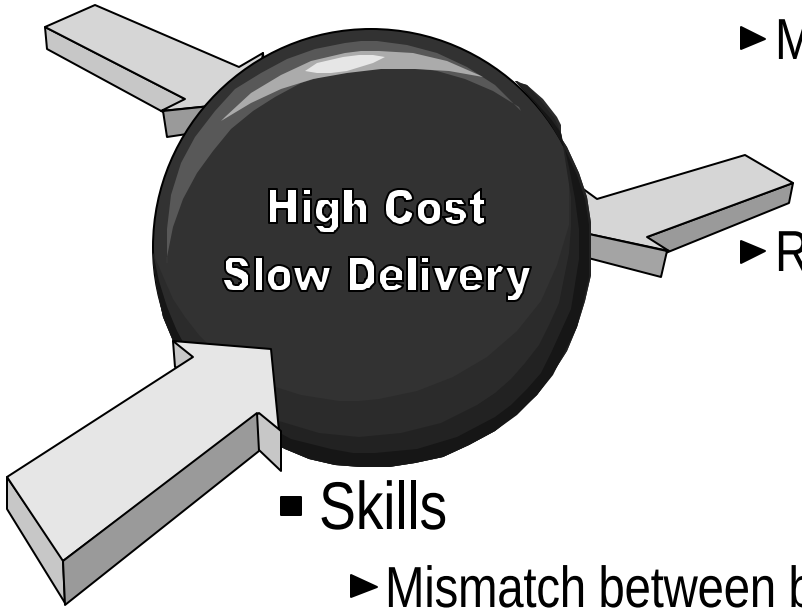


•JCA Connectors and XML Enablement
•Language Tools for z-series
•Flow tools

- Skills
  - ► Mismatch between business knowledge and technology knowledge
  - ► Retraining is long and hard

•EGL
•Language Tools for z-series

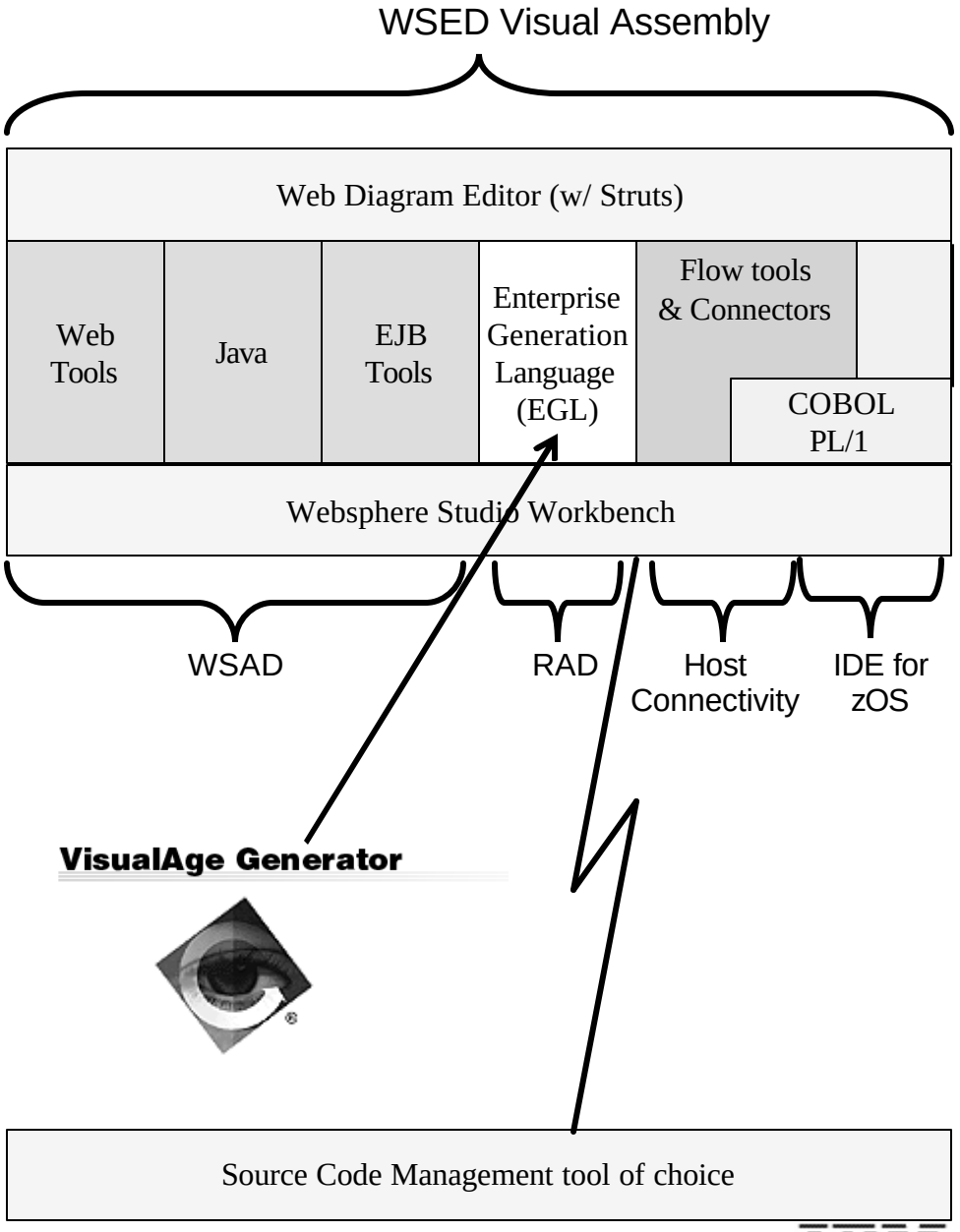
Why Websphere Studio Enterprise Developer?

WSED 5.0

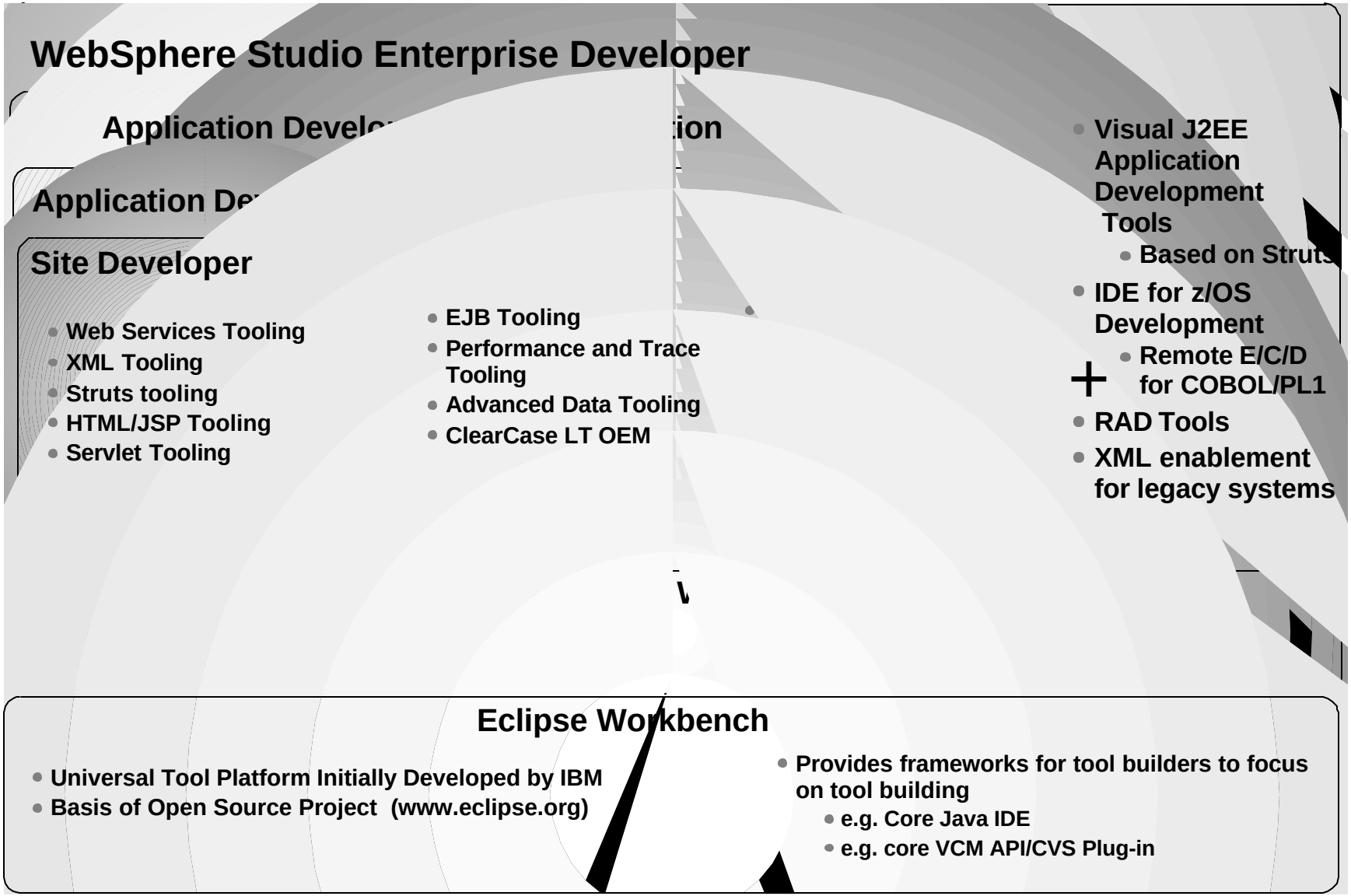
- **Development Tool Requirements for WSED V5.0**
  - Simplify construction of web applications
    - Less complex
    - Leverage existing skills
    - Embrace the construction of web applications that are structured for change
  - Support a variety of runtime environments
    - Websphere Application Server
    - i-series
    - CICS
  - Support multiple development roles
    - Web Page Designer
    - Traditional or 4GL Developer
    - J2EE/Java developer
  - Support a variety of web application technologies
    - J2EE, XML, WML, etc.
    - MVC (Struts)
    - Web Services
    - Traditional business logic and connections to it
  - Integrated to facilitate a single coherent development process
    - Common look and feel
    - Common source control
    - Common build methodologies
  - Enable development of open systems; database and platform

IBM's Solution: WSED Product Overview

- Web Diagram Editor simplifies definition, assembly, and maintenance(understanding) of web applications. Supports the "struts based" Model-View-Controller architecture for separating code (and team member) responsibilities
- EGL capability abstracts out difficult development processes like I/O handling, message handling, error handling, etc. and lets business oriented developers focus on business processing
- IDE's for zOS provide COBOL and PL/I editing, syntax checking, and debugging
- XML transformation and connector generation for the RAD and zOS developer allow less technical developers to generate complete web services and connector processing including platform oriented parsing of XML taking advantage of the QOS provided by zSeries
- Generation of EGL business processing to both WAS and CICS environments
- Build processing supporting both zOS and distributed application builds
- Application level debugging with EGL.
- Other parts of WSAD and WSADIE including:
- HTML, JSP, Java, and EJB editing.
- Additional tools for WAS/EE and connector generation



Websphere Studio Enterprise Developer



OK – Now what?

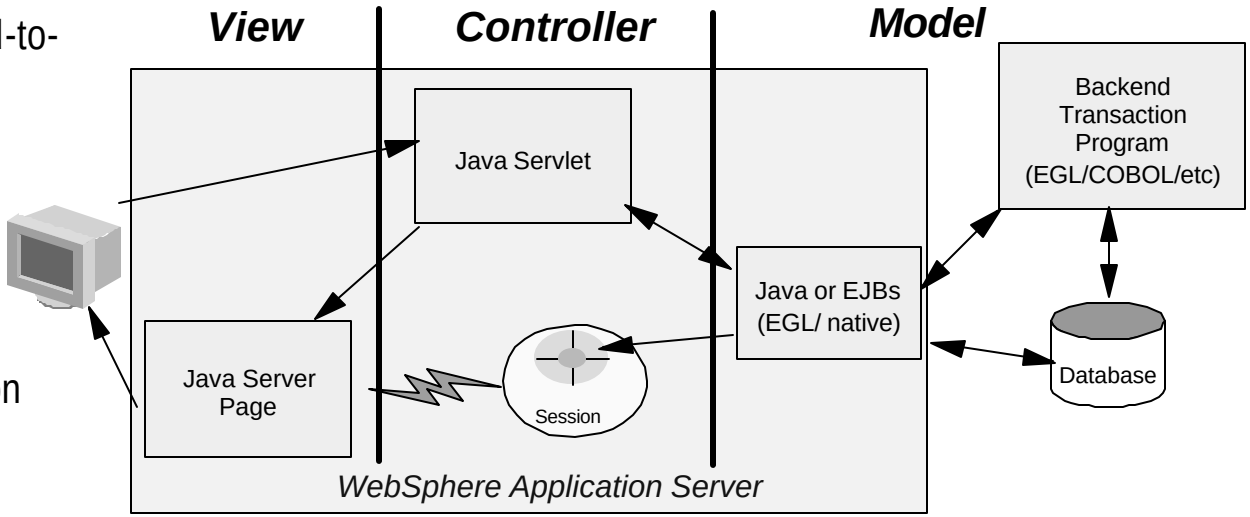
- **Lots of tools, even if they are all in the same toolbox, doesn't tell me how to build a house**

- **Application Architectures with tools and runtimes that support them are needed**
  - Business Components
    - Reusable entities that typically tie business critical data together with the functions that operate against that data
    - Can be integrated with whatever the connector du jour is
      - JCA connector, Web Service, COBOL CALL
  - Model, View, Controller (MVC)
    - Model – A set of components
    - View – The technology an end user will use to interact with the model
    - Controller – responsible for handling events between View and Model

IBM's Solution: What does this boil down to??

R5.0 Focused on Host Developer
- **Well Structured Web Apps (Struts)**
- **Rapid Development (EGL)**
- **Traditional Development Environments**

- **WebSphere Studio Enterprise Developer V5**
  - Component-based development
  - Adopts, enforces, facilitates MVC e-business systems architecture
    - Sophisticated tier-1 (View) development (HTML, *ML, JSP etc.)
    - Automatic generation of "Struts" compliant tier-2 (Controller)
    - Widest choice of implementation for tier-3 (Model)
      - Java, COBOL, PL/I, EGL (generates Java or COBOL)
  - Visual composition of end-to-end (tier-1 to tier-3) web system
  - High-level 4GL language
  - Comprehensive lifecycle assistance and automation
  - Sophisticated End-to-end debugging and deployment automation



- **Separates component responsibilities**
- **Exploits strengths of each component ("best practice").**
- **Promotes reuse**
- **Leverages existing skills on existing platforms**

Struts Runtime

- **Implementation of MVC ("Model 2")**
  - Apache open-source subproject (Jakarta)
  - Struts V1.0 was released 6/2001, 1.1 in beta now
- **Framework for well structured web applications**
  - Web page flow control
  - Form input handling and validation
  - Error handling and reporting
- **Set of cooperating classes, servlets, JSP tags**
  - Action Servlet, Action, ActionForm, ActionErrors
  - JSP tag libraries to simplify JSP development
- **Benefits**
  - Applications more adaptable to change, easier to maintain
  - Developer responsibilities separate and less dependent
  - Strong adoption rate by J2EE community

Well Structured Web Apps: Tools for "Struts"

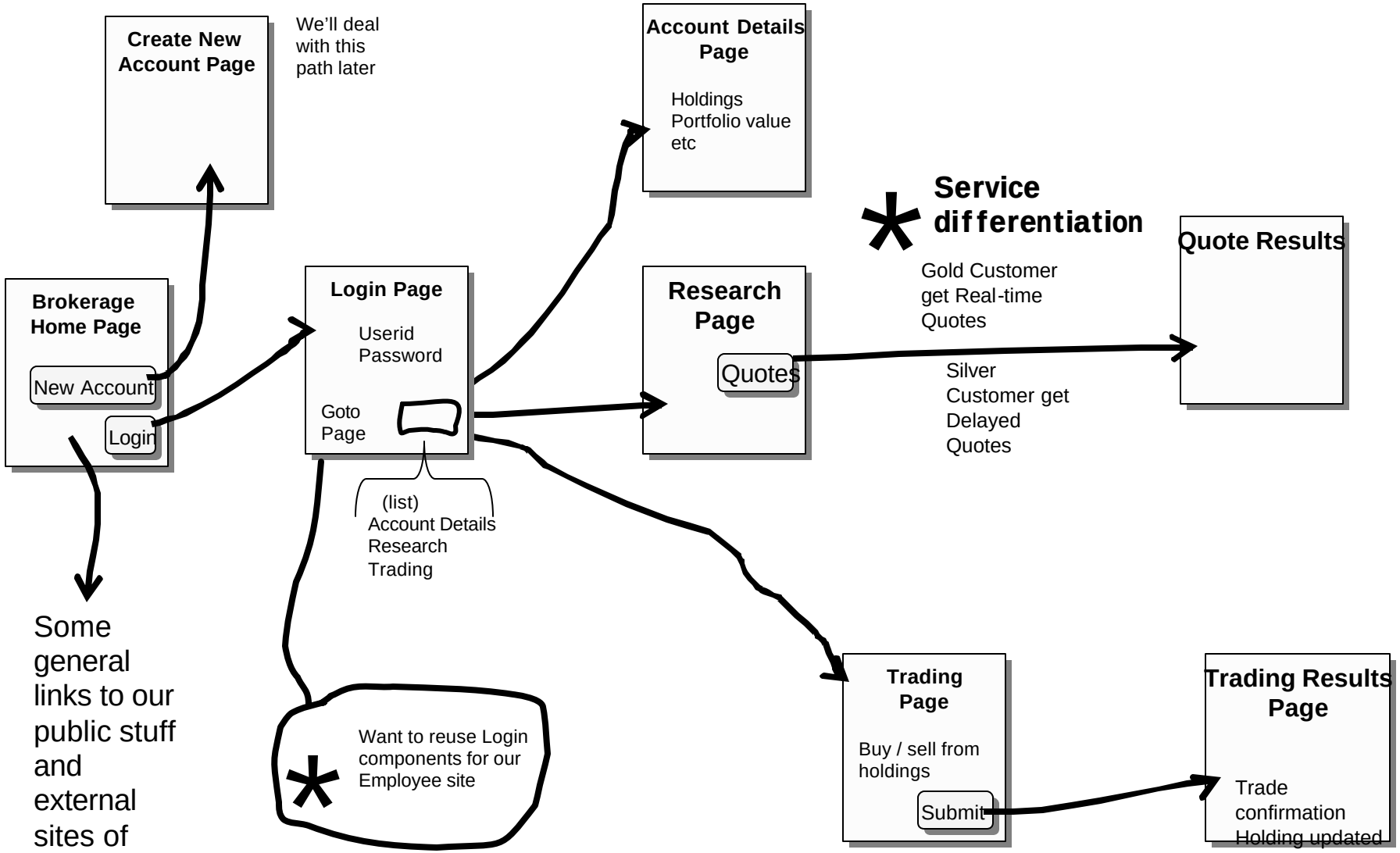
Tools for Struts Apps

- **Configuration editor** for struts-config.xml
- **Structure view** of struts artifacts and their relationships in a hierarchical form
- **Web Diagram Editor**…graphically renders flow of Struts-based web application
- Wizards and "cheat sheets" to facilitate creation of elements

Compare Web Transactions And Struts Runtime

Brokerage Web Site Design Session

(a top-down example using a whiteboard and yellow sticky notes)



Web Diagram Editor (using Struts)

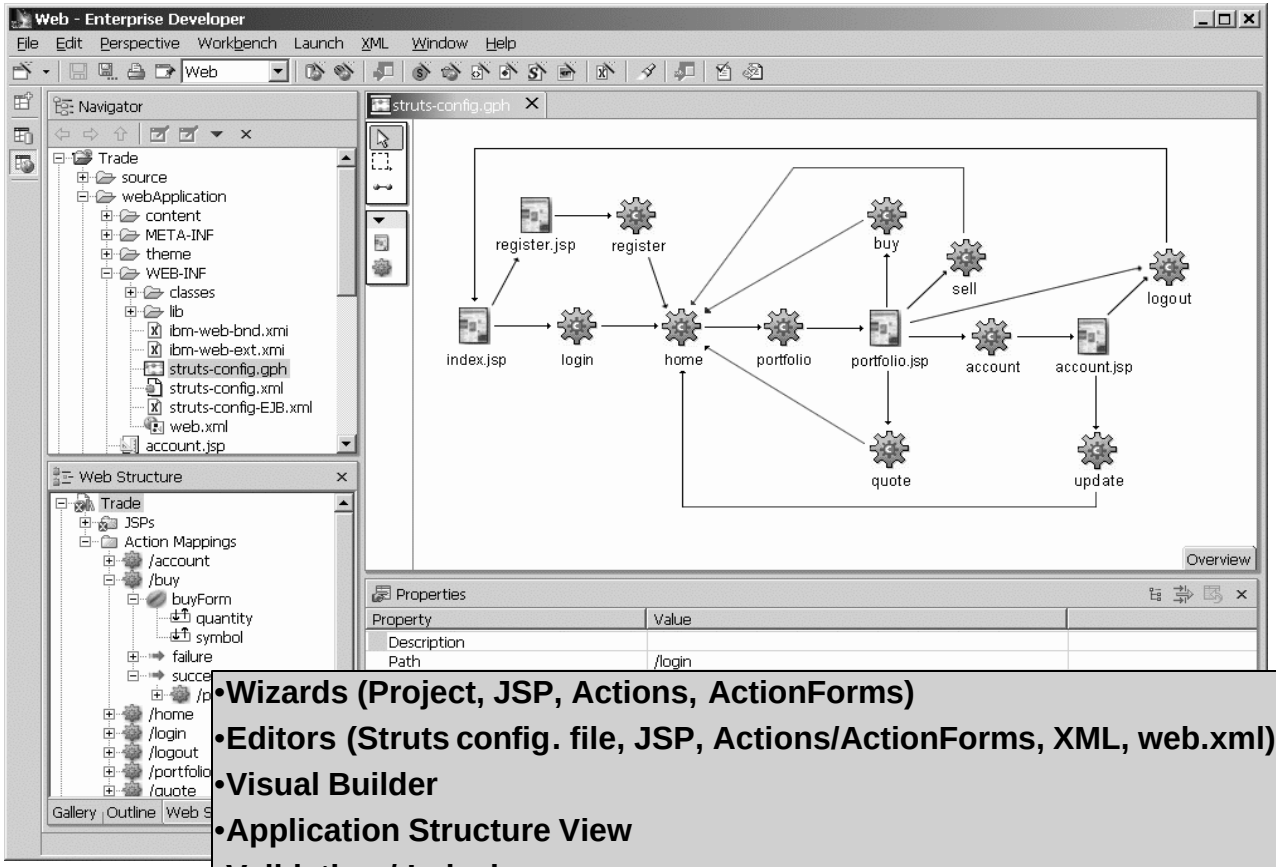
•Leverages emerging MVC2 open standard (Struts), makes it intuitive and easy

•As connections are created, appropriate updates are made

•Drop/define JSPs, Actions, Rules

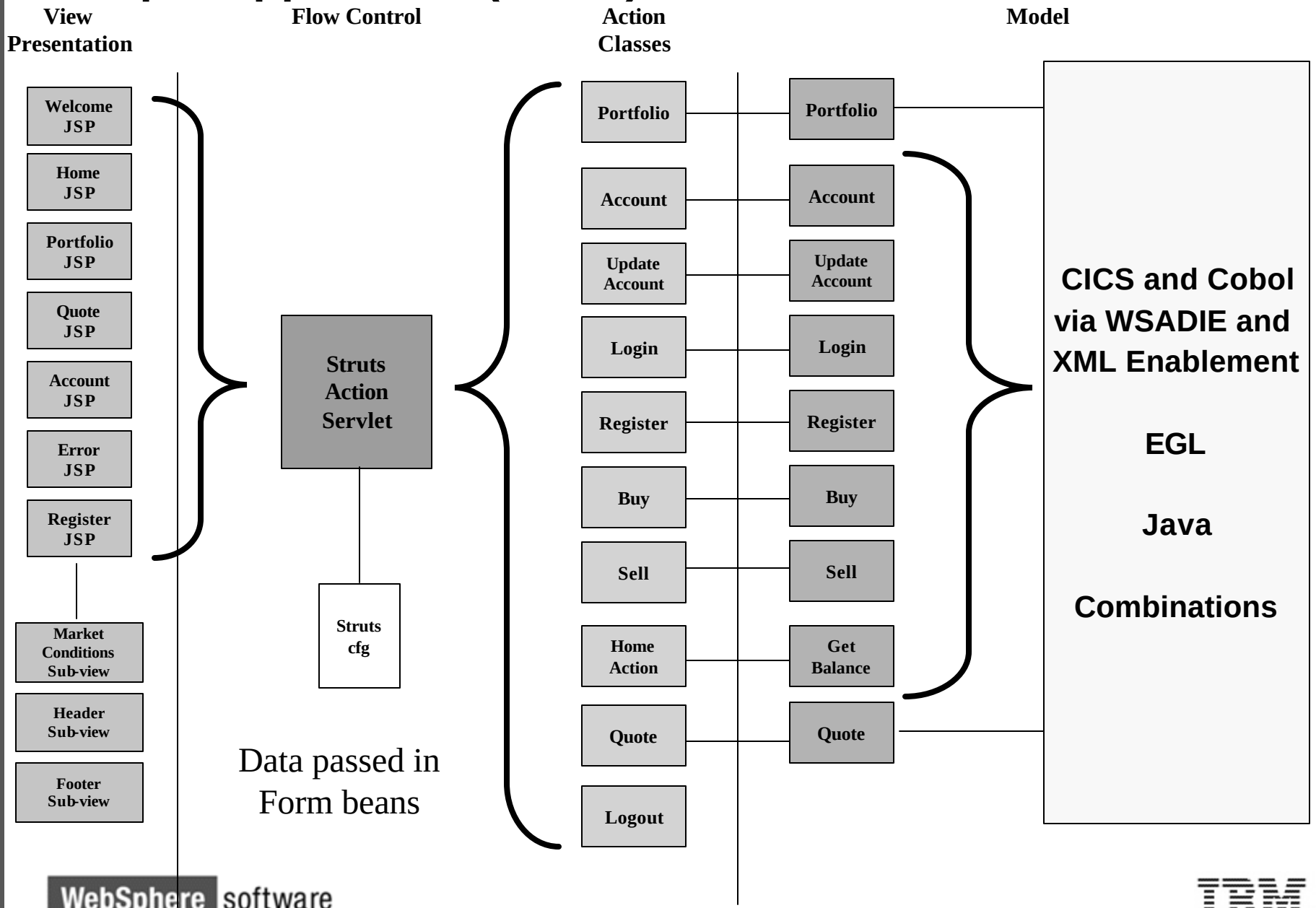
•Full integration with all the edit/debug tools

- –JSP
- –Actions/Struts Wizards
- –Models(Java, COBOL, EGL Components)
- –Web Structure Viewer



•Wizards (Project, JSP, Actions, ActionForms)
•Editors (Struts config. file, JSP, Actions/ActionForms, XML, web.xml)
•Visual Builder
•Application Structure View
•Validation / Indexing

Sample Application (Trade) http://tradehost.raleigh.ibm.com/Trade/

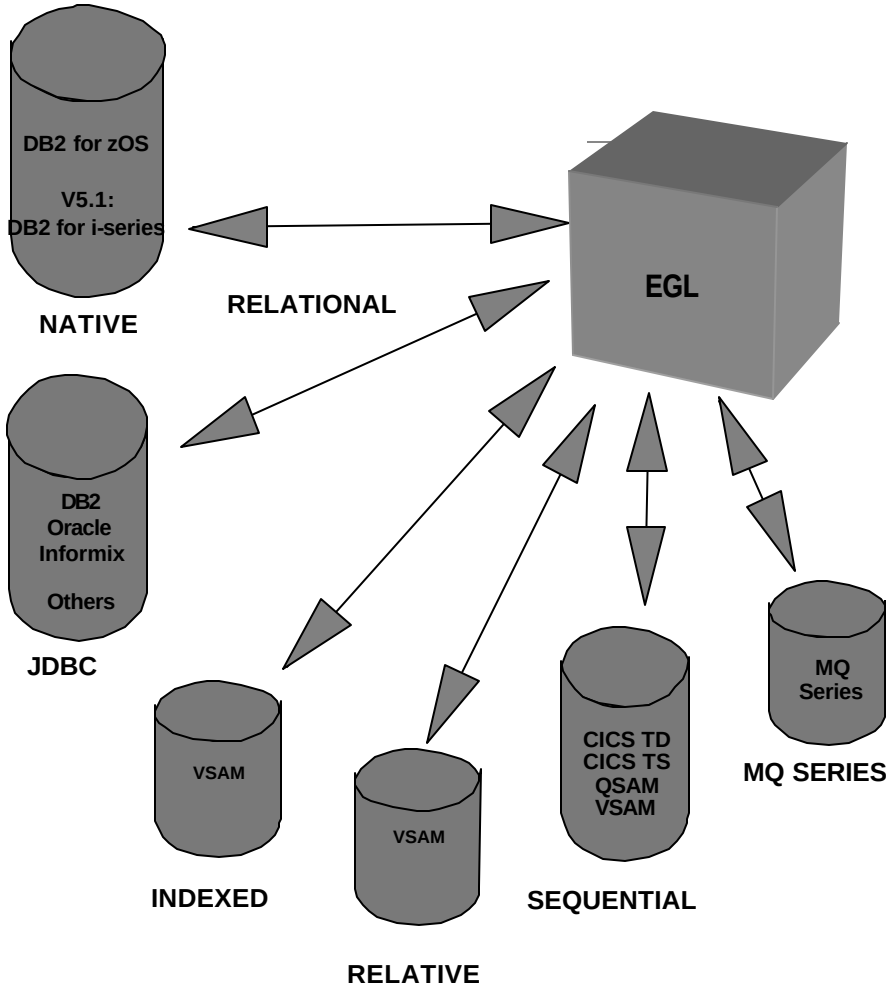


What is EGL?

Rapid Development:
Enterprise Generation Language

- **EGL = Enterprise Generation Language**
  - High level programming specifications
  - Hides complexities of implementation technology
    - For the non-Java programmer
    - For the non-CICS programmer
  - Generation of code optimized to run in target environment
    - Java for WAS
    - COBOL for CICS
- **Special Parts + Scripting Language**
  - Stored in files managed by workbench repositories
- **Interactive Development and Debugging**
  - Environment independent language
  - Built-in debugger
  - RAD development environment

EGL and RAD (Data Types)

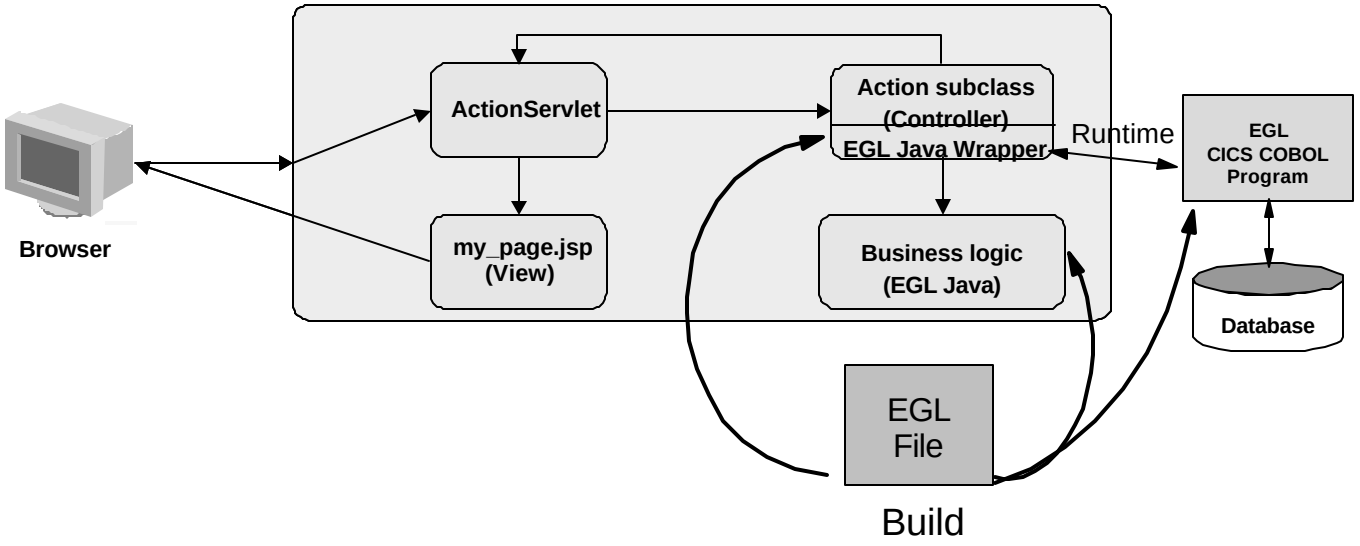


- **Record types**
  - **Serial, indexed, relative**
  - **SQL row**
  - **Message Queue**
  - **Working Storage, Redefined**

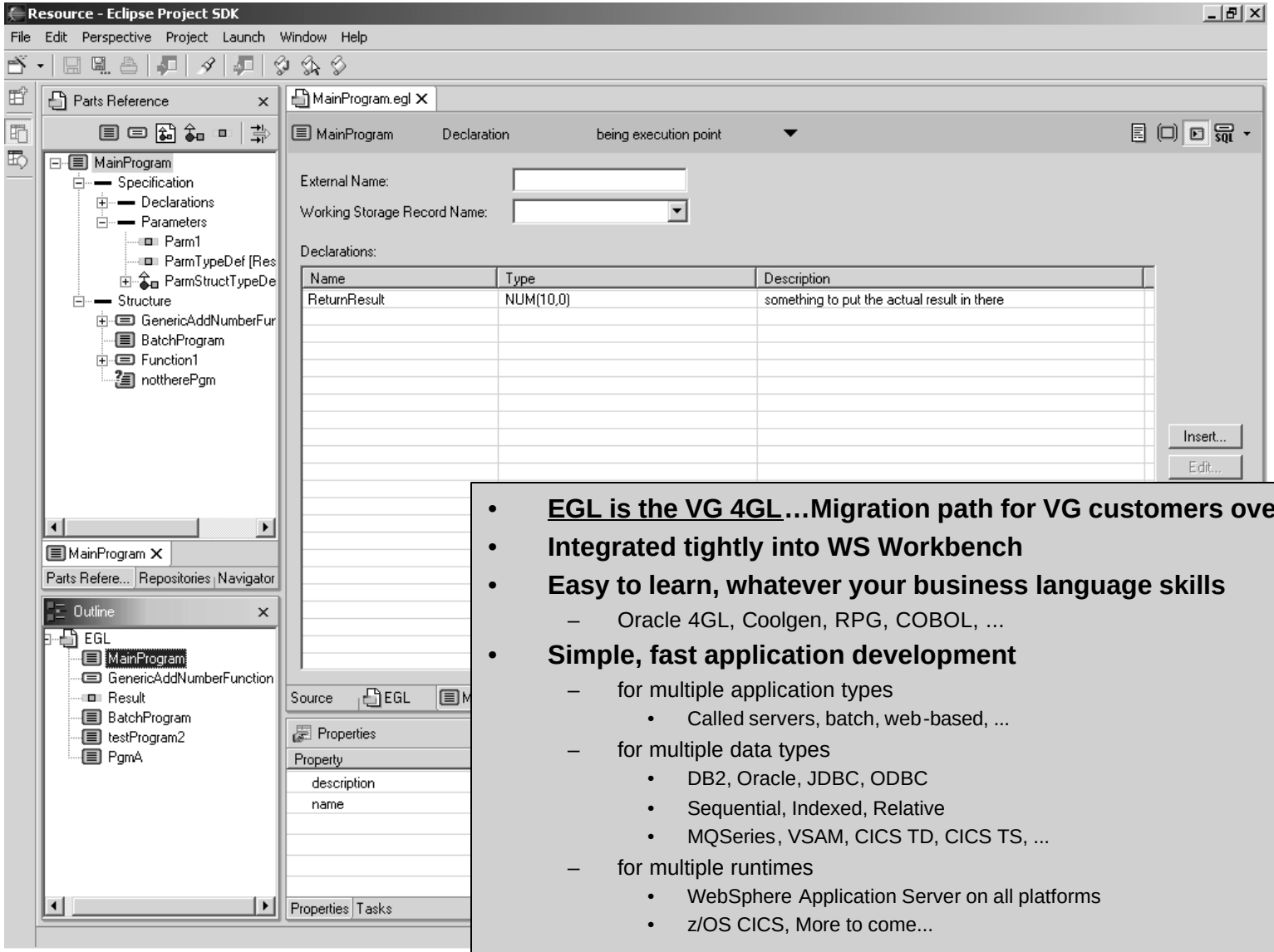
- **Data I/O Verbs**
  - **ADD**
  - **INQUIRY**
  - **SETINQ**
  - **SCAN**
  - **SCANBACK**
  - **UPDATE**
  - **SETUPD**
  - **REPLACE**
  - **DELETE**
  - **CLOSE**
  - **SQLEXEC**

EGL Web Application in 5.0

- **Integrated with Struts tools**
  - Very little to no Java required…Web Transactions will be based on this work in 1H2003
- **Generates source code for business logic**
  - Java for Windows or zOS Unix System Services
  - COBOL for CICS
- **Generates Java wrappers to include in Action Classes**
  - Including EJB Session Beans for wrappers if desired

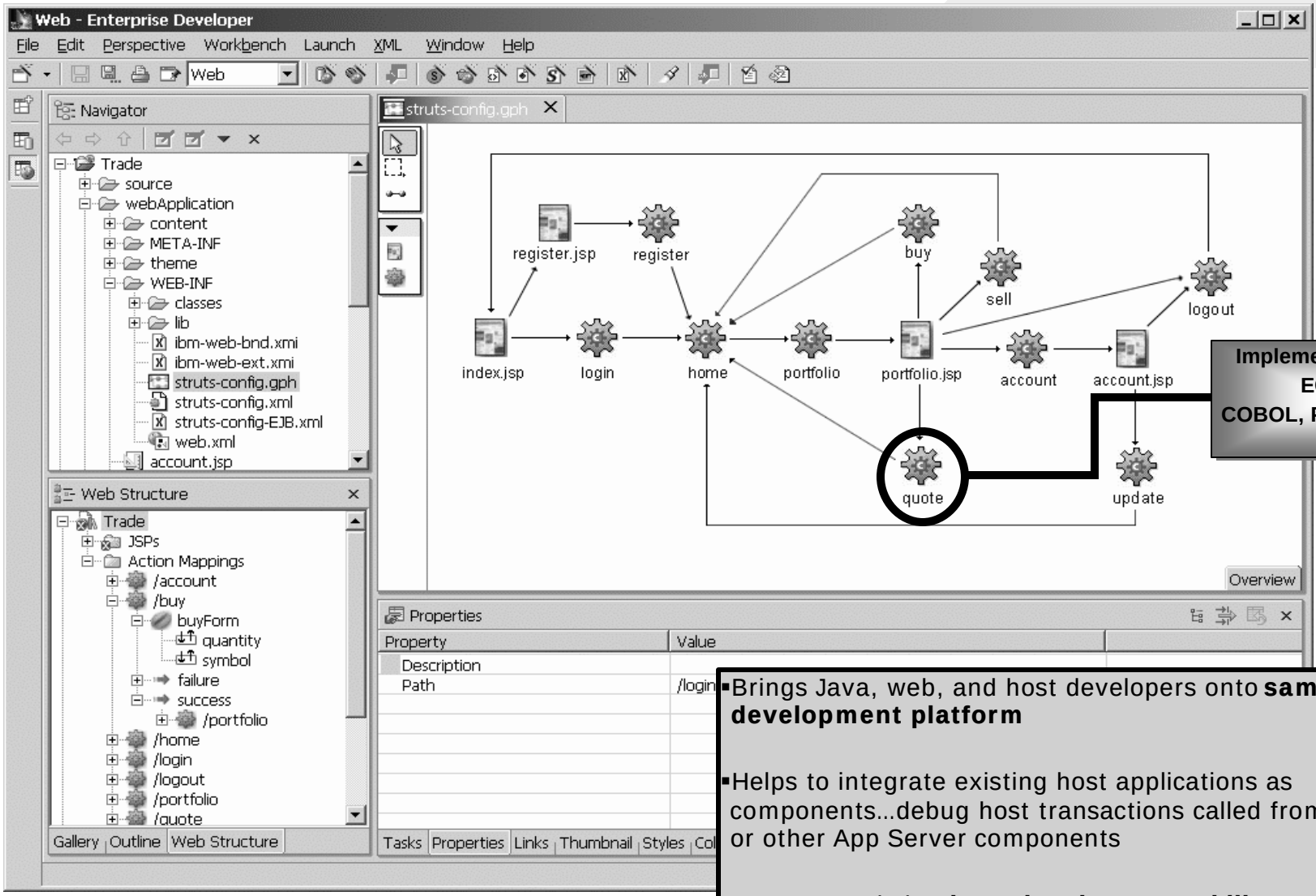


Enterprise Generation Language



- **<u>EGL is the VG 4GL</u>…Migration path for VG customers over time…**
- **Integrated tightly into WS Workbench**
- **Easy to learn, whatever your business language skills**
  - Oracle 4GL, Coolgen, RPG, COBOL, ...
- **Simple, fast application development**
  - for multiple application types
    - Called servers, batch, web-based, ...
  - for multiple data types
    - DB2, Oracle, JDBC, ODBC
    - Sequential, Indexed, Relative
    - MQSeries, VSAM, CICS TD, CICS TS, ...
  - for multiple runtimes
    - WebSphere Application Server on all platforms
    - z/OS CICS, More to come...

Traditional Development Environments

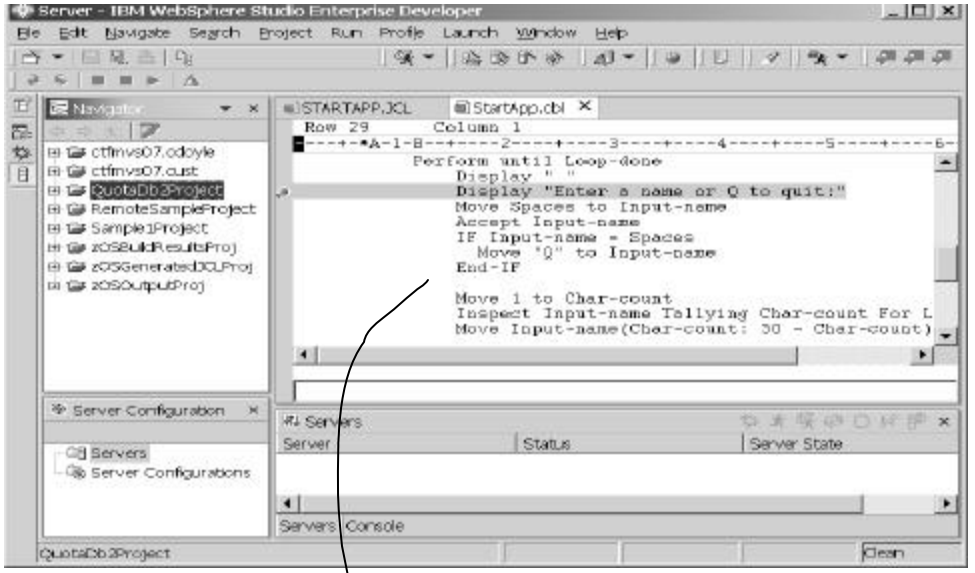


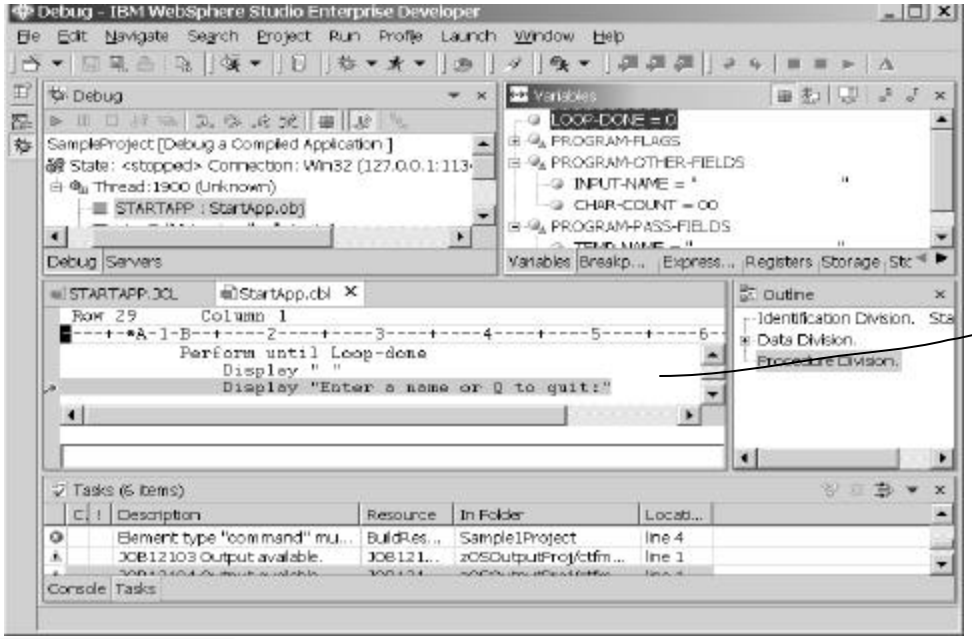
Implement using:
EGL,
COBOL, PL/1, EJB's,
…

- Brings Java, web, and host developers onto **same development platform**
- Helps to integrate existing host applications as components…debug host transactions called from EJB's or other App Server components
- Leverage existing **host development skills**

IDE for zOS

- **Interactive, workstation-based environment**
  - Faster development with less errors
  - Host offload of development CPU cycles



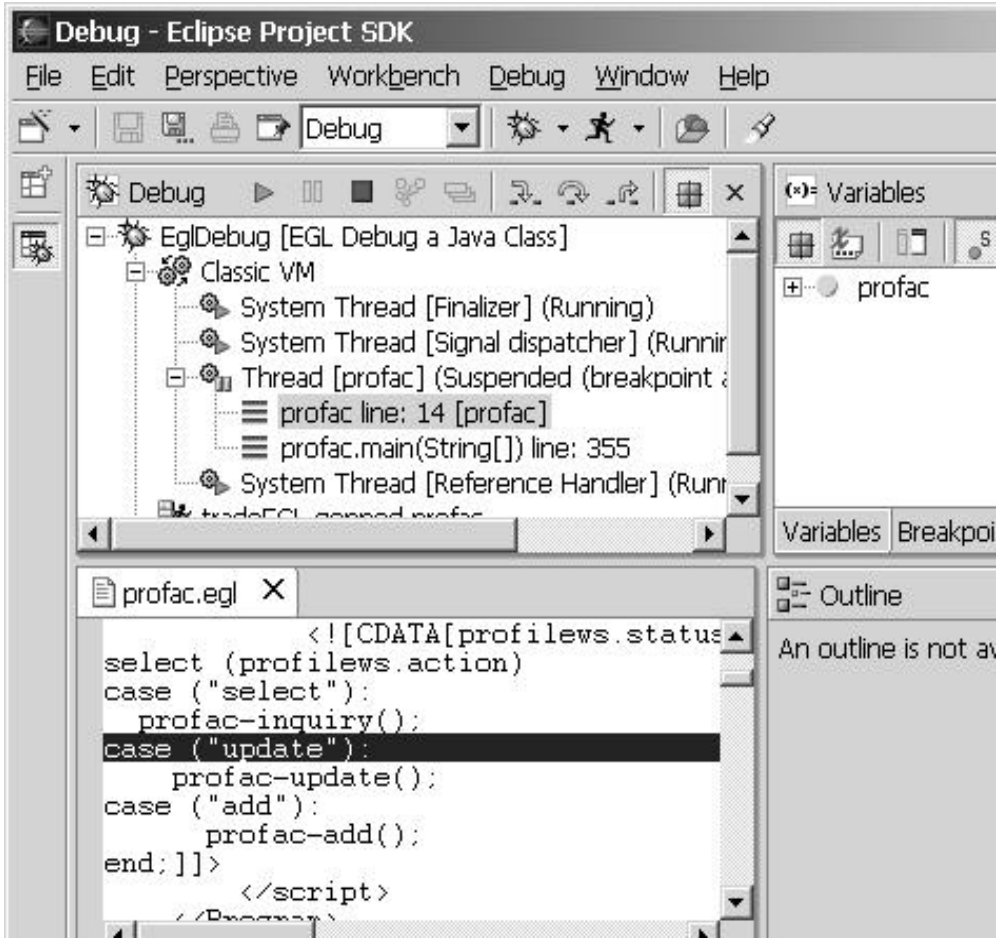


- **Edit/compile/debug on the workstation**
  - Language sensitive editing: COBOL, PL/I, Assembler
  - Data Assistant
  - BMS Map Editor
  - Performance Analyzer

- **Prepare output on the mainframe**
  - Job generation, submission, and monitoring
  - TSO command execution

Testing/Debugging

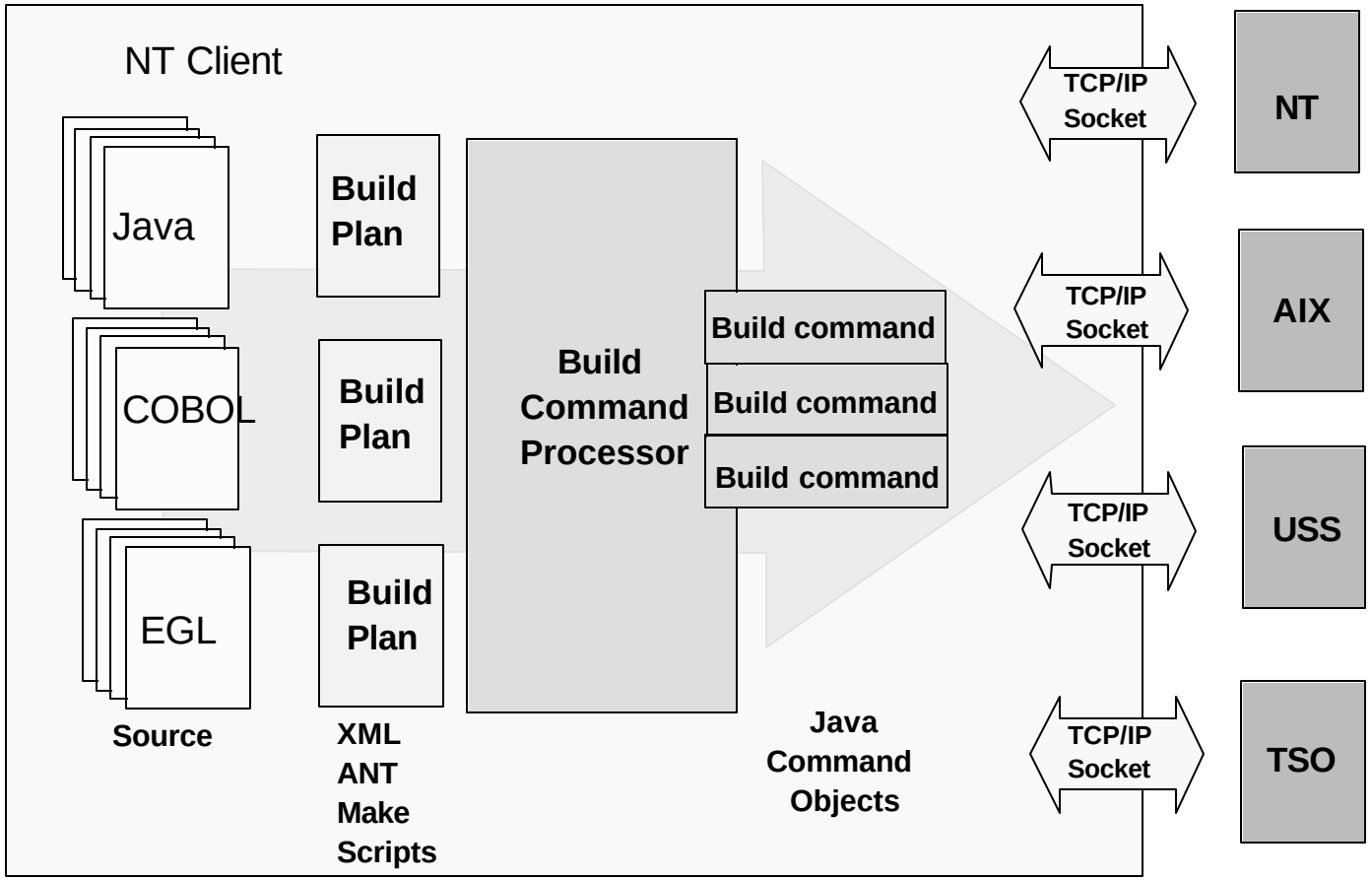
- Validate/prevent syntax errors during coding
- Animate and Debug the application Flow



- Traditional Debugging
  - ►Java and JSP debugger
  - ►COBOL, PL/I debugger
  - ►EGL debugger
- Code Profiling
  - ►Java and Distributed
- Resource monitoring
- WebSphere Test Environment
- Object Level Tracing
- Third party test tools
  - ► Mercury, Sitraka

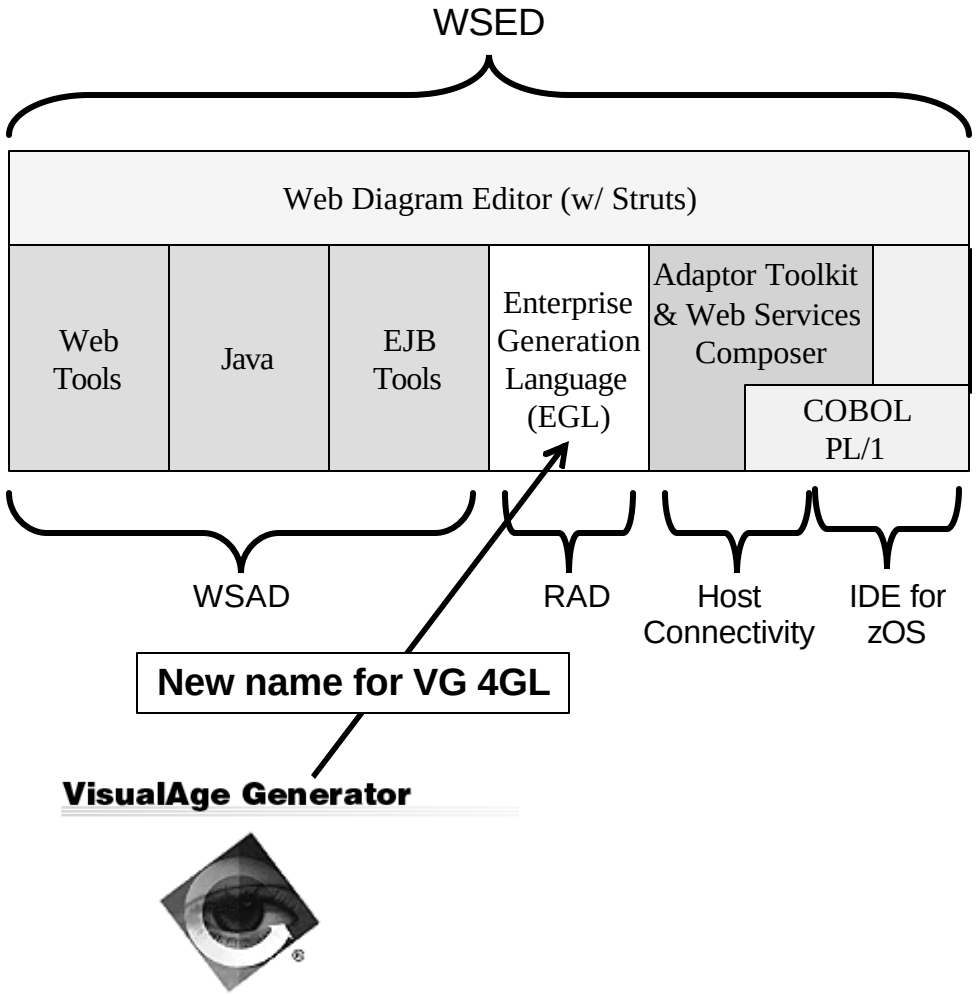
Build/Deploy

- Automated Build based on Build Plans (XML)
- Automatic transfer to target machine
- Run build commands on target machine



WSED Product Packaging

- Built on and includes all of Websphere Studio Application Developer – Integration Edition
  - HTML/JSP editing
  - Java tools
  - EJB tools
  - Web Services tools
  - Connectors
  - Microflow-based services
  - XML tools
  - Rational ClearCase LT
  - Adaptor to use CVS
  - …
- Includes VisualAge Enterprise Suite 4.5
  - VisualAge Generator
  - VisualAge COBOL
  - VisualAge PL/I
  - …
- Includes sample application that demonstrates several different business logic implementations



Deliverables

Summary

- **In 2001, for WSED 5.0, we set out to…and delivered on:**
  - EGL
    - Build EGL infrastructure in the Websphere Studio Work Bench
    - Build Struts tools as a basis for Web Transactions
    - Support “called batch” style applications
    - Generate Java for deployment to WAS
    - Generate COBOL for deployment to CICS
    - Debug Generated Java, mapping it back to EGL in debugger
    - EGL Language enhancements,
      - Source saved as plain text…A source editor to go with it
      - Paul will cover detailed enhancements in a later presentation
    - Platforms: Windows, zOS, i-series…others very close
    - Also achieved Simulated Debug capability (shipping in GA)
    - Also achieved wrapping EGL program as Web Services!
  - IDE for zOS
    - Edit/Compile/Debug of COBOL, PL/I, Assembler for zOS…
    - Tight Integration with WS Work Bench
    - Local or Attached Remote Development supported
  - Struts
    - Support for struts 1.1
    - Configuration Editor
    - Structure View
    - Web Diagram Editor

Design/Prototype
+ Customer Input
= Better Product

When to use EGL instead of VG

- Building a new web application with VA Gen
- Interested in Struts-based (MVC) web architecture
- Proofs of concept…prototypes

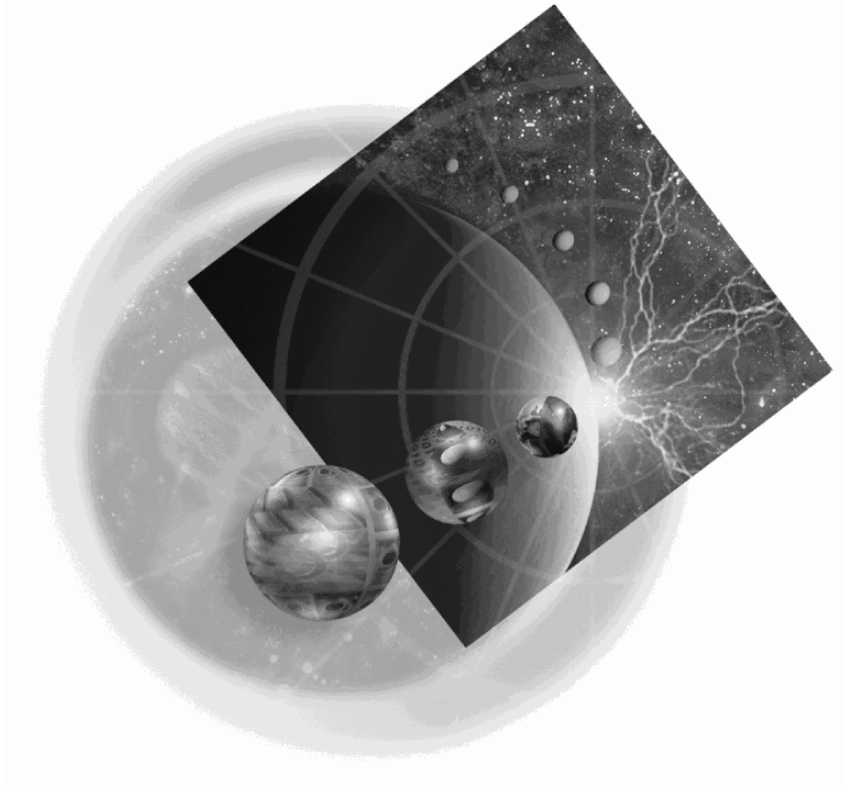
Dates

Summary

- **5.0 Early Availability**
  - Became Available for purchase on 9/30/2002
  - Based on Websphere Studio Application Developer
  - Reason for term “Early”: WAS 5.0 Unit Test Environment is beta level code.

- **5.0.1 General Availability**
  - Will be Available in January, 2003
  - Based on Websphere Studio Application Developer-Integration Edition…brings connectors to host components
  - Includes additional functionality:
    - EGL…
      - Interpretive Debug
      - EGL programs wrapped as web services
    - Struts…
      - limited support for Struts 1.1,
      - FormBeans in Web Diagram Editor
      - “Cheat Sheets” to help with new operations
    - IDE for zOS…
      - Simplified installation/configuration
      - Code Assist for COBOL

Thank you!!



Websphere Studio Enterprise Developer