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e business software

Modernizing and Integrating Today's Enterprise Applications

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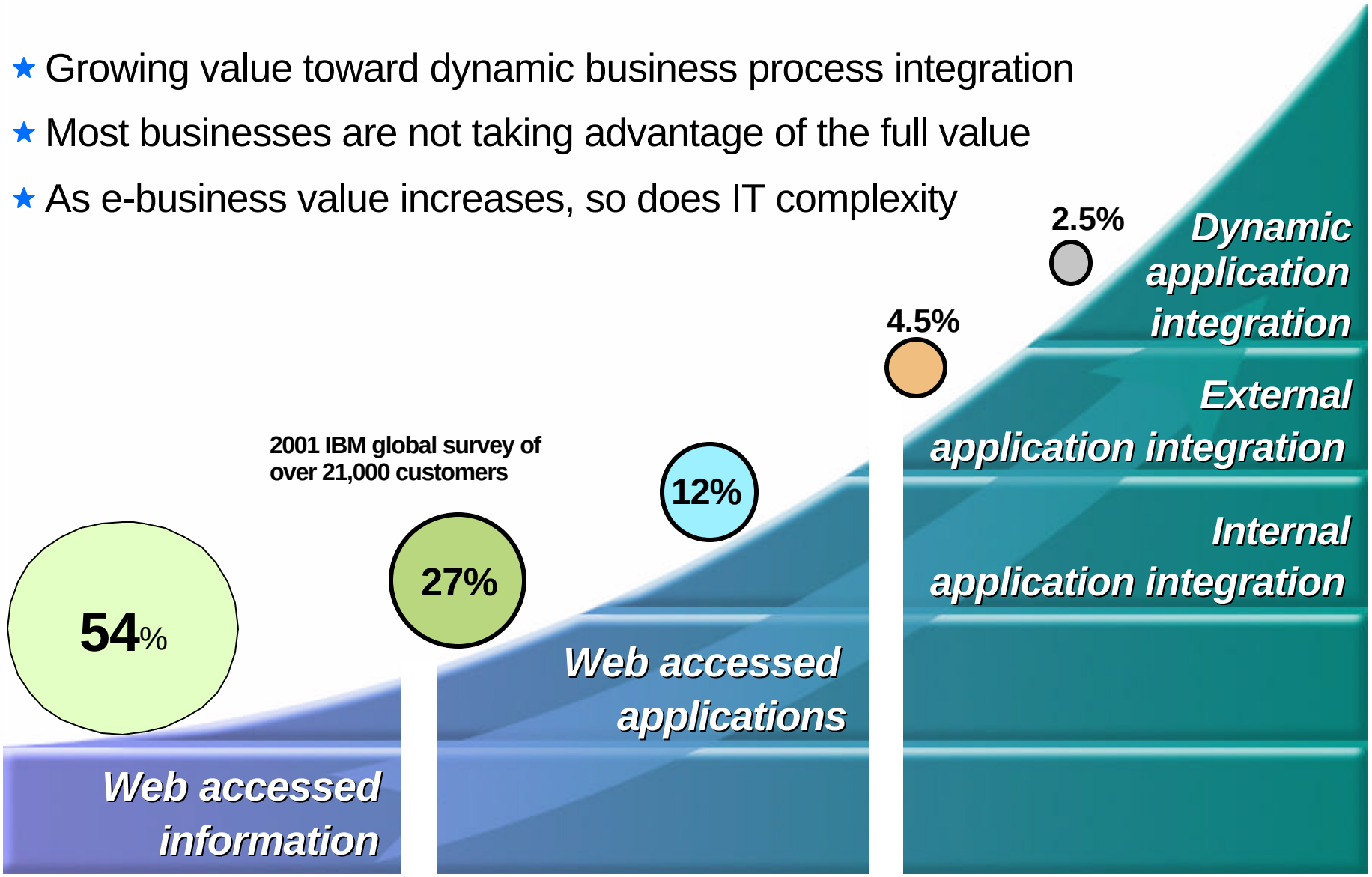
Outline

- **Enterprise Technology Challenges and Marketplace**
- **Modernizing the Enterprise**
- **Enterprise Development - What, why, and where?**
- **Summary and Feedback**

The evolution of e-business

- Growing value toward dynamic business process integration
- Most businesses are not taking advantage of the full value
- As e-business value increases, so does IT complexity



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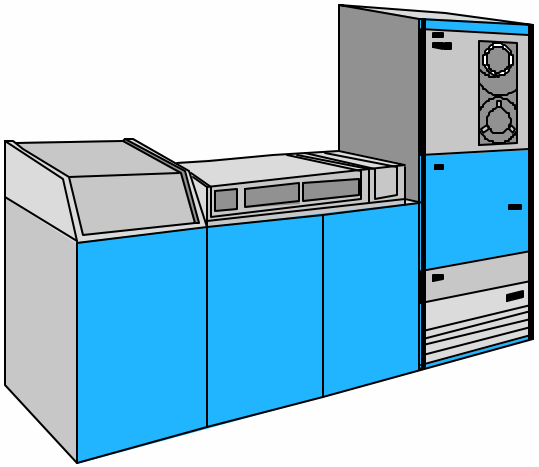
Why should companies care about modernizing?

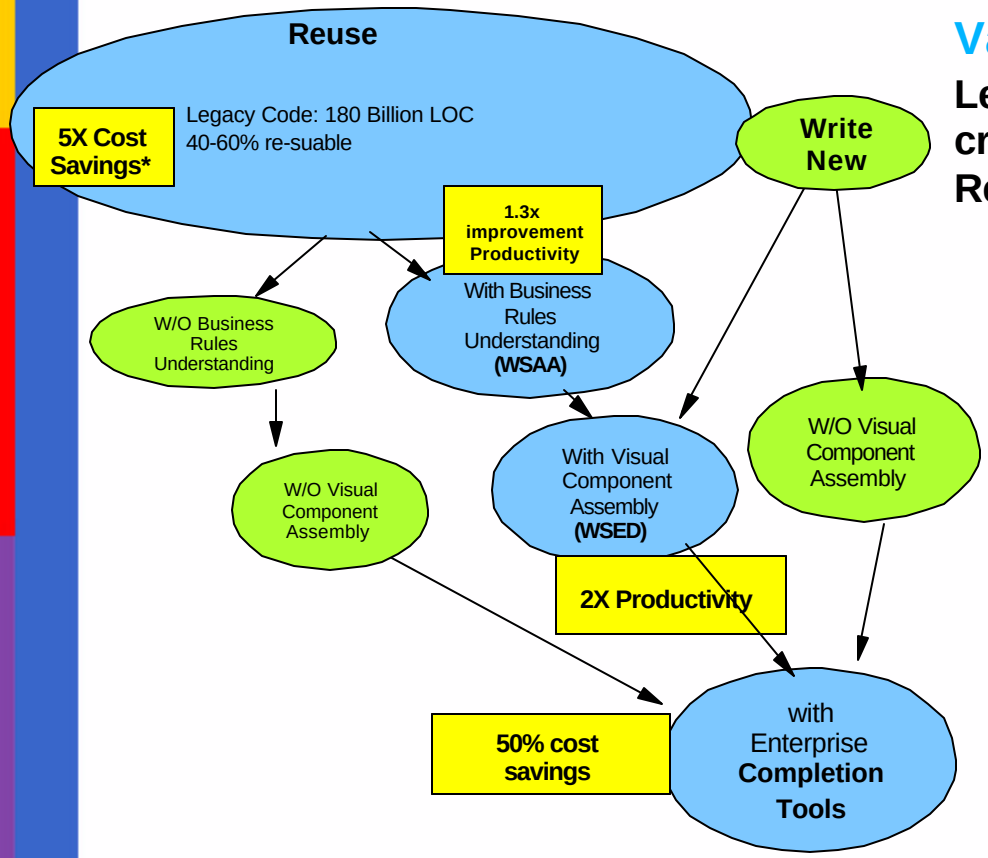
Why are Legacy applications important?



- ★ 200 Billion lines of COBOL code in existence
  - Source eWeek
- ★ 5 Billion lines of COBOL code added yearly
  - Source Bill Ulrich, TSG Inc.
- ★ Between 850K and 1.3 Million COBOL developers
  - Source IDC

Rewriting existing mainframe applications and moving them to e-business platforms is not an option

New Value with Modernization



Notes:
* Based on Software development productivity analysis
** Based on customer Connector development study
*** Based on customer productivity studies

Value to the Enterprise

Leverage existing systems, applications and skills to create dynamic e-business provides excellent Returns on Investment

Reuse saves time and money

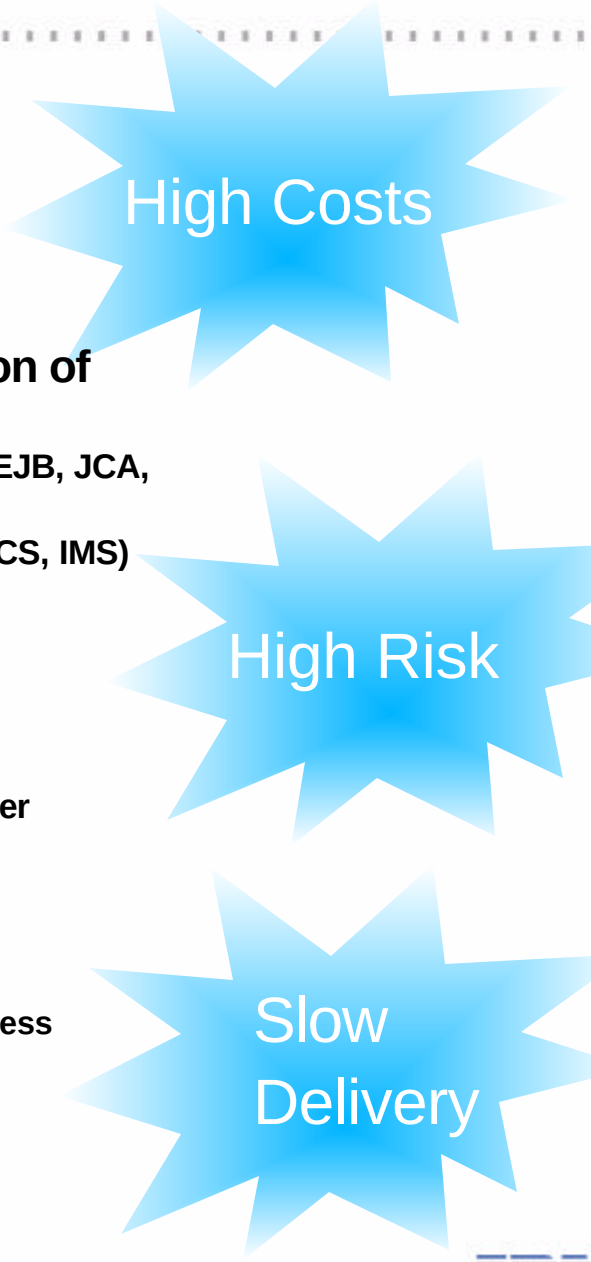
- IBM customers have significant business knowledge invested in enterprise systems (over 180 billion Lines of code and 5 billion new per year) and 40-60% is reusable
- Customer wants to leverage Qualities of Service built into enterprise systems

Provide Competitive Advantage

- Accelerates the e-business adoption
- Single vendor for complete Enterprise e-business development needs

Challenges/hurdles

- **Legacy not ready for integration into Web Application Architecture**
  - ✓ Tedious and costly manual analysis and harvesting
- **Scarcity of Skills and Steep learning curve(or perception of steep learning curve)**
  - ✓ Complex new/emerging technologies (XML, SOAP/WSDL, Struts, EJB, JCA, etc)
  - ✓ Massive amounts of traditional technologies (COBOL, PL/I, CICS, IMS)
  - ✓ Need to include new developer communities
- **Multiple Artifacts**
  - ✓ More complex Application design
  - ✓ Fragmented development process
  - ✓ Responsibility boundaries and Communication among team member
  - ✓ Error prone integration, test and build
  - ✓ Multiple point tools and multiple skills must be in place
- **Clashes between development groups**
  - COBOL developers know the enterprise applications, hold the business knowledge, Java developers have the web knowledge
- **Too much backlog and not enough time to deliver**



Enterprise Modernization

Business Requirements

- Simplify the complexity of leveraging existing enterprise applications
- Extend and transform IT assets into e-business components
- Use existing enterprise business rules to speed development of e-business applications
- Leverage Qualities of Service on enterprise systems
- Common development environment to leverage traditional and web skills

Value Proposition

- **Business Benefits**
  - Lowers Total Cost of Ownership for development
  - Faster time to market by speeding enterprise e-business application development
- **Technology Cost Savings**
  - Reuse of existing IT assets vs writing new results in 5X cost savings
  - Ease understanding of business rules vs manual code analysis results in 1.3 X productivity improvement
  - Visual assembly tools can increase productivity by 2X
  - New problem determination, performance and workload testing tools can save 50% of the total deployment cost

How we deliver to the requirements

Requirements:

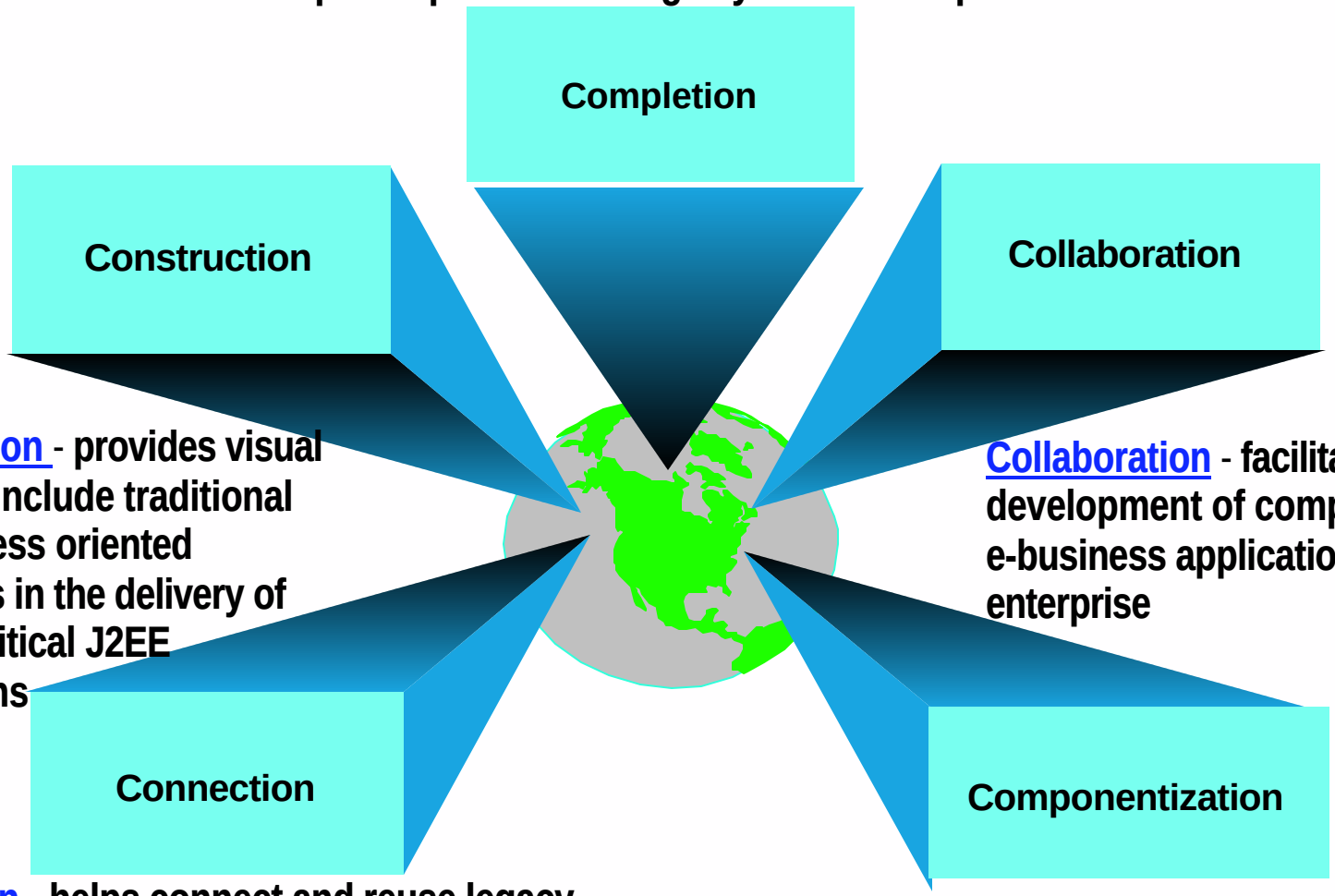
- ✓ Enable reuse of existing components
- ✓ Retool COBOL and PL/I developers to web developers
- ✓ Include vastly more developers in the process (business oriented)
- ✓ Deliver common way to move business processes between languages and transactional environments
  - ✓ Ultimate write once - run anywhere
- ✓ Provide distributed debugging and testing across various runtimes
- ✓ Continue to support traditional zOS development and maintenance

Support each stage of this process by:

- Provide access
- Deliver understanding
- Discover interfaces
- Generate wrappers
- Extract business processes for service creation -code segments or visual interfaces
- Enable build of differing technologies with diverse skill sets
- Support testing & runtime execution

Enterprise Modernization Strategy

Completion - speeds the movement of applications from the development process through system test to production



Construction - provides visual tooling to include traditional and business oriented developers in the delivery of mission critical J2EE applications

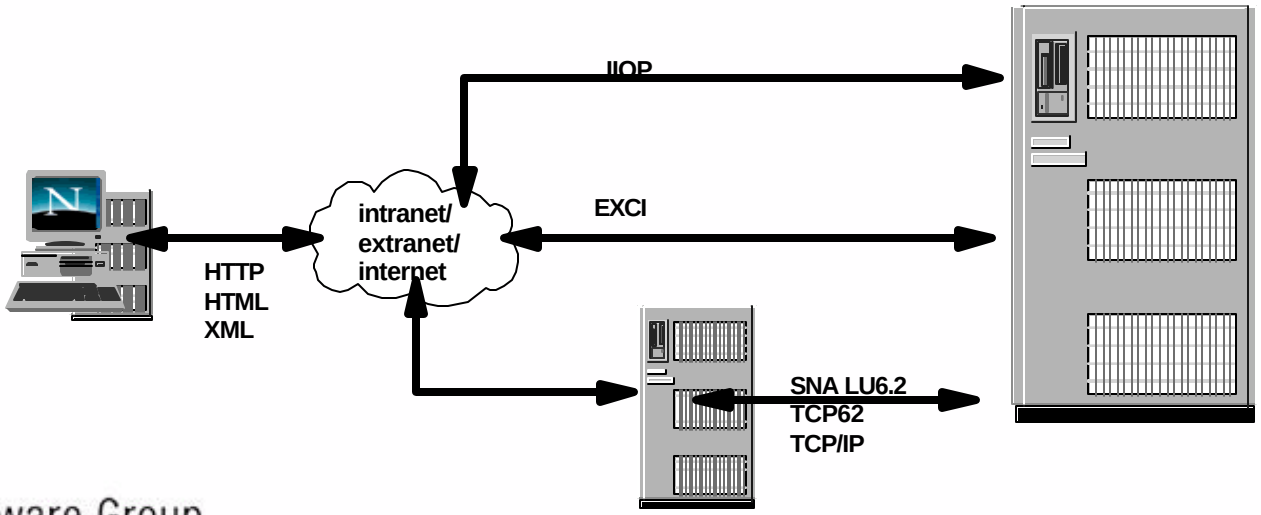
Collaboration - facilitates team development of component based e-business applications across the enterprise

Connection - helps connect and reuse legacy enterprise applications for e-business by using connectors

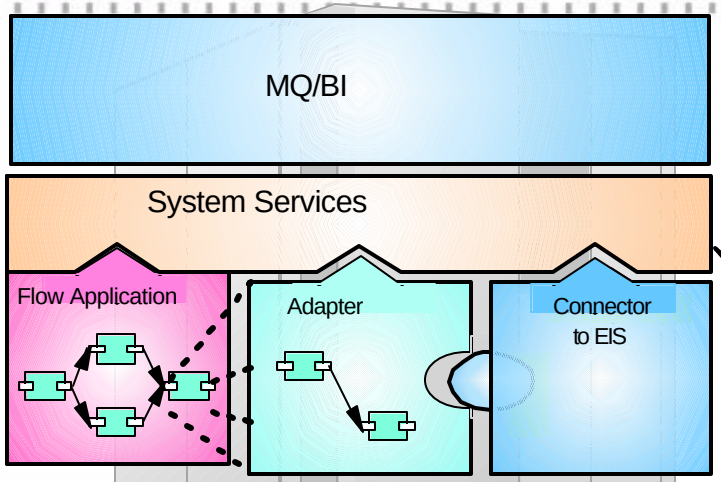
Componentization - promotes the transformation of legacy Enterprise Applications into components and the integration of these components into new e-business applications.

Enterprise Modernization: Connection

- Objective
  - ***Simplify the connectivity to host components***
- Strategy
  - ***IBM tooling supports the generation of WSDL and connector beans that provide automated access to existing enterprise environments***

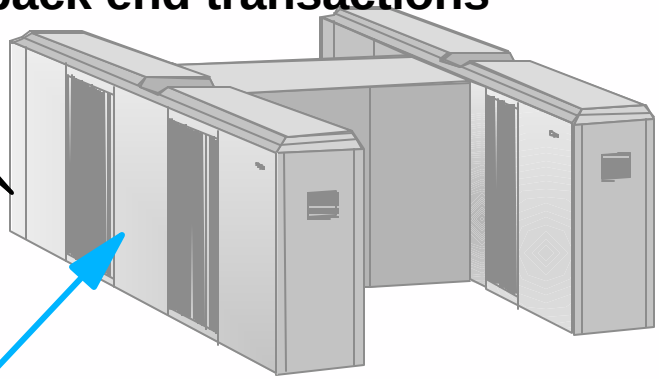


Enterprise Modernization: Connection



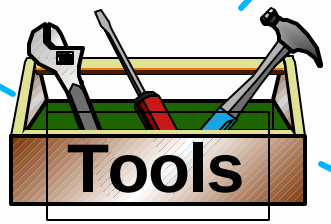
Enterprise Information System (eg. CICS)

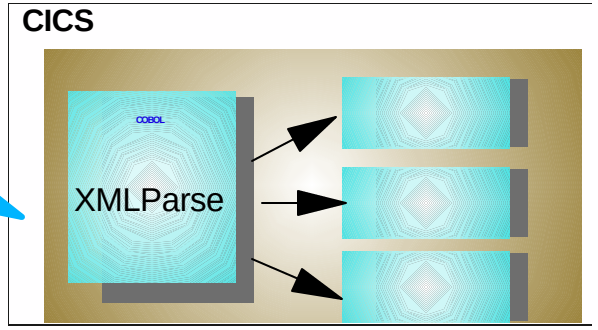
CTG: JCA connectivity to back end transactions



WSED:

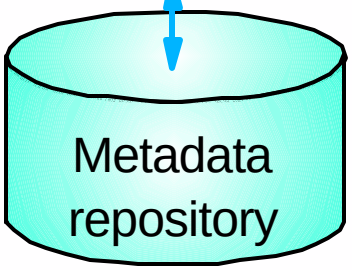
- generates command beans
- enables migration from CCF
- Imports metadata (eg. COBOL copybook)
- Generates WebSphere and Enterprise based transformers





WSAA

- scans artifacts and builds metadata repository
- Connector builder assistant creates metadata files



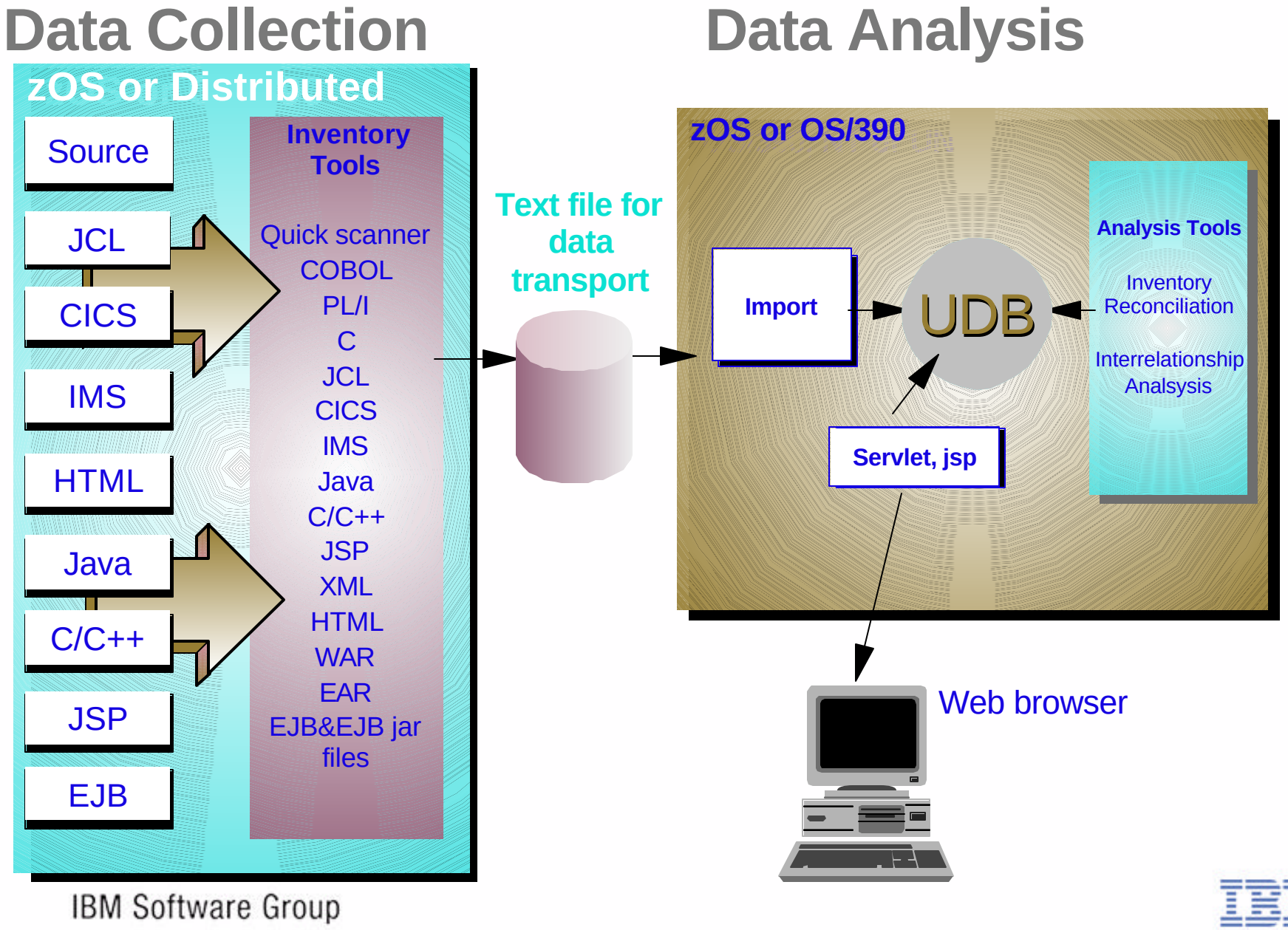
Enterprise COBOL

- processes XML messages
- accesses enterprise business logic and databases

WSAA Problem summary

- Application dependencies are extraordinarily complex, and exist at multiple levels
  - Job and transaction
  - File and database
  - Programs
  - Applications
  - Sites
  - Enterprise
- Dependencies cross technologies and environments
  - MVS and distributed
- Need to support application maintenance, development and test
- Need to support application integration and transformation

WSAA: Implemenation Topology



Connect: Enterprise Cobol XML Support

XML/
SOAP

CICS/IMS/Batch/DB2 COBOL

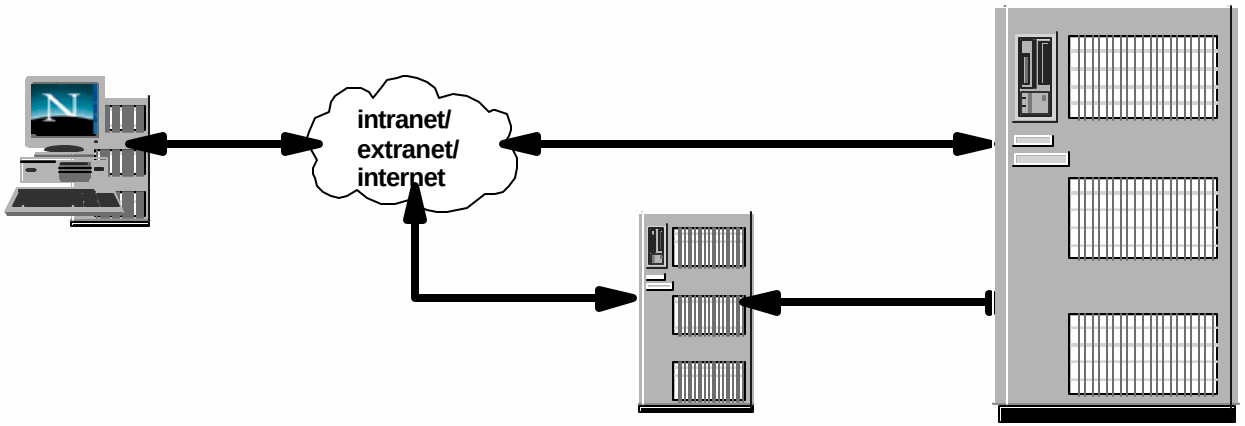
XMLParse Document1

```
XMLDoc-Handler
  Evaluate xml-action
    when 'START-OF-DOC'
      ...
    when 'END-OF-DOC'
      ...
    when 'START-OF-ELEMENT
      ...
    when 'ATTRIBUTE-NAME'
      ...
    when 'ATTRIBUTE-CHAR'
      ...
    when 'END-ELEMENT
    when 'START-OF-CDATA-Section'
    when 'CONTENT-CHARACTER
    when 'PROCESSING-INSTRUCTION-TARGET'
    when 'PROCESSING-INSTRUCTION-DATA'
'
```

Enterprise Modernization: Connection

Value

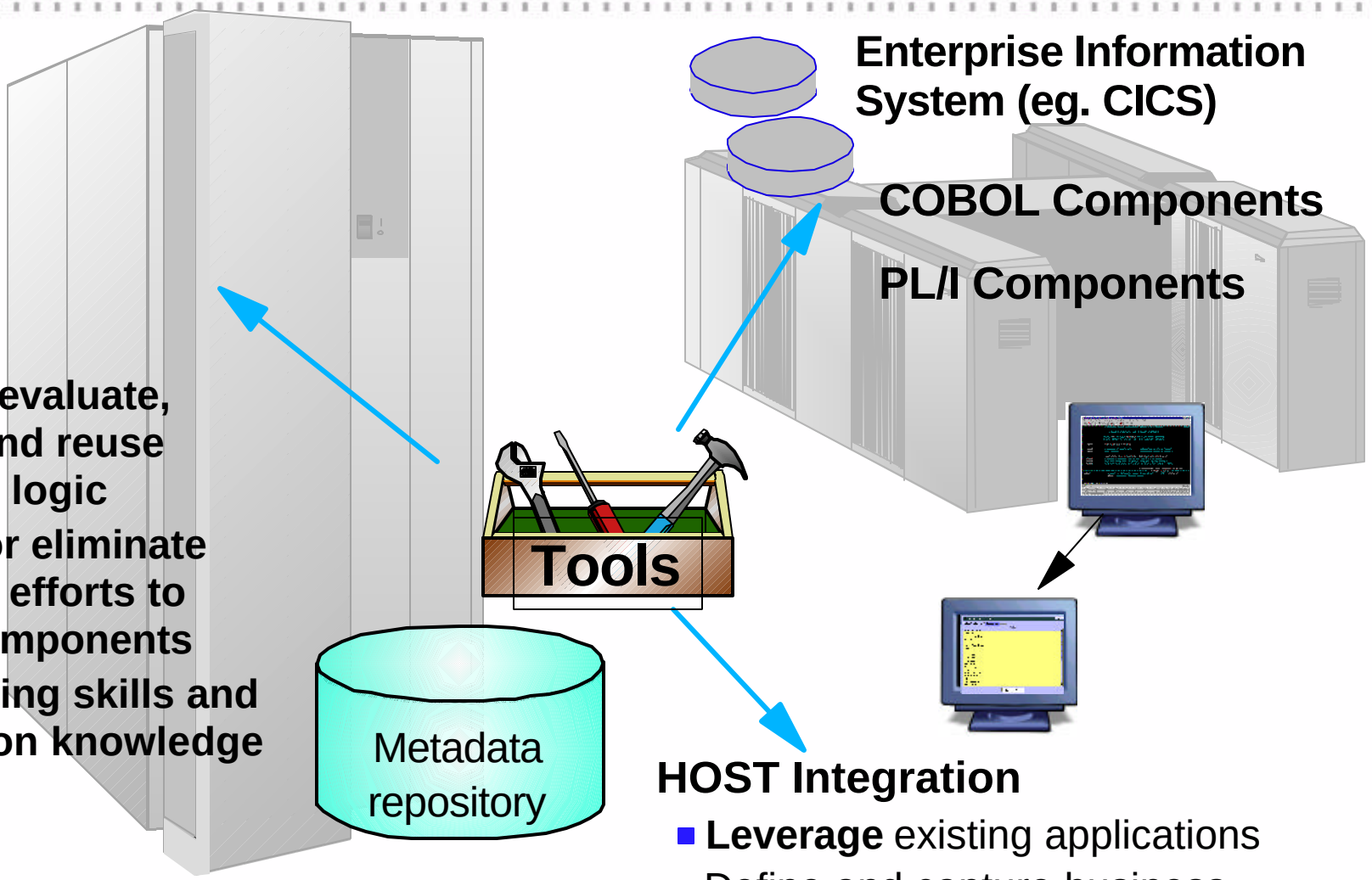
- By easing the burden of connecting disparate applications and technologies, customers can realize savings by modernizing and reuse



Enterprise Modernization: Componentization

- Objective:
  - ***Reuse existing enterprise applications as components***
- Strategy
  - ***Use application understanding tools to extract the business rules and knowledge of existing enterprise applications quickly***
  - ***Use component assembly and building tools***
    - ***Compose e-business application business flow quickly***
    - ***Rapidly develop components by automating the build, deployment and unit test***

Enterprise Modernization: Componentization



WSAA

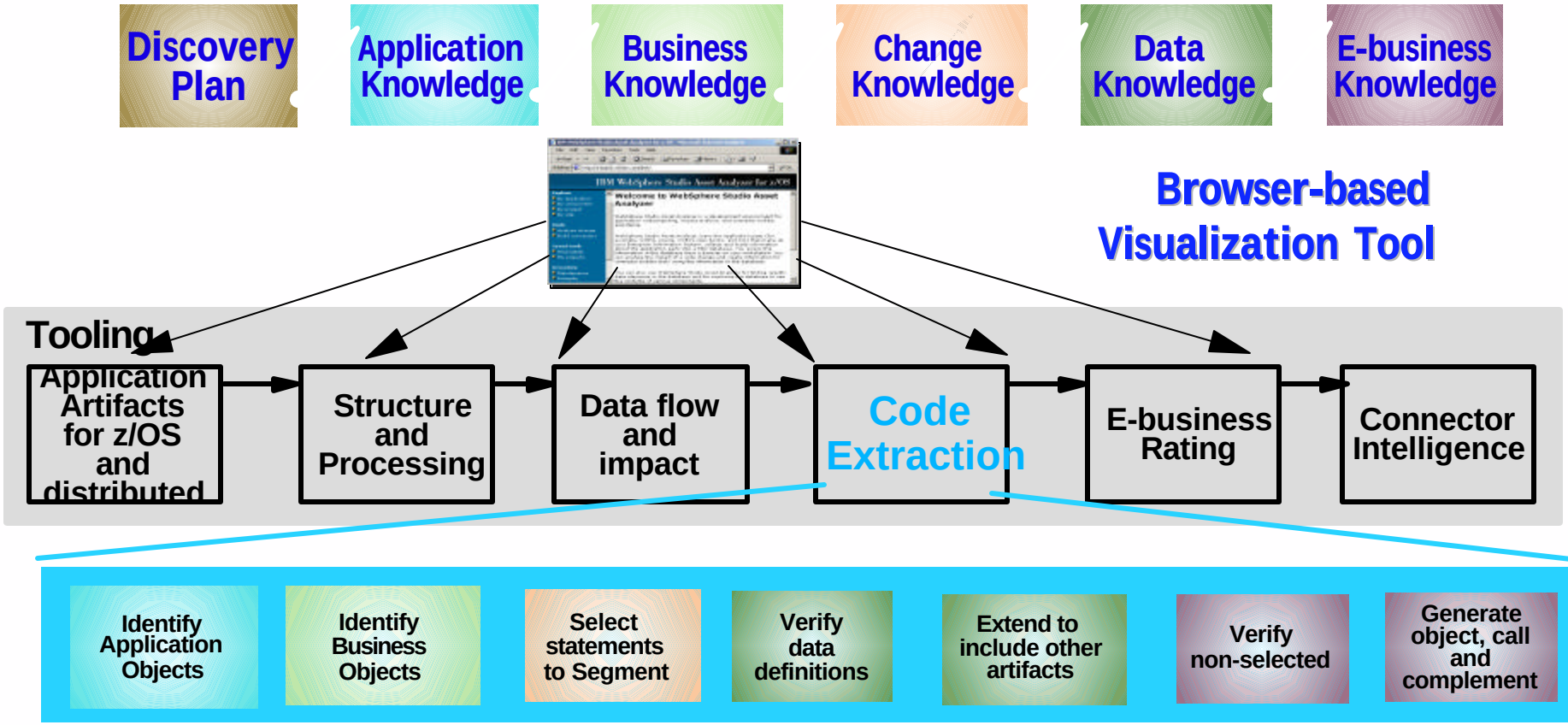
- **Analyze, evaluate, isolate, and reuse business logic**
- **Reduce or eliminate intensive efforts to create components**
- **Use existing skills and application knowledge**

HOST Integration

- **Leverage** existing applications
- Define and capture business process
- **Build** composite applications with multiple delivery options
- Integrate with WebSphere

Componentization: WebSphere Studio Asset Analyzer

Analyzer, code slicing, and componentization tools simplify reuse



VALUE

- **Analyze, isolate, and reuse existing business logic for the Web**
- **Reduce or eliminate labor intensive efforts to create connectors**
- **Use existing skills**

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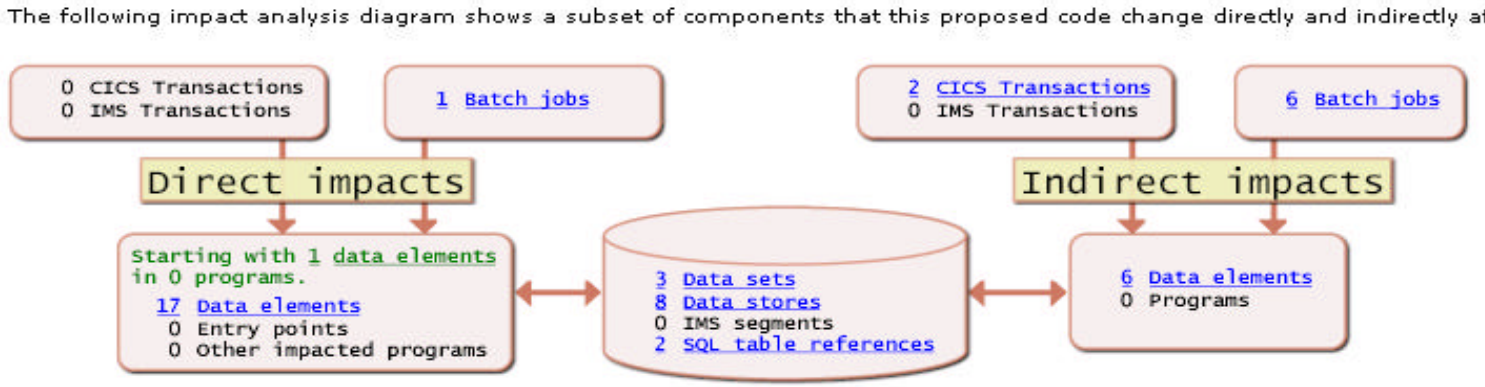
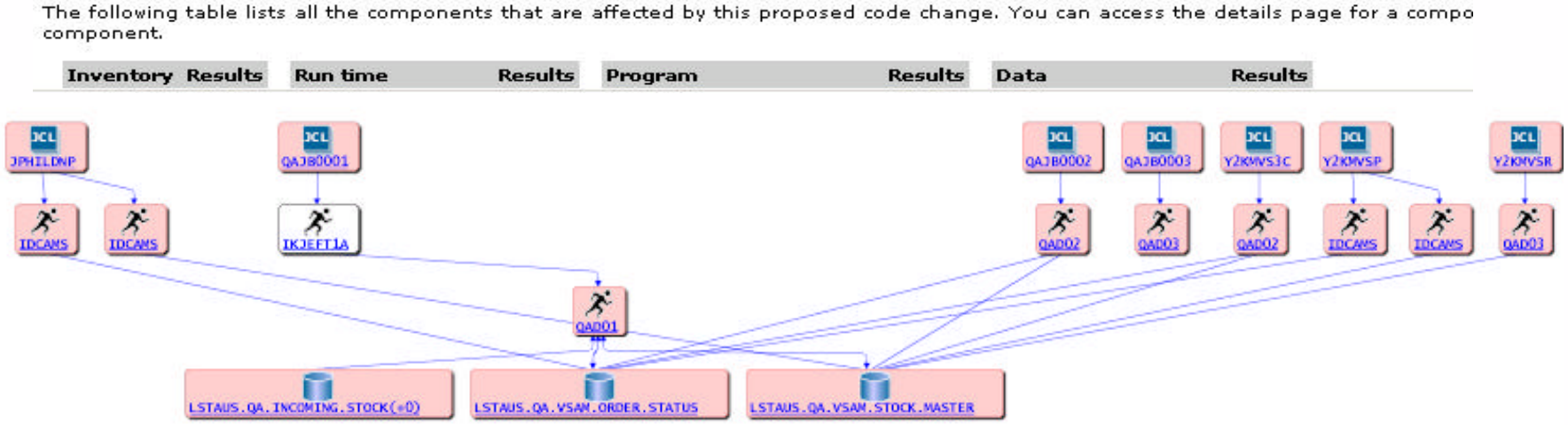
Componentization: Impact analysis summary and visualization

- Visualization support for zOS and distributed Assets so that all developer levels can easily understand business processes





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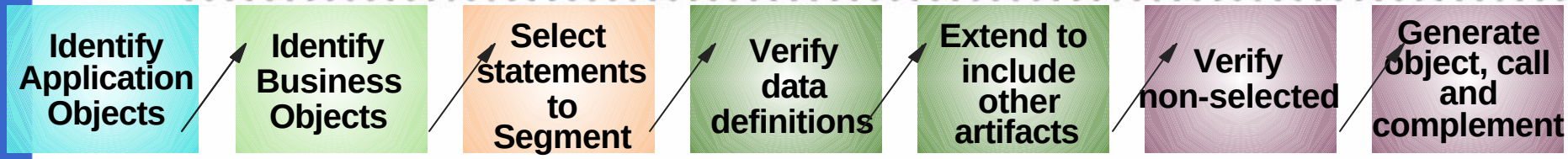
Componentization: Code Extraction



z/OS sequential file name to hold code extract file: DAVIN20.EXTRACT.COBOL

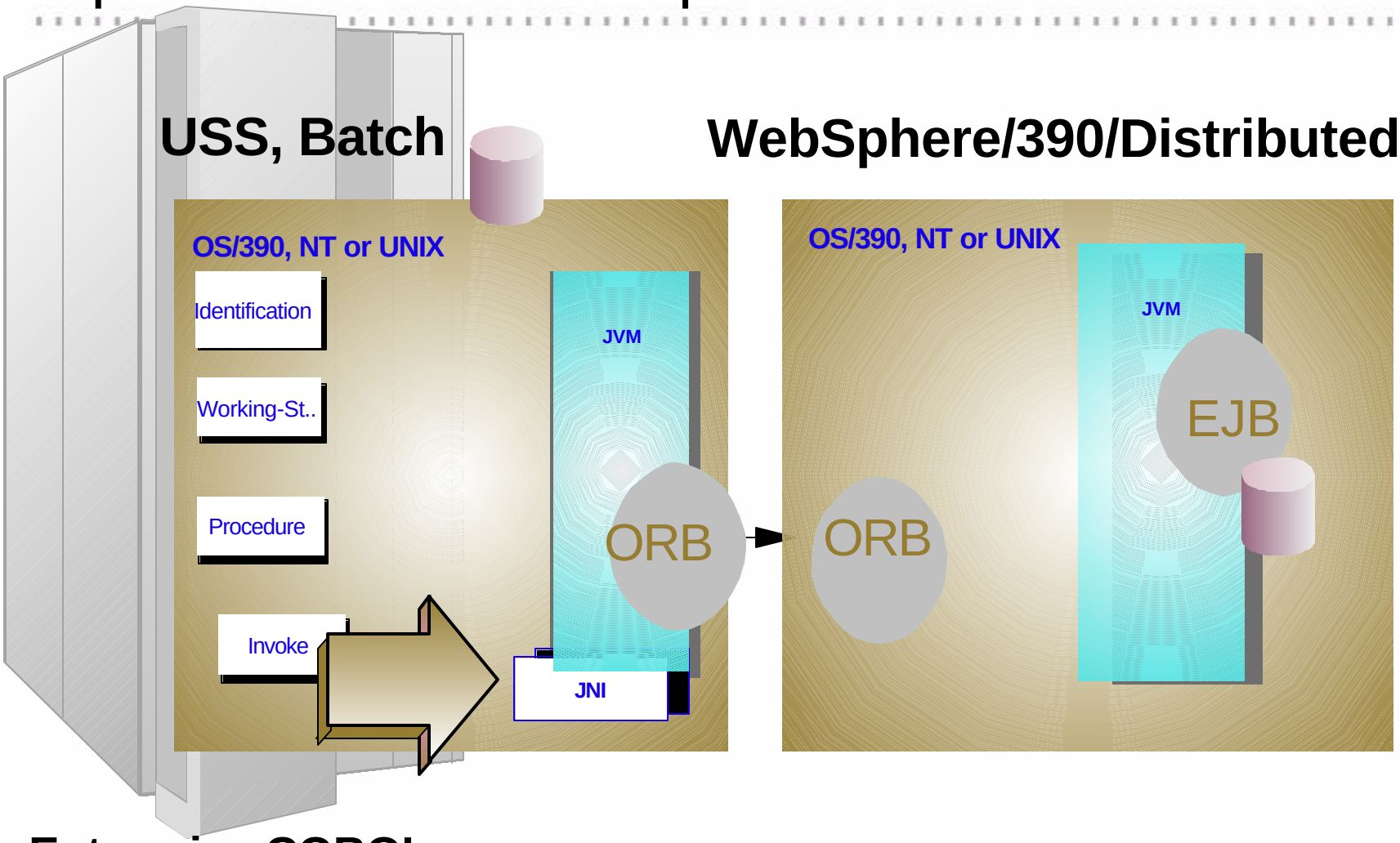
z/OS sequential file name to hold compliment file: DAVIN20.COMPLMNT.COBOL

(The directories for the above pathnames must exist on the

Select a line, range of lines (by holding the **Shift** key or dragging the mouse), or multiple ranges of lines (by usir

```
253 | 070060 PROCEDURE DIVISION.                                    02560000
254 | 070070 GO-BABY-GO.                                          02570000
255 | 070090     ENTRY 'DLITCBL' USING TERM-NAL, DATABASE.          02580000
256 | 070105    MOVE GET-UNIQUE     TO FILL-FUNCTION.              02590000
257 | 070106    MOVE SPACES TO INPUT-TEXT.                         02600000
258 | 070120     CALL 'CBLTDLI' USING GET-UNIQUE, TERM-NAL, LINE-INPUT.    02610000
259 | 070140    IF TERM-STATUS NOT = ' ' GO TO ERROR-HANDLER.      02620000
260 | 070150    IF FIRST-6 = 'ADDPN ' GO TO ADDPN-RTN.             02630000
261 | 070151    IF FIRST-6 = 'ADDPAR' GO TO ADDPN-RTN.             02640000
262 | 070160 LP.                                                  02650000
263 | 070170     CALL 'INPANAL' USING ALL-OTHERS-PARAM-TABLE, LINE-INPUT,   02660000
264 | 070180          EDITED-ALL-OTHERS-MSG, MSG-SEG-CNT.         02670000
265 | 070190    ADD 1 TO MSG-SEG-CNT.                              02680000
266 | 070200 GN.                                                  02690000
267 | 070210    MOVE GET-NEXT      TO FILL-FUNCTION.               02700000
268 | 070220    MOVE SPACES TO INPUT-TEXT.                         02710000
269 | 080020     CALL 'CBLTDLI' USING GET-NEXT, TERM-NAL, LINE-INPUT.     02720000
270 | 080035 GN-1. EXIT.                                          02730000
271 | 080040 EX. IF TERM-STATUS = ' ' GO TO LP.                   02740000
272 | 080050    IF TERM-STATUS NOT = END-OF-MSG GO TO ERROR-HANDLER.      02750000
273 | 080060    MOVE 0 TO MSG-SEG-CNT.                             02760000
274 | 080065    MOVE SPACES TO INPUT-TEXT.                         02770000
275 | 080080     CALL 'INPANAL' USING ALL-OTHERS-PARAM-TABLE, LINE-INPUT,   02780000
276 | 080090                    EDITED-ALL-OTHERS-MSG, MSG-SEG-CNT.   02790000
```

Componentization: Enterprise COBOL



Enterprise COBOL

- Batch and USS access to JAVA and WebSphere Components
  - COBOL object module integrated with JAVA

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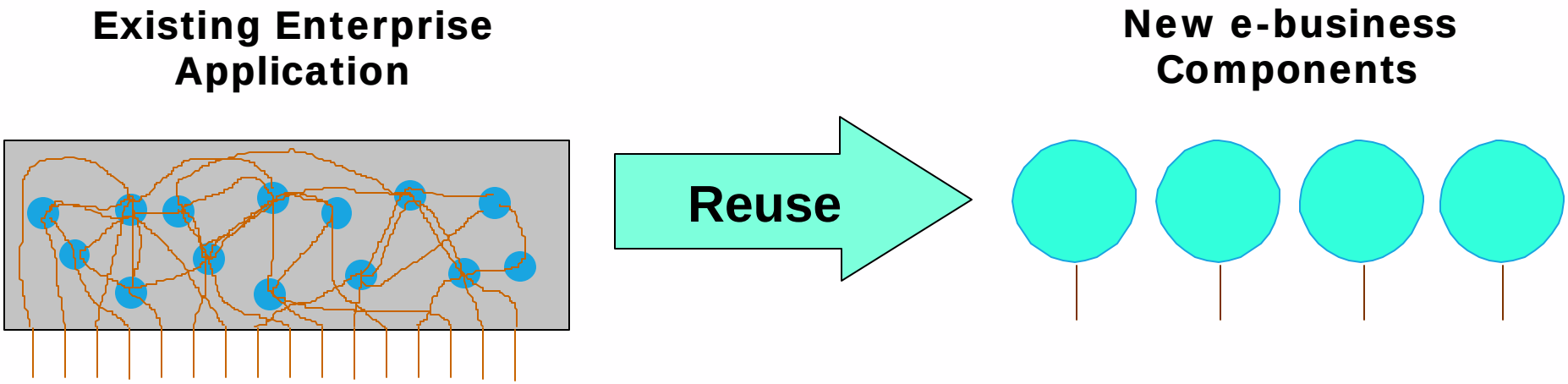
Enterprise Modernization: Componentization

Value

- Position for evolution to dynamic e-business
  - Reuse of IT assets as components
  - Rapid application creation



Enterprise Modernization: Construction

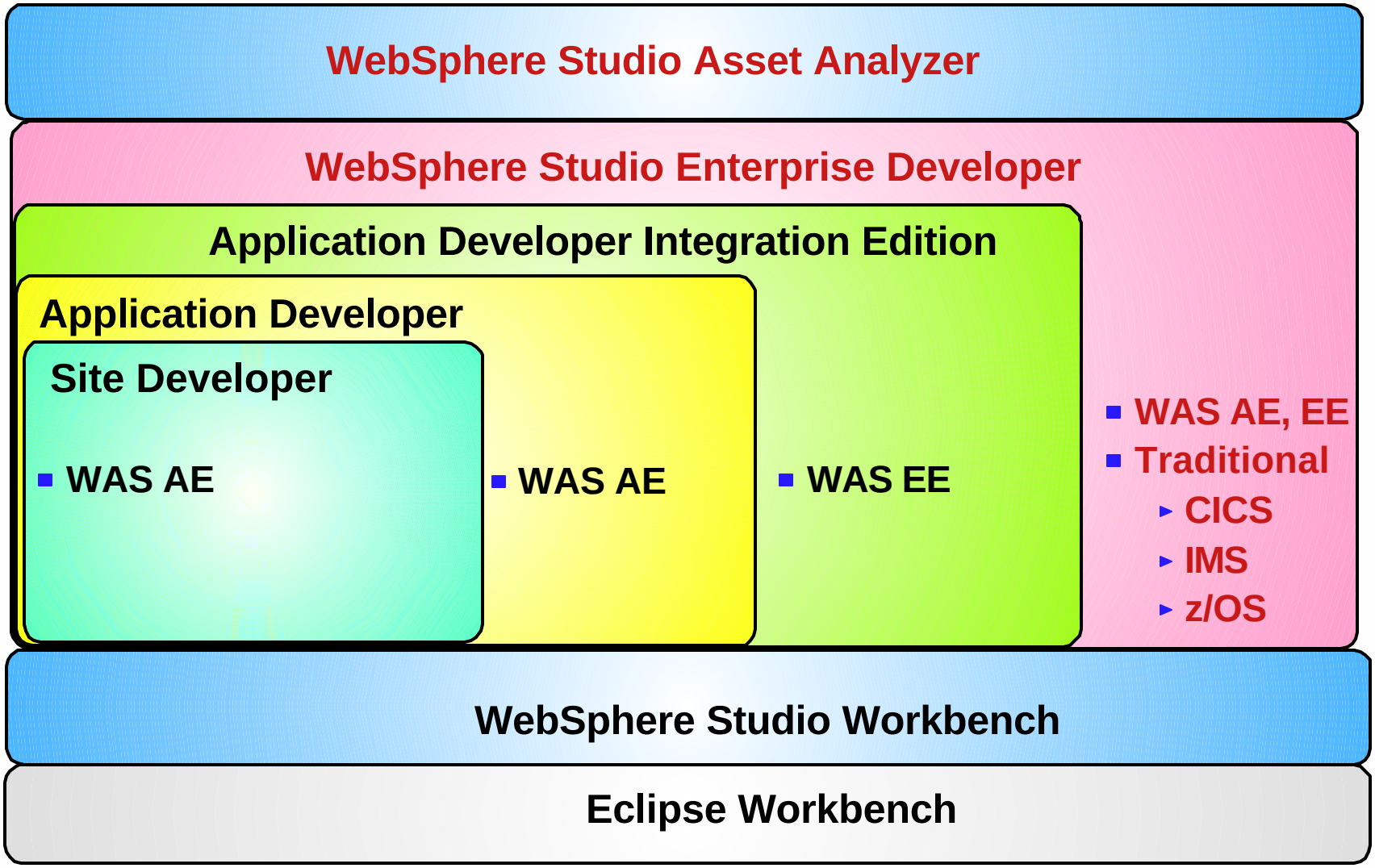
Objective:

- ***Facilitate enterprise wide e-business J2EE component based development***

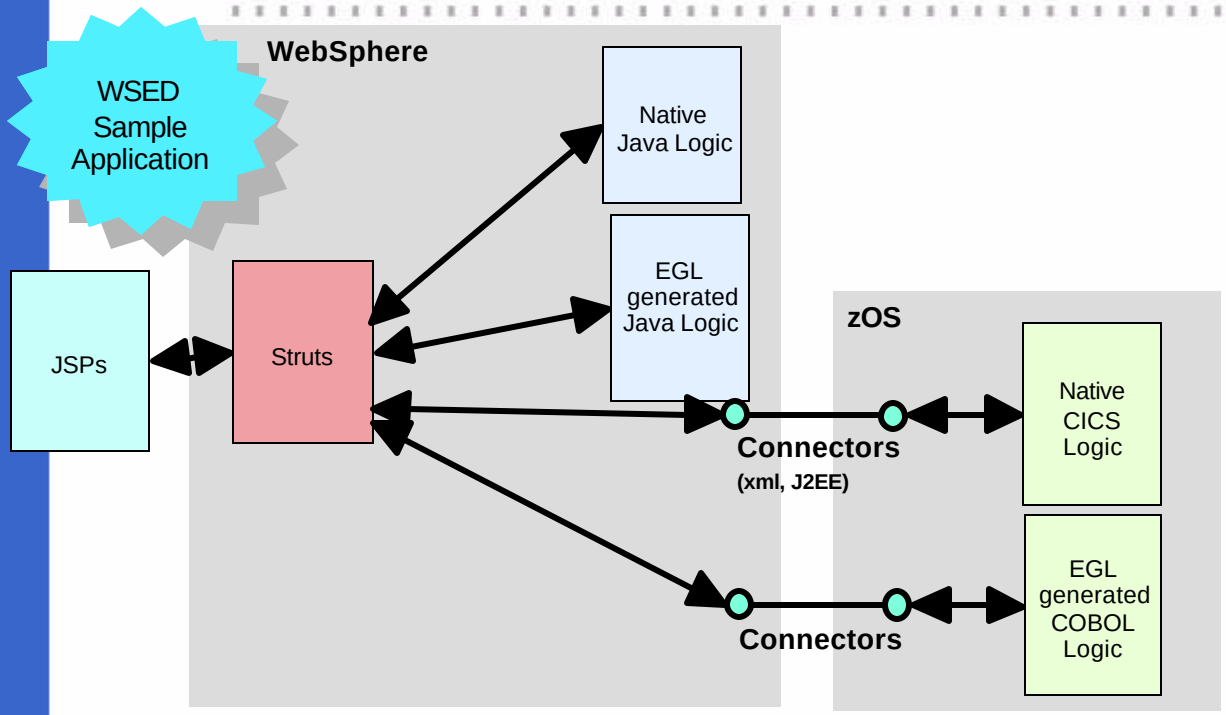
Strategy

- ***Provide visual tooling to include traditional and business oriented developers in the delivery of mission critical J2EE applications***

Enterprise Modernization and the workbench



WSED Overall Scenario



Overall-Scenario

A higher order scenario that combines elements of lower level scenarios and provides an extremely flexible model for solving customer problems

Lower level scenarios can be described in terms of the overall-scenario

Customers want to build robust web applications and services leveraging heterogeneous technologies and skill sets. And want a solution which speeds them through the entire development process

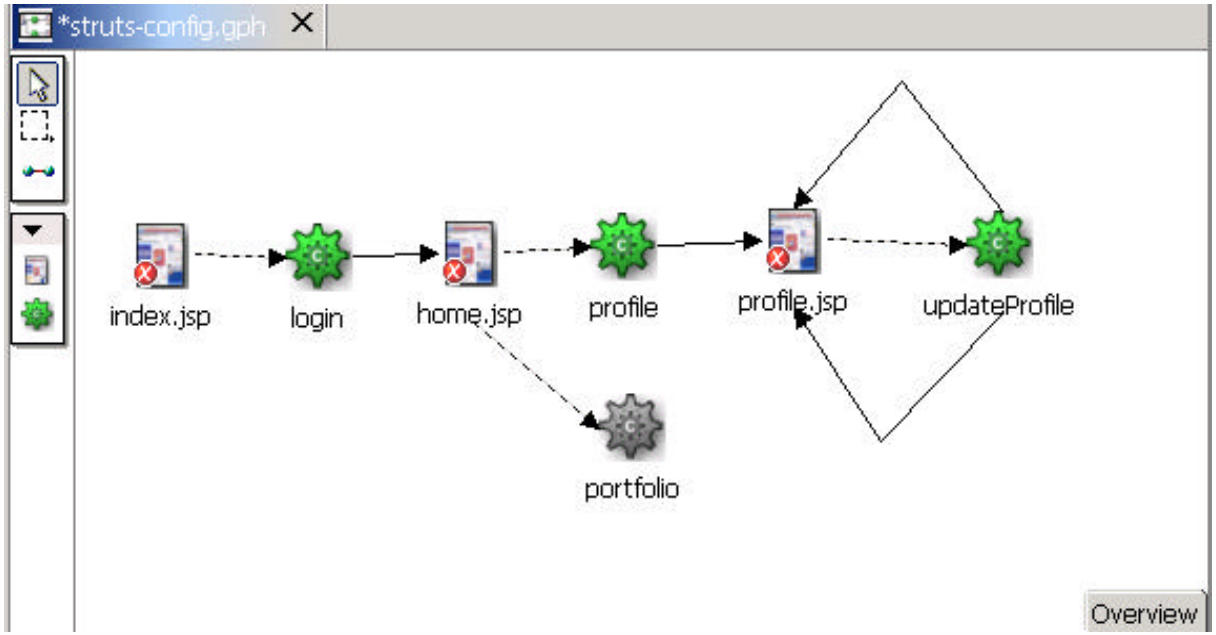
Examples:

- Combine middle-tier (web) and host logic in web application
- Provide high speed access to host components
- RAD
- Legacy COBOL and PL/I
- Reuse currently executing legacy applications

Determining Application Flow

... to fully graphical design facility

- 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 (Java, COBOL, PL/I, EGL components)
  - Struts
  - XML
  - etc.
- Exploit services of Workbench



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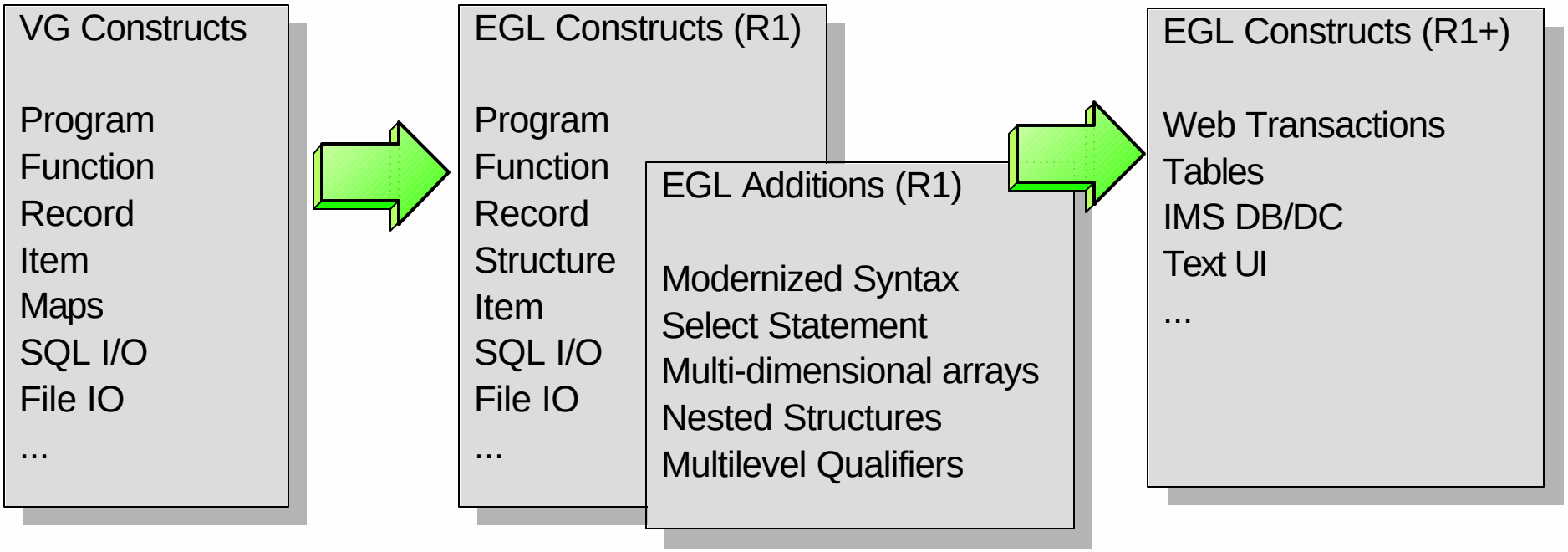
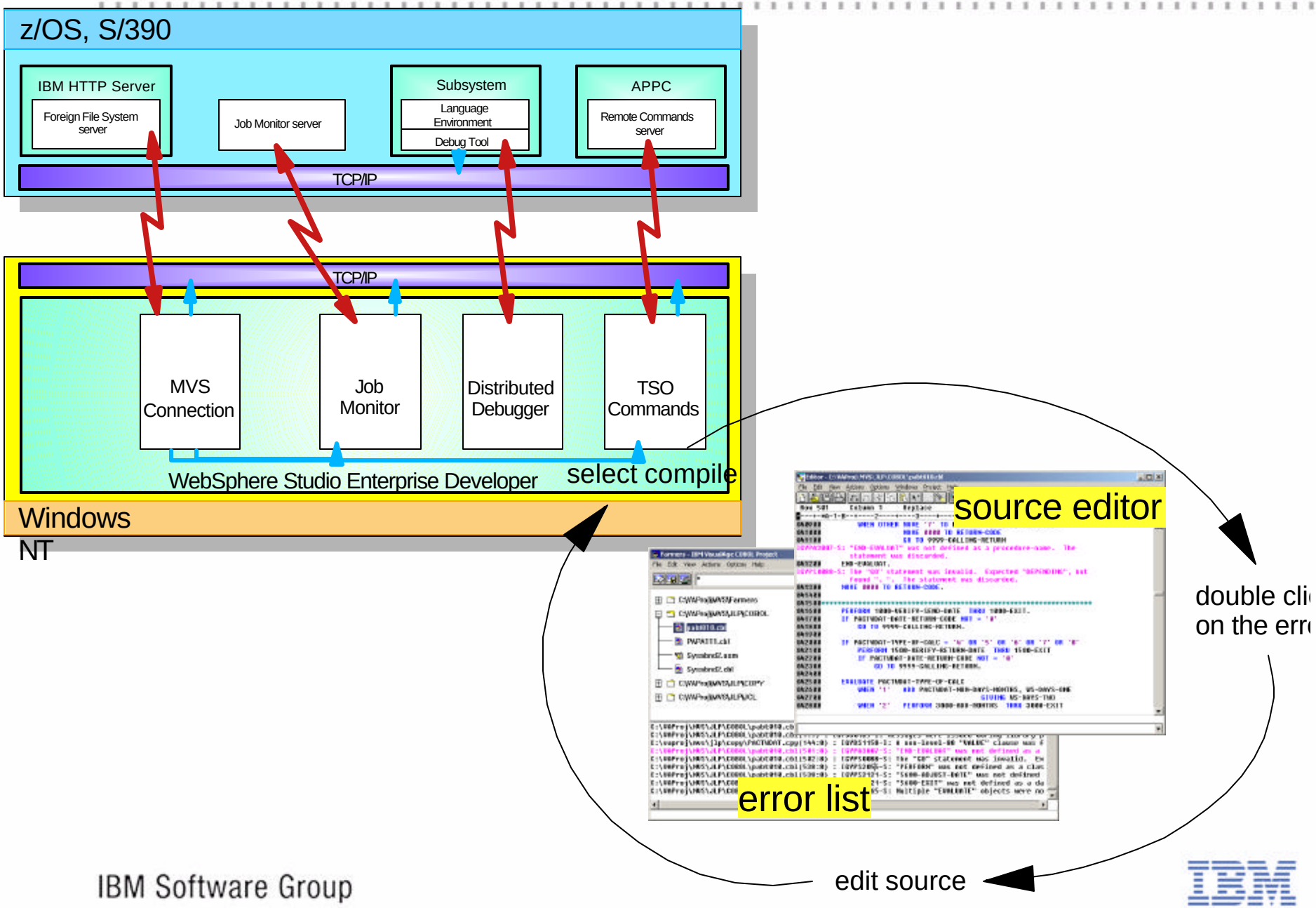
Enterprise Generation Language

- A new name, linked to IBM's WebSphere strategy
- Migration path from VisualAge Generator's 4GL
  - with significant additions and enhancements necessary for robust e-business Web Application development



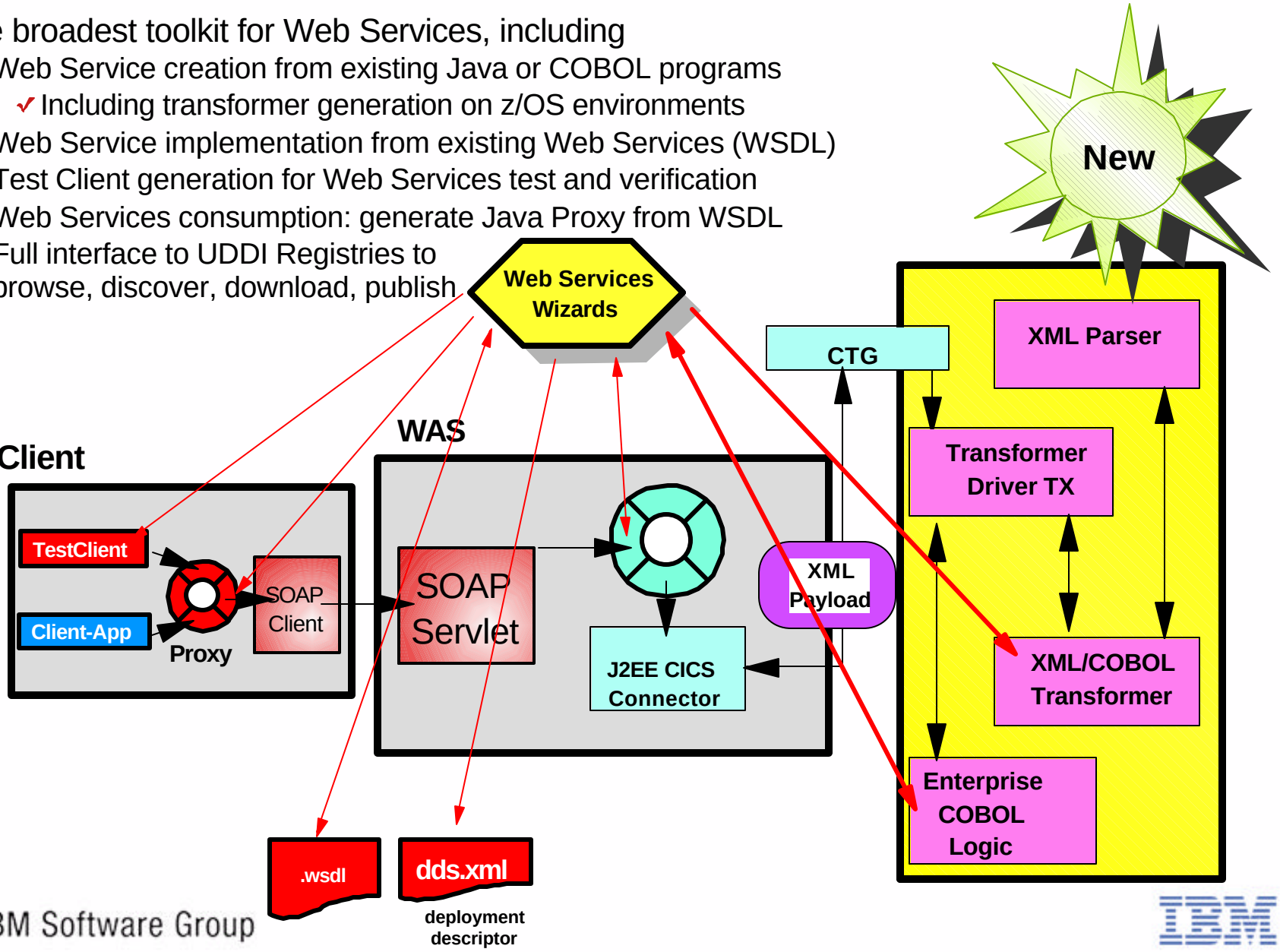
Bringing forward and enhancing the core technologies created over the last 20+ years in VisualAge Generator and CSP

Enterprise Developer development



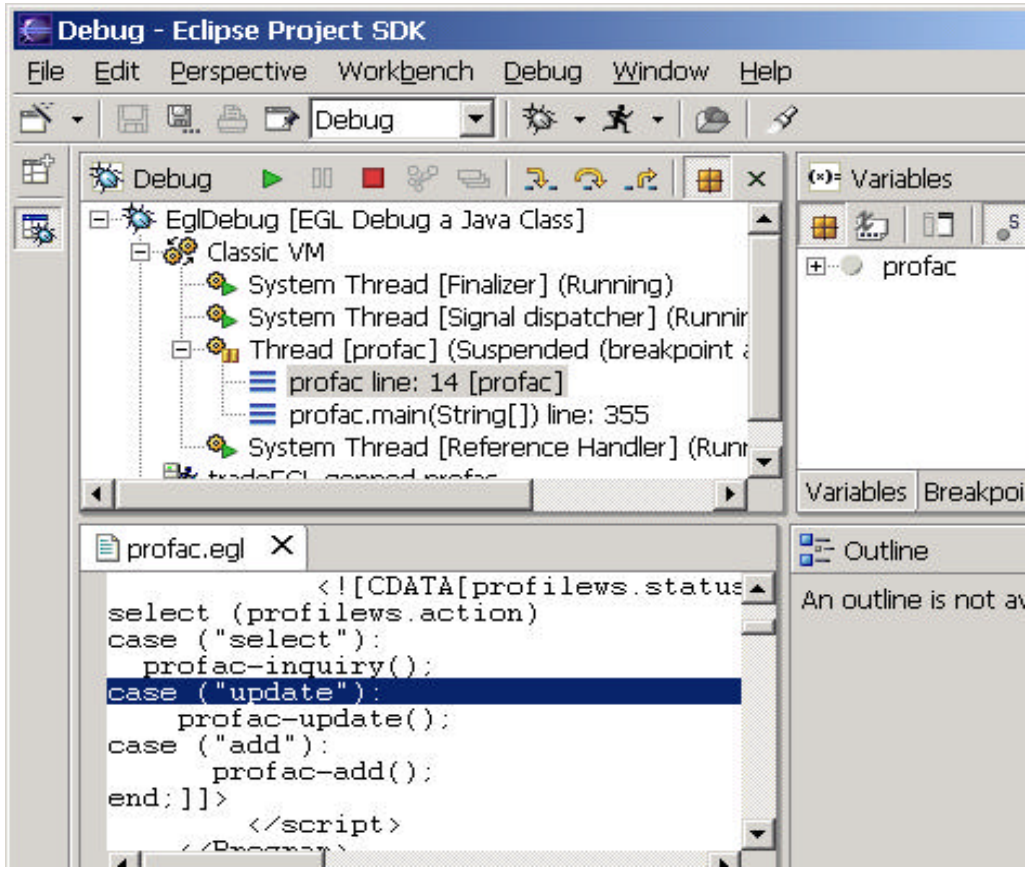
Creating Web Services and Transformers

- The broadest toolkit for Web Services, including
  - ✓ Web Service creation from existing Java or COBOL programs
    - ✓ Including transformer generation on z/OS environments
  - ✓ Web Service implementation from existing Web Services (WSDL)
  - ✓ Test Client generation for Web Services test and verification
  - ✓ Web Services consumption: generate Java Proxy from WSDL
  - ✓ Full interface to UDDI Registries to browse, discover, download, publish



Testing and 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

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Enterprise Modernization: Construction

Value:

- **Accelerate creation of new e-business applications**
- **Include all enterprise developers in the process**
- **Support traditional and WebSphere runtimes**

Enterprise Modernization: Collaboration

Objective:

- ***Facilitate e-business team development***

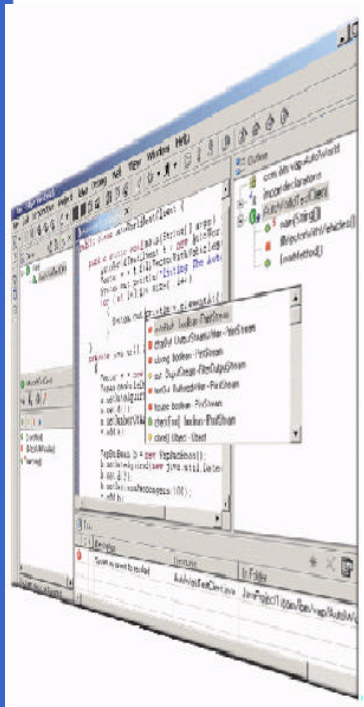
Strategy

- ***Provide an internal tooling family to facilitate team creation of e-business applications***
  - ***Share project processes & components***
  - ***Create and monitor AD projects***
  - ***Integration with industry-wide AD tools***
- ***Common AD tooling for both traditional and e-business development***
  - ***Allow developers to build on their existing skills***
  - ***Collaborate by sharing tools***

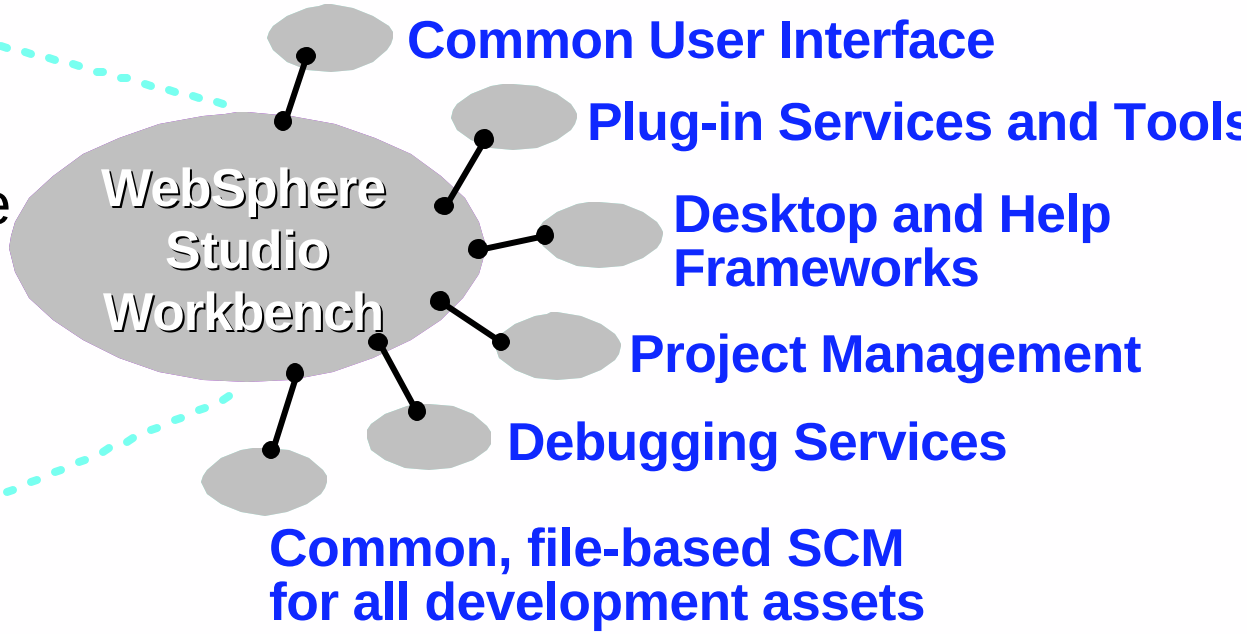
Collaboration: WebSphere Studio Workbench

An innovative, revolutionary concept

- An "operating system" for tool builders
- Poised to change the tool industry as we know it
- Common services and "look and feel"
- Plug-in architecture



Products built with Workbench inherit these capabilities plus 'plug-ins' built by others



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Enterprise Modernization: Collaboration

Value:

- **Enable business to become an E-business more quickly**
- **Allow developers to participate and build on their existing skills**
- **Improve teaming and communications among development groups**

Enterprise Modernization: Completion

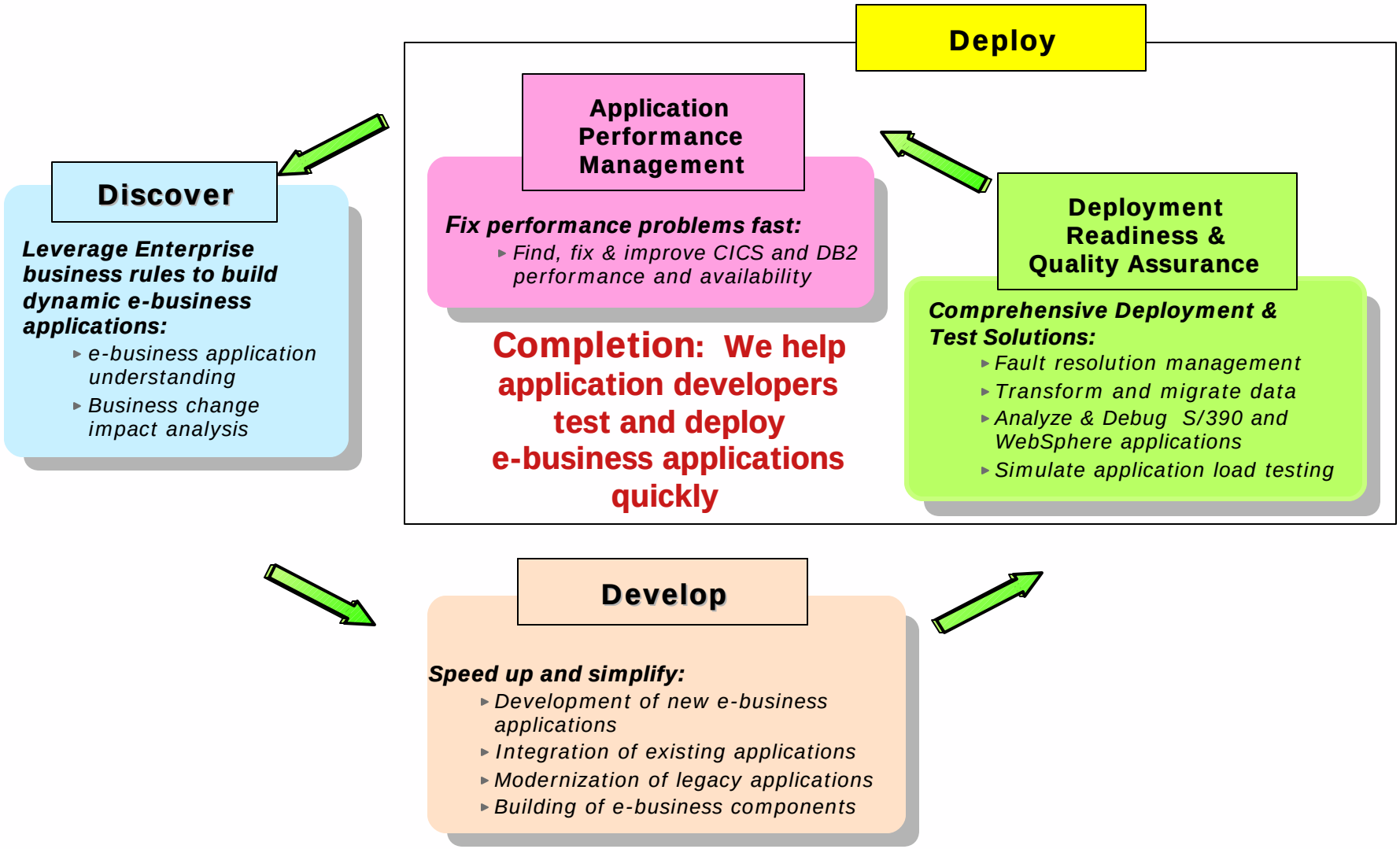
Objective:

- ***Enable developers to move through the testing and implementation cycle in a timely, cost effective manner***

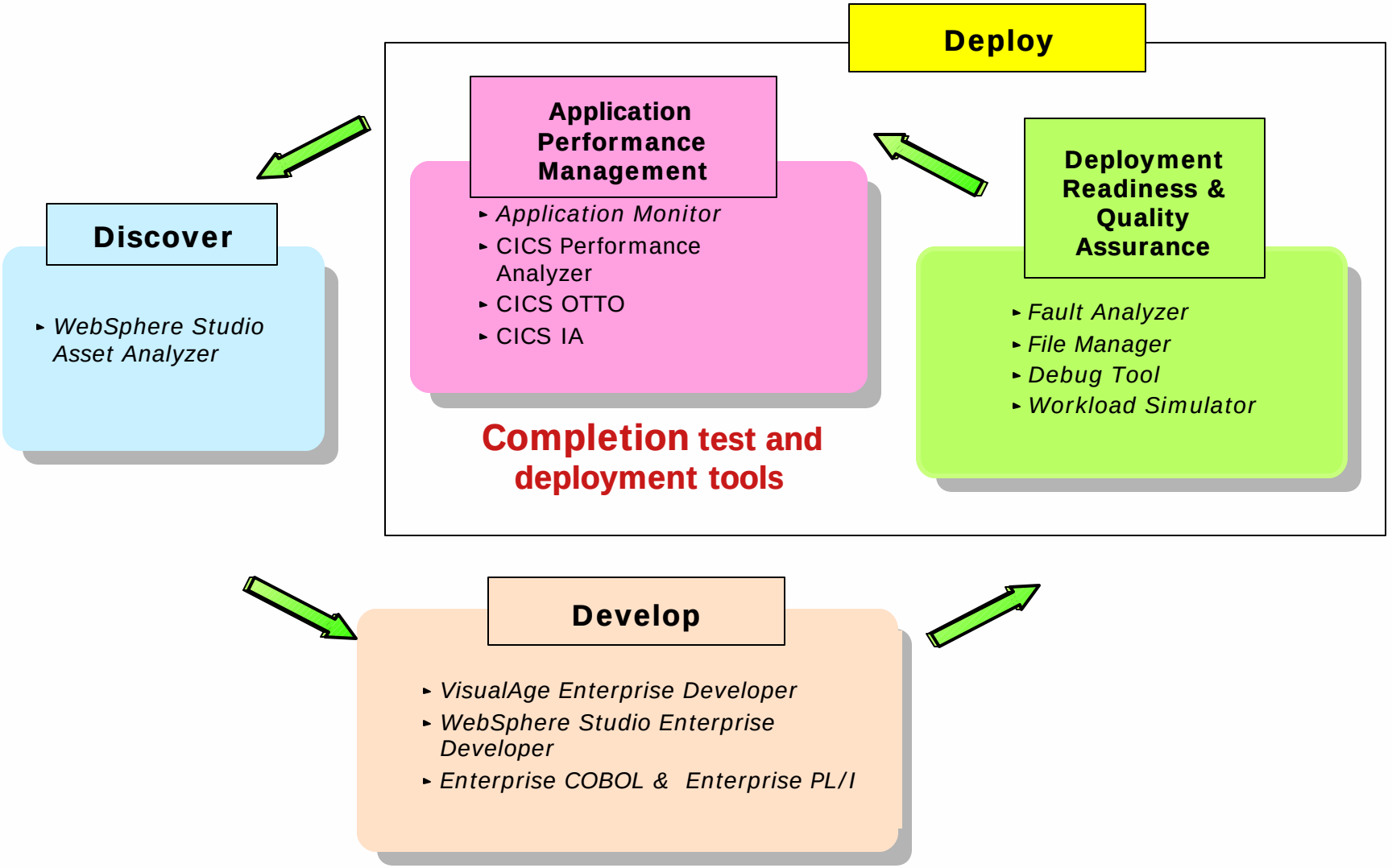
Strategy:

- **T*ooling to edit/create data files and capture application faults***
- ***Tooling to help minimize down time***

Enterprise Modernization - Completion



Enterprise Modernization - Completion Offerings



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Enterprise Modernization: Completion

Value:

- **Business delivers robust, high qualitiy applications more quickly**
- **Lowers total cost of ownership of development and platforms**

WebSphere Studio Enterprise Development

Objective

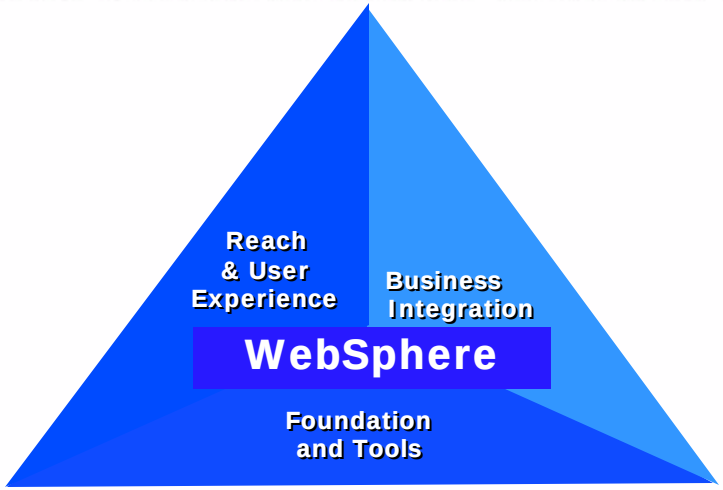
Help customers improve their ROI in application development by

- Enable all developers in an organization to deliver enterprise scale WebSphere based applications in significantly less time than other solutions in the marketplace

Strategy

- Provide the broadest AD lifecycle solution in the marketplace speeding the discovery, development and deployment of both traditional, e-business, integrated, and modernized enterprise scale applications
  - discover and manage business assets enabling rapid understanding, reuse and integration of applications via web services
  - speed development and integration of enterprise scale applications leveraging existing and in many cases limited technical expertise
  - quickly validate and deploy their enterprise applications into production
  - minimize any downtime when problems occur

What is our definition of enterprise



The IBM WebSphere Application Server:

- is targeted at "enterprise-class" of applications and Web services
- has established the zSeries as an key integration platform for J2EE applications
- Enterprises have:
  - More existing applications
  - More varied workloads and environments
  - More developers of varied skill sets
  - More internal procedures
  - Larger numbers of active projects
  - Higher QOS standards
  - and a mainframe

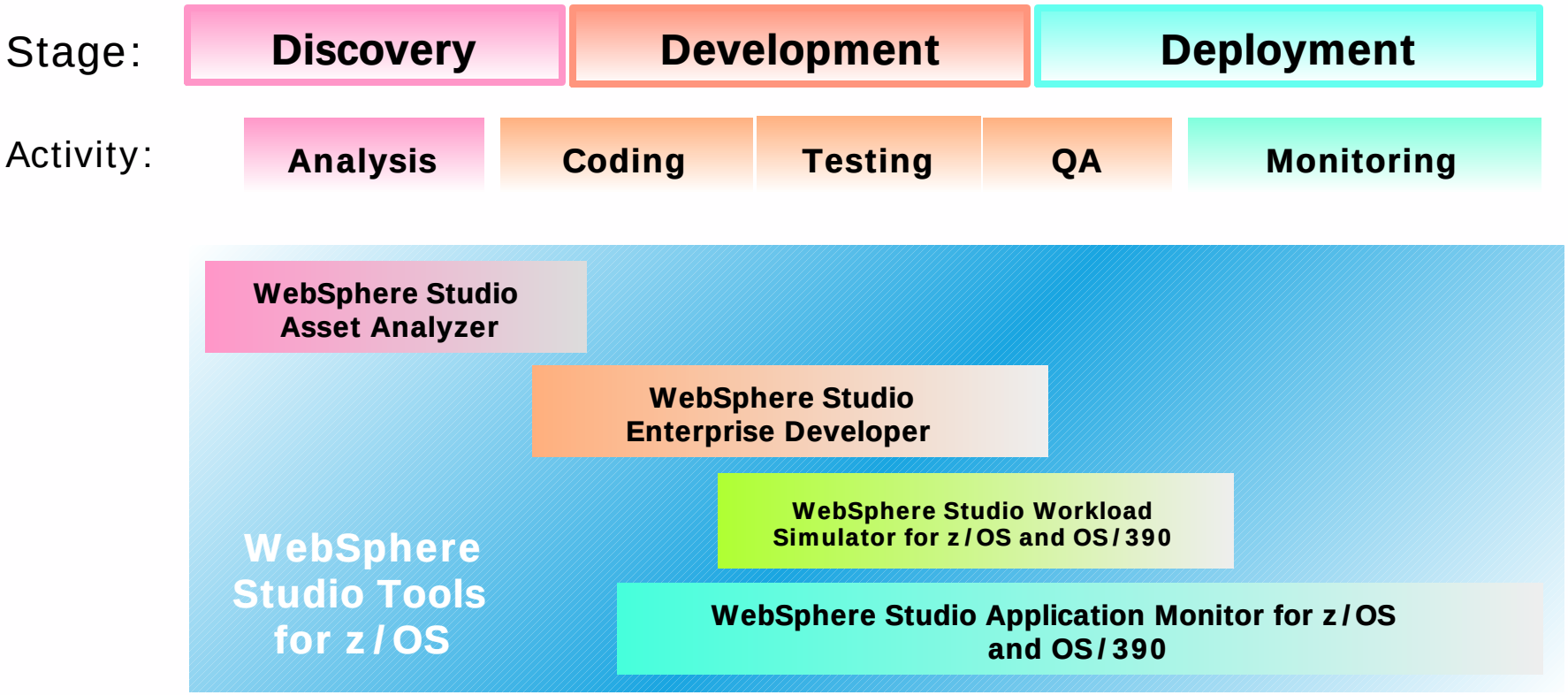
IBM

The application lifecycle

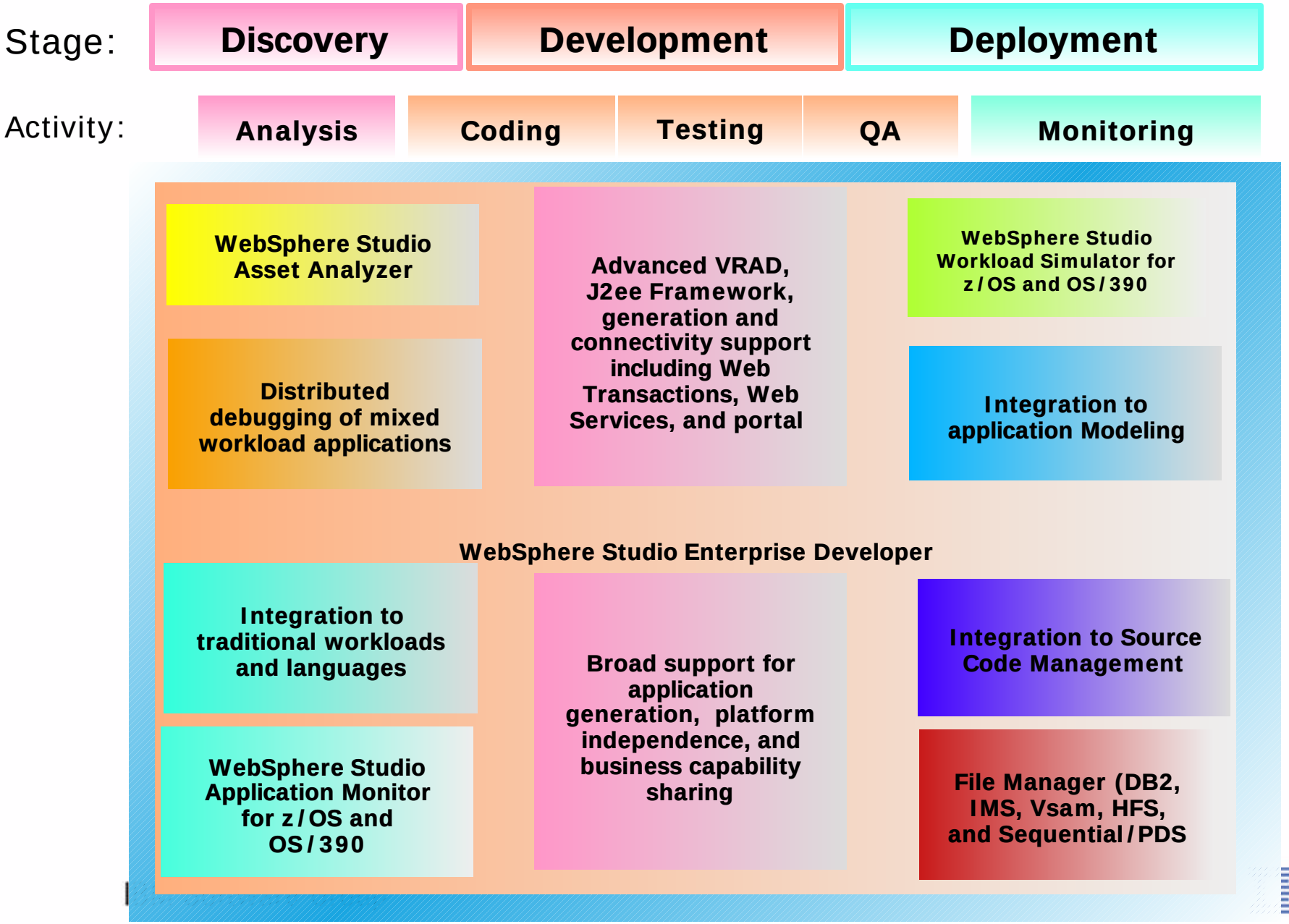
The typical application lifecycle consists of three stages:

Stage:	Discovery	Development	Deployment
Activity:	**Analysis**	**Coding** / **Testing** / **QA**	**Monitoring**
Role:	**Application Developers and Architects**	**Application Developers and Test Personnel**	**Application Developers and Production Analysts**
Function:	▪ Build and debug applications ▪ Maintain applications ▪ Design applications ▪ Manage portfolios ▪ Architect applications ▪ Componentize applications ▪ "Screen scrape" applications	▪ Code applications ▪ Conduct testing ◦ Unit test ◦ Functional test ◦ System test ◦ Integration test ◦ Performance and load test ▪ Perform QA functions	▪ Coordinate several applications into "solutions" ▪ Monitor applications ▪ Analyze resources consumption ▪ Plan future requirements

How the tools map



WSED: The developer dashboard enabling rapid movement through the lifecycle



EM Strategy Value Proposition

IBM Enterprise Modernization offering	Benefit/Value Statement
Addresses traditional and new developers	▪ More productive developers ▪ More applications with higher quality ▪ Easier core application integration ▪ More reuse
Supports the complete development process	Speed through the process and lessen time to market
Maximize development resources by including business oriented developers (EGL)	Applications meet business needs
Supports all transaction environments	Deployment flexibility today and tomorrow.

Questions and Feedback

- **Reduce the e-business application development time**
  - Use of industry standards accelerate development understanding and deliveries
  - Eliminate Web & Traditional developer organizational barriers
  - Reduce skills and technical challenges of e-business
- **Position for evolution to dynamic e-business**
  - Reuse of IT assets as components
  - Rapid application creation
  - Extend developer community in the organization
- **Bridge the development skills gap with a common toolset for both Web and Legacy programmers**