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iSeries Developer Roadmap

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IBM Canada



COMMON Belgium Congress
17 November 2004

Joint Strategy from:
IBM Systems and Technology Group
and IBM Software Group

Fall, 2004

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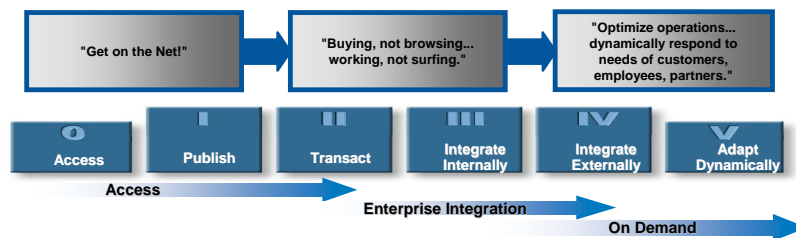
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Phases of e-business Adoption

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From accessible to adaptable



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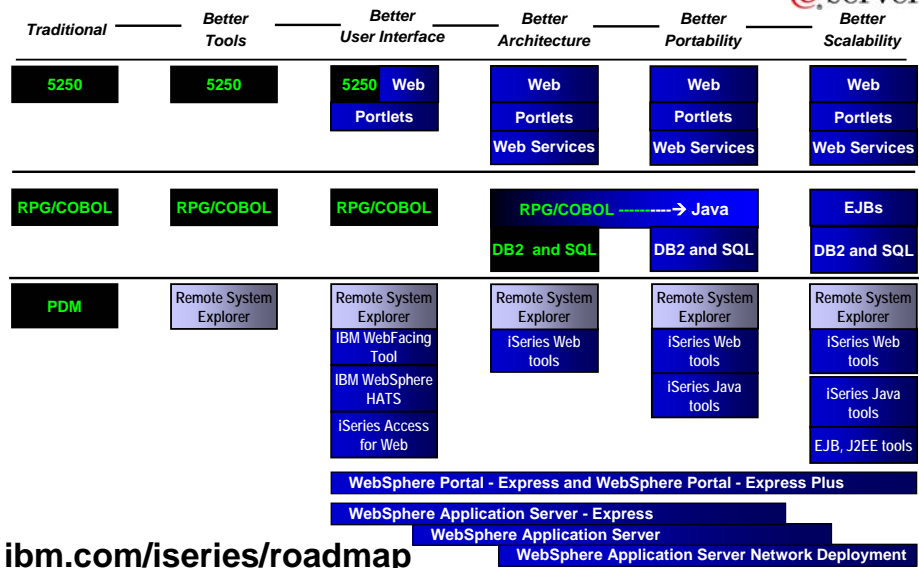
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IBM Goals of the Roadmap



- Provide a step-by-step approach for modernizing applications
- Moving from
 - 5250 to Web
 - RPG/COBOL to Better RPG/COBOL
 - RPG/COBOL to Java
 - RPG/COBOL to J2EE
 - RPG/COBOL to Service Oriented Architecture (SOA)
- Allow merging of new technology with traditional code
- Provide multiple entry and exit points
 - Each step in the road is both a destination and a rest-stop
 - Allow gradual growth of skills

IBM iSeries Developer Roadmap – Version 2



- In a traditional environment, developers:
 - ▶ Create or enhance 5250 applications
 - ▶ Maintain traditional applications in traditional style – large multi-functioned programs
 - ▶ Use traditional, host-based development environment such as Application Development ToolSet (PDM, SEU, SDA, RLU, DFU, & system debugger)
 - ▶ Use traditional languages such as RPG, COBOL, C, CL and C++



The screenshot displays two terminal windows. The left window, titled 'Session A [24 x 80]', shows the PDM (Program Development Method) menu with options like 'Edit', 'Copy', 'Delete', 'Display', 'Save', 'Change text', 'Compile', and 'Create'. A green arrow labeled 'PDM' points to this window. The right window, also titled 'Session A [24 x 80]', shows the SEU (Source Entry Utility) interface with a list of source specifications for a file named 'FCUSTOML3'. A green arrow labeled 'SEU' points to this window.

IBM Step 1: Better Tools



- Move iSeries application development to new development environment on the desktop
- Based on Eclipse Integrated Development Environment (IDE)
- Remote System Explorer (RSE)
 - ▶ Provides iSeries server access from Eclipse IDE (included in WebSphere Development Studio Client for iSeries)
 - ▶ 21st century follow-on to ADTS (PDM, SEU, SDA, RLU) & system debugger
 - ▶ Consistent interface and function across old as well as new application development

5250

RPG/COBOL

RSE

IBM Step 1: Better Tools



- Value Proposition
 - ▶ Improved productivity over older green screen tools with intuitive Graphical User Interfaces and familiar tree views
 - ▶ Provides easy access to advanced application development tools such as source control and change management created as plug-ins to Eclipse by IBM & its business partners
 - ▶ Consolidated IDE for multiple types of projects (RPG, Web, Java) shortens the learning curve and reduces training costs as developers move from one technology to another
 - ▶ Workstation centric development reduces development workload on iSeries system, lowering the costs of development

5250

RPG/COBOL

RSE

IBM Step 1: Better Tools



Skills Required

- Desktop tools
- Remote System Explorer

Education Enablement

- ▶ WebSphere Development Studio Client packaging & introduction
- ▶ Eclipse education (how to use)
 - Tool solution developers may be interested in how to extend Remote System Explorer
- ▶ Remote System Explorer education

5250

RPG/COBOL

RSE

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IBM Better Tools



The screenshot displays the Remote System Explorer interface within WebSphere Development Studio Client. Key components are highlighted with callouts:

- SEU-like editor:** Points to the central code editor window showing RPG code.
- Outline view:** Points to the right-hand pane showing a hierarchical view of the program's structure.
- PDM-like tree & table views:** Points to the left-hand pane showing a tree view of system objects.
- Error list:** Points to the bottom pane displaying a list of error messages (e.g., RNF2120, RNF7030).
- Property sheet:** Points to the bottom-left pane showing properties for the selected object.

Extensible by solution developers

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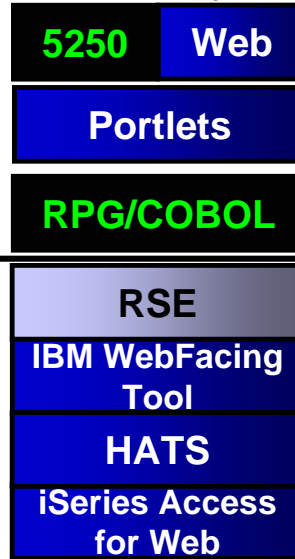
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IBM Step 2: Better User Interface

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▪ Create Browser-based UI for 5250 Applications

- ▶ Nearly instant conversion to Web User Interfaces
 - IBM WebFacing Tool – development conversion
 - Host Access Transformation Services (HATS) – runtime conversion
 - iSeries Access for Web – runtime conversion
- ▶ No impact to underlying application logic
- ▶ HATS or the IBM WebFacing Tool set the stage for additional modernization of the User Interface via Development tools (WDSi and/or HATS Studio)
- ▶ Provides the flexibility to add function to the application using new technologies like XML or Java with no impact to existing programs
- ▶ Consider implementing Portal technology to improve user experience



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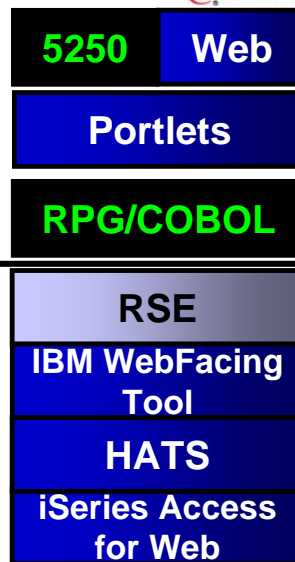
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IBM Step 2: Better User Interface

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▪ Value Proposition

- Easy access to applications for remote employees, vendors, & partners, via Internet, lowering communications costs
- Improves acceptance and use of existing applications, improving employee productivity
- Familiar browser interface reduces training costs
 - Integration with Portal improves user satisfaction
- Expanded market for solution developer applications
- Elimination of interactive cycles when using WebFacing with latest iSeries
- Better integration with other Windows desktop applications



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IBM Step 2: Better User Interface



Skills Required

- Application Server
- Tool Specific training
 - HATS, WebFacing Tool, iSeries Access
 - Portal

Education Enablement

- ▶ WebSphere Application Server — Express for iSeries
- ▶ Introduction to Web application artifacts, architecture & terms
- ▶ IBM WebFacing Tool, Host Access Transformation Server (HATS) or iSeries Access for Web
- ▶ Portal Education (if required)

5250

Web

Portlets

RPG/COBOL

RSE

IBM WebFacing Tool

HATS

iSeries Access for Web

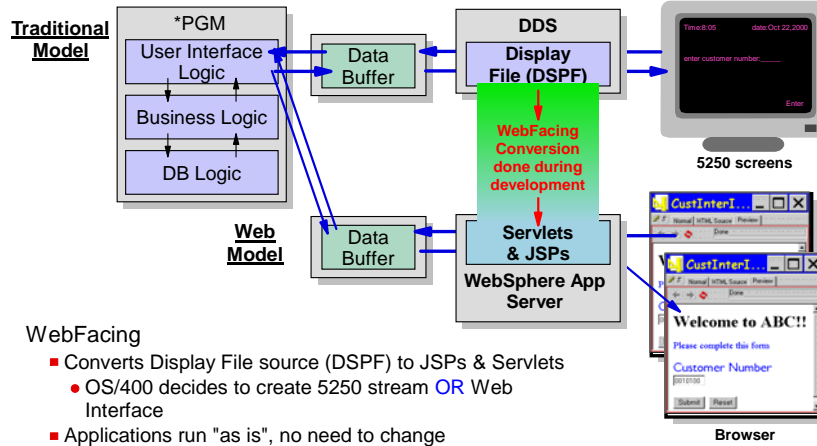
IBM Better User Interface – IBM WebFacing Tool



The screenshot displays the IBM WebFacing Tool interface within the WebSphere Development Studio Client. The main window shows a web browser displaying a converted application titled "CALL ORDENTR Parts Order Entry". The application interface includes a form with fields for "Customer number", "Customer name", "Address", and "City", along with a "Qty" field. A table with columns "Opt Part" and "Description" is also visible. The interface is annotated with three callouts:

- Conversion inputs, outputs:** Points to the left-hand side of the application form.
- Converted app. in Web browser:** Points to the main content area of the web browser window.
- Built-in & remote Web Application Servers:** Points to the "Servers" panel at the bottom of the interface, which lists various test environments.

IBM WebFacing Architecture



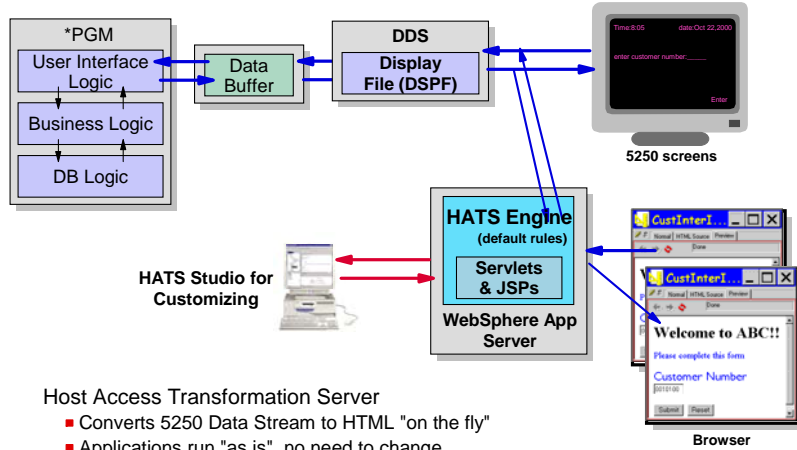
WebFacing

- Converts Display File source (DSPF) to JSPs & Servlets
 - OS/400 decides to create 5250 stream OR Web Interface
 - Applications run "as is", no need to change
- Quickly web-enable many applications

IBM Better User Interface - HATS



IBM HATS Architecture

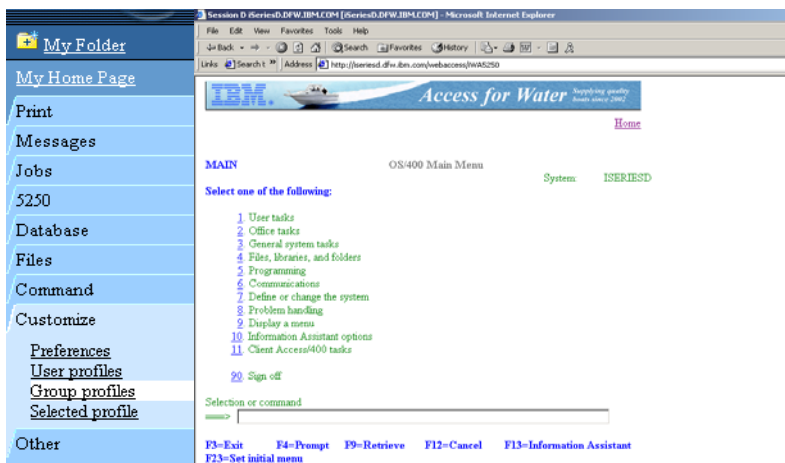


- Host Access Transformation Server
- Converts 5250 Data Stream to HTML "on the fly"
 - Applications run "as is", no need to change
 - JSPs are created with full customization
- Quickly web-enable many applications

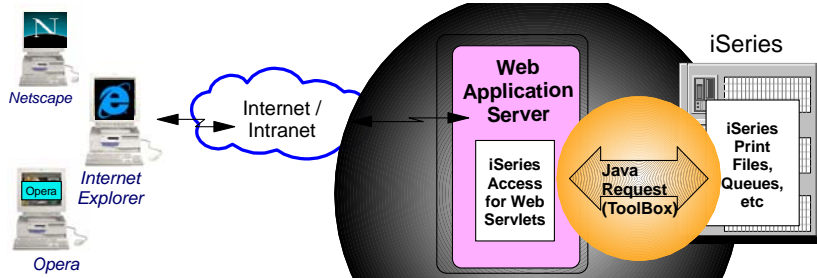
IBM Better User Interface – iSeries Access for Web



Boats Application



IBM iSeries Access for Web



IBM WebSphere Portal – Express & Express Plus



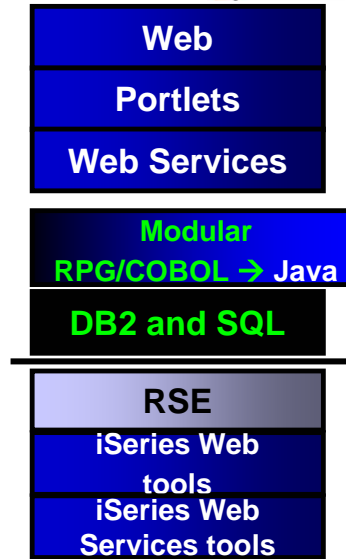
Symbol	Price	Change	% Change
IBM	91.79	0.47	0.51%
SCOMPQ	1,905.50	3.70	0.19%
SDJI	10,020.23	-43.41	-0.43%
SPX	1,088.42	-5.53	-0.51%

IBM Step 3: Better Architecture

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■ Create new iSeries e-business solutions

- ▶ Using Web & Web services tools in WebSphere Development Studio Client
 - ▶ Hand craft web based user interface
 - ▶ iSeries Web Tools to generate others
 - ▶ Java Server Faces (JSF)
- ▶ Modularize traditional applications
 - ▶ ILE RPG, ILE COBOL, ILE CL, ILE C
 - ▶ Separate functions
 - ▶ business logic
 - ▶ user interface
 - ▶ data access
 - ▶ Remote System Explorer
- ▶ Use SQL in High Level Languages for DB Access
- ▶ Co-existence with some Java code
 - ▶ Choose language appropriate for function



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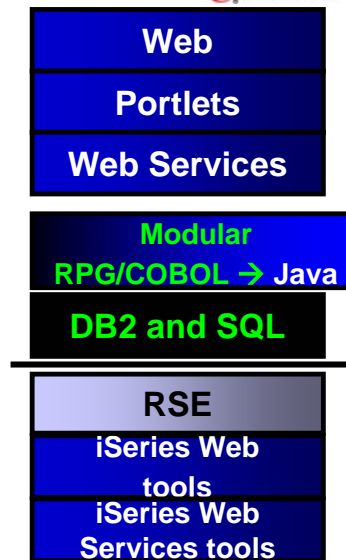
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IBM Step 3: Better Architecture

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■ Value Proposition

- Modular applications offer:
 - Easier maintenance / reuse of business logic
 - Respond to increasing demands
- Properly architected Web applications offer:
 - Quicker support for multiple interfaces: Web, phone, ...
 - Faster support for B2B via Web services
- iSeries Web Tools:
 - Focus on business logic, not J2EE plumbing
 - Reuse SDA skills in Web page development
- Facilitate modularization of applications that leave them client neutral and easier to adapt to new devices
- Web services improve interoperability with applications running on other platforms for improved B2B connectivity as well as cross platform integration within the enterprise utilizing exiting developer resources



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IBM Step 3: Better Architecture

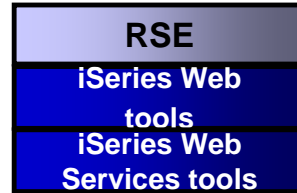


Skills

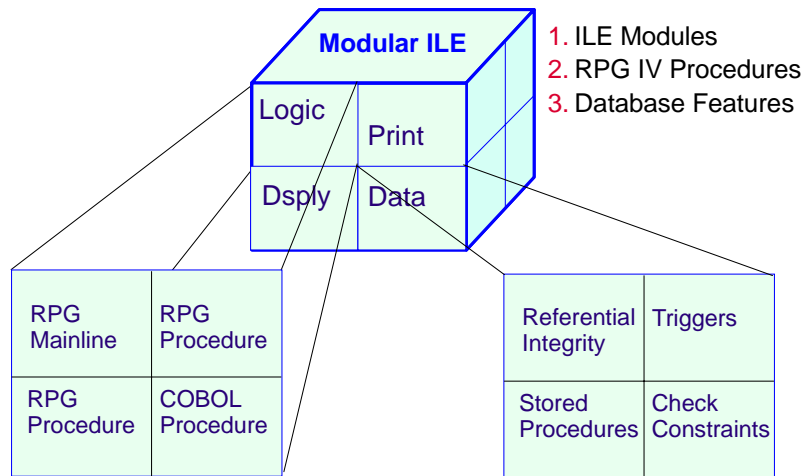
- Web architecture
 - Web services
- ILE + appropriate language skills
- Some Java knowledge
- Advanced DB function

Education Enablement

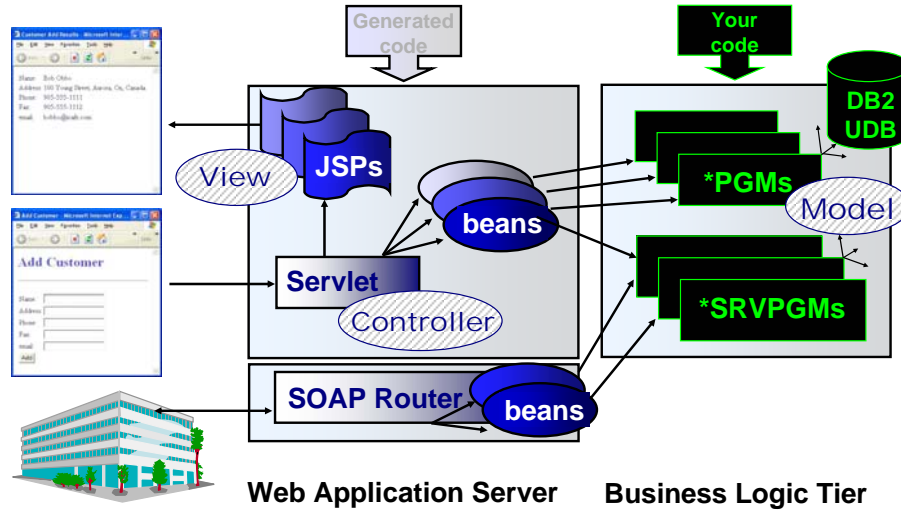
- ▶ Introduction to e-business
 - Web application artifacts, architecture, terms
 - Introduction to Struts framework for Web applications
 - Introduction to Web services
- ▶ Tools
 - RPG IV, ILE COBOL, ILE C, ILE C++
 - Remote System Explorer (RSE)
 - iSeries Web, Struts, Web services (including iSeries Program Call wizard)
- ▶ Java Education
- ▶ Database
 - DB2 functions
 - Referential Integrity, Triggers, etc
 - SQL
- ▶ WebSphere Application Server education



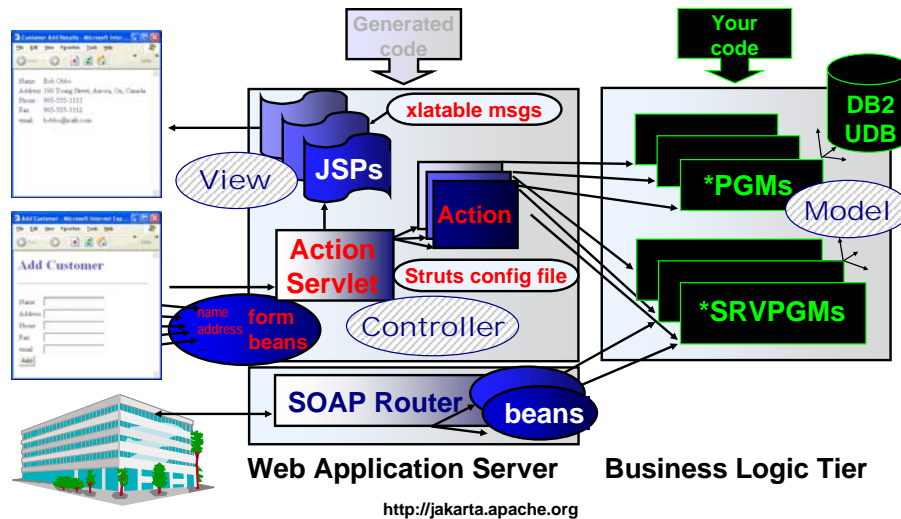
IBM Traditional to Better Architecture



Architecture of "Better Architecture"



Even Better Architecture with Struts



<http://jakarta.apache.org>

IBM Better Architecture: iSeries Web Tools



iSeries Web Tools

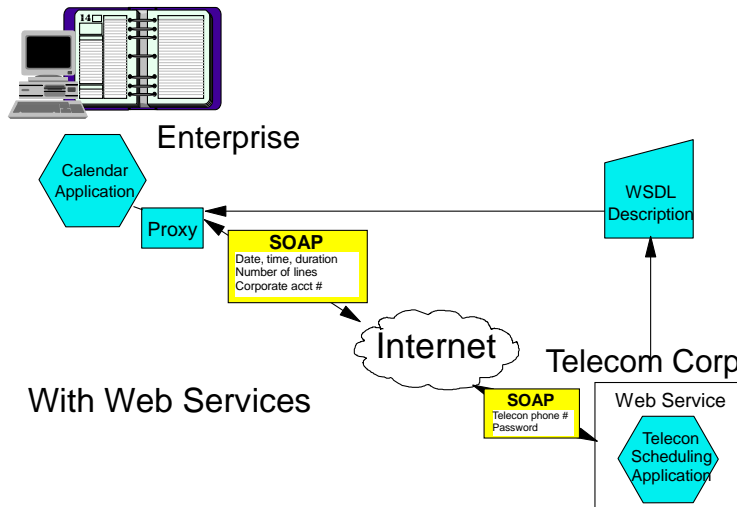
The screenshot displays the WebSphere Development Studio Client Advanced Edition for iSeries interface. Several components are highlighted with blue arrows and labels:

- Struts Web Diagram Editor**: Points to a diagram showing a flow between a form and an action.
- Struts Web Structure viewer**: Points to a tree view of the web application structure.
- Page Designer**: Points to a form with fields for Name, Address, Country, Sex, and Phone.
- iSeries Web components**: Points to a palette of UI components like Check Box, Radio Button, and Text Area.
- iSeries Web Interaction wizard**: Points to a menu option for opening Struts web interaction.
- Attributes for iSeries text entry**: Points to a dialog box for defining data attributes like Type, Length, and Decimal places.

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IBM Web Services



With Web Services

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IBM Java Server Faces Tools



Web Perspective

Project Navigator

Page Data

Attributes

Page Designer

Event Panel

Palette

New in 5.1.2

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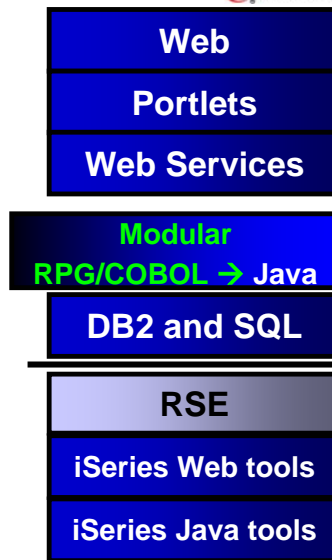
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IBM Step 4: Better Portability



• New e-business Solutions

- ▶ Open new markets, new platforms
 - ▶ Business logic in Java for portability
 - ▶ May retain minimal RPG/COBOL for specific functions such as data access or printing
- ▶ Maintain interaction with users and other enterprises via web technologies

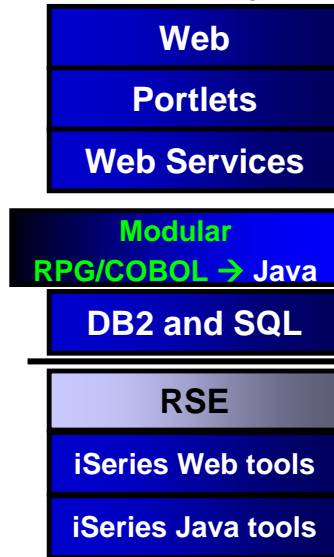


IBM Step 4: Portability

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Value Proposition

- ▶ Allows developers to create e-business solutions
 - ▶ Object oriented & portable
- ▶ Expands the market for ISV solutions
- ▶ Allows programmer talent to be shared across platforms in heterogeneous shops, reducing costs and more effectively applying existing resources
- ▶ Allows easier distribution of software assets for workload balancing and disaster recovery
- ▶ Provides access to a new pool of programmer talent
 - ▶ computer science graduates that typically have experience with Java
- ▶ Facilitates the move to pervasive computing



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IBM Step 4: Portability

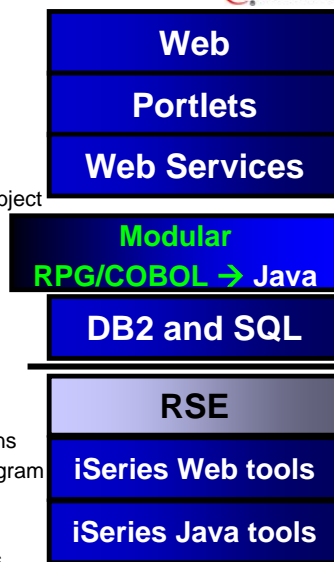
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Skills Required:

- Java and Web programming
- Java and Web tools knowledge

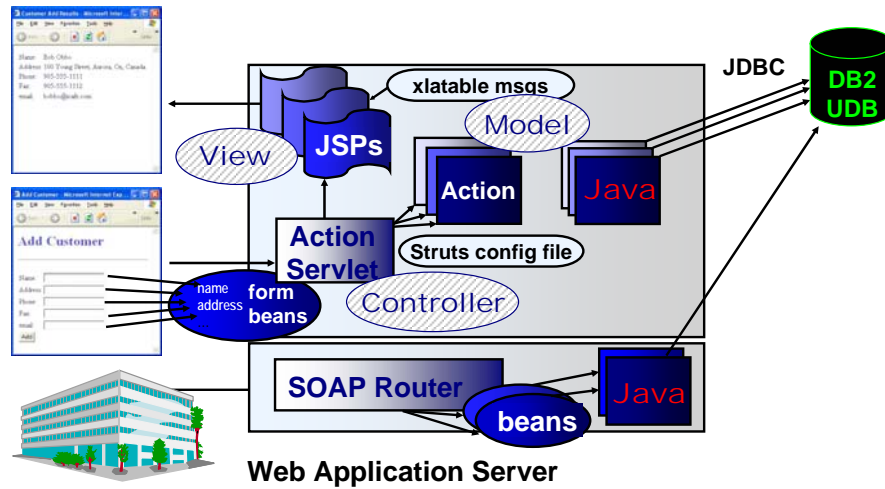
Education Enablement

- ▶ Java
 - Introduction, Advanced, IBM Toolbox for Java, Object Oriented Analysis, Design and Concepts
- ▶ Detailed e-business (including Java code)
 - How to write servlets & JSPs, Javascript, HTML
 - Struts, including Struts actions
 - Web Services, XML parsing
 - JDBC
- ▶ Tools
 - WebSphere Studio Java tools & iSeries extensions
 - iSeries Web, Struts, Web services, & iSeries Program Call wizard
- ▶ WebSphere Application Server
 - Beyond WebSphere Application Server - Express

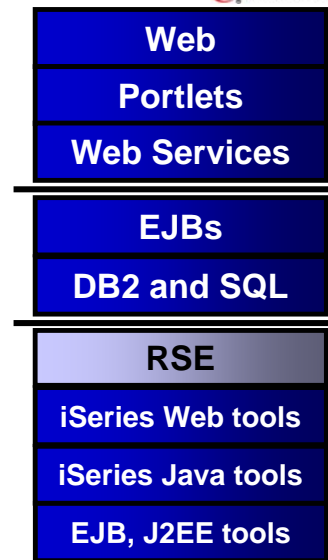


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- **Create Highly Scalable e-business Solutions**
 - ▶ Using J2EE, EJB, Java, Web, & Web Services tools
 - ▶ Better distribution of function

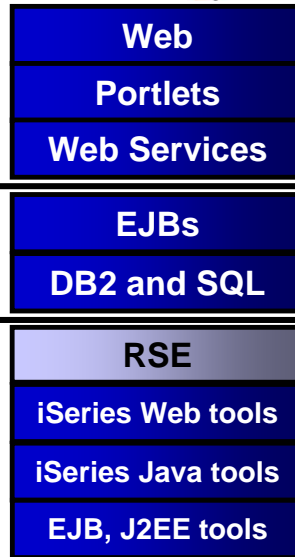


IBM Step 5: Better Scalability

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Value Proposition

- ▶ Create portable, J2EE-compliant solutions for high-volume, high-transaction-rate, e-business environments
- ▶ Adherence to industry standard technologies makes integration with other vendors and systems easier
- ▶ Build with consistent technology used across all of IBM's server platforms
- ▶ Expands the ability to create new applications from scratch using components purchased from others or downloaded free from the Internet, speeding application development and deployment



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IBM Step 5: Better Scalability

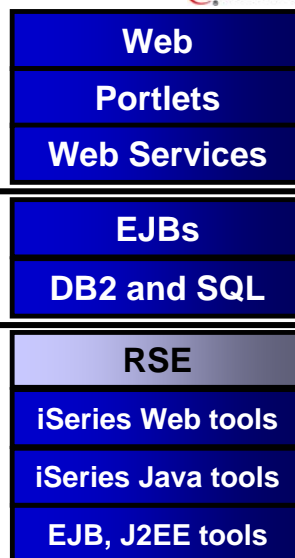
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Skills required

- J2EE
- EJB
- Tool Knowledge

Education Enablement

- ▶ J2EE
 - Enterprise JavaBeans (EJBs), Message Driven Beans (MDBs)
 - J2EE services (e.g., JMS)
 - J2EE security, LDAP, JNDI
- ▶ Tools
 - Eclipse Java tools, J2EE tools, & iSeries extensions in WebSphere Development Studio Client
 - Tools: iSeries Web, Struts, Web services (including iSeries Program Call wizard)
- ▶ WebSphere Application Server V5.0 & ND

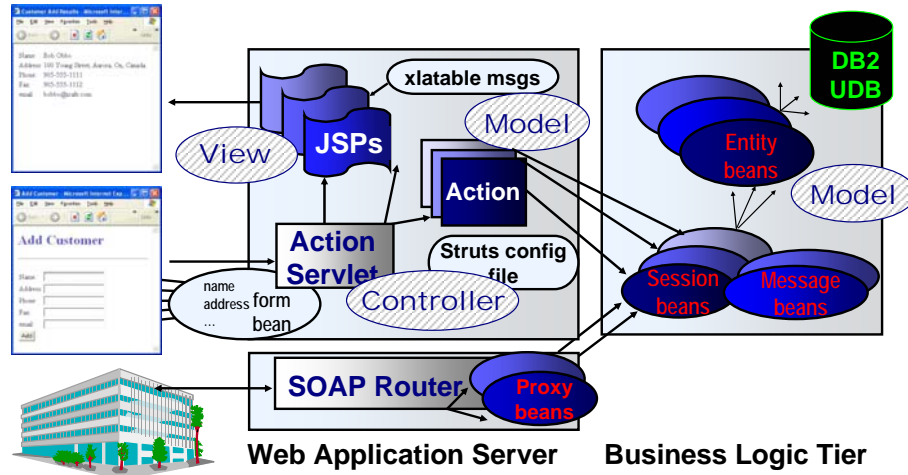


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IBM Better Scalability

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IBM Conclusion

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The **iSeries Developer Roadmap** - one approach for modernizing applications:

- Moving from:
 - 5250 to Web
 - RPG/COBOL to Better RPG/COBOL
 - RPG/COBOL to Java
 - RPG/COBOL to J2EE
 - RPG/COBOL to Service Oriented Architecture (SOA)
- Allows merging of new technology with traditional code
- Provides multiple entry and exit points
 - Each step in the road is both a destination and a rest-stop
 - Allows gradual growth of skills



IT IS TIME TO GET STARTED!

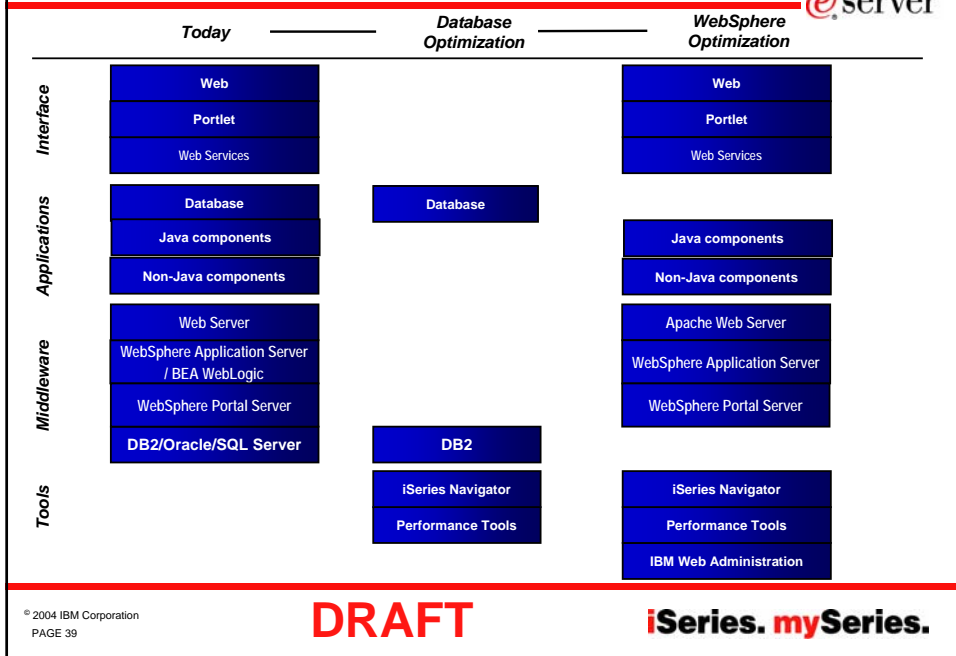
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J2EE Developer to i5/OS Roadmap



Additional Information



- developerWorks: IBM's resource for developers**
ibm.com/developerworks/
 - WebSphere Application Server Network Deployment**
ibm.com/Servers/eserver/series/software/websphere/wsappserver/indexnd50.html
 - WebSphere Host Access Transformation Server (HATS)**
ibm.com/software/webservers/hats/
 - ASF Tomcat Web Application Server on iSeries**
ibm.com/servers/eserver/iSeries/software/http/services/tomcat.html
 - IBM WebFacing Tool**
For general details...
ibm.com/software/awdtools/wdt400/about/webfacing.html
For a Redbook...
www.redbooks.ibm.com/abstracts/sg246801.html
For a "guided tour"...
mc-store.com/un/ibmwebtool.html
 - WebSphere Development Studio**
ibm.com/software/awdtools/wds400
 - The Eclipse Consortium**
www.eclipse.org
 - WebSphere and Eclipse**
ibm.com/software/info1/websphere/index.jsp?S_TACT=103BHW06&tab=eclipse/index
 - WebSphere Application Server - Express**
ibm.com/software/websphere/info/express/index.jsp
 - The Struts framework explained...**
www.jakarta.apache.org/struts/
 - WebSphere Portal**
ibm.com/websphere/portal/
 - WebSphere Commerce**
ibm.com/websphere/commerce/
 - Lotus Domino Toolkit for WebSphere Studio**
ibm.com/software/info1/websphere/index.jsp?tab=products/studiotoolkits
 - Tivoli Access Manager for e-business**
ibm.com/software/tivoli/products/access-mgr-e-bus/
 - WebSphere Personalization for iSeries**
ibm.com/Servers/eserver/iSeries/software/websphere/wspersonal/
 - WebSphere MQ**
ibm.com/software/integration/wmq/
 - DB2 UDB for iSeries**
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