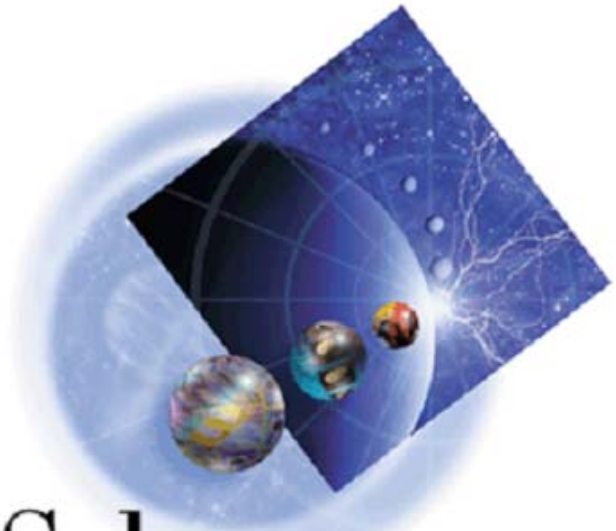
WebFacing

5250 Applications with

Leonardo LLames
IBM Advanced Technical Support
Rochester, MN



WebSphere® Development Studio for iSeries™

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Acknowledgement:

- This presentation is a collaborative effort of the IBM Toronto iSeries Application Development presentation team, including work done by:
  - Phil Coulthard, George Farr, John Steinbacher, Claus Weiss,
  - Satish Gungabeeson

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AGENDA

- Web Application Architecture
- Introduction to WebFacing
- How WebFacing Works
- Development Time Tooling
- Some Final Comments
- Screen Cam Demo ?

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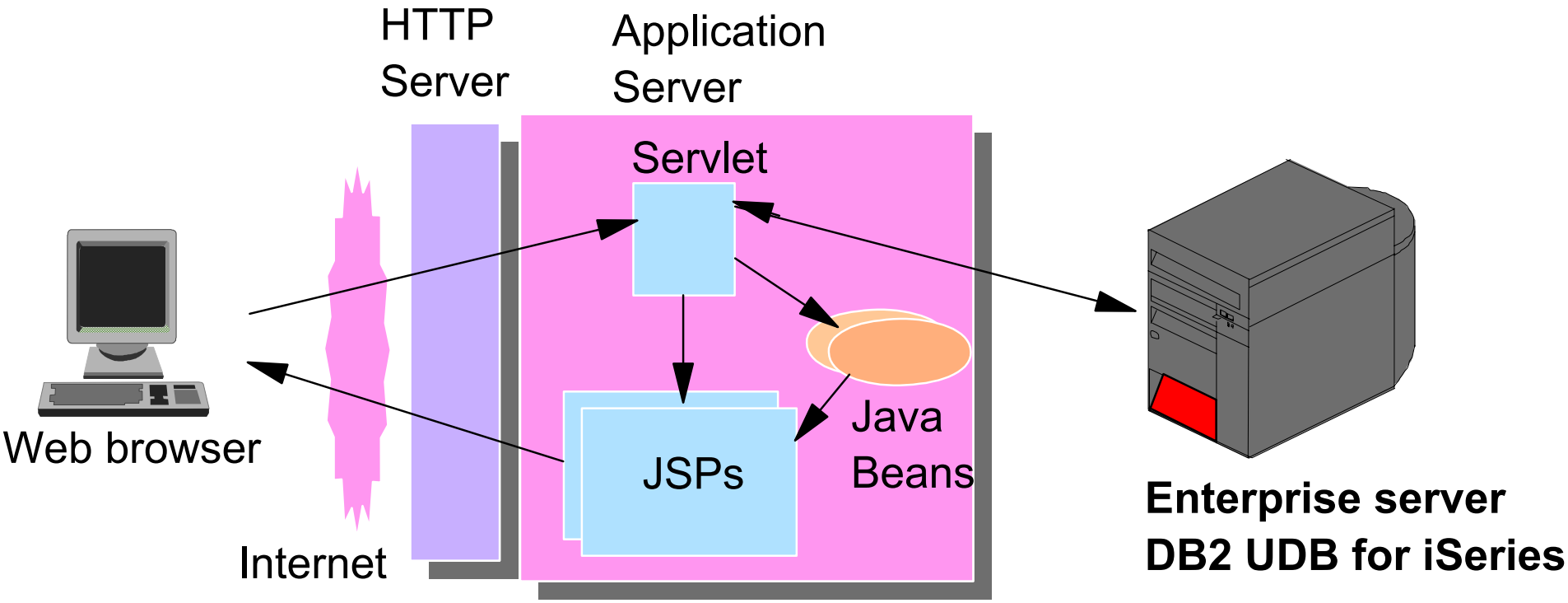
Web App Architecture



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Servlets and JSPs

- **Servlets**
  - A Java class plug-in to the application server
  - Acts as the Web application controller
    - Processes and routes browser requests to Java helper objects
- **JavaServer Pages (JSPs)**
  - Encapsulate the presentation (view) of the application
  - Allows a clean separation between presentation and dynamic content
  - Use Java scriptlets to reference Java beans for dynamic application data
- **Java Beans**
  - Encapsulate dynamic application data
  - Populated by the servlet

Servlets , JSPs, and Beans are the resources of Web applications. They allow the generation of dynamic web pages.

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Key Messages

- **Development (Build) & Deployment (Run) Platforms**
  - *Standards*
  - *Tools that use standards*
  - *Deploy on secure, reliable, scalable iSeries*
- **Integration Options With Core Applications & Data**
  - *Java & WebSphere*
- **GUI Development & Administration, e.g.,**
  - *WebSphere Development Studio*
  - *WebSphere Administrative Console*

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Agenda

- **How to leverage / integrate your applications in these new business scenarios**
  - *Drive existing applications*
  - *Modify and extend existing applications*
- **What options do you have available**
  - *5250 datastream capture*
    - IBM & 3rd party software
  - *WebFacing*
  - *Java access to traditional application logic as services*
    - IBM Toolbox for Java
    - Middleware, e.g., MQ Series, etc.

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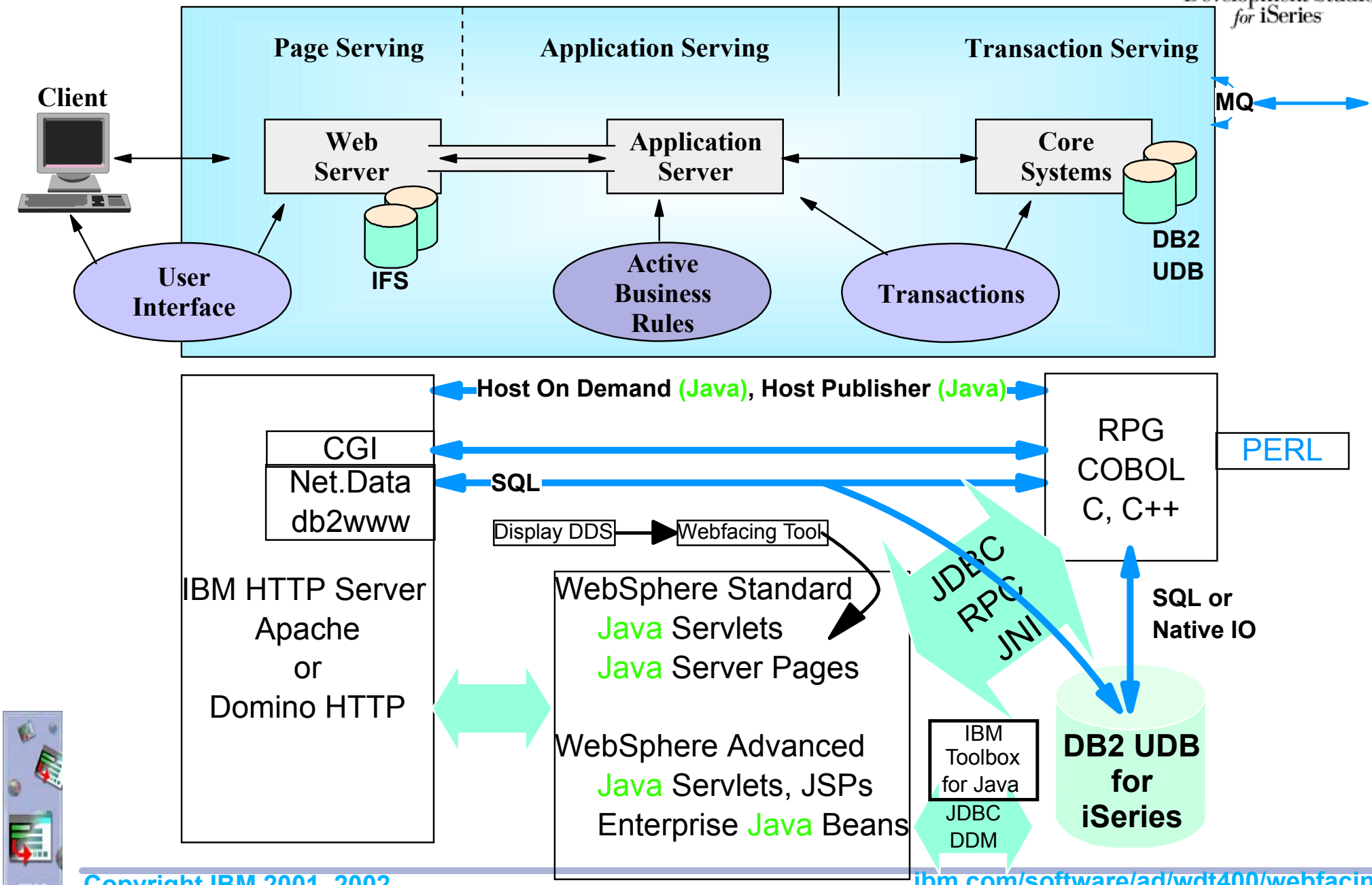
Common Options - Application Server & Integration



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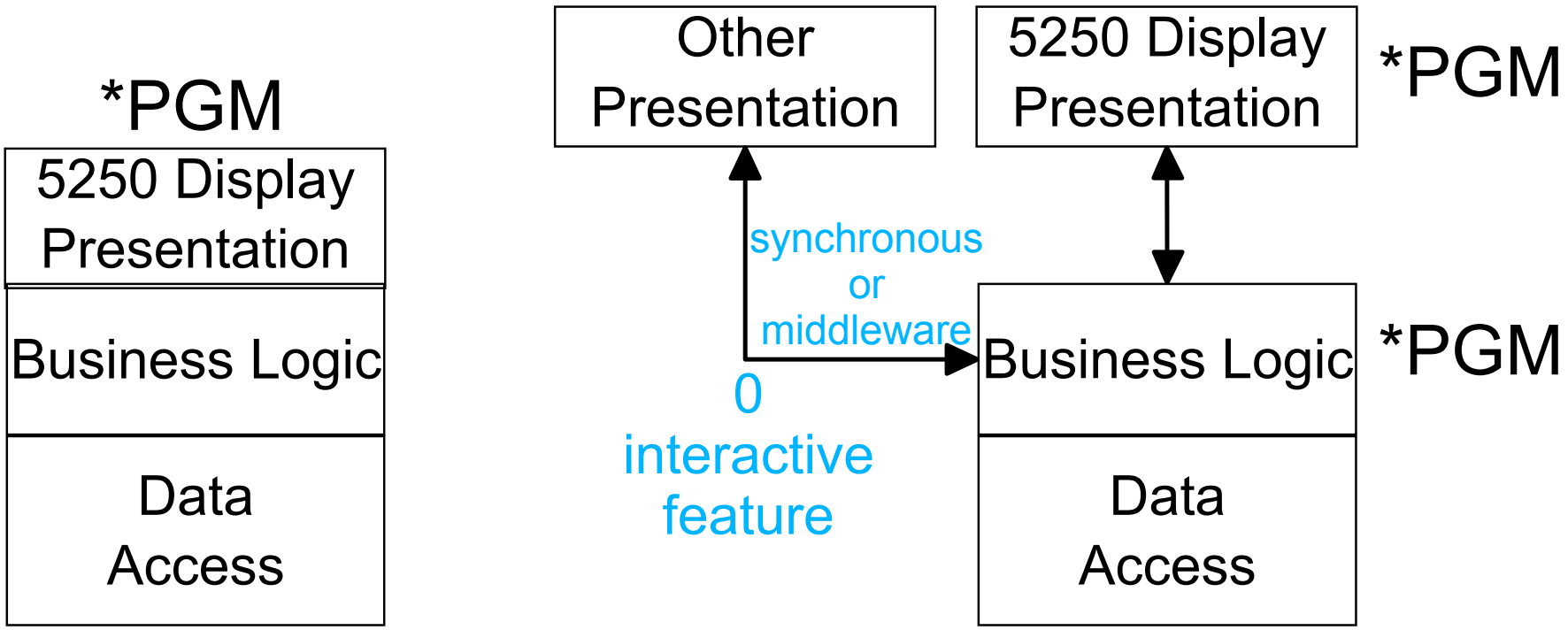
How embedded is presentation layer?

Monolithic Program Design, 5250 cannot be EASILY bypassed

- Host Integration
  - IBM or 3rd party SW, e.g., Host Publisher
- WebFacing

Modular Program Design, can either use or bypass 5250

- Host Integration
- WebFacing
- CGI or Net.Data (non-Java)
- New Java logic can call existing business programs
  - Example: WebSphere Studio Web Interaction Wizard



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AGENDA

WebSphere Development Studio for iSeries

Introduction to WebFacing

- What is WebFacing ?
- A quick example
- How do I get it ?
- What do I need ?

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What is WebFacing ?

WebSphere Development Studio for iSeries

New !

RPG Program

```
D/Copy DOWProto

P DayOfWeek       B
D                 PI        1P0
D WorkDate                  D

D AnySunday       S         D   INZ(D'1995-04-02')
D WorkNum         S         7  0
D WorkDay         S         1P 0

C   WorkDate      SubDur    AnySunday     WorkNum:*D
C   WorkNum       Div       7             WorkNum
C                 MvR                     WorkDay
C                 If        WorkDay < 1
C                 Return    WorkDay + 7
C                 Else
C                 Return    WorkDay
C                 EndIf
P DayOfWeek       E
```

Workstation manager

?

5250

Web

5250 to Web conversion

You can use both the 5250 and web UI !

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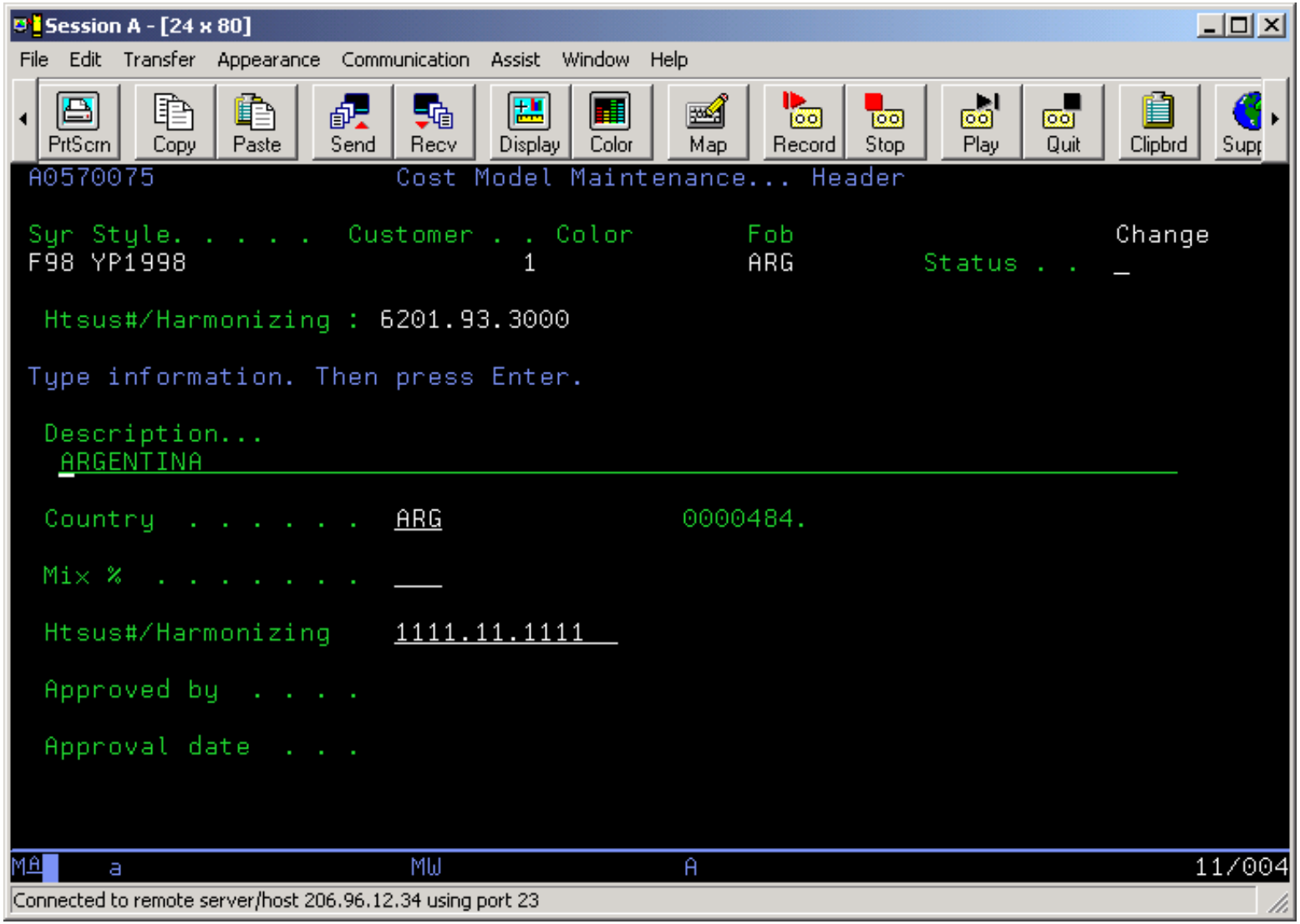
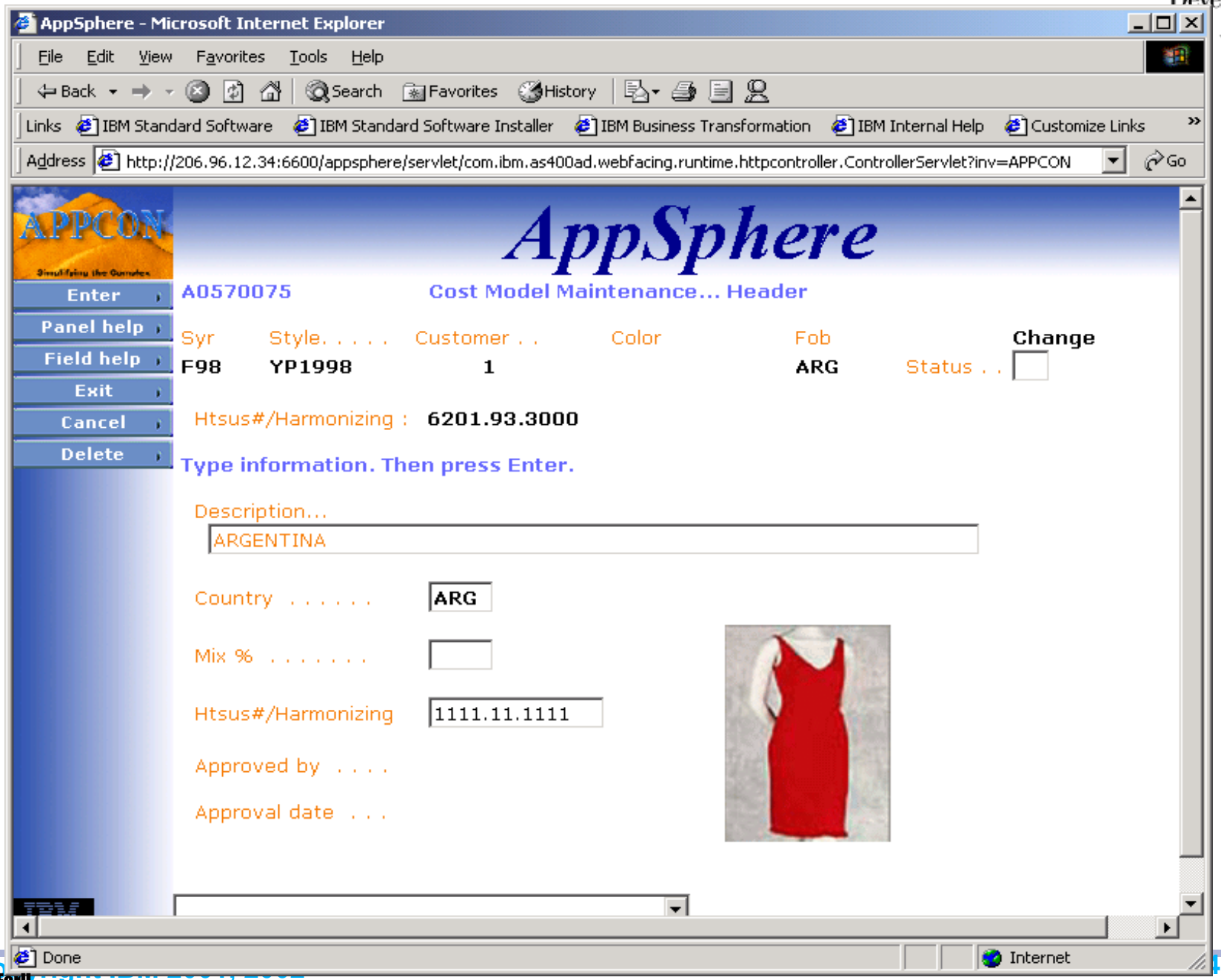
Before WebFacing

WebSphere Development Studio for iSeries



After WebFacing

WebSphere Development Studio for iSeries



How Do I Get It ?

WebSphere Development Studio for iSeries

Announcing

WebSphere® Development Studio for iSeries™

ONE PRODUCT: ALL TOOLS

- All host compilers and tools
  - ✓ RPG, COBOL, C, C++
  - ✓ ADTS (PDM, SEU, SDA, RLU, DFU)
- All client tools - unlimited

WebSphere Development Tools

- ✓ CODE/400
- ✓ VisualAge for RPG
- ✓ VisualAge for Java Pro plus ET/400
- ✓ WebSphere Studio plus iSeries extensions
- ✓ WebFacing

New

- 5769-WDS: V4R5
- 5722-WDS: V5R1
- ibm.com/software/ad/wds400

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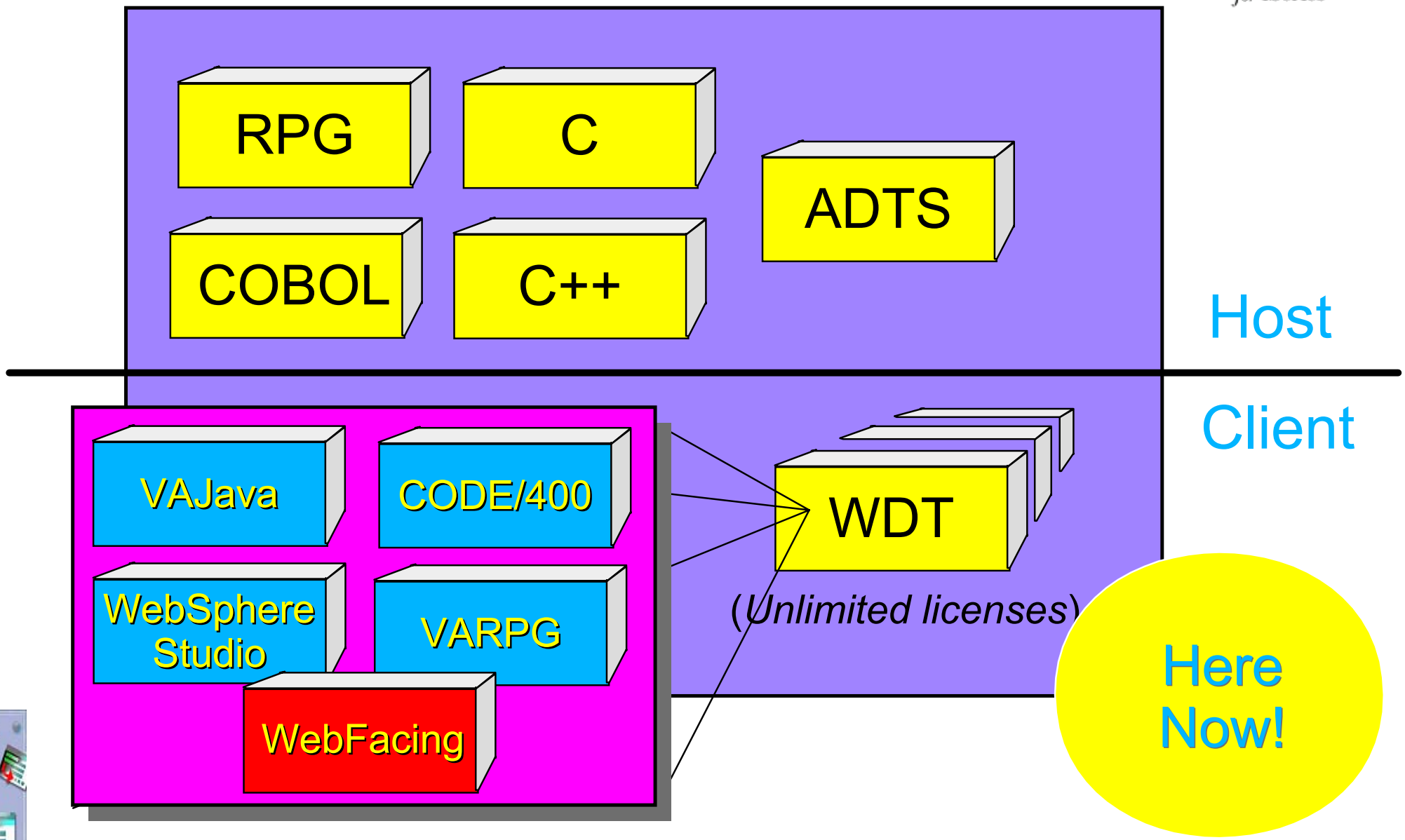
WebSphere Dev Studio



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Goals of WebFacing

WebSphere Development Studio for iSeries

- ✓ **Quickly convert existing interactive applications into web apps**
  - Browser based user interface
  - Minimal change to underlying applications
  - Minimal initial investment in skills
- ✓ **Allow iterative improvement for the Web**
- ✓ **Changing the face of the iSeries**

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AGENDA

WebSphere Development Studio for iSeries

How WebFacing Works

- Development time: Converting DDS --> JSPs
- Runtime: Putting the pieces together...

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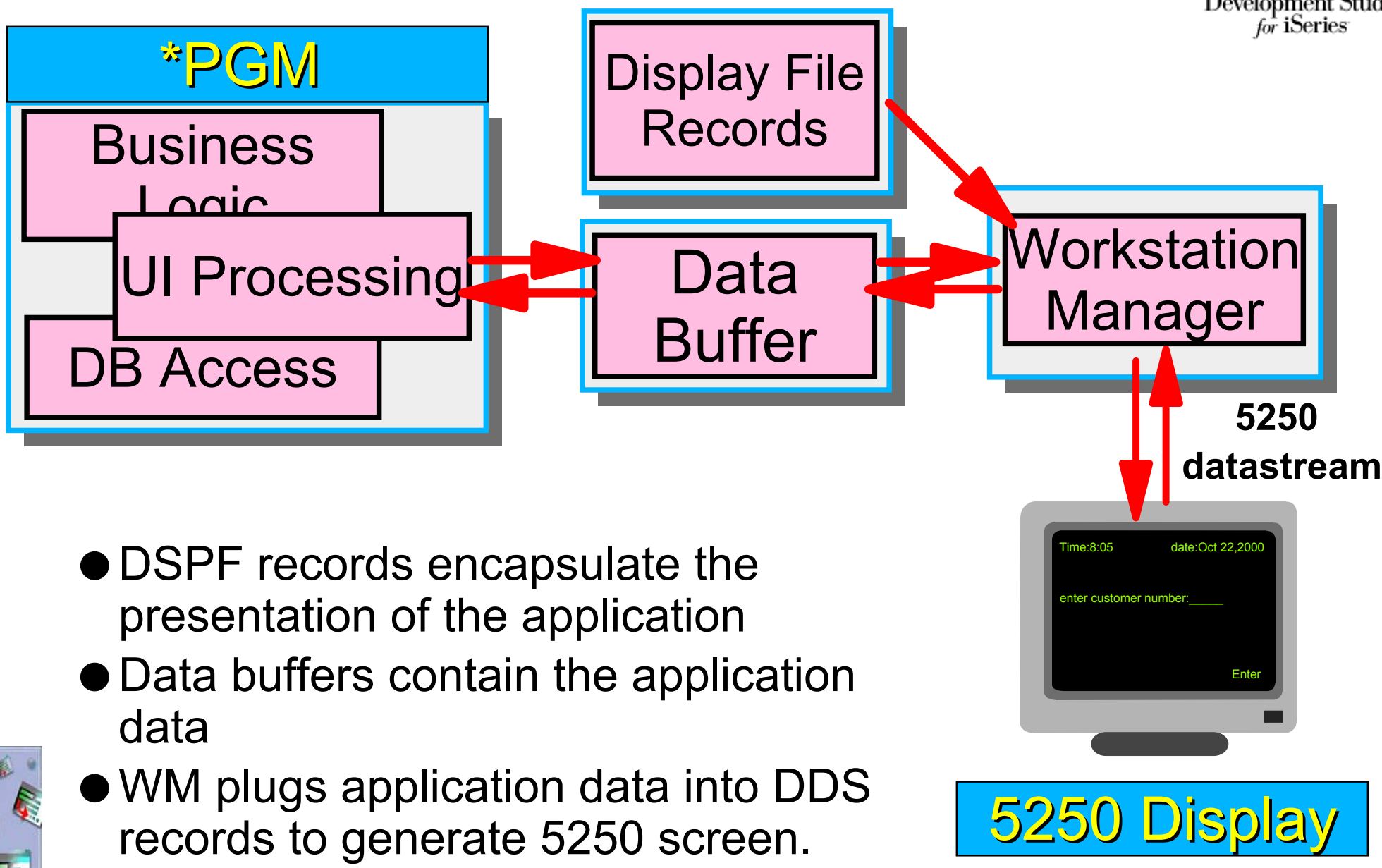
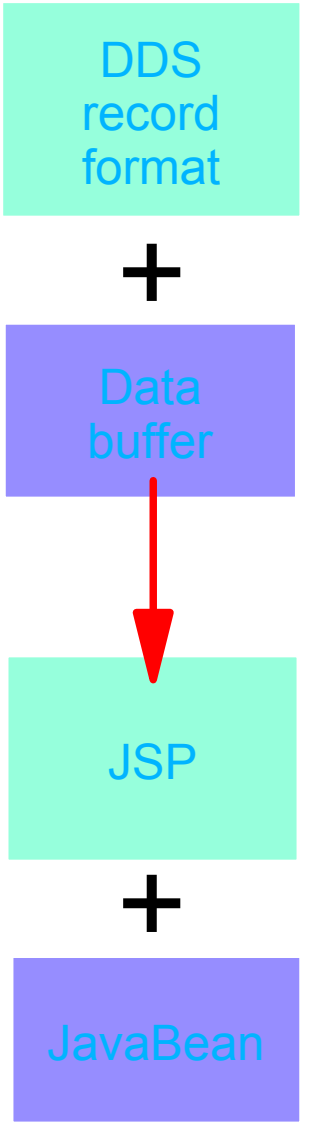
Interactive *PGM Model



- DSPF records encapsulate the presentation of the application
- Data buffers contain the application data
- WM plugs application data into DDS records to generate 5250 screen.

Convert DDS to JSPs & Beans

- Development time wizard:
  - Converts DDS to JSPs:
    - Select DDS members to convert
    - Creates one Java server page and 3 java beans per record format:
      - Bean holds data,view,and feedback for record format
      - JSP displays output and prompts for input
    - Select from various look-and-feels
  - Creates an "invocation page" per conversion: (index.html)
    - Web page with links
    - Each link results in starting a job, running the user-supplied CL command which starts the application contained the converted DSPFs



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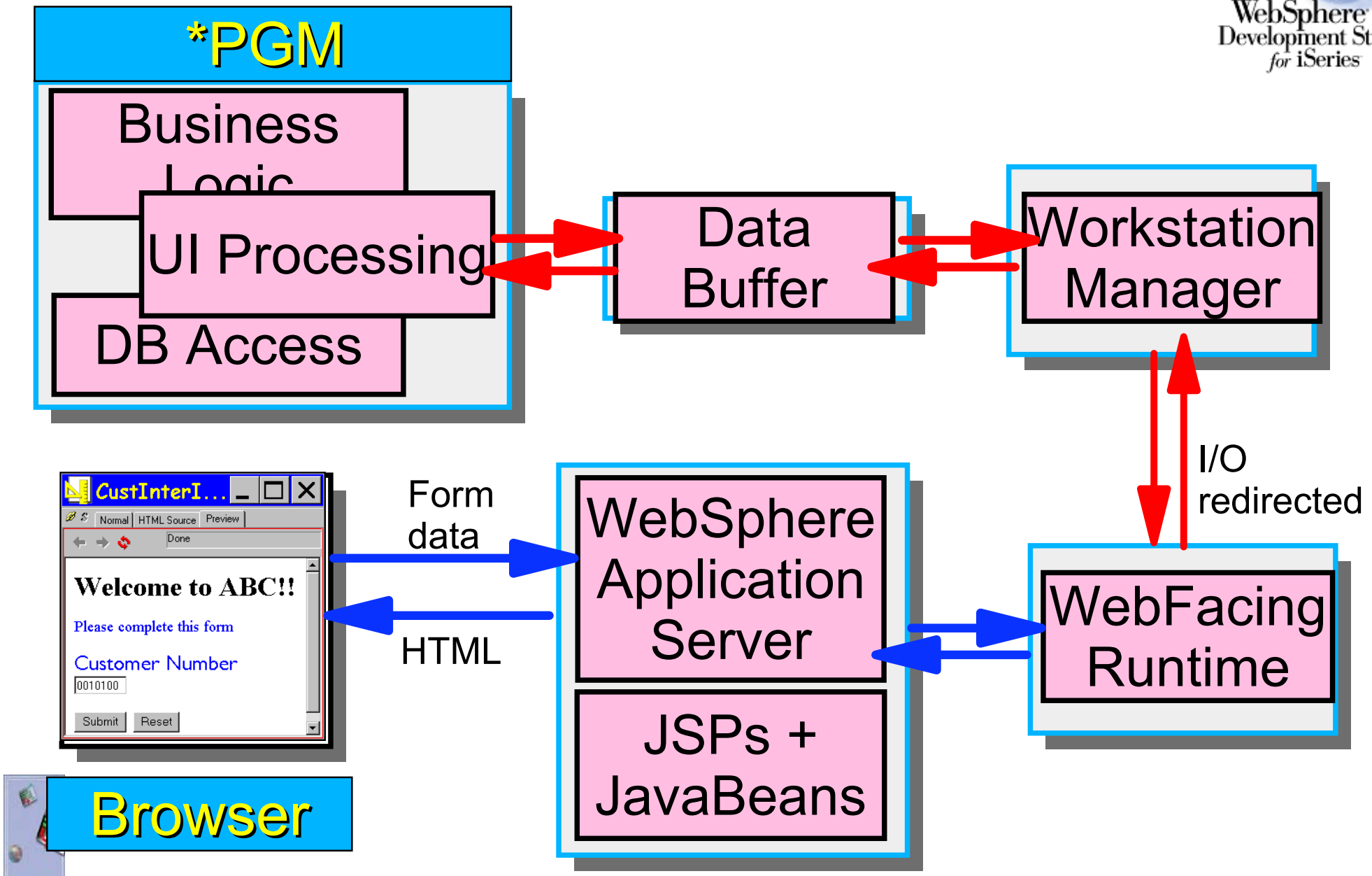
WebFacing Model



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WebFacing Runtime

- **WebFacing Servlet Runtime**
  - ► Called by generated Invocation Web Page
  - ► Starts OS/400 job, calls your application
    - **Using invocation and signon information supplied in the web application. (Password is encrypted)**
    - **Operating system recognizes special WebFacing mode**
      - Redirects writes and reads of DSPF to WebFacing servlet, via the WebFacing server
  - ► Maps *PGM "writes" and "reads" to previously generated JSPs
    - **Merges multiple writes into single JSP**
    - **On "read" sends merged JSP to user, waits for "Submit" from the browser**
      - Returns input data to waiting *PGM

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How does it all work?

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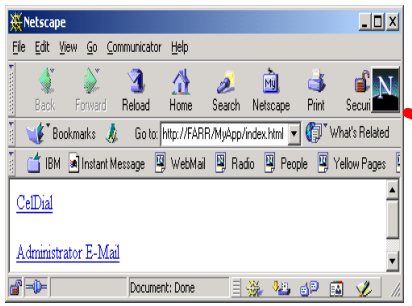
Tier 1

Tier 2

Tier 3



User issues the URL:
http://server:port/web-path/index.html

1. Open socket
2. Flip WM switch
3. Start job
4. Call host app

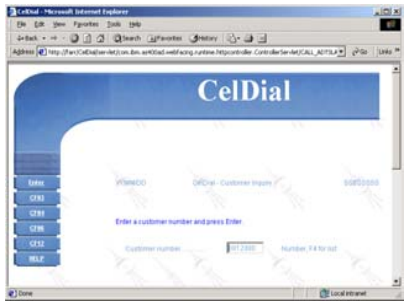
App writes, reads data

Servlet

JSPs

Beans

5250 Host app



JSP page output.

User enters data, and presses Submit...

WebFacing Server

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AGENDA

WebSphere Development Studio for iSeries

Development Time Tooling

- Create WebFacing Project wizard
- Publishing information
- Deployment to WebSphere Application Server
- Test it out !

What are the steps?

- Start the new IDE
- Run the Create WebFacing Project wizard
  - Import DDS Source from the server
  - Specify the CL command used to start the app and the text for the Web page link
  - Select style
- Convert DDS to JSPs, beans
- Update publishing information
- Deploy the files to WebSphere App Server
- Ensure that WAS instance is up and running
- Invoke the first page - Invocation page = index.html
- Iteratively improve the look ...

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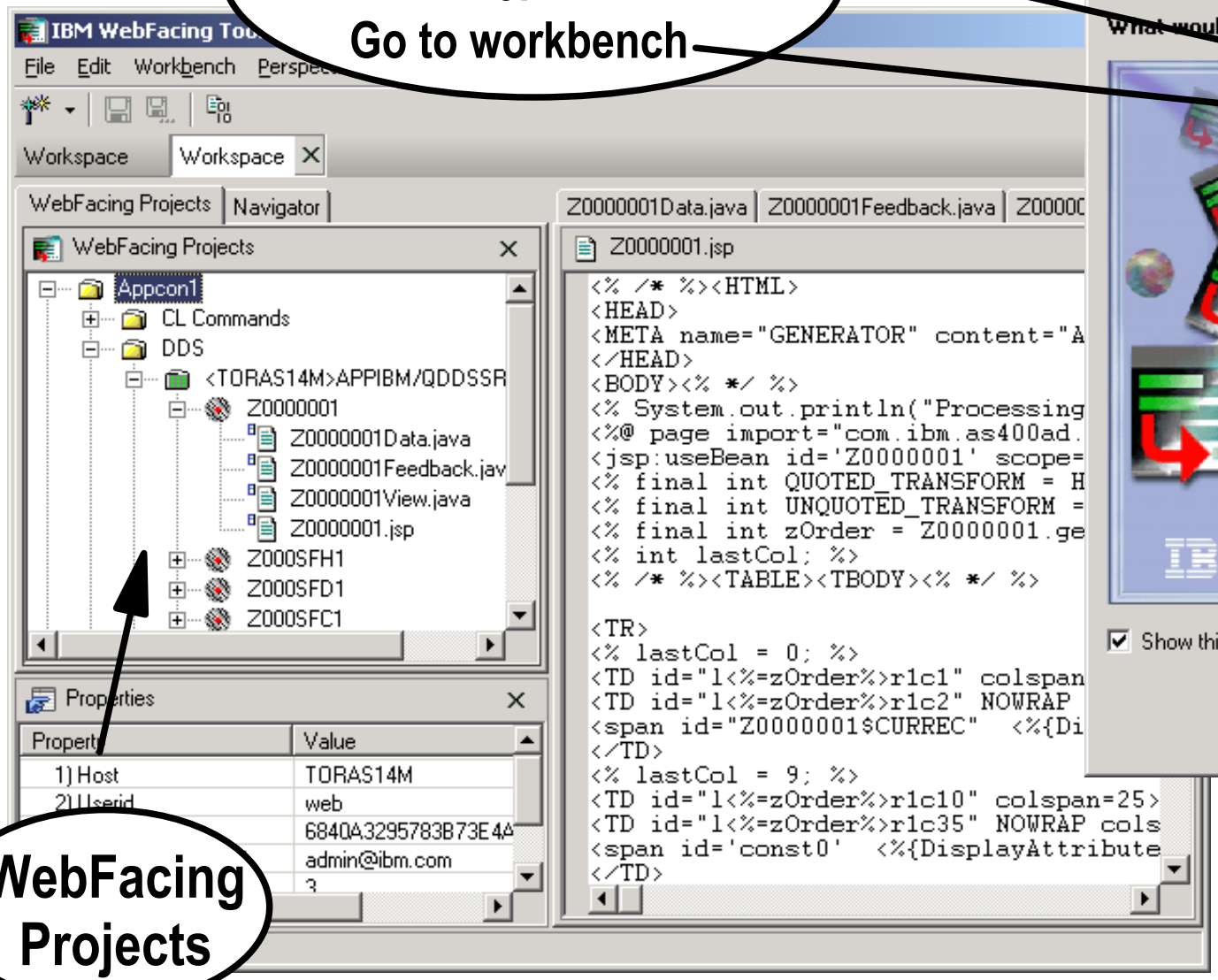
New IDE . . .

WebSphere Development Studio for iSeries

Create new WF project
or
Go to workbench



WebFacing Projects

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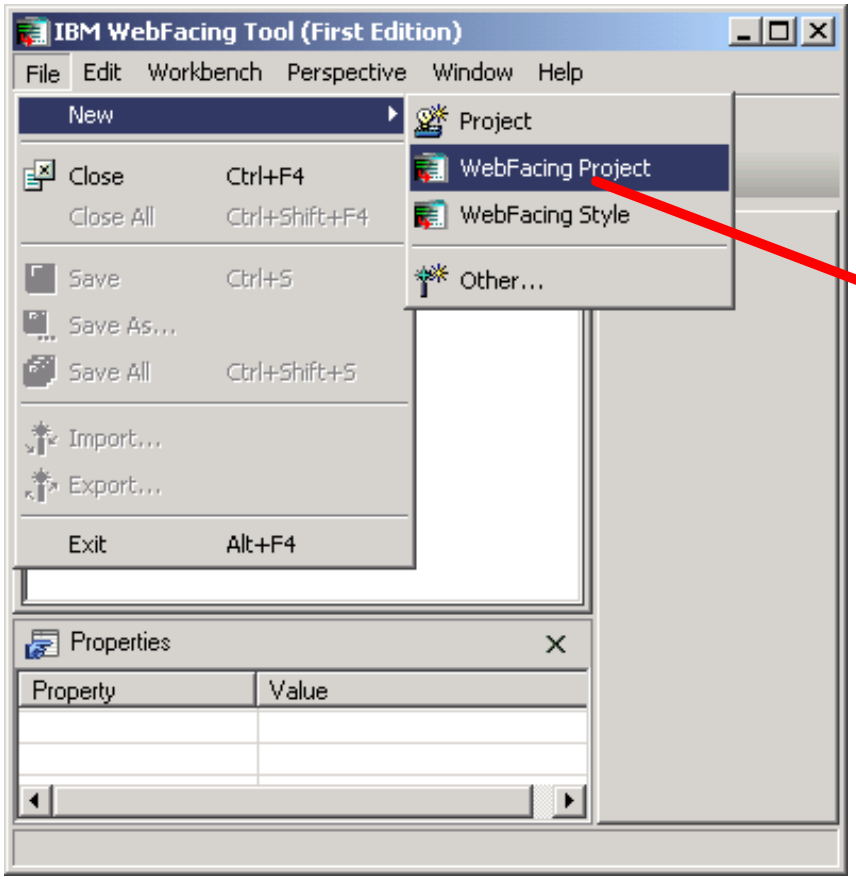
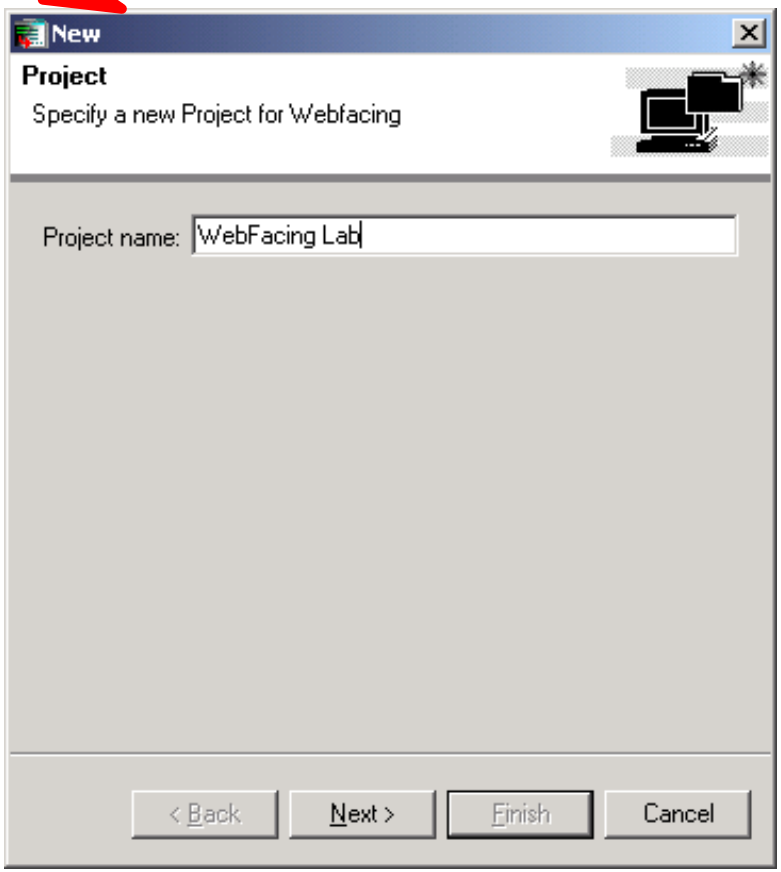
Create a New Project !





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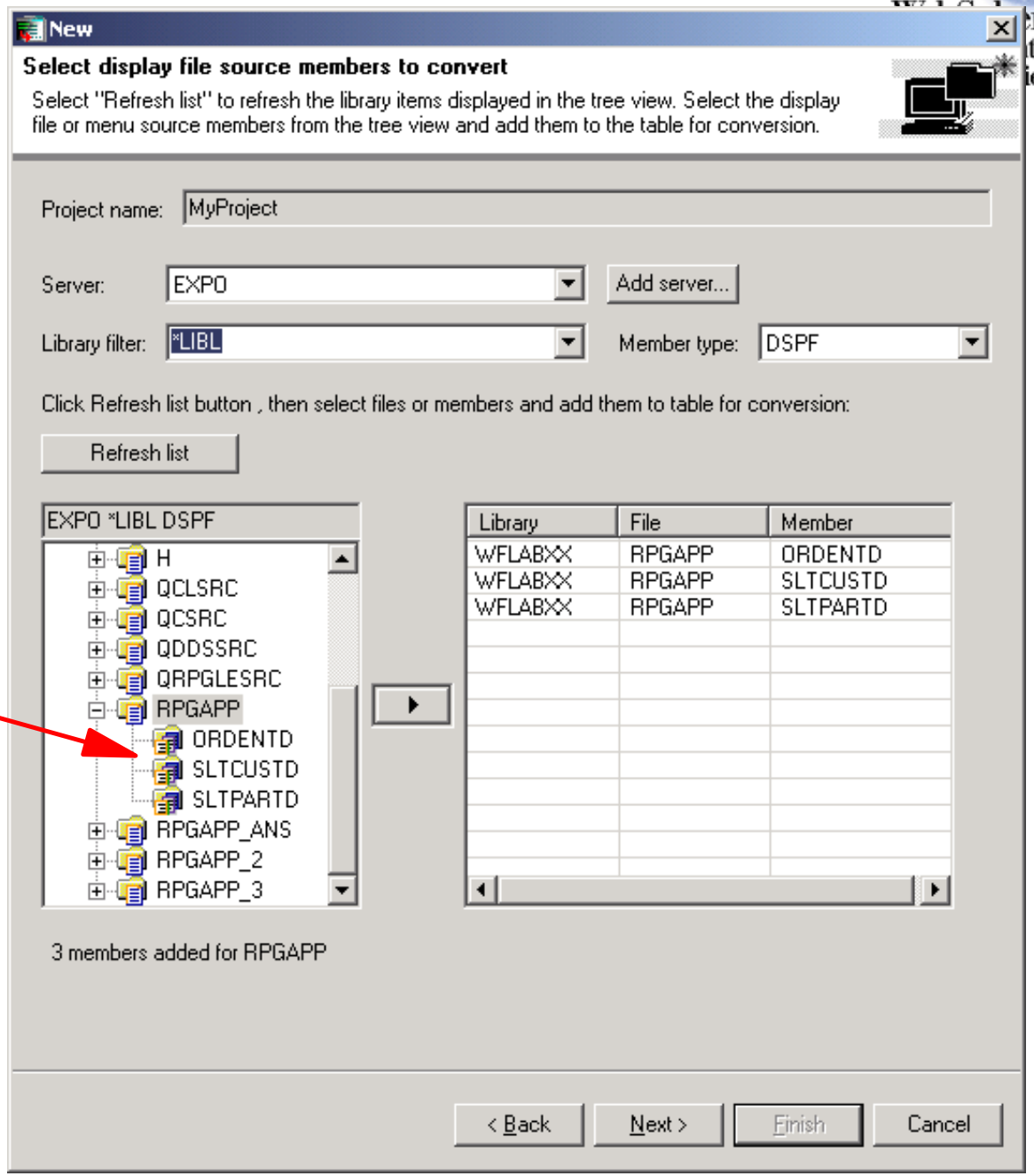
Select DDS source

- Select server
- Sign on

- Select DDS



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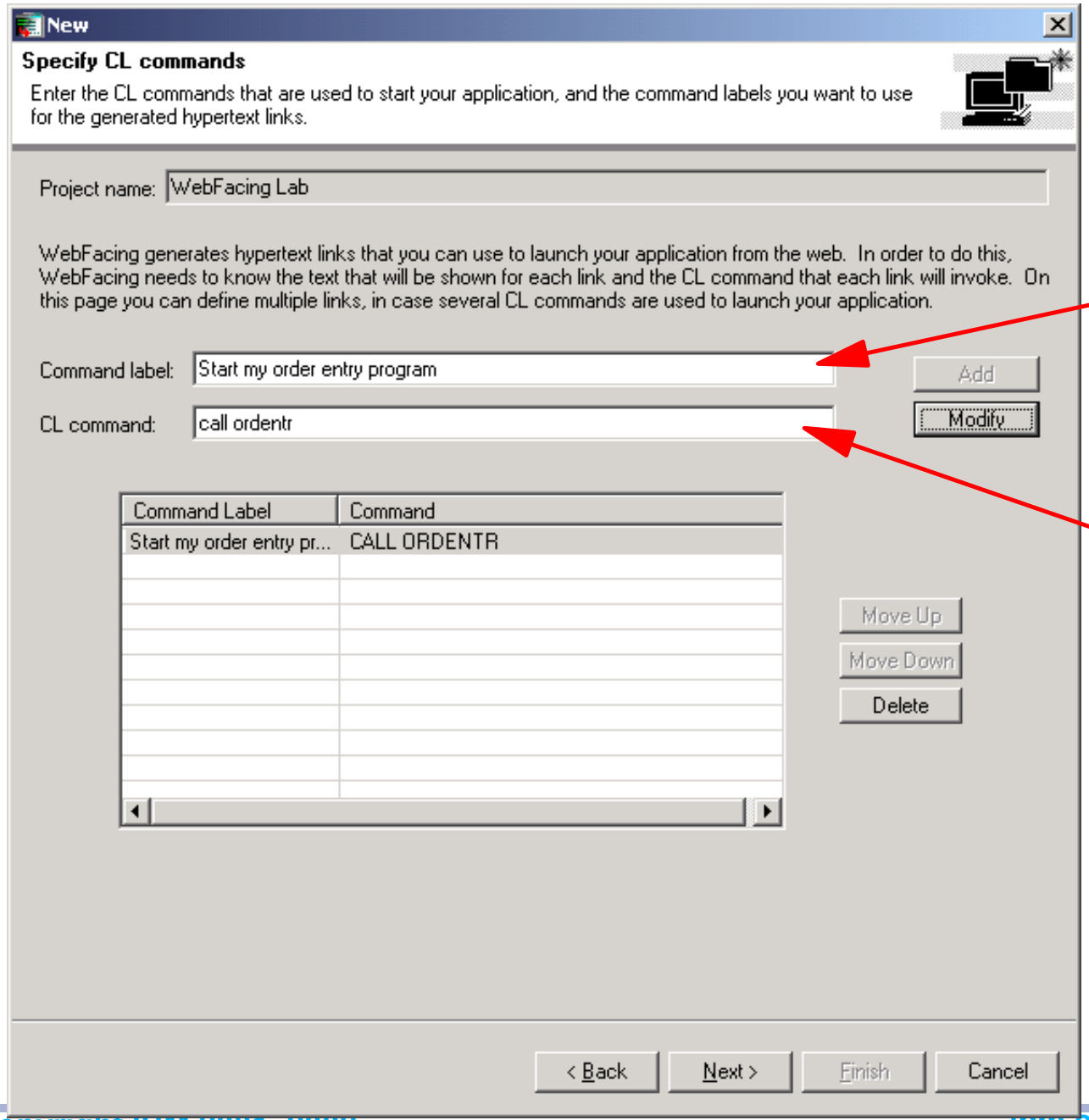
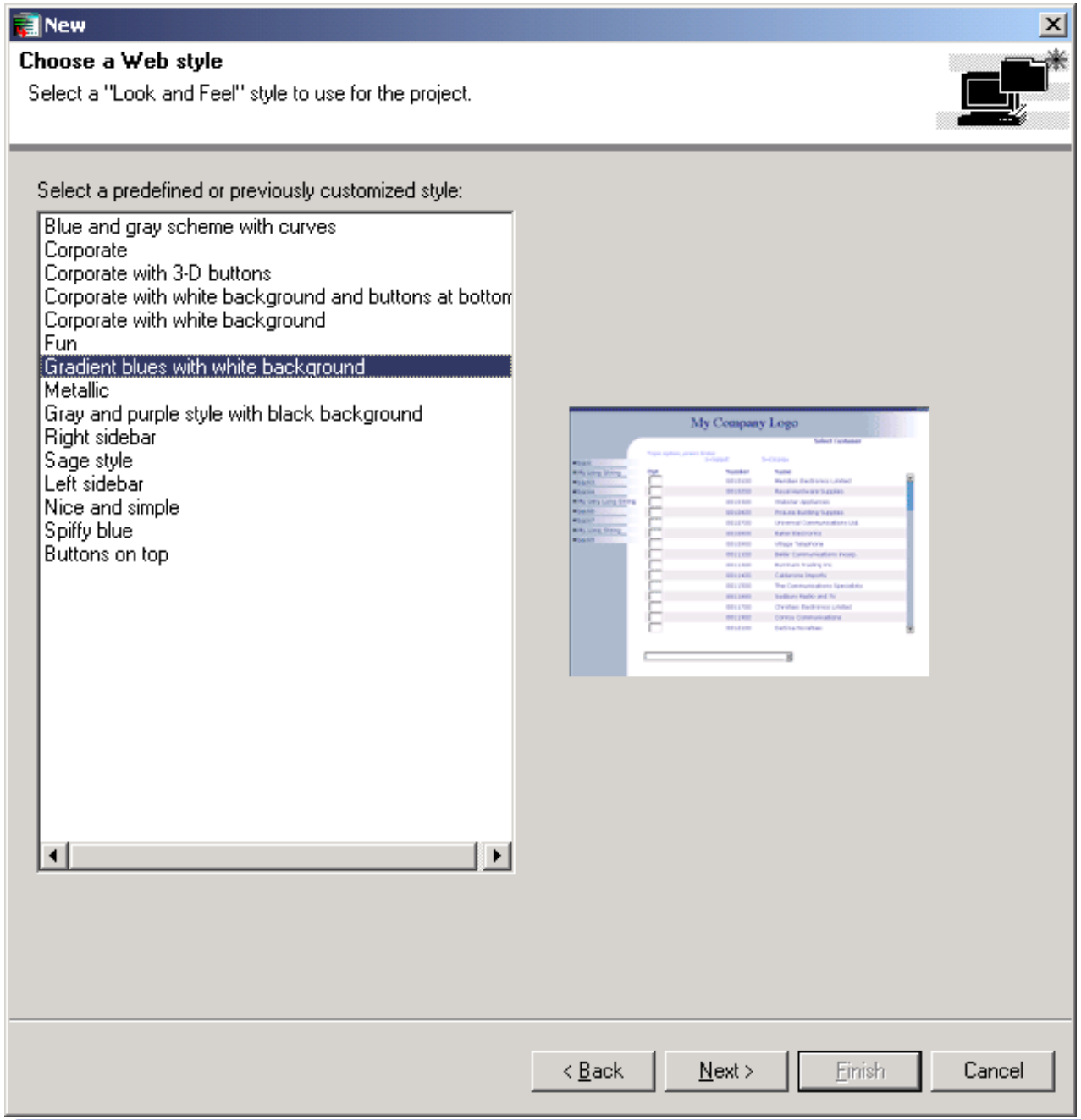
Command to Call App



Text for web page link

CL command

Select Presentation Style



- Lots of styles that you can modify !
- Cascading style sheets

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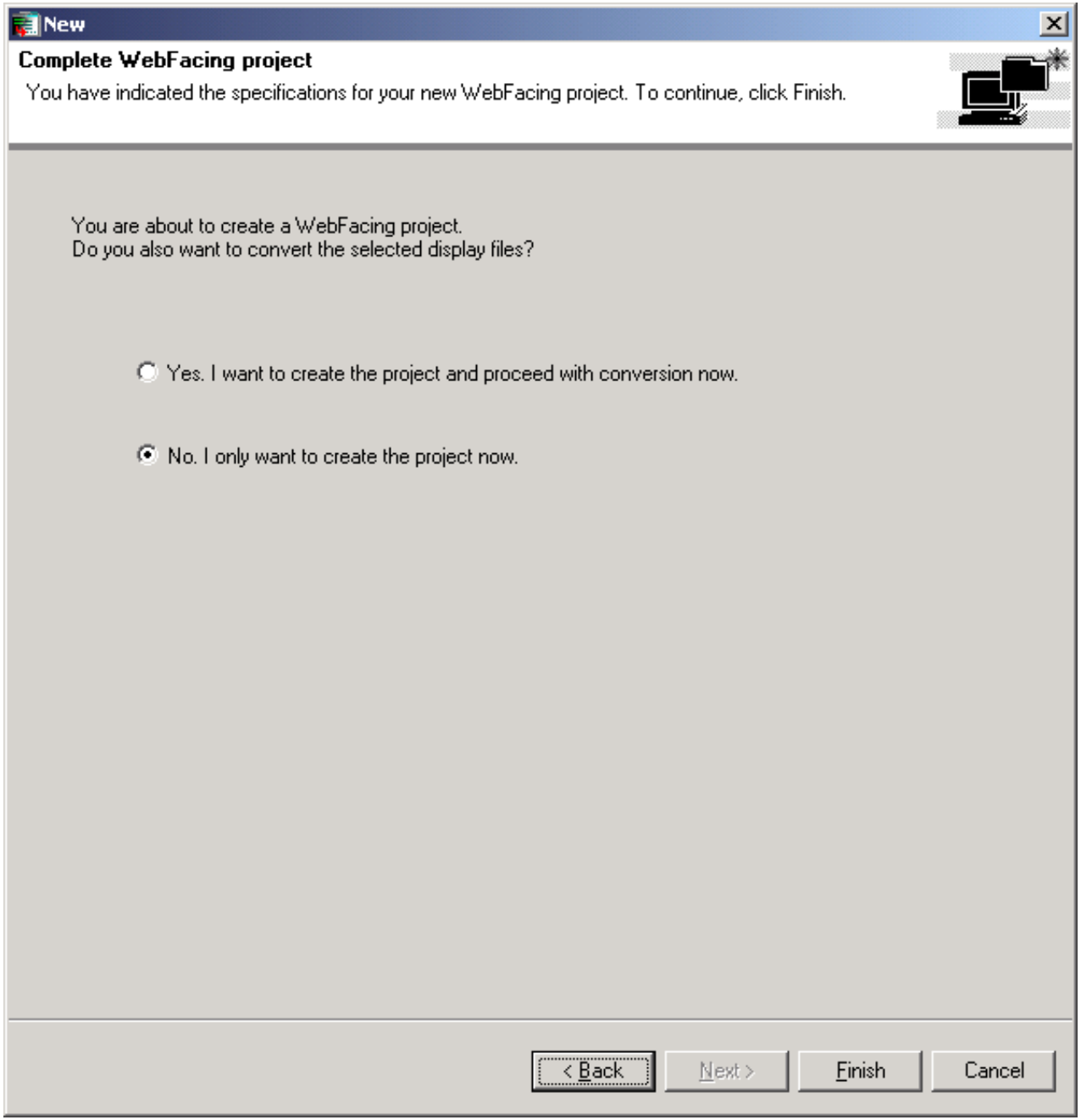
Done!



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Convert DDS to JSPs

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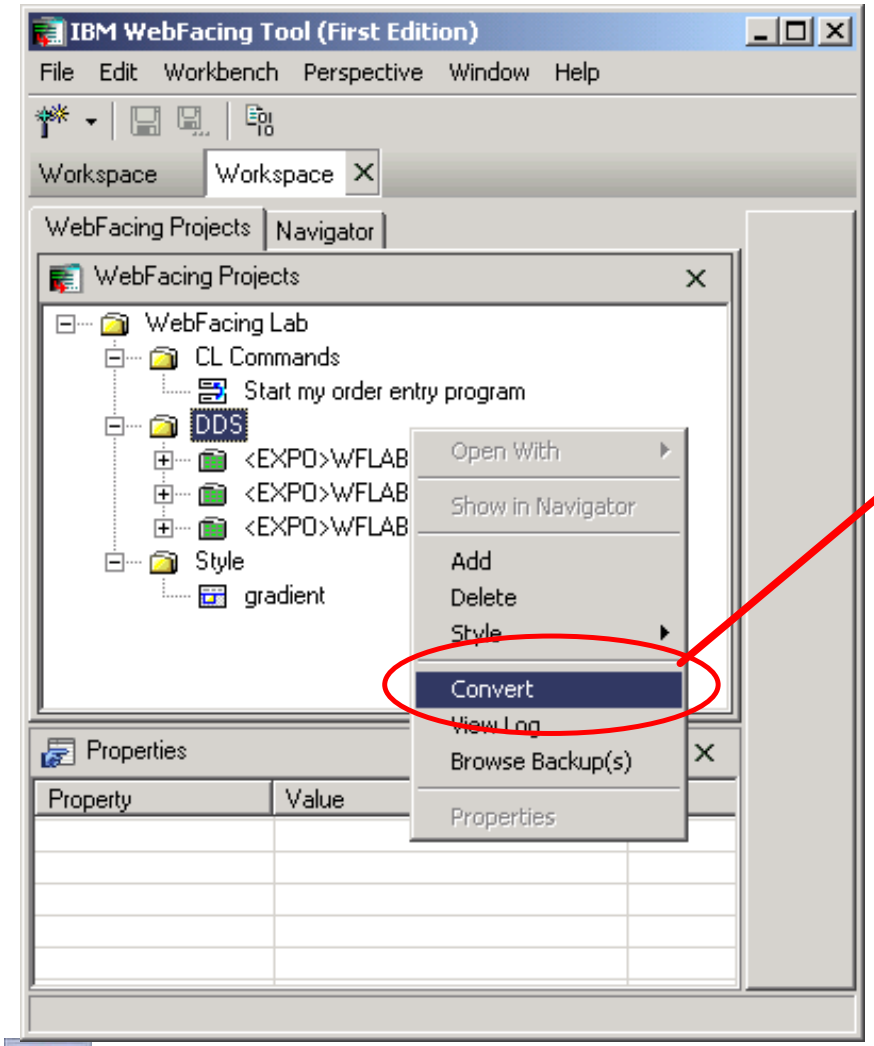

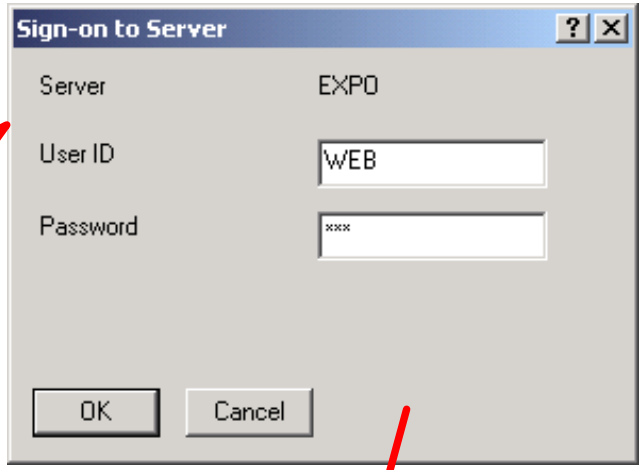

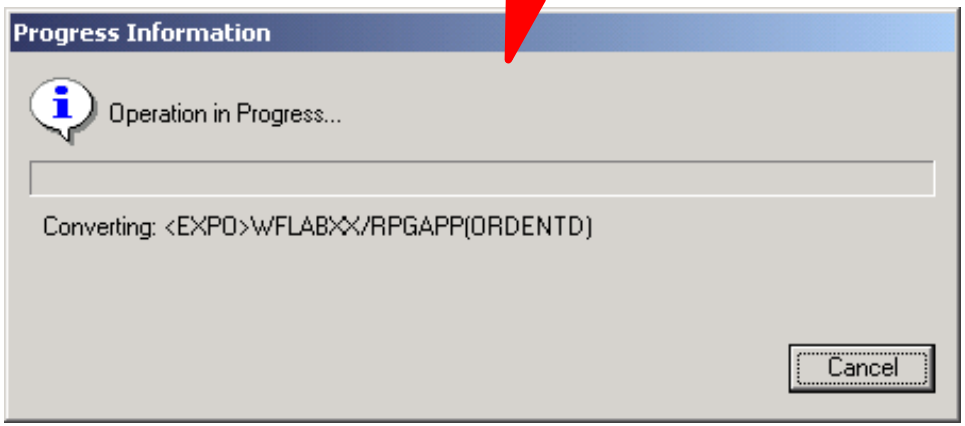

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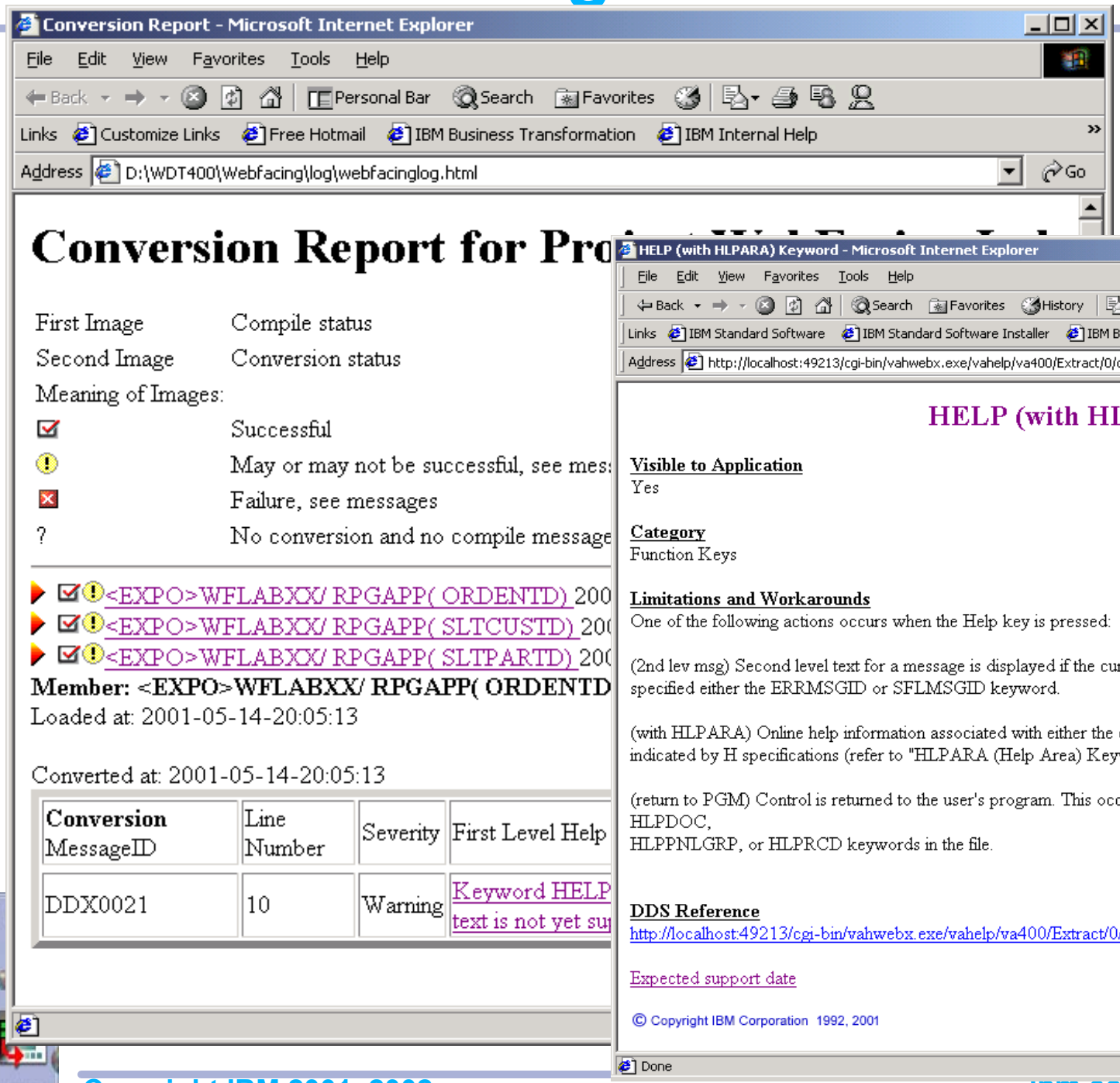
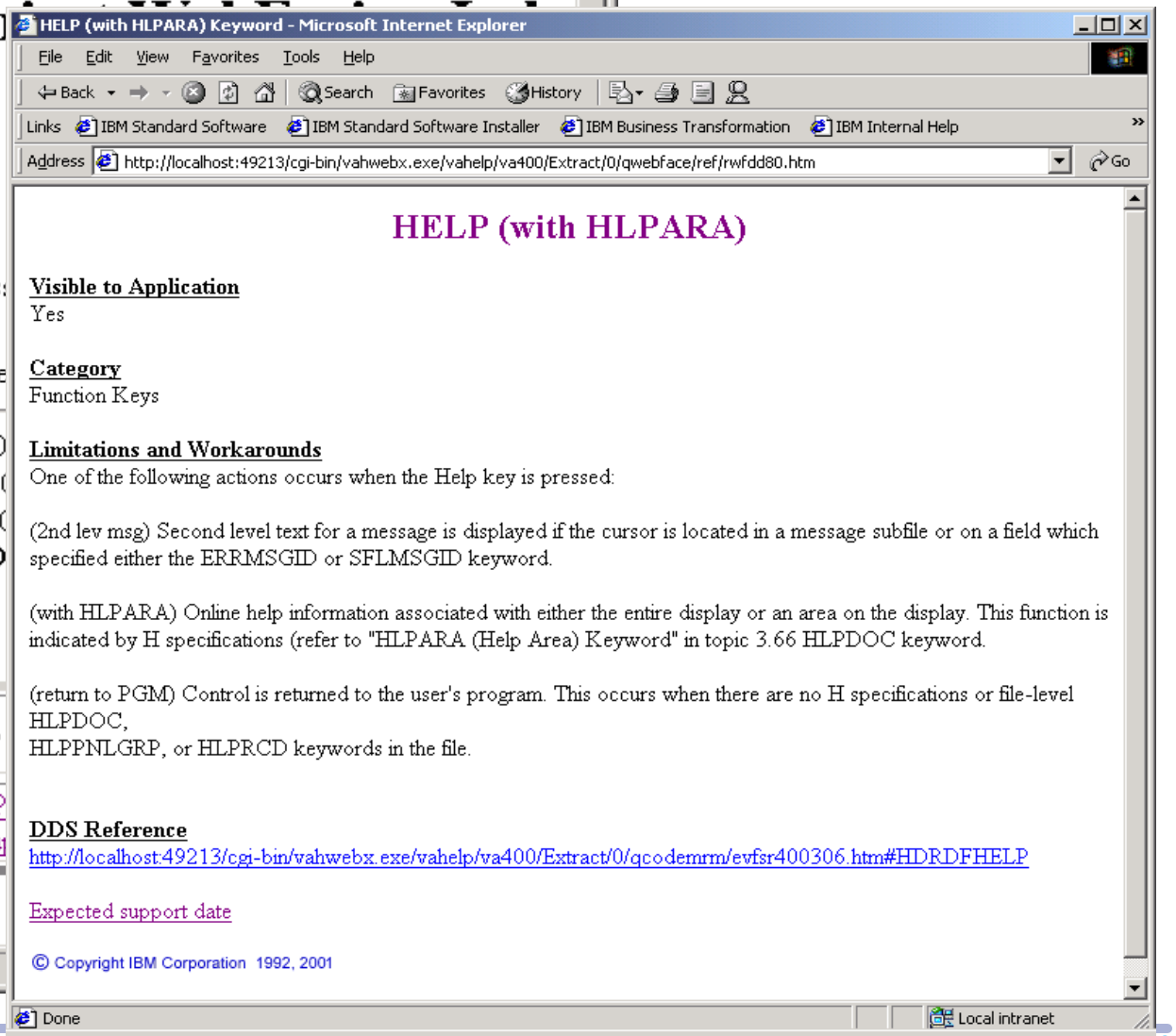
Conversion Log





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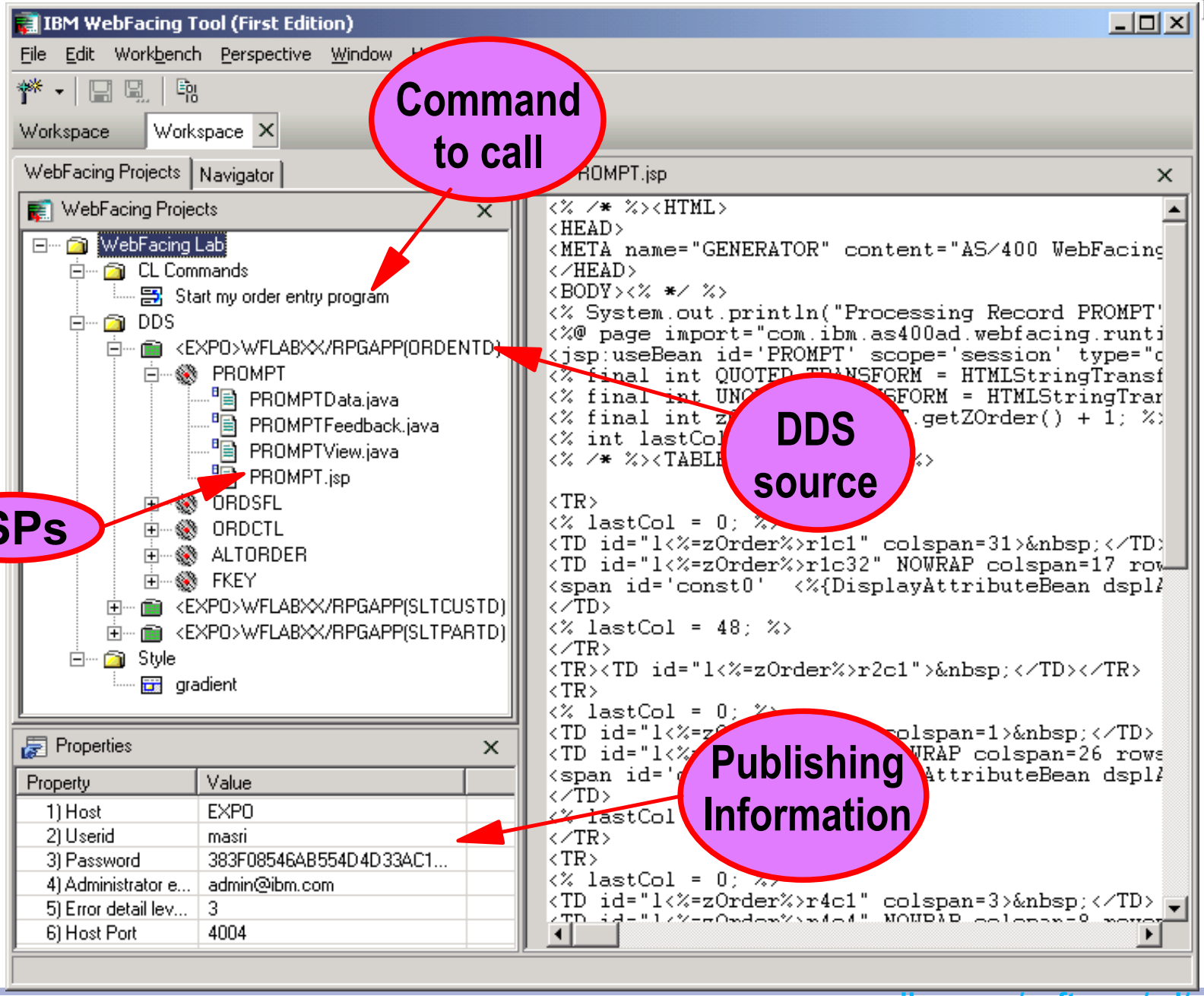
Generated Output



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Almost done !

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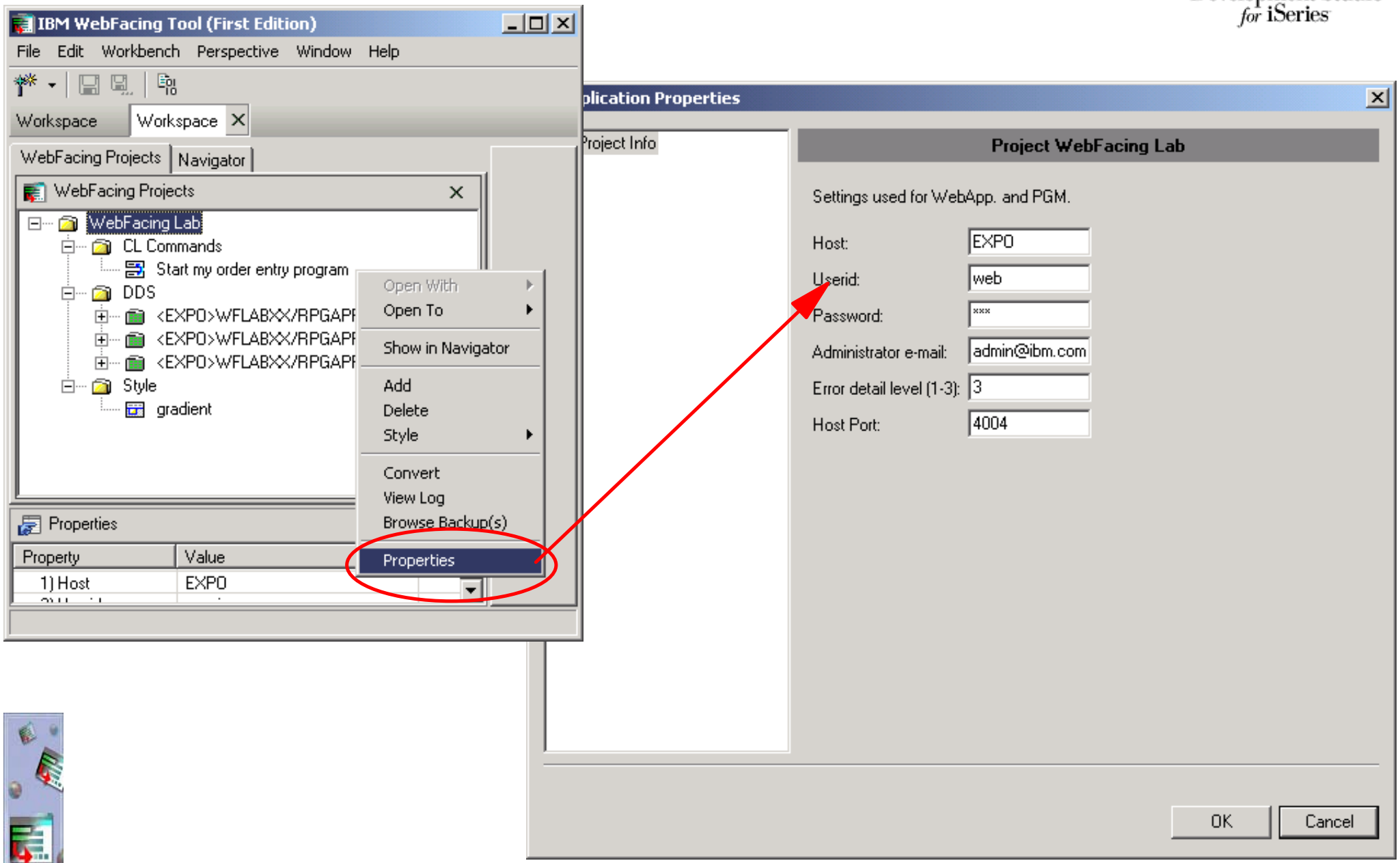
Update Publish Information



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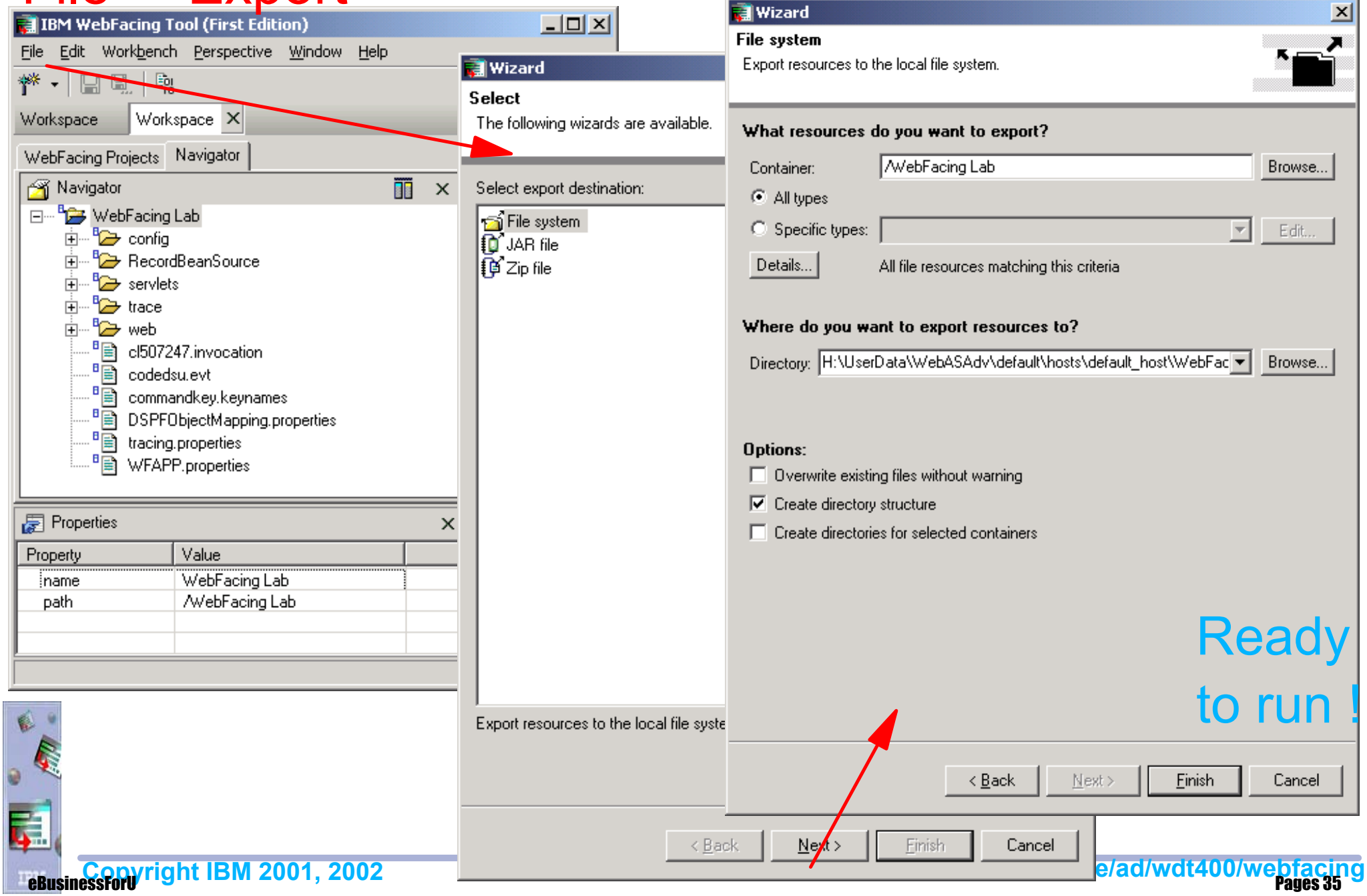
Deploy to Server

File ➡ Export



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The Invocation Page

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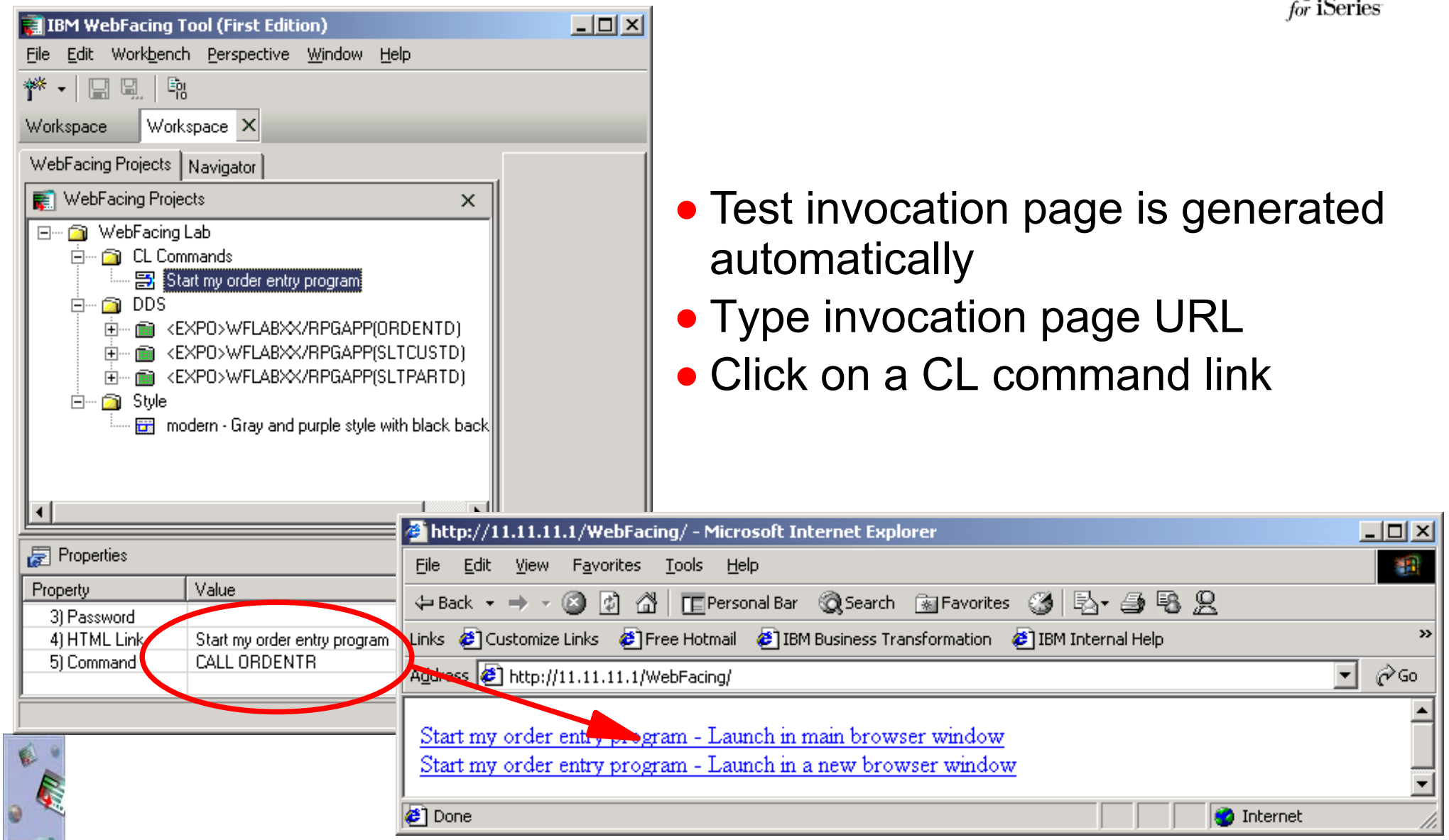

- Test invocation page is generated automatically
- Type invocation page URL
- Click on a CL command link

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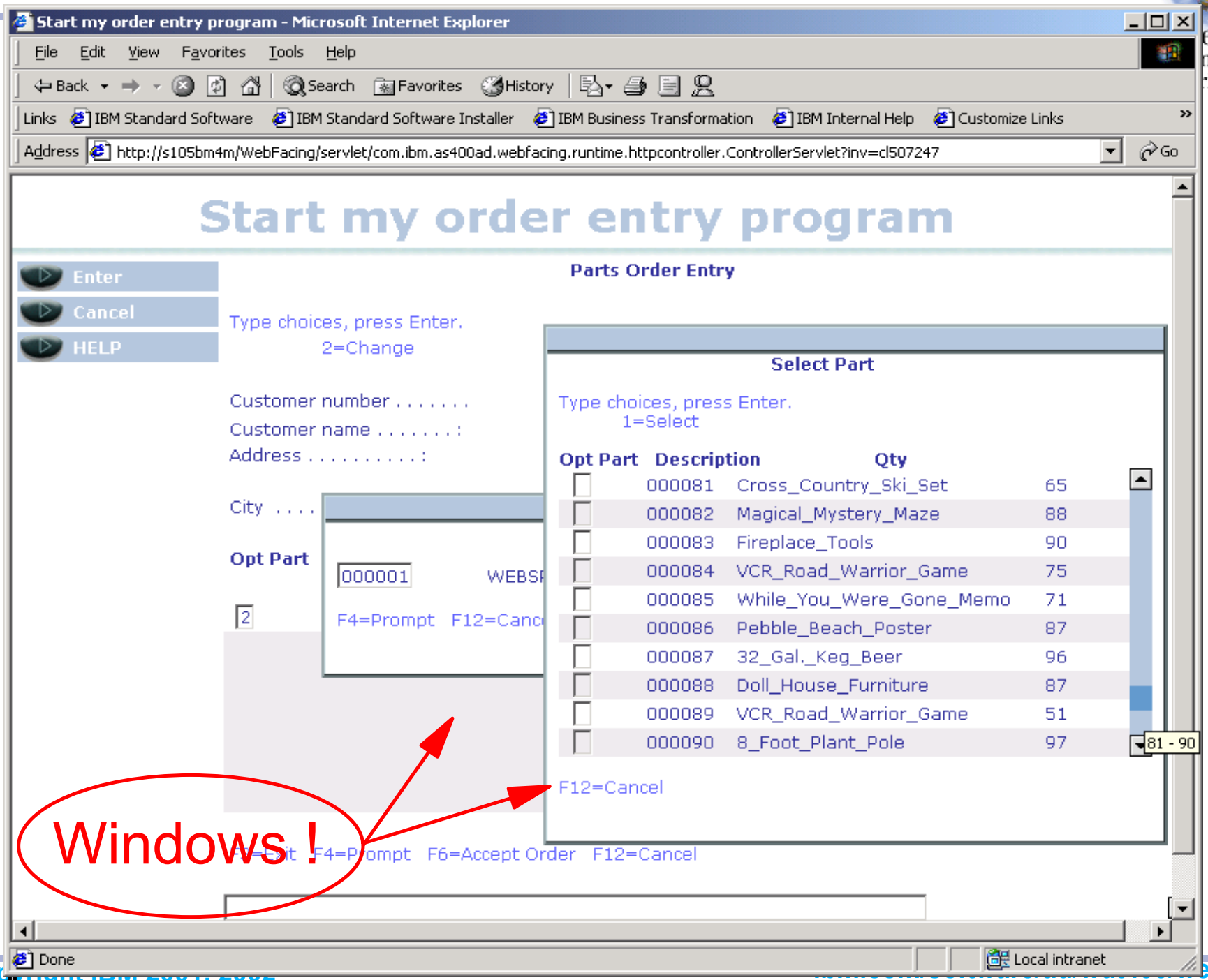
Run the App !


Start my order entry program - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Links IBM Standard Software IBM Standard Software Installer IBM Business Transformation IBM Internal Help Customize Links
Address http://s105bm4m/WebFacing/servlet/com.ibm.as400ad.webfacing.runtime.httpcontroller.ControllerServlet?inv=cl507247
Go
Start my order entry program
Enter
Cancel
HELP
Parts Order Entry
Type choices, press Enter.
2=Change
Customer number . . . . . .
Customer name . . . . . :
Address . . . . . :
City . . . .
Opt Part
000001
F4=Prompt F12=Canc
2
Select Part
Type choices, press Enter.
1=Select
Opt Part Description Qty
000081 Cross_Country_Ski_Set 65
000082 Magical_Mystery_Maze 88
000083 Fireplace_Tools 90
000084 VCR_Road_Warrior_Game 75
000085 While_You_Were_Gone_Memo 71
000086 Pebble_Beach_Poster 87
000087 32_Gal._Keg_Beer 96
000088 Doll_House_Furniture 87
000089 VCR_Road_Warrior_Game 51
000090 8_Foot_Plant_Pole 97
81 - 90
F12=Cancel
F4=Prompt F6=Accept Order F12=Cancel
Windows !
Done
Local intranet

Customizing Your Results

WebSphere Development Studio for iSeries

3 options for customizing results:

1. Use CODE Designer ***before*** conversion to add links or images, or hide/change fields
   - ✓ Saves information in comments, used by conversion
   - ✓ You can also extend our conversion code with your own!
2. Change the cascading style sheets
   - ✓ Or build you own !
3. Use Page Designer in WebSphere Studio ***after*** to edit JSPs
   - ✓ But changes to application area lost on next conversion
   - ✓ Conversion will be backup input, so you can manually merge if you desire

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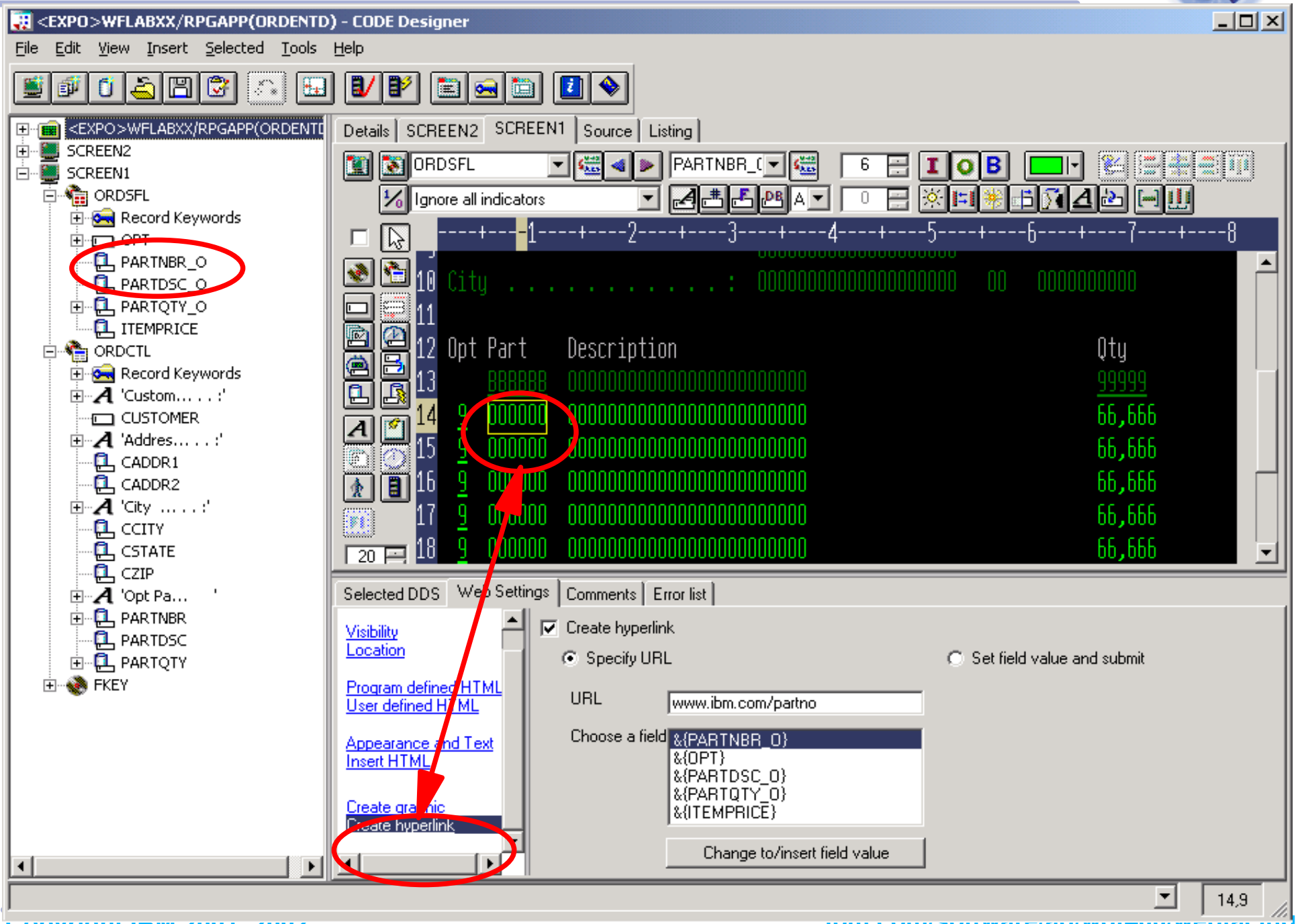
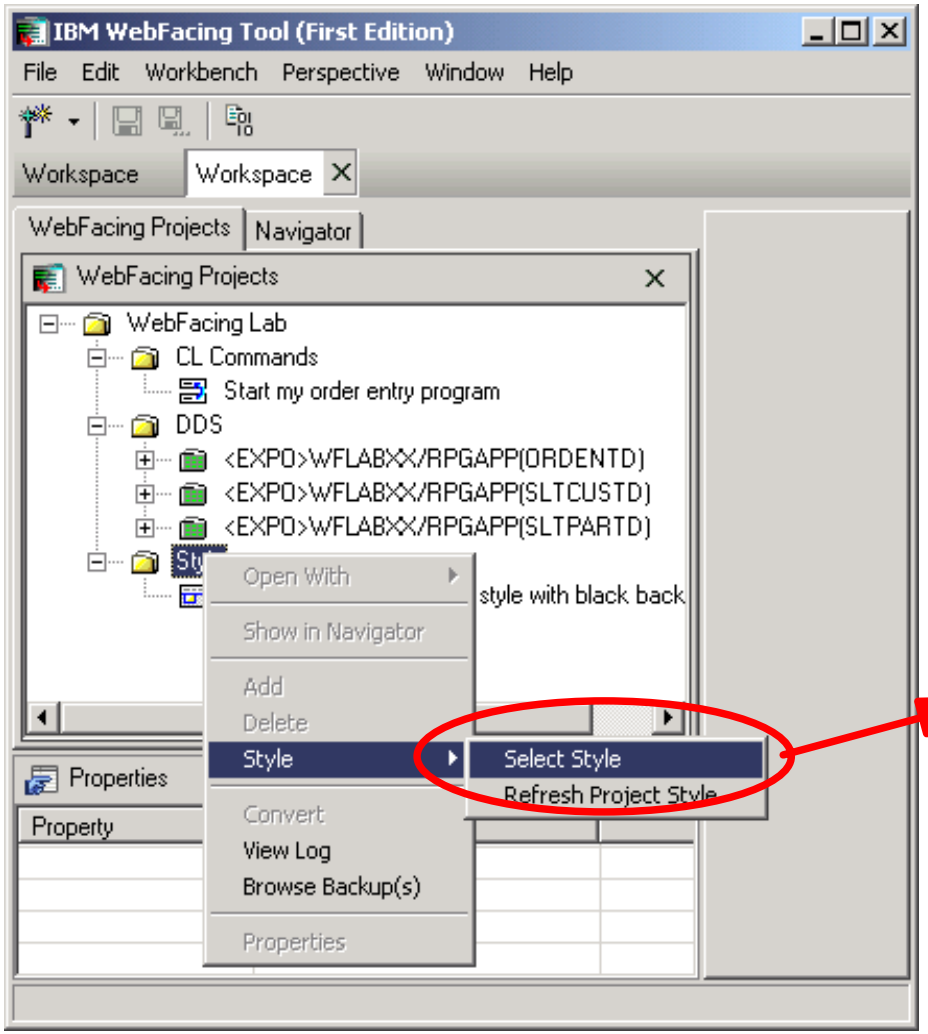
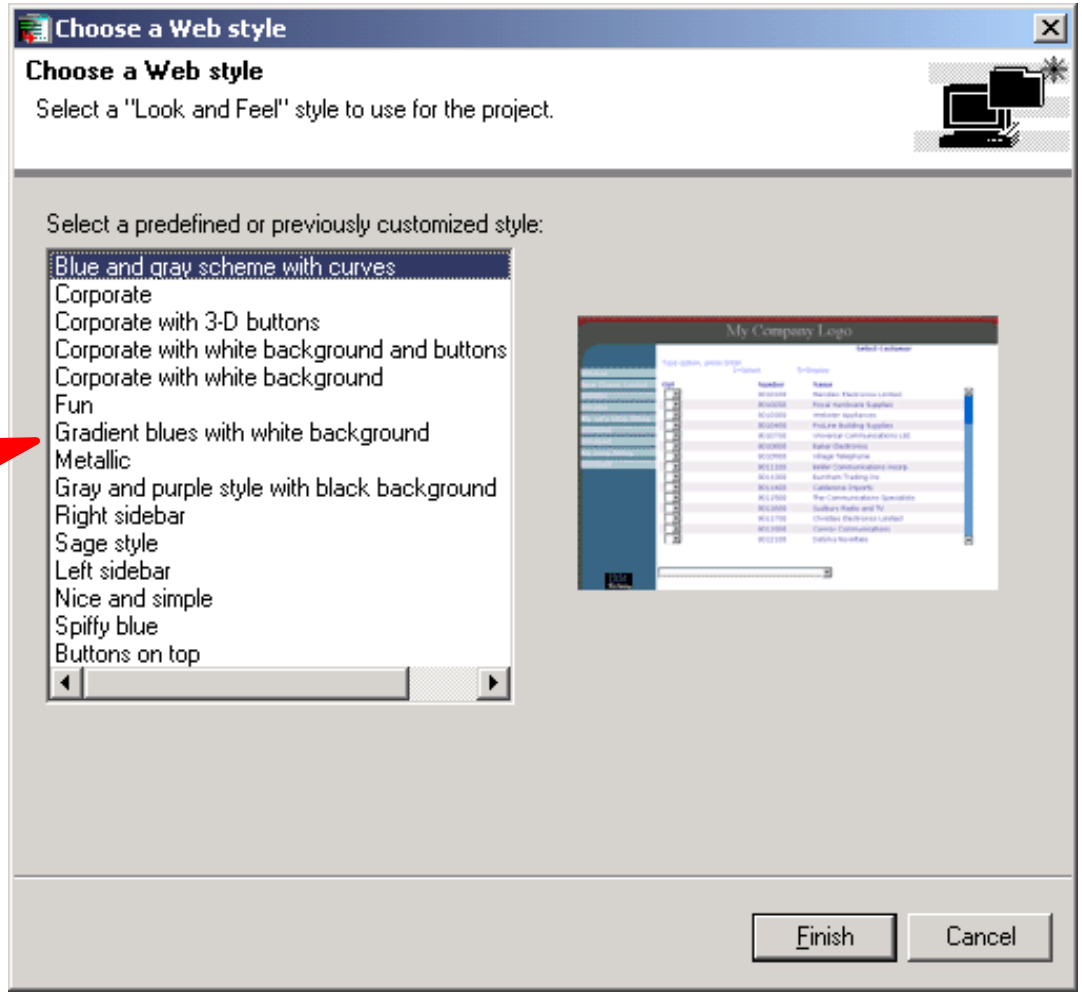
CODE Designer



Change Styles





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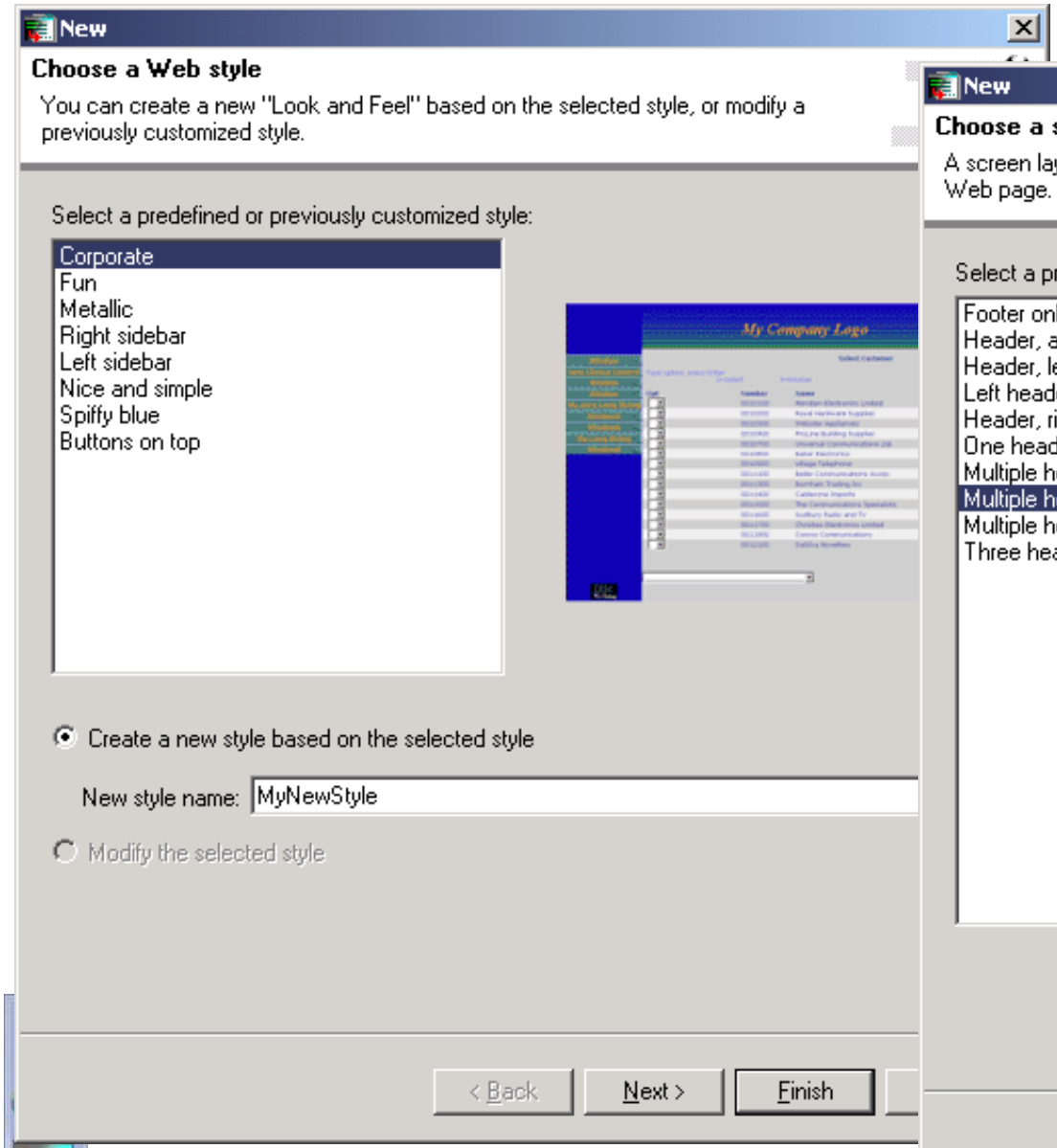
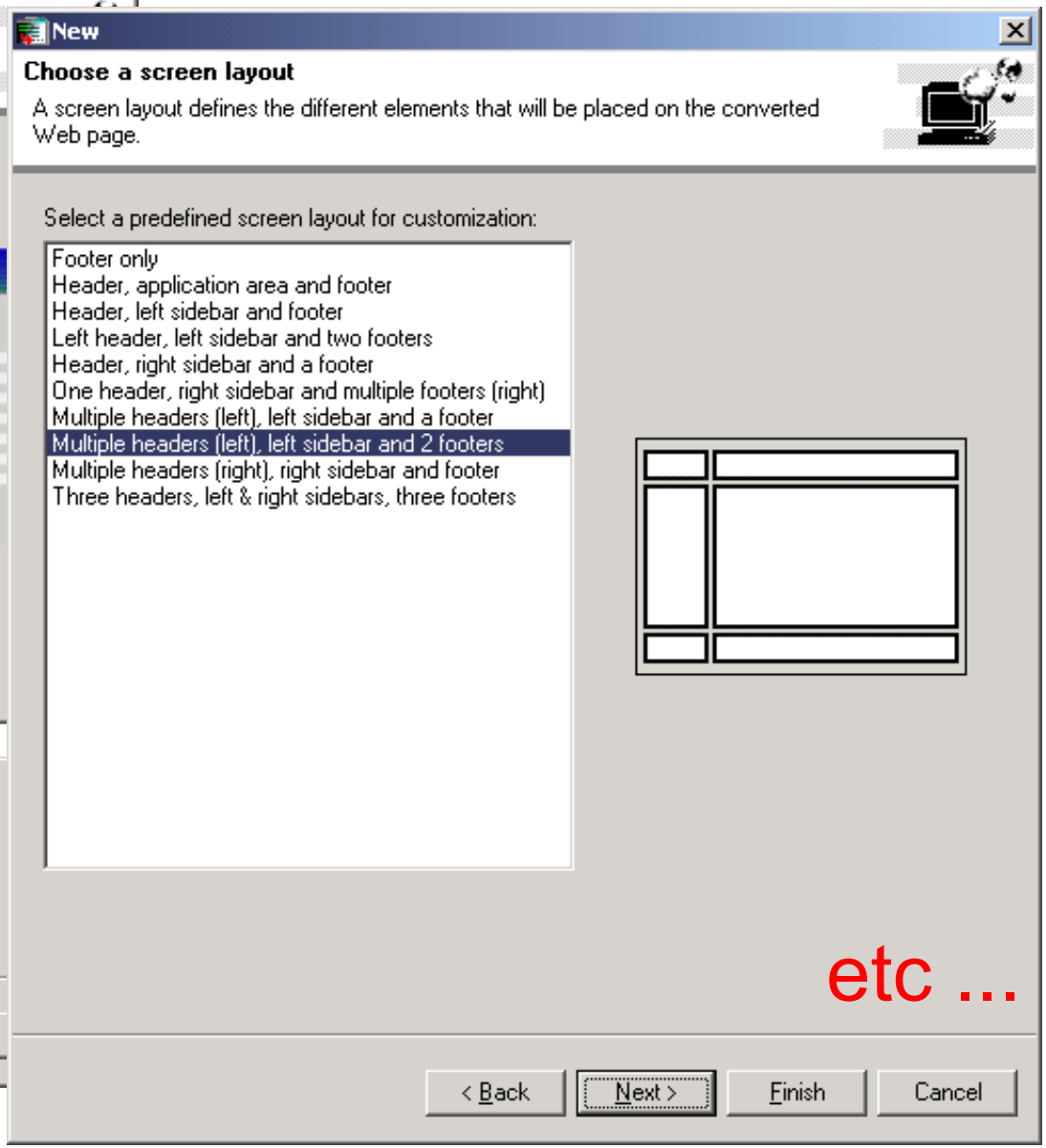
Or Build Your Own Style ...





etc ...

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WebSphere Studio for iSeries

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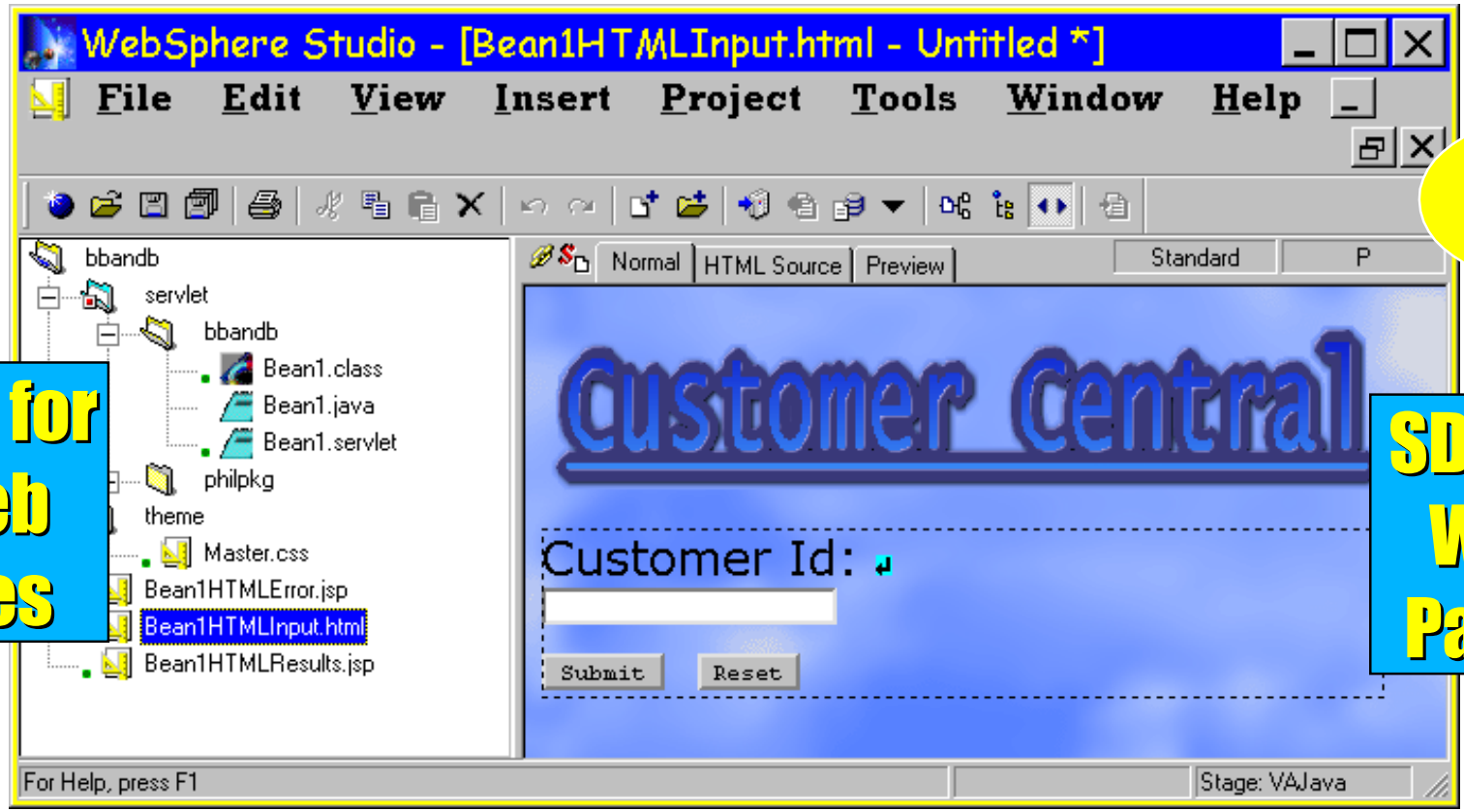
v3.5



PDM for Web Files

SDA for Web Pages

- Studio "workbench"
  - ► manage and maintain your site's files
  - ► create, edit, copy, share, and publish files
- WebSphere Page Designer
  - ► a WYSIWYG HTML editor
  - ► a WYSIWYG JSP editor
- Studio wizards and numerous little editors

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AGENDA

WebSphere Development Studio for iSeries

Some Final Comments

- Pros and cons
- Current status

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WebFacing Considerations

- Interactive *PGM can run either 5250 or WebFaced UI
  - Hopefully only minor changes needed to program and DDS
- Conversion done at development time
  - So runtime is fast and efficient
    - No 5250 datastream is ever created
  - It means generated JSP output can be enhanced ... before deploying into production
- Runtime part of OS/400. Tooling part of WDT/400

- Must have access to DDS source
- Non-DDS screens cannot be converted
  - No current support for UIM or system screens or 3270 or ...
- Some non-supported DDS keywords

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URLs

WebSphere Development Studio for iSeries

- **ibm.com/software/ad/wds400**
  - WebSphere Development Studio for iSeries
- **ibm.com/software/ad/wdt400**
  - WebSphere Development Tools for iSeries
- **ibm.com/software/ad/wdt400/webfacing**
  - WebFacing

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Publications

- **ITSO Redpiece www.redbooks.ibm.com**
  - WebSphere Development Tools for iSeries Generating Web Front Ends to Existing Applications
- **"Getting Started" manual and lab exercises**
  - Getting Started with WebSphere™ Development Tools for iSeries SC09-2625-05

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