



Getting Into the Web *JSF, EGL and PHP for i5/OS*

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Agenda

1. The latest on DB2 Web Query
2. RPG and COBOL now, where next for i5/OS development?
3. JAVA, J2EE, Web Services and SOA
4. Brighten up the front end: V7.0 of HATS, WebFacing and WDHT
5. **Getting into the Web: JSF, EGL and PHP for i5/OS**
6. What about .NET? Interoperability with i5/OS and DB2

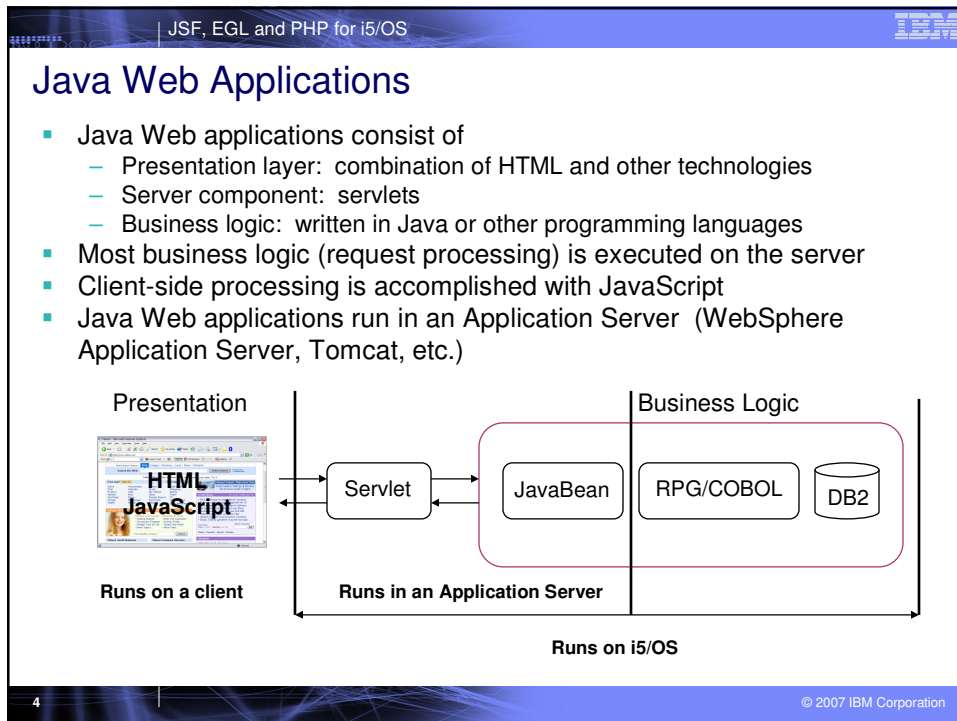
JSF, EGL and PHP for i5/OS

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Java Server Faces

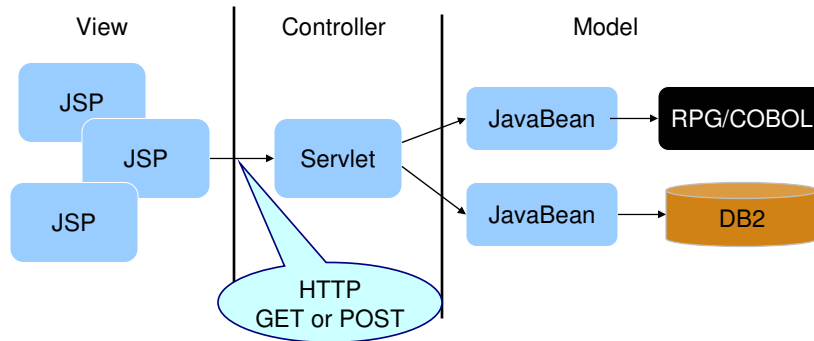
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JavaServer Pages

- Better architecture than Servlet API for UI definitions
 - Model-View-Controller (MVC) pattern: separation of presentation and business logic (HTML code is not in a servlet)
 - Code reuse
 - Easier to maintain

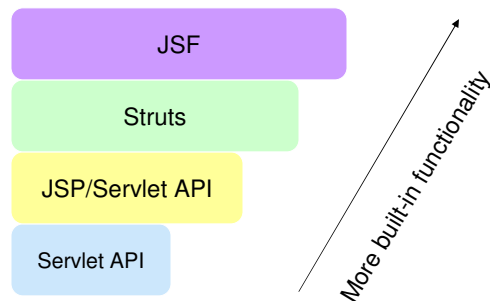


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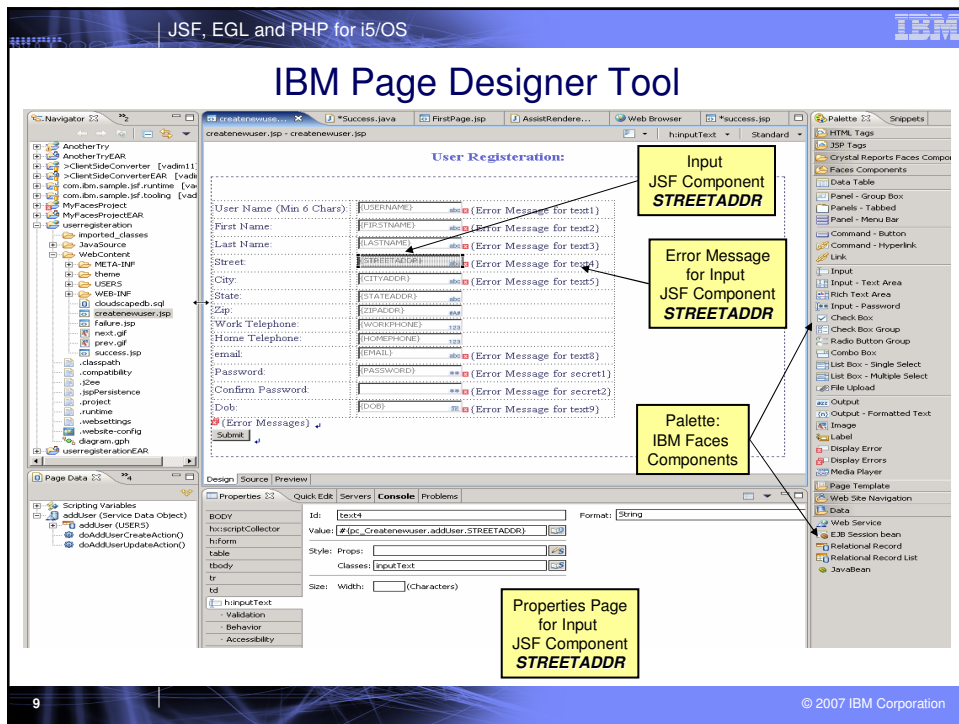
JavaServer Faces: Overview

- JSF enhancements to JSP/Servlet API
 - More built-in Java classes
 - More tag libraries
 - Programming discipline: JSF Lifecycle
 - Better tooling in IBM tools (WebSphere Studio and Rational)



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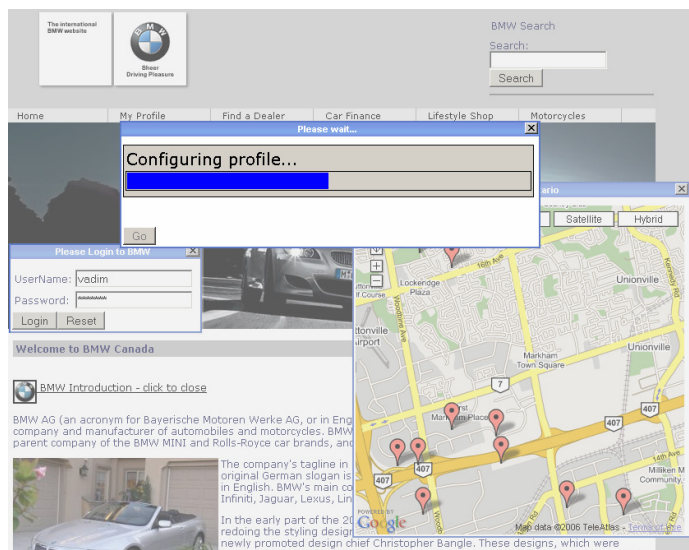
JavaServer Faces: Overview

- JSF is an open standard: JSR 127
 - Java Community Process Website: www.jcp.org
 - JSF is included in Java EE (formerly known as J2EE)
- JSF Goals
 - Enable Rapid Application Development (RAD) for J2EE Web applications
 - Event driven model
 - Eliminate a great deal of hand coding
 - Make it easy for non-J2EE programmers

JavaServer Faces: Overview

- JSF consists of
 - Java classes
 - JSF UIComponents: server-side equivalents of HTML components (text, buttons, check boxes, etc.)
 - Faces Servlet
 - Managed Beans
 - Helper classes (converters, validators, listeners, etc.)
 - Tag libraries
 - Sun Microsystems and IBM extension tag libraries
 - Used in JSPs
 - Configuration file (faces-config.xml)
 - JSF project configuration: navigation between pages, JavaBeans used by JSF
 - JSPs that contain JSF components (tags)

JWL: Means Richer User Experience



JWL: Means Richer User Experience

- JWL is a JavaServer Faces Widget Library
 - An IBM implementation of: JSF + JavaScript library
 - JWL adds rich user experience to the base JSF
 - IBM Page Designer tool supports JWL widgets
- JWL provides additional JSF Components
 - Menus, Popup Calendar, File Upload, Color Picker, Extended DataTable, Progress Bar, Media Players, More...
- JWL provides additional validators and converters
- JWL supports input assists
- JWL provides behaviors

JSF and System i5 Integration

- Program Call
 - JSF managed beans call your RPG/COBOL logic
- Database Integration
 - Direct access
 - Database access via existing RPG/COBOL code

JSF, EGL and PHP for i5/OS

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Enterprise Generation Language

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Target: Business-Oriented Developers

People who need to solve business problems quickly and efficiently


- need higher productivity
- need to deploy to diverse platforms
- want to focus on business logic, not system plumbing or platform issues

They are legacy developers

- RPG
- COBOL

They are 4GL and C/S developers

- Software AG: Natural
- CA: Cool:Gen, IDEAL, Telon, Synon
- IBM: VAGen, CSP, Informix 4GL
- Oracle Forms, Visual Basic, PowerBuilder




**No plumbing,
No infrastructure,
No additional technologies
to learn**


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“Java without the Java!”



 **EGL** is a combination of high level language and advanced Eclipse based development tools.

 **EGL** can be learned by anyone with a basic understanding of programming in any language.

 **EGL** can be learned in 1 week – expert in a month.

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What is EGL?

A simple high-level language

- Programmers will easily learn EGL

Complete development environment


- Build core business applications, not just a user interface.
- Full SOA support.
- Integrated debugger.

Code Generation, but not a 4GL

- EGL is the culmination of 25 years of experience in Code Generation from CSP to VisualAge Generator to EGL
- EGL Generates Java and COBOL for System i

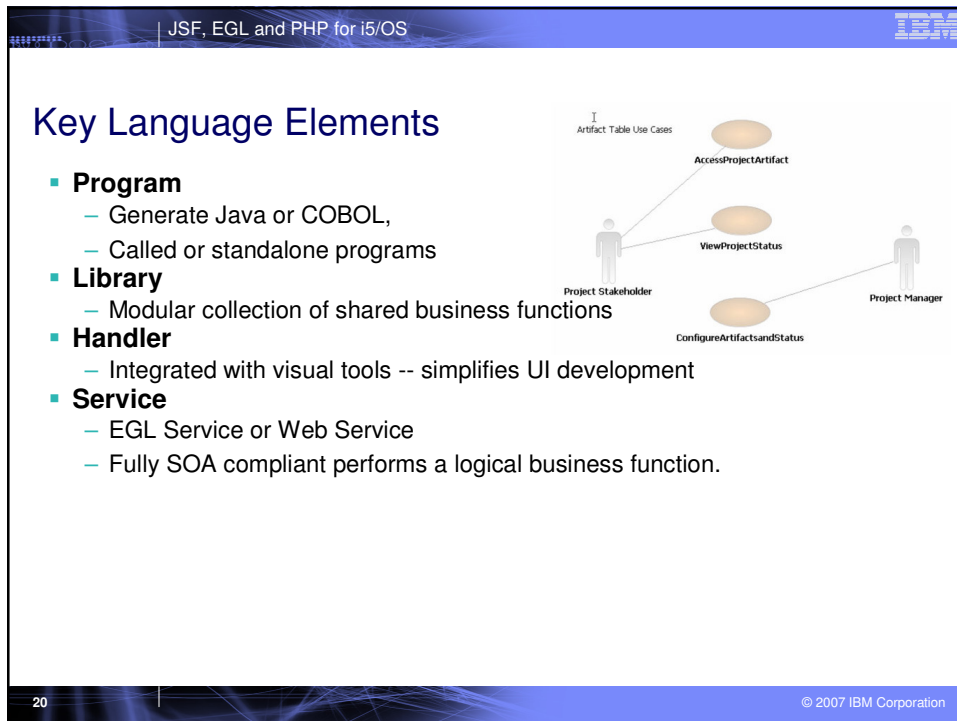
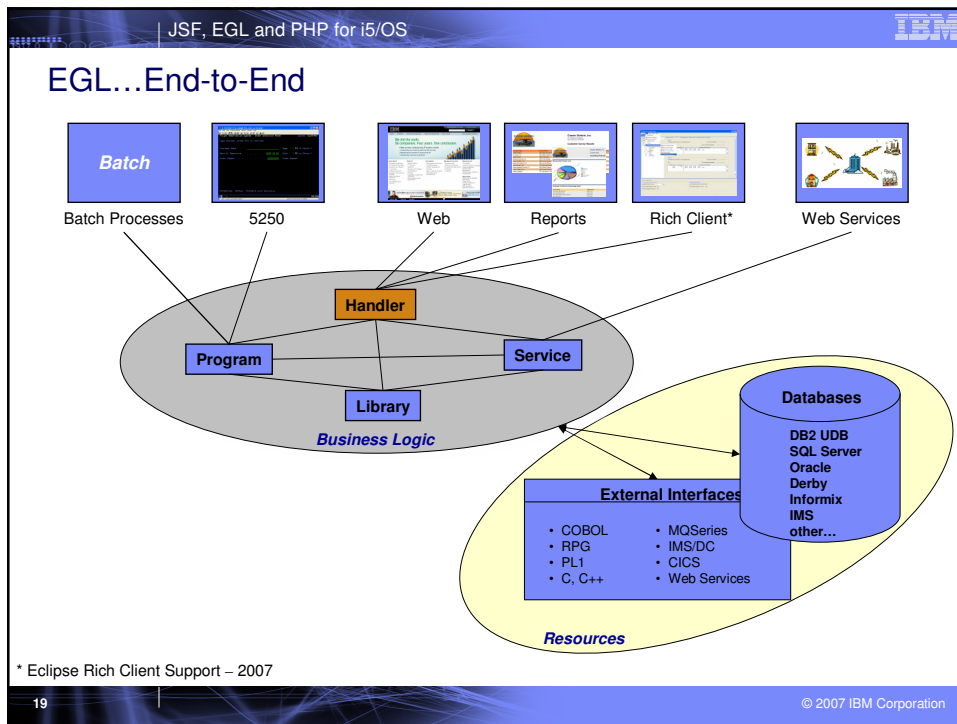
Hides the technology

- Database Access
Example: get recordName
- MQ Series
Example: get queueName

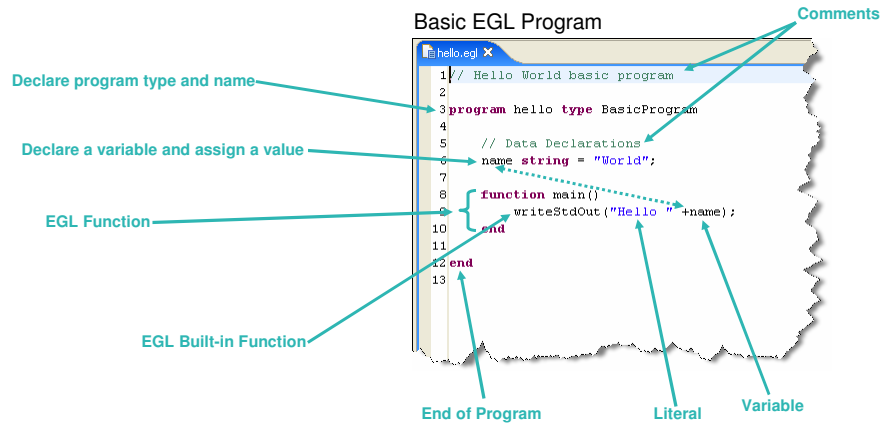
 = **Simple + Complete**

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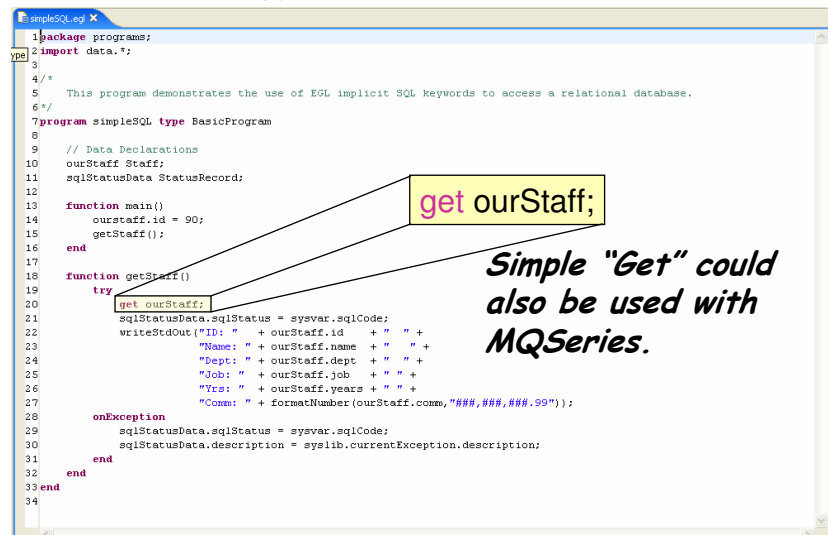
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Hello World



Hide the technology



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Data Driven Development

Create an EGL Library. Then use content assist to create a record

Use the SQL Retrieve wizard to retrieve the definition from your System i

```

package libraries;

record customer type SQLRecord (tableNames = ["EGL.COMPANY"]) end

// basic library
library demoLibrary type BasicLibrary

// Function Declarations
function functionName()
end
  
```

```

package libraries;

record customer type SQLRecord (tableNames = ["EGL.COMPANY"]);
keyItems(["COMPID"])  COMPID int      (column="COMPID");
                        (column="COMPID", sqlVariableLen=yes, maxLen=30);
COMPNUM string        (column="COMPNUM", sqlVariableLen=yes, maxLen=30);
COMPDESC string       (column="COMPDESC", sqlVariableLen=yes, maxLen=254);
COMPLOGO string        (column="COMPLOGO", maxLen=30);
CREDLIN int           (column="CREDLIN");
COMPBAL decimal(9,2)  (column="COMPBAL");
CREDST smallint       (column="CREDST");
COMPDISC smallint     (column="COMPDISC");
CREDTERMS smallint    (column="CREDTERMS");
PHONE string          (column="PHONE", maxLen=18);
FAX string            (column="FAX", maxLen=18);
WEBURL string         (column="WEBURL", sqlVariableLen=yes, maxLen=50);
end

// basic library
library demoLibrary type BasicLibrary

// Function Declarations
function functionName()
end
  
```


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Rich libraries of built-in functions

- Maths
- Date & Time
- String manipulation
- System functions
- UI Functions
- Much more



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Simple Language + Powerful Tools

- Use Wizards and power tools automate code creation.
- Complete interactive test environment and debugger.
- Modern Eclipse based IDE attracts young developers.
- Fully integrated into Rational's suite of tools and WebSphere SOA offerings



Future: IBM is Investing heavily in EGL

- **Model Driven Development**
 - Create EGL applications from patterns based on
 - UML Models
 - DB Schema
 - Transform models to EGL
- **Service Oriented Applications**
 - Continued focus on Simplifying SOA and on integrating with IBM's SOA tools and runtimes
 - Generate Web Services to COBOL for CICS, IMS, and System i
- **UI platforms**
 - 'Rich Client Platform' (Client/Server GUI)
 - 1st Stage – Support for i4GL CUI Migration
 - 2nd Stage – Full support
 - Support for Portlet applications
- **Additional:**
 - Language Enhancements
 - Continued improvements in performance, usability, productivity




Future Plans Subject to Change

JSF, EGL and PHP for i5/OS

Standards & Open Source

- **Standards**
 - Rational is in the process of creating a EGL Standards spec to be presented to the OMG Standards body
<http://www.omg.org/>
 - The EGL language will become a standards based language!
- **Open Source**
 - It is also IBM's intent to Open Source parts of the EGL language to allow for easy integration and extension of the EGL language.
 - This will open EGL to 3rd party vendors to provide add-on tools.



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EGL Today – How is it being used?? - Examples

- **Modernization of existing applications**
 - Replacing GUIs in client server systems with JSF/EGL
 - Nordic Copyright Bureau (NCB) (Published case study)
 - European Government Agency
 - European Insurance Company
 - Adding Web capability with EGL/JSF pages to existing 3270/5250 systems
 - US State Agency
 - European Services Industry
 - US Retail Store
 - Asian Bank
 - Using EGL Web services tooling to wrapper existing called programs
 - US Manufacturing company
 - European Financial Company

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Packaging

- **WDS Sc V6.0**
 - EGL included
 - No additional cost
- **WDS Sc V7.0**
 - EGL NOT included
 - Separately packaged as “IBM Rational Business Developer Extension”
 - Per-seat charge
 - Discounts for upgrades from V6.0

EGL Resources

- **EGL Zone – Developer Works**
 - Tutorials
 - Technical Samples
 - Forum
 - White Papers, Articles, and much more...

<http://www.ibm.com/developerworks/rational/products/egl/>

P_{HP}

Hypertext

P_{reprocessor}

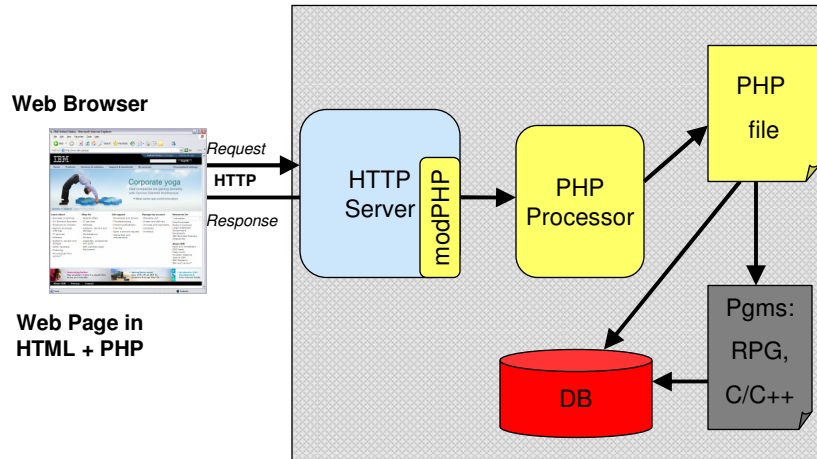
What is PHP?

PHP = PHP: Hypertext Preprocessor

- Scripting language for developing Web applications.
- Scripts are embedded within HTML documents.
- Scripts are processed when needed (not compiled).

```
<!DOCTYPE html PUBLIC "-//W3C//DTD  
HTML 4.01 Transitional//EN">  
<html>  
  <head>  
    <title>PHP Test</title>  
  </head>  
  <body>  
    <?php echo '<p>Hello World</p>'; ?>  
  </body>  
</html>
```


PHP

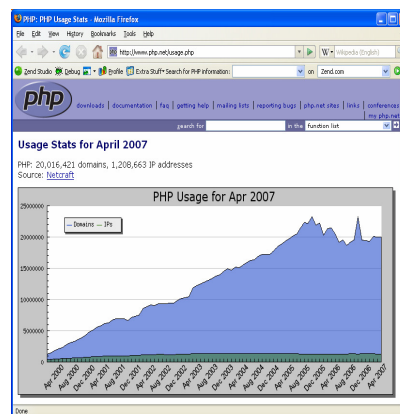


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Why is PHP so Popular?

- **Simple**
 - Easy to learn and use
- **Powerful**
 - Supports most protocols, data sources, data manipulation
- **Independent**
 - Supported by almost every HTTP server, operating system, DB
- **No Charge**
 - Open-source with large community providing extensions, documentation, templates, sample code



PHP is the single most widely used Web programming language.

Source: www.php.net June 2007

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IBM Announcement on April 3rd 2006

- IBM and Zend announced a multi-year agreement to deliver selected Zend PHP products and solutions for i5/OS ®




<http://www.ibm.com/systems/i/software/php>



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Zend Products for i5/OS

- Zend Core for i5/OS** No Charge
 - PHP runtime environment in i5/OS providing connections to DB2 UDB for i5/OS and RPG and COBOL applications
 - With 3 years Standard support
 - Gold and Platinum support levels available
- Zend Studio Professional for i5/OS** No Charge
 - Integrated Development Environment on Windows or Linux
 - With 3 years Standard support
 - Gold and Platinum support levels available
- Zend Platform for i5/OS**
 - A robust PHP production environment in i5/OS providing performance, scalability, and monitoring for PHP applications
- Zend Guard**
 - Provides code protection and license management tools for solution providers on Windows or Linux clients

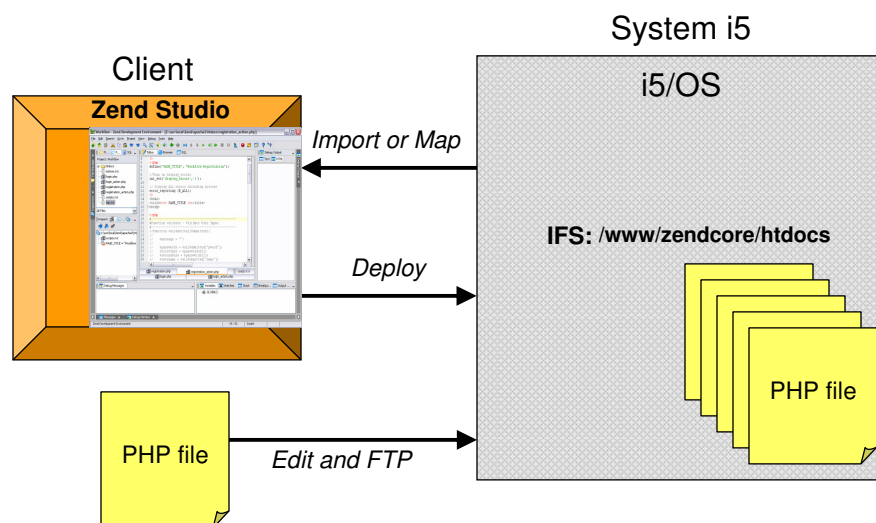
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Value Add of PHP on i5/OS

- Extend existing applications to the Web
 - Integration with System i5 applications and objects
 - Examples: RPG, Java, data queues
- Create new applications quickly with minimal code
 - Using existing PHP sample code
 - Using extensions
- Zend Core packages commonly used extensions
 - Extensions are plugged in and ready to use
 - Examples: XML, LDAP, FTP, SOA for Web Services
- Applications benefit from System i5 environment
 - Stability, reliability, security, virus resistance,
- Consolidate all applications onto one System i5
 - Including PHP applications

PHP Development and Test Environment



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Zend Studio

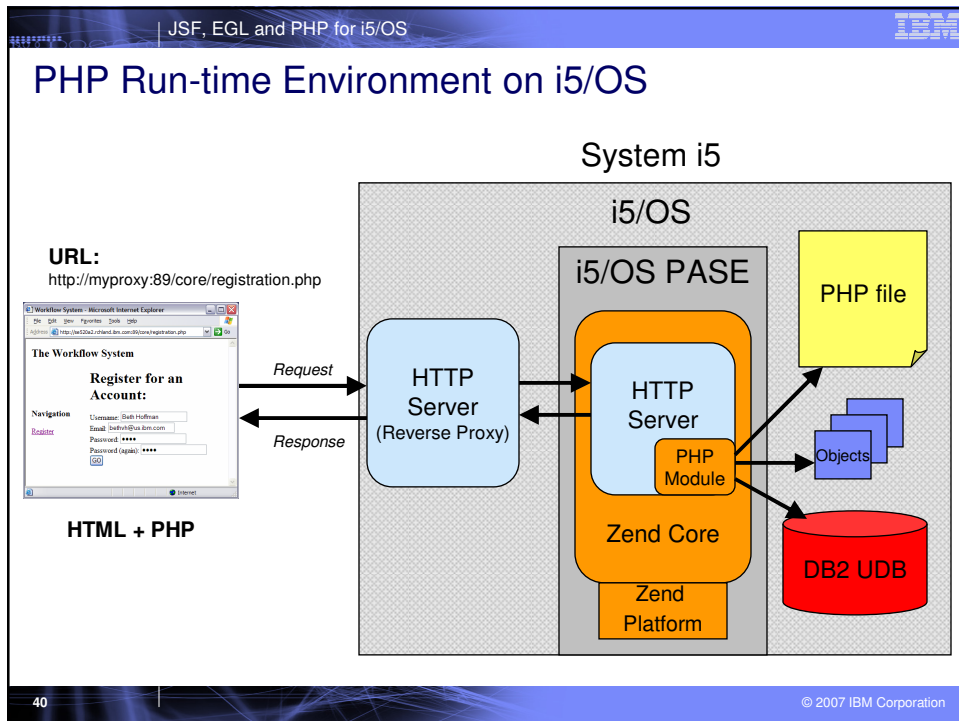
```

1  <?php
2  <?php
3  define("PAGE_TITLE", "Workflow Registration");
4
5  //Turn on display_errors
6  ini_set('display_errors', '1');
7
8  // Display ALL errors including notices
9  error_reporting (E_ALL);
10
11
12 <html>
13 <title><?> PAGE_TITLE <?></title>
14 <body>
15
16
17 <?php
18
19
20 #function validate - Validate User Input
21
22 //function validate($allSubmitted){
23 //
24 // $message = "";
25 //
26 // $passwords = $allSubmitted["pword"];
27 // $firstPass = $passwords[0];
28 // $secondPass = $passwords[1];
29 // $username = $allSubmitted["name"];

```

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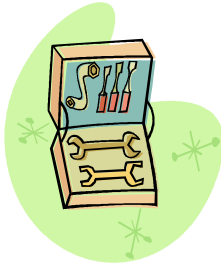
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PHP Integration with i5/OS



- Zend Core for i5/OS includes a Toolkit so PHP applications can access:
 - DB2 UDB
 - Program call
 - Procedure call
 - Data Area
 - Data Queue
 - Message Queue



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MySQL Support

Many PHP applications target the MySQL open source database

- An AIX binary can be down-loaded from www.mysql.com
 - Installation instructions at:
<http://devzone.zend.com/article/609-MySQL-on-i5OS-Example>
- 25th April 2007: “MySQL AB and IBM Announce Open Source Database Support for the IBM System i Platform”
 - Companies Plan to Bring the MySQL Open Source Database to i5/OS -- and deliver DB2 as a Certified Storage Engine for MySQL on System i

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Figure 1

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System i5

WebSphere

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