

From RPG OA to PHP: IBM i Modernization and Mobile Approaches

Presented by:



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Senior Sales Engineer
Quadrant and BCD Software

Agenda

- Brief History of Modernization
- 5250 Refactoring
- RPG OA
- PHP
- Node.js
- Mobile

Brief History


- Webfacing, Hats, Jwalk
- Slow Performance
- Lipstick on a pig
- Deployment
- New Product Enhancements?
- Browsers and JavaScript Now Improved

IBM
SG24-8185-00

Draft Document for Review March 26, 2014 12:22 am

Modernize IBM i Applications from the Database up to the User Interface and Everything in Between

- Learn about best practices for modern development
- Use modern tools for a modern world
- Incorporate data-centric programming for ensured success



Susan Gantner
Isaac Ramirez Herrera
Brian May
Michel Mouchon
Jon Paris
Mike Pavlak

Trevor Perry
Pascal Pulverini
Jim Ritzhart
Paul Tuohy
Jeroen Van Lommel
Carol Woodbury

Redbooks

ibm.com/redbooks

Considerations

- Skillset
- Timeline
- Budget
- Current Applications
- Reface, Re-engineer or Replace
- Mobile

Agenda

- Brief History of Modernization

- ➔ **▪ 5250 Refactoring**

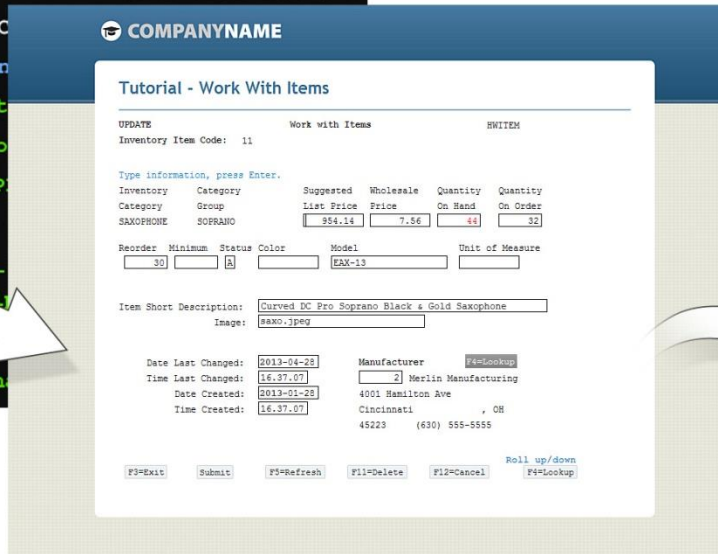
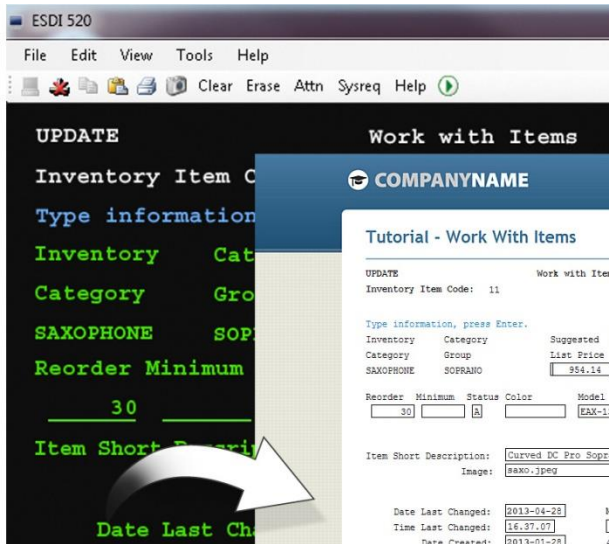
- RPG OA

- PHP

- Node.js

- Mobile

5250 Refactoring



5250 Datastream - Benefits

- Fastest results
- No code changes
- COBOL or RPG (any version)
- Any screen (third party, OS)
- All DDS
 - Data and screen constants
 - Includes input formatting rules (*Eg: auto record advance*)
 - Field positioning info
- Not many limitations

Business Case For Modernizing Green Screens

Rich Web Applications

The screenshot displays a web application interface for a product catalog search. The main window shows search results for 'CYLINDRICAL ROLLER BEARINGS'. A 'View Cart' modal window is open, showing the current cart contents and options to update quantities or complete the order.

Search Results Table:

Qty	Code	Grp	Description	Item Number
10	LLRJAI		OUTER RACE & ROLLERSLOOSE INNER	

View Cart Modal:

Category: CHAIN & SPROCKETS

Product Description: Item Number:

Pitch:

Customer: 123 - HARMONICS WHOLESALE Currency: AUD
 Cart Number: 1468 Cart Created: 15/07/2014 4:01:09 Order Total: 44.88
 Items in Cart: 3

Qty	UOM	Item Number	Item Description	Unit Price	Extended Price
2	/EA	AL844CHAIN	AL844CHAIN (LEAF1.0 4X4)	8.29	16.59
3	/EA	A600CHAINACETAL	REX CASE CHAIN	9.43	28.29
3	/EA	7314B.JPFAG	7314B.JP ANG CONT B/BRG	.00	.00

Related Products Table:

+ H 38	6 X 6 LACING	BL466PINLINK	POA	.0000	.0000	.0000	
+ H 38	3 X 4 LACING	BL534CHAIN	3.31	.0000	.0000	.0000	
+ H 38	3 X 4 LACING	BL534CL	.25	.0000	.0000	.0000	
+ H 38	3 X 4 LACING	BL534PL	.61	.0000	.0000	.0000	
+ H 38	4 X 4 LACING	BL544CHAIN	POA	.0000	.0000	.0000	
+ H 38	4 X 6 LACING	BL546CHAIN	4.48	.0000	.0000	.0000	
+ H 38	4 X 6 LACING	BL546CL	.51	.0000	.0000	.0000	
+ H 38	4 X 6 LACING	BL546PL	.96	.0000	.0000	.0000	

Faster Data Entry and Intuitive

Add or Update Customer

UPDATE PS_UCUST

Details **Address**

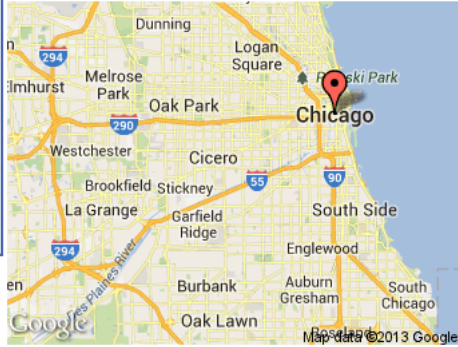
Address 1:

City:

State/Prov:

Country:

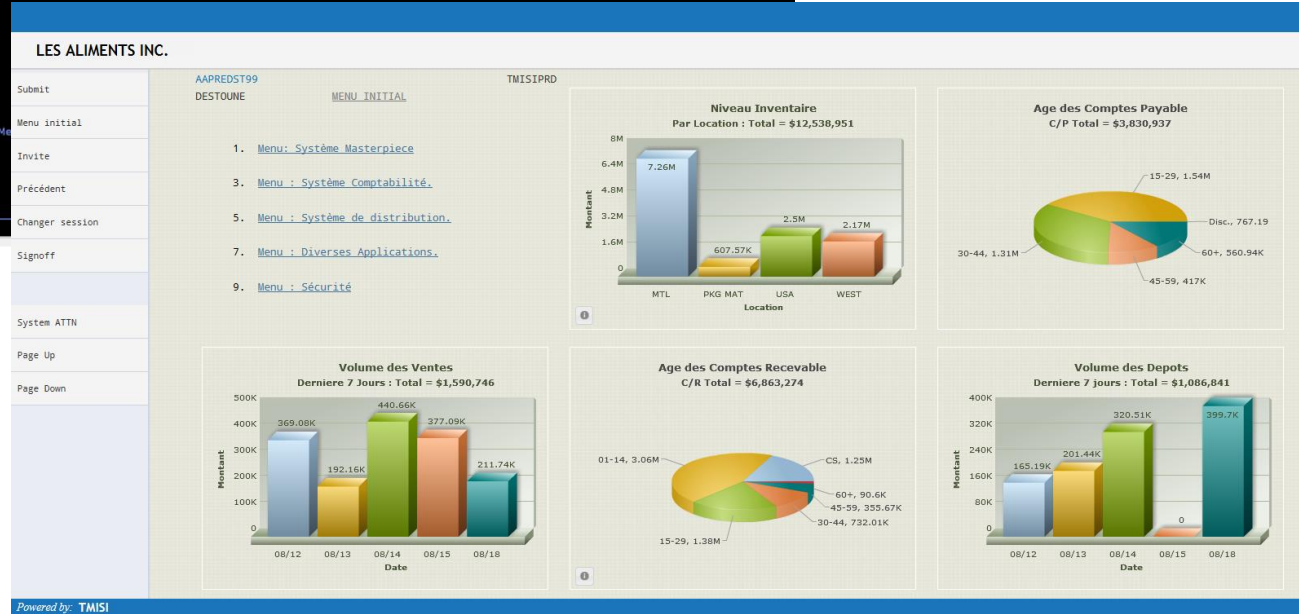
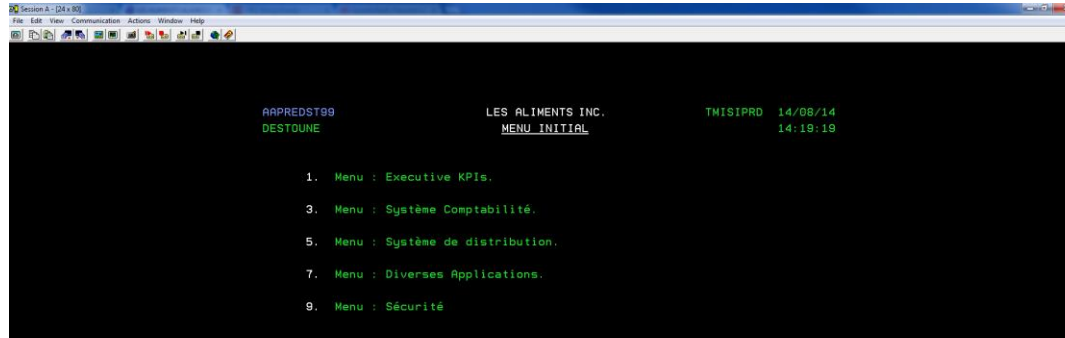
Postal/Zip:



F3=Exit F11=Delete F12=Cancel

Roll up/down

Visual Data



Easy Deployment



Repurpose

Presto™ Success Story - JRP & Associates

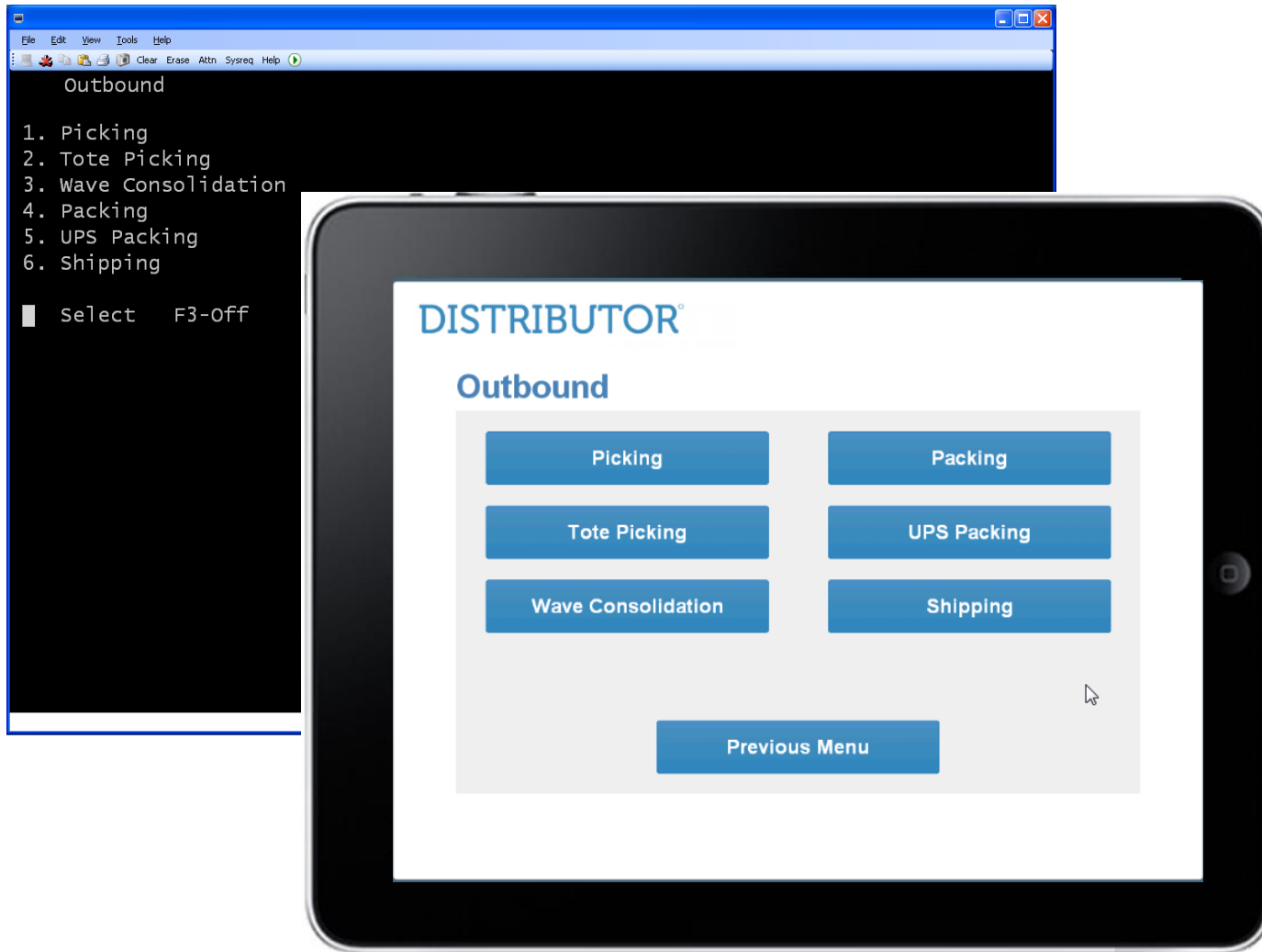
JRP & Associates Repurposes Customer Order Entry Application with a Web Browser Look and Feel



Jay Pierce, President
JRP & Associates

Presto-modernized IBM i green screen application improves customer service and saves everyone time by providing clients direct access to their accounts.

Mobile Support



The Business Case for IBM i Green Screen Modernization

The top business reasons, supported by real-world examples, why giving your green screens a web GUI adds value to your IBM i.

BCD | Presto

<http://www.bcdsoftware.com/business-case-ebook>

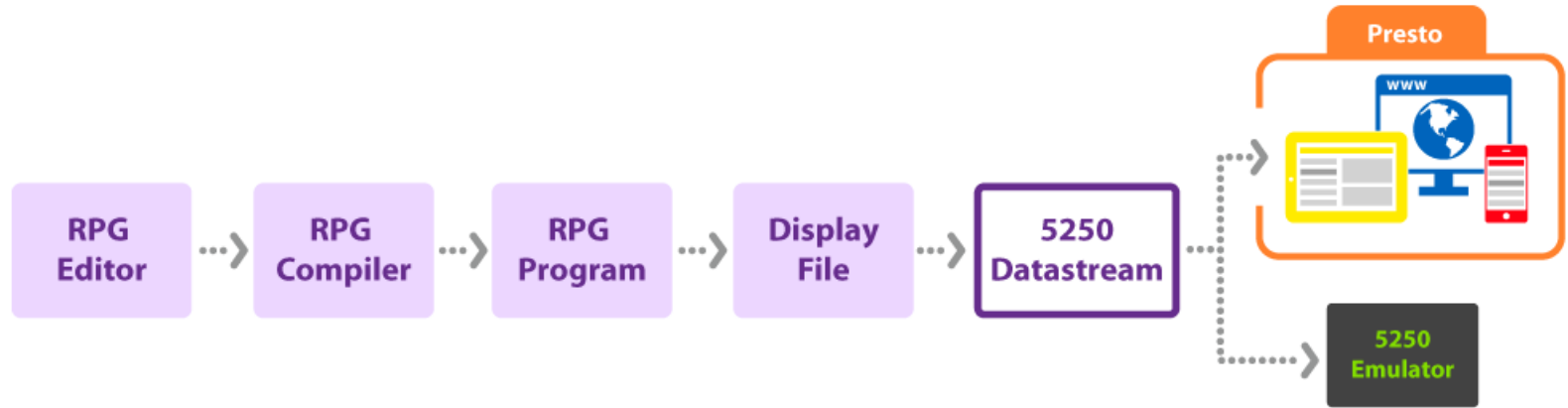
Tools

- Presto - BCD
- Newlook - looksoftware
- Profound Genie - Profound Logic
- Lansa - Axes
- Legasuite - Rocket
- Wings - ASNA

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- Node.js
- Mobile

5250 and Open Access



What is RPG Open Access

- Developed by IBM
- Get data from RPG to browser
- Green screens or new RPG programs
- Bypass 5250 datastream
- Handler populates data structure
- Use traditional I/O, existing RPG skills

RPG OA - Requirements


- Requires source code
- Add 1 line of source code and recompile

```
0094.00 F
```

```
HANDLER (' PR_OAHLR (EP1) ' )
```

- RPG IV only
- Field data only
- Conditionally compile if need green screen
- Grid needs load all subfile
- Min OS - IBM i 6.1

Grids



 **COMPANYNAME**

Work with Items


Category: Group: Item:

Opt	Category	Group	Item	Qty on Hand	Price
<input type="checkbox"/>	BANJO	UKELELE	404	95	225.00
<input type="checkbox"/>	BASS	INSTRUMEN	300	15	1650.00
<input type="checkbox"/>	BASS	INSTRUMEN	301	25	1700.00
<input type="checkbox"/>	BASS	INSTRUMEN	302	16	1800.00
<input type="checkbox"/>	BASS	MISC	312	55	4.95
<input type="checkbox"/>	GUITAR	ACOUSTIC	10	1	772.00
<input type="checkbox"/>	GUITAR	ACOUSTIC	11	5	945.14
<input type="checkbox"/>	GUITAR	ACOUSTIC	12	0	702.26
<input type="checkbox"/>	GUITAR	ACOUSTIC	13	7	808.50
<input type="checkbox"/>	GUITAR	ACOUSTIC	130	1	162.80
<input type="checkbox"/>	GUITAR	ACOUSTIC	14	4	3799.19
<input type="checkbox"/>	GUITAR	ACOUSTIC	15	3	5358.00
<input type="checkbox"/>	GUITAR	ACOUSTIC	16	2	5167.50
<input type="checkbox"/>	GUITAR	ACOUSTIC	17	5	2063.14
<input type="checkbox"/>	GUITAR	ACOUSTIC	18	3	4748.10
<input type="checkbox"/>	GUITAR	ACOUSTIC	19	2	10338.30
<input type="checkbox"/>	GUITAR	ACOUSTIC	20	2	15111.30
<input type="checkbox"/>	GUITAR	ACOUSTIC	21	6	998.26
<input type="checkbox"/>	GUITAR	ACOUSTIC	22	5	1601.11
<input type="checkbox"/>	GUITAR	ACOUSTIC	23	4	2160.00
<input type="checkbox"/>	GUITAR	ACOUSTIC	24	2	4816.50

F3=Exit F5=Refresh F12=Cancel



Field Types

 **COMPANYNAME**

Add or Update Customer

UPDATE PS_UCUST

Details **Address**

Customer Number: 1

Customer Name:


Area Code:

Phone Number:

Contact Name:

Email Address:


Terms:

Customer Since: 

January 2014

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	


Roll up/down



Tools

- Presto - BCD
- openlook - looksoftware
- Profound UI - Profound Logic
- ASNA Wings

Agenda

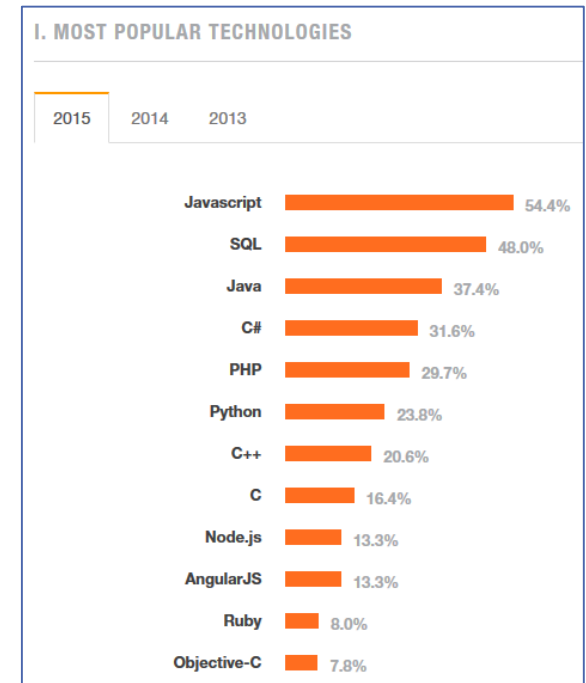
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- RPG OA
-  ■ PHP
- Node.js
- Mobile

Stateless Web Applications

- New web applications
- No call stack
- Standard on other platforms
- Scalable
- Customer facing
- SEO, bookmarks

Why is PHP attractive?

- PHP is a proven solution for Enterprise
 - Thousands of IBM i shops using PHP
 - Half of the top 10 busiest site in the world (alexa.com)
- Easy to adopt for RPG developers
 - Procedural to OO to frameworks
 - Similar structure to RPG subprocedures
- New developers
 - 5-7 millions PHP developers
 - They ARE coming to the platform
- Community
 - Free Scripts
 - IBM and Zend



Source: stackoverflow.com

Why PHP

Top 10 Reasons to Choose PHP for IBM i Web Application Development

Read this eBook to learn why PHP is a great application modernization choice for IBM i shops

BCD
A Quadrant Software Company



<http://www.bcdsoftware.com/lp/webmart-php/php-on-ibm-i.php>

Leverage RPG Code

Alfa Aesar
A Johnson Matthey Company

Home | Contact Us | FAQs | Language: English

Products | Order Center | Documents & Reference | Specialty & Bulk | Literature | News & Events | About Us | My Account

Register ? Login Password Product No. or Name Advanced Search

Search Results

57 items matched your Product No. or Name search for "silica gel"

SHOW ALL DETAILS SHOW ALL PRICES View 50 Results Per Page 1 2

Product No.	CAS	Description	MSDS	Prices
+ 44387	7631-86-9	Silica gel desiccant, -6+12 mesh granules	MSDS	Prices
+ 44386	7631-86-9	Silica gel desiccant, -3+8 Mesh Granules	MSDS	Prices
+ 44390	7631-86-9	Silica gel desiccant, indicating, -14+20 mesh granules	MSDS	Prices
+ 44389	7631-86-9	Silica gel desiccant, indicating, -6+16 mesh granules	MSDS	hide prices

Pricing and Availability

Size	(\$)	Price	Quantity	Options	Availability
250g	23.70		<input type="text"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	Enter qty and click checkbox
1kg	68.00		<input type="text"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	Enter qty and click checkbox
5kg	274.00		<input type="text" value="7"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	7 on 29-Mar-2011

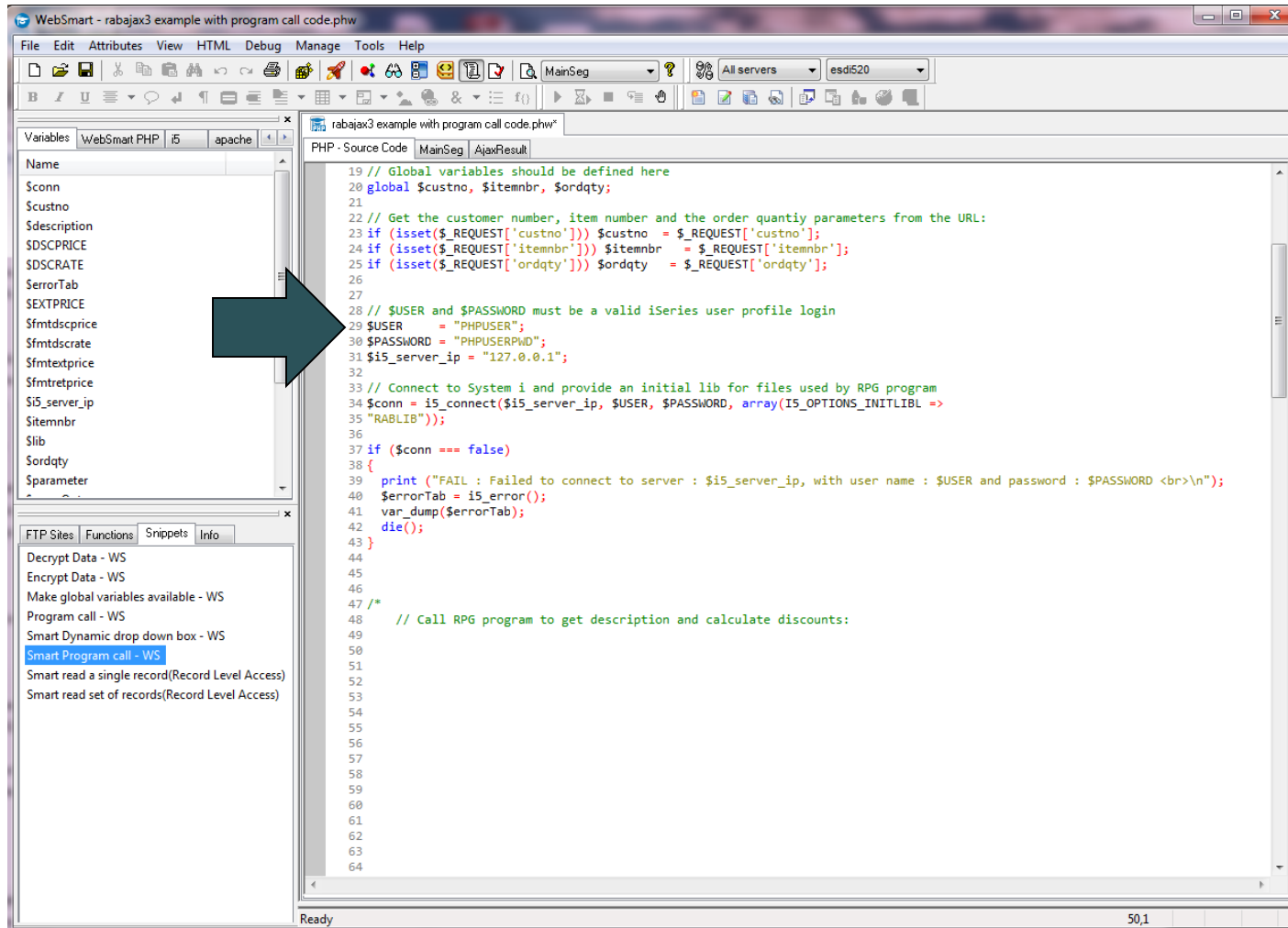
ADD TO CART ADD TO BULK QUOTE

+ 36737	7631-86-9	Silica gel desiccant, indicating, ACS	MSDS	Prices
+ 40381	7631-86-9	Silica gel desiccant, indicating, ACS	MSDS	Prices
+ 42729	7631-86-9	Silica gel 60, 0.019-0.037mm (400-600 mesh)	MSDS	Prices
+ L14004	7631-86-9	Silica gel 60, 0.032-0.070mm (220-450 mesh)	MSDS	Prices
+ L14003	7631-86-9	Silica gel 60, 0.032-0.063mm (230-450 mesh)	MSDS	Prices
+ 42570	7631-86-9	Silica gel 60, 0.040-0.063mm (230-400 mesh)	MSDS	Prices
+ 42727	7631-86-9	Silica gel 60, 0.062-0.105mm (150-230 mesh)	MSDS	Prices
+ 42757	7631-86-9	Silica gel 60, with fluorescent indicator, 0.032-0.070mm (220-450 mesh)	MSDS	Prices



Pricing and Availability

PHP - RPG Program Call



The screenshot shows an IDE window titled "WebSmart - rabajax3 example with program call code.php". The main editor displays PHP source code with the following content:

```
19 // Global variables should be defined here
20 global $custno, $itemnbr, $ordqty;
21
22 // Get the customer number, item number and the order quantity parameters from the URL:
23 if (isset($_REQUEST['custno'])) $custno = $_REQUEST['custno'];
24 if (isset($_REQUEST['itemnbr'])) $itemnbr = $_REQUEST['itemnbr'];
25 if (isset($_REQUEST['ordqty'])) $ordqty = $_REQUEST['ordqty'];
26
27
28 // $USER and $PASSWORD must be a valid iSeries user profile login
29 $USER = "PHPUSER";
30 $PASSWORD = "PHPUSERPWD";
31 $i5_server_ip = "127.0.0.1";
32
33 // Connect to System i and provide an initial lib for files used by RPG program
34 $conn = i5_connect($i5_server_ip, $USER, $PASSWORD, array(I5_OPTIONS_INITLIB =>
35 "RABLIB"));
36
37 if ($conn === false)
38 {
39     print ("FAIL : Failed to connect to server : $i5_server_ip, with user name : $USER and password : $PASSWORD <br>\n");
40     $errorTab = i5_error();
41     var_dump($errorTab);
42     die();
43 }
44
45
46
47 /*
48 // Call RPG program to get description and calculate discounts:
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
```

The left sidebar shows a "Variables" panel with a list of variables including \$conn, \$custno, \$itemnbr, and \$ordqty. A large arrow points from this panel to the code, specifically highlighting the connection parameters in lines 34-35.

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- ➔ ■ **Node.js**
- Mobile

What is Node.js

- Server Side Web Applications
- JavaScript for Server Side
- Open Source
- Created in 2009
- Popular Technology
 - Walmart, LinkedIn, PayPal

Benefits of Node.js

- Performance
- Open Source Community
- Attract New Developers
- One Less Language
- Programmer Productivity
- Leverage RPG

ILE - RPG CGI

- CGIDEV2, WebSmart ILE
- Stateless
- Uses native CGI APIs
- Runs in standard Apache web server
- Produce secure web apps
 - Login - IBM i user id, LDAP, etc.
 - Use sessions
- Better than stateful for new, highly scaleable apps
- SEO, bookmarks

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- ➔ ■ Mobile

3 Approaches

- Native mobile apps
- Mobile web apps
- Hybrid apps

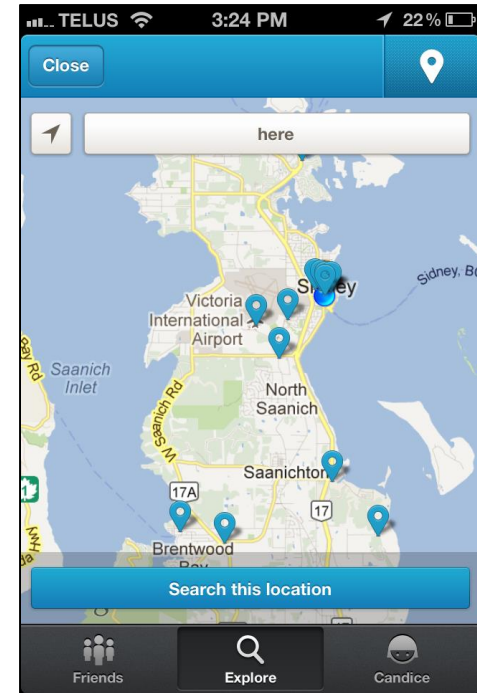


Native Mobile Apps

- Device's native programming language
 - iOS - Objective C/Swift
 - Android - Java
 - Windows C#
- Not cross platform - specific to device
- App store

Native Mobile Apps (con't)

- Access to device's hardware
- Great user experience
 - Speed
 - Reliability
 - Access
- Web service for IBM i data



Mobile Web Applications

- Website accessed from device's browser
- HTML, CSS and JavaScript
- PHP, RPG, .Net and more
- Looks more like a native app



Mobile Web Applications *(con't)*

- Single code base for all platforms
 - Not all browsers render the same
 - Can optimize for specific browsers
 - Responsive web
- HTML5 and JavaScript frameworks
 - Examples: jQuery, Bootstrap etc.
- Instant updates

Mobile Web Applications *(con't)*

- Offline support
- No access to some device hardware
- Performance dependent
 - Network
 - Device
- Responsive - One code base for desktop and mobile

Hybrid Mobile Apps

- Web technologies
- Turn web app into native mobile app
 - Wrapped in platform specific shell
 - Runs in native container
 - App store
- APIs to access device hardware
- No native development languages, reuse code
- Easier to enter native app world
- Slower performance

Which Approach?

- Mobile web apps in most cases for IBM i
- HTML5 keeps improving
- Browsers won the last war
- No one size fits all

Questions?