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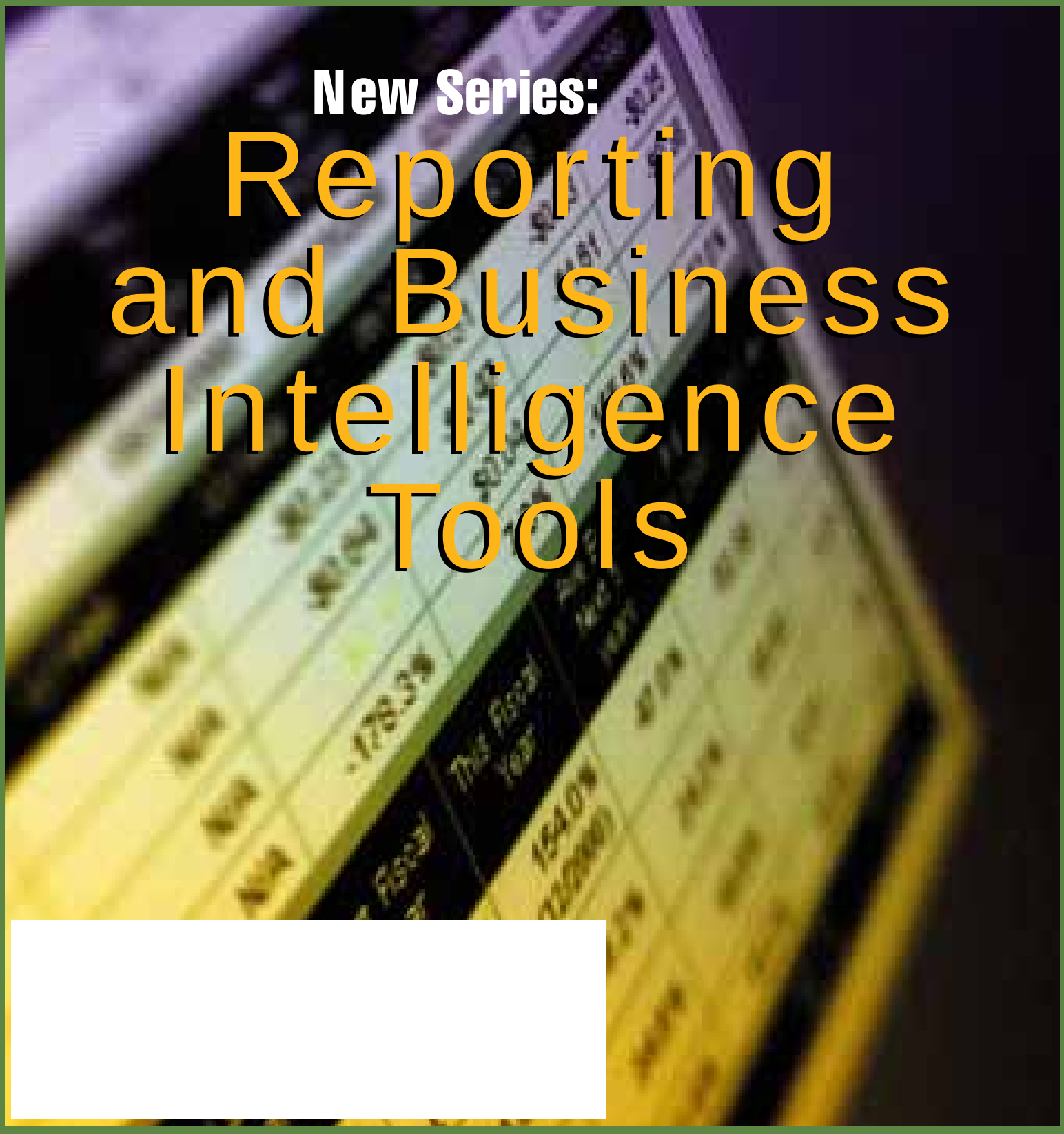

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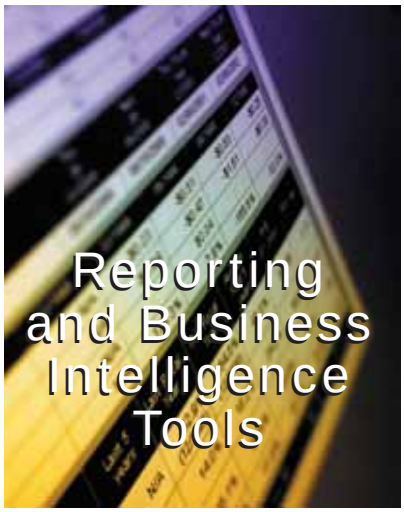

INTERNATIONAL Spectrum
THE MULTIVALUE TECHNOLOGY MAGAZINE

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From the Inside

BY NATHAN RECTOR

The 2008 International Spectrum Conference and Exhibition is only a few months away. We are furiously working to make this Conference even more successful than last year. For those of you that have not seen the conference information yet, the 2008 International Spectrum Conference is in Newport Beach, California, on March 31st – April 4th.

We have many of the popular sessions that we have had in the past, like web development, Ajax integration, as well as project estimation, to name a few. But the great thing about this year's conference is the list of new topics:

Windows and Linux Administration. Most of us have at least one Windows server, if not a Linux server as well. Do you know what to do if something goes wrong with those systems? How about managing resources on those systems?

Quick Start sessions on PHP, .NET, and Java. The Quick Start sessions were developed to give you an understanding of the language and how to use it. We are no longer able to just use MultiValue Basic, no matter how much of it can solve your enterprise needs. GUI, web sites and other user interfaces are requiring us to understand how to work with other languages and tools along side our MultiValue Basic programs.

GUI and Event programming. Almost every programmer is dealing with this, or will be dealing with this in the future. We all know you can't create GUI and web applications using the same techniques we use for our character-based screens. These sessions are designed to show you how to mix your GUI development environment with your MultiValue Basic programs and how to make them as responsive as your character-based screens.

User Interface Design. Ok, most programmers will read this and wonder why they should care about user interface design. They have been doing it for years in their character-based screens. But for those that have started creating GUI screens, you have probably found that you spend 40% of your development time making your screens look right. The Science of User Interface Design session will give you simple rules and techniques to use to cut the time required for layout and making-it-look-right in your GUI programming.

Common Carrier Solutions. Many companies are saving money by using UPS and FedEx to ship their products and materials to customers. Many shops use these companies' software solutions but end up doing double entry to create or query shipping information. With these sessions, you will get an understanding of how — and the reasons why — to integrate your shipping systems with UPS and FedEx, as well as the pitfalls you will find when doing so.

Vendor Product Demos. As always, we have the vendor demo sessions that allow you to see the new developments and enhancements in your favorite MultiValue software applications.

There are many, many more sessions available than what I have listed here. And I could go on for pages just talking their benefits without getting into the other things going on at the Conference.

As with previous conferences, the sponsored breakfasts are free to the conference attendees. And, we have the Exhibition Floor Preview party, which everyone always loves, as well as the Closing Conference Party on Thursday night.

As always, the Exhibition Floor is FREE to both attendees and walk-ins. Talk with all vendors and see all the new products and enhancements to your favorite software applications. The Exhibition hours are a little different this year. The Exhibition Floor is open on Wednesday afternoon until 5:30, and then again on Thursday morning until Noon. The Full Conference attendees get to preview the Exhibition Floor on Wednesday night during the Preview Party.

On the Exhibition Floor, you will find the MultiValue Café with a Wi-Fi connection to help you keep in touch with your office and customers. You will also have the MultiValue Job Pavilion where you can post your available jobs or if you are available for a job.

I personally invite you to join us in Newport Beach this year. It's shaping up to be a great time. For more information or to register, visit www.intl-spectrum.com/show/2008. Look forward to seeing you there.

-NATHAN RECTOR
President, International Spectrum
nathan@intl-spectrum.com

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NOVEMBER/DECEMBER 2007

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BY SEAN FITZSIMONS, REVELATION SOFTWARE

The OpenInsight Printer Interface: Formatting Tables

As part of the continual improvement process of OpenInsight, we are constantly and actively seeking features that should be added to the various components and tools within the developer's toolkit. The OpenInsight Printer Interface is one such component that is constantly being reviewed for the possibilities of adding new features.

The OpenInsight Printer Interface is an integrated set of commands used to create pre-packaged documents. It is the best method to use to achieve high-quality output from OpenInsight. The OpenInsight Printer Interface, commonly referred to as OIPI, provides a complete printer solution for OpenInsight and has been part of the OpenInsight product since version 7.0. The interface allows BASIC+ to send text and graphical information to a printer and provides OpenInsight developers with a powerful printing tool.

OIPI will print plain text, tabular data, rich text, and graphics such as rectangles, lines, ellipses, polygons, polylines, and image files.

The purpose of this article is to explain how to create reports using tabular data and the method by which the table may be formatted. However, before addressing tables and table formats, it is necessary to provide a basic overview of the OIPI commands.

The Set_Printer and Get_Printer Functions

The commands used to create the OIPI reports are the Set_Printer and Get_Printer functions. The Set_Printer function sends instructions to the printer engine to render the print job. The Get_Printer function retrieves data from the printer control. Both functions contain a MESSAGE parameter, which advises the functions which action to perform. The Get_Printer function only accepts the MESSAGE parameter, while the Set_Printer function accepts additional parameters that control the behavior of the Message sent. The number of additional parameters, if any, is determined by the Message sent.

Continues on page 8

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```
spStatus = Set_Printer(MESSAGE, parameter_1, parameter_1, ...)
```

FIGURE 1 - The Syntax for the Set_Printer function

```
spStatus = Set_Printer("TEXT", "Hello World, it's me Eugene.")
```

FIGURE 2

```
returnValue = Get_Printer(MESSAGE)
```

FIGURE 3 - The syntax for the Get_Printer function

```
printers = Get_Printer("DEVICES")
```

FIGURE 4 - Determining accessible printers

```
spStatus = Set_Printer("ADDTABLE",columnFormats, columnHeaders, |
tableData, headeShade, tableShade, append, tableBorder)
```

FIGURE 5 - The syntax for the Set_Printer function using the ADDTABLE message

```
spStatus = Set_Printer("TABLECELL", formatInfo)
```

FIGURE 6 - The syntax for the Set_Printer function using the TABLECELL message

Field	Description
Property	The type of setting to be modified.
Row 1	The starting row of the cells to be modified.
Column 1	The starting column of the cells to be modified.
Row 2	The ending row of the cells to be modified.
Column 2	The ending column of the cells to be modified.
Value	The value of the property that needs changing.

FIGURE 7 – Fields used to construct the formatInfo parameter

```
Equ TCForeColor$ To 21 ; * Returns or sets the foreground (text) |
color for a cell.
```

FIGURE 8 - Example of OIPI_Equates record

```
spStatus = Set_Printer("STARTTABLE")
spStatus = Set_Printer("ADDTABLE",colFormat,colHeader,data, |
           "","","","")
spStatus = Set_Printer("TABLECELL", formatInfo)
spStatus = Set_Printer("ENDTABLE")
spStatus = Set_Printer("TERM")
```

FIGURE 9

Continued from page 6

All OIPI reports need to start with the Set_Printer INIT message and end with a Set_Printer TERM message. The INIT message defines the initial properties for each printing session. The TERM message is used to end each printing session. The TERM message is required to close the printing job, destroy the printing dialog box, and clean up resources. If the Print Preview window is visible, then the TERM message finishes the printing and activates the Print Preview window.

Figure 1 shows the syntax for the Set_Printer function.

To print a simple line of text would involve using the Set_Printer function, passing in a MESSAGE parameter of "TEXT" and the text requiring printing (fig. 2).

Figure 3 shows the syntax for the Get_Printer function.

To determine the printers that you have access to would involve using the Get_Printer function, passing in a MESSAGE of "DEVICES" (fig. 4). A field mark delimited list of available printers will be returned from the function.

Tables and Table Formats

The ADDTABLE message is used for printing tabular data. The TABLECELL message is used for formatting the table and table data set using the ADDTABLE message.

The ADDTABLE Message

Figure 5 shows the syntax for the Set_Printer function using the ADDTABLE message.

Now let's take a look at each of the parameters.

Column Formats

The Column Formats parameter is used to set attributes of each column, such as the width, justification, and position. The number of columns in the table is determined by the number of values in the Column Formats parameter. Each column in the Column Formats parameter is separated with a value mark.

Column Headers

The column headers are printed at the top of the table and are repeated at the top of each page if the table does not fit on the current page. The column headers are value mark delimited. The number of column headers should be equal to the number of Column Format values. Multi-line headers may be created by using carriage return (line feed) characters.

Table Data

The data prints with the formatting that is set by the Column Format parameter. The number of columns in the Table Data parameter should be equal to the number of Column Format values. Row data is field mark delimited and column data is value mark delimited.

Header Shade and Table Shade

The Header Shade and Table Shade parameters set the colors that are used in the background for the header and table data. The values set should be the RGB value of the color.

Append

The Append parameter allows you to append to the previous table. All of the parameters — except the Table Data parameter — for the ADDTABLE must be the same for all table pieces that are printed with the Append property set to 1. The Append parameter is useful for adding data to the previous table when data is gathered from using different methods. For example, it is useful when one section of your code prints the detailed data for the table and another section is used for determining total and control data. The first section may print the table detail and the second section could append the total data to the table.

Table Border

The Table Border parameter sets the border for the entire table. The Table Border parameter is such that you may border entire rows and columns or you may border the entire table. You have to print each row as a separate table to print different borders for each row.

The TABLECELL Message

The TABLECELL message will allow you to format your reports beyond the formatting options provided in the ADDTABLE message. The TABLECELL message is used to change specific formatting for the table itself — specific rows or columns in the table or specific cells within the table. For example, if all negative numeric data within the table should be colored red, then use the TABLECELL message to format the data. Perhaps you need to merge cells, then use the TABLECELL message. Perhaps, perhaps, perhaps… the list could go on. If it requires formatting different data in the table, then use the TABLECELL message.

Continues on page 10

FIGURE 10 · Source code for a completed OIPI report using the TABLECELL formatting

```
Function Print_A_Formatted_Table(parent)

Declare Function Unassigned, Set_Printer, Get_Printer
$Insert OIPrint_Equates
$Insert OIPI_Equates

if unassigned(parent) Then parent = ""

Gosub Set_Printer_Init

startingBalance = 80000 ; endingBalance = 0
negativeArray = "" ; currBalance = 0 ; tableData = ""

data ""
data = '10/1/07,2,0,5000' : @fm
data:= '10/1/07,3,4000,0'  : @fm
data:= '10/8/07,2,0,3000' : @fm
data:= '10/8/07,3,4000,0' : @fm
data:= '10/15/07,2,0,2000' : @fm
data:= '10/15/07,3,6000,0' : @fm
data:= '10/22/07,2,0,1000' : @fm
data:= '10/22/07,3,5000,0' : @fm
data:= '10/29/07,2,0,1000' : @fm
data:= '10/29/07,3,5000,0'

swap ',' With @vm In data

If startingBalance < 0 Then negativeArray<-1> = 1

tableData:= "10/1/07" : @vm : "Starting Balance" : @vm : "" : @vm |
            : "" : @vm : Oconv(startingBalance,"MD2,") : @fm

numLines = dcount(data, @fm)
for i = 1 To numLines

       thisLine = data<i>
       transDate = thisLine<1,1>
       transType = thisLine<1,2>
       transDB = thisLine<1,3>
       transCR = thisLine<1,4>

       transTypeDesc = "Unknown"
       Begin case
              Case transType = 2
                     transTypeDesc = "General Deposit"
                     transDB = ""
                     currBalance += transCR
              Case transType = 3
                     transTypeDesc = "Petty Cash"
                     transCR = ""
```

code continues on page 10

FIGURE 10 *code continued from page 9*

```
                    currBalance -= transDB
        End case

        if currBalance < 0 then negativeArray := i+1 : @fm
        tableData: = transDate :  @vm : transTypeDesc : @vm : Oconv(transDB,"MD2,") : @vm : Oconv(transCR,"MD2,") |
                   : @vm : oconv(currBalance,'MD2,') : @fm
Next i

if currBalance < 0 then negativeArray := numLines + 2: @fm
tableData : = "10/31/07" : @vm : "Ending Balance" : @vm : "" : @vm : "" : @vm : Oconv(currBalance,'MD2,')
numLines = dcount(tableData,@fm)
negativeArray[-1,1] = ""

spStatus = Set_Printer("STARTTABLE") ; * send the STARTTABLE message in order use TABLECELL

colFormat = '<_1440' : @vm : '<_2880' : @vm : '>_1440'  : @vm : '>_1440' : @vm : '>_1440'  ; * Set the column  |
            formats
colHeader = "Date,Description,Debit,Credit,Balance" ; * Set the Column Headers
swap ',' With @vm In colHeader
spStatus = Set_Printer("ADDTABLE",colFormat,colHeader,tableData,"","","",TB_ALL) ; * Send the data to the printer

* Set All the Cells In the Last Column to Bold
spStatus = Set_Printer("TABLECELL", TcFontBold$ : @fm : 1 : @fm : 5 : @fm : numLines : @fm : 5 : |
                       @fm : 1)

* Set Negative Balances to have a Red forecolor
numNegBals = dcount(negativeArray,@fm)
For i = 1 To numNegBals
       spStatus = Set_Printer("TABLECELL",TCForeColor$ : @fm : negativeArray<i> : @fm : 5 : @fm : |
                              negativeArray<i> : @fm : 5 : @fm : red)
Next i

* For the First Line and Last Line (Starting and Ending Balances) lets merge cells
spStatus = Set_Printer("TABLECELL",TCColSpan$ : @fm : 1 : @fm : 2 : @fm :  "" : @fm : "" : @fm : 3)
spStatus = Set_Printer("TABLECELL",TCColSpan$ : @fm : numLines : @fm : 2 : @fm :  "" : @fm : "" :  |
                       @fm : 3)
```

code continues on page 11

The OpenInsight Printer Interface *Continued from page 9*

Figure 6 shows the syntax for the Set_Printer command when using the TABLECELL message.

The formatInfo parameter contains an @fm-delimited array of the information regarding what is to be modified and how it is to be modified.

The table in Figure 7 describes the different fields that are used to construct the formatInfo parameter.

The Row and Column field values are pretty straightforward.They are numeric values of the starting and ending positions of the cells to be formatted. The Property and Value fields need to be examined in more depth.

The Property and Value Fields

There are four categories of properties – Table, Row, Column, and Cell. Within each of these categories, there are different types of properties that may be set. For example, the Row categories have types to set the spacing before and after the data contained in the row. The Property is a numeric value from 0 to 45. Provided in OpenInsight is an Insert record named OIPI_ Equates which provides equate statements for the properties and their numeric designation (fig. 8).

The Value field is wholly dependant on the Property field being set. If one is setting the color property of the value would be the RGB value of the color. If one is setting the bold property then the value would be a Boolean true or false. See OpenInsight documentation for the various Properties that may be set using the TABLECELL message.

The combination of Properties and Values will set the formatting for the tables within your reports. There is much a developer can accomplish using the TABLECELL functionality. I encourage developers to delve deeper and experiment with different variations of properties and values.

Integrating the TABLECELL Message

The TABLECELL message is sent after the ADDTABLE message. Both of the messages need to be enclosed within a STARTTABLE and ENDTABLE message (fig. 9). If the STARTTABLE and ENDTABLE messages are not sent, TABLECELL will force the system to abort.

FIGURE 11 - Formatted output in the OIPI Print Preview window

A design consideration is necessary to determine when data should be reviewed for formatting. A one-pass process would retrieve the data, build the data table, and then track any data values that would need formatting. A two-pass process would separate the retrieval process from the formatting process.

Figure 10 contains source code for a completed OIPI report using the TABLECELL formatting for changing color of particular cells, adding space before and after rows, and merging cells within rows. Figure 11 contains the formatted output in the OIPI Print Preview window.

The ADDTABLE and TABLECELL messages are useful to developers when providing functionality that allows for more clear readability of tables within reports. I hope that this article — touching the surface of what may be accomplished — spurs the OpenInsight developer in new directions. is

FIGURE 10 *code continued from page 10*

```
spStatus = Set_Printer("TABLECELL",TCRowSpaceBefore$ : @fm : 1 : @fm : "" : @fm : numLines : @fm |
                       : "" : @fm : 50)
spStatus = Set_Printer("TABLECELL",TCRowSpaceAfter$ : @fm : 1 : @fm : "" : @fm : numLines : @fm |
                       : "" : @fm : 50)

* Shade the Header Row
spStatus = Set_Printer("TABLECELL",TCBackColor$ : @fm : 0 : @fm : 1 : @fm :  0 : @fm : 5 : @fm :  |
                       GRAY)

spStatus = Set_Printer("ENDTABLE")
spstatus = Set_Printer("TERM")

return


Set_Printer_Init:

* Start the OIPI report with the INIT message
FileName = "TableCell Example"
PrintTitle = "TableCell Example Printing..."
PreviewTitle = "TableCell Example Print Preview" ;* Change the title of the print preview window
margins = 1:@fm:1:@fm:1:@fm:.1  ;* Set one inch margins
Orientation = 0 ; * portrait
PrintSetup = ""
PrintSetup<1, 1> = 3  ;* Maximized window
PrintSetup<1, 2> = 0  ;* Display all buttons
PrintSetup<1, 5> = 1  ;* Allow Print Range
PrintSetup<1, 6> = 7  ;* Full Mouse Support
PrintSetup<2>    = -1 ; * Page Width Display

spStatus = Set_Printer("INIT", FileName, PrintTitle:@fm:PreviewTitle, , Orientation, PrintSetup)

return
```

UniVerse Triggers

BY BRIAN LEACH

Database triggers offer tremendous potential for extending and simplifying applications, but they have yet to become part of the regular vocabulary of the MultiValue community. UniVerse developers have been slow to realize their benefits and to use them to their best advantage.

A database trigger is simply a piece of code that is called automatically by the database in response to changes made to a specific file. Triggers have long played a pivotal role in the SQL world, where they are normally divided into two categories: statement triggers that are run once for each data manipulation statement (INSERT, UPDATE, or DELETE) and row triggers that are run once for each row of data that is amended. Triggers are gaining ground on MultiValue platforms, and are now becoming a more useful tool for UniVerse developers. All UniVerse triggers are row triggers.

Triggers are not a new phenomenon for UniVerse. They were first added to the database with the introduction of the often underused SQL compatibility that enables UniVerse to act as both a MultiValue database and as a first-class relational database at the same time. At the heart of this was the addition of SQL tables — files that extend the native functionality by supporting such mainstream database features as defined data types and the addition of check constraints to ensure data integrity and access security.

It was alongside this functionality IBM introduced support for triggers. This of course meant that triggers were originally confined to SQL tables. But, over recent releases, more of the SQL functionality has been rolled across into the native MultiValue model, in part because of the difficulties associated with migrating existing applications to adopt the more rigorous data model that underpins the UniVerse SQL support. This blurring of the boundaries between the two models means that current versions of UniVerse allow

developers to add triggers to both SQL tables and to regular database files, although the triggers themselves must adhere to the SQL rules.

UniVerse supports up to six separate triggers for each file. Each trigger is associated with a particular file event:

- BEFORE INSERT
- AFTER INSERT
- BEFORE UPDATE
- AFTER UPDATE
- BEFORE DELETE
- AFTER DELETE

As in the general SQL world, triggers are only associated with events that manipulate data, and there are no SELECT (i.e., read) triggers.

Triggers that are called before an event can be used to modify data before it is written. Triggers that are called after an event are normally associated with secondary updates and similar post-processing.

Uses for Database Triggers

The great practical advantage of using triggers is that they are called predictably in response to any event that updates a file, whether that update is made from BASIC, PROC, RetrieVe, SQL, or from a client/server API like UniObjects or OLE DB. Triggers therefore provide developers with a safe route for adding new or supporting functionality that needs to take place whenever data is modified. An obvious example of this might be to add an audit log to a file (for example, in response to regulatory requirements).

Database triggers are extremely useful if you want to consolidate database operations such as updating secondary files, adding extended or full text indexing, or if you want to integrate with third-party applications such as reporting databases or mobile clients by sending changes across in near real time.

"The great practical advantage of using triggers is that they are called predictably in response to any event that updates a file."

Triggers are also great for troubleshooting. I have used triggers to watch a file whose content was occasionally becoming corrupted on a system that was being updated through many different interfaces (i.e., traditional green screens, Windows clients using UniObjects, RedBack-based web pages and XML-based Java feeds). By logging the user details, the trigger provided a means of isolating the cause of the problem and capturing the before-image so the data could be fixed once the problem had been rectified.

One of the problems that bedevil developers is duplication — discovering that the same business logic has been copied and scattered across multiple programs, subroutines, and even worse, client code. We all know that this makes for bad design and dramatically increases the likelihood of error and the risks associated with any changes.

Here once again triggers may come to the rescue. Triggers can perform additional validations, restructure data before that data is written, or implement certain business rules. By encapsulating these rules in code attached to database triggers, developers are freed from having to remember to perform these tasks from within every program that could potentially update that file. Triggers can be an essential adjunct to any existing system with concerns regarding data integrity and software quality.

Creating Triggers

Adding a trigger to the database is a two step operation: first, in creating the trigger itself, and second, in attaching that trigger to one or more of the events on a file.

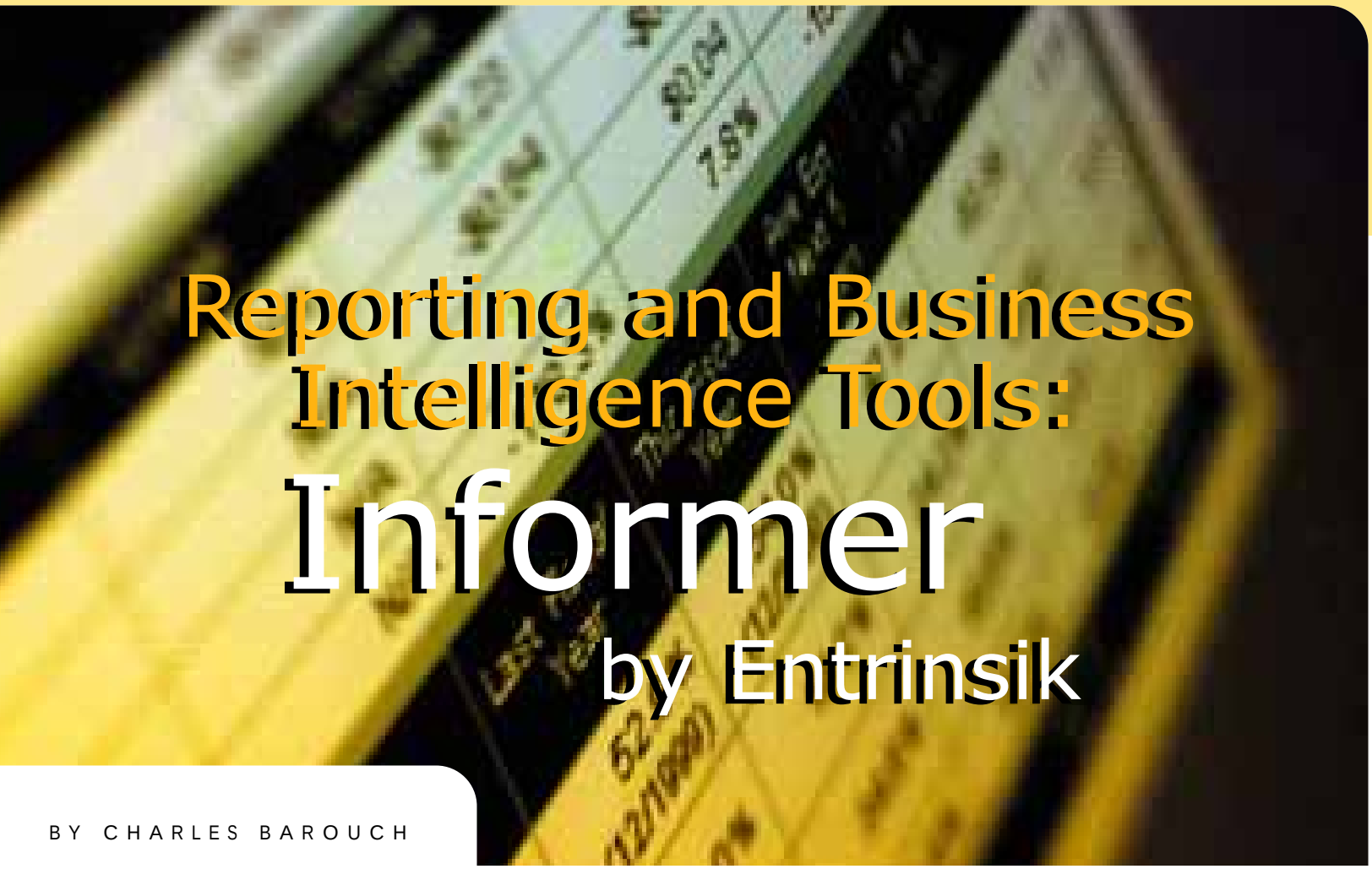
Triggers are implemented as regular UniVerse BASIC subroutines, giving developers the freedom to perform standard operations, although with certain restrictions imposed by the SQL model detailed below.

A trigger subroutine receives a fixed set of arguments from the database engine. These serve to identify the action being performed and provide the before- and after- images of the data being updated. These include:

- Name of the trigger
- Name of the file being updated
- Name of the event (INSERT, UPDATE, or DELETE)
- New Record Id
- New Record
- Old Record Id
- Old Record

The trigger, file, and event names allow the same subroutine to be associated with more than one trigger, which is essential for auditing. The old and new

Continues on page 26



Reporting and Business Intelligence Tools: Informer by Entrinsik

BY CHARLES BAROUCH

In this first article of a series on Reporting and Business Intelligence tools available to the MultiValue market, we take a look at Informer by Entrinsik. Joining us for a look at their web-based reporting tool are Doug Leupen, president of Entrinsik, Brad Leupen, CTO, and Chris Reeves, director of VAR Relationships.

SPECTRUM: ***What were some of the rejected names before you settled on Informer?***

DOUG: Believe it or not, that was the first name. The company name, Entrinsik, on the other hand, was difficult process. Entrinsik was founded as Magna Systems. Then, around 2000, we wanted a more modern name to reflect a more modern product suite. Entrinsik is a reference to the intrinsic value of an organization's personnel and its information.

SPECTRUM: ***If we met at a Spectrum Conference and you had to convince me to stop by your booth, what could you say in two paragraphs or less about Informer?***

DOUG: I'd say talk to our customers. I think our biggest selling point is that Informer intuitively allows end users to access their MultiValue data. Before, it was quite difficult to view MultiValue data due to lack of tool support, complicated command line interface, and what-have-you.

Continues on page 16

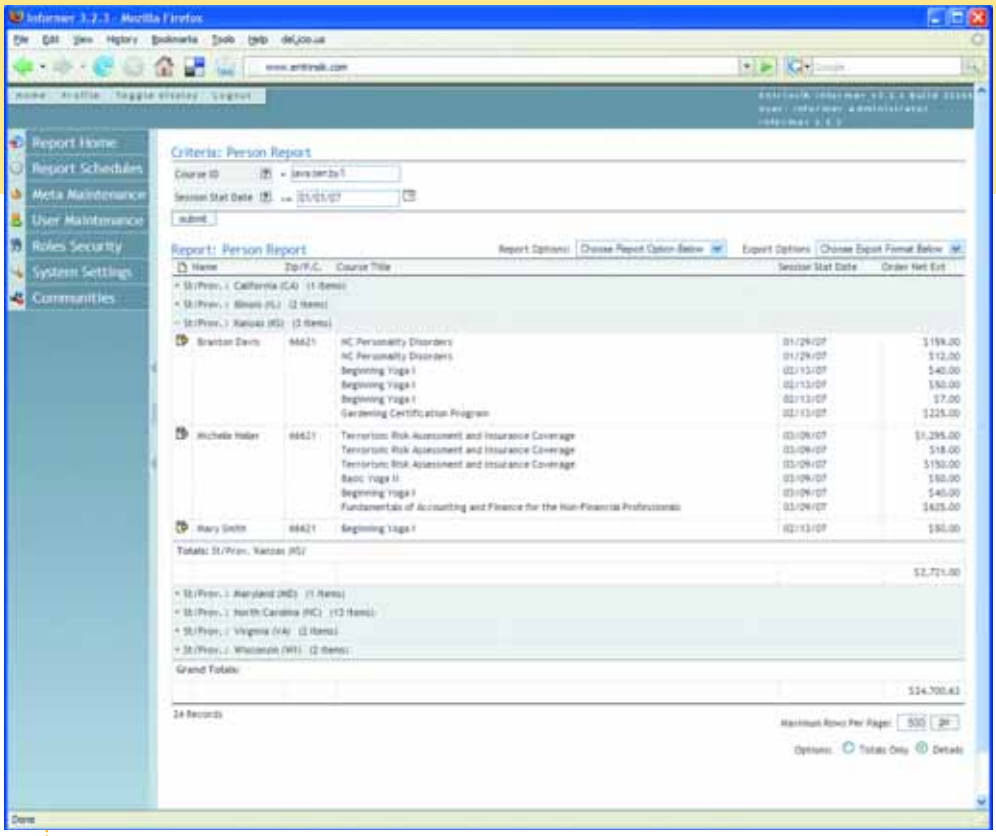


FIGURE 1 – Informer Web Reporting software by Entrinsik.

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REPORTING AND BUSINESS INTELLIGENCE TOOLS

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SPECTRUM: ***Obviously, many readers would disagree. Using Access, RetreiVe, etc. is fairly easy. How is this better?***

DOUG: Unlike other solutions, Informer was conceived as an Enterprise Reporting Environment natively supporting MultiValue. Informer allows people to log into a user friendly front-end and get value from their data without having to know a whole lot about the data schema. Informer was originally created to solve a specific reporting challenge that we were dealing with internally with our SEMtek customers. SEMtek is a UniVerse-based ERP solution for professional training/continuing education providers. Many of our customers didn't understand our data schema well enough to effectively implement an off-the-shelf reporting solution. To be fair, our files and dictionaries were often redundant and cryptic. So we developed Informer from the ground up to overcome these challenges. It's native, not ODBC-based, as it uses UniObjects for Java to communicate natively with U2. It is completely web-based and simple to use. It's not intimidating like command line tools are for some people. As we mentioned, SEMtek was the catalyst for us to develop Informer. Now there is a SEMtek version of Informer with predefined Meta records and reports that ships with SEMtek. Today, Informer is a very important part of SEMtek.

SPECTRUM: ***How did you make it simpler?***

BRAD: The Meta table allows admins to polish their files and dictionaries (e.g., weed out non-reporting files and dictionaries, clean up descriptions, provide intuitive help, and join files). This is all done once by the system administrator, giving the user an intuitive reporting landscape.

Informer allows people to log into a user friendly front-end and get value from their data without having to know a whole lot about the data schema.

SPECTRUM: ***What about security?***

BRAD: Admins can segment their user base into one or more roles that tie back to their job function and informational requirements. We implemented file- and field-level security by role. It not only defines access to features within the product but also access to data, i.e., who can see what. With our user profile, we are able to provide row-level security which allows our customers to extend information to their customers, vendors, salespeople, etc — people who would not ordinarily have access to the database.

SPECTRUM: ***You mentioned UniObjects, which means UniVerse and UniData support. Is there — or will there be — other platforms supported?***

BRAD: We are hard at work on our next major Informer release which among many new features will support multiple file sources including SQL. An interesting aspect of the new release is that with our Meta tables a user will be able to join data from two different database engines.

SPECTRUM: ***Informer works with your software. What about other people's products?***

CHRIS: We offer the same level of integration to our VARs with our VAR Toolkit. It provides a customized look and feel, customized system behavior, security, and single sign-on integration. It even provides integration into their product's user interface. They get the ability to prepackage quality Meta definitions, reports, roles, etc.

SPECTRUM: ***Can you give an example? Who's using it?***

CHRIS: One great example is Paciolan. They are one of the leading ticketing companies in North America. They used the VAR Toolkit to create a completely private-labeled reporting solution for their customers. They integrated the look and feel of their application, their user security, their data schema, and reports directly within Informer. This is all rolled up into a point-and-click installer. So, at the end of the day, their customers install the Paciolan eQuery product to get

reports. They are actually installing and using a branded version of Informer.

Paciolan also provides their branded Informer as part of their ASP offering. They did a great job with the integration. It is seamless. David Raber, their CTO, provided this observation: "Integrating these two packages provides our customers information on demand with Entrinsik's intuitive Informer Web Reporting software. Obviously, we're excited to offer our customers the very latest in web reporting capability, all seamlessly integrated with our ticketing solution package."

In fact, we love to sell Informer this way (privately labeled) because it provides the ideal solution for the end user. The end users don't have to spend any time at all defining Meta definitions or (re)creating mission critical reports. Everything is available immediately upon installation. We have other VAR partners as well who have achieved various levels of integration, depending on need.

SPECTRUM: ***So, there are others?***

DOUG: Here are some of them: APT Solutions, AutoPower, Bolo Systems, HealthPort (formerly Companion Technologies), EnRoute Emergency Systems, F.W. Davison & Company, Primac Systems (Vercom Systems). We have referral/reseller agreements with many others, including Datatel.

SPECTRUM: ***You had some new features added recently. What is Live Excel?***

BRAD: For example, here at Entrinsik we use a UniVerse-based accounting system. Every month we run the same accounting reports that include BI-style trend analysis, revenue pie charts, etc. We do this all in Excel using Excel pivot tables and pivot charts. The data is pulled in live via Informer's Live Excel interface. So, our controller opens her monthly financial statement Excel document and is presented with the most recent month's worth of data with zero effort beyond opening the file!

SPECTRUM: ***Zero effort for her. How much work for you to set it up?***

BRAD: She logged into Informer, pulled up her financial statement report, and clicked the Live Excel button. Informer created a live spreadsheet bound to the report, which she saved to her desktop. She inserted a pivot table and pivot chart, and checked a box asking it to refresh on open, and that's it.

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REPORTING AND BUSINESS INTELLIGENCE TOOLS

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SPECTRUM: ***I've heard about this community reporting feature...***

CHRIS: We found, in implementing Informer, that customers who have the same database or application often have similar reporting needs. Datatel's colleges are a great example of this, as they all have the need for reports like "give me all students in a given major/term". We asked the question, "wouldn't it be great if these customers could collaborate and share Meta definitions and reports that are common to the application" (e.g. Datatel).

So we developed two utilities to foster collaboration: One, the ability to import/export reports and Meta definitions. This gives users the ability to save and share report definitions with colleagues; and two, Informer Communities.

SPECTRUM: ***In essence, you found that the people who live and die with the data are often excellent report writers and you saw a way to leverage that for your customers' benefit?***

CHRIS: Yes, because Informer Communities are really much larger in that, it allows similar institutions to aggregate their reporting solutions — to share amongst themselves Meta definitions and reports. One example of this is the North Carolina Community College System. Members of which have state-mandated reporting requirements. So rather than each customer developing these reports from scratch, they simply connect to the community and download these reports in a matter of moments. A big benefit to this is that as new community colleges come on board with Informer they have a big head start; they benefit from the hard work of their colleagues. VARs can also use Informer communities as a distribution channel for new reports. Customers don't have to wait around for new versions of Informer to come out in order to get new reports and they can download these updates on the fly. Think of it as iTunes for reports — except that you are encouraged to share and it doesn't cost anything.

For more information about Entrinsik's Informer Web Reporting System, visit www.entrinsik.com or call 1-919-848-4828. is

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- Multiple property assignment modes
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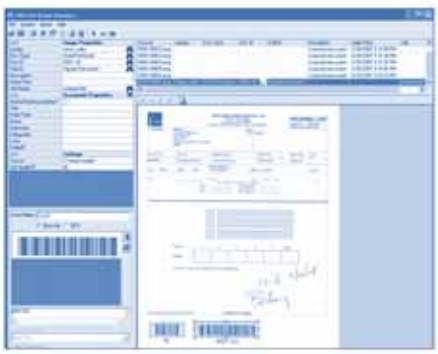
- Extensibility via VB Script

Universal web browser document retrieval



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New Products

Stamina Software Announces Viśage Designer 7.20, a Thin Client, Ultra-RAD Development Environment

Stamina Software is pleased to announce the immediate availability of Viśage Designer 7.20, the thin client ultra-RAD development environment that makes migration from “green screen” to “seen screen” child’s play. This major upgrade has been over 12 months in the making and includes 100’s of customer-driven enhancements, with major focuses on speed and rock solid stability.

For highly secure environments, V7.20 allows complete end-to-end data encryption via HTTPS client connections to the web server and optional SSH connections through to your MultiValue database. Connection pooling has also been enhanced to enable a single pool to service multiple database accounts, which is essential for delivering ASP-style solutions to the market.

Viśage Server configurations can now be saved and restored as XML files, making it easy to extend server farms or replicate environments for testing and disaster recovery scenarios. The Viśage Management Console offers finer control over web server caching and data stream compression, and with more screen and process details stored as static XML, this translates to improved performance for a deployed application.

Windows Vista is fully supported as a client and also a web server with IIS7. And, v7.20 has also been verified with the latest Beta Windows 2008 (Longhorn) server platform.

The client runtime environment has been re-engineered and extended, though the API is fully backwards compatible with v7.x applications and is identical for both IE and Firefox clients (and the various “bugs” that emerge with version and operating system platform changes). Automatic mandatory field highlighting has been enhanced and a new fast message box facility is available.

The Screen Designer is now even faster and more intuitive than before with improved IFrame, Tree and Tab controls, a new media player widget, and now allows filters to be applied dynamically rather than having to pre-define them. The maintenance of multi-lingual error messages which can be accessed from client script can now also be done for specific pages within the designer.

An improved, and deceptively simple, role-based security system has been introduced, as well as support for multiple time zones and enhancements to the incremental application patch and packaging capabilities. Full menu and application-based distribution packages can also be produced. ■

Datatel Launches New Service to Expedite Colleague System Implementations

Datatel, Inc. recently announced the launch of Datatel ExpressWay, a new and unique implementation service that delivers the company’s information management technology in a faster time frame compared to traditional models. The service enables clients to experience greater efficiencies and other benefits from their Datatel Colleague enterprise resource planning (ERP) system more quickly, promoting rapid returns on their investments.

With ExpressWay, the Colleague implementation process is completed in as little as six months, instead of the standard 18 months. Offered by Datatel’s Professional Services team, ExpressWay delivers the majority of the Colleague system implementation steps — setup, building, testing, documentation, and management — through Datatel consultants. This reduces time spent by institutional staff and accelerates a final system delivery.

"The goal of expediting our implementation model is to provide a faster return on investment for our clients," said Liz Murphy, Datatel vice president of professional services. "With a condensed time frame to successfully launch Datatel's software, client institutions will benefit from Colleague sooner."

About Datatel, Inc.

Datatel provides colleges and universities fully-integrated administrative software systems and e-marketing solutions of exceptional value that effectively process transactions, conserve resources, improve constituent services, and provide for sustainability. In conjunction, the company delivers essential consulting and training services including web site and end-user portal development, as well as continuous quality improvement programs through its Center for Institutional Effectiveness. Datatel counts more than 745 institutions as clients throughout North America and is headquartered in Fairfax, VA. As a market leader, Datatel has exclusively focused on meeting all the business needs within higher education for more than 25 years.

For more information, visit http://www.datatel.com. ■

NEWS MAKERS

APT Solutions becomes the UK Distributor for Informer Web Reporting Software

APT Solutions, the primary distributor of IBM's UniVerse and UniData (U2) databases in the United Kingdom, has expanded its partnership with Entrinsik to distribute Informer Web Reporting Software in the UK and Ireland. APT is essentially expanding its already successful VAR relationship with Entrinsik as it has been selling an integrated version of Entrinsik's Informer Web Reporting Software with its own popular enterprise software for the not-for-profit industry.

"We began offering Informer to our customer base a few months ago with excellent customer acceptance," said George Land, APT's Chairman and Business Development Director. "We have determined from our customers' reactions and from our own evaluation that Informer is the superior reporting tool for U2 databases. Now with our expanded U2 distribution role with IBM, Informer became the obvious choice to be our recommendation of a web reporting complement for our U2 customers."

As distributor for IBM in the United Kingdom and Ireland, APT Solutions is uniquely positioned to offer services to the growing U2 industry in the area and to serve as the primary software solutions provider to both existing and new customers. APT is including Informer Web Reporting in its standard offerings suite and now boasts the most comprehensive solutions package available for the UK market.

"The APT partnership is exciting for us as it really opens up the UK market," said Doug Leupen, president of Entrinsik. "APT is IBM's largest and most respected U2 software partner in the UK. Now, with their expanded U2 distribution role and their fantastic reputation, we expect an outstanding win-win relationship."

About Entrinsik

Entrinsik, Inc. provides software and services focused on the IBM U2 family of database products. Entrinsik's Informer Web Reporting System is the industry leader for reporting systems for UniVerse and UniData. Founded in 1984 and in the MultiValue market since, Entrinsik aims to provide leading edge technology and unsurpassed service to their customers. For more information, visit Entrinsik at http://www.entrinsik.com or call 1-888-703-0016.

About APT Solutions

APT is known as the premier provider of software and services to the Not-for-Profit sector. Their Stratum Membership and CRM software is complemented by their Spectrum range of Professional Administration and Fulfillment Solutions. Established in 1988, APT has built a wealth of experience helping Not-for-Profit organizations. Some of the UK and Australia's largest societies, universities, institutions, unions, and charities trust APT to manage their information assets and enhance the services they offer to their users. For more information on APT Solutions visit www.aptsol.com. ■

New Products

Mpower1 Creates BlueFinity Application Services International for Outsourced MultiValue and .NET Application Development

Mpower1 International, an international operation specializing in business creation, turnaround, growth, and development for software companies, is pleased to announce the latest addition to its growing list of "Business Mpowered" companies: BlueFinity Application Services (BAS).

BAS has been established to perform application development for any MultiValue database or .NET customer who does not have the in-house skills or time to develop, migrate, or enhance their systems themselves. Development can either be provided as a one time project or as part of an outsourced development and support contract depending on the needs of the customer.

Headquartered in the UK under the group holding company Mpower Partnership LLP and operating from offices around the world, Mpower1 is fast becoming the investment leader in the MultiValue marketplace. BAS is now the fourth MultiValue company within the Mpower1 Group of Companies joining SC Systems, jBASE International, and BlueFinity International. SC Systems is a provider of Rapid Application Development (RAD) tools; jBASE International is a l eading MultiValue database provider; and BlueFinity International is a supplier of software development tools for the MultiValue database and Microsoft developer communities.

Although BAS will utilize a number of programming

N E W S M A K E R S

Activant Completes Acquisition of Intuit Eclipse Distribution Management Solutions Business

Activant Solutions Inc., a leading provider of vertical business management solutions, recently announced that the company has completed the purchase of the Intuit Eclipse Distribution Management Solutions business from Intuit Inc.. Under the terms of the agreement, Activant acquired the Intuit Eclipse business for approximately $100.5 million in cash, subject to potential post-closing adjustments.

Intuit Eclipse is a leading enterprise software provider to the wholesale distribution segment, servicing more than 600 wholesale distributors in verticals ranging from electrical, plumbing, HVAC, and building materials to industrial, janitorial, and other durable goods supplies. The Eclipse product is a comprehensive enterprise software solution, offering order and inventory management, purchasing, pricing, financial management, business reporting and analyses, and warehouse management.

The acquisition strengthens Activant's position with larger wholesale distribution businesses and is an additional step in its corporate strategy to offer retail and distribution technology solutions that scale from independently owned small businesses to large national consolidators. Activant will sell, support, and enhance the product under the brand name Activant Eclipse™. "Today, we bring together two strong technology providers to better service our customers in the wholesale distribution segment," said Pervez Qureshi, president and CEO of Activant. "The addition of the Eclipse product specifically strengthens Activant's position in the plumbing market, as well as our leadership position in the electrical industry. Both Activant and the Eclipse operations are deeply rooted in these market segments and our combined expertise and strengths will provide our customers and our company new opportunities for growth."

About Activant Solutions

Activant Solutions Inc. ("Activant") is a leading technology provider of vertical business management solutions serving small and medium-sized retail and wholesale distribution businesses. The company serves three primary vertical segments: automotive aftermarket, hardlines and lumber; and wholesale distribution.

Founded in 1972, Activant provides customers with tailored proprietary software, professional services, content, supply chain connectivity, and analytics. More than 30,000 customer locations use an Activant solution to manage their day-to-day operations. Activant has operations in California, Colorado, Connecticut, Illinois, Massachusetts, New Jersey, Pennsylvania, South Carolina, Texas, Utah, Canada, Ireland, and the United Kingdom. For more information, please visit www.activant.com. ■

languages and development tools from within the Mpower1 Group of Companies, the company particularly expects to leverage the use of BlueFinity's mv.NET in the .NET development environment to produce applications.

mv.NET is a comprehensive solution for accessing MultiValue databases from within Microsoft's .NET environment. It enables software designers to combine the power and flexibility of proven MultiValue technology with the feature rich .NET environment. Its seamless integration with Microsoft Visual Studio provides a potent rapid application development environment fine-tuned for the MultiValue developer. mv.NET provides a 100% native .NET interface to all MultiValue database platforms allowing .NET developers to access all aspects of the MultiValue system — both data and program code — from within the .NET application.

"We see a tremendous future in the MultiValue marketplace, particularly with the growing trend to use .NET to integrate other technologies with MultiValue business applications," explains Ian Leeper, director of BAS. "BAS consultants are your best source for insight and knowledge about your MultiValue and .NET implementations."

Over the last five years, Mpower1 have invested in multiple complementary add-on products to enhance MultiValue databases and extend their existing functionality. The company plans to continue their investment and commitment to forward thinking solutions. Leeper continues, "The addition of BAS to the Mpower1 Group of Companies further testifies to our long term commitment to the MultiValue market."

BAS services extend from straight forward programming to comprehensive project management encompassing strategic planning, implementation, and deployment. For more information, email info@basintl.com.

About Mpower1 International

Mpower1 (www.mpower1.com) is an international operation, headquartered in the UK under the group holding company Mpower Partnership LLP and operating from offices around the world, specializing in business creation, turnaround, growth and development "Business Mpowerment". Mpower1 provides an infrastructure that incorporates management, finance, support, sales, and all other aspects of a successful business operation to companies looking to expand into new markets or achieve exponential growth. Mpower1 calls upon a highly experienced team of directors, senior level employees, investment capital, and its global infrastructure to deliver an extensive knowledge of many international markets, the experience to manage the unexpected or unwanted, and the necessary network of contacts around the world to achieve time after time accelerated growth of technology companies. ■

NEWS MAKERS

Australian-based T Data Joins BlueFinity International's Distribution Network

BlueFinity International, a member of the Mpower1 Group of Companies, is pleased to add T Data to its growing network of distributors of the BlueFinity product line. From its offices situated in Sydney and Auckland, T Data will market and sell BlueFinity's mv.NET and Reporting Services Data Connector (RSDC) to businesses throughout Australia, New Zealand, and into Asia.

T Data commenced operations in 1982 as a custom software developer using the MultiValue data model and gradually evolved into a value-added distributor. John Buchanan, director of T Data, explains, "Our long history in the industry has allowed us to build a genuinely solid reputation as a dependable, flexible, efficient, and price-competitive supplier of products we understand and support. We pride ourselves on our in-depth product knowledge, technical support by trained and experienced staff, and fast, efficient delivery. We are pleased to add BlueFinity's mv.NET and RSDC to our portfolio of cutting-edge products."

mv.NET is a comprehensive solution for accessing MultiValue databases from within Microsoft's .NET environment. It enables software designers to combine the power and flexibility of proven MultiValue technology with the feature rich .NET environment. Its seamless integration with Microsoft Visual Studio provides a potent rapid application development environment fine-tuned for the MultiValue developer.

RSDC, when used with mv.NET, supports the full feature set of Microsoft's Reporting Services product and allows it to be used against all of the major MultiValue database platforms with almost no extra work on behalf of the application developer. This allows MultiValue databases to provide sophisticated, real-time report data using a wide variety of delivery mediums (browser, PDF, rich-client, application-embedded), incorporating all of the reporting features expected by today's demanding report consumer.

This distribution agreement is only the latest step in realizing the market potential of BlueFinity technology in the region. "BlueFinity is developing its channel to market in Australia and New Zealand," says Pete Loveless, CEO of BlueFinity International. "Our new partnership with T Data is very important to us as it gives us a significant partner in the right time zone for the key Australia and New Zealand market." Loveless continues, "we believe that the combination of BlueFinity International's revolutionary products with T Data's comprehensive services will ensure the success of the product range in the region."

For more information, visit www.bluefinity.com; for more information about T Data, visit www.tdata.com.au. ■

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UNIVERSE TRIGGERS

Continued from page 13

> “Triggers can be an essential adjunct to any existing system with concerns regarding data integrity and software quality.”

```
SUBROUTINE (T,S,Table,Event,Time,NewId,NewRec,OldId,OldRec,A1,A2,A3,A4,A5)

EQU BOOKTITLES.PUBLISHER TO 13

* check the publisher is consistently entered
Publisher = NewRec<BOOKTITLES.PUBLISHER>
Begin Case
Case Publisher = "Harper Collins"
   NewRec<BOOKTITLES.PUBLISHER> = "HarperCollins"
Case Publisher = "BBC"
   NewRec<BOOKTITLES.PUBLISHER> = "BBC Audiobooks"
End Case

RETURN
```

FIGURE 1 - Enforcing consistency with a Before Trigger

```
CREATE TRIGGER trigger_name
BEFORE|AFTER [ INSERT] [[ OR] UPDATE] [[ OR] DELETE]
ON file_name
FOR EACH ROW
CALLING 'catalog_name'

For example

CREATE TRIGGER UpdateTrig AFTER INSERT OR UPDATE ON ORDERS FOR EACH
ROW CALLING '*OrderUpdateTrig';
```

FIGURE 2

OpenQM

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```
DROP TRIGGER ORDERS ALL
```

FIGURE 3

```
LIST.SICA ORDERS 11:09:09am  19 Sep 2007    Page     1
=========================================
Sica Region for Data File "ORDERS"
  Revision:         4
  Trigger "TrigVerify" is enabled, creator is "brian".
          calls "*VeriftyOrder" for      Row Before Insert Update
Delete
  Trigger "TrigAudit" is enabled, creator is "peter".
          calls "*AuditTrig" for         Row After Insert
```

FIGURE 4

```
SUBROUTINE(T,S,Table,Event,T2,NewId,NewRec,OldId,OldRec,A1,A2,A3,A4,A5)

$INCLUDE std.h

If Not(OpenFile("PARAMETER" ,F.PARAMETER)) Then
   RETURN
End

Read Triggers From F.PARAMETER, Table:"*":Event Else
  RETURN
End

NoTriggers = DCount(Triggers,@FM)
For TrigNo = 1 To NoTriggers
   Trigger = Triggers<TrigNo>
   Call @Trigger(T,S,Table,Event,T2,NewId,NewRec,OldId,OldRec,A1,A2,A3,A4,A5)
Next

RETURN
```

FIGURE 5 - Simple Master Trigger

records make it easy to check for changes that need to be logged or, in the case of additional validation, to put back the previous value while raising some form of exception (fig. 1).The full list of parameters can be found in the online help for SQL CREATE TRIGGER.

A trigger subroutine must be globally cataloged.This makes sense when you recall that a file may be updated from anywhere, and so UniVerse must be able to locate the code regardless of the account from which the update has been made.

Once the trigger has been written and tested in isolation, it must be attached to the file using the CREATE TRIGGER command, which follows a convoluted regular SQL syntax (fig. 2).

The trigger is given a name, allowing a trigger to be removed from a file by issuing a DROP TRIGGER command (fig. 3).

Triggers and the SICA

Once a trigger has been attached to a file, the details of that trigger are stored in a special section of the file called the SICA (Security and Integrity Constraints Area).The SICA is automatically created for SQL tables, but is initially missing from regular database files. Once the first trigger is attached to a regular database file, a new block is added to hold the SICA and a pointer to the location of that block is written to the file header.

Triggers are listed as part of the SICA information, using the LIST.SICA command (fig. 4). Because the trigger information is held in this way, this restricts the use of triggers to those file types that include a physical file header. Triggers cannot, for example, be attached to directory files. For distributed files, they should be attached to each part file.

Continues on page 28

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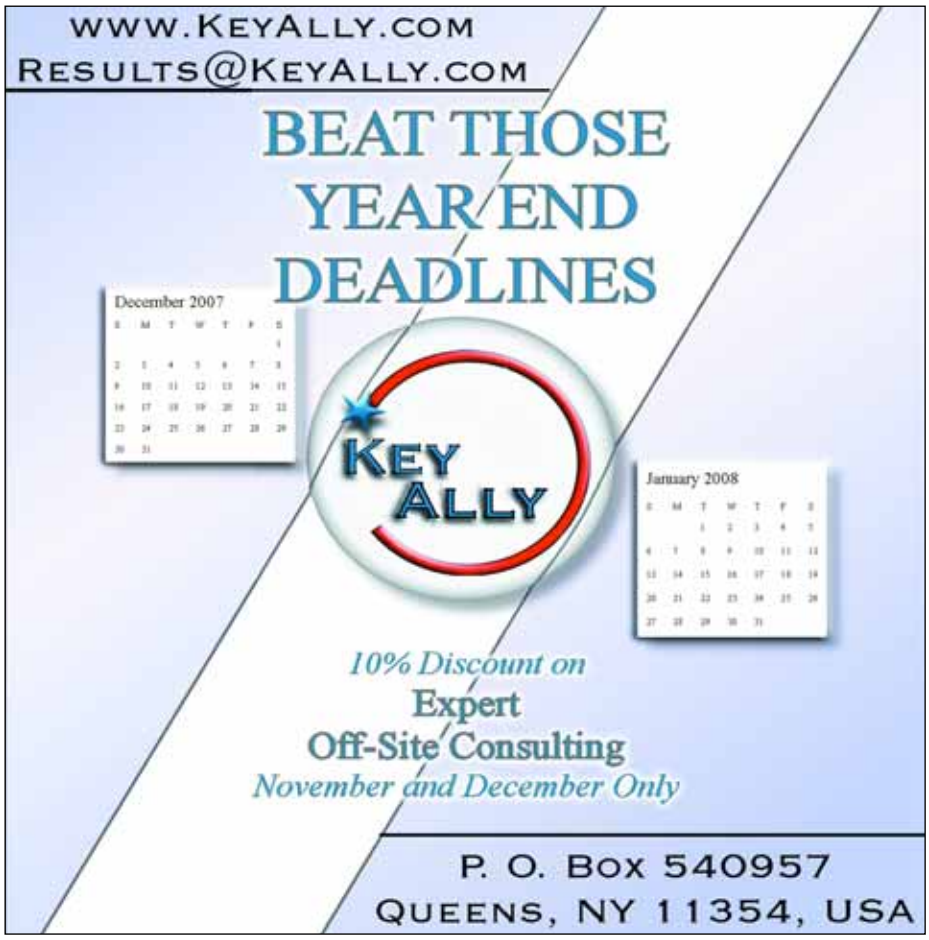

UNIVERSE TRIGGERS

Continued from page 27

Introducing a SICA also adds a second complication — you cannot copy a file that includes a SICA onto another platform. The file conversion utility (format.conv or fnuxi) refuses to process any file that includes a SICA. If you want to take a copy of a file you will need to zero the pointer to the SICA in the file header before you can process it, even if you remember to drop the triggers before taking the copy.

Coding Restrictions

Because any trigger might possibly be called from an SQL statement, the trigger must adhere to the rules that ensure adequate isolation and transactional integrity. In practice, this means that all updates must be protected by using a record lock – even for a new key – and that certain commands are off-limits during the time the trigger is executing. These are primarily commands whose effects cannot be rolled back if the transaction is not committed: commands that restructure the database (for example, CNAME); statements that perform wide scale changes (for example, CLEARFILE); statements that update sequential files; and commands whose effects are felt outside the UniVerse database (for example, SH or DOS).

Master and Sub Triggers

Only a single trigger can be attached to an event. Moreover, if the trigger subroutine changes, the trigger must be dropped and then recreated.This can be a problem, especially if a system is running 24x7.

A simple solution is to use a master trigger and a series of sub-triggers. A master trigger is attached to a file and reads a list of subroutines that it can call in sequence as a set of sub-triggers (fig. 5). By keeping the list in a parameter file, new routines can be added to or substituted into the list. If an existing subroutine is altered, renaming that routine — for example, by appending a version

number — ensures that the latest version is always picked up.

Performance

Using database triggers imposes performance penalties. Triggers should be kept as light as possible — especially if secondary updates can be legitimately deferred. Administrators should also note that triggers can impact more heavily upon the lock table.

For example, a developer may wish to add a readable audit history of the changes made to a transaction file or may wish to add ease of use facilities, such as full text indexing. Both of these might involve intensive parsing and neither needs to deliver immediate results. In such circumstances, the trigger should simply write the record image — and before-image, if required — to a work file and allow one or more phantoms to process these in due course rather than hold up transactional operations waiting for the parsing to complete.

A similar approach should also be adopted when communicating changes to remote systems (allowing any failure or delay in communications to be addressed safely) or if the communications requires access to commands or facilities that are blocked within the trigger itself.

Debugging with Triggers

Triggers are designed to be hidden.They can be called from any environment including client/server or web-based operations, and so a trigger cannot be allowed to request input. One unfortunate side effect of this is that a trigger cannot be used with the interactive debugger, RAID.This extends not only to the trigger itself, but to any program that writes to a file that uses a trigger.

Understanding your Application

The biggest remaining challenge when adding triggers is the extent to which they can obscure the picture of the system. UniVerse developers are not yet accustomed to looking for triggers when piecing together a mental model of an application or of following through code in search of an update. And, it is not immediately apparent to an observer when a file may have triggers present.

The only real solution to this is to invest in good and up-to-date documentation, whether written by hand or generated using automated software auditing tools.

Despite these restrictions, the benefits of using triggers far outweigh the disadvantages. The potential for enhancing mature applications in particular should be clear for all to see. **is**

BRIAN LEACH is an independent consultant working in the UK. He is the current President of the IBM International U2 User Group. You can find out more at http://www.brianleach.co.uk.

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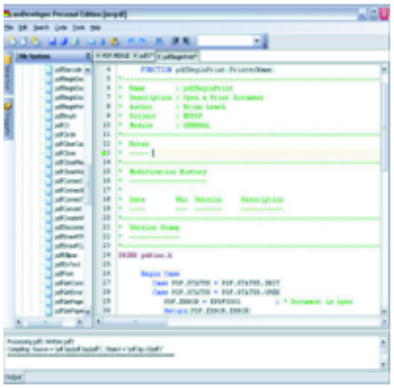

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How Laser Forms Technology Morphed into Document Management

BY MIGUEL J. ESCOBAR
SYNERGETIC DATA SYSTEMS, INC.

This is the second article in a series discussing document management solutions, which are deployed to archive and manage electronic documents. The first article, which appeared in the last issue of Spectrum, looked at the "why" question.

In this article, we look at the technological advances that laser forms software tools have taken over the last decade and the surrounding environment that created or influenced some of the milestones. By understanding some of the underlying technology in these packages, we think you'll see there's a good case for putting a laser forms based document archiving and management solution on your radar screen.

1994

Laser

The laser printer revolution is underway. The move away from impact printing for many applications becomes prevalent and predominant due to the falling price curve on laser technology. UnForm 1.0 is released.

Unix Pipe

"One of the most important commands in Unix," per various industry gurus.

The Unix operating system pipe construct, represented with the | character, is the root-level technology at work in at least several popular laser forms products, including UnForm.

The pipe command is used to connect the output from one command and send it as input to another command. A Unix pipe allows output redirection — the intercepting of a text stream to a printer from a software application. Once intercepted, the text stream can be embedded with attributes for fonting, bolding, box drawing, shading, etc. The Unix pipe construct then redirects the resulting enhanced output to the spooler or device at the other end of the pipeline. What used to be the preprinted elements of a form background can now be added to the text stream dynamically and output to laser printers on plain paper.

Windows Post-Printing

In the Windows world, where the Unix pipe construct is not available, this meant that other technology was required to drive the same model. For applications, this meant that the underlying programming language an application was written in sometimes controlled the feasibility of interfacing with particular laser form software products. SDSI's laser forms tool worked well in Windows application programming environments where post-printing executables were made available to the printer configuration mechanism of an application.

Rule Files

SDSI adopts a rule file model for the command repository which establishes the attributes and processing rules to be applied to text streams. The model makes a command set available to define form enhancements available inside of a simple text tile delineated by rule sets which apply to the specific types of form or report documents coming through the print stream. Text analysis applied as a result of a DETECT command at the top of each rule set provide for a very simple to implement single or multi-line command set correlation of text documents with their corresponding enhancing and processing commands. This rule file/rule set model is very much like an .ini file construct in its labeled divisions and accessibility via simple text editors.

The above three technologies — the Unix pipe command, Windows post-printing executable, and the rule file model — form the base foundation for a system which integrates two software applications. The first is the driving application, which is programmed to produce forms and reports. The second is a software tool that seamlessly attaches itself to the application's output text streams and then morphs them into a graphically-enhanced document or presentation-quality report for printing on a laser device.

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1996

Fax

Electronic faxing software becomes widely embraced as an alternative to postal mail delivery for transaction-oriented trade documents. The APIs of most popular faxing packages provide a command line interface for passing a graphics file to a faxing server — a soft-

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“What did smart forms capability give you? More control. Control over what you do to forms and what you do with forms.”

LASER FORMS TECHNOLOGY

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ware application that provides transparent access to electronic modems.

Because of the Unix pipe — and because faxing system clients have a command line API and many faxing server support the laser file format PCL — laser forms products can easily make the transition to offer access to electronic faxing software.

Smart Forms

Forms processing is evolving to become smarter. SDSI's concept of smart forms, incorporates a whole programming language which can be accessed inside of delineated blocks of code with predetermined processing sequences within a form rule set within the easy to edit and maintain rule file.

What did smart forms capability give you? More control. Control over what you do to forms and what you do with forms. The do to forms could include things like looping through document text lines while matching patterns, applying conditional logic so that you can mark form text elements lines for special treatment. The do with forms might include things like sending a copy of the document to a different device or destination — again based on conditional logic that has access to specific text contained in the text stream — or detecting inside of a larger print job when a recipient entity ID changes which is going to affect where the document is delivered to.

Together But Separate, And Horizontal

Some disparate but related things began to evolve both separately and together inside of a single software tool — the software that prepares and formats documents prior to delivery and the technology that actually delivers documents.

This same analogy can apply to an important and parallel aspect of integrating software tools. Both the preparing of documents and the delivering of documents are not programmed into the driving application. They are connected to it via an independent intermediary software tool — a horizontal application that supports and, in a sense, undergirds the vertical application it is interfaced with.

This is the beginning of a client/server model. In the case of laser forms, the driving application is insulated from the complexity of the preparing and delivering of the documents. It is free to evolve on its own track, concentrating on other areas of expertise and other disciplines.

1999

Internet, E-mail, And PDF

The internet revolution is in full swing. Service providers and e-mail are now ubiquitous. Adobe's PDF standard for document creation and its policy of making the reader component a free download drives the trend toward what is frequently a lower cost alternative to faxing trade documents.

SDSI and other laser forms providers respond. SDSI adds a driver option to its API for the creation of PDF files. This allows the enhancement rule file to create either a PCL file for laser printing or faxing or a PDF file for e-mailing and/or retention in a file system. E-mail commands and functions are added to the rule file syntax to interface with an electronic mail server using the PDF format for document files to be attached to e-mails. PDF represents what will become a universal format making it a more desirable format for retention on the host or network file system, providing a simple form of archiving.

Throughout the late 1990s and into Y2K and beyond, smart forms capabilities also continue to evolve with new features and enhancements.This is happening throughout the forms generation software product niche.

Windows Virtual Port Monitors

On the Windows technology side, the development of products known as virtual port monitors accelerates the penetration of some laser forms products into the Windows technology marketplace.A virtual port monitor can be configured as a printer in Windows so that output can be captured and processed before sending it back to a physical or electronic device.This fits the model of the original integration methodology used with most forms packages.

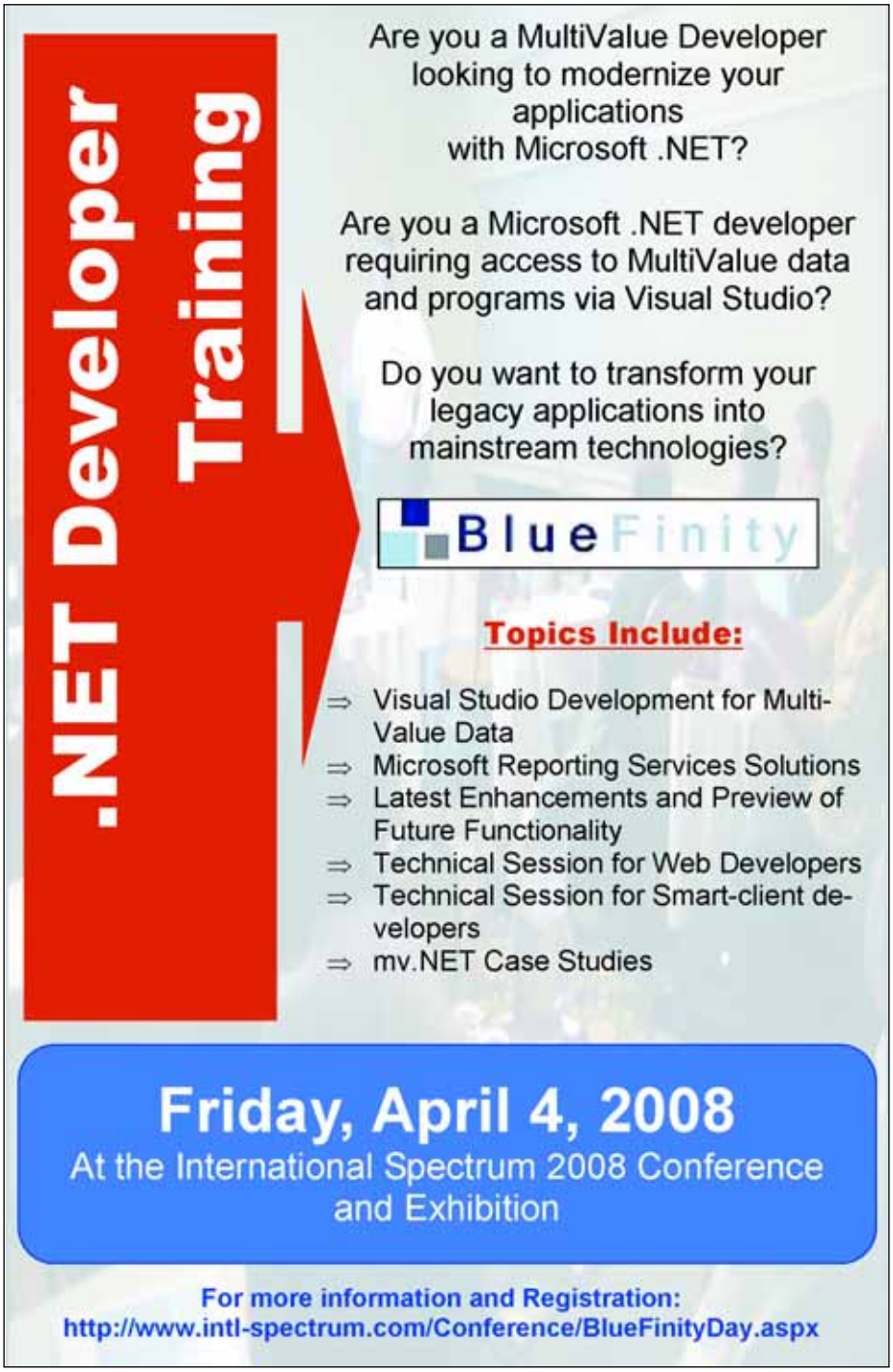
2003

Archiving

Outside of the laser forms package marketplace, file and document archiving systems are in the process of flowing downstream into the small and medium-sized business market segment. Prior to this, in many cases, the prohibitive cost — and sometimes complexity — of imaging solutions and other integrated software solutions positioned true document management systems outside of the realm of feasibility for non-enterprise level users.

During this time, SDSI releases a new product called sdStor, a text document archiving tool with technology similar to the laser forms technology model. Market feedback on this approach eventually leads to a more integrated approach — one which uses SDSI's native enhancement technology and archives both text and PDF copies of documents within the same processing cycle as laser printing and other document delivery functions.

A number of users express a strong preference for products that provided the next logical step — the ability to capture, store, and access related graphic images of signature copies of the parent trade document.While solutions existed to accomplish the capturing of the related images, there was not a good way to correlate or index those external images with the text source documents being archived.



2004, 2005

Client/Server

With the trend towards interoperability between Unix, Linux, and Windows operating systems firmly established, client/server architecture is introduced into laser forms products, including SDSI's UnForm. Smart forms technology also continues to evolve and SDSI introduces the sub-job process to its stable of code-block functions.

The client/server architecture separates the client API from underlying forms

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LASER FORMS TECHNOLOGY

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generation server processing. This allows server to reside on one CPU and clients to reside on the same or other workstations in a local or wide area network environment.

Sub-Job Processing

Evolving smart forms concepts lead to the development of what is known as sub-job processing. A print job can spawn any number of new forms jobs. This new functionality is most frequently used to process individual documents separately for electronic delivery from inside of a large multi-document print run job stream.

Sub-jobs — implemented in coding as a small set of tight, parameterized internal functions — drastically reduced the amount of code necessary for more advanced document delivery applications and more complex forms processing requirements. This enabled integrators of all sizes to leverage their investment in technology expertise for the benefit of their client base or organization.

TCP/IP Printing

TCP/IP printing to virtual printer ports by this time is built directly into some forms packages, making the integrator's implementation process more efficient.

2006, 2007

After the above review of direct and parallel technology developments and their influence on the design of laser forms and electronic delivery software, we reach the point where the direction that other forms packages on the market might take is unknown to us. SDSI's direction with UnForm, however, is very clear.

Document Management

In late August 2006, SDSI released UnForm 7.0, with its new Document Archiving and Management and Image Manager components. These two new components move UnForm into the markets as full document management solution.

What we call a full document management solution is one that captures, stores, retrieves, manages, and delivers documents and document images. In addition to the new components, many other new features were added, including:

• support for Postscript to drive newer and more economically priced laser printers,

• a Windows support server for additional OS interoperability which includes MS-FAX, ODBC, and dynamic image conversion support, and

• almost 50 new rule-file code-block functions.

The evolved laser and electronic delivery and the new document management components come together as an integrated and integrate-able software tool, which:

• Allows customizable and configurable laser, e-mail, and FAX output;

• Stores enhanced PDF and text copies of forms through direct integration with applications;

• Stores documents in a robust, scalable, encrypted, and secure repository with rich indexing features;

• Allows enhanced drill-down and search retrieval capabilities accessible to any workstation on a network inside a universal browser;

• Captures external images from scanners or file systems with barcode and OCR recognition features;

• Automates the process of document property metadata tagging of external images, followed by automated upload to archive libraries; and

• Matches both internally generated documents and external images with parent or related documents in the archive.

A Missing Link?

That's the evolution. But there's a small, but significant aspect not yet mentioned. It relates directly to the logic of why it makes so much sense for a laser forms package to morph itself into this new arena. There's one important relationship missing from the above trek through the morphing process.

It is what the laser form software tool acts on that is the key to understanding the important synergies that can be gained by approaching document management the way UnForm does.

Every byte of textual data in the print stream which is intercepted for the purpose of enhancing, printing, delivering, and now archiving is available to the archiving process of the server for establishing document property metadata.

Document property metadata is the indexes, categories, titles, dates, keywords, and links associated with the document in the archive.This is the data you need to have associated with every document so that you can make it easy for the user or the application to retrieve it or find it; to make it easy to match up a related internal or external document with it; or even to aid in the design of a work flow system where documents move through different status categories.

Every byte of textual data in the print stream is available. Furthermore, this also includes external data — through ODBC/SQL select queries or indexed lookups from CSV files — when the data is not in the print stream, as long as the key to the data is.

This is what distinguishes UnForm from other document management solutions. It can be placed at the heart of where the raw data is originally generated by the application, when it is being generated the first time around. In the process, you end up nailing various birds with one stone.

That's the inherent logic in choosing a document management solution that is evolved from a laser forms package.

We invite you to visit SDSI'S website, www.synergetic-data.com, for more information. And be sure to check out the News Pages section. The second quarter 2007 lead article on document management has a good overview and links to multiple SDSI resources. **is**

Feedback

What came first, the letters or the letters-to-the-editor department?

We are making another change to International Spectrum Magazine—a Feedback Department, sometimes known as Letters to the Editor.

We want to hear your comments, your reactions, your agreement or disagreement with what you see. Also, do not hesitate to let us know about things happening in the MultiValue Community we may not have heard about yet.

Please send your comments by e-mail to: **editor@intl-spectrum.com**

Tricks for Gaining Java EXPERIENCE

BY JIM PAUL

Part of the challenge of learning a new technology is getting real life experience with it – moving from tutorials to productive work. With Java, I encourage you to not to skip the book learning. Jumping ahead too quickly can leave you with holes in your knowledge that will soon stymie you. On the other hand, you'll want to start programming before you start down the rabbit hole of frameworks, custom exceptions, subscribers, factories, visitors, and concurrency. There is a reaction to the complexity of many Java solutions. You are not alone if you prefer simple solutions as opposed to technically correct solutions. I've sought out examples for this article that use POJOS (Plain Old Java Objects).

If you have any Java programming going on in your company, see if you can get involved with it. Nothing is better than face time with other skilled programmers working on a real project. Some packaged applications are written in Java or have interfaces for customization with Java; that would be a good starting place too.

What if these are not viable options for you? Where can you go? In this article, I'll brainstorm some ideas with the hope that you'll be able to make some connections with your particular business situation. I'm hoping you find a gem that will help you move forward. Throughout I mention The Links (fig. 1), which list sample programs from many kind souls on various web sites that you can copy and modify.

Look around your company for projects that have requirements where MultiValue is weak and Java is strong, particularly networking. Look for something that ties into your MultiValue database but is not heavy on transaction entry. Find something that is simple, well defined, and limited in scope. Putting a GUI interface on an existing application would be too big of a project. However, adding a browser interface to a single area, possibly in a display-only way, would be great. If you do go this route, the browser is popular and easier to get started with than, say, Swing (the GUI library that comes with Java).

You're going to need a way to read and write MultiValue data from your Java program. There are many ways to do this. I can think of five:

- Direct Access via JDBC (Java Database Connectivity);
- HTTP access via a web server that has access to the MultiValue database;
- Calling/executing a bridge program directly from Java;
- Connecting to the MultiValue host via telnet like a terminal; and
- Passing messages through the file system.

This last technique is crude but can work. A request is written to a folder in the local file system where it is picked up by a MultiValue process monitoring that folder. I have seen a Perl Script do this too; the owner claims it works quite well.

JDBC is the most mainstream. You will find tons of examples showing how to use it. On the other hand, it is inordinately complex compared to the READ and WRITE statements we are used to in MultiValue Basic. See The Links (fig. 1) for a way to greatly simplify JDBC.

For some of these suggestions, you will need a way of executing a Java program from within a MultiValue Basic program. For the quick and dirty, an EXECUTE statement will probably work, but will be slow. Java programs can take input from the command line. Also, starting a Java service that monitors a folder for messages could work.

Good Starter Web Projects

Here are some ideas to get you thinking about simple functions that might be useful in your organization:

- Customers check order or job status;
- Prospects request quotes;
- Doctors check their appointment schedules;
- Employees check their hours and pay;
- Interested parties check medical treatment plans of patients;
- Employees check their work queues;
- Trading partners request transaction reports;
- Vendors check if a bill was paid and check cashed;
- Anyone checking inventory level, quality surveys, and questionnaires.

A user reviewing a student's file must go to four different green screens to get a complete picture. I'm proposing putting all the data on a single web page with the student's picture.

I have a customer that makes loans to students. A user reviewing a student's file must go to four different green screens to get a complete picture. I'm proposing putting all the data on a single web page with the student's picture. It will take no input, just view.

Continues on page 38

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The Back-To-Basics courses offer fundamental MultiValue knowledge comprising the backbone of the environment. This is a great place to start if you are new to MultiValue or have been working in MultiValue for a while but need a refresher of the fundamentals.

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FIGURE 1 - The Links

Send and pickup e-mail with POJOs
http://www.rgagnon.com/Javadetails/Java-0081.html

How to pickup e-mail with Javamail
http://www.vipan.com/htdocs/Javamail.html

Your own simple SOAP client, step-by-step
http://www.ibm.com/developerworks/xml/library/x-soapcl/

A list of mostly free, fun and useful web services
http://www.xmethods.com/ve2/index.po

Java product converts HTML to PDF
http://www.htmldoc.org/index.php

A free Java product to work with PDFs
http://www.lowagie.com/iText/

Simple use of runtime.exec to shut down your computer
http://www.moneycantalk.com/forum/index.php?topic=1616.msg25766

Sample code to parse XML to name-value pairs
http://www.developerfusion.co.uk/show/2064/

A collection of simple useful Java code, including:
- Get file via HTTP or FTP
- Manipulate JPEG files with command line interface
- Text file search with Swing interface
- Access system clipboard
- HTTPEcho Program
- Using wildcard expressions in Java
- Undocumented Base64 Java Classes — used to decode images and other binaries
- Multi-Part MIME Message Parser — read e-mails

http://www.nsftools.com/tips/JavaTips.htm#getinternetfile

Simplify JDBC/SQL database access. See the section on XYDB.
http://www.codeproject.com/useritems/HowToSmallUseful.asp?df=100&forumid=212214&exp=0&select=1218994#xx1218994xx

TRICKS FOR GAINING JAVA EXPERIENCE

Continued from page 37

Internal web sites with some dynamic content are ideal sandbox projects. Think along these lines — business project documentation, personnel policies, booking the meeting room, checking out equipment, punching the time clock, a project calendar, or input for a quality control project.

If you choose any of the above, first learn about Java Servlets and run them on a Java application server like JBoss or GlassFish. Then decide whether you want to go with a framework like Struts or a template system like JavaServer Pages. You will find lots of material on the web to guide you whichever direction you go. Start your research with Wikipedia.

Processing E-mail

JavaMail is a set of classes for dealing with every aspect of e-mail. You can check a POP server for new e-mails, break out the attachments, and send responses. Some of the previous suggestions could be implemented with e-mail. E-mail may work better for people with cell phones or where the response takes some time to formulate. E-mail is a push technology; the user gets the e-mail without taking any action. E-mail also gives the user their own copy of the data. E-mail is simpler than dealing with a web server. You might have users send you e-mails with keywords on the subject line that trigger actions on your computer system. See The Links (fig. 1) for sample code to shut down a server at a particular time. Trigger processing with e-mail works better for very simple tasks or for functions used internally.

In The Links (fig. 1), there are two useful programs for handling e-mail in Java that you can modify to your needs. One uses JavaMail and the other is even simpler.

Batch Processes

It is easy to zip, encrypt, and transfer files via FTP in Java. Possibly these are

things you do as part of an Electronic Data Interchange (EDI) with a business partner. It is also pretty easy to walk through an XML document. Maybe it can be parsed into simple name-value pairs to simplify programming on the MultiValue side? See The Links (fig. 1) for a program you can modify that does just that.

You can also manipulate images and create PDF documents from HTML text with the right tools. See The Links (fig. 1) for PDF tools and a simple program to pick up files via FTP or HTTP.

I have a client where users often go to a government web site to look up some data on particular medical diagnoses. I wrote a program that hits the site with all diagnosis codes they might want and scrapes the results from the incoming HTML. More and more, data like this is available from a web service via SOAP, which presents another reason to write a Java program. See The Links (fig. 1) for a sample Java proxy server you can modify to help you diagnosis problems when you are not sure if your SOAP requests look like they should.

Using Java from inside your MultiValue application

Many of the tasks already described can be driven from the MultiValue side, if you have a way of starting and/or messaging a Java application. Command your Java program to do difficult tasks — make PDFs, send via FTP, send e-mails and faxes, shrink a bunch of incoming JPEG images, Zip files, parse or encrypt data, and talk to other applications.

Many applications — particularly those hosted on the web — can be integrated with your own applications using web services or, more directly, with Java APIs. Some examples are Salesforce.com, various Google applications, and Lotus Notes.

Maybe you want to use a web service in an order entry screen to calculate mileage and freight? Maybe you want to verify that someone gave you a good phone number? See The Links (fig. 1) for a simple SOAP client that any programmer can understand and for some public web services you can tie into.

There are also Java products that let you read and write an Excel spreadsheet directly, such as Jxcell. While many Excel tasks are best done by using Excel to produce a template spreadsheet and using data load, there may be some higher volume or very specific needs that could be done by programmatic manipulation of the Excel file.

If you are getting into JavaScript and Ajax

Consider the Google Web Toolkit (GWT). It cross compiles Java code into JavaScript that will run on the common browsers. It also integrates well with existing Ajax libraries. Ajax sites failing on large segments of the browser population is a serious problem. (For example, yahoo.groups.com fails on my Opera browser and Linkedin.com has failed on both Opera and Explorer for me.)

Google gave a presentation at the Cincinnati Java Users Group in September 2007 on GWT. The project is very active, well organized, and quickly maturing. Small, but very useful, parts of the Java class library have been implemented so they will cross compile. You use your Java editor/debugger. You have the absolute standardization and backward compatibility of Java. You use and refine your knowledge of the Java language. Because of the optimization of the compiler and the way images are bundled in one HTTP transfer, your page will usually load and run more quickly. I particularly like the idea of using the same language for programming the browser as I use on the server.

Selling Your Boss on Java

There is a big advantage in selling something that can be demonstrated. Consider ironing out the hard parts on your own time or maybe in some grey skunk works time you can eke out. Doing some Java might bring some prestige to the department and make it easier to recruit new hires. If the boss programs, that helps. If you can get a process to work more reliably or salvage something that is failing by replacing it with a Java portion, your next sell will be much easier. With any new endeavor, there is risk.To move forward with this exciting technology, someone needs to be willing to take it.

If you would like me to e-mail you the links in this article plus additional useful links, send me an e-mail at jimpaul@fuse.net. **is**

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Principle in Northtec Consulting Group, which he formed in 1985, Jim Paul speaks at dozens of conferences and has written articles for several different publications, including Computer World. A Sun certified Java programmer with a BA from Indiana University of Pennsylvania, he has written complete software applications for finance companies, manufacturers, and health care providers. He can be contacted at jimpaul@fuse.net.

BY MELVIN SORIANO

Casting Wide and Deep

One of the most interesting developments on the Net, to me, has been the mighty explosion of blogs, podcasts, and online videos. The three amigos of Internet personal communication have been altering not just the social landscape of teens, tweens, and "will I look hip wearing these low-rise jeans" types. These technologies have affected politics and world events as well. One just needs to see what happened this Fall in Myanmar and with the resigned-but-not-really-resigned U.S. Senator to recognize the effects of individualized communication.

But when it comes to business uses of these technologies, I think most of us are unprepared for the opportunities available. Many tend to think of these technologies as the tools of the slacker – the couch potato who prefers online opinions and entertainment to real-world actions and activities, much less exercise. So, is it possible to make these tools work in a traditional business environment, rather than in journalistic diaries and op-ed pieces?

Irony aside, for I do think it is odd that we traditional print columnists usually lack these online offerings, there's no doubt that some opportunities are available. I think these may be more evident if I describe some of the reasons that I go reading blogs, listening to podcasts, and trawl through videos.

First and foremost, I still prefer printed opinions. I still like to read actual books and magazines, go to live performances, and watch my Netflix videos on DVD. In short, I'm a traditional fogey. That doesn't mean I don't use these technologies, however. Instead, I use them whenever it seems appropriate. Perhaps I am one of the millions who are aware of, and may even dabble in, podcasts, but don't actually listen to them.

I think that I tend to read blogs more than listen to podcasts because I might be searching for some random bit of information. Perhaps, in an effort to discover and say "Eureka," I prefer to skim the blogs like I used to skim the encyclopedia. Read a few items here, a few items there, and decide if it was worth reading the remainder of the article.

Podcasts and videos, though, limit that capability. You cannot skim. The information consumer has to commit more time before deciding whether to continue or to move on. I definitely know that when searching for a relevant podcast or video, I usually have to spend more time than I originally intended. It's definitely a chore and a commitment to do the needed research to find the appropriate media feeds. Text feeds, on the other hand, are an obvious benefit to those who read even at a moderate speed.

I do find podcasts very helpful when they are used in conjunction with an article, a graphic, or a slide show. Somehow, the combination of commentary with the visual works. I can skim the visual item and decide if I want to hear the associated commentary. Usually, the combo works far better than one or the other in isolation.

We've been able to use this technique effectively with some of our higher education customers. We at Eagle Rock make graphics and slide shows available to some customers for introductory training and system administration information, and we use podcasts and videos to supplement the

data presented so statically. In our bumbling experiments in this media, the consumers/students/participants seem to benefit from the multi-pronged approach.

I find that informational podcasts become boring or appear irrelevant when they take more than five to ten minutes. It's as though I'm looking for the insight and nuance, rather than a fully fleshed-out audio dissertation. I tend to prefer short videos as well. Longer videos simply encourage me to fast forward, hoping to find the nugget.

Perhaps it's a question of tight editing. When one writes a magazine article or a book, there is typically an editor to reign in our maniacal need to expound, excoriate, and, well, semantically excrete. We like the sounds of our fingers typing. If the Spectrum editor thinks I go on too far, then words get trimmed, and sometimes even appropriately. Most podcasts and videos lack such discipline, needing more editorial oversight and foresight. So, we fast forward.

In our bumbling experiments in this media, the consumers/students/participants seem to benefit from the multi-pronged approach.

Some marketing research suggests that podcast growth will come from single segment users. I somewhat agree. Certainly when digesting information as I do, I prefer short topical discussions. But I do use the technology for non-business purposes as well. I do enjoy listening to longer podcasts when they belong to several genres: humor, sports, religion, and news.

Hey, that's starting to sound like AM radio and NPR. Well, to be honest, that is in fact what will encourage me to keep my Attention Deficit under control long enough to stay tuned. So, unless your business is in those areas, well, perhaps longer podcasts don't make as much sense.

I do know that hundreds of thousands also listen to podcasts as an alternative to traditional radio. It's like when cable channels started appearing left and right. An entire cable channel for Comedy, for News, and for Music Videos? Impossible! Well, podcasting and videos have made it easy to put on longer shows geared towards soccer moms and transvestites, and for those needing help in cooking or in writing sermons. The diversity is astonishing, and the "stickiness" or commitment is comparable to typical broadcast fare.

I think that some people like broadcast podcasts because it's easy to be mobile. It's the books-on-tape phenom, online and on a mobile ddevices, like the iPod. We can listen and look at the road at the same time.

Now, let's not get ahead of ourselves in this regard. Although the statistic that somewhere between two and five million people download podcasts monthly may seem impressive, this pales in comparison to most broadcasting viewership. Sure, it's more extensive than those watching public access television, but it won't beat *The Tonight Show*. Heck, more people watch televised bowling than listen to podcasts, so let's get real.

But, if you're focused – and remember that most people are either listening to podcasts as a replacement for radio or as an audio how-to – then you may be able to reach a target audience far more specifically and effectively than using traditional methods. The fact that someone can subscribe to podcasts, download them automatically, and then listen to them at leisure makes them effective for marketing.

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Business Tech:

Capital Projects

Large scale changes, like adding a new facility or introducing a new line of business, require a special kind of planning. This is referred to as a capital project. Most businesses have no software to manage this sort of planning activity. Many ERP package fall short in this important area. The reason is simple — the term is too broad.

BY CHARLES BAROUCH

When I develop a new software product, it really needs to be treated as a capital project. Launching a second office is a capital project. Redesigning and updating the assembly line is a capital project. These are vastly diverse processes. All of which require special skills from different skill sets. And, they all would have to fit into the same software if you try to service the full definition.

So, our challenge as programmers — and management's challenge in running a capital project — is to address the right subset of the definition. In order to help make that clearer, here are some specific examples which will underscore the similarities and differences between some of the key types of capital projects.

Physical Construction

Let's go to work for Expando Corp. They have a five year plan which calls for doubling their office space. Since Expando sits on three acres, an hour outside of the city proper, they elect to build a second building on their property. With that in mind, you might think that the project begins with construction — but it doesn't. Working backwards from your goal, like we do in all good planning, we need to define everything needed to result in a viable office building.

At the end, we need to think about maintenance, heating and cooling, wiring, and security. All of those things require specific types of spaces, which need to be incorporated into the building's design. But design requires us to have some sense of how we want to use the space. A building full of scientists is likely to have different requirements than a building full of salespeople. Knowing who will be spending time in our building requires us to think about the level mix. How many corner offices vs. cubicles? How many floors do we need to produce enough corners? How many of those spaces will be people transferred from our existing location and how many are likely to be new?

Once we know who will be living there, we can figure out what permits the city will require. Once again, manufacturing and science are likely to require more permits than business offices.

So, looking forward, we need to develop a plan to provide to the architect. It will tell him or her how we intend to

divvy up the space and what requirements we'll have for waste disposal, security desks, power, environmentals, etc. With his drawings in hand, we can do internal approvals, arrange permits, modify plans based on safety and legal issues, and then we can start managing it as a construction project.

Oh, and a hiring project. We'll need janitors, guards, and other support staff before we can move the first primary employee into place. Oh, and a services integration project, to get the building on the electrical grid, fit it with gas (if necessary), and it would be nice if the plumbing connected to the sewers. Oh, and an IT project to get networking in place and set up software security and servers. Oh and... you get the idea.

Building a building is really multiple capital projects, involving several different departments. If you focus on one at a time, you'll end up with a bad design. It has to all coordinate together sensibly.

What makes a capital project different is that coordination of the various parts is every bit as crucial as the parts themselves.

As daunting as this sort of project management software might be, think of having to write something flexible enough to handle any capital project. Think about that as we look at a softer example.

Software Initiative

Here at Safe Co, we make security software for the Zetta hardware platforms. Zetta is filing for Chapter 11 (reorganization bankruptcy) and is rumored to be heading for Chapter 7 (the more final kind of bankruptcy). So, our leadership has elected to start a capital project to migrate our software to other platforms. This is a capital project because it is effectively a new product initiative.

Working backwards, we assume that the look and feel of the new product will be based on the look and feel of the existing line; so, we know a lot about the end user's experience before

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Capital Projects

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we write any new code. Working back from the user experience, we find our way to how the software will be sold. That leads us to marketing requirements and needs analysis, i.e., what features must it have for it to be marketable and saleable to the channel — which reminds us that in the new hardware lines, we might not have a channel. So, potential customers need to be brought in for focus groups. Then, perhaps we can deal with the part of the project where we do — what was the little step we missed? Right, developing the new software, testing it, and making it all work smoothly.

Now, just as we need infrastructure staff in a building, we need support staff for sales and help desk. In fact, once we get a level up from the specifics, we can see a lot of broad parallels between this capital project and the building project over at Expando.

They both need to start forward from a good specification. The plan we provided the architect is, broadly, like the project spec we need for the software development team. They both need to express the needs of the end users, the support staff, and the overall initiative. They both continue through acceptance — one through management and city planning, the other through QA. They both spawn sub-projects for hiring, secondary services, and infrastructure.

This is why these sorts of things are lumped together as capital projects. They do share many surface similarities. The devil is in the details and, at the detail level, the differences are staggering.

Workflow

At Sluggard and Sluggard, our law firm does things the old-fashioned way. Recognizing that not everything old is good and not everything new is bad, we are mounting a new capital project to redesign our entire workflow. We need to double our productivity without exceeding a ten percent growth in staff. This is a capital project because it will require a huge outlay of capital and fundamentally redesigns the interior business.

So, backwards again. Since our goals are relative to today — staffing and workload are both expressed as increases to present values — we need to start by defining where we are. We need a point of reference. So, to end up with a proof of success, we need to start with an audit of the present state of the company. That leads us to an analysis of where inefficiencies lie, which should

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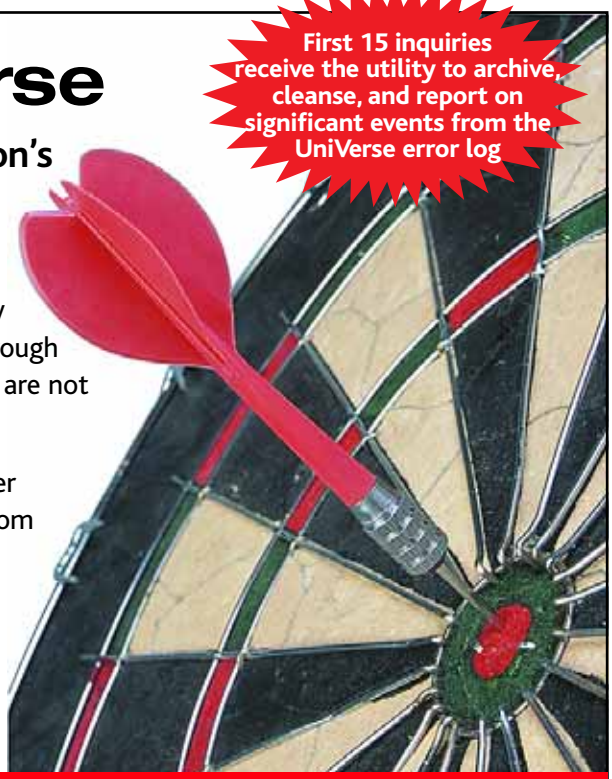

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lead us to hiring, firing, and training issues. It should also lead us to architectural issues, where we might put related departments closer or change the furnishings to accommodate better interaction. It should lead us to IT issues for collaboration and sharing. It should lead us to purchasing issues, for newer equipment, copiers, and other linchpin machines. It could lead us to a million sub-projects.

The Big Picture

Building a building requires buying a lot of cement, glass, and steel. New workflow will necessitate temps, new employees, outside contractors, and other staffing changes. What makes a capital project different is that coordination of the various parts is every bit as crucial as the parts themselves. This is pure form logistics. It requires software that lets us weave a project through the various existing systems. Because, ideally, a capital projects software module will leverage the existing software where it is possible, allowing both the big view and the small view to work together.

The thing is, while upper management needs to see the whole dance, IT needs to know how their bit of the choreography fits into their thousand other deadlines. So, when thinking about this sort of initiative, you have to realize that developing capital projects software **is** a capital project. **is**

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Webonomics

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Here are some tips I'd suggest as you go down this road.

- Throw in ads but keep them very, very short. Got a short pitch in mind? Shorten it some more.
- Use the podcast as a supplement to written or visual documents.
- Keep the content fresh and release frequent articles if you want people to stay tuned.
- Test out effectiveness. Announce an offer or sale through a podcast and see who is responding.
- Dialogue is better than monologue. Do the podcast with a partner.
- Let the inner musician in you come through. Add an opening and closing theme song. Again, keep it short.
- Don't drag it out. Keep it short, say what you had to say, and sign off.

Speaking of which – "Thanks for listening. This is WebWizard Mel signing off." **is**

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Clif Notes

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not just about the database and programming, but also about the application. Get involved with and known in a user group. Become a known name on online discussion lists and forums for your platform.

Hey! You could contact us at editor@intl-spectrum.com, link up with one of our staff to help you with the writing, and get world-wide exposure and name recognition by contributing articles on your favorite technical topic to International Spectrum magazine. (I know. I'm shameless.)

Longevity is part of endurance and so is stress reduction. How can you increase your endurance by reducing your stress? Spend some time every day on the treadmill of testing. Really testing. In depth, reproducible testing. Learning how to properly test a program, module, or complete system will help reduce your stress and eliminate much fingernail biting just before they promote your changes to production. And when the budget cuts and RIFs (Reduction In Force) come, it helps to be known as the one who takes a little longer but gets it right the first time, every time, rather than the one who checks the same program into production six times for each change.

So get out of your cubicle. Order and read books. Sign up for webinars. Attend conferences and user group meetings. Pick up one of your programs, take half an hour, and read the online help documentation for every statement you've used in that program. You'll be amazed at what you learn about things you already think you know.

As for me, it's time for dinner, and I'm going to get two birds with one stone. I'm headed for a low-fat, low-carb, low-calorie meal while reading a book on DocBook XSL.

Maybe I should just read the book and eat the pages after reading. It would probably taste better. is

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(All questions must be answered. Incomplete forms will not be processed. Complimentary subscriptions are limited to U.S. addresses.)

1. What is your job function/title?

☐ Principal/Owner ☐ Sales/Marketing
☐ President/GM/CEO ☐ Programmer/Analyst
☐ MIS/DP Manager ☐ Purchasing
☐ Controller/Financial ☐ Consultant
☐ VP/Department Head ☐ Other

_____

2. Is your company a (check one):

☐ Computer System Supplier ☐ Dealer/OEM/VAR ☐ Software House
☐ Consultant ☐ End User ☐ Other _____

3. What MultiValue Databases does your company use? (check all that apply)

☐ D3 ☐ Native MultiValue ☐ Reality ☐ Other _____
☐ jBASE ☐ uniData ☐ UniVerse ☐ uniVision

5. What major business/industry most clearly describes your company?

☐ Accounting ☐ Medical ☐ Direct Marketing ☐ Legal
☐ Banking/Finance ☐ Dental ☐ Construction ☐ Retail
☐ Education ☐ Insurance ☐ Other _____

6. What are your firm's approximate gross annual sales?

☐ Under $500,000 ☐ $500,000 - $1 million
☐ Over $1 million - $5 million ☐ Over $5 million - $10 million
☐ Over $10 million - $25 million ☐ Over $25 million - $100 million
☐ Over $100 million - $500 million ☐ Over $500 million

IS 8/07

Clif Notes *Continued from page 47*

the edges of your professional knowledge and skills envelope. Then push that edge just a bit further, a little at each session. You know XML. You know your platforms MultiValue Basic XML API for working with DOM. But sometimes DOM is either overkill or has memory limitations. So push the edge a little bit. What about SAX? How would you write a SAX parser in MultiValue Basic? Or maybe you might stretch in another direction. How could you call a Java SAX parser from the MultiValue environment?

Maybe you want to stretch a bit by becoming more knowledgeable about other MultiValue platforms. Your goal in professional flexibility training is to be able to freely move in different directions when the situation calls for it rather than just relying on the same 20-year-old box of tricks as the information management world passes you by. Start by reading the book, *Who Moved My Cheese?* by Dr. Spencer Johnson.

Unfortunately, both strength and flexibility will not get you far if you don't have the power to last until your goals are achieved. You also need endurance.

Viewed simply, endurance is the ability to keep doing what you're doing until you get where you're going. In the physical realm it includes cardiovascular stamina, breathing, and the ability to ignore discomfort, sometimes pain, in order to reach your goal. In the professional world, it means being able to tackle large, complex projects and see them through to completion. It means training yourself to ignore the discomfort and boredom of completing a set of maintenance changes — not by using only minimum effort, but with appropriate refactoring and documentation. It means meeting your commitments so you keep your job.

Demonstrating your abilities outside of your own cubicle is also a way to add to your longevity. Offer to conduct knowledge transfer lunches in your shop —

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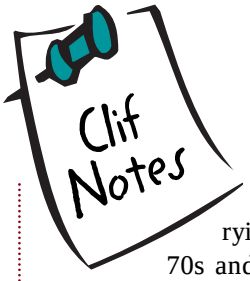
Are You a MultiValue Couch Potato?

BY CLIFTON OLIVER



I just know I'm going to get unmitigated grief from a number of my colleagues about this column. After all, in my current condition, I am one of the almost perfect examples of the old joke — "I'm in shape. 'Round' is a shape, isn't it?" So when this issue hits the desks, I expect to be receiving e-mail messages with embedded sound files of uncontrollable laughter when they discover I had the nerve to write a piece using a physical fitness theme. I may have to go on that diet yet — or not. But that's okay. Even though I'm the only programmer in the MultiValue community who is overweight, I'll endure it for the sake of giving you something to think about, and to meet my word-count.

There are a lot of parallels between staying in shape physically and staying in shape professionally. You can sit around and do nothing to tone your body and get slow and fat. You can sit around and do nothing to exercise your brain and your professional skills and get slow and irrelevant. The first case can be detrimental to your physical life — increased blood pressure, shortness of breath, diabetes, stroke. It can also lead to an early physical death. The second case can be detrimental to your professional life — increased blood pressure (too much stress), being passed over for promotions, always getting stuck on maintenance projects, never getting assigned any of the fun stuff. It can lead to an early professional death when — after 15 or 20 years with the same company — you are "phased out" as your shop switches to a different database or web-based services, about which you know nothing.

Getting into physical shape involves, among other things, losing weight and starting an exercise program to improve strength, endurance, and flexibility. This model will also serve us well when we decide get off of our professional duffs and expand outside our current comfort zone. First, we need to lose some weight.

When we talk of "losing weight" on a professional fitness program, we are not, of course, talking about pounds or kilograms. We are, however, still referring to getting rid of some mass — that mass of old ideas, stale coding techniques, one-size-fits-all database designs, and the notion that MultiValue is so different from mainstream that we have nothing to learn from those methodologies. If you think that in 2007 coding in ALL UPPER CASE increases your productivity because you can type faster if you don't use the Shift key, you've already developed a bit of a paunch around your mental waist. If your platform supports the REMOVE statement and you have never used it, if you still code EXTRACT and REPLACE functions, if you accept batch runs that take 30 hours, you are carrying around so much 70s and 80s technique baggage that it's the professional equivalent of looking down and not being able to see your toes. It is time to go on a diet.

But just like the caution about no crash diets, don't go overboard and start rewriting all of your existing code. You want an open mind about this but not so open that your brain falls out. Now that you have jettisoned a bunch of the old mental weight, it's time to take up a bit of strength training.

In a physical fitness program, strength training involves strengthening muscles so you can do more — lift more weight, for example. It is much the same in a professional fitness program. You want to be able to do more than you can right now. You already code in MultiValue Basic on a MultiValue system. Your goal in this area is to do more of it or with it. Re-read the manuals to find out what your platform has added over the last ten years. Read all of the release notes. Bulk up by learning how to use that XML API, how to present a web service, or how to pass information cross-platform. Get ripped in your coding proficiency by finding or developing pattern libraries. Become a deep expert in your shop on the current release of your platform.

In addition to strength, you also want flexibility. Physical flexibility involves both range of motion and stretching. So does professional flexibility. Just like moving in a particular plane to the end of your range and then stretching just a little bit further, you want to explore

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“To get that information just type –

```
SORT CUSTOMER.MASTER BY CUST.NAME WITH SALESMAN = “JKL’’
    CUST.NBR CUST.NAME CREDIT.LIMIT OPEN.BAL ID.SUPP
  LPTR HEADING “CUSTOMER CREDIT LIMIT REPORT ‘D’ ‘L’ ”
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