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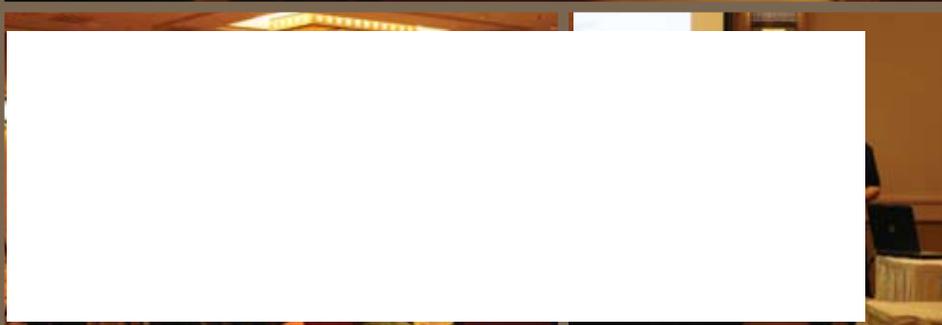
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**6 International Spectrum
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Successful Years of Solving

Problems 28 years. Wow. That makes the International Spectrum Conference the longest running computer conference in the United States. Why? Because it helps its attendees find solutions to Real World problems. Check out what you missed if you didn't attend. **BY SHANNON STOLTZ**

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 Whether or not you want to use the Google API as your end-point solution, it's a free way to demonstrate the Dashboard concept to your boss/clients/users. A graphic is worth 1K words. **BY CHARLES BAROUCH**

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From the Inside

BY NATHAN RECTOR

<http://blog.intl-spectrum.com>

This year at the International Spectrum 2009 Conference, I did a session called "Alphabet Soup." I talked about current IT terms and what they mean to us, and how they effect us in our day-to-day life.

One of the terms I covered was *Green IT*. After the session was done, a few people said I should write more about it and what it means to us. So here I am.

The question of what *Green* is in IT is very relative. Green started out as a term for cutting your carbon footprint. The problem is that there are many different ways to do this.

Let me start out with an example from an article on creating a Green computer in a recent issue of another IT magazine. The researchers put a computer together that used as many components that where manufactured out of recycled components as possible. They did stress tests, an evaluation, and wrote an article about the results.

In the next issue they included an additional article/retraction because they got slammed by readers whose concepts of *Green* differed from the researchers. The ideas of what Green computing is range from lower power consumption, which of course leads to a lower carbon footprint at the power plants, to recycled parts, to using laptops and thin clients instead of desktops. Others explained that they didn't think this computer was really Green because it required more energy to create the components made from recycled components due to the extraction and then manufacture process.

I've talked with some CIOs and their concept of "going Green" is removing one server from their data center and making sure that everyone turns off their workstation at night.

Another replaced most of their thick client PCs with thin clients and moved all the processing to a central server in the computer room. While this cuts down on the amount of power used on each PC, it increases the amount of power in the computer room, both for the computer and in cooling and power conditioning. But since this is lowering the amount of power used by whole company, then its termed "going Green."

You can really go pretty far with this concept. By using Linux computers instead of Windows computers (which usually requires more processing power), you would be "going Green" because you don't need such a large computer and don't need the same power consumption.

Green has become a marketing buzzword lately. So if you are asked, "Is your MultiValue database server Green?" you can say Yes.

We don't require the same hardware resources as other applications and databases. You save on power consumption. You don't need the large storage arrays.

These are only a few examples, and as you can see, the term *Green* is relative. If you focus on the concept of lower carbon footprint and assume that means lower power consumption, then any computer system that uses less power than another would say that is Green.

-NATHAN RECTOR

President, International Spectrum

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Learn more about the MultiValue Symbol and see what MultiValue Technologies and MultiValue Communities exist to help you support and manage your business and systems. To find out more visit

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International Spectrum Conference

28 Successful Years of Solving Problems

BY SHANNON STOLTZ

What do pregnant bachelorettes, male cheerleaders, and a snow storm have to do with the MultiValue community? They each added humor and excitement to the 28th Annual International Spectrum conference held in Denver, Colorado, March 23 – 26, 2009.

Attendees from all over the U.S. gathered for four days of professional development, due diligence, and connections. For those attendees from the Central and Eastern U.S., Denver proved to be a more convenient locale, with many conference attendees driving in or flying in the same day as the conference.

Attendees included consultants, in-house IT teams, and vendors, all working in a range of vertical markets — distribution, retail, medical, universities, energy, etc — and on a variety of software from home-grown to pre-



“The presenters were all subject matter experts, and they demonstrated their knowledge during the forums that they led. Furthermore, all the presenters were more than willing to talk with the attendees after their presentations. I came back to work and started recommending that our company send a representative every year to International Spectrum.”

**Paul Gilbert
Neiman Marcus**

packaged. Attendees included MultiValue veterans who come every year or every couple years to those attending their first Spectrum conference.

During the opening session, Nathan Rector gave us his projections for the MultiValue and IT communities in the months to come. His primary point was that businesses are primed right now to streamline operations and increase their competitive advantage with technology solutions — particularly cost-effective technology solutions that add bottom-line value.

Nathan encouraged attendees to make the most from their conference investment by building connections with each other and the speakers, investigating the different technologies discussed in the sessions and available from the vendors, and building their knowledge base during the 18 hours of available professional development sessions.

Professional Development

Each day offered four, sometimes five, tracks of sessions. Two-hour, technical workshops tailored for the MultiValue professional covered topics like PHP,

SQL, ASP.NET, Windows Administration, ODBC, and Object-Oriented Programming.

Monday's .NET track offered viewpoints and expertise from three different MultiValue experts on programming, implementing, and tools available for .NET. Clif Oliver shared his insights on project estimation, working with XML, and why we should care about SQL. Susan Joslyn explored the limits of software testing, and Susie Siegesmund shared insights into SOA and why it matters.

GUI, Dynamic Web Pages, and Dashboards were the hot tracks for Tuesday. Ross Morrissey conducted three sessions sharing his knowledge and perspective on designing and building business intelligence dashboards. In the Web/Browser track, attendees gleaned from the experiences of Brian McMahon, Charles Barouch, Kevin King, Martin Phillips, and Nehemiah Spence.

On the GUI track, a popular session was Glenn Jensen's case study on how P2 Energy Systems took their oil and gas software from green-screen to GUI, and the process and iterations they went through.

Continues on page 8





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Wednesday morning's sessions offered the opportunity to delve into the different options available in the MultiValue community for .NET, document management, software configuration, connectivity, and reporting.

Thursday's sessions covered a variety of topics and offered interesting insights into how MultiValue technology is being used. Hot terms like green computing, virtualization, and RSS were explored. Luke Bucklin's session offered some interesting ideas for using RSS feeds in our business applications. Nathan Rector decoded some of the "new" IT buzzwords into MultiValue speak and gave some insight into how to use these terms to explain MultiValue to non-MultiValue folks. And, Cedric Fontaine shared insight into bringing MultiValue data to the iPhone.

Collaboration, Camaraderie, and Connections

Whether it was Nathan's prompting during the opening session, the hotel's large comfy sitting areas in the lobby, or something else, the true value of this year's conference seemed to come in the sharing of information and ideas that came about during the conference networking events, before and after sessions, and in the exhibit hall.

While attendees have always conferred during past conferences, this year's conference seemed to take on an additional level of connectivity. In several sessions, attendees were encouraged to introduce themselves and tell about what they were working on and how long they had been in the MultiValue community.



"The conference provided a great way to get a variety of information from several different sources and also to have the opportunity to "network" with the MultiValue world. I gathered lots of new information about what is going on in the U2 world and was re-introduced to functionality I had forgotten about (i.e., ODBC). Time goes by quickly, and it is easy to get caught up in the day by day drama and sometimes lose sight of the forest because of the trees. So it was useful to attend a conference like Spectrum. It gives you a new perspective and provides new motivation to how you can do your job better. Would I recommend the Spectrum conference to others? I already have."

**Audrey Maydew - President
Applied Applications Consulting, Inc.**

“International Spectrum Denver 2009 was the most valuable conference I attended this year. The synergy and collaborative atmosphere was impressive. The decades of MultiValue and IT experience represented were evident in the quality of the sessions and workshops. The exhibitors were diverse, and I was able to find products to enhance the University’s MultiValue systems.”

Michael DiCrescio
Manager Financial Systems
Adelphi University

As questions and ideas were shared in the sessions, and various attendees learned about what others were working on or had accomplished, more people seemed to be connecting outside the sessions to discuss specific options and ideas. After sessions, conversations were taken out of the session rooms and into the hallway or lobby. At the end of each day, groups of MultiValue professionals could be found out in the lobby and at nearby restaurants.

In the exhibit hall, vendors, customers, and other prospects had the opportunity to connect further. On Tuesday night at the preview party, sponsored by the Colorado MultiValue Users Group, the atmosphere was casual and chatty as people socialized with their vendors. On Wednesday during the Ice Cream Extravaganza, sponsored by InterSystems, the tone was more focused. But overall, the climate seemed to be one of actively looking for solutions to specific business issues. Several vendors

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Many thanks to this year’s International Spectrum Conference Sponsors and Exhibitors:

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Building Dashboards with the Google Visualization API

BY CHARLES BAROUCH

Close Encounters of the Third Kind

Many years ago a really bad boss gave me some really good advice:

For some people, “give me the data” means “I want the raw data because I know the business better than you do.”

For some people, “give me the data” means “I want your analysis of the data because that’s what I’m paying you for.”

For some people, “give me the data” means “draw me a pie chart and try not to put any numbers on it.”

In my career, I’ve done a lot of the first two kinds of “give me the data” work. I’ve produced forests worth of raw and analyzed numbers. The last kind, the kind that gets BI people’s pulses racing, I’ve largely avoided. The reason was simple: it was more work than I was willing to do — and re-do — and re-re-re-do. Fortunately, we now have Dashboards, which is a class of technology dedicated to making that third kind much easier.

Anyone who has opened an International Spectrum in the last few years knows that we have a lot of MultiValue-specific choices. From Sierra Bravo’s free tools to commercial options like MITS and

Tantiva, we have a solid range of offerings. I elected to do the first pass of this project using none of them.

Once I get user feedback, and see how they will use the dashboards, I will rewrite this application using an MultiValue-specific tool. I’m using Google’s Visualization API for a first pass in order to deliver a Phase I quickly before committing to a long term approach.

The code for the project can be found at the Key Ally web site (intl-spectrum.com/s1012).

The Google information is here: (intl-spectrum.com/s1013) and here (intl-spectrum.com/s1014).

Easy as, well, Pie

Google offers a complete code example. Figure 1 shows the only part of the code which we need to modify. Lines 1 and 2 are the titles for the data rows. Line 3 is a row count. Lines 4 to 9 are the data. The last line sets the chart title and size.

Once we wrap each line like this

```
DOCUMENT.HD := `data.setValue(0, 0,  
→      `Alpha Corp.`);`
```

We are nearly done. For lines 1 and 2, replace the last parameter with the data titles you want.

```
001 data.addColumn('string', 'Company');  
002 data.addColumn('number', 'Ranking');  
003 data.addRows(3);  
004 data.setValue(0, 0, 'Alpha Corp.');
```

```
005 data.setValue(0, 1, 1);  
006 data.setValue(0, 0, 'Delta Corp.');
```

```
007 data.setValue(0, 1, 4);  
018 data.setValue(1, 0, 'Omega Corp.');
```

```
009 data.setValue(1, 1, 24);  
...  
011 chart.draw(data, {width: 400, height: 240, is3D: true, title: 'Corps'});
```

Fig. 1

For lines 4 to 9, build a loop to create however many data rows you need to express your data. The layout for data lines is `<row>,<column>,<value>`. Make sure line 3 has the correct row count.

Just change the title and size in the last line and you are done (fig 2). Some of us can't stop at easy. I certainly didn't.

Iron Chef: MultiValue

In the code example, I've added a form to let the user select the date range, the chart type, and the subset of categories. I've also elected to create six

charts each time. The first three are the target dates, viewed by category, by level, and by data source. The second set of three are the same three views for the previous period.

I have under three hundred lines of code, with comments, and the users have an interactive dashboard set. While the vast majority of this code will be tossed out when I do phase II with a more MultiValue-specific program, I will have all of the data analysis logic here and ready to harvest.

I've deliberately built my code as a subroutine which returns the HTML and

JavaScript into two variables: `DOCUMENT.HD` and `DOCUMENT.BD`. This way my calling program can add any header (HD) or body (BD) code needed to make this page fit the requirements of the user's site. For example, they may have a

standard style sheet, logo, or navigation which belongs on all pages. This sort of separation will make it much easier to slot my phase II version in place smoothly.

Of course, the code still needs a delivery mechanism. In my case, the users already have a web connection, so I simply plugged my code into theirs. If no mechanism exists at your site, there are still other ways to deliver the pages. Here's an extremely easy way to deliver dashboards: push technology.

Push Technology

If I run a phantom to build dashboard updates, I can publish them to an external file (UniVerse type 19, UniData Dir file, other systems have equivalent mechanisms). By pointing Apache, or any other web service, to that file, I can call the pages with no MultiValue-specific web delivery mechanism. These pages won't be dynamic — form-based requests would be very complicated to

Continues on page 26

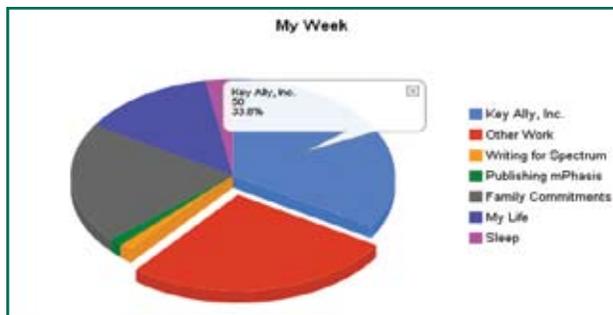


Fig. 2

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Sally Crowell, President, Crowell Systems

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My Journey Inside of PDF Files: *Inserting Metadata*

BY KIM AMANN

Introduction To PDF Metadata

When one of my customers asked me to use a feature in PDF files (Adobe Portable Document Format) to enhance their application software, my first thought was “sounds great, but I know nothing about PDF files other than to click on their name to view them with Adobe Reader.” So I knew I had some challenging work ahead of me.

The company was Image Software, Inc., a vendor of a robust document imaging system that uses MultiValue databases under UniVerse as the core of their product. They wanted to add a new feature to their IPublish module (document exporting module) that would automatically imbed *metadata* information into PDF documents that were being outputted from their customer’s image archives. This metadata would be unique data (not already in the document but was available in the Image archive’s controlling databases) that would enhance the user’s ability to rapidly pick a subset of documents out of thousands using the advanced search feature of Adobe Reader.

This Adobe Reader feature will search for specific PDF files by looking for metadata in a library of files as though it was part of the original document imbedded information. In Adobe Reader, the advanced search feature can be activated by clicking on the “Find” box menu and then on “Open Full Reader Search.”

What follows in this article is a recap of what I discovered about Adobe PDF files in order to accomplish the task I had been assigned. My sources of information included the 1,310 page *Adobe PDF Reference Manual* Version 1.7 and the *Adobe XMP Adding Intelligence To Media* specification.

By reverse engineering several PDF files created with Adobe Acrobat and analyzing them using Microsoft WordPad, I was able to determine what command lines in a PDF file are affected when metadata is inserted.

Although my understanding of PDF files increased considerably during this project, what I learned was just a drop in the bucket of what can go on inside of even simple PDF files.

So What Is A PDF File Anyway?

According to the *Adobe Reference Manual* Version 1.7, the Adobe Portable Document Format (PDF) is the native file format of the Adobe Acrobat family of products. The goal of these products is to enable users to exchange and view electronic documents easily and reliably, independently of the environment in which they were created.

PDF relies on the same imaging model as the PostScript page description language to describe text and graphics in a device-independent and resolution-independent manner. To improve performance for interactive viewing, PDF defines a more structured format than that used by most PostScript language programs. PDF also includes objects, such as annotations and hypertext links, that are not part of the page itself but are useful for interactive viewing and document interchange.

Some Basic Information

For starters, since the data describing a document in a PDF file does very bad things to the standard UniVerse READ command, all the programming to accomplish this was done in UniVerse Basic using the OPENSEQ, READBLK,

and WRITEBLK commands to access and update the PDF file. The READBLK command facilitates the input of the entire PDF file as an item into memory which can then be manipulated using UniVerse Basic.

READBLK requires a byte count to control how much of a file it will read. Since PDF files come in all sizes you must be careful to specify a byte count that works for all PDF files you are reading. If you are not sure of the record size of the PDF file, then a READBLK loop would be required to gather the entire PDF file.

The first line in every PDF file contains the version number in the form of %PDF-x.x with "x.x" being the version number of the features supported by Adobe. The last line in every PDF file contains the text %%EOF. Lines are terminated by either a CR or LF. If the first line ends in CR then all subsequent lines terminate with CR. The same applies for LF. So once the READBLK has put the PDF file in memory as an UniVerse item, the lines can be parsed using LF or CR as a line terminator. With the ability to parse lines comes the complete control over what you are able to do the PDF file using the power of UniVerse Basic.

Although much of the content of a PDF file is unreadable (the document itself, fig. 1), the command data telling Adobe Reader what to do with the content is readable text (fig. 2). The document data and command data is intermixed throughout the PDF file. It can be very simple in layout or extremely complex based upon the Adobe options used in creating the document. If the PDF file is a single page such as a letter, the commands are simple and limited. If the PDF file is a manual with

many illustration and pages, the commands will be much more complex and verbose. The International Spectrum magazine you are now reading is a PDF file and is of the very complex command structure style.

PDF relies on the same imaging model as the PostScript page description language to describe text and graphics in a device-independent and resolution-independent manner.

What is Metadata?

So if the object of the project was to insert metadata then what is it? According to the Adobe PDF manual, "a document may include general information, such as the document's title, author, and creation and modification dates" or for that matter it can also be *any* textual data you need to include that can enhance the use of the document.

Such global information about the document (as opposed to its content or structure) is called metadata and is

intended to assist in cataloguing and searching for documents in external databases (a library of PDF files). A document's metadata may also be added or changed by users or plug-in extensions. For example, Adobe Acrobat has a feature to insert metadata when a document is created.

Metadata can be stored in a PDF document in either of the following ways:

- In a *document information dictionary* associated with the document.
- In a *metadata stream* (PDF 1.4 or higher) associated with the document or a component of the document.

What is a Document Information Dictionary?

A Document Information Dictionary is the way metadata was stored in PDF files prior to Version 1.4. It is very simple in layout and easy to read as shown in figure 3. Without any prior training one can look at a Document Information Dictionary and know the rules required to create it. In figure 3, the line beginning with /Keywords is where you could place your metadata

Continues on page 14

```
xÃŠšÄ"â€œÃ-oÃ,Ã^Ã'Ã+Ã¿_ÃiÃ©Ã³Ãçy^Ã"Ã|Ã©ÃžÃ¼: _ \|M/m.Ic_Ã»_Ã...Æ'â,-â€"i[=Y_
(9Ã¹Ã¼Ã·Ã_ã,,çÃ¥ãâ€"ÃçdÃ¥_Ã²@SÃf%gfwv>Ã³KÃ@Lãâ€çÃ¥Y5ÃfÃŠÃºY_Ã_Ã_i
BedÃŠ, eÃ¹ãâ€œÃ³YË†|Ã%ãâ€"ã,,çãâ€|_ãâ€"Hv_Ã²_Ã_Ã¹fÃ±Ã²^šÃiEC$ãâ€"Ã_EÃ«Ã"Ha_Ã_Ãµ"Ã...
Y$#ãâ€"SÃiE_Ã©Ã¥ÃÆR_Ã_Ã-(ãâ€(ãâ€"Ã³ã,,çE_Ã²Ã³Ëæ|_ãâ€°}d_ã,,çfÃ©rÃç#Ã»Y2V|Ã¹0KÃ-
Ë+Ã_gÃ%_Ã±Ã"KY-
```

Fig. 1 Sample of Document Data

```
trailer
xref
0 0
trailer
<</Size 6449/Prev 886325/XRefStm 881731/Root 6219 0 R/Info 6418 0 startxref
886621
%%EOF
```

Fig. 2 Sample of Command Data

```
1 0 obj
<< /Title ( PostScript Language Reference, Third Edition )
/Author ( Adobe Systems Incorporated )
/Creator ( Adobe FrameMaker 5 . 5 . 3 for Power MacintoshÃ® )
/Producer ( Acrobat Distiller 3 . 01 for Power Macintosh )
/CreationDate ( D : 19970915110347 - 08 ' 00 ' )
/ModDate ( D : 19990209153925 - 08 ' 00 ' )
/Keywords (Account No. 1234567; Customer No. 324564; PO No. 332244)
>>
endobj
```

Fig. 3 Sample Document Information Dictionary

MY JOURNEY INSIDE OF PDF FILES: INSERTING METADATA

Continued from page 13

if you choose to do so. It is simple and straight forward.

What Is A Metadata Stream?

Again, according to the Adobe PDF Reference Manual:

Metadata, both for an entire document and for components within a document, can be stored in PDF streams called *metadata streams* (PDF 1.4). Metadata streams have the following advantages over the Document Information Dictionary:

- PDF-based workflows often embed metadata-bearing artwork as components within larger documents. Metadata streams provide a standard way of preserving the metadata of these components for examination

downstream. PDF-aware applications should be able to derive a list of all metadata-bearing document components from the PDF document itself.

- PDF documents are often made available on the Web or in other environments, where many tools routinely examine, catalog, and classify documents. These tools should be able to understand the self-contained description of the document even if they do not understand PDF.

The contents of a metadata stream (fig. 4) is the metadata represented in Extensible Markup Language (XML). This information is visible as plain text to tools that are not PDF-aware only if the metadata stream is both unfiltered and unencrypted.

The format of the XML representing the metadata is defined as part of a

framework called the Extensible Metadata Platform (XMP) and described in the Adobe XMP Adding Intelligence To Media Specification. This framework provides a way to use XML to represent metadata describing documents and their components and is intended to be adopted by a wider class of applications than just those that process PDF. It includes a method to embed XML data within non-XML data files in a platform-independent format that can be easily located and accessed by simple scanning rather than requiring the document file to be parsed.

PDF File Basic Structure

Objects

Information inside a PDF file is separated into logical groups called *objects*. There can be a number of objects in a file. Objects can contain all types of information such as strings, arrays,

```
528 0 obj<</Subtype/XML/Length 17016/Type/Metadata>>stream
<?xpacket begin="Ã~À~À&id="W5M0MpCehiHzreSzNTczkc9d"?>
<x:xmpmeta xmlns:x="adobe:ns:meta/" x:xmpk="3.1.1-111">
  <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
    <rdf:Description rdf:about=""
      xmlns:dc="http://purl.org/dc/elements/1.1/"
      <dc:format>application/postscript</dc:format>
    </rdf:Description>
    <rdf:Description rdf:about=""
      xmlns:xap="http://ns.adobe.com/xap/1.0/"
      xmlns:xapGImg="http://ns.adobe.com/xap/1.0/g/img/">
      <xap:CreatorTool>Adobe Illustrator CS2</xap:CreatorTool>
      <xap:CreateDate>2006-04-11T16:18-07:00</xap:CreateDate>
      <xap:ModifyDate>2006-04-11T16:18-07:00</xap:ModifyDate>
      <xap:MetadataDate>2006-04-11T16:18-07:00</xap:MetadataDate>
      <xap:Thumbnails>
        <rdf:Alt>
          <rdf:li rdf:parseType="Resource">
            <xapGImg:width>232</xapGImg:width>
            <xapGImg:height>256</xapGImg:height>
            <xapGImg:format>JPEG</xapGImg:format>
            <xapGImg:image>IMAGE REMOVED HERE FOR READABILITY</xapGImg:image>
          </rdf:li>
        </rdf:Alt>
      </xap:Thumbnails>
    </rdf:Description>
    <rdf:Description rdf:about=""
      xmlns:xapMM="http://ns.adobe.com/xap/1.0/mm/">
      <xapMM:DocumentID>uuid:0A5E1AB5CB0711DAB43BCAF93BF067C1</xapMM:DocumentID>
      <xapMM:InstanceID>uuid:0A5E1AB6CB0711DAB43BCAF93BF067C1</xapMM:InstanceID>
    </rdf:Description>
  </rdf:RDF>
</x:xmpmeta>
<?xpacket end="w"?>
endstream
endobj
```

Fig. 4 Sample of a Metadata Stream

names, streams, dictionaries, etc. They begin and end with a start line and an end line as:

```
6 0 obj
```

(6 is a sample object number. Each object has a unique number)

When metadata is added, it is added as an object of information

```
endobj
```

Xref Table

A table of object locations is located towards the bottom of the PDF file. The first 10 digits of each line is the starting byte count from the beginning of the file to where that particular object begins. Each entry in the table is assumed to be numbered starting from zero and represents the object number. So the first line is object 0, the second object 1 and so on. It begins with and ends with lines to distinguish it as an xref table:

```
xref
0000000000 00000 n
0000000010 00000 n
0000000113 00000 n
0000003644 00000 n
0000007172 00000 n
trailer
```

Startxref

One more command line provides the final bit of data to locate the xref table. It provides the byte count for where the xref table begins in the file. In this example, the xref table begins as byte number 12,345 in the file.

```
startxref
12345
```

You can see that the purpose of much of the command information is to identify where things are in a PDF file by byte count. So if metadata is inserted into a PDF file, all these byte counts (depending on where the metadata is inserted) in all these command lines have to be adjusted to include the number of bytes that make up the *metadata object*. If any byte count value is off by 1 digit, Adobe Reader will refuse to open the file. So byte counting has to be accurate.

It is advisable then to insert a new metadata object at the end of all previously defined objects in order to eliminate the renumbering of the entire xref table.

Summary

There is a very good chance you will never need to use any of the above information to insert metadata into PDF files and this article will be of little or no value to you.

But if you do or your curiosity is getting the best of you and you have nothing else better to do then open any PDF file with Microsoft WordPad and take a peek. You will see many more command lines than discussed here but you will also be able to get a general feel for the structure of a PDF file and discover that it is not the magic it may have seemed after all.

And to demonstrate that there is a practical use for knowing some basics about the internals of PDF files, the next article in International Spectrum on this subject will describe how to convert standard line printer files into PDF files. **IS**



KIM AMANN began programming for a bank in 1964 in COBOL and Assembler.

In the early 80s he crossed over from the dark side and began developing Prime Information based applications as an independent contractor. Now using UniVerse and UniData, he has help a wide variety of businesses and organizations become more efficient.

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Business Tech: Becoming a Software Vendor

Part 3

TGIS — Thank Goodness It's Software

Computers. Software. Code. I'm putting those words at the beginning so that you'll know that we are taking a break from talking about the business side and finally on to talking about technology. It isn't entirely true, but it is a comforting thought. Once you start turning a project into a product, you can never stop thinking about the business.

Let's say you are writing your project using a database. Let's go further out on a limb and suggest that you might be using a programming language, a client of some sort — albeit a terminal emulator, a web browser, or a custom client — and maybe some software to develop help or documentation. Congratulations, each of those decisions has horribly complicated your business plans.

F[r]ee Range

If you write software using a free (free as in GPL) database, you have two choices: (A) ignore the rules under which you are allowed to deploy it — and weaken your case in defending your own software from theft and misuse — or (B) do things the right way and perhaps be constrained from growing your product. Either way, you will spend time explaining how the database was free, but your software should still require a fee from your users.

If we go with a commercial database, we are generally less limited in what we can do with it. We are building paid software with paid software. And, best of all, we are increasing our costs by requiring our customers to buy the same database. In the past, Clif Oliver has made the clear argument for why that extra cost is a good thing. I'll just say that there are worse things than paying for software which returns a measurable value.

For the vast majority of situations, the programming language you choose is not going to require you to resell that language to each customer. Exceptions include 4GLs, where you will have exactly that obligation. That does not mean that 4GL is a bad choice, it just means that it isn't a free choice. However, the language you pick will limit your commercial op-

tions. VB, C#, and Delphi code is not very portable to non-Windows systems. Choosing one of them means possibly limiting market or possibly adding complexity in order to make them work elsewhere.

“But Chuck, Windows is such a huge slice of the market. Is that really so limiting?”

Yes. Windows software can't be adapted to my iPhone, my Android G1, my Nokia/Symbian, and so on. It doesn't play well with Linux-based kiosks. It will not work on many remote hosting platforms.

Today, we can't think of software as something which runs only on desktops or servers. It might work for the first release, but most people want their data wherever they find themselves. Since Windows Seven is starting to look like Vista redux, Windows may not be as safe a bet as it once was.

Will there still be a large installed base to which you can sell? Yes.

Will it be the place where most of your competition is? Yes.

A good package for Unix or Linux or Mac will have a smaller market, but it will have less competition. A package which can run on more platforms makes your market bigger and helps you exploit places where less competition exists.

Let's say you go with the languages which come with your database. Now you are portable to everywhere your database is portable to but you have a new business challenge.

How well can you secure the source code against copying and modification?

If you only deliver compiled code, are you in a position to compile it for each release version of the database?

How well can you support customers if they have access to source and may have caused the problem they are reporting by making changes they forget to mention to you?

Of course, there are portable languages available. For example, you have the three P's: Perl, Python, and PHP. Many oth-

Continues on page 18

Document Management Solutions with UnForm®

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7, 4, 00, 5, 10, 1, 1, e
8, 5, "Date", uni v
8, 7, "Invoice", u
8, 9, "Page #", un
Data Type: int
5, 5, rcut (61, 5, 8
5, 7, rcut (71, 5, 7
5, 9, rcut (79, 5, 2



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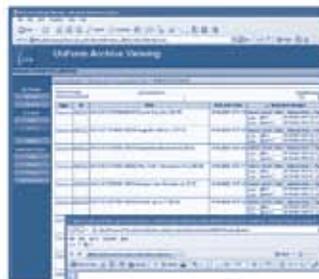
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Document Image Manager

Universal web browser document retrieval

BUSINESS TECH: BECOMING A SOFTWARE VENDOR – PART 3

Continued from page 16

ers, like Ruby, have huge followings as well. A language with an active community gives you a good place to go for answers and a pool of possible employees. With each of these languages, you have the same questions you had with the database native languages: how do I secure them, and how do I support them across releases?

We can go with a 4GL, which solves none of the problems listed above, but does solve many of the practical problems of completing the actual project. Remember that your 4GL might require a specific platform for deployment. Know the limits and the advantages before you pick a direction.

The bad news is that you have to expect that modern software will require more than one approach. For example, I am working on a project where PHP and MySQL owns the front, Delphi, UniVerse (BASIC and database) share

Today, we can't think of software as something which runs only on desktops or servers. It might work for the first release, but most people want their data wherever they find themselves.

the middle, and MS SQL owns the back. This is becoming a progressively more typical model. One size does not fit all. That's why there's more than one language, more than one database, and — probably — more than one product that does what your product does.

Pick-y, Pick-y, Pick-y — Let's Pick Some Software

For this discussion, let's say we are running jBase, using the native programming, PHP, and JavaScript/XHTML/CSS, and deploying for use with any modern

browser. Our architecture is a modified LAMP/WAMP/MAMP stack — the “A”, “M”, and “P” stands for Apache, MultiValue, and PHP in our case, the “L”, “W”, “M” part is Linux, Windows and Mac, respectively — and our plan is to make several million dollars.

We still need to formulate a way to deliver help screens and documentation. After that we still need to manage one more technical hurdle. What was it again? Oh, right, we need to actually build the product.

To make this more concrete, think of it the same way you think about a traditional green screen input statement: INPUT ANS. We don't just put INPUT ANS in a BASIC program and declare ourselves done. To make it useful, it needs a label on the screen so that the user knows what we expect them to input. To meet that need, we add lines to clear the screen, display a prompt, etc.

Now, once they respond, we have to test for the help key — a response may



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not be an answer, it might be a request for in-context help — we need to do the same for navigation keys, loop on validation, possibly do some file look ups, maybe respond on screen to confirm the information, and so on. In that way of looking at things, your thousand lines of code, spread over three routines and a PROC, are just the layers of support needed to make that one line INPUT ANS into a useful line. So, when we layer all these business and tech choices on top of your decision to release a product, we aren't distracting you from your goal, we are creating an environment which supports the successful use of your product.

Back to our LAMP/WAMP/MAMP stack: we need to start layering. With three programming languages, the BASIC baked into jBASE, PHP, and JavaScript, we need to sort out what role each one is expected to play. Let's let JavaScript manage the in-screen edit controls. We can assign all the sever-side layout (building the XHTML) to PHP. That leaves the heavy-lifting to BASIC, which has the most direct access to the data. While the lines will be a bit blurrier in the final product, this is a good balance for planning.

With a set of tools selected, we are finally at the point where we can talk about the phrase I've been using but not explaining *project to product*. Other than starting with the letter P they have less in common then you might think. The topic is so important that we will spend the entire next installment on it. **IS**



CHARLES BAROUCH is the CTO for Key Ally, Inc. He is current President of the International U2 Users

Group, and a regular Spectrum Magazine contributor.

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NEWSMAKERS



Berklee College of Music and Carroll Community College Win 2009 Datatel Partners in Excellence Award

Berklee College of Music and Carroll Community College have each received the 2009 Datatel Partners in Excellence Award. Datatel President and Chief Executive Officer John F. Speer recognized the two institutions at the 2009 Datatel Users' Group (DUG) Conference and Expo in April.

The Datatel Partners in Excellence Award is presented annually to client institutions that demonstrate exemplary collaboration with Datatel and a commitment to excellence in higher education. Award criteria include: innovative information technology practices; active participation in the Datatel client community; and leadership in developing quality services for faculty, staff, and students.

Datatel presents the award each year to one two-year institution and one four-year institution. Recipients receive an unrestricted monetary gift and a special commemorative

plaque presented by Datatel's president.

"Datatel congratulates and thanks these two institutions for their outstanding leadership and strong collaboration with Datatel," said Mr. Speer. "Achieving the Strategic Academic Enterprise and long-term sustainability for higher education institutions, especially during these challenging times, requires the type of relationship that Berklee College of Music and Carroll Community College have forged with Datatel. We look forward to continuously working with them, and all our clients, to ensure they remain effective in providing successful student outcomes."

Carroll Community College, located in Westminster, MD, and a Datatel client for 13 years, was recognized for its active participation in, and sharing best practices with, the Datatel client community. The College has also innovated using Datatel products to support their strategic infrastructure transformation to a learning-centric and outcome, performance-oriented institution. Virtually all of Carroll Community College's strategic initiatives are dependent upon or supported by current Datatel, and Datatel-partner products and services. In 2008, The Center for Digital Education and Converge magazine identified the College as one of the "Most Tech-Advanced Community Colleges" in the mid-sized category.

"We are honored to receive this award from an exemplary partner such as Datatel," said Dr. Faye Pappalardo, president

of Carroll Community College. "Both our internal and external constituents benefit from Datatel services.

"Berklee College of Music was recognized for their active involvement in the national and regional Datatel Users' Group organizations and strong working association with Datatel. The College hosted seven Datatel Regional Training Classes in 2008 and is now designated as a Preferred Region Host for 2009. Berklee College of Music has also collaborated with Datatel's Center for Institutional Effectiveness to use technology to support and augment the Berklee Music City Network — the College's national network of institutions offering the Berklee PULSE music method to under-served teens at no cost to them.

"We're pleased to be recognized with the Partners in Excellence Award," said Debbie Bieri, Berklee's Senior Vice President for Institutional Advancement. "It's a tribute to our Institutional Advancement and Information Technology groups, and their ability and willingness to work closely with the Datatel support team. We're pleased with the results, and are looking forward to working with Datatel to enhance our growing domestic and international projects."

Datatel's Strategic Academic Enterprise is a holistic approach that focuses on and supports five cross-functional domains essential for achieving institutional and student success: Strategic Enrollment Management, Strategic Planning, Institutional Advancement

and Marketing, Teaching and Learning, and Performance and Operational Management. The Strategic Academic Enterprise extends traditional enterprise resource planning (ERP) models by viewing administrative and academic functions as vital interdependent business processes across the higher education enterprise.

About Datatel, Inc.

Datatel is a leading provider of technology solutions and professional business services to higher education institutions throughout North America and overseas. For more information, visit www.datatel.com. ■



Austin Health Launches Enterprise-Wide Migration of MultiValue Applications to InterSystems CACHÉ

InterSystems Corporation has announced that Austin Health in Melbourne, Australia has rolled out the first component of an enterprise-wide migration of MultiValue applications to the InterSystems CACHÉ high-performance object database. Taking advantage of industry-leading CACHÉ MultiValue capabilities, Austin Health has gone live with its Allied Health

Appointments (AHA) application in a rollout that will ultimately result in moving systems currently running on the Reality-X platform to CACHÉ.

Future-Proofing Legacy Applications

"We were facing a challenge that is familiar to many IT executives," said Paul Girdler, Application Services Manager at Austin Health. "We have a series of legacy application systems developed in-house that worked quite well. However, there had been no ongoing development or upgrades on the applications or the Reality-X platform since 2000. We wanted to modernize the systems with new web interfaces and get them to a level where we could identify potential productivity gains that could be derived by taking advantage of new technologies."

Girdler's team researched multiple alternatives including a complete rewrite of the organization's applications. "Rewriting is certainly one way to go, but it certainly didn't seem the most optimal use of development time and resources," he said.

Instead, Austin Health chose to migrate its legacy applications to the CACHÉ platform. In addition to delivering top-tier performance and massive scalability, CACHÉ enables rapid web application development and high-performance transaction processing, and provides advanced MultiValue capabilities.

"We had been running the InterSystems TrakCare hospital information system successfully for years, so we were familiar with InterSystems' technology leadership," Girdler said. "CACHÉ with MultiValue clearly offered an extremely cost-effective migration route that would not only offer improved perfor-

mance and scalability but also provide interoperability with other systems and advanced application development features. With CACHÉ," Girdler continued, "we are effectively future-proofing our core enterprise applications."

After the successful trial migration, Austin Health mounted an aggressive porting initiative. "We kicked it off with the migration of the AHA system – a large, complex application used by multiple departments across the three campuses that make up the Austin hospital group," he said. "Based on the success of that migration – the first departments went live in May – and the positive response of the application's end users, the organization is now moving forward to port the remaining applications to CACHÉ."

Setting Stage for New Development, Dramatically Slashing Costs

"CACHÉ has given us the opportunity to take an existing, 20-year-old application and migrate it to a contemporary platform that will support rapid development of new application enhancements," Girdler summarized. "And, we're achieving these results in the most cost-

effective way possible – CACHÉ is only a fraction of the growing cost of licensing the legacy database software. Finally, the support we've received from InterSystems has been amazing and we appreciate the opportunity to continue what is obviously a very successful working partnership."

"Austin Health's success is a textbook example of how organizations can extend the life of key enterprise systems while simultaneously positioning themselves for future development," said Denis Tebbutt, Managing Director for Australia and New Zealand. "We value our ongoing partnership and look forward to supporting their transition strategy as they take advantage of the rapid development and deployment capabilities of CACHÉ."

About InterSystems

InterSystems Corporation is a global software product company with headquarters in Cambridge, Massachusetts, and offices in 22 countries. For more information, visit InterSystems.com.

About Austin Health

Austin Health is the major provider of tertiary health services, health professional education

and research in the north-east of Melbourne, Australia. For more information, visit www.austin.org.au. ■



BookMasters Go Live On OpenQM

BookMasters, one of the largest distributors of books in the United States, have completed migration of their 105 user business system from D3 to QM (www.openqm.com). Running on a quad core Xeon system with five 32 Gb Managed Flash Technology drives (www.easyco.com), the migration has significantly reduced costs and is delivering outstanding performance. Application level read rates averaging in excess of 95,000 records per second have been recorded. Some reports that previously took several hours to complete now run in just a few minutes. ■



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New Products



Entrinsik Announces Beta Launch of Informer v4.0

Entrinsik, Inc., known in the MultiValue industry for database reporting software and services for IBM UniVerse and UniData databases, announced the availability of Informer Web Reporting v4.0 beta release, providing organizations with unprecedented information access to multiple databases.

The new release of Informer offers native connectivity to multiple databases simultaneously, including, but not limited to, Oracle, MS SQL Server, MySQL, DB2, Informix, Microsoft Access, UniVerse, and UniData. No need for a data warehouse or data mart. With only a few mouse clicks, organizations can now immediately connect multiple sources of data to provide users with a single point of access to customizable reports via Informer's easy-to-navigate Web 2.0 user interface with drag-and-drop, auto complete, calculated columns, and in-place editing functionality. Informer also extends reporting organization-wide by enabling integration with desktop functions including PDF, e-mail, Excel, and Live Excel spreadsheets to instantly transport data from the database without the need to log onto the system.

"Informer is able to perform real-time extraction of our live data significantly faster than we were able to in the alternative solutions because it does not have to move individual records to a data warehouse or cube. Best of all, the data is always accurate and up-to-date because there is no batch process to wait for," says Jeff Jones, Institutional Research Coordinator, Fresno Pacific University. "The improved interface and functionality in Informer's new release not only increases accessibility and retrieval speed to my data, but it adds the capacity for analysis and the ability to integrate with other database platforms."

"We've already completed two rounds of alpha testing on the new solution with great success," says Brad Leupen, CTO of Entrinsik. With this release, Informer not only opens up access to these different types of databases in isolation, but it will also let users connect them.

"Let's say you had product information in a SQL database and the information about the orders and people who placed orders stored in a U2 database," notes Leupen. "With Informer, you could write a report that actually sucks in up-to-the-second data from both databases and then glues the results together to do reporting and analysis in real time at once."

Unlike other reporting technologies, Informer was designed specifically to extend real-time self-service reporting and analysis to front-line users who can initiate high-level queries and

immediately delve into the underlying details, all without burdening IT staff.

"The new release of Informer builds on our already successful solution by delivering isolated database connectivity to provide a very flexible connection to most industry-standard commercial databases. And Informer employs native query commands and Web server caching to accelerate data retrieval and provide flexible, rapid data manipulation capabilities," says Leupen.

Visit our web site at www.entrinsik.com. For a demonstration of Informer or a free trial, call us today at 888-703-0016 or email sales@entrinsik.com. ■

to scan documents into the system. Documents are machine re-sized, cropped, and checked for quality. Employees, vendors and customers are able to access their documents through Internet and intranet portals. Document storage and bundling are controlled by typing the documents allowing for some document types to be stored uniquely each time while others are overwritten.

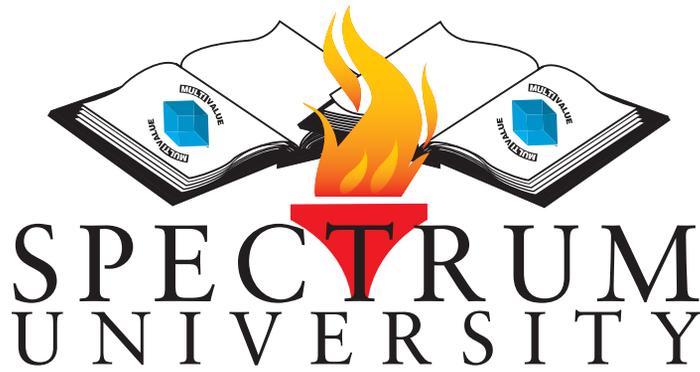
A significant feature is the ability of the EXPERT system to refer to supporting documents in the body of a document with links to them. Many of these documents are in remote databases which are accessed through a series of Python-based web interfaces. Through these interfaces, the system has access to well over 25 million documents. As customer title orders are received into the system, they are machine-mapped to the appropriate supporting documents.

EXPERT has proven to be scalable and flexible by easily expanding during the housing heydays at the turn of the century to the formidable challenges of today's market when efficient processes are critical to enterprise success. The LT Systems EXPERT document management system has been key to customers in the competitive title insurance business. ■



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LT Systems, LLC (LTS) of Denver, Colorado has developed a state-of-the-art IBM AIX/U2-based document management system (EXPERT). LTS customers use the system to maintain a competitive edge in the title insurance industry with a comprehensive set of tools to generate, bundle, print, fax, e-mail, scan, and store documents. Generated bar codes are used



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Upcoming Webinar Schedule

TIME AND DATE	TITLE
Tuesday June 2, 2009 2:00pm EST, 11:00am PST	Back to Basics: MultiValue Retrieval Syntax MultiValue Retrieval is a fact of life in all MultiValue applications whether you are an end user or developer. This 4 week course will cover all aspects of writing your own retrieval statements. The major topics are Verbs, Sorting, Selection Criteria and Output Specifications. This webinar is a good refresher course for the professional, or an introductory course for your new IT staff or power users.
Thursday June 18, 2009 2:00pm EST, 11:00am PST	MultiValue F Correlative This two week course is designed for the experienced MultiValue Developer who needs to become familiar with F Correlatives. Most legacy systems still have F Correlatives as a working and functional parts of their dictionary design. This webinar will cover how to read, create and modify F correlatives.
Tuesday July 7, 2009 2:00 pm EST, 11:00am PST	Mastering UniVerse/Unidata I-Descriptors This two week course is designed for experienced MultiValue developers who are familiar with Pick-flavor dictionary descriptors and correlatives or with the basics of Prime INFORMATION or UniVerse-flavor D descriptors and want to learn the use of I-descriptors for complex derivations, translates, and calling UniVerse Basic subroutines from a dictionary descriptor.
Thursday July 9, 2009 2:00pm EST, 11:00am PST	Integrating MS SQL with your MultiValue Application Microsoft SQL Server is common in many enterprises as satellite systems spring up to handle different applications. Many times, web servers are involved, and need to stay up to date with changes to your MultiValue Applications. This 4 week class will cover how to communicate with MSSQL to query and update information in the database. We will also talk about how to cause MSSQL servers to notify and update information into your MultiValue Application.
Tuesday July 21, 2009 2:00pm EST, 11:00am PST	UniVerse Triggers This three week course is designed for experienced MultiValue developers who are familiar with UniVerse programming and hashed files and want to add triggers to files to automatically perform additional processing, such as audit trails, when changes are made to the file, without modifying existing application programs.

OpenInsight and .NET

Over 25 years ago, Revelation became the first MultiValue implementation on the IBM PC. Different in design and approach from the other server-centric MultiValue databases of the day, Revelation was a client-based database, tightly wedded to the PC. As the product — and the PC — evolved, Revelation turned into Advanced Revelation, one of the first 4GL database environments, using the PC graphics to bring “windows” to application designers. Advanced Revelation eventually grew into OpenInsight, a true Microsoft Windows design tool; it straddles the MultiValue and GUI worlds like no other product in our market.

OpenInsight, as “the” graphical MultiValue database, has always had the ability to tie in to the latest features incorporated into Windows. For prior, and current, releases, this has been accomplished through our OLE/COM integration available in the Form Designer (our graphical layout tool) and programmatically (via the `OleCreateInstance` and associated commands). With the release of Revelation Software’s OpenInsight 9.0 Development Suite, this integration has been extended into the .NET environment.

An entire new range of functionality has been introduced by Microsoft with its .NET framework. Originally announced in the late 1990s, released for beta in late 2000, and officially released in 2002, the .NET framework is a virtual environment in which applications written in different languages can run and inter-operate (communicate with each other). .NET provides the underlying security, memory management, and communication layers — the *framework* in which these programs exist.

With the release of the completely-rewritten 2.0 version in 2005, Microsoft accelerated its push, redirecting development from COM (Component Object Model) programs and controls to .NET. Note that, in .NET terminology, each “control” or set of functionality is called a “class”; multiple classes can be bundled together into a single

“assembly”, typically a dll. This is different from COM/OLE, where each control resided in its own file.

Although still internally relying on COM to communicate with Windows, OpenInsight has been extended to allow .NET integration in three different fashions. If you are a developer who is familiar with Visual Studio (Microsoft’s development environment) you can, with some small effort, create “wrappers” around the .NET controls that you’d like to access from OpenInsight; or, if the Visual Studio programming languages and development environment are more appropriate to your application, you may create your applications entirely in Visual Studio and use OpenInsight as a data repository and application server through the use of the NETOI .NET assembly. And of course, if you’re most comfortable remaining entirely within the MultiValue environment, you can use the RevDotNet API from within OpenInsight to create and control .NET classes.

Option 1: Wrapping .NET Controls

Using Visual Studio (2005 or above), it’s possible to write your own .NET custom controls and have them accessible to COM applications. This requires only a few additional steps:

- Generating the GUID (Globally Unique Identifier) values (fig. 1) for 3 “COM Interfaces” (fig. 2); and,
- Checking the “Register for COM Interop” checkbox (fig. 3)

Once you have completed these steps, your custom control is now COM-compliant and can be used by any COM application — including OpenInsight and its Form Designer.

Developing a custom control can be very straightforward. You find a .NET control that you wish to access from within OpenInsight, create a new Custom Control project in Visual Studio, place the desired .NET control on your form, and then define any properties and methods you’d like OpenInsight to access.

The code in your custom control should then invoke the appropriate code in the .NET control. If you desire, you can create properties and methods that are exact matches to the .NET controls; however, you are not limited to doing this. You can create your own properties and methods, including additional functionality in your custom control. In this fashion, you can tailor your custom control to the needs of your OpenInsight application.

Once you have completed, compiled, and deployed your custom control, it will be accessible in the Form Designer;

figure 4 shows how you can select the OLE Control from the palette, name the

Continues on page 27



Fig. 2 Setting the ClassId, InterfaceId, and EventsId constants with GUIDs

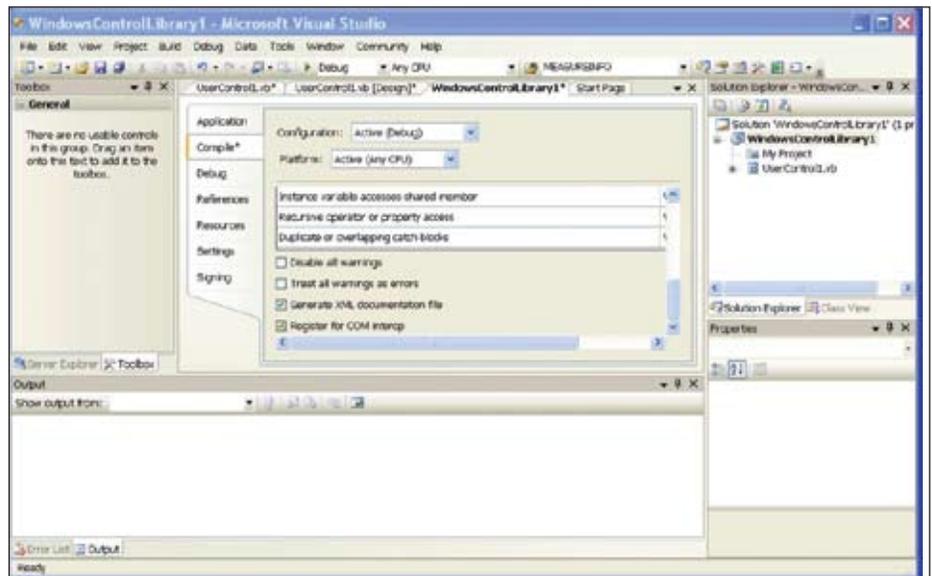


Fig. 3 Registering for COM Interop

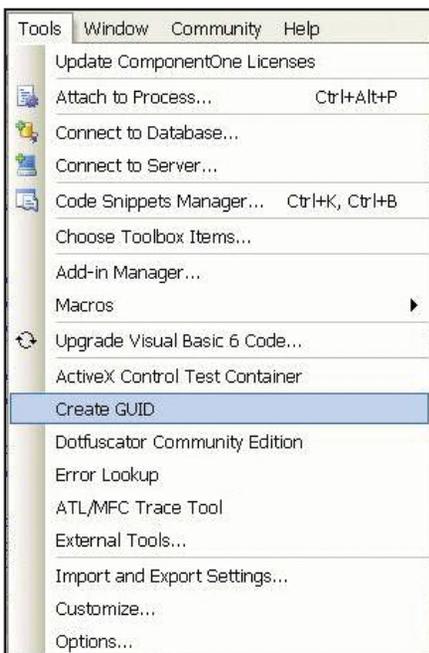


Fig. 1 Generating GUIDs from the Tools Menu

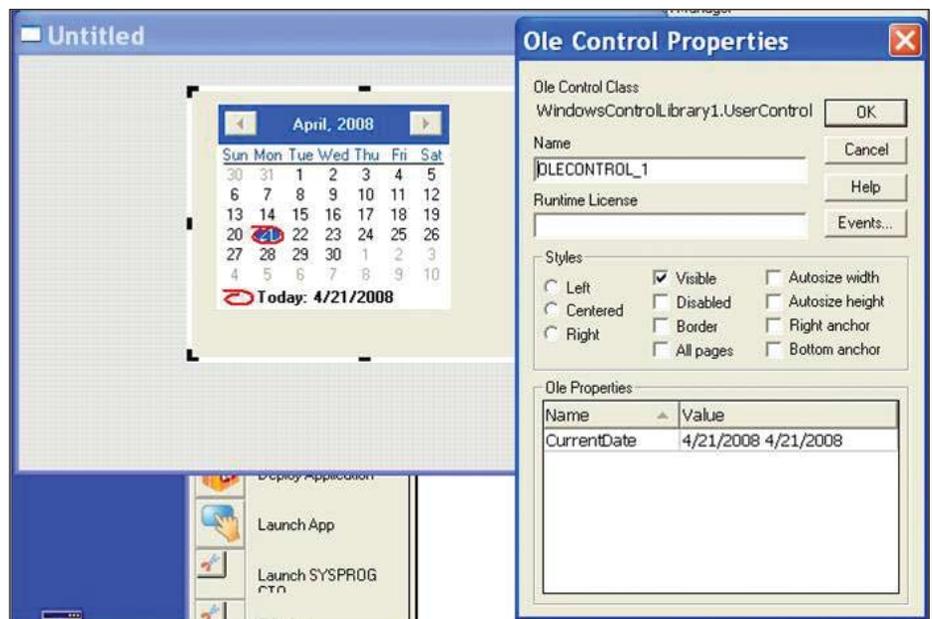


Fig. 4 Inserting your custom control into the Form Designer

SHORT-LINKS

What are those short links in the text of some articles?

As our authors share their knowledge and experience, they also point you to the Web for more info. Some of these URLs are long and cumbersome to use.

To make the URL easier to read and use, we are now using Short-Links to redirect you to the web page the author recommends.

The format (intl-spectrum.com/s9999) drops the "http://www." from the front.

Most modern browsers fill that in for you, or you can add it back in.

Comments or additional suggestions? Please drop us a note at editor@intl-spectrum.com

BUILDING DASHBOARDS WITH THE GOOGLE VISUALIZATION API

Continued from page 11

implement — but most dashboards run from predetermined parameters.

The other tool we need for creating push dashboards is an auto-refresh. This allows the pages to update as each time the phantom rebuilds them. All we need is this line in the <head> section: <meta http-equiv="refresh" content="90" />. In this case, the 90 is the refresh rate, which is always measured in seconds. So long as your rebuild and your refresh are in sync, you are done.

Summing up the Summary

Dashboards are used to summarize data in a very targeted and visual way. It takes as long to build a bad one as it does to build a good one, so treat it like any other reporting project. Be sure that you understand the business needs it supports.

One of the primary reasons for redoing the project with different technology in phase II deals with drill-down. My Googling around does not produce self-confirming data. With a drill-down, the user can click on an element in the chart and see the data underneath. This helps us with debugging and helps the users develop trust in the dashboard. **IS**

CHARLES BAROUCH is the CTO for Key Ally, Inc. He is current President of the International U2 Users Group, and a regular Spectrum Magazine contributor.

You can contact Charles at Results@KeyAlly.com, or phone (718) 762-3884 ext 1.

Expand Your UniVerse

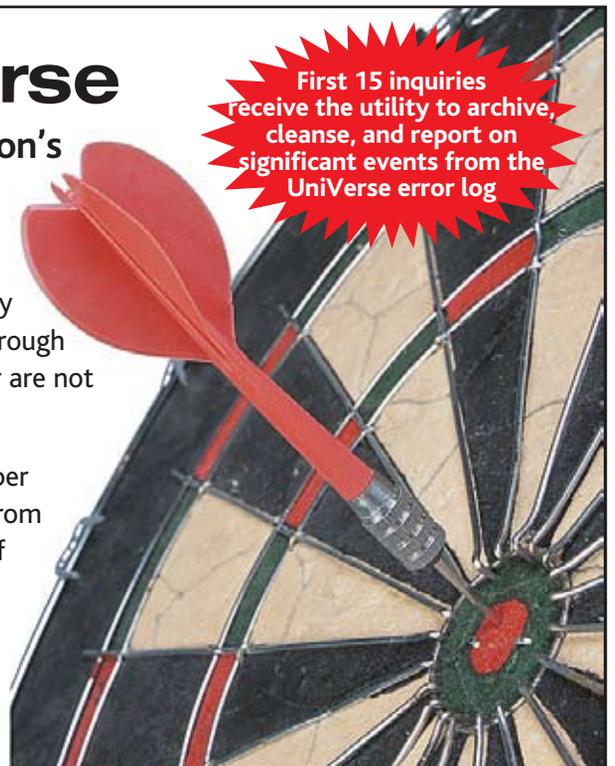
On-site training *targeted* to your organization's specific needs is now available.

Based on our popular UniVerse classroom courses, our on-site classes can be adjusted to fit your particular requirements. Why incur travel expenses for several people to go a class and sit through material about topics in which they already have experience or are not applicable to your environment?

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OPENINSIGHT AND .NET

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control on the Form, and specify your class name — and you should see your custom control appear on the form.

Option 2: Developing .NET Applications

This turns the “integration with .NET” question on its head — rather than having OpenInsight control one or more .NET controls, you can code entirely in Visual Studio (or your development environment of choice), and develop a Windows application that uses OpenInsight as its data source.

The NETOI assembly contains classes to communicate with the OpenInsight Engine Server (the Server class), open and communicate with files (the OIFile class), and manage records and selectlists (the OIRecord and OISelectList classes). Using NETOI, you can perform all the basic file I/O needed to use OpenInsight. Figure 5 is an example of some Visual Basic.NET code using these classes. In addition, the Server class allows you to invoke functions and subroutines on the host, as well as execute (and capture the results from) OpenInsight commands.

With this option, it is up to you, the developer, to decide where you want your logic to reside — either in Visual Studio (using OpenInsight to retrieve and update the records in your files), in OpenInsight (with your Windows application invoking the appropriate procedures in OpenInsight), or a combination of the two.

Option 3: Using RevDotNet

RevDotNet functionality is contained in a series of APIs that OpenInsight programmers can call to create and manipulate .NET classes. These can be either visible classes (like Tree Controls, ListView Controls, etc.) or functional classes (like encryption classes, etc.). You must first establish which assemblies you wish to use, and then you may create objects from the classes in those assemblies.

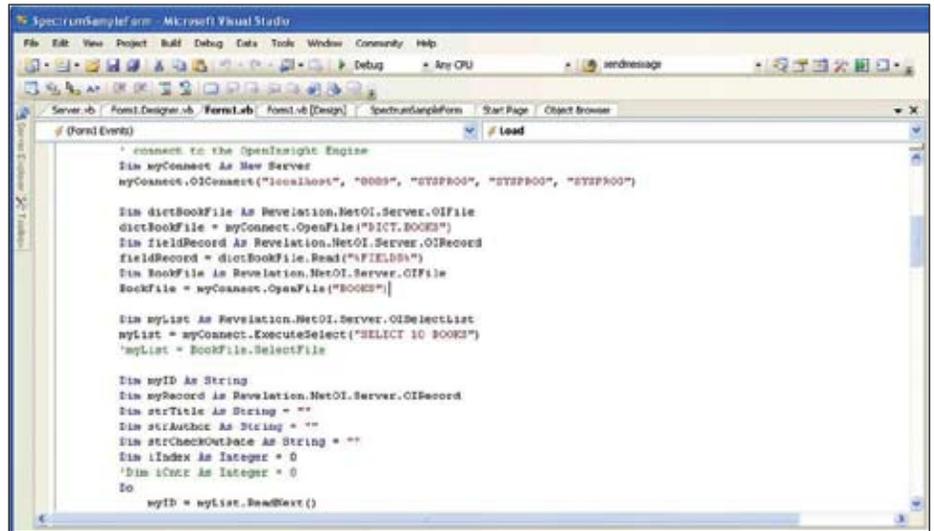


Fig. 5 Using the NETOI classes in Visual Basic.NET

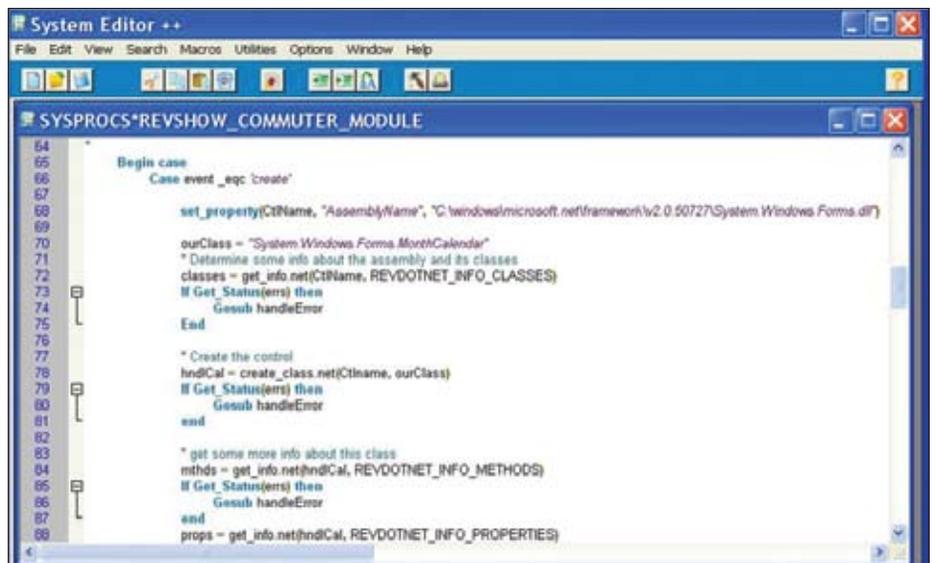


Fig. 6 Communicating with .NET through the RevDotNet API in Basic+

Once you’ve created an object, you can determine its methods, properties, events, etc., and invoke those methods, set and get those properties, register for those events, etc. Figure 6 shows some of the Basic+ code necessary to control the .NET ListView control.

To assist you in navigating through the capabilities of the .NET framework, the DOTNETEXPLORER tool (figure 7) can be used to examine specific

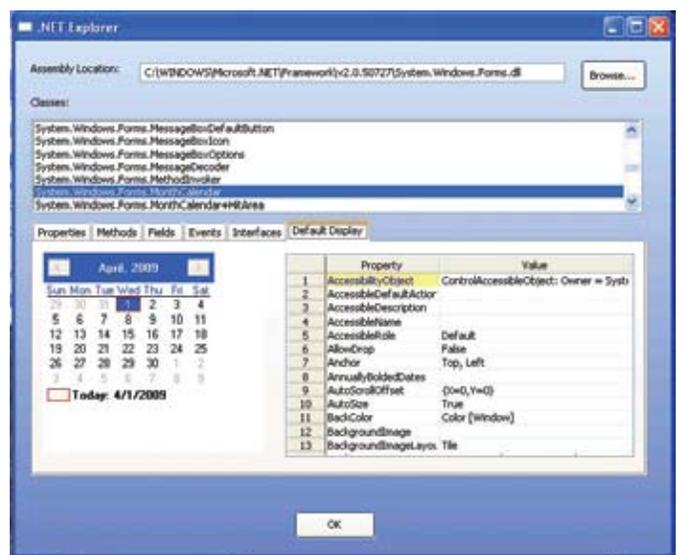


Fig. 7 DotNetExplorer Interrogation/Design Tool

classes within any assembly. Using the DOTNETEXPLORER, you can see a full

Continues on page 29

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INTERNATIONAL SPECTRUM CONFERENCE: 28 SUCCESSFUL YEARS OF SOLVING PROBLEMS

Continued from page 9

commented that both new and old prospects were less in the “looking” mode and more in the “buying” mode.

Even on Friday, after the conference was technically over, casual conversations in the hotel lobby and even the shuttle ride back to the airport turned into information sharing sessions.

Snow Storms and Comedy

Thursday brought us an extra layer of excitement — a winter wonderland of snow that caused many attendees to change their travel plans and a comedy show that really showed the humorous side of the MultiValue community.

We can thank Kevin King at Precision Solutions for this year conference entertainment. On Tuesday night, at the preview party, the magician invited by Precision Solutions wowed the attendees with some impressive slight-of-hand card tricks. And on Thursday night, the entire room was rolling with laughter at the Madcap Improv Comedy show.

Unfortunately, due to the weather, Kevin wasn't able to make it to hear the hilarious routines that included the “world's worst programmer,” the sound effect talents of two of our very own MultiValue professionals, or the hilarious Dating Game featuring our own (pregnant) Tracey Rector as the bachelorette and her three bachelors — the “chess geek,” the “male cheerleader,” and the “jerk.” The entire audience is to be credited for their unique and interesting input into the comedy show; it was definitely a memorable way to end the conference.

We'll see you at next year's conference, April 10-15, 2010, also in Denver, Colorado. **IS**

OPENINSIGHT AND .NET

Continued from page 27

list of the properties, fields, methods, events, and interfaces that a particular class contains; for visible controls, you can also manipulate the visible properties to see how changes affect the display.

Using RevDotNet, you use the familiar environment of OpenInsight to manipulate all the actions of the .NET control. Note that many of these actions are fairly complex, and thus do require a significant amount of code — some of which is hidden from you when the .NET control is used, for example, in the Visual Studio environment. With RevDotNet, you get to see and control all the behind the scenes functionality.

How To Choose?

The choice of which .NET integration method is best depends on you (and your development team), as well as on the specific goals you wish to achieve. If you wish to leverage an existing ap-

The choice of which .NET integration method is best depends on you (and your development team), as well as on the specific goals you wish to achieve.

plication with some new .NET functionality (either visible or functional classes), then adding RevDotNet into your application would be the easiest approach.

If the .NET control you wish to access is complicated to work with, containing dozens (or hundreds) of properties that you need to manipulate, along with sub-objects that need to be separately managed, you may find it easier to build your own custom control to serve as the interface between OpenInsight and the control. While you can perform the necessary tasks using RevDotNet, the added functionality of Visual Studio — especially including the

behind the scenes, ease of use features incorporated into Visual Studio — may make creating your own custom control the most effective approach.

If you are developing a new application from scratch, and your development team is more familiar with Visual Studio — and less familiar with the MultiValue world — then using the NETOI assembly allows you to take full advantage of the strengths of your team without requiring a large training effort.

With OpenInsight's .NET integration strategies, you have the tools to make the choice that works best for you! **IS**

BRYAN SHUMSKY has nearly 30 years of experience working as both a database administrator and software engineer in the MultiValue market. He was Director of Engineering for Via Systems for ten years, and since 2005 has been Senior Developer at Revelation Software.



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BY JOHN P. RACINE

PERCENT on Pick-style Databases

Percentages of one column against another, both on detail and break/total lines, are common requirements, but some find them difficult to implement without writing a whole program in Basic. The following code snippets are B-correlatives on mvBase and can be easily converted to B-correlatives on mvEnterprise, calls on D3, or U-correlatives on QM. They need to be specified as conversions on line 7 of A- or S-type dictionaries, not as correlatives on line 8. A sample for PERCENT is shown in figure 1.

PERC1 is a basic cataloged subroutine, shown in figure 2. UTIL.IBP PERCENT is shown in figure 3.

I recommend keeping these two parts separate. Copy the first SUBROUTINE part to different names for each percentage you wish to do and catalog it under different names for each percentage. Alter the attribute numbers of NUMER.ATT and DENOM.ATT for the numerator and denominator of the percentage, respectively. The UTIL.IBP portion will remain the same and function for all dictionaries. **IS**

JOHN P. RACINE of Racine Enterprises Inc. can be reached at www.purveyorsoftware.com.

Do you have a Tech Tip to share? E-mail it to editor@intl-spectrum.com

```
PERC
001 S
002 5
003 %
004
005
006
007 B;PERC1]MR2
008
009 R
010 7
```

Fig. 1 Sample

```
SUBROUTINE PERC1
*** produces percentages on the break lines when TOTALed
*** changes EQU to reference the attributes you want
EQU NUMER.ATT TO 44, DENOM.ATT TO 29
$INCLUDE UTIL.IBP PERCENT
RETURN VAR
```

Fig. 2

```

*** this is intended to be a generic solution for almost
*** all files
*** Put this on line 7 before any other conversions
*** and not on line 8
*** change ATT and DENOM.ATT in the EQU statements to be the
*** attribute numbers you wish to have percents of
$INCLUDE BASICLIB ACCESS.COMMON
B.DICTPRIMFILE=DICT$
B.ITEMID=ID$
B.ITEM=ITEM$
B.AMC=NA$; B.VMC=NV$; B.SVMC=NS$
B.NI=NI$; B.ND=ND$
B.FLAGS=NB$
B.PRIMFILENAME=FILENAME$
B.NB=B.FLAGS
EQU B.USER1 TO USER$(1), B.USER2 TO USER$(2), B.USER3 TO USER$(3)
EQU B.USER4 TO USER$(4), B.USER5 TO USER$(5), B.USER6 TO USER$(6)
EQU B.USER7 TO USER$(7), B.USER8 TO USER$(8), B.USER9 TO USER$(9)
EQU B.USER10 TO USER$(10), B.USER11 TO USER$(11), B.USER12 TO USER$(12)
EQU B.USER13 TO USER$(13), B.USER14 TO USER$(14), B.USER15 TO USER$(15)
EQU B.DATA TO CURRENT$
IF B.USER1+0=0 THEN
  B.USER14=0
  B.USER13=''
  B.USER2='!@#%$'
  B.USER3=B.USER2
  TOTAL.1=''; TOTAL.2=''
END
IF B.USER2#B.NB THEN B.USER14=1 ELSE B.USER14=0
IF B.USER14=1 THEN
  EXT=0
  FOR LEVEL=40 TO 1 STEP -1 UNTIL EXT=1
    IF B.USER13<LEVEL>=1 THEN B.USER14+=LEVEL; EXT=1
  NEXT LEVEL
END
BEGIN CASE
CASE B.USER14=0
  VAR1=B.ITEM<NUMER.ATT,B.VMC,B.SVMC>
  VAR2=B.ITEM<DENOM.ATT,B.VMC,B.SVMC>
  IF VAR2+0=0 THEN VAR=0 ELSE
    VAR=INT(((VAR1*10000)/VAR2)+.5)
  END
  B.USER11<1>+=VAR1
  B.USER12<1>+=VAR2
  B.USER13=''
CASE B.USER14>0
  IF B.USER12<B.USER14>+0=0 THEN VAR=0 ELSE
    VAR=INT(((B.USER11<B.USER14>*10000)/B.USER12<B.USER14>)+.5)
  END
  B.USER11<B.USER14+1>+=B.USER11<B.USER14>
  B.USER12<B.USER14+1>+=B.USER12<B.USER14>
  B.USER11<B.USER14>=0; B.USER12<B.USER14>=0
  B.USER13<B.USER14>=1
  B.USER14=0
CASE 1
  VAR='???'
END CASE
B.USER2=B.NB
B.USER1=1

```

Fig. 3 UTIL.IBP PERCENT

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:
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CLIF NOTES

Continued from page 34

The Sessions

I won't dwell on this for long; Shannon has done an excellent job in her recap article telling you what kind of things were available. But I did observe a couple of things.

Of course, as you would expect, the "bleeding edge" sessions were popular. You know what I mean. RSS, SOA, Dashboards, how to program a proper martini using BATCH strings. (Ok, so that last one wasn't on the agenda.) But I noted that the "old" stuff was also well attended. If you have a session on techniques for system performance that "everybody knows about," like "don't stick your DCOUNT in the loop of your FOR statement," and it is well attended, what does this tell you? Either that a lot of people have been programming MultiValue for years and haven't heard these tips, or that there are a number of *new* people to MultiValue who need to hear them.

And in Gumpian fashion, I'll let you mull on that point and simply say, "That's all ah got to say 'bout that."

Community

This one hit me in the face this year. After Gus and Monica Giobbi sold International Spectrum to Nathan and Tracey Rector, I think there was a "holding our breath" period. Would Spectrum continue? Would it tank? Had it been nothing more than a Cult phenomenon?

Well, I was sitting in the exhibit hall with friend and colleague Chuck Barchou at the end of the exhibit period. As we watched the vendors starting to break down and pack their booths, I noted that I was used to wrapping up six months to one year projects and feeling a bit of loss and sadness. I figured it was due to the amount of time I had spent working with other people on a team and now seeing that dissolve. But I couldn't account for the melancholy I felt seeing four day conference

breaking down and packing. Chuck made a very poignant point. He asked me how many people I knew at this conference, then how many people I knew in the neighborhood I lived in.

Point taken. My MultiValue community is larger than that I live in on a day-to-day basis. With a couple of exceptions, I know more of your names than I do the people on my own street.

Now that's something to think about when asking yourself next year, "Is it worth going?"

I go to two family reunions a year — one my biological family, and one my professional associates family. Please don't ask me which I enjoy more.

All You Have To Do Is Ask

In summary, I think this was one of the best International Spectrum Conferences I've been to from the standpoint of Getting It Done. I saw more information being shared, more technical tips being discussed, and, in the current economic condition, everyone sharing about ways to do more with less — always a point to emphasize about MultiValue technologies.

But when you don't know something, you *have* to ask! At least at my table at the closing party dinner, after tasting it and assuring everyone it was not Poi, and people at my table and those around us wondering, "What is this?", I simply asked one of the servers, "What is that purple-grey stuff in the middle of our dinner plate?"

That was easy.

Don't be afraid to just ask. **IS**



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1. What is your job function/title?

- | | |
|---|---|
| <input type="checkbox"/> Principal/Owner | <input type="checkbox"/> Sales/Marketing |
| <input type="checkbox"/> President/GM/CEO | <input type="checkbox"/> Programmer/Analyst |
| <input type="checkbox"/> MIS/DP Manager | <input type="checkbox"/> Purchasing |
| <input type="checkbox"/> Controller/Financial | <input type="checkbox"/> Consultant |
| <input type="checkbox"/> VP/Department Head | <input type="checkbox"/> Other _____ |

2. Is your company a (check one):

- | | | |
|---|---|---|
| <input type="checkbox"/> Computer System Supplier | <input type="checkbox"/> Dealer/OEM/VAR | <input type="checkbox"/> Software House |
| <input type="checkbox"/> Consultant | <input type="checkbox"/> End User | <input type="checkbox"/> Other _____ |

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

- | | | | |
|--------------------------------|--|-----------------------------------|--------------------------------------|
| <input type="checkbox"/> D3 | <input type="checkbox"/> Native MultiValue | <input type="checkbox"/> Reality | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> jBASE | <input type="checkbox"/> uniData | <input type="checkbox"/> UniVerse | <input type="checkbox"/> uniVision |

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

- | | | | |
|--|------------------------------------|---|---------------------------------|
| <input type="checkbox"/> Accounting | <input type="checkbox"/> Medical | <input type="checkbox"/> Direct Marketing | <input type="checkbox"/> Legal |
| <input type="checkbox"/> Banking/Finance | <input type="checkbox"/> Dental | <input type="checkbox"/> Construction | <input type="checkbox"/> Retail |
| <input type="checkbox"/> Education | <input type="checkbox"/> Insurance | <input type="checkbox"/> Other _____ | |

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

- | | |
|---|--|
| <input type="checkbox"/> Under \$500,000 | <input type="checkbox"/> \$500,000 - \$1 million |
| <input type="checkbox"/> Over \$1 million - \$5 million | <input type="checkbox"/> Over \$5 million - \$10 million |
| <input type="checkbox"/> Over \$10 million - \$25 million | <input type="checkbox"/> Over \$25 million - \$100 million |
| <input type="checkbox"/> Over \$100 million - \$500 million | <input type="checkbox"/> Over \$500 million |

CLIF NOTES

Continued from page 35

at one end in a lobby area, a single hallway with all but one session room opening off of it, and the exhibit hall at the other end. The one exception room, by the way, was because there were at times five session tracks running at the same time, so they had to take an overflow room one floor up. But this arrangement worked to keep everyone grouped together. This was not only extremely convenient, but it encouraged hallway discussions and knowledge sharing.

The Hotel Staff

The hotel staff was fantastic. Due to my compulsive tendency to reduce airfares whenever possible (AKA "cheap sucker"), I had flown in early Sunday morning. Of course, normal people do not check out of a hotel room at 8 AM on the weekend, so I had a wait to get my room. The kind people at the desk noted my situation and that I was parked in front of one those nice fireplace seats in the lobby for what could have been a six to eight hour wait — not fun when you are running on about one hour's sleep in 48. (Yeah, yeah. So I was up all night putting more slides into my XML presentation. <sheesh> I bet I'm not the only one.) They not only kept me advised of the availability of my room, but apparently put it at the front of the housekeeping list. Now that's customer service.

On the same topic of hotel staff, due to a foot injury, I spent more time than usual at the registration desk making sure one of the chairs didn't float away. I noticed that the liaison Ashley was frequently coming by to make sure that everything was working as planned and that there were no problems or unforeseen requirements that needed to be dealt with.

Very nicely handled, Westin.

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Answer : Purple Idaho Potatoes



B Y C L I F T O N O L I V E R

Here we are. The “post-conference” issue after the 28th International Spectrum Conference, the longest running computer-oriented conference in the United States. It was a

Good Time: my brain is full, my GTD system full of Next Steps, and my feet are killing me.

I started to write this article about what I’d learned at this conference and then decided I wasn’t quite ready to differentiate what I had learned from what I had observed. So I figured I’d simply report on the observations, impressions, and thoughts and let you figure out what you could have learned, had you been here.

If you want to know just the details of what technical information you might have missed if you were unable to join us this year, see Shannon’s recap article on page 6 of this issue.

For the Quants

First, everyone wanted to jump on The Numbers. Was attendance up? Was it down? Oh, my, the humanity! The MultiValue database market is dead!

Really? When I got into the PICK environment in 1974, I was told it would be dead in five years. Hasn’t happened yet. But, ok, let’s look at some Conference numbers.

Attendance this year was off by about 7%. The average in the US with the current economy was around 30%, with some industries canceling their conferences completely. Seems like MultiValue professionals still are looking to connect and find solutions to problems. That was my major observa-

tion. The MultiValue community is alive and well. To paraphrase Mark Twain, “The reports of our demise have been greatly exaggerated.”

The Facilities

I think the Westin was great. It is a nice property. It is well designed, comfortable, and nicely decorated without being gaudy or ostentatious. The downstairs lobby has ample seating around two sides of a large fireplace for gatherings to discuss various topics, exchange notes and ideas, or just chill out and relax. (Hm. Considering the snow we had, I probably should have chosen a different phrase than “chill out.”)

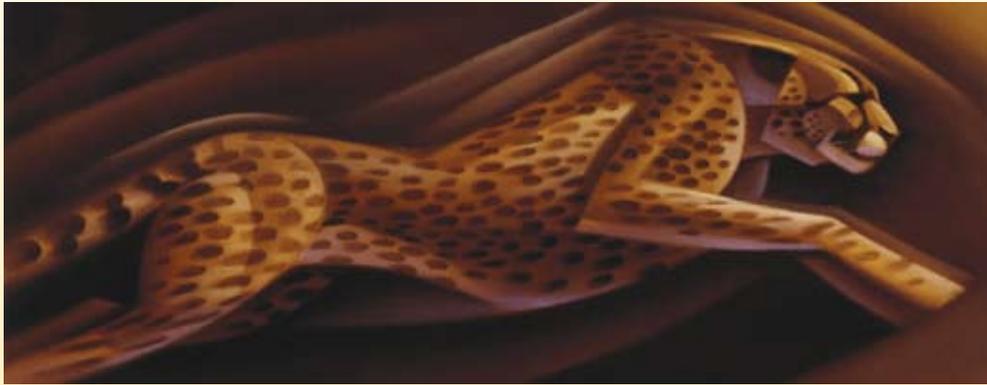
For a property this size, the bar area was rather small. But interestingly enough, it was adequate, not overly loud, and had the advantage of having its own menu. For those at the conference by themselves, this offered a chance to have a more informal meal, but still be in close enough proximity to other conference attendees to meet new people, get drawn into a side discussion, or jump into a conversation with a suggestion or proposed solution to a problem.

Now the Conference area was a real pleasure. In my opinion, the perfect layout. Registration desk

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