DESIGN

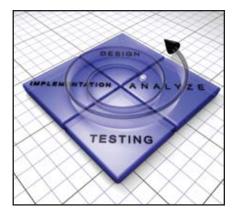# Automated Testing

IMPLEMENTATION

ANALYZE

TESTING

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mv.NET Solution Objects

One simple implementation gives you limitless ways to enhance your MultiValue functionality

mv.NET Solution Objects

New or Existing MultiValue Applications

WINDOWS 8 TOUCH SCREEN APPS
Windows 8 / WinRT / Windows 8 Phone
Tablets and Phones

HTML5 / WinJS / CSS / .NET / XAML

WEBSITE INTEGRATION
All platforms

HTML / JavaScript / CSS

MODERNIZE YOUR EXISTING APP
New functionality
New interface

Any Web, Desktop and Mobile Technologies

BROWSER BASED MOBILE APPS
Android, iOS, Windows 8, Windows Phone, Blackberry

HTML5 / Javascript / CSS

NATIVE MOBILE APPS
Android, iOS, Windows 8, Windows Phone, Blackberry
Use the GPS and Camera

Native SDK / HTML5 Hybrid

Any Web, Desktop and Mobile Technologies

BUILD NEW CLIENT/SERVER APPS
All platforms

Web Services / REST / JSON / XML

INTEGRATION WITH NON MULTIVALUE SYSTEMS IN THE INFRASTRUCTURE
Internet connected data source / consumer

Business to Business

INTERNATIONAL Spectrum

THE MULTIVALUE TECHNOLOGY MAGAZINE

FEATURES | MARCH/APRIL 2013

DEPARTMENTS

From the Inside

What does the Future Client/UI look like? What should you start considering now in your application design?

We all would like to keep our console based applications (Green screen), but you also know that you have to evolve beyond this. We have been creating the Web UIs and the Desktop GUI for years now, but are these the only UIs to consider?

Tablets/Phone/PC

Your tablet will become your phone, and your phone will become your tablet. Your laptop will become your desktop, and your desktop will become your Phone. Your Phone will become your wallet, your ID, your office, your TV, your life.

Did I just hear a HUH?" Let's try that again. Everyone seems to agree the Desktop is dead... Long live the Desktop. There are just some things that you can't do without a screen or keyboard, or just a larger space to do things in... you know that desk/cubical thing.

What is really important at the desk? A large presentation device (monitor) and a high speed input device (keyboard). From there, you need a processor to handle the Input and Output.

Enter the personal cloud, enterprise cloud, and public cloud. Your computer no longer has to be a local device. You can access your files, programs, and information from anywhere in the world using a WiFI, Cellular, or Internet connection.

This should be the direction your enterprise is moving now! WebApp, HybirdApps, VDI, RDP, VNC... there are so many ways to do it now, why aren't you considering it?

The only thing that is lacking is a good connection or dock to an external display and input device or devices. This is the direction that Microsoft is taking the desktop to tablet to smartphone interfaces with Windows 8 UI.

Cloud Computing

To a degree, MultiValue software is already written as cloud-based. Everything runs on a server that can be accessed from anywhere. The only things we are lacking is the appropriate UI — web, tablet, phone, console, desktop, etc.

The cloud concept is not likely to go away, and will just become more important. While most people think of Cloud Computing as putting your software and data somewhere outside of the office, they forget that Cloud Computing is more about easy management and access from everywhere, not run from everywhere.

Natural User Interface

What is this? Well, you know all the new TVs that allow you to change the channel or increase the volume by waiving at the TV? Or the Kinect Game console system? Or the cool user pinch and swipe interface for your cell phones that we take for granted?

Those are all Natural User Interfaces. Combine the NUI with augmented reality, and you now have a three dimensional area that will consist of swiping and tapping the screen, virtual keyboard, and multiple rotating screens... Tony Stark's garage and Minority Report, here we come.

Augmented Reality

Right now, this is just fun. Augmented Reality on the surface looks more

MISSION STATEMENT *International Spectrum* magazine's editorial mission is to be the premier independent source of useful information for users, developers, and resellers of MultiValue database management systems, open systems business database solutions, and related hardware, software, and peripherals. Published bimonthly, International Spectrum provides comprehensive coverage of the products, companies, and trends that shape the MultiValue marketplace as well as the computer industry at large — helping its readers get the most out of their business computer systems.

Automated Testing

Part 1

BY BRIAN LEACH

Early this year I released a new tool aimed at giving MultiValue developers a practical framework for building automated tests for their applications. The germination of this tool was the realization that I really needed a better way to test my own MultiValue solutions and that none of the regular testing frameworks allowed me to delve easily enough into the database to be effective or provided the latitude I needed to write convincing test cases. At the same time, my New Year's resolution was to improve my working methods, and so better automated testing has been very much on my mind.

So in this series I will be sharing the motivations that led me to build my own testing framework and looking into different types and uses of automated testing. We will turn our attention to what makes for good unit, integration, regression, user interface and volume testing, and how these can be applied to both new and legacy applications. We will also be looking at some of the popular toolsets for unit testing, code coverage and profiling.

Why use Automated Testing?

I'm sure many MultiValue developers regard automated testing as an overhead: when the language is such a joy to use and

This "Test First" approach ensures not only that testing doesn't get pushed out to the last piece (and therefore often forgotten) but that development remains targeted towards specific objectives: there is a clear aim to pass the test and not to go wandering of into realms of technical fancy as developers are wont to do.

so easy to craft into business solutions, do you really need it?

Automated testing brings real benefits. The obvious ones are repeatability and consistency: a unit testing framework allows you to run swathes of automated tests to ensure that the application functions as expected and that nothing has broken since the previous run. Overall it can be a huge time saver after the initial investment, and who enjoys manual testing?

But there are other benefits as well, and to appreciate these we need to look at where automated testing stands today and some of the influences that have shaped their popularity.

Toolsets

Over recent years automated testing has moved from an obscure discipline largely confined to professional testers to the forefront of modern development. This rise has been assisted in no small measure by the increasing endorsement of agile development methods and the wealth of testing tools that are now in the reach of mainstream developers. Where Visual Studio, for example, originally confined testing tools to its premium editions, these now form part of their professional versions and are therefore common currency amongst C# developers. The various open source xUnit frameworks have popularized unit testing for other technologies, and have arguably driven down the price of more highly featured professional testing frameworks. I will return to these later in the series.

Agile Development

Agile practices are not new: the first of these, the Dynamic System Design Method (DSDM) appeared as far back as 1994 but was targeted at large enterprises and confined to a small group of cognoscenti. Today the agile landscape has been transformed with simpler methods like Scrum enjoying ever increasing popularity and a merging of agile practices with other software methodologies led by the eXtreme Programming (XP) movement. Scrum in particular has sparked the imaginations not only of developers and project managers, but more importantly the awareness has penetrated those higher echelons of man-

agement holding the purse strings. Today it is a lot easier to get approval to run a project along agile lines than ever before.

A common thread amongst agile practices is iterative development with a feedback cycle that requires regular releases. This would not be possible without a supporting infrastructure of automated build, deployment and testing. Scrum and XP both place strong emphasis on unit testing, with proponents of XP going further in extolling the virtues of Test Driven Development: an approach in which failing unit tests are written first, before the code is built to the point where the test passes. This "Test First" approach ensures not only that testing doesn't get pushed out to the last piece (and therefore often forgotten) but that development remains targeted towards specific objectives: there is a clear aim to pass the test and not to go wandering of into realms of technical fancy as developers are wont to do.

More generally, agile development has given rise to other supporting technologies such as storyboarding, prototyping and specification languages that help to improve the workflow and to encourage consistency. Code generation tools are starting to mature in the .NET space. In the world of web development JavaScript frameworks from jQuery and Dojo to Backbone and Knockout are common currency. The mainstream world has woken up to the benefits, always enjoyed by the MultiValue sector with its strong family of 4GLs, of adopting frameworks to assist development.

Design Patterns

Another movement that has played its part is the increasing use of MVC patterns and their derivatives. MVC (Model View Controller) aims to segregate the business layer of an application (the "Model") from its presentation (the "View"), and MVC frameworks are now available for practically all mainstream development technologies. MVC emphasizes a "separation of concerns" that allows automated testing to be much more readily applied to a solution. If you take the typical example of an order form in a web application, it is

very difficult to automatically test if you only have the web page itself as your target. Once the working logic has been separated from the page it becomes trivial to test the business rules: adding and removing order lines, checking lookups and validations, examining calculations and boundary conditions. A parallel can be drawn with a well-structured MultiValue application: it is easier to unit test your business logic when it is encapsulated in Basic subroutines.

Testing for MultiValue Developers

Of course it is true to say that the ability for MultiValue developers to write such tests is nothing new. Giving your subroutines a standard calling interface means you can write test programs to call them with standard data and examine the expected results. But even so, I have been surprised at how few MultiValue sites even boast a good test system with adequate test data, let alone a consistent testing framework.

If you're not already using some form of automated testing, here are a number of key reasons (beyond the need to preserve your sanity) why you should consider doing so:

Cost is the first significant factor. Yes, there is a cost to producing unit tests, but the cost of fixing a bug once it is in production, both in financial and reputation terms, is far higher — according to industry estimates between 40 and 100 times greater. The earlier it is possible to catch a bug the cheaper it is to fix, and unit testing is the best way to ensure new bugs are

not introduced as a by-product of development before it ships.

Complexity is the next factor. Modern systems have more layers and interdependencies than ever before and with that an increasing need for integration and regression testing and the need to prove that each layer is solid before releasing it into the wild. Even within an application, the fact that MultiValue systems use run-time calls to subroutines means that you need to ensure that you have tested everywhere a subroutine is called when you make a change. Unless you use external Basic functions and INCLUDE your declarations the compiler won't tell you of an argument mismatch on an external subroutine call - and not all MultiValue platforms support that.

Compliance is another powerful driving force, and where the encroachment of requirements such as SOX has increased the cost of performing software releases, so it has affected the cost of releasing patches for bad software.

Comprehension is arguably the most important of these. Test First approaches aim to ensure that by defining unit and acceptance tests from the start a developer proves their full understanding of the problem before coding begins: after all, how can you test for something you don't understand?

Next Article: Unit Testing. **IS**

BRIAN LEACH is a MultiValue developer, consultant and trainer. You can find details of his products and services, including many free tools, at http://www.brianleach.co.uk.

Show Me the Money!

BY KEVIN KING

For eons, MultiValue programmers have used the "MR2" and "MD2" conversions for formatting money values. While this conversion is perfect for converting a stored money amount to something human-readable — for those of us with a decimal currency, that is — there are a surprising number of developers unaware that this code can do much more.

Whether formatting a money, decimal, date, time, alphanumeric, or other type of value, all of the conversion features of the Multi-Value platform are worthy of continued study. In UniData, conversion codes are documented with the ICONV(..) and OCONV(..) functions in the BASIC Reference, but with conversions being a crucial feature of dictionaries and the query language you may find more information about conversions just about anywhere in a documentation bundle.

Today let's take a brief glance at the "MR2" conversion code. Years ago it was explained to me that the "M" and "R" mean "mask" and "right justified" and the following "2" means "show two decimal places". While accurate, it missed a very important detail: There's a digit missing!

The "MR" conversion code — as well as its kissing cousin "MD" (Mask Decimal) and even "ML" (Mask Left) — can be followed by two separate number parameters. The first number is the number of decimals to show, and the second is the number of positions to scale (move) the decimal point. For example, a conversion of "MR2" is really an abbreviation of "MR22", which means to show two decimal points after scaling the decimal by two positions. Similarly "MD4" will show four decimal places after scaling the number by four decimal places. (In an OCONV the decimal moves to the left; in an ICONV the decimal moves to the right.)

So what's the big deal? If not typing that second digit saves you a keystroke and it just works, why should you care? On the other hand, what if you want to show a certain number of decimals but scale the number differently?

Let's say for instance we're building a report program that's reading a list of payment amounts from a text file. As we look at the text file we instantly notice that the payment amounts are unpredictably formatted, like this:

```
23
5.2
325.46
6432.236
```

To output these on our report we need to convert these values so that each payment amount has two decimal places, no more, no less. Throughout the years I've seen a number of ways to achieve this in code, the most common being to input convert the raw value by two decimal places, and then output convert that result by two decimals, like this:

```
VALUE = OCONV(ICONV(IN.VALUE,'MR2'),'MR2')
```

While this does the trick, wouldn't it be cool if we could do it all with a single conversion? With separate show and scale numbers in our "MR" conversion, we can do exactly that:

```
VALUE = OCONV(IN.VALUE,'MR20')
```

In this example, the "MR20" says to mask the number, right justified (though the justification doesn't matter, see sidebar), show two decimal places, but scale the decimal by zero places. In other words, the decimal won't move and we'll still get our two decimal places in the human-readable output.

Looking at this from a different perspective, what if we want to take a number that is stored with two decimal places and show it in thousands with no decimal places? For our example, let's say the stored value is "12345678" which represents "123456.78". For our report, we want to show this value simply as 123. We certainly could OCONV the input value using the "MR5" conversion to format the number as "123.45678" and then use an "MR0" conversion to scale this to "123", but why do it with two conversions when we can do it with a single "MR05"?

While this is just one of many options available with of the MR, MD, and ML conversion codes, it's a significant detail that can simplify the transformation of numbers from one base and format to another in a single operation. There are many other options for adding commas, dollar signs, asterisks, and padding, so if you're interested, dig into the manual and see all that these conversion codes have to offer. **IS**
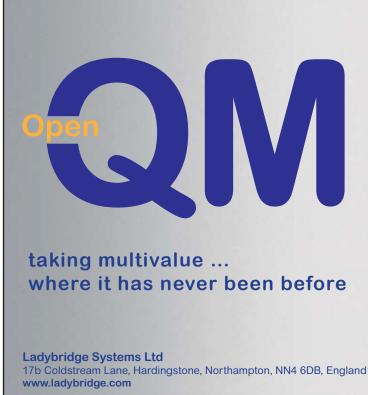
KEVIN KING is the President and Chief Technologist with Precision Solutions, Inc., a leader in technology solutions, support, and training. He is also the author of SB+ Solutions, an enthusiastic private pilot, and Christian guitarist and producer... as time allows.

BlueFinity's mv.NET
Current and Future

BY DAVID COOPER, LEAD DEVELOPER

BLUEFINITY INTERNATIONAL

BlueFinity International supplies Microsoft-centric tools which allow MultiValue developers to create applications using the very latest technologies while retaining their valuable and often substantial investment in MultiValue software and knowledge.

David Cooper is one of the lead developers at BlueFinity International. He has worked within the MultiValue community since 1986 and has extensive experience authoring both end-user applications and developer tools. David has worked on BlueFinity's flagship mv.NET product since its conception and is one of the few people in the industry qualified to talk at an in-depth level about MultiValue, .NET and mobile technologies.

In this article, David discusses BlueFinity's strategy to integrate MultiValue data with modern Microsoft platforms and technologies using mv.NET Solution Objects.

The Current Picture

BlueFinity's mv.NET has been the leading .NET to MultiValue development tool for the past six years and during this time its functionality has grown tremendously. In summary, it currently provides:

- Connectivity from .NET to all the major MultiValue database platforms

- High performance connection management with easy management and configuration

- Feature rich DataBASIC-like functionality for C#/VB via its Core Objects API

- A high performance ADO.NET managed data provider and data reader via its Adapter Objects API

- Industry leading and unmatched entity modelling and code generation features allowing the MultiValue database to be exposed as a series of .NET classes via its Solution Objects API

Although all of the above features are important it is probably the last one, Solution Objects, that is the most significant — both in terms of what it currently provides and also in terms of what it will provide in the near future. I will explore Solution Objects in a little more detail later in this article.

The Current Scope of mv.NET

The diagram in figure 1 illustrates the range of coverage within the overall application development and delivery spectrum currently provided by mv.NET. It also hints at what's in the pipeline for delivery in the very near future.

As you can see — we do an awful lot more than simply providing a communications pipe to MultiValue databases!

At present we stretch from our footprint on the database server (which currently comprises a collection of approximately 100 BASIC support routines) through the connection management/data model presentation tier and onwards into our tooling to support the initial stages of application user interface (UI) creation.

mv.NET Application Development Coverage

Fig. 1

Digital Version On-Line

Scan Me!

The database side of things at present consists of a library of pre-composed support routines which reside safely and securely well away from all other applications. These routines provide a very stable and flexible target for .NET. We then provide a comprehensive library of Windows-based tools that communicate with these routines for a variety of very useful application development and tracing/debugging uses.

On the Windows (server) side, our connection management components breeze through the most demanding of connectivity requirements. These interact seamlessly with all three of our programmer APIs to provide a flexible, .NET developer-friendly way of accessing the MultiValue environment from within .NET.

Today, our adventures into the land of application UI creation is limited to the browser-based Silverlight environment. This generated a huge amount of interest within the community when it first appeared nearly two years ago, but — as we all know — the ever shifting technical landscape is evolving, resulting in the need to embrace additional technologies and working patterns.

Using mv.NET to create an application UI for Silverlight is very intuitive process and introduced an approach which met a number of sometimes conflicting development demands:

- Quick-start application development

- Database content driven screen design

- Easy access to existing DataBASIC logic on the database server

- Use of industry standard development tools with the ability to use whatever 3rd party tools libraries are necessary to assist in the job

- Great looking UIs!

- Ability to engage non-MultiValue aware development resources

The tool we created for Silverlight is called the "XAML Wizard" — XAML being the Microsoft technology used in Silverlight which provides the rough equivalent to HTML/CSS (and a bit of JavaScript) in the traditional web world. The XAML

The new products coming from BlueFinity's developers will ultimately reach down into the MultiValue database via Solution Objects. This is because everything in .NET naturally speaks in the language of classes and therefore it makes perfect sense to focus on this approach.

wizard provides a high level UI designer which links into Solution Objects entity modelling to provide a drag and drop UI creation experience to speed up and join the UI and database.

Once the UI design work is done (or part done — the whole process is naturally cyclic) the designer is able to generate either whole or part of a Visual Studio solution. The developer is then able to use the full power of Visual Studio to do the rest of the work to complete the application. We found that this approach gave developers the best of both worlds — a very easy to use initial application creation tool while still allowing them the full power and flexibility of an industrial strength IDE.

Despite being a great product we all know that Microsoft, while providing long term support for Silverlight, has now moved its focus on to other things — so it's time for us at BlueFinity to add more in the area of UI creation to our portfolio as well — and we are!

Solution Objects

I introduced Solution Objects earlier as an incredibly important part of mv.NET for BlueFinity. Today it provides four key components:

- An entity modelling tool — this allows you create a sophisticated database to .NET class mapping definition

- A code generator — this generates C#, VB or, in fact, entire Visual Stu-

dio solutions based upon an entity model. This enables all or part of your MultiValue database application to be exposed as a series of standard .NET classes. These classes can be used by any .NET developer for any kind of .NET application. Even better, .NET developers need not have an ounce of MultiValue knowledge in order to make full use of both data and logic residing on your database. This is a major benefit where development teams can be expanded by adding new .NET skills without the need for time consuming MV cross training.

- The "XAML wizard" — see above

- A "REST wizard" to fully automate the generation of a complete, fully functional read/write RESTful service directly from an entity model.

In fact, I took my stop watch out the other week and timed how long it took me to go from an entity model to a fully working and published within IIS create/read/update/delete/select enabled industry standards compliant RESTful service — 4 minutes 17 seconds was the answer.

Solution Objects is proving to be an essential tool for many BlueFinity customers. It allows them to easily address some key technological challenges:

- How to encapsulate vital MultiValue knowledge and know-how within a general purpose, industry standard projection of their database content

- How to expose selected parts of their database in a way which cannot be abused (accidentally or not) by application developers

- How to retain/advance their investment in MultiValue technology while keeping pace with the rapidly evolving user-driven technology landscape

- How to engage non-MultiValue aware development resources to help meet these challenges

- How to integrate their MultiValue database with modern hand-held devices

BLUEFINITY'S MV.NET – CURRENT AND FUTURE

Solution Objects therefore is a vital part of mv.NET both now and into the future. Let's explore what's coming soon from BlueFinity and how Solution Objects plays its vital role on this very exciting path.

The Future Picture

BlueFinity has never been lacking when it comes to innovation in providing the MultiValue development community with key tools to allow them to integrate with Microsoft's ever-changing .NET environment.

At BlueFinity we spend an inordinate amount of time observing, experimenting, testing, breaking, cursing and sometimes loving new technologies. We do this partly because it's good fun but also — more importantly — because it's vital for us as a tools vendor to be absolutely on top of what the marketplace, our customers and new prospects will be asking for in terms

of development tooling in 6 to 12 months time.

Over the past 18 months the task of doing this "technology watch, understand and use" process has been especially challenging as the big players out there fight to grab the hearts and minds of developers and the wallets of consumers.

In conjunction with this technology awareness, another really important part of our job at BlueFinity is to listen to what MultiValue-based IT departments are being asked to do.

It is the joining together of these two strands of awareness which is at the heart of BlueFinity's developers product roadmap for the coming 12 months. This roadmap steers a careful course through the jagged rocks of application development for today's often impetuous, trend driven, mobile device fixated modern business landscape.

We think it's really important to furnish the MultiValue community with state of

the art software development tools. Tools that allow the creation of modern, forward thinking line of business applications, but which also allow these applications to be designed, developed and successfully deployed on time and on budget. Specifically, this means providing tools which are:

- Intuitive and easy to use

- Designed to utilize and integrate with industry standard components and infrastructure

- Engineered to provide a unified application development process that is able to address the need to target application delivery at an ever increasing variety of software/hardware environments

- Able to create engaging, modern look-and-feel application UIs while still being able to make the very best of existing and future MultiValue database investment

- Able to leverage the superb existing mv.NET technology stack

To that end, during the coming year we will be delivering products that you are really going to love to use and which will save you immense amounts of development time and effort (and money).

The new products coming from BlueFinity's developers will ultimately reach down into the MultiValue database via Solution Objects. This is because everything in .NET naturally speaks in the language of classes and therefore it makes perfect sense to focus on this approach. To achieve this we will be doing more clever things inside Solution Objects to underpin our support for modern coding patterns such as MVC and MVVM.

We are very excited about the products coming out of our development labs this year and can't wait to share them with you!
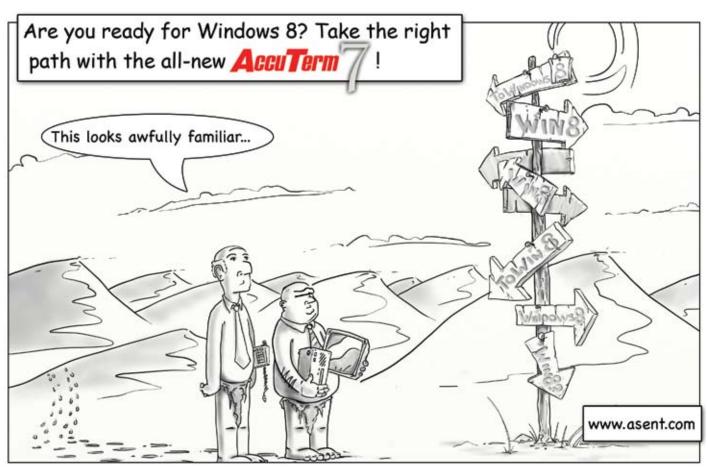
For More Information

To learn more about BlueFinity or to register for a free, fully supported trial evaluation of mv.NET, please visit www.bluefinity.com. **IS**

Negotiation

BY CHARLES BAROUCH

I have a friend who teaches business at the college level. Recently, I've been thinking about asking her if I could guest lecture. As a result, I've been looking for a bite-sized topic; something I could convey in one sitting to people who may or may not have business experience beyond the theoretical. I do a lot of bite sized topics here, in print, and when I speak professionally, but this would be a — theoretically — less experienced audience. So, I thought that negotiation might be the right topic.

Let's see if I can talk you into it.

The Bottom Line

The national gun debate, reproductive rights debate, and countless other debates, have made me rethink a lot of my views. Truth being truth, most of my adventures in rethinking brought me back to the same positions. I am better qualified to tell you how I feel, but largely I still feel the same. Doing this reminds me that a good debate is the process of offering another person the chance to come over to your side, while being open to a journey of your own. Debate is not supposed to be hate speech or a tool for forcing the "opponent" into the corner. If you do it right, there are no opponents, just alternate viewpoints.

Digital Version On-Line

Scan Me!

When the lines between departments are absolute, there can rarely be bridges. We need to blur the lines to make negotiation faster and more effective.

In business, we need to consider this same approach. One of the reasons IT is often not invited to the kick off conversations has to do with our habit of cutting to the chase. We use our considerable analytic skills to find an answer and then state it, expecting the rest of the room to see the point without offering them sight of the path which took us to that same point.

We can't afford to walk into the room and say, "Bad idea. Let's do this instead." We have to learn how to walk others through our process and see if they — and we — arrive at the expected destination or if, having seen our approach, the others might offer productive course correction.

Crossing the Line

One of the best tools for changing debate from adversarial to exploratory comes from defining the "line." I was in a debate about guns recently — I have no interested in sharing my perspective on that topic here — and I launched the following line of inquiry: "Do we all agree that citizens should not have access to unlimited nukes?" The question is bizarre, but it let me get to this

idea: "Since we agree on nukes, we axiomatically agree that there is a limit of some sort on the right to bear arms. Now all we have to do is agree on where the line is."

Once we all accept that we each have a line we won't cross, then we become a group of people trying to mutually agree on the placement of that line. Sometimes you have to swing over to the absurd to make the point. Often you can then dial it down and use a more moderate example.

The business example might include things like building a web presence. Someone once asked me, *why can't you* just make the search work *like* Google. Instead of yelling, or jumping to "no," I asked them how much they wanted to spend on this feature. I pointed out that the distance between their budget and the Google budget for designing search was pretty far apart. Then, I showed them Google's results as it applied to their site and they realized that they don't want what Google does, they want a tailored version of what Google does. Instead of fighting with me, they started drawing lines.

One line defined the upper limit of their budget for this change. Another delimited the things that were nice to have vs. the things which they needed to have. We didn't fight, we just defined lines.

Blurring the Line

Part of the reason we have to negotiate at work stems from our differing expertise. While Jack knows how many widgets the

world is willing to buy at $6.99 MSRP, Jill knows to the penny what they cost in each variant of our base design. So, Jack talks about $6.99 as a target because it meets the need he understands. Jill talks about $8.99 because she knows what the margins have to be. Neither knows that our partners have pre-negotiated a 50% of MSRP price for wholesale, which requires the MSRP to be $17.99 to meet Jill's margin. Both know that no end customer wants the product at $17.99. They need to stop fighting over the moot issue of $6.99 vs. $8.99 and discover the real problem. What Jack and Jill need is a bridge.

Some people are bridges. They have skills in multiple disciplines and are allowed by their management to exercise those skills. If Jenny knows manufacturing and marketing, she can help Jack and Jill get on the same page. When the lines between departments are absolute, there can rarely be bridges. We need to blur the lines to make negotiation faster and more effective.

Falling in Line

Perhaps the hardest part for us analytic types is the moment when we need to stop debating and just get the job done. Falling in line is painful. Especially when you know, deep in your heart that the choices made are poor ones. Just remember that sometimes, what we know is wrong.

So, why fall in line? Why not, to coin a phrase, rage against the dying of the light? Sometimes the argument is worth having. Often, a bad decision is survivable. So long as you haven't backed the "other guy" into a corner, it may not be so bad to let them make their mistake. At the end of the day, I like to be acknowledged when I am right, but I'd much rather have my advice followed than ignored. If walking off in the wrong direction lets others come to see what I see, even if I don't get the credit, I can let life convince them. Of course, I have to be open to the fact that they might just prove that a supposed "wrong direction" is really a brilliant shortcut.

Every time I'm wrong, I learn something. Every time I'm wrong and militantly stick to my guns, I teach people to stop listening

to me. If those are the choices, I'd rather be the person doing the learning.

Line Up

I don't know if I'll ever get around to approaching my friend about guest lecturing. All this might have just been a useful thought exercise. If I never give this talk, I still learned something by taking this detour. Sometimes we are the people going the wrong way.

Let's hope we've encouraged the folks around us to meet that sort of *wander* with patience and partnership. **IS**

CHARLES BAROUCH is the CTO of HDWP, Inc. He can be contacted at www.hdwp.com

FROM THE PRESS ROOM

Revelation Software announces the availability of OpenInsight (OI) Development Suite 9.4

Revelation Software (www.revelation.com) has announced the availability of OpenInsight (OI) Development Suite 9.4 and the Universal Driver Heavy (UDH) 4.7.

OI 9.4 provides improvements to the MultiValue Base Filing System (MVBFS) which combines the U2, D3, mvBase and QM connectors into one common database connector. The next generation of OpenInsight for Web (O4W 1.5) along with patches and enhancements for the Table Builder, Arev32, OIPI. Net/OIPI, SQL Connector, and the Editor++/Basic+ are also included.

The Universal Driver Heavy (UDH) 4.7 is client/server software designed to allow real time mirroring of Revelation linear hash data. The UDH 4.7 provides 64-bit compatibility for the UDH Manager, speed improvements and several software patches.

For further information see www.revelation.com or email info@revelation.com.

About Revelation Software

Founded in 1982, Revelation Software delivers a suite of application development tools and companion services that take full advantage of leading network computing architectures, messaging, and operating environments. Today, the company's flagship product OpenInsight is the only database development suite that provides both Windows, Web 2.0 and .Net tools to develop and deploy mission critical applications. There are more than 1.5 million licensed users of Revelation products across 60,000 deployed sites worldwide. The company has offices in Westwood, New Jersey, as well as a European distributor in the United Kingdom, and an Asia Pacific subsidiary in Australia. ■

mvDeveloper Version 2 Available

Brian Leach has released version 2 of his popular and free mvDeveloper software, redesigned from the ground up to be even more engaging, slicker and more productive than the original.

mvDeveloper is a native Windows based programmers editor for MultiValue developers.

Why should you consider it? Check out the following:

- Free, as in beer.

- Customizable syntax highlighting for Basic, PROC, Paragraphs, scripts and more.
- Customizable templates and code snippets for quick building.
- Code-aware navigation, editing, building and cataloging.
- Quick load referenced subroutines and include files.
- Split screen and side by side editing.
- Dictionary editor with expression highlighting.
- Data Editor with Value Grid for fixing that 99th broken association.
- Simple API to integrate with source code and release systems.
- An optional ED style command line for those who can't live without it!

Whatever your front end, make server side development a pleasure not a burden.

Please download your free copy from http://www.brianleach.co.uk. ■

Entrinsik's Informer Featured in New Gleanster Agile BI Benchmark Report

Entrinsik, Inc., developer of award-winning Informer software announced today that Informer has been ranked as a leading vendor in Gleanster's new benchmark report on Agile Business Intelligence.

Gleanster's report evaluated 32 Business Intelligence vendors in four categories: Ease of Deployment, Ease of Use, Features and Functionality, and Overall Value. The top firms in each category were ranked from "Good" to "Better" to "Best." Drawing from the experiences of 367 companies, this 38-page report offers a comprehensive look at how Top Performers are using Agile BI to enable continuous, on-demand reporting, empower non-IT professionals with data access and drive faster, smarter business decisions.

"Informer was developed with a focus on speed and agility, putting self-service reporting and data analysis tools into the hands of business users so they can respond quickly to business change," says Sharon Shelton, VP Marketing at Entrinsik. "We are thrilled to be recognized as a leader in delivering agile business intelligence."

While traditional BI offers pre-defined analytics and reporting, Agile BI provides ad-hoc discovery tools that can be used to answer new business questions as they arise, according to Gleanster. In addition, IT support is required for traditional BI but far less so for Agile BI, which emphasizes self-service delivery models that once deployed generally require little IT involvement. Because information is power and timing is everything, it's easy to see why Agile BI is gaining ground.

"Agility is a great word to use in the context of BI when you're trying to create an alternative to the traditional, full-scale approach to data analysis," says Jeff Zabin, Gleanster's research director and co-author of the report. "It speaks to the acceleration of decision-making cycles and the need to put the right data and tools in the hands of business users."

"Informer is a great example of a solution that is bringing the promise of Agile BI to life," says Zabin.

The full Gleanster Agile BI Report covers the most compelling reasons to implement Agile BI, most important value drivers, most challenging aspects, and most common performance metrics. Be sure to download your free copy at http://www.entrinsik.com/informer-gleanster-agilebi/.

About Entrinsik

Since 1984, Entrinsik has been developing, implementing, and supporting information management solutions that enable organizations to maximize performance and improve bottom lines. Entrinsik's Informer software is an innovative, award-winning operational reporting, analysis and dashboarding solution used by over 1000 organizations around the world every day. For a demonstration of Informer or a free trial, call us today at 888-703-0016 or visit www.entrinsik.com/informer-free-trial. ∎

CirrusPrint: Efficient Cloud and Network Printing

CirrusPrint is designed to manage and streamline remote printing and document transfer between your cloud or remote computer systems and local printers and file storage systems.

CirrusPrint runs on Windows, Linux, and many Unix systems. To the local spooling system, it looks just like a set of network printers. Print jobs are sent to the server, and arrive quickly at remote printers. Or use it to distribute your documents safely and efficiently between systems in different locations. CirrusPrint can monitor folders for files, and transfer those files to one or more locations.

To see a demonstration send an email to sales@sdsi.us or call 800-446-7374 ∎

BY BRYAN SHUMSKY, REVELATION SOFTWARE

Building A Mobile Application With O4W

Part 1

Introduction

In the past (see specifically Spectrum Magazine issues July/August 2010 and September/October 2010), I discussed Revelation Software's O4W web development toolkit. For those of you who've forgotten, O4W provides both a "wizard" interface for generating reports, forms, menus, and graphical dashboards, and a full basic+ API to build custom routines. It's designed to make Web 2.0 development easy for MultiValue programmers, without requiring developers to learn all the ins and outs of HTML, JavaScript, and AJAX.

O4W uses an open-source library called jQuery as its underlying scaffolding. jQuery provides a platform independent way to create rich web user interfaces, and has been adopted by over 50% of the world's top 10,000 web sites, with a vibrant and large community of users and developers. It's been incorporated into Microsoft development environments, and is even used by Wikipedia (source: Wikipedia — so it *must* be true!)

Over the past year or two, the jQuery developers have released a comparable library for mobile device development, called jQuery Mobile. O4W has been extended to allow you to develop mobile applications using jQuery Mobile behind the scenes. Over the next two issues, we'll explore how you can make a mobile web app with O4W.

This Means YOU

Before we begin, let's get a preconception some of you might have out of the way —

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Scan Me!

> *O4W has been extended to allow you to develop mobile applications using jQuery Mobile behind the scenes.*

O4W is <u>not</u> just for OpenInsight developers. Through the use of OpenInsight's extendable Basic Filing System, files that are in D3, mvBase, UniVerse, UniData, QM, or SQL databases can be "hooked up" to OpenInsight, and appear (to all extents) as native OpenInsight tables. That means that O4W's wizard tools can operate on them, and that O4W custom routines written in basic+ can access and update them directly.

Sample Application

Look, it's no secret — I like pizza. Anyone who knows me — indeed, many people who don't know me, but who just see me — will come to this conclusion. So anything I can do to make pizza more readily available is a worthwhile endeavor.

As our sample application, we're going to make a mobile application for a pizza delivery service. We'll use "stepwise enhancements" to take an initial, simple application, and dress it up until it has a bunch of sausage and pepperoni — oops, sorry, I mean bells and whistles.

And then when it's all done, we'll order in pizza, ok?

Mobile Design Considerations

I carry around a Galaxy Note smartphone, one of the "phablets" (phone-tablets) that many commentators in the tech world originally dismissed as being too big and unruly for people to want. But — surprise! — the Note has taken off, because

people realized that a bigger screen makes it easier to do things. Yes, in this instance, substance won out over style.

But even though my phone has a bigger screen, I still don't want to try and edit a full-size spreadsheet on it, for example. And neither do I want to try and view (or use) a web page that only looks good on a 27" monitor. Yes, the growing size of many smartphones, and the increased use of tablets, means that mobile web sites can take advantage of more screen real estate than ever before, but the major design restriction is still going to be the limited number of display inches (in comparison to a desktop or laptop screen).

So when we design our mobile web page, we must remember two things:

a. Don't try to squeeze on more content than can reasonably be seen on the smallest device you plan to support — No, telling the user to "zoom out" or make his or her font smaller is not the right answer. Redesign your layout so that it fits naturally on the screen(s) that your users are going to use; and

b. The communication channel between the device and the server will not necessarily be as fast as wired internet or wifi — no matter how many "G's" the phone companies tell you your phone is running (3G, 3.5G, 4G — gee wiz!), it's still not going to match wired Gigabit ethernet. So don't make your mobile page try to push more bytes than it has to!

Fortunately, jQuery Mobile (and thus O4W Mobile) take these into consideration when generating the web page. jQuery Mobile will control the layout to make things eye- and finger-friendly on different sized screens, and will also attempt to minimize round trips between

the device and the server by "cacheing" results wherever possible.

Building the Form

jQuery Mobile will automatically convert the HTML and javascript that's generated by O4W and make it "mobile friendly", but in order for jQuery to do this correctly, we have to identify where each section of our HTML goes on the mobile screen. jQuery Mobile does this by having us assign "roles" to each section. The required, standard roles on a mobile screen look like figure 1.

We use the same structure, and the same basic+ APIs, to generate a form in O4W Mobile as we do in "regular" O4W — we just also add information to the API call to

Fig. 1

identify the role that each element plays in the overall picture.

Let's go ahead and start building our first iteration of the mobile pizza application. In O4W, each routine that may be called via a URL has to have a name that starts with "O4W_" (this is just a security precaution — don't want someone inadvertently invoking DELETE-FILE via the browser…), and by convention we usually put an "M_" somewhere for the mobile version of the application, so let's call this routine O4W_MMM_PIZZA (mmm… pizza…) (fig. 2).

Every O4W routine has this general format — a subroutine call with three parameters, and including two standard inserts. When the URL with this request is first received, the routine gets called with the "CREATE" event, and at this point the subroutine can use O4W calls to build the required browser output.

```
SUBROUTINE O4W_MMM_PIZZA(CTLENTID, EVENT, REQUEST)
$INSERT O4WCOMMON
$INSERT O4WEQUATES
BEGIN CASE
    CASE EVENT _EQC "CREATE"
        O4WSetMobile("1") ;* tell O4W we're generating mobile output
        O4WForm() ;* initialize the output form
END CASE
RETURN 0
```
Fig. 2

```
* build first page of mobile application

* define the overall page section
O4WSectionStart("menuPage", pageOptions) * define a section for our
header
O4WSectionStart("menuHdr", hdrOptions) * show a header of size 3
O4WHeader("mmmPizza Menu", 3) ;* build the navigation bar
Gosub makeNav
O4WSectionEnd("menuHdr") ;* done with the header section
O4WBreak() ;* skip a line
O4WBreak() ;* skip another line
* start a new section for our main content
O4WSectionStart("menuContent", O4WMarkedOptions('1'):contentOptions)
Gosub buildMenu
O4WSectionEnd("menuContent")
O4WSectionEnd("menuPage")
```
Fig. 3

```
MakeNav:
* create menu bar
o4wsectionstart("pizzaNavbar", O4WMobileOptions("navbar"))
o4wliststart(0) ;* start an unordered list
o4wlistitem() ;* our first item in the list is a link to the menu page
O4WLink("Menu", O4W_LINKTYPE_LOCAL$, "menuPage")
* the second item in the list is a link to the location page
o4wlistitem()
O4WLink("Location", O4W_LINKTYPE_LOCAL$, "locPage")
o4wlistend() ;* the list is done
o4wsectionend("pizzaNavbar") ;* and so is this sectionReturn
```
Fig. 4

```
pageOptions = o4wmobileoptions("page","b"):
        →  O4WDataStyle("", "data-add-back-btn", "true")
hdrOptions = o4wmobileoptions("header")
contentOptions = o4wmobileoptions("content")
dialogOptions = o4wmobileoptions("dialog","b")
```
Fig. 5

For our simple example, we'll build two mobile pages in this routine — a menu display, and a location page – along with a navigation bar to transfer between the two. Our code will make extensive use of the O4WSectionStart and O4WSectionEnd API calls to group the output into sections (those become "divs" in HTML, for you HTML junkies out there), and we then apply modifiers to the sections to indicate what role they play in the overall page layout (fig. 3).

The internal subroutine to build the navigation bar is similar — it defines the navigation section, and then uses standard O4W API calls to build links between the pages (fig. 4).

Note that we explicitly called the O4WMobileOptions call to identify this section as the "navbar" role, but in the overall page creation code we used globally defined variables that we'd set up previously as a convenience. The pageOptions and hdrOptions modifiers, as well as some other handy "role definitions", can thus be reused (fig. 5).

And indeed we do reuse these in the definition of the second page (fig. 6).

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 A MOBILE APPLICATION WITH O4W – PART 1

Here we use an O4WTable to lay out the columns of data in nice, even rows – we'll also do the same thing for our main menu page.

When this is all put together, along with the buildMenu internal subroutine, we generate the pages in of output on the mobile device (fig. 7 and fig. 8).

The full code that was used to make these pages can be found at (intl-spectrum/s1059).

The actual rendered output will vary depending on which mobile device, and which browser, is used; jQuery Mobile will convert the various calls to their appropriate "native" equivalents.

The Next Step

To actually view this program on your smartphone or tablet point your mobile browser to: http://m.revelation.com/pizza

Now that we've generated our first, rudimentary mobile output, it's time to dress it up with some more "pizzazz" (see how I worked in pizza one more time?)…but for that, you'll have to wait for next month's part two! **IS**

```
* build second page
O4WSectionStart("locPage", pageOptions)
O4WSectionStart("locHdr", hdrOptions)
O4WHeader("mmmPizza Locations", 3)
* use same menu bar
Gosub makeNav
O4WSectionEnd("locHdr")
O4WBreak()
O4WBreak()
O4WSectionStart("locContent", O4WMarkedOptions('1'):contentOptions)
* use standard O4W API to build this output
O4WTableStart("locTable", o4wmobiletableoptions("1", "", "33"))
;* mark as a 'header'
O4WSetCell(1, 1, '', o4wtablecelloptions("","","1"))
O4WText("Location: ")
O4WSetCell(1, 2)
address = "99 Kinderkamack Rd":@VM:"First Floor":@VM:
    → "Westwood, NJ 07675"
O4WText(address)
O4WTableEnd("locTable")
O4WSectionEnd("locContent")
O4WSectionEnd("locPage")
```

Fig. 6

Fig. 7

Fig. 8

International Spectrum Magazine
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Let us help you keep your MultiValue skills up-to-date and efficient.

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http://www.intl-spectrum.com/magazine/

jBASE

MultiValue without Boundaries

BY jBASE INTERNATIONAL

Since its founding in 1989, jBASE has emerged as the platform of choice for migrations and integrations of MultiValue applications with mainstream technologies, offering customers a stable, robust platform now and for the future. In this interview, Dan Ell of jBASE Support — a 32 veteran of the MultiValue industry and one of the original jBASE Value Added Resellers — tells how nearly 25 years of jBASE's pioneering development has led to the evolution of a product perfectly placed for today's and tomorrow's application needs.

How is jBASE Different From Other MultiValue Databases?

The biggest difference between jBASE and all the other MultiValue implementations is that jBASE does not use a Virtual Machine. jBASE runs natively on an operating system so it does not incur the overhead or the inconvenience of running interpreted code in its own, enclosed, environment like other MultiValue databases. A jBASE program is compiled and catalogued as an operating system level executable that can be called from any other piece of executable code capable of calling external routines. Most importantly, once compiled, interoperability with third-party applications and drivers is seamless and native — there are no APIs in the way. If you have BASIC code that is responsible for the routing of your fleet of trucks or for

The biggest difference between jBASE and all the other MultiValue implementations is that jBASE does not use a Virtual Machine.

determining the best way to place goods in a warehouse or for assessing risk on a stock portfolio then you can now call it from any other environment — Java, VB.NET, C or C++ or even your favorite IDE.

Running natively with the host operating system ensures that new technologies are easily supported which allows endless options relating to future direction.

What About Web Access?

We can easily present jBASE data via RESTFUL services. We have an interface that allows you to access and update the data via the conventional Account/File or MultiValue way with very little effort on the part of the system administrator. Setup only takes a few minutes if you want to expose your entire system, which will work for an internal or secure web. It takes a little longer to set up security if you want to limit what Accounts/Files are accessible and for what, but that is really just a matter of telling it what to do. The interface works with a simple Perl script that calls a jBASE program (since jBASE is a native program) and it returns the data to the web client in either HTML, JSON or CSV.

For those wondering what a RESTFUL service is; a RESTful service is an Appli-

cation Programming Interface (API) that follows standard HTML rules and allows the jBASE database to be accessed and updated. It uses the HTTP defined verbs to access and update the database:

GET - Access a predefined set of data

PUT - Update the data

DELETE - Delete the data

POST - Possibly create or alter the actual database structure (add accounts/files/items)

Why do You Think 64-bit is so Important?

Today 64-bit is the way of the world in computing products. Yes you can run as 32-bit but what about all the internal restrictions? 64-bit removes many of the limitations that have caused problems in the past, for example, Shared Library size on AIX, File handles on Solaris and file sizes on just about everything! While some MultiValue databases might have added 64-bit addressing to overcome 2GB file sizing, jBASE 5 is a complete 64-bit implementation of the database. There are no hidden 32-bit addressing limitations, allowing complex and large applications to be handled with ease.

How Does jBASE Access Third Party Databases?

Core to the design of jBASE is flexibility. jBASE was originally designed to allow for MultiValue tools to be able to be used on any form of data. Flexibility was needed to allow an individual to be able to write BASIC code, reports via jQL (jBASE Query

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Language) and stored procedures (Procs and Paragraphs) that could work without change against a range of databases such as ORACLE, MySQL and others. This flexibility is achieved by the jEDI (jBASE External Device Interface) which relieves all of the jBASE tools of the burden of how the data is accessed or stored. Any jBASE developed application can read and write to whichever database is required for data storage just as simply as the jBASE database. This means a jBASE solution can be billed as an Oracle, DB2 or SQL Server solution without a major rewrite and at an economic cost. Major end users can match a corporate requirement for RDBMS compliance while still benefiting from thousands of hours of development in tailored applications written in BASIC. VARs can deliver applications to markets demanding RDBMS databases to capitalize on their investment and expand their business. Even the tough task of merging two companies with diverse IT strategies is easily accomplished by jBASE and its jEDI architecture.

The jEDI is implemented with simple STUB files which allow the data to flow through pre-defined routines that handle the actual data retrieval and/or storage. What this does for the user is allow CUSTOMER to be a jBASE recognized file regardless of its final destined database. The closest concept in other MultiValue implementations would be Q-points which allow you to see files in another account or SUPER-Q-points which go as far as seeing them on another machine, the STUB files go a giant step further in that they let you see files in a foreign database.

How Secure is jBASE Data?

jBASE from its conception has been the best MultiValue implementation in ensuring data integrity. jBASE data files are each a separate operating system level file and therefore you do not have the overflow table corruption problems you have with other implementations. Data corruption is much less likely to occur and should it occur it will affect only the individual files. Other MultiValue implementations that depend on an overflow table can have data corruption that affects all files. jBASE also

supports complete transaction processing which, if implemented, assures that data transactions are complete.

A simple example of transaction processing in practice can be seen when entering an order. The order updates the order file, the customer file and the inventory file; with transaction processing all the files are updated or none of them are. Transaction processing insures "complete transactions". jBASE includes jbackup utilities that back up the entire system, usually on a nightly schedule. Up to the minute transaction journaling can be implemented assuring that any data corruption or even accidental user error, deletion or update can be recovered. Transaction journaling on jBASE can literally be set up in less than 5 minutes and, when setup, will ensure you have record of transactions assuring data recovery. No other database that I know of, let alone MultiValue type databases, can setup transaction journaling as easily. jBASE 5 has added the capability of warmstart, which means in case of hardware power outage the system can restore transactions automatically to the minute of failure. Many customers take transaction journaling to another level in that they have disaster recovery systems which are updated in real time and should a server problem occur they can switch to the disaster recovery system immediately.

There are over 600 banks live or implementing jBASE in more than 120 countries, so I think it is safe to say that the critical mass for a proven, secure platform for business software has long been surpassed. Today jBASE technology is shipped on a daily basis around the world without concern regarding security or reliability!

What Debugging Tools are There?

jBASE debugging does so many more things than any other debugger I have worked with. Probably one of the coolest is remote debugging in that you can run a program on one terminal and debug it on another. This comes in handy if you have a problem with a screen where something prints and you don't want a bunch of debug commands all over the screen.

With remote debugging, the screen that is running the program just shows the program and all the debug commands are on a separate screen. The jBASE debugger is fully interactive with the operating system it runs on which adds a lot of powerful features. With the jBASE debugger, you can redirect the output to a file or pipe it to any operating system command. And, since jBASE programs are native operating system commands, this means you can send the output of a debug to a jBASE program to filter the results or possibly go as far as emailing or texting the output somewhere. Those familiar with Linux understand the power you have with utilities like grep, awk and sed.

What Other Areas Epitomise MultiValue but Allow New Ways of Doing Things?

A great thing with jBASE is the program profiling. jBASE implemented it by setting an environment variable, which means you can profile any program, any time and not impact other users of the same program. There is no need to compile it with special options or run it with special options. With program profiling you can quickly see where the inefficiencies are in a program and it is all done by simply setting an environment variable. I ran it on a set of reports for a company and when we fixed the inefficiencies we literally went from taking longer than overnight to running in less than 30 minutes.

Along the same theme of the jEDI, jBASE spooler was created with that same flexibility in mind. Simply put, a jBASE "printer" can actually be a process that sent a PDF to email recipients, a process that archived reports to a report server or even something that posts information to a website. With jBASE, the printed output is directed through a jBASE filtering and translation process and then passed to whatever program or process the native operating system wants to use. The most typical jBASE printer will actually just simply send the print job to the operating system's lp command. The only limit of where a "printed"

JBASE: MULTIVALUE WITHOUT BOUNDARIES

job can be sent is your computers connectivity and your imagination.

Why Does jBASE Offer SQL Support?

One of the main benefits of providing a SQL engine for jBASE is that the database can be used with external tools and APIs. SQL has many benefits that can be applied to the jBASE database. In particular with jBASE, SQL allows users to query data where there might be tables within tables and no primary-key/foreign key relationship (these relationships are defined in the dictionary). This is an extreme advantage not available in most other MultiValue systems. As well as integration with external API's the jBASE SQL engine also allows SQL to be used to interact directly with jBASE files. For example SQL can be used wherever jQL is used currently while the rich set of SQL functions allows the creation and manipulation of data tables e.g. inserting updating and deleting records.

jBASE 5 allows you to access SQL directly from the jsh which means you can use jBASE SQL commands in jBC BASIC programs and in stored procedures. The SQL commands built directly into jBASE include everything from SQLCREATETABLE to SQLDELETETABLE and a lot of commands in between which are all familiar to those who use SQL. The SQLSELECT syntax allows for joins and selection of jBASE files or as those in SQL like to call them, tables. jBASE SQL is not an add-on product or third party utility, but is actually a part of the core design of jBASE 5. jBC BASIC programs can access the SQL capabilities by executing the jBASE SQL commands or by using the JQL functions. I don't believe any other MultiValue implementation has SQL commands built-in without either third party or add-on products.

MultiValue is Much More Than Programming in BASIC so Where has jBASE Evolved for the Developer?

jBASE 5 has introduced the jRemote API which provides an API to expose jBC functions like subroutines, execute commands and access files from JAVA. Similarly, jBASE provides a bi-directional interface to JEE by means of the JEE compliant jRemote Inbound and jRemote Outbound resource adapters. This is complemented by a full JDBC 2.0 compliant API for both read and write. The Java developer is certainly well at home when working with jBASE 5.

The Microsoft .NET developer has several options open from the straightforward jRCS API through to the all encompassing functionality provided by mv.NET Solution Objects. This Entity Model based development functionality means that any and all of the power of .NET application development can be exploited against all the great jBASE 5 features we have highlighted.

What About Migrating Applications Across to jBASE?

jBASE supplies lots of tools for migration from other MultiValue platforms. First of all, jBASE has utilities which allow for account restore from the other MultiValue implementations. Essentially, jBASE supports PQN/PQ proc and paragraphs with no change. jBC BASIC includes all but the most esoteric extended commands of other MultiValue BASIC languages. The main difference between jBC BASIC and other implementations' BASIC is the list of keywords that jBASE does not allow as variable names. jBASE includes a utility called portbas that does this conversion for the developer. Although there was a great effort to standardize how MultiValue implementations would work, there were slight differences between R83, REALITY, PRIME and others. Some implementations allow for setting the type you wish to use. jBASE went one step further in that we include preset types, but also allow for a-la-carte picking of over 150 different behaviors including the @(-n) func-

tions. This means you could run as R83 with some of the added functionality from other implementations.

Our professional services team can even offer a free assessment of your current application with technical advice about how to get where you want to go.

How is jBASE Licensed?

As you might expect, a classic license to use with annual maintenance fees has always been available. However when there is more than the single user to license, the Server model is available. Today's applications users want more flexible access to 'open multiple windows' in to an application and that is fully supported with a Multi-session license. Access to an application can now be from a webserver or a terminal server and again a slightly different approach is required and this is supported via Websession licensing.

jBASE runs on most commercially viable hardware and operating system platforms, including virtual and cloud based systems. The classic licensing model described above still works for dedicated requirements but where applications are offered as software as a service, SAAS, model a different approach is required. To match this SAAS model jBASE is available with subscription licensing.

Whatever your application delivery model there is openness and flexibility with jBASE licensing.

How do I Get Started?

We offer a free software evaluation which is fully supported by a team that is often said to be the best in the industry. Go to the website (www.jBASE.com) to register for a trial, contact our sales team for a no obligation chat, or meet with our technical team for a free online demonstration with a Q&A session specific to your own company. At jBASE, we understand the challenges that customers face in maintaining the competitive edge in their industry and we know how to meet them. **IS**

GET CONNECTED.

KNOWLEDGE AND EDUCATION FOR THE MULTIVALUE PROFESSIONAL.

ABOUT OUR PROFESSIONAL MEMBERSHIPS

We are all busy in our day-to-day work and staying up-to-date with the current MultiValue technologies can be difficult.

Professional Memberships provide you access to knowledge, solutions, information, and code that you won't find in other locations.

Professional Membership Includes:

- Magazine in Electronic and Print
- Newsletter
- On-Demand Videos
- Live Webinars
- Discounted Conference Rates
- Research papers
- Case Studies
- Source Code

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Tech Tip

How to Access PROC Input Buffers from BASIC Programs

When working with PROCs there are 2 different input buffers available: Primary and Secondary. There are different way to access these buffers from within your BASIC programs:

```
PROCREAD and SYSTEM(10)
```

Primary Buffer

This buffer provides you access to information found at the TCL command line, and other inputs generated when 'SS' and 'STON' is not used within a PROC

```
PROCREAD PRIMARY.BUFFER.ITEM ELSE PRIMARY.BUFFER.ITEM = ""
```

PROCREAD allows you to access the primary buffer. A common use for this is to get the TCL arguments from the PROC command line. In the example below, the ARG1 and ARG2 along with the TEST.PROC will be available in the PROCREAD statement.

```
TEST.PROC ARG1 ARG2
```

If you create a PROC like the following:

```
PQ
RI
S1
O Begin Date +
IP
S2
O End Date +
IP
HTEST.PROGRAM
P
```

This will cause all the input from the user to be placed in the Primary Buffer. PROCREAD can then read this information. The draw back to this is that the arguments supplied at the command prompt will be overwritten. So in the sample above, instead of saying "TEST.PROC ARG1 ARG2", it will be replaced with the input values with "Begin Date" and "End Date". The output will become "01/01/13 02/01/13 ARG2".

You will notice that the PROC name has been overwritten by the "Begin Date". This has to do with the "S1" and "S2" commands which dictate which argument the input will be placed into.

Here is an example of running the above PROC:

```
:TEST.PROC3 ARG1 ARG2
Begin Date :01/01/13
End Date :02/01/14
PROCREAD 01/01/13 02/01/14
```

Secondary Buffer (Stacked Data)

The secondary buffer is often used when stacking inputs, or passing Item IDs from an active select list to another TCL statement. Stacked Input data can be accessed with a SYSTEM(10). This will tell you if there is anything in the secondary buffer or not.

If you create a PROC like the following:

```
PQ
SS
S1
O Begin Date +
IP
S2
O End Date +
IP
HTEST.PROG
STON
A1
H<
A2
H<
P
```

Notice the "SS" and "STON" PROC commands. This will force the data being entered to be saved in the Secondary buffer, not the primary buffer. The STON will then allow you to create a "Stacked Input" that SYSTEM(10) can detect.

Here is an example of running the PROC with Stacked Input:

```
:TEST.PROC2 ARG1 ARG2
Begin Date :01/01/13
End Date :02/02/13
PROCREAD TEST.PROC2 ARG1 ARG2
STON 01/01/13
STON 02/02/13
```

Test BASIC program

The following is the BASIC program that is used to test the PROCS:

```
* TEST.PROG
PROCREAD TEST.VAR ELSE TEST.VAR = ""
*
*** Display what was found in the PROCREAD statement
*
CRT "PROCREAD ": TEST.VAR
*
*** Capture all STON statements
*
LOOP WHILE SYSTEM(10) DO
    INPUT STON1
    CRT "STON ": STON1
REPEAT
END
```

IS

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

M ARKETPLACE

HIGH IMPACT 4-COLOR DISPLAY AD

```
Data Systems, Inc.
Sophisticated order processing and fulfillment
systems                                        Data Systems, Inc.

303.333.3333         info@example.com      www.example.com
                      3 -3//8"
```

Cost Per Year

1" $1,811.00

2" $3,623.00

BASIC LISTING: $690.00

DataSystems, Inc. http://www.example.com, ... 333.333.3333, ext. 1

- ■ Includes company name, website, and phone number
- ■ Approximately 60 characters per line
- ■ Place under category of your choosing

ADDITIONAL LINES: $280.00 per line

DataSystems, Inc. http://www.example.com, ... 333.333.3333, ext. 1
Sophisticated order processing and fulfilment systems

- ■ Approximately 60 characters per line

ONLINE BANNER ADS:

VERTICAL BANNER (120X240)

$2,880.00 per year or $300.00 per month

RECTANGLE (180X150)

$2,592.00 per year or $270.00 per month

SQUARE BUTTON (125X125)

$1,680.00 per year or $175.00 per month

E-MAIL NEWSLETTER BANNER:

HALF BANNER (300X90)

$4,200.00 per year or $175.00 per issue

ONLINE MARKETPLACE LIST:

BASIC LISTING – FREE

- ■ Company Page
- ■ Product Page – Limit 1
- ■ ADs will be displayed on your page

PROFESSIONAL LISTING

$350.00 per year/ $35.00 per month

- ■ Company Page
- ■ Product Pages - Unlimited
- ■ No ADs displayed on your page
- ■ Download Links

For more information contact Nathan at: nathan@intl-spectrum.com

ACCOUNTING

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Execu-Sys, LTD
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TERMINAL EMULATOR

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FROM THE INSIDE

like a gee-whiz and "it's just a toy" concept. Much like VR was years ago. It requires you to use your smartphone's GPS and camera to get any kind of information. Then the phone will display overlays on the real world.

Look at the business use for this… Service techs and manuals. Customer and job history by just walking in the door.

Keep in mind that while Augmented Reality is not just displaying cool 3D graphics on top of real world, but also reacting to the environment. Height, depth, location, temperature, etc… We usually extend the output that these triggers would cause into something that is visual, but nothing says it has to be presented over the top of real world images.

The only reason Augmented Reality hasn't gone beyond the fun and cool animated graphics, is because we are missing a natural easy to use visual interface to make the Augmented and the Reality seamless.

Enter the Google Glass project.

Google Glasses

Google Glasses is a stepping stone to the monitor and keyboard-less office. With Google Glass the enterprise will be able to take Augmented Reality and project anything, anywhere, and then provide the Natural User Interface to create a virtual keyboard or input method.

If you thought talking on a Bluetooth headset while walking through the airport got you odd looks, wait until you start waiving your hands and smacking people in the arms or head by accident.

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

CLIF NOTES: WHY I GO TO SPECTRUM (IT AIN'T FOR THE ICE CREAM)

go to conferences. And it is very important. This conference is where I reconnect with other professionals in the MultiValue community. Note that I said "other professionals," not prospects, not customers, not only other consultants. I want to find out who is working on what. What Regular Programmers have real, hands-on experience with (fill in the blank). Was it a good experience, or was the experience painful? Who's working on solutions to a new set of problems?

I understand that a lot of Regular Programmers don't see the benefit of networking to them. After all, they are not consultants, they have regular, full-time jobs. To you folks I will simply pose the following question. In this age of company failures, acquisitions, and mergers, what makes you think that just because you've been at your current company for 10 years you won't be looking for a job this time next year? A few of those other Regular Programmers you met a couple years ago at the conference and have stayed in touch with just might be the edge you need to avoid finding yourself on your feet all day long saying, "Welcome to Walmart." Just think about it.

Although networking is an important activity, at least in my opinion, that's not the major reason I come. I come to the conferences to learn stuff. What stuff? Anything I can. It's one of the ways that I stay relevant, which I suppose is just a fancier way of saying that I'm trying to avoid becoming a MultiValue couch potato. Of course, I could do that without coming to the conference. I can download software, read documentation and tutorials, and buy and read books. All I would have to do is give up part of my billable activities, cut down even more on my sleep, stop taking time to eat (okay, that might not actually be such a bad idea), and skip spending time with my kids and granddaughter (figure the odds of that happening). Instead, I can come to the Spectrum Conference and take advantage of these bright, knowledgeable people who have already gone through the painful part

of the learning curve and are graciously willing to give the rest of us a quick-start in whatever new technology they have been working with.

Did you notice that I haven't said a single thing about "vendors" yet? I'm not talking about spending several days sitting through product presentations although, of course, those are also available, and I strongly encourage you Regular Programmers to check for those presentations, also. The people you work for and who might be looking for various solutions will quickly learn that you're the "go-to" person about what is happening and what is available in the MultiValue marketplace. Not a bad reputation to have in your company instead of just "well, she writes code."

I want to emphasize this professional education thing, because I think that the misconception that the Spectrum Conference is all about vendors pitching their wares is detrimental to all of you Regular Programmers out there.

By my count, there are 51 sessions being presented at this years conference. Of those 11 are vendor presentations or demonstrations. That means that 40 sessions are professional education sessions targeted at Regular Programmers. That's 78% of the content, folks.

What is in it for you? Most of it.

So please forget the idea that the International Spectrum Conference is nothing more than four days of sales pitches and vendor presentations. Yes, those are an important part of the offering. But for those of us Regular Programmers (including consultants) who are not in a position to sign a check to buy anything or looking for sales leads, it's all about connecting with your fellow MultiValue professionals and continuing your education in the ever increasing sophistication of the MultiValue capabilities.

If you are at the Conference, look me up and say hi, and let's exchange a few ideas. I'll be the one wandering around like a kid in a candy store.

Or maybe an ice cream shop. **IS**

Why I go to Spectrum (It Ain't for the Ice Cream)

BY CLIFTON OLIVER

A while back, Charles Barouch posed a question on the Pick Users Group on LinkedIn asking people who were not planning on attending the International Spectrum Conference, "Why not?" As you would suspect, this topic immediately caught my eye.

One of the early respondents self-identified as a "regular programmer," not a consultant or (in my interpretation here) somebody looking to purchase equipment, software, or solutions. As a regular programmer, there didn't seem to be anything in it for him. I think it is a pretty straightforward and understandable decision. It is, however, based on a misunderstanding or misinformation, and I expected participants to point that out. Unfortunately, that is not what happened.

The discussion was quickly taken over by some consultants pointing out that it wasn't worth it to them because they don't get any new business leads from attending. This then morphed into a discussion of how the vendors aren't doing anything to promote MultiValue in the marketplace. In other words, it almost immediately devolved into the same gripe session that I have been hearing for the last 30 years. Now, I normally don't get involved in this discussion anymore. After about 36 years

in the MultiValue community, I'm bored with it. The same points are always raised, the same gripes about the database vendors not bothering to do any marketing are always aired, and I have yet to see any new ideas or solutions offered.

But this time, something bugged me. Specifically, nobody bothered to address the Regular Programmer's points. So I attempted to. In the hopes that a number of other Regular Programmers who did not see the discussion on LinkedIn might see this issue of Spectrum magazine, I thought I would expand on my comments in that discussion thread and explain just why it is I attend the Spectrum Conference.
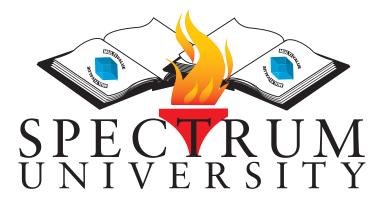
Let's begin by getting the "full disclosure" stuff out of the way. Yes, I am the Editor of this magazine. Yes, I do receive some payment from Spectrum for that work. But that's where it ends. I am not an employee. I have been an Independent Consultant full-time since 1980. The compensation I get from Spectrum is a very small part of my income. As Editor, that is where my responsibilities end. I am not "required" to attend Spectrum. I am not required to give presentations at the conference. I can skip the conference anytime I want to. (Although I will admit, I think it would look a little odd

if the Editor of the magazine didn't bother to show up.) Do I get paid to attend the conference? Absolutely not. I have to take the time off of billable work activity (it's called "lost income") just like any other self-employed person or employee who takes time off work to come. I pay for my own travel and my meals out of pocket. Because of the number of presentations I do, Spectrum is gracious enough to comp me a hotel room. But between travel expenses and lost income, it costs me a large chunk of money out of my own pocket to attend that shindig.

So why do I do it? After all (some of you need to prepare to gasp), I have never received a single consulting lead directly as a result of attending or presenting at Spectrum or any other conference I have attended, even those over the years where I have presented sessions. It has always been strictly money out-of-pocket. And as much as I enjoy ice cream, the Ice Cream Social is nice, but I will not take a week off of billable work and pay all the expenses to come just for something like that. I am in easy driving distance of Baskin-Robbins and Cold Stone.

"Networking" (as in connecting with other people) is frequently touted as one of the main reasons why people

Upcoming Webinar Schedule

DATE	TITLE
Friday April 26th	**Spectrum 2013 Conference Review: What Did You Miss?** Did you miss the 2013 conference? Join us in this webinar to see what you missed at the conference, and what announcements and new products were presented at the conference.
Tuesday April 30th	**Using WebServices in Multivalue BASIC** People have been talking about how to create Web Services from MultiValue BASIC, but there are many web services out there that you can use within you multivalue BASIC applications. This webinar will talk about how you can consume web services and use them as part of your applications.
Thursday May 2nd	**Creating an Excel Add-In to Access MultiValue Data** Your office loves Excel. Your co-workers love Excel. Why can't you get your MultiValue data into Excel for them to use? Excel provides developers the ability to create an Add-in or Plug-In to enhance Excel's functionality. This webinar will talk about how to create Excel Add-ins, and use them to extend and combine the your MultiValue application with Excel. This webinar is designed to show you how to pull the data from the MultiValue database into Excel and how to call MultiValue BASIC programs from within Excel.
Thursday May 23rd	**Windows 8 Metro Development for MultiValue** We know that you need to design and develop applications for Windows 8 and the Metro UI. This webinar will talk about what is new in the Metro UI, how to address it, and what problems you may have developing for Windows 8.
Tuesday May 28th	**Virtualizing Your MultiValue Database** If you are looking at virtualizing your databases, then this webinar is a must. The webinar will cover planning, the gotchas, and setup needed to virtualize your database.

For more information or to register please visit http://www.intl-spectrum.com/webinar