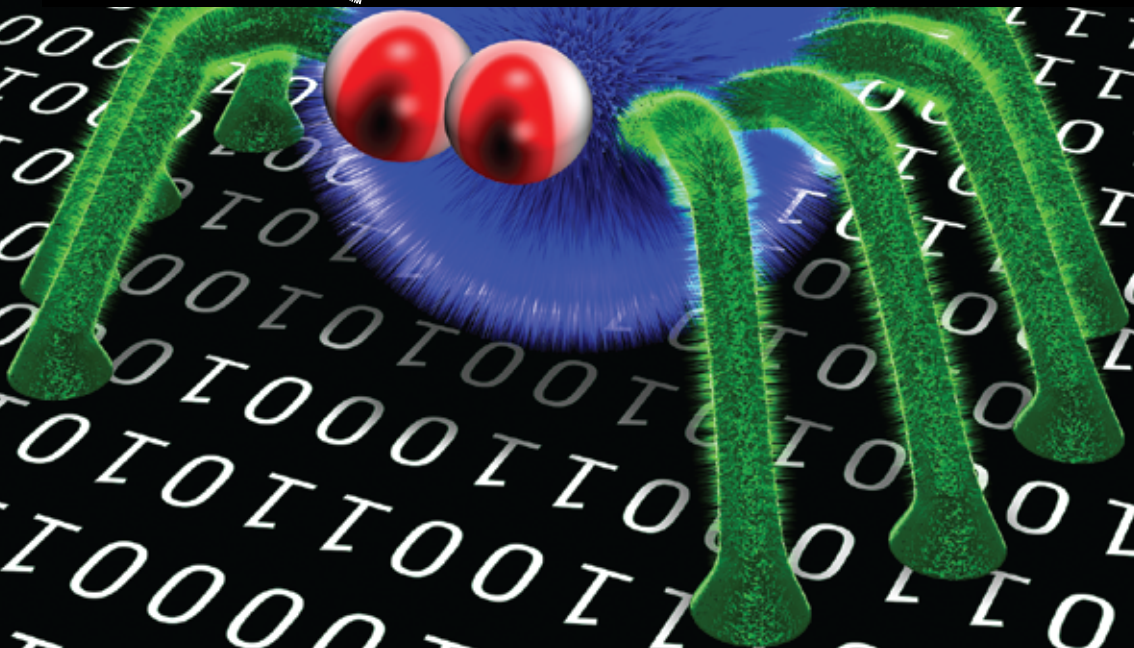


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THE MULTIVALUE  TECHNOLOGY MAGAZINE | NOVEMBER/DECEMBER 2012



Zero-Defect
MultiValue
Applications

ALSO IN THIS ISSUE:

- Locking - Part 2
- Understanding Perspective
- 2012 MultiValue Recap



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16 Business Tech: Perspective In many cases our understanding of a situation is determined in large part by our perspective – our viewpoint of the issue. In order to get a more complete picture, we need to make a conscious effort to understand the other person's perspective. Knowing where they are “coming from” can often help us understand things in a completely different way. **BY CHARLES BAROUCH**

18 2012 MultiValue Industry End-of-Year Recap The year 2012 continued to provide us with a number of challenges – changing economic conditions (improvements and setbacks), changing technologies, and changing market demands. But within all times of change there also exist opportunities. We asked some of our MultiValue partners to share with us some of their accomplishments from this last year and what to look for in the next.

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From the Inside



INTERNATIONAL Spectrum

NOVEMBER/DECEMBER 2012

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Happy Holidays to all!

It's the end of the year, time to relax, enjoy family, give gifts, and time to start planning for 2013.

I'm going to assume that if you are reading this, then you are preparing for after the 2012 Armageddon. If you are, then you should be planning for the International Spectrum 2013 conference.

International Spectrum 2013 will be in Phoenix on April 15th–18th, 2013. That is less than 4 months away.

Have you taken a look at the conference details yet? If not, please do, you'll find many informative sessions that you shouldn't miss. You will also find documents and materials (ROI spreadsheet, conference schedule) that will help you justify the conference to your management. You will also find preview videos of many of the sessions that will be at the conference this year.

There will be a webinar on January 19th that will talk about what is going on at the conference this year, and provide you some information to help you justify coming to the conference. Make sure you aside some time to join us, as well as, look over the other materials.

We will be providing the "Group Pass" again this year. The "Group Pass" allows up to 5 people from the same organization to attend the conference for an average of \$600 a person. Since the "Group Pass" gives you access to the full week, you can have your company send 2 or 3 attendees at the beginning of the week, and then send the remaining attendees at the end of the week. This way you don't have your entire IT department gone and can still take advantage of educating as many as you can.

To find out more on the 2013 Conference go to the following URL: <http://www.intl-spectrum.com/conference/2013>

-NATHAN RECTOR
President, International Spectrum
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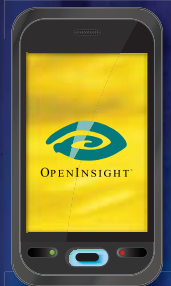
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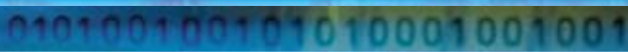
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Zero-Defect

MultiValue Applications

BY JON A KRISTOFFERSON

This article is my musing over how to develop zero-defect MultiValue applications. MultiValue databases are renowned for their rapid application development (RAD) capabilities. Many applications I have worked on have been developed by experts in their respective fields, but most were not skilled in software engineering. That is both the upside and downside of having an easy to use database facility that anyone can use.

These thoughts will hold true for most MultiValue database application environments. I have done application development in several disciplines including Manufacturing, Health Care, Insurance, Law Enforcement, and Application Conversions. I have done development in a number of different MultiValue database environments. Some of the information may seem to be obvious, but all of the information presented here will provide the framework for developing zero-defect MultiValue applications.

Don't Get Blind-sided

Make sure that your operating environment is not an impediment to your application development. Insure that

Make sure that your operating environment is not an impediment to your application development.

your computer hardware is up to date and working properly. Make sure that you are at a known good version of the operating system. Keep the MultiValue database software up to date with the latest good patches. I'm like everyone else in that I do not always load the latest patches to anything without waiting for the results from the trail blazers who update before me.

Create an operating system script that checks your operating system and MultiValue database licensing, disk space, error logs, spool queues, system performance, and users. I named my script "morning" as when I first login in the morning I run it and see what news it brings. If there are any problems, I resolve those before I do anything else.

In my current data center our operations are 24/7. When we backup the system we do not have the luxury of bring down the system for a backup. Neither can we afford to back up our system with users on, as the backup

image will appear corrupted if we need to restore. In a disaster we want to be operational as soon as possible, and we cannot afford the time it would take to repair file corruption on the backup image. We use a technique¹ that allows us to get a good backup with users and background tasks running with minimal interruption to the users.

You should run a process that checks all of your production and development accounts for file corruption and proper file sizing. File corruption problems should be corrected at once; file sizing can be left for low system usage times.

You must make sure your development platform is stable to proceed to zero-defect MultiValue application development.

Pick a Methodology or Two

Application methodologies come and go like the songs on my daughter's iPod playlist. It is hard to select a methodology knowing that it will be out of fashion in such a short time. It is, however, critical to developing zero-defect MultiValue applications to have a standard methodology. For project management I like the Scrum² methodology. For the software engineering I like the Agile³ methodology.



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1. Kristofferson, Jon A. (2006). A Backup Strategy in the Unidata Environment. International Spectrum, May/June 2006, pp. 32-34.
2. [http://en.wikipedia.org/wiki/Scrum_\(development\)](http://en.wikipedia.org/wiki/Scrum_(development))

I have not found a single methodology that seems to work well with both the overall project management and the software engineering of a development project.

Scrum provides visibility in how the project is progressing and identifies roadblocks to the completion of the tasks. It also separates the developers from interruptions and distractions from outside influences.

Agile programming and in particular pair programming is crucial towards creating zero-defect MultiValue applications. Pair programming is having two developers working on a single task. One developer codes the task the other codes a test for the task.

For instance, a sales order entry application is written by one developer and the other developer creates a test program that will exercise the sales order entry application. Upon completion of the sales order entry application, the application can be tested by running the test program. What better use for a computer than to run repetitive tasks like testing applications.

Build Your Application Wisely

A little forethought in the design or ongoing development of your application goes a long way to creating a zero defect MultiValue application.

Have software engineering standards and follow them. Standards can improve the overall quality of your software project. Maintaining those standards allows you to move closer to achieving zero-defect MultiValue applications.

MultiValue applications can be almost self-documenting. Make sure your software engineering standards make use of this fact. You should be able to generate a good deal of your applications documentation programmatically.

Anticipate that your application will be updated during its life cycle. Having a solid update process that can be reversed if a failure occurs will make updating your application a bit less painful to your customer base.

Consider separating the application data from the application programs. Keeping separate MultiValue accounts for data and programs makes for good software engineering.

Keep global variables for the release and version numbers of your operating system, MultiValue database and application. It is possible to have your application updated with new versions (bug fixes) without the users being interrupted. New releases may require users to exit the application during the installation of a new release.

Incorporate error logging in your application. Flashing messages to the users does next to nothing toward zero-defect MultiValue applications. By placing detailed error messages into an error log, developers can get the information they need to resolve an issue.

Use object-oriented techniques in your programming practices. Even though there is little native support for Object-Oriented programming in Basic, you can still reap some rewards by writing subroutines to perform the main part of your applications logic. For example, subroutines that add, update, delete, print and inquire on your sales orders.

By moving the complex logic to subroutines the application will be easier to document and maintain. If the logic needs to be changed it should only need to be changed in the subroutine once. The programs using the subroutines will be easier to write and maintain.

Use computer generated code wherever possible. Computer generated code can be much less prone to programming errors. The generated code

will have the same logic flow making it easier to maintain. All changes should be able to be made through the code generation utility. Generated code can be easier to document.

Use a Standard Test Database

I'm sure that E.F. Codd⁴ will hate what I'm going to tell you next. You should create a standard test database in a single MultiValue file. The file will contain all of the data for all of your files in the application. If you prefix the file name to the file key you can fit them all in one test database file. MultiValue files are not particular about what you store in them. This goes against any sort of software engineering standard, but it makes setting up your application for testing so much easier.

You can write a fairly simple program to read the files in your production application and write the data into the test database file, prefixing each record key with its filename. If your application has separate accounts, prefix the data with the account and then file name, then the file key. Likewise if you have multiple servers in your application prefix the hostname, account and then file name to the file key.

The only data that really changes in your test database are the date fields. Your test database should store only a date offset in the date fields. When you create the test database you use the current date and subtract that from each date value in each test database record. You can reconstitute the data by adding a current date to the date offset.

I store the attribute numbers of the date fields in the dictionary of my test database file. When I load the test database from my production data, I subtract the run date of the load process from each date field in the entire production database. When I refresh by test database, I add the run date of the refresh process to the date offset fields before writing the data to their respective data files.

Continues on page 8

3. http://en.wikipedia.org/wiki/Agile_software_development

4. Codd, E.F. (1970). "A Relational Model of Data for Large Shared Data Banks". *Communications of the ACM* 13 (6): 377-387.

ZERO-DEFECT MULTIVALUE APPLICATIONS

Continued from page 7

When I run the test programs, the dates change but the relationship between the dates does not. So if I run a 30-60-90 day accounting report, the output should remain the same no matter what date I run it on. The only thing that would change would be the dates.

The refreshing of the test database can be quite quick and the results are the same every time.

Let the Computer Test Your Application

I mentioned above about pair programming. I'm sure some MultiValue developers are one-man IT shops. Pair programming in a one man shop is hard, but not impossible. In a multi-developer work environment pair programming should be made a standard practice.

5. <http://expect.sourceforge.net/>

I'm sure at first glance, if you are not using pair programming already, you are thinking, "This guy is Nuts!" If the cost of placing two programmers on a single programming task seems ludicrous you should read on.

The first programmer is responsible for coding the application program assigned to him. The second programmer, possibly the more senior, would insure the software engineering standards are being maintained and take responsibility for the coding of the test program.

The test program would generate inputs to the application and check the resulting outputs from the application. A great program to use for that purpose would be "expect"⁵. Expect allows you to send an input to an application and then wait for a response. You can check the response for correctness or notify the programmer that the application did not respond as expected.

"expect" works for both green screen applications and web-based applica-

tions. If your application uses a graphical user interface (GUI) there are other methods for performing the testing process.

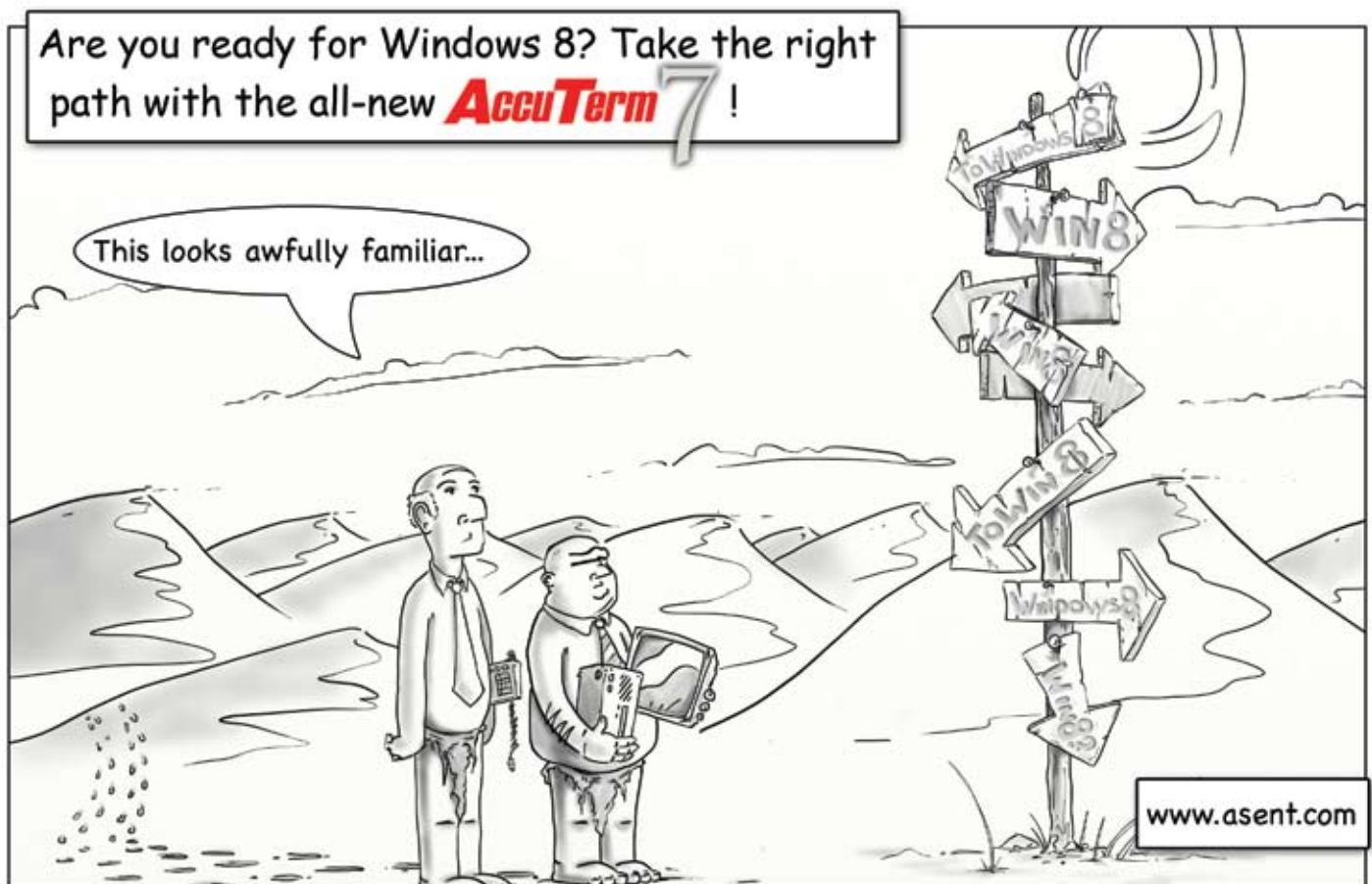
By using "expect" scripts to test your applications, you can do several types of application testing. The first type as described above would be unit testing of a single application program. You can use a programmatic approach to creating the "expect" scripts.

After successful unit testing, you may want to test the entire application as a whole. That would entail clearing all of the data from all of the files and building the entire application database from scratch using "expect" scripts.

The third type of testing would be full load testing of your application. That would be running the "expect" scripts in parallel to monitor your application for any performance problems.

Conclusions

You may argue that zero-defect applications are impossible to develop. Due



to the complexity of the operating systems, MultiValue databases, and the intricacies of your particular application, the odds are that it will be difficult, but I don't think it impossible.

If the individual programs are fully tested, the application as a whole tested from installation to operational mode and finally the application is tested under a full user load. The likelihood of becoming a zero-defect MultiValue application becomes a function of the rigor of the computer aided testing.

With the advent of virtual machines, you may have several different operating systems running several different versions of MultiValue database environments. With high speed I/O alternatives, several test runs or load tests can be run in a single day.

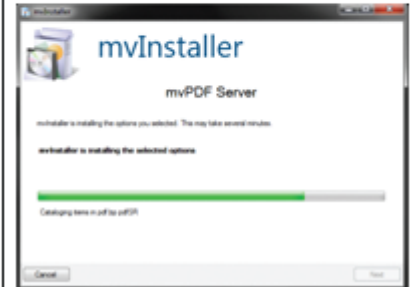
Finally, you need to determine if the costs of pair programming can be offset by delivering zero-defect MultiValue applications to your client base. The costs of developing zero-defect MultiValue applications can be far less than

correcting technical problems and product reputations in the field. **IS**



JON A KRISTOFFERSON has 35 years experience in the computer business. Currently he is working in an Enhanced 911 Call Center outside of Chicago, IL. He also does consulting on a limited basis. Mr. Kristofferson enjoys giving talks on MultiValue Database issues, Linux, Open Source software as well as technology trends. His background includes: Electronic technician, Electrical Engineer, Systems Analyst, Principal Consultant, and Executive Manager. In his spare time he enjoys exercising, astronomy and spending time with family and friends.

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LOCKING

Part 2: Traditional Locking

BY BRIAN LEACH

In the first article of this mini-series, we looked briefly at how UniVerse uses its lock table to ensure physical integrity of the database by blocking concurrent access to files at the group level. In this article we consider application locking as a means of ensuring logical integrity.

Why Locking?

The reason for locking is to ensure that all operations take place against a current copy of a record, in a way that guarantees that no updates are lost.

Sounds like time for a highly contrived example.

Mugs for Mugs has a stock control system. Clare receives a parcel from their suppliers with 10 mugs to add to the 6 already in store. At the same time Gary receives an order for 4 mugs.

Gary reads the stock record, notes that there are six mugs present and takes off 4, leaving 2. He finishes wrapping the parcel and saves the change. At the same time, Clare also reads the stock record and notes that there are six mugs present. She adds her ten mugs making 16, and saves the change before Gary finishes wrapping. Gary is a little slower than Clare (or dispatch is more difficult, he would say). Without locking, the system simply records what was committed last. The ten mugs have gone missing (fig. 1).

So how should the system work? There are three possible options:

- Gary is not allowed to update the record until Clare has finished with it.
- One or other update is disallowed.
- Only the changes are recorded and they are applied to the record when it is saved.

These three scenarios demonstrate the main approaches to locking: pessimistic, optimistic and merging.

Traditional Locking Model

The traditional MultiValue locking model is a type of pessimistic locking that is based on intent. Before performing any operation that would lead to a change being made to a record, a developer is expected to request an update lock, which in turn confers an exclusive right to modify and commit that record. Once the developer has gained the update lock he or she is free to perform any modifications to the record and to write or delete the item — or to release the record lock should the update be abandoned (fig. 2).

Since it is normally expected that a record should be read prior to modification, the lock is most usually requested using a READU (Read for Update) statement:

```
READU Record FROM MYFILE, MyID ...
```

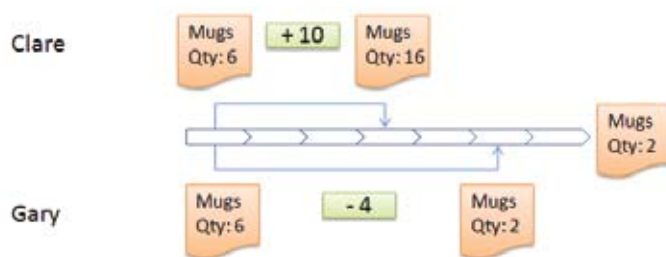


Fig. 1 Life Without Locking



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Good, bad, worse. Release without a record id is perhaps excusable for batch processes, but the global RELEASE is a disaster waiting to happen.

Under normal circumstances, the READU statement should either gain the record lock or wait patiently until the lock is available. The problem is, of course, that waiting patiently isn't necessarily the default action of most users who might simply assume that the session had hung or might, in fact, have better things to do than staring at a blank screen or whirling cursor. Some systems helpfully beep to show that the system is, in fact, still operating but that may not be sufficient to stop users closing their sessions in frustration (and DBAs having to clean up the resulting mess).

So a partial solution is to be found in the shape of the LOCKED clause. In addition to the usual THEN, ELSE and ON ERROR clauses, the READU statement has a LOCKED clause that fires if the record is already locked by another session. This allows developers to intervene or at least manage expectations (fig.3).

It is worth noting that the LOCKED clause is the first clause on the statement, which is appropriate since the lock request is made first and the read action will not proceed if the lock cannot be taken. READU is not the only locking command: the RECORDLOCKU statement also exists on many platforms.

Releasing Locks

Locks are automatically released on a WRITE or DELETE action unless overridden by using the WRITEU or DELETEU statement. A frequent misunderstanding is that the WRITEU statement does not itself take a record lock if one does not exist: it only preserves an existing lock.

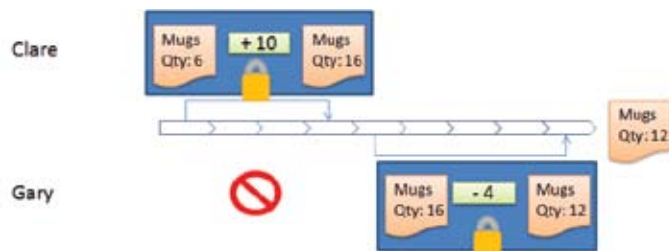


Fig. 2 Now with added locking

```
Fin = @False
Loop
  ReadU MyRecord From MYFILE, MyID Locked
  Crt @(0,22):'Hey, that lousy user `:Status():' has locked it'
  Crt 'Trying again at':OConv(Time() + 1,"MTS")
  Sleep 1
End Then
  Fin = @True
End
Until Fin Do
Repeat
```

Fig. 3

If the write or delete is abandoned, it is up to the developer to explicitly release the update lock. The RELEASE statement comes in three syntaxes with different levels of scope:

```
RELEASE fileVariable, itemId
RELEASE fileVariable
RELEASE
```

Good, bad, worse. Release without a record id is perhaps excusable for batch processes, but the global RELEASE is a disaster waiting to happen. That will release any and all locks held by that process — and not necessarily just from the one program, which is an issue when we look at client/server applications.

RELEASE is not the only example of lazy programming where locking is concerned. All locks held against a file variable are released when the file variable goes out of scope. Whilst useful, that can mask a bad habit in which the developer may frequently forget to explicitly release an item. File variables held in common only go out of scope when the common block is destroyed, which for named common is typically at the end of the session, so assuming closure as a means of releasing is bad programming.

Good Intentions

The strange thing about the traditional locking model is that update locking is intent based, not mandatory. You can read and write records with no locking and the database will not complain. It is a feature that new developers need to learn quickly, but one that will not be assisted by the software. A lack of discipline in taking out record locks is a problem when it comes to retrofitting transactional control into older systems. Consistent locking patterns is one of the benefits when it comes to using 4GLs and application runners, as these usually include hard baked locking.

An interesting approach was taken by the UniObjects middleware for UniVerse and UniData. Remembering that this was targeted at client side developers working away from the database — who may not be MultiValue programmers — rather than requiring the developer to explicitly take out and release record locks, UniObjects offers the option to create a locking strategy at a session or individual file level. The strategy dictates when record locks should be taken and under what circumstances they should be released, which is a brave at-

Continues on page 15



Ladybridge Systems Launches OpenQM on the Raspberry Pi

UK based Ladybridge Systems has announced availability of the OpenQM MultiValue database software on the Raspberry Pi computer.

Martin Phillips, Technical Director of Ladybridge Systems, said, "Making OpenQM available on the Raspberry Pi is one element of a project to increase awareness of the MultiValue data model. Our belief is that by exposing students to this model before they are indoctrinated in the more restrictive relational model, they will be in a better position to make reasoned decisions regarding the appropriate model for projects that they may encounter later in their careers."

The data model used by OpenQM and other MultiValue database products allows storage of multi-dimensional data, significantly decreasing the number of tables needed in an application compared to the relational model, simplifying development, increasing performance, and reducing costs.

OpenQM is also available on Windows, Linux, Mac OS X, FreeBSD, AIX, Solaris, and the PDA. Application software is largely compatible across all

platforms.

The Raspberry Pi computer was launched in February 2012 by the Raspberry Pi Foundation is a credit card sized computer with a price tag of under £25 (US\$35) featuring 512Mb RAM, SD card data storage, two USB ports, high definition video, and Ethernet connectivity. Primarily intended as an educational tool, enthusiasts have purchased these devices as fast as they can be manufactured.

The Raspberry Pi version of OpenQM is available free of charge to genuine educational establishments. Outline teaching materials introducing database concepts will be available shortly.

For further information see www.openqm.com or email sales@ladybridge.com. ■



Informer Business Intelligence Now Available to SugarCRM Customers Via SugarExchange

Entrinsik, Inc. (www.entrinsik.com), developer of award-winning Informer software announced today that Entrinsik's Informer self-service reporting and business intelligence software is now listed on Sugar-

CRM's SugarExchange and can integrate directly with SugarCRM implementations. SugarCRM is the market-leading customer relationship management (CRM) company that enables enterprise-wide customer engagement.

SugarExchange is the marketplace for discovering third party solutions that leverage the SugarCRM platform. Informer is available in the Business Intelligence and Reporting categories on SugarExchange. Informer software provides real-time reporting, data analysis and interactive dashboards that extend the value of SugarCRM.

With Informer integration, Sugar users can:

- Access data from multiple sources including SugarCRM, data warehouses, Google Docs, Excel spreadsheets etc.
- Incorporate run-time variables allowing users to specify filter parameters and underlying Key Performance Indicators (KPI) on the fly
- Easily construct ad-hoc reports with that contain rich content and integration with Sugar

"Through the integration between Entrinsik and SugarCRM, users can simply log into Sugar and access real-time reporting, data analysis and interactive dashboards all while staying within their CRM system," said Clint Oram, CTO and co-founder of SugarCRM. "We are making the process easier for users to have all the information they need at their fingertips in a central location, and this means they will stay in the CRM longer and unlock greater value from it."

"Informer is a natural fit for SugarCRM customers who are looking to add more advanced business intelligence capabilities to their CRM system quickly and easily," said Doug Leupen, President and CEO of Entrinsik. "With Informer, companies can now link their SugarCRM platform to multiple data sources on one screen; then immediately drill into the underlying details within the disparate databases with just one click."

About Entrinsik, Inc.

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-sugarcrm.

About SugarCRM

SugarCRM democratizes customer engagement, empowering every professional who interacts with the customer to excel at their job. SugarCRM's market leading open Customer Relationship Management (CRM) platform delivers the agility, flexibility, and security required to equip each customer facing professional with the relevant information and tools they need to effectively collaborate and engage with their customer, both within and beyond the enterprise. SugarCRM applications have been downloaded more

than 11 million times and currently help over 1,000,000 end users across disciplines effectively engage their customers. Over 7,000 organizations have chosen SugarCRM's On-Site and Cloud Computing services over proprietary alternatives. SugarCRM has been recognized for its customer success and product innovation by CRM Magazine, InfoWorld and Customer Interaction Solutions.

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MITS Discover Software Version 8.0 Unveils a Host of New Features & Enhancements

MITS, a leading provider of advanced reporting and analytics solutions, is pleased to offer a new release of their popular software application MITS Discover, providing easy-to-use tools for tracking and capitalizing on company patterns and trends, including sales, profitability, accounts receivable, accounts payable and more. "MITS Discover 8.0 is the culmination of

over a year and a half of intense effort," explains Mickey Lass, VP Sales & Business Development, "and several enhancements we included in this release were based on predicted future requests from our user base. This customer focused approach is designed to maximize user satisfaction in what is already a highly regarded data analysis and reporting tool."

"Whether you're new to MITS Discover, or are currently using it and thinking of upgrading, you're going to find a lot of value in the 8.0 release," says Mickey. "For everyday users, the improvements will make access to their information that much easier and more useful. For the IT group that supports Discover, the web-based administration tool really cuts the cord, allowing them to access and modify the system from anywhere in the world."

Discover 8.0 brings the power of inventory and sales data closer than ever, making business intelligence decisions that much more informed. Upgrades include:

Drill-Across Feature – Drill-Across, allows the user to isolate a piece of data and 'step-back' to look at it in the context of the whole organization, quickly and easily. This drill-across from a detailed Report or from a summarized Dashboard to a detailed Scorecard opens up exciting new avenues for data analysis.

Customized Landing Page – Discover 8.0 now allows users to designate any Dashboard, Scorecard, or Report as their primary homepage. Now when you launch Discover, the information

most important to you will be the first thing you see.

New Report Wizard – The new report wizard automates the once-manual process of defining report parameters to quickly and easily generate reports on demand.

Updated User Management – Discover 8.0 features an all new, web-based user administration tool, eliminating the need for a static location running the Discover administration module. Further, user records can now be displayed with permissions merged in from a user's assigned templates.

MITS Discover is a mature, state-of-the-art analytics solution used by hundreds of organizations worldwide. The 8.0 update will enhance what is already an incredibly powerful tool to help users develop the types of business intelligence and reporting functions that will help their company grow and prosper. Contact MITS at 206-789-8313 for more information or visit our website at www.mits.com to schedule a demonstration today.

About MITS

Founded in 1996 and headquartered in Seattle, Washington, the company's technologies are used by thousands of organizations, resellers, and system integrators worldwide. MITS products are firmly entrenched in a wide range of business areas, including manufacturing, distribution, retail sales and services, education, government, healthcare and insurance, as well as a host of other industries. ■



Extend your MultiValue Data with Microsoft SQL Server 2012

BlueFinty's mv.SSIS allows developers on any major MultiValue platforms to take advantage of the world's most widely used product when it comes to moving data into SQL Server – Microsoft SQL Server Integration Services (SSIS). Microsoft SSIS is a graphical based tool which runs inside Visual Studio and allows developers to define how external data is to be imported into a SQL Server database.

Microsoft SSIS provides an incredibly rich way of drawing and manipulating data before it is loaded into SQL Server. The latest version of mv.SSIS supports the 2012 release of Microsoft SSIS which introduces new features and enhancements that increase the power and productivity of developers, administrators, and knowledge workers who develop data transformation solutions.

"We are seeing a significant growth in the number of companies wishing to retain their investment in MultiValue while at the same time expanding their computing infrastructures to embrace the use of SQL Server," explains David Cooper, Lead Developer at BlueFinty. "Once data is within SQL Server a host

Continues on page 14

FROM THE PRESS ROOM

Continued from page 13

of SQL-based tools may be utilized for purposes such as data mining, data migration, reporting services and OLAP (Online Analytical Processing), allowing company decision makers to slice and dice data enabling them to make intelligent business decisions."

When Microsoft designed SSIS they did so in such a way which enables 3rd party organizations to create connectors that allow data from outside sources to connect into SQL Server. BlueFinity's data connector, mv.SSIS, connects to Microsoft's SSIS on one end and into mv.NET on the other end which then reaches out to all of the major MultiValue database platforms to draw data into SQL Server.

Using Microsoft's SSIS combined with BlueFinity's mv.SSIS and mv.NET products, developers can build complete database synchronization solutions — quickly and easily. "Be it a simple, single direction data export or a full blown bi-directional data synchronization requirement, these tools allow you to build a solution tailored to your specific needs," Cooper continues. "You can use mv.SSIS to initiate bulk file updates to amalgamate different data sources or to synchronize separate data sources so if a change is made to your MultiValue data, the same change is brought over and inserted into your SQL Server database."

More information including a video interview with Da-

vid Cooper is available here: www.bluefinity.com/site/mvssis.html.

About BlueFinity International

BlueFinity International, part of the Mpower1 group of companies, supplies leading-edge software development tools and consultancy services to the MultiValue database and Microsoft developer communities. Its flagship product — mv.NET — is a comprehensive solution for developers wishing to access MultiValue databases from within Microsoft's .NET environment. Visit www.bluefinity.com. ■

Feedback

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

International Spectrum Magazine has a Feedback Department, sometimes known as Letters to the Editor.

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

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



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To learn more, call 866-763-KORE or visit www.koretech.com today!



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LOCKING - PART 2 TRADITIONAL LOCKING

Continued from page 11

tempt to simplify the model whilst making it consistent.

Shared Read Locks

So far we have only considered locking from the point of view of updates, but there is another level of locking available. Whilst not used very often, a shared read lock, created using a READL or RECORDLOCKL statement, prevents other processes from gaining an update lock but does not block other processes from also gaining a shared read lock. Similarly, a shared file lock prevents another process from getting an exclusive file lock. Shared locks are therefore used to ensure the consistency of data as it is being presented, guaranteeing that the view is an accurate snapshot in time. It's a way of saying — don't mess with my data until I've finished looking at it!

Transactions and Isolation

The traditional locking model was built in an age before true transaction boundaries were available under the MultiValue model. Systems assumed that any writes would complete and therefore the locks could be discarded as soon as a write operation had returned.

With transaction handling, locks need to take center stage. You start a long transaction, possibly involving a large number of records that need updating. Just as for the individual update above, in order to guarantee transactional integrity it is essential that no other changes from other processes can intervene whilst the transaction is running. This means that you need to acquire locks for everything modified in the transaction until the transaction has either been committed or rolled back. This can, of course, stretch the lifetime of a lock very much further than that required for non-transactional processing. Any missing locks could allow another process to change the data during the transaction phase, thereby compromising data integrity. Where

there are nested transactions, locks in the child transaction should not be released until the parent transaction has completed since the child will not be committed until then.

It is for this reason that UniVerse enforces transactional integrity through the twin concepts of isolation levels and isolation modes. An isolation mode, in UniVerse terms, is implemented as a set of locking prerequisites that must be met in order for processing to continue at a given isolation level. Isolation levels are one of the inheritances from the SQL model that dictate how safe and repeatable a system should be to meet transactional constraints. In the lowest of these, NO.ISOLATION, there are no prerequisites and the database acts as a regular MultiValue system. As you go up through the tree, UniVerse becomes more restrictive in its locking requirements in order to guarantee integrity of operations.

In practice this means that for a READ COMMITTED isolation level — the recommended level for busy sites — any reads should be protected by at least a shared read lock and any writes by at least a record update lock. The words at “least” here are significant: an update lock trumps a read lock, and a file lock trumps a record lock. A file lock requests exclusive update access to a database file and takes precedence over all record locks within the file. A file lock is requested using the FILELOCK statement and released using the FILEUNLOCK statement.

Lock Promotion

There are some circumstances where UniVerse will insist on an isolation mode even if one has not been explicitly set. Triggers are one such example — because a trigger could be part of a transaction, UniVerse requires that any updates performed by a trigger must be protected by an update lock. If not, the trigger will simply fail and the update will abort.

Another such situation regards SQL-oriented operations. A SQL UPDATE

runs as a single transaction so the database needs to ensure that all candidates are locked, which could involve many thousands of record locks. Whilst effective locking is critical for logical consistency and mandated for some isolation modes, taking out huge numbers of record locks can swamp and eventually stop the system.

So for some bulk operations, notably large SQL UPDATE statements, UniVerse will automatically consolidate record locks to a single file lock once a configurable threshold has been reached, to avoid the danger of filling the lock table at the expense of the greater risk of contention.

Non-Transactional Bulk Updates

When running regular MultiValue processing, even large transactions are typically relatively limited in scope, possibly affecting a few dozens or hundreds of records. If you run the update through Basic, then you have options such as using soft locks throughout and ensuring that all reads and writes go through your own subroutines (ignoring PQN PROC and other such ugly mechanisms for updating), locking some identifier known to the processing such as a batch header record, or taking a file lock. If the process is truly wide ranging you could also use the old task synchronisation locks that seem to have been largely forgotten now using the LOCK n statement to ensure that only a single instance could run the update, as a belt and braces procedure to further limit the impact.

The traditional locking model served MultiValue developers well for many years, but in the next article we will look at where the model breaks down. **IS**

BRIAN LEACH is an independent MultiValue and .NET consultant working in the UK. He is past president of the International U2 User Group. Find out more at www.brianleach.co.uk.

Perspective

BY CHARLES BAROUCH

I gave a speech to CMUG once where I started by showing the group a PCMCIA broadband card (figure A). I explained that my then-current computer can only use PC-Express cards, which are smaller. My wife had found me a reasonably priced PCMCIA-to-PC-Express adapter, which I plugged into the card (figure B). Finally, I pointed out the need to occasionally use the card in the old computer — and put a PC-Express-to-PCMCIA adapter on to the other adapter (figure C). This, I explained, was a series of good ideas that, collectively, form a bad idea.

Remember that bad idea, as we talk about perspective. Our viewpoint is informed by our own, personal series of decisions. Likewise, the people we talk to will have their own experience set, which will create *their* viewpoint. We live in the weeds. Our perspective is often tied to that low-to-the-ground position. Other people see things from a different angle. I was talking to a buddy recently and he said, “*Don’t they understand that they are doing it wrong?*” I looked at him and pointed out that the mythical “they” in this story were getting the results that “they” wanted, without spending the money required to do it right. From where he

Wherever you work, there are always opportunities to know your audience. The most successful consultants are the ones who take this same approach.

sat, it was wrong, but from where his bosses sat, they were doing it right. We want the world to resolve to one truth, but it doesn’t.

Bad Code On The Rise

I was hired by this one company who needed me to fix years of bad code. I was worried that I might get dragged into the day-to-day, and never get a chance to do what they originally hired me to do. It was bad code, and I wanted to fix it. I needed a compelling argument. How bad was the code? The code had wrested the company from the jaws of bankruptcy. The code put them on a profitable track. How could that be bad code? Here’s the answer I wanted to give: *The code had multiple reads and writes of the same records. It had single letter variables. It had hundreds of lines of dead code inter-*

mixed into the programs, making the code hard to read. It was laced with GOTO statements, some of which bent back upon itself. There were dozens of programs which were only a few lines different from each other. It used horribly inefficient code. Here’s the answer we actually gave: The code can’t be proved, so we are losing hundreds of dollars of manpower in re-re-reading the code each time a problem is reported. Maintaining this much code will require us to keep adding employees without adding features or functions. Code which cannot be proved will fail an audit. The second thing that sold them on the value of cleaning the code? One of the other IT guys grabbed a program that had been cleaned, and showed management the Before code and the After code. Good structure and good variable names in the clean code meant that the manager, who had never written code himself, was able to guess his way through the program with near perfect accuracy. The Before code was just letters to him. It imparted no content or context.

Risky Business

I was in another conversation where the tech bemoaned the fact that man-

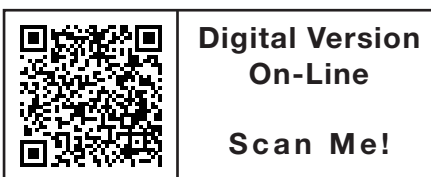


figure A



figure B

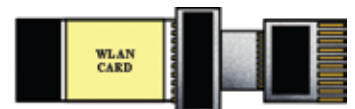


figure C

agement wasn't paying attention to a specific business — not technical — need. He pointed out to me that he'd been around long enough to know that management didn't see technical issues as he did, but this was business. He was correct; they were doing it wrong. The reason his perspective didn't match their perspective came down to facts not in evidence. Management knew — but *he* did not know — that the issue in question represented a fraction of one percent of the business. Ultimately, they did agree with him, but fixing that issue was too far down on the list to be contemplated. So, functionally, it was permanently off their radar. Unfortunately, even when everyone agrees on the truth, we can still end up in a disagreement because not everyone has every fact. I've certainly seen the reverse, where us "weed people" know things not in evidence to the "10,000 foot people" at the top. How we communicate our "secret" facts can bring us success or bring us trouble. We need to know our audience when we speak.

A Bridge Too Far

There was a meeting in which one of the executives said that one of the "code monkeys" believed that the third party code we were using was inaccurate. When someone else in the meeting attempted to use the same term — code monkey — when referring to me, she was corrected with the statement: "No, Chuck isn't a code monkey. Chuck is more of a bridge." I cherish being a bridge. Any time people outside of IT see me as a translator, they see me as someone with whom they can talk. That sense that I can be approached gets me included in conversations which decrease the number of facts not in evidence. Having the same information, and working at using the same perspective, allows me to win the arguments that I should. It also helps me avoid starting arguments which will never go well. Before you think I'm painting myself as a superman, please realize that most of my bosses have never been sure exactly what I do

for them. Even someone with excellent "bridgework" is facing a continuous uphill climb.

The Secret To Your Success

Like every Business Tech column, the value isn't in my storytelling. The value comes when it happens to help you. Not every column applies to every reader. Not every column is on your desk the day you need it. Making this one work is not about waiting for the moment. It is about creating moments. Bridge-building is a constant event. You can't simply always be on topic and on target when the situation hits. You need a reputation for being the right person. That means that you need to think about being a bridge at all times. Some of us are in massive, mega-multi-sized companies. Most of us, however, are probably in a more intimate setting. The smaller the venue, the better chance you have to be seen as part of the team, and not as "That Guy From IT." Even in the massive companies,

it can be done. Most big companies have an entrenched tradition of keeping your bosses half in the dark. If they don't know, it is hard for them to clue you in on things. Wherever you work, there are always opportunities to know your audience. The most successful consultants are the ones who take this same approach. You never want to be on the opposite side of the table from management. You want to be seen as on their side.

All too often, IT, HR, and other departments are seen as outsiders, despite being part of the same company. The reason is often the gulf between what we see and what everyone else sees. **IS**



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



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MultiValue Industry

2012

End of Year Recap

Entrinsik

What new features or services did Entrinsik introduce in 2012?

Entrinsik introduced Informer Dashboards with outstanding customer feedback and adoption. Informer Dashboards allow organizations to use Informer's intuitive interface and powerful reporting engine to access multiple data sources and create interactive data visualizations using drag and drop dashboard widgets. Like Informer, Dashboards are incredibly easy to implement. Data is retrieved directly from multiple databases in real time, regardless of the database type, therefore making data warehouses or data marts optional and lowering the burden on IT.

With over 100 Informer Dashboard modules sold in the first 3 months of offering, I credit its rapid market adoption to 3 factors:

1. Because Informer is fast and easy implement, it takes a huge burden off short-handed IT departments who have been charged with implementing dashboards for management;
2. Because the Dashboard module is end-user intuitive, organizational department heads can make and modify their own set of department-specific dashboards to monitor dynamic key performance indicators; and
3. Because Entrinsik has an excellent reputation for listening to their customers and standing behind their products, our customers know that our Dashboard module will always be improving to meet changing technologies and organizational needs.

Our customer service group also expanded its range of services to include dashboard implementation support and consultation services in addition to existing onsite and web-based training, and to assist our customers in best leveraging their investment in Informer.

What is the most exciting thing that happened in 2012?

Entrinsik hosted an extremely successful Informer User Conference in March to an audience of about 300. The three day conference provided a combination of technical how-to classes, sessions presented by both customers and Entrinsik staff on how to apply Informer to real world challenges, and a product launch session of the new Dashboard module.

Perhaps the most interesting component of the Conference was an Informer BI use case contest in which our customers submitted applications describing how they solved problems and addressed important reporting and data analysis needs using Informer. With more than 20 submissions, all were very impressive. The winner was Cathy Brown at McDaniel College who indicated that her college President referred to the features and capabilities of Informer as a "game changer" for their school.

What would you like Spectrum readers to watch for in 2013?

Informer is quickly being viewed as a major player within the operational and agile BI space. As an agile BI solution, Informer addresses a broad need by organizations to accelerate the time it takes to implement, roll out and deliver value with BI projects in order to provide end users the ability to explore and analyze operational data beyond static reporting. With ever increasing adoption of Informer within the SQL database community, we anticipate additional endorsements of Informer by major BI industry analyst this coming year in the form

of white papers and favorable product reviews.

Also, the Informer R&D team will continue their efforts to build additional functionality and product improvements into Informer with an emphasis on usability, speed, flexibility and extensibility.

In 2013 we will be introducing Enrole, a completely web-based ERP and Registration software product that includes all the best web UI technology utilized within our Informer product combined with industry best practice functionality now found within our existing Semtek software. Enrole will be available both as a hosted and non-hosted solution to our customers.

InterSystems

What new features or services did InterSystems introduce in 2012?

In early 2012, InterSystems introduced technology to automatically extract concepts from unstructured data. This capability, which goes by the feature name "iKnow," permits applications to use ALL the data available — a key characteristic of the new class of software we call "breakthrough applications." Many of our application partners have already exploited iKnow to build radically different applications in health-care, publishing, government, and other sectors. More recently, we extended this by providing the ability to use unstructured data in analytics, to define dimensions and measures on unstructured data and thereby mingle structured and unstructured data in DeepSee cubes. (InterSystems DeepSee is an active analytics engine that works with both our Caché database and Ensemble integration platform. It provides a development environment for embedding real-time business intelligence capabilities into operational applications without the need for a data warehouse or any other form of extraneous data store.) InterSystems DeepSee al-



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lows easy and flexible development of data models based on transactional data.

What was the greatest or most exciting thing that happened to your company or product in 2012?

For InterSystems, 2012 has been an exciting year because we see a number of our application partners thriving — because they are delivering breakthrough applications. These are applications that don't just automate processes; they innovate and alter them, often radically, and can change the way an entire organization functions. In our view they generally encompass three considerations:

1. Mass personalization: Delivering whatever information the user requires, in whatever format is most appropriate and on whatever platform the user requires — PC, web, mobile, etc.
2. Access to all the data: The ability to access any type of data, regardless of whether it is conventional structured data, content (text, images and so forth), or other unstructured information gathered from devices such as smart meters.
3. Driving informed action: When applications go beyond mere process automation, there will always be a human element: decisions to be made, actions to be taken, and so on. Breakthrough applications not only deliver information but also drive intelligent action.

We have attracted very large software enterprises to adopt our core technology as their platform for new development because it enables true breakthroughs.

What would you like Spectrum readers to watch for in 2013?

There will be exciting announcements from InterSystems in the spring of 2013. Look for an array of breakthrough applications from many of our partners using the advances in technology we've engineered this year to make it possible to deliver mass personalization, use all the data, and drive informed action.

Kore Technologies

What new features or services did Kore Technologies introduce in 2012?

Kore Technologies continues to focus its efforts on E-commerce and Business Intelligence: two key areas companies are investing in today given the state of the economy.

Our Kourier Integrator: U2 Edition solution helps our clients build and maintain a SQL data warehouse that is synchronized from their UniData/UniVerse ("U2") environment at near real-time refresh rates. We added support for real-time access to U2 databases via RESTful Web Services that can be created without programming. We've also given integration projects portability between servers by adding Developer Suite-case utilities. Kore offers several integrated solutions that are already "packed" and ready for deployment.

Our KommerceServer eCommerce solution allows our clients to reach new markets, reduce operating costs, and retain their customer's loyalty. Many new features have been added to address the specific needs of distributors such as geographical restrictions on certain product lines and providing a way for users to locate the nearest branch for pick up. We have also introduced a Content Management System so users can create and manage pages and promotions online without IT assistance. A Mobile edition of the Storefront and Portal applications was developed and is now available for the various mobile platforms including iPhone, Android, and Windows Phone.

What was the greatest or most exciting thing that happened to your company or product in 2012?

Kore opened up two new markets for our KommerceServer solution and we can now deliver robust e-commerce solutions for companies utilizing the Epicor Eclipse or Epicor Prelude applications.

Earlier in the year, Kore partnered with Paciolan, a major MultiValue software vendor that provides ticketing and fund raising services for College Athletics, Performing Arts, and Pro Sports Venues. We are proud that Paciolan has chosen our Kourier Integrator: U2 Edition as their standard ETL (Extract Transform and Load) technology to main-

tain the multiple Microsoft SQL Server data warehouses used for their Ticketing Intelligence ® application.

What would you like Spectrum readers to watch for in 2013?

Kore will be adding support for Microsoft SQL Server 2012 in Q4 for Kourier Integrator: U2 Edition. This will take advantage of the latest technology offered by Microsoft which provides many improvements such as: rapid data discovery with PowerView and PowerPivot analytical tools, improved data quality using the new SQL Server Data Quality Services, better SharePoint integration, improved overall performance, and more.

We will be rolling out a new webServiceCenter application for the KommerceServer suite. This new solution will allow customers to manage on-line returns, support warranty on serial controlled products, perform failure analysis, and support collaboration with back office technicians. webServiceCenter will be designed for integration with ERP applications to provide a complete end-to-end solution.

Ladybridge Systems Ltd

What new features or services did Ladybridge Systems Ltd introduce in 2012?

We released Unicode character set support in April, making QM more attractive to developers targeting markets in which the 8-bit character set is not sufficient. In accordance with our forward compatibility policy, existing programs continue to run unchanged and without recompilation, even when accessing files that contain data from the extended character set supported by this development. Extended character set support within the QM environment is

Continues on page 22

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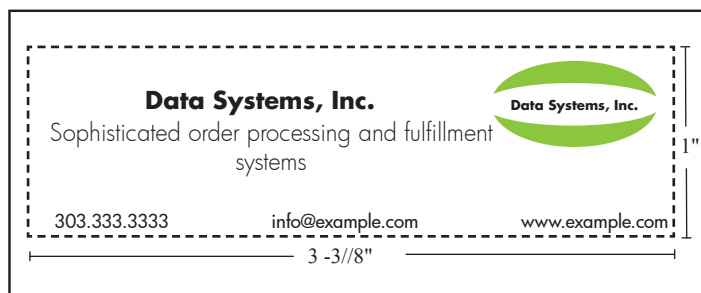
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For more information contact Nathan at: nathan@intl-spectrum.com

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MULTIVALUE INDUSTRY 2012 END OF YEAR RECAP

Continued from page 19

coupled with 8-bit encoding options such as UTF-8 on external interfaces to terminal devices, directory files, etc.

Flexibility is provided by user editable character maps that determine character type attributes, upper/lower case pairing, sort order, transliteration and other features. We worked with our business partners and beta test sites to ensure that we had character maps for Dutch, English, French, German, Italian, Polish and Spanish at first release and we are always keep to receive maps for other languages. Because the character map is selectable separately for each QM session, different users of the same report might see the data sorted differently for their local language conventions.

What was the greatest or most exciting thing that happened to your company or product in 2012?

Despite the global recession, QM continues to grow and has attracted serious interest from developers of several large applications looking to lower costs and expand markets. We have forged several new business partner relationships during the year, notably with Revelation and Ashwood Computer. The QM connector for Revela-

tions OpenInsight and O4W was launched in March and combines the power of Revelation's tools with the low cost and reliability of the QM multivalued database.

The mvTools package from Ashwood Computer was ported to QM in September and provides a GUI application development environment that is closely linked with the AccuTerm terminal emulator.

Rasmussen Software

What new features or services did Rasmussen Software introduce in 2012?

We continued the development and enhancement of Print Wizard, our form overlay and document processing tool. As this is written, Print Wizard is going into a beta test for version 4.1.

This version can read more kinds of PDF files as input, and can produce more space-efficient PDF output files. It also introduces a "mask" feature, which allows on-screen document signing, blocking of prices on invoice pages, and print-time editing.

What was the greatest or most exciting thing that happened to your company or product in 2012?

We saw considerable growth in the number of Multi-Value end users and application de-

velopers deploying Print Wizard, and also in the breadth of problems it solved. Examples included MICR printing, archiving or print jobs, multi-copy form output, signature capture, QR code printing, and paperless invoice delivery.

What would you like Spectrum readers to watch for in 2013?

In addition to the rollout of Print Wizard 4.1, we plan to bring out some enhancements to Anzio, our terminal emulation product, targeted at Windows 8 and the renewed interest in touch, stylus input, and extreme portability. We expect a variety of new hardware offerings to be available for the Windows 8 platform, and we will be ready for them.

Revelation Software

What new features or services did Revelation Software introduce in 2012?

This past year has once again been a very busy year at Revelation Software. We had two releases of OpenInsight. In March we released OpenInsight v9.3.1 which included our O4W Mobile extensions and our OpenQM Connector. In October we released OpenInsight v9.3.2 which included O4W v1.4 and our Multivalued Base Filing System (MVBFS). Our multivalued connectors for Universe, Unidata, D3, mvBase and OpenQM have been combined into a single code set which we have named MVBFS. Our parent company WinWin Solutions, Inc. is now offering hosted solutions for OpenInsight applications.

What was the greatest or most exciting thing that happened to your company or product in 2012?

2012 marked the 30th year Revelation Software has been in business. This is quite an impressive milestone for any technology-based company. We also added 13,000+ new licenses in the past year.

What would you like Spectrum readers to watch for in 2013?

Development is now under way for OpenInsight v10.0 which will include 32-bit and 64-bit implementations. The 10.0 release will also include a WYSIWYG O4W Form Designer, an Embedded Web Server, a Database Management Console and improvements to indexing. The target release date for v10.0 is Q2 2013. Last but not least, the next Revelation Software Users' Conference will be held at the Sheraton Music City Hotel, Nashville, Tennessee on April 16-19, 2013. **IS**

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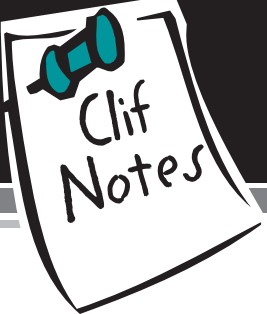
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Personal Best Best

BY CLIFTON OLIVER

As the holiday season approaches, many of us are looking forward to relaxing and spending time with family and friends. In addition to the traditions, celebrations, and festivities of the holidays, for many of us the end of year is a time of wrapping up and winding down. For many businesses things just naturally slow down as business slacks off due to holiday time off and vacations. Of course this obviously does not apply to those of you who are involved in retail sales!

I am one of those people who finds the end of year slowdown to be a particularly good opportunity to take the time to occasionally just sit quietly, idle back the normal busy brain activities, and become a bit more contemplative. One of the things that I have been thinking about recently is this issue of "Personal Best."

You normally hear the term used in a sports context such as running, cycling, weight training, or any number of other physical activities. As a matter of fact, like many other fad terms, it has become so ubiquitous, at times it gets a bit nauseating. The overuse and hype is rather unfortunate, because I think that the core concept is really worth thinking about. Let's start by considering a fairly typical definition of the term found in the Macmillan dictionary:

An achievement in a race, competition etc. that is better than anything that you have achieved before.

As I have already pointed out, you will notice that the definition is oriented toward sports and competitions. So for

the purposes of this column, I would like to alter that definition slightly:

An achievement in a ~~race, competition etc.~~ *any personal endeavor* that is better than anything that you have achieved before.

I can't help but wonder what would happen if we software developers approached our work with the same mindset as an individual engaged in, say, cross country running. (I'm going to have to use my imagination here since I, obviously, do not and never have done running of any kind.) You might set yourself up with several routes and keep records of your times, always looking to shave a few seconds off of your Personal Best time. It seems to me the trick would be to find a way to maintain the motivation to improve until such time as the improvement becomes the motivation itself.

What would happen if a developer started tracking how many lines of code they wrote and how many bugs were reported with 90 days per 1,000 lines of new code written? Then try to either improve on that by continuously reducing the number of bugs or increasing the number of lines of codes. Or both. It seems to me that kind of practice couldn't help but improve the quality of work being done. But would it eventually become a self-sustaining activity?

Given the fact that this idea is usually linked to some form of sports-like events, I think there would a temptation to set this up based on productivity measurements, such as lines of code written per day. Or number of hours

worked without a break. But I'd like to see something related to software quality instead. Maybe something linked in with implementing the Clear Message Initiative (Jan-Feb 2011, p. 6)?

It might be an interesting experiment to try. If any of you routinely do something similar to this, I'd love to hear about it. Drop me a line at editor@intl-spectrum.com.

In the meantime, I hope you have a safe and joyful Holiday Season. I'll see you in January and we'll talk about our post-Holidays diet plans. (Just joking.)
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