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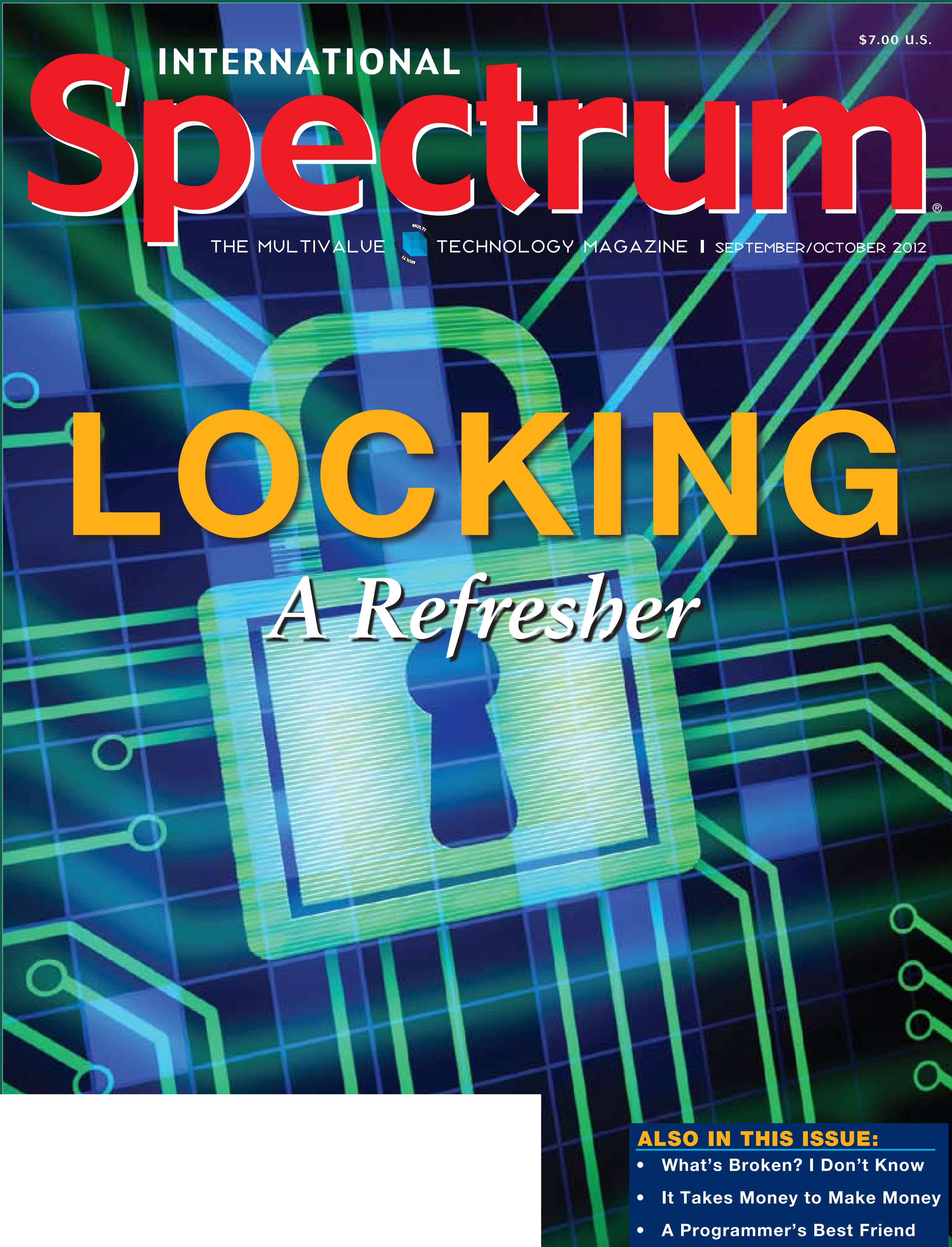
INTERNATIONAL Spectrum®

THE MULTIVALUE TECHNOLOGY MAGAZINE | SEPTEMBER/OCTOBER 2012



LOCKING

A Refresher

ALSO IN THIS ISSUE:

- What's Broken? I Don't Know
- It Takes Money to Make Money
- A Programmer's Best Friend

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INTERNATIONAL Spectrum®
THE MULTIVALUE TECHNOLOGY MAGAZINE

FEATURES | SEPTEMBER/OCTOBER 2012

DEPARTMENTS

From the Inside

The future has caught up with the power of MultiValue Applications, but have your MultiValue Applications caught up to the future?

We all know the power of the MultiValue data model, as well as the power of the enhanced stored procedure (Basic, I-Types, and Dictionary Correlatives) abilities MultiValue Databases provide. But have you compared what them to what the "Future Database" contains or expect to contain?

<u>The Past Database:</u>

- Structured Data
- Summarized Data

<u>The Present Database:</u>

- Analytical Reporting
- Detail Transactions instead of Summarized Data

<u>The Future Database:</u>

- Massive Data
- Enhanced Decision Reporting and Alerts In the Database
- Hybrid Relationships (Complex Data)
- Data Any Place

Massive Data

What truly is "Massive Data?" It is the size of the overall database or the number of transactions in any one file. Or is it the number of transactions consumed in a minute, hour, or day?

Hybrid Relationships

Hybrid relationships are designed to correlate structured data with the unstructured data. We all know that not all data can be placed into well-defined structures. This is either because the structure is constantly changing, or because to make it structured would require too many files, tables, accounts, and relationships to make it feasible.

Data Any Place

Most people would define this as distributed data, but in reality, all people want is to access the data from any place, anywhere, and from anything they have in front of them. The current buzz term for this is "Cloud Computing" or "Cloud Databases."

While each of these technologies is implemented to address a specific issue, the real issue they are trying to address is "Ease of Access and Deployment of Changes."

Enhanced Decision Reporting and Alerts

Originally, databases were set up to store and retrieve data. Nothing more, nothing less. Most applications are designed to use the database for that purpose. But a trend in database architecture is to start providing more advanced featured in the stored procedure languages to answer complex questions.

In the past, this was only available to the programmer on the client application. It required the client application to access massive amount of data, which caused the process to be slow.

Now databases are beginning to take on even more complex stored procedure logic. For example, Oracle touts the ability to create stored procedures in Java and Microsoft SQL provides the ability to include .NET assemblies in their stored procedures.

Existing MultiValue Technologies

Here is what the MultiValue data model and technologies provide that are just now emerging in the "Future Database."

<u>Massive Data</u>

With the built-in compressed data format (Dynamic Arrays), MultiValue developers have been handling massive data for many years. Since we could store large amounts of data and transactions in less space on the physical disk, we have never had to address the processing power and cost of storage issues that existing and past databases had to contend with.

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NATHAN RECTOR
President

CLIFTON OLIVER
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Layout

Learn more about the MultiValue Symbol and see what MulitValue Technologies and MultiValue Communities exist to help you support and manage your business and systems. To find out more visit
http://www.intl-spectrum.com

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Revelation Software, Inc.
Corporate Headquarters
99 Kinderkamack Road, 1st Floor
Westwood, NJ 07675
Toll Free: (800) 262-4747
Phone: (201) 594-1422
Fax: (201) 722-9815
Email: info@revelation.com
Web: www.revelation.com

Revelation Software Ltd.
45 St. Mary's Road
3rd Floor
Ealing
London, W5 5RG, UK
Phone: +44(0)208 912 1000
Fax: +44(0)208 912 1001
Email: info@revsoft.co.uk
Web: www.revsoft.co.uk

Revelation Software Australia Pty Ltd.
PO Box 300
Brookvale, NSW 2100
Australia
Phone: +61 2 8003 4199
Fax: +61 2 9332 6099
Email: info@revelationsoftware.com.au
Web: www.revelationsoftware.com.au

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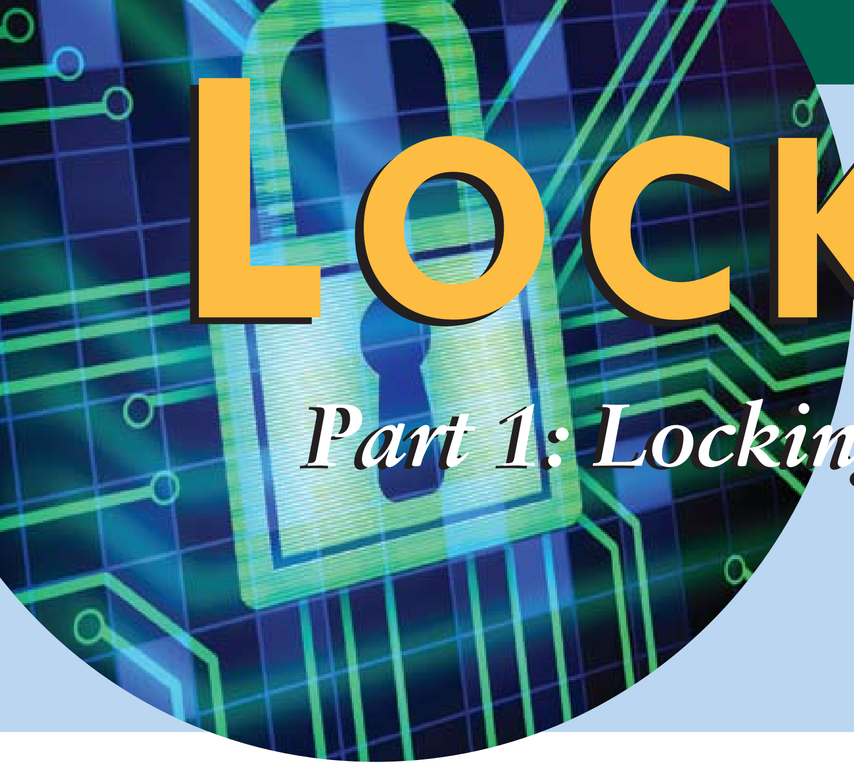


LOCKING

Part 1: Locking Refresher

BY BRIAN LEACH

This short series was prompted by a posting on the U2 Users list, bemoaning the fact that junior programmers don't understand locking any more. Now whether or not the poster was right in this assertion, the fact is that the designs and rigours of today's systems place demands in terms of locking, contention, and resolution that simply did not exist when the locking model for MultiValue systems was first conceived. So it is probably worth returning to this most essential of database programming activities for a fresh look.

In this series we're going to start off with some basic coverage of locking before looking in detail at the standard MultiValue locking model in Part 2. Unfortunately this often proves too restrictive for modern systems, so in Part 3 we will look at some of the issues around the traditional techniques and investigate some alternative locking models.

I'll be basing most of this on UniVerse and to a lesser extent on UniData, but beyond the platform-dependent issues of lock promotion, isolation levels, and such like, most of this will translate across to other MultiValue platforms.

The fact is that the designs and rigours of today's systems place demands in terms of locking, contention, and resolution that simply did not exist when the locking model for MultiValue systems was first conceived.

Back to Basics

When we look at locking within the context of a MultiValue database, we are really considering two different aspects of database management.

On the one hand, we have the low level requirement to ensure physical data integrity by managing individual processes that read and write to parts of a database file. This is typically the concern of the database engineers and DBAs, and most developers probably don't stop to think too carefully about this, though there are some caveats that they should be aware of.

The other is ensuring logical data integrity by managing the order in which application level updates are applied to prevent updates getting lost and the appropriate use of transactions, where supported. This should one of the highest concerns of any developer, and so it is this aspect that I'll be concentrating on most for the next two articles in this series.

Before we dive into programming practices in regard to application locking, a short look at how physical integrity is maintained can be useful as well, so let's start off with an overview of group management.

Ensuring Physical Integrity

UniVerse and UniData, in line with many other MVDBMS platforms, support a range of different file types to meet the variegated needs of data storage and retrieval within an application. Of these the most popular for managing regular data are static and dynamic (linear) hashed files. Whilst the internal organization of these differs from platform to platform, the fundamental principles are the same across all MVDBMS.

Hashed files distribute potentially huge numbers of records into a file structure by logically splitting the file space into a number of much smaller separately addressable buckets or "groups." Records are allocated to a particular group on the basis of a hashing algorithm that is

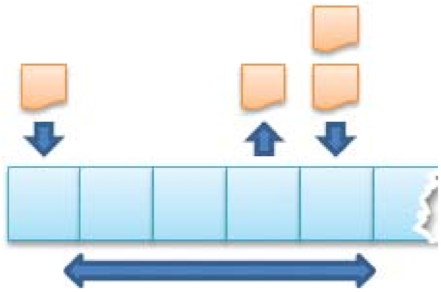


Fig. 1 Multiple processes writing to a hashed file in parallel.

applied to the key, limiting the area of the file that needs to be searched to retrieve or update the record by any read or write operation.

As well as being a very fast and efficient mechanism for managing large volumes of data, any hashed storage model (fig. 1) is particularly well suited to systems that support a high level of concurrency. Because records can be predictably allocated to specific sections within a file, a number of separate processes can safely read and write to different areas of a file at the same time — important as most MultiValue systems use direct file access rather than a memory cache and lazy writing used by some other database types.

Even so, some level of contention is still likely even with well tuned hashed storage. Requests may be made for records that hash to the same group or for shared resources such as a free list to extend the file or blocks used for statistics and load factors. And, of course, not all data files use hashed storage anyway, so the database still needs a mechanism to block concurrent requests that would otherwise interfere with one another.

UniVerse maintains physical integrity using two structures both held in shared memory (under Windows, as a memory mapped file). The first of these is an array that holds the load statistics for all open dynamic files preventing the need to flush these to the file header on every update. The file header is only updated once the file is closed or in response to a dbpause instruction — a vital step for 24x7 sites that use mirrored file systems to source their backups. This is fixed, though tuneable, and once full any subsequent opens on new dynamic files will fail.

The second is the group lock table which manages file read and write operations, another tuneable shared memory structure. This is effectively split into two regions: a group lock table that manages physical reads and writes, and a record lock table that manages logical contention.

The group lock table permits or denies access to individual file groups. Before a process can read or write a group in a data file it must request permission to do so. The group lock table consists of a series of sets of slots each of which is protected by a semaphore (fig.2). A lock key is calculated from the group and file (inode) numbers and this is hashed to a particular set in a similar manner to the hashing on a record key. If the group lock requested is already taken, or the group lock set is full, the process must wait until the slot is available. The same set of semaphores is also used for the record lock table and the presence of a record lock is indicated at the group level to improve lookup speed.

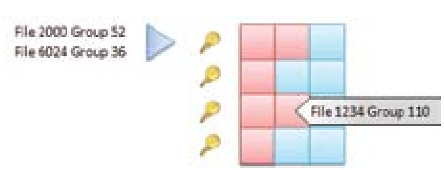


Fig. 2 Group lock table and semaphores

In the example in figure 3, taken from the UniVerse LIST.READU command, the Lmode shows the detail of an active group lock: a WRite lock protecting the group address 26000 of the file, using an entry in the lock table protected by the semaphore 41. Commands like this can give an indication of excessive contention leading to tuning the group lock table.

At this point you are probably asking, apart from boring my friends down the pub, why should any of this affect me, since this is just the database looking after its own? Well, as good as this model is, there are some places where the physical locking model needs some thought even before we move on to look at application level locking.

For dynamic files, access to the load statistics block in shared memory under UniVerse (not UniData) is protected by a single semaphore and the size of the block is fixed (though tuneable). Whilst this works well, it is a signal to UniVerse developers to only to use dynamic files where necessary.

The B+Tree files used for indexing are also block based. But with a B+Tree, all processes must begin their traversal in the same place – with the root node of the tree – and so this is a candidate for plenty of contention: and unless the database locks the entire tree each page traversed will involve a separate group lock and release action. Adding more B+Tree indices or using B+Trees to handle data only exacerbates the hit on the lock table.

Directory files are much larger problem. Directories are not group based, and so the locking system can only consider these to be single units that can only be accessed by one process at a time, and will block the entire file for every read/write operation. That is in

Continues on page 19

```
Active Group Locks:                                    Record Group Group Group
Device.... Inode..... Netnode Userno   Lmode G-Address.  Locks ...RD ...SH ...EX
1369043616  993978089       0   8148   41 WR       26000      0     0     0     0
```

Fig. 3

The Must-Haves Behind Project Development

BY KELLY BLECK

You may have had a few conversations that resemble the following:

"Tech Support, how can I help you?"

"Nothing is working!"

"Could you please clarify? What isn't working?"

"I mean, NOTHING is working! I need this fixed immediately!"

Improvements in technology are incredible. But one small issue with the ease of technology is a slight disconnect we may encounter when trying to solve problems for our clients… who are hundreds or even thousands of miles away.

So the first step in fixing their problem materializes as a question — or quite a few. Where do we go from here? How exactly is this project going to develop? What information do we need to efficiently solve this? Will it be a serene, fairytale where all information, discovery and solutions fall quickly and quietly into place?

By detailing what you need from your client and helping mold them into delivering that information the first time around, you can save yourself some time and your client some cash.

Of course not! Sometimes it's a mixture of quiet frustration building to hair pulling, coffee breaks, and multiple emails. And Skypes. And phone calls. And… well, you get the idea.

But this can be remedied! Hopefully.

By detailing what you need from your client and helping mold them into delivering that information the first time around, you can save yourself some time and your client some cash.

Details, Details, Details…

This is the one time when way too much information to sort through is the best gift. We can't help solve the problem if we don't know why it's broken. And as much as we know about business, we have to admit we're just not as good as the client — they know their business better than we do.

Which is why, first, we have to understand just how important the issue is to their business. If we have 10 minutes, the going will be tough. If we have until month end rolls around again, we can take a deeper breath. This helps us determine how much time we will need to put into the problem, and how quickly we must address it.

Once importance has been determined, the rest of the details come into play. Because we aren't near the client, they can't physically step us through their process. So, we have to ask the pertinent questions and hope for detailed answers. What is the problem? What exactly went "wrong?" Again, the client knows their business best, and they need to be the ones to explain why the issue was an issue, specifically. No matter how adept we are at testing our solutions, the client is the only one who truly understands how they use the programs. What did they expect to happen?

A Picture is Worth a Thousand Words

Sometimes, the easiest way to understand a problem is to *see* the problem — again, slightly troublesome when we are available only across a small wire. If available, the easiest antidote is a shot of the screen itself. At the least, a breakdown of the steps taken to achieve the undesired problem should be sent. When we can follow their steps to the "T" we can hopefully recreate the problem and discover a solution.

But we can't know what to solve if we don't know how to get there.

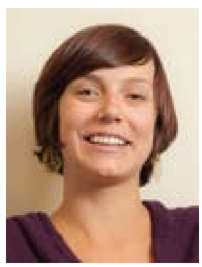
Access? You Don't Need Access!

What's the best problem of living across a wire? Discovering where the point of entry for that wire exists on the other end. A few minutes connecting followed by a half hour of problem solving, or a few days attempting to gain access with no problems solved. Which would you rather pay for? It is surprisingly difficult gaining access to some systems. There are a plethora of VPNs and access points we have to navigate, combined with the necessary credentials within the system itself. Having the correct credentials and a fairly stable VPN helps exponentially.

After connecting, we need to determine who we need to contact regarding this issue. Are we allowed to talk directly to the employee? Is there a chain of command that has to be followed? There's nothing worse than awkwardly e-mailing the wrong person with information they don't need to know or don't know what to do with.

The Solution...

...is potentially reached by following these steps. It's at least reached much more efficiently with more information up front. We need to encourage our clients to follow a set of guidelines that help us reach the problem, and subsequently the solution, quickly. IS



KELLY BLECK is currently a software artist-in-training at Precision Solutions, Inc., learning to navigate the MultiValue development arena.

QUICK GUIDE

- What were the steps to reach the problem?
- What actually happened?
- What was expected to happen?
- Why is it a problem?
- Screenshots, samples, explanation of the exact steps taken.
- Access: onto a VPN, into the system, into other areas where the investigation may go.
- How important is this? How much time do we truly have to solve this?
- Who's our point of contact?

Alternate Financial Arraignments

BY CHARLES BAROUCH

Capital Idea

Got to love Capitalism. I make a widget for one dollar, I sell it for two, and everyone walks away happy. Except, nowadays, business is rarely that straightforward. That dollar widget sells may sell for two dollars, but the store wants twenty cents toward co-marketing, the coupon cuts another half dollar from the mix, and someone has to pay for the recall we had to issue due to a packaging problem. So, when you work for a company which is under the financial gun — and who doesn't — we need to help them get it right.

Two hundred years ago, we'd call on family and friends to get a business started. Some business might still work that way, but fewer and fewer situations like that exist. Likewise, the days of going to Uncle Leo for a loan, to keep the business running or expand it, are largely gone. Funding, like everything else, is getting progressively more complicated.

Banks A Lot

When a business goes to the bank, it needs to bring documentation with it. As IT professionals we need to understand the difference between giving the boss an inaccurate report (bad) and giving one to the bank (fraud). Your best friend is the accurate title. Marking a report as a *estimate,* or as *pre-tax*, or however the numbers are slanted, is hugely important. Adding a unique identifier to the title of each report will help you prove the math if it is challenged days or months later. Likewise, footings can allow you to annotate special details.

> *As IT professionals we need to understand the difference between giving the boss an inaccurate report (bad) and giving one to the bank (fraud). Your best friend is the accurate title. Marking a report as a estimate is hugely important.*

Remember that Sally from Finance or Bob from Marketing might get a last minute call to run a few more reports. The ones they tell you are going to the bank may turn out to be a partial list. Getting all of your reports up to snuff makes this a non-issue. However, we all know how much work that will be. Make a list of the most used and most useful. Do them first. For the ones you can't get to, simply adding "internal use only" to the footer, or some similar nomenclature is an excellent protection.

Expect the bank to have a list of recurring reports. They will also, in some cases, have some additional rules about data handling procedures or confidentiality. Make sure your company remembers that you can't do your job without access to pretty much everything. Sometimes they forget to put us on the list of people allowed to see the data.

Date with an Angel

Venture Capitalists are one alternative to banks. They are less formal, more risk taking, and often more invasive. Your bank probably doesn't want to run your business. Your VC Angels might. Assume that big procedural changes will come with any VC funding. They are likely to be less organized than the bank when it comes to reporting requirements so you are likely to get several updates to the reporting list.

Unlike the bank, the VCs are more likely to want to meet the IT team. They usually know your importance in a way that your own company may have forgotten. Don't let them flatter you into talking too much. Do see the opportunity to prove your worth, the worth of the tech you use, and the deep integration it has in making the business viable.

If you are working with VCs or banks, you need to have scheduling software. Missing deadlines on delivering reports can have serious financial penalties. It can also create trust issues.

Taking Stock

Going public is another way to bring in the dollars. If we worry about bad reports going to banks or VCs, all the worry doubles up when the SEC gets involved. If you are in a company which is going from private to public, you should take a little time to do a little reading. A good place to start is the SEC website (intl-spectrum.com/s1051). For anyone who hasn't frequented the .gov websites recently, they are surprisingly well put together. Of course, if you are outside of the US, you should look to your country's on equivalent to the SEC. For example: UK (intl-spectrum.com/s1052), Australia (intl-spectrum.com/s1053), and Germany (intl-spectrum.com/s1054).

They Print Their Own Money!

The Government has lots of programs to help businesses. The competition for these can be extreme. Winning through has a lot of luck and timing in it, but the two best ways to lose are: (A) don't apply, (B) do an unprofessional and incomplete job. If we can help the company get the right data at the right time, we don't assure success but, we do improve their chances.

In the US, the Small Business Association covers a lot broader range than you might think. Your multi-national employer might still fall under SBA and qualify for loans and grants (intl-spectrum.com/s1055). Once again, if you are outside the US, there are similar governmental support structures in play. Everything said earlier about timely and accurate reporting applies.

Continues on page 19

Entrinsik Launches Informer Dashboards With Web-based, Interactive Data Visualization

Entrinsik, developer of award-winning Informer software, announces the release of Informer Dashboards. With a powerful 100% Java-driven architecture and browser-based interface, Informer Dashboards allow organizations to visualize real-time data from multiple sources on one screen to quickly identify actionable information and key trends.

For tens of thousands of users around the world, Informer software provides real-time access to multiple databases including Oracle, SQL Server, MySQL, Access, DB2, Informix, U2 and others without the need for complex ETL processes, data warehousing, or data cubing. From an intuitive drag and drop web interface, Informer's self-service reporting capabilities enable business users to drill down into data elements in real-time, sort and group, build interactive charts and perform ad-hoc analysis without IT support. Informer is implemented in hours and is easy to install, configure and administer, delivering quick ROI and a low total cost of ownership.

"With the addition of Informer Dashboards, Informer has evolved into a highly intuitive, comprehensive operational business intelligence solution ideal for organizations that need to make better decisions faster, don't have a sizable budget, and want to minimize risks involved in deploying a new BI solution," said Sharon Shelton Entrinsik's Marketing VP. Informer Dashboards enable business users to instantly create and share personalized dashboards and data visualizations while providing administrators with a flexible, extensible, lightweight operational BI platform.

Here are some powerful features of Informer Dashboards:

- Access data from multiple sources: data warehouses, cubes, Excel, Google, etc.
- Develop dashboards by dragging and dropping using a single web-based interface.
- Incorporate runtime variables allowing users to specify filter parameters.
- Identify underlying Key Performance Indicators (KPIs) on the fly.
- Update dashboard widgets with real-time data according to refresh schedule.
- View multiple reports and visualizations on one screen.
- Find context for real time data.
- Create drill downs to answer critical questions.
- Use easy widgets for immediate data summaries and visualizations.

"Many enterprises find it increasingly difficult to justify the huge footprint and IT investments that typically accompany traditional BI," said Doug Leupen, President/CEO at Entrinsik. "We've built Informer with a 100% Java-driven architecture using Google Web Toolkit (GWT) with a focus on ease of use, performance and extensibility to enable organizations to access information wherever it is and make data-driven decisions to improve profits or minimize costs."

Watch a brief video demonstration to discover the power and simplicity of Informer Dashboards for yourself at http://www.entrinsik.com/informer-dashboards. And for a free trial of Informer, contact sales@entrinsik.com or call 888-703-0016. ■

Announcing U2 DataVu Version 2.2

U2 DataVu strengthens connectivity with UniData and UniVerse (U2) and adds team authoring capability, mobile access and an optional text analytics capability for unstructured data.

Visualize your enterprise data from any source and maximize your business advantage.

Real-time data access and interactive drill-downs provide the right information—at the moment that it's needed—to desktop, web, and mobile users.

U2 DataVu V2.2 delivers on-demand, one-click charting and wizard-driven "quick reports"with fresh, up-to-the-minute data.

Integrate information from across your enterprise. Fresh information can be concurrently drawn in real-time from across the enterprise—from transactional data sources, data warehouses, or from the content of structured files.

Other outstanding features:

- Powerful inline analytics support for transforming, merging, tabulating, and federating data.
- Predictive data modeling directly integrates forecasts into reports and dashboard.
- Secure content using interfaces to LDAP and Active Directory.

Learn more by going to http://www.rocketsoftware.com/u2/products/datavu/datavu2-2 ■

Revelation Software announces the release of OpenInsight Development Suite 9.3.2

Revelation Software announced the availability of the latest release of OpenInsight Development Suite (OI) 9.3.2. OI 9.3.2 provides the following new components:

OpenInsight for Web (O4W v1.4) – O4W v1.4 includes enhanced OECGI3P.PHP to provide better performance in fastcgi situations, initial deployment of new engine server functionality, added "pattern validation" in the form designer, provided a "READY" event for forms and reports, added the ability to use repository entities for template and css, and O4W Mobile enhancements.

Multivalue Base Filing System (MVBFS) – Our multivalue connectors for Universe, Unidata, D3, mvBase and OpenQM have been combined into a single code set which we have named MVBFS. This new base filing system will support rti_readu, rti_writeu, and rti_writerelease functions to allow developers to interact with multivalue servers in a more traditional multivalue style. Transaction logging support has also been incorporated with the rti_transaction subroutine.

"Over this past year I have travelled to multiple continents to listen to what our resellers want from our OpenInsight Development Suite", said Mike Ruane, President/CEO Revelation Software, "This release includes many of the ideas and suggestions requested by our VAR community throughout the world."

Also included in the OI 9.3.2 are a number of patches and enhancements for the Banded Report Writer, RevelationDotNet, OIPI.Net/OIPI, SQL Connector, Editor ++/Basic+ and RDK.

"The response from the MultiValue community regarding our database design tools has been exceptionally positive", said Robert Catalano, Director of Sales, Revelation Software. "With a single code set we are now positioned to deliver more features and functionality to all the MultiValue platforms we support."

OpenInsight Development Suite 9.3.2 is available from Revelation Software, or through their network of resellers. See Revelation.com for details.

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. ■

BlueFinity's mv.NET 4.3 Breaks New Ground with Super Easy RESTful Services Support

BlueFinity International, a member of the Mpower1 Group of MultiValue companies, introduces an industry first in the easy creation of RESTful services for MultiValue database applications. This new functionality, available in the latest release of mv.NET 4.3, allows RESTful services to be created with literally a single click of a button on all the major MultiValue databases.

As David Cooper, Technical Lead at BlueFinity describes, "We had a number of key design goals when creating this new functionally. Firstly, we wanted to enable developers to generate industry standard RESTful services without having to be a network stack or HTTP guru. Secondly, we wanted to provide the developer with the best of both worlds - easy, automated service generation combined with fully customizable service content. Thirdly, but by no means least, we recognized the need to allow developers to host and deploy these services using non-proprietary, industry standard technologies that are able to integrate seamlessly with existing enterprise computing infrastructures."

This latest release of mv.NET follows BlueFinity's aggressive ongoing development plan aimed at enabling users to take advantage of the very latest of technological innovations from Microsoft and other key technology companies. mv.NET Version 4.3 allows applications from any flavor of MultiValue database to be deployed across any of the wide range of today's mobile interface devices using the very latest industry standard RIA technology. Developers can rapidly integrate MultiValue data and logic in HTML5, Silverlight, ASP.NET, WPF and any other .NET enabled Microsoft environments, servers and applications.

Native applications can be produced for iPhone/iPad/iPod or Android using a common C# based development environment. Alternatively, browser based applications can be created using ASP.NET and HTML5 that adapt themselves to the appearance of native platforms without learning multiple mobile platform skill sets. .NET developers don't even need MultiValue knowledge to produce applications meaning organizations can utilize the massive resource pool of .NET developers to boost application development bandwidth and reduce development timescales.

Cooper continues, "We are incredibly excited to release this new functionality, not only because it provides really useful capabilities in its own right, but because it will be one of the main cornerstones of a number of great innovations coming out within the product over the coming months".

On October 2nd, BlueFinity will demonstrate just how quick and easy it is to create RESTful services in a free webinar. Attendees will be shown how to generate RESTful services on a variety of sample MultiValue applications running on different mobile platforms including Windows 8. Details and registration can be found at www.bluefinity.com.

For more information email sales@bluefinity.com.

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. ■

B Y   B A R R Y   R O G E N

Business Analyst

A Programmer's Best Friend

One day a friend of mine was telling me a story of when she was a little girl. It was holiday time and all the family was over for dinner. Her mom was busy in the kitchen, when she pulled out this big beautiful roast from the oven. She placed it on the big fancy cutting board and the first thing she did was cut the roast in half. Why did you do that she asked her mom and she was told '"Well, that is what grandma always did." With grandma in the other room, she ran over and asked, "Grandma, why did you cut the roast in half as soon as you put it on the cutting board?" And grandma said, "Well, that is what your great grandma always did." Seeing great grandma over in the corner, she ran over to great grandma and asked, "Great grandma, how come after you take the roast out of the oven, the first thing you did was cut the roast in half?" And great grandma said, "Because it would never fit on my cutting board."

Digital Version On-Line

Scan Me!

Business Analysis is the practice of enabling change in an organization by defining needs and recommending solutions that deliver value to stakeholders. A business analyst is used to identify and articulate the need for change and how an organization will work to facilitate that change.

Unfortunately, too often, too many companies are the mom in the kitchen dealing with the roast when it comes to methods of doing business. Management tends to overlook the fact that 25 years ago, how they were doing business was a great idea (because the cutting board was too small) but times change (the cutting boards got bigger). I know of one company that was making some major system changes. The "this is the way we have always done things" corporate mentality was so deeply entrenched that they broke the cardinal rule of implementing a new system. Prior to initial implementation, they twisted and contorted the new application with modifications to meet their current methodologies, rather than adjusting those same methodologies to meet the core design of this new system (which somebody thought was a better idea for the company). Failing to utilize a qualified project manager and business analyst, who would have steered this project effectively by providing the necessary analytics and direction, cost this company dearly.

I have worked in a few MultiValue shops throughout my programming lifetime and have experienced numerous senior I.T. managers that are just as ensconced in their "old" ways of doing things. To broach them with the idea of employing something like a business analyst would be like (in their minds) putting three legs on an ostrich. It may be nice, but we do not need it, nor does it really serve a purpose. Besides they would probably cry, what is a business analyst anyway, and why do we need them? With all my experience and understanding of business, what benefit is gotten by utilizing a business analyst? And what the heck do they really do anyway besides generate paperwork and more levels of procedures and red tape?

Business Analysis is the practice of enabling change in an organization by defining needs and recommending solutions that deliver value to stakeholders. A business analyst is used to identify and articulate the need for change and how an organization will work to facilitate that change. A qualified analyst has mastered the skills to act as a guide and lead the business through the unknown territory to get to its desired destination. Some products of a business analyst that propels a project forward are:

- Project scope
- Business Requirements
- Functional Requirements
- Operational Requirements
- User Requirements and User Case Studies
- Product Requirements and Product Case Studies
- Change Management

Thinking about your company or the company of friends or customers, how many function in reaction mode instead of strategic? How many times do we find that we are reworking and re-reworking tasks because there was not enough time initially to properly map out the needs and requirements? In today's economy, it is more and more important to get it right the first time because the consequence of a "do-over" could be enormous.

Did you know :

- 71% of failed software projects are traced to poor requirements – CIO Magazine
- 40% of the effort in an average software project is fixing errors
- Requirement defects account for 56% or re-works – Butler Group 2005
- $250 billion of annual waste is traced to poor requirements (globally speaking)
- $46 billion is spent in the US on fixing error caused by poor requirement definition (US Bureau of Economic Analysis 2008)

So what is an organization supposed to do? They say that the definition of crazy is a person who does the same thing over and over again and expects a different result. More and more companies are finding that a structured, detailed analysis of projects is not only more effective but proves a greater return on their investments. The growth of business analysts in companies today is greater than ever and is a reflection of this corporate mindset. Let us take a few minutes and see what a BA would bring to a task you might encounter.

Wilber's WorldWide Widgets, Inc. wanted to develop a new order entry management system. First thing, the BA meets with the project sponsor and related stakeholders to gather the essential information to compose a written description of the project at hand. This section describes some of the steps that the business analyst would follow to model the resources, business items, and activities involved in the process. I will consolidate and not include many thoughts for the sake of brevity in this example.

Initially, our analyst meets with the project sponsors, in this case the director of sales and the customer service manager. The goal of this meeting is to establish the purpose and items they want to see accomplished (from a tree top level). Now the initial business requirements have been established for this project.

Business Requirement

1. A customer calls the customer department. The caller is initially defined as a new customer or existing customer
2. Actions for new customer:
    a. The service representative creates an account for the customer on the system
    b. A credit check is performed and a price list formula is developed for the customer..
    c. If the credit check comes back with a negative result, the account manager is notified.
        i. The account manager reviews the order and decides whether or not to approve it.
        ii. If the account manager approves the customer, then the customer service creates the order. .
        iii. If the account manager does not approve the order, then the account manager notifies the customer of the rejected credit check.
3. If a customer currently has an order in the system and is calling to verify or update their order:
    a. The customer service representative brings up the customer's existing order and reviews it with the customer.
    b. if no changes are required, then customer order remains unchanged in the system, the customer service representative thanks the customer and disconnects.
    c. If the order requires updates, the service representative updates the order. After the order is updated, it follows the same path as a new order
4. If an existing customer is calling to place a new order:
    a. The service representative creates a new customer order. (There would be multiple steps associated here but for brevity, this will do.)
    b. The system performs credit status, inventory availability and

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BUSINESS ANALYST — A PROGRAMMER'S BEST FRIEND

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other status checks related to this order.

Our business analyst now meets with the customer service supervisor, possibly the customer reps, and all the other key players within the company who would be directly affected by the new order management process. After discussions and meetings, our BA is able to start breaking down the business requirements into actual tasks, business items, data flows, and processes.

Tasks

There are several activities that are performed in the process. Here is an initial list of tasks (some of these might be subprocesses that can be broken down further) :

Identify the customer as a new or existing customer

Retrieve the customer record from the database and create or modify as required

Determine whether the customer is calling to place new or update existing order

Create and review the order with the customer and modify if necessary

Verify customer credit and notify the account manager of a failed credit check

Submit order for processing

Business Items

These are a few items that are created or modified during this process:

The order that is placed by the customer

The customer account record that tracks customer information

The e-mail message that is generated if a customer's order is approved

Because Wilber wants to track data such as call times, a tracker of customer's call activity needs to be maintained.

Order Handling Process Diagram (a small piece thereof)

In order to add definition to the business flow for the project, the business analyst very often will use flowcharts (basic, business, cross function, engineering, etc.) like the one in figure 1. As you can see, this flowchart clarifies the process flow to the stakeholders. The process starts with the customer call, then the CSR identifies the customer, sees if this an existing customer, and flows through to the end of the process. In many cases, this flowchart may well be accompanied by a cross function chart to define responsibilities.

Data Model

Very often with new tasks, there is the addition of new files and attributes within the files to support the new process. In order to be sure that all stakeholders (I.T. included) have what information they will need within the database, a simple data model can be used by the BA to define these new values of data. Accompanying this simple chart (fig. 2) might be a data flow diagram flowchart to elucidate within the

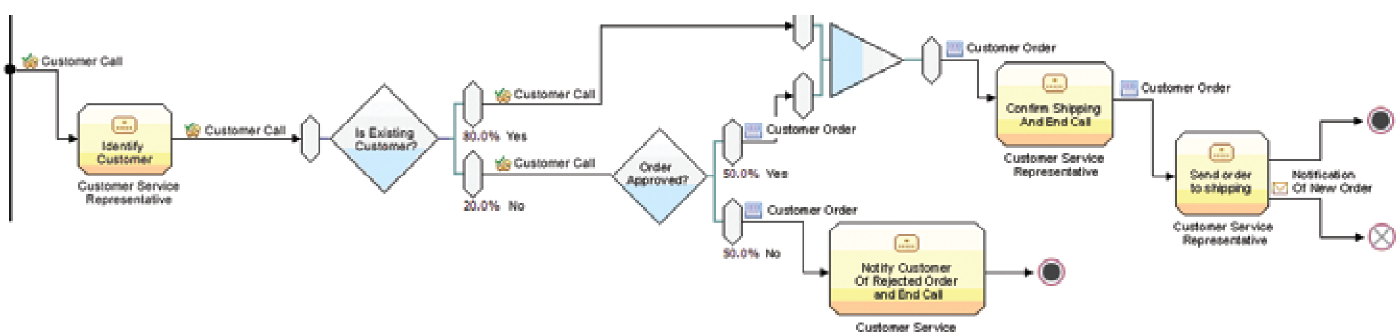

Fig. 1

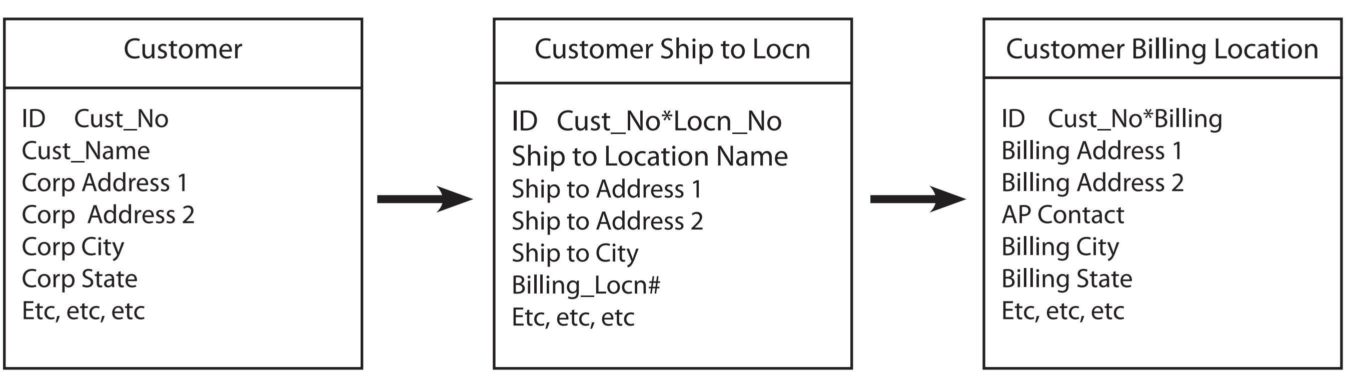

Fig. 2

flow of the process how, where, and when the database is accessed and updated.

I have not included other matters a BA would have identified like hardware demands, personnel needs, and other points. Our analyst now needs to define the scope of the project along with all the requirements entailed, along with user cases, so that there is a clear picture of all the facets that will be involved in this task. The BA presents this final presentation to the key stakeholders, who sign off on all points, after which it is presented to the development team.

Once the actual design and coding begins, the BA is then responsible for controlling and documenting any and all change requests that are subsequently made to the project at hand, adjusting the baseline as needed. This prevents any extraneous or unnecessary additions to the project that extends beyond the agreed upon baseline and scope of the matter at hand. Should a change be required for the project, the business analyst will formally expand the scope and alter the baseline to account for the alteration.

This example has touched lightly on what would actually be a very sizable project. The benefits of a business analyst can extend to the smallest of tasks as well as the largest of tasks. Let us say that a manager wants a minor screen adjustment that would take (virtually) no time to produce. How many times have you heard, "While you are here…" or, "While you are doing that, can you also….." or, "That is not what I wanted…." while doing this couple lines of coding change. A BA would construct the definition of the scope, requirements and baseline and have the requesting sponsor sign off on these matters. In what would amount to two or three pages of documentation, a clear, approved picture would be built, leaving the (couple lines of code) change for the development team to make and implement.

At a basic level, business analysis reduces the overall costs for a project. Although an I.T. manager would grasp this immediately , this concept is often counter-intuitive for managers unfamiliar with business analysis. At first blush, adding a business analyst and producing additional project documentation appears to be an additional cost. If you are managing without a business analyst today and you introduce one, the cost and the labor involved may appear to increase, especially at first. However, in actuality, business analysts are focused on reducing costs. This could be measured in the following ways:

- Reduction in rework — the team stays focused on the right requirements, which will reduce the amount of unnecessary change. There will always be some change, as implementation encourages learning. However many projects

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BUSINESS ANALYST – A PROGRAMMER'S BEST FRIEND

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without structure are plagued by change requests because requirements were not well understood. This kind of change is waste and can be greatly reduced or eliminated by a business analyst.

- Reduction in requirements churn — Stakeholder time is valuable, but without someone in the business analyst role, stakeholders might spend excess time in unproductive discussions. An analyst can help drive logical and efficient decision-making processes, track open issues, and document discussions, reducing the amount of time spent rehashing previous discussions and going down rabbit holes.
- Discovering more cost-effective solutions — When the business analyst is licensed to find any number of solutions to a problem, specifically solutions that may not involve information technology, the business analyst actually might help reduce costs by finding more cost-effective solutions.

The business analyst can also help the project team by increasing the potential benefits yielded by the solution. Some key areas come to mind.

- New business needs or requirements are discovered — A business analyst does not just pick up or "gather" the requirements. Most often a business analyst must actively mine for or discover the requirements (intl-spectrum.com/s1057). By actively discovering requirements, the business analyst helps the business come to an improved understanding of what is needed from the solution to be successful.
- Prioritization ensures focus on value — I know where I work, left unto itself, priorities would be linear (every need as important as the other). By using various prioritization techniques and prioritizing at several stages in the requirements lifecycle, it ensures that the stakeholder efforts are invested in the requirements with the greatest importance and most potential benefit.
- More effective implementation of new solutions by the business — Even without formal change management practices, focusing on the business analyst principles of clarity and alignment help the organization prepare for change.
- Providing a framework in which an IT team can scale — as an organization grows, so does the number of stakeholders and project. As this happens, the natural patterns of communication that worked for a smaller team tend to fall apart. Business analysis can be a component in enabling a small team to scale to a larger one, thereby increasing the benefits realized because more projects can be successful investments.

The business analyst can help with formulating a plan of action which allows the stakeholder to pinpoint where a problem exists. Narrowing down the problem can be handled by the BA through research and interviews (meetings). Once the problem has been uncovered and defined, the business analyst will be able to work to determine which is the best course of action. A project report can be written outlining the step needed to reach a predetermined solution.

The good BA will be able to act as a liaison between departments and work with them to be sure there is no second guessing on points of the project and that all tasks expected by the department are being met. The business analyst will be able to express the needs of the stakeholder and the end user in such a way for the I.T. department and others involved to understand. There are times when users, stakeholders and the development team are on the same page but each is interpreting key items in different ways. The qualified business analyst will be able to set the wheels in motion that will allow stakeholders and development team to understand what is needed.

Corporations that employ business analysts have a higher rate of productivity from their I.T. department and find that the programmers within generate cleaner code that falls closer to the needs of the user base. As the title states, the business analyst is a friend to the I.T. development team, not an adversary but an ally. They remove all the time needed to define and structure a stakeholders needs, freeing the development team for tasks that better suits their skills. A good BA will present a project to the programmer with clear definitions and requirements. He will generate mock ups of screen designs when applicable so it is clear what the user wants. He will manage all the change requests that occur within a project, preventing creeping expansion. The business analyst may work with all stakeholders to plan and implement a testing process for the given task.

Can companies in today's world live without business analysts? Obviously they can. However, the business analyst can bring structure (i.e. methodology to gather requirements, process baseline) and formalization of requirements (i.e. gather the required capabilities) into this process, which may lead to increased foresight or outcome among business owner. IS

BARRY ROGEN is long time senior UniVerse programmer and business analyst at a major electronics manufacturer. Barry as taken numerous courses through Villanova University on business analysis and project management and is working towards full certification in both venues.

LOCKING — PART 1: LOCKING REFRESHER

Continued from page 7

addition to the overheads involved in storing large number of files in an operating system directory. Under Windows, NTFS directories actually use a B-Tree structure for file indices: these speed sorted display but are slow to update. So once again, directory files should only be used to house data where absolutely necessary.

Knowing how the physical locking works can also lead to some common sense design decisions. If you have a central control file holding frequently accessed elements like accumulators (next number generators) it makes sense to oversize this so that you do not end up with a small number of groups getting frequently blocked, and to make sure all your next numbers are not held in the same record.

And finally we come to the perennial problem of file overflow. Everyone understands that poor file sizing or record distribution in regular hashed files can cause massive chaining of overflow groups with every read/write operation potentially needing to trudge through a set of these to find a given record. But don't forget that poorly sized files have another impact — on the lock table.

The longer a read or write operation takes, the longer the lock table must hold on to that lock. And since this is a shared resource the effects on the lock table from having badly sized files can quickly become significant.

That's probably enough time spent on the physical locking aspects of the database. In the next article we will move on to look at application locking from a traditional perspective. 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.

BUSINESS TECH: ALTERNATE FINANCIAL ARRAIGNMENTS

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Five O

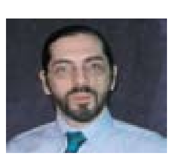
Some businesses are US 503(c) which means they can accept charitable donations. The same category exists, under different names, in other countries. If your company isn't a good match for a charity designation, parts of it might still be. Mentioning the option is as deep as we will go today. Covering the ins and outs of this sort of business would take well over a year of business tech articles to provide a good grounding. Once again, no surprise, get your reports in order.

Send in the Crowds

Another way is to crowdsource your funding. I've recently put something up on Kickstarter.com. There are lots of other sites designed to meet this same purpose: IndieGogo.com, Rockethub.com, OnSetStart.com are just three examples. Of course, the Internet being the Internet, there are sites which review and recommend sites which crowdsource. One example is at (intl-spectrum.com/s1056). The good news here, is that this is a more causal approach and the requirements on IT are more causal as well. Expect to spend more time on website redesign than on reporting.

People's Choice

I have no intention of ending this article by telling you which is best. Each answer comes with a set of rule and restrictions and qualifications. It is possible that your business fits none of the models or that you are one of the lucky few who can go to Uncle Leo for a loan. My goal here is simply to alert you to the scope and scale of the options before us. IS



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

FROM THE INSIDE

Continued from page 4

<u>Enhanced Decision Reporting</u>

We have always been server-centric developers. Because of this, most of our programming, processing, and reporting has always been done on the database servers instead of offloading the data to the client.

MultiValue Basic, I-Types, and Dictionary Correlatives have provided us the ability to generate reports and analytics that the "traditional" databases are just now starting to implement.

<u>Data Any Place</u>

While the different implementations of access our data from any place is still new to us, the development needed to create a "Data Any Place" access model is not new. MultiValue developers have been designing and creating "cloud" applications and databases for years.

The only thing that needs to be done is to add the web service, mobile device, or desktop client to access the information.

<u>Hybrid Relationships</u>

This is not new to us. WE have been creating data models to interact with structured and non-structured data for years. Since MultiValue files don't requires that we create a dictionary to store data, we are not limited to structured data models. But if we want to implement a partial structure within a non-structured file then we can using Virtual Dictionaries (I-Types and Correlatives).

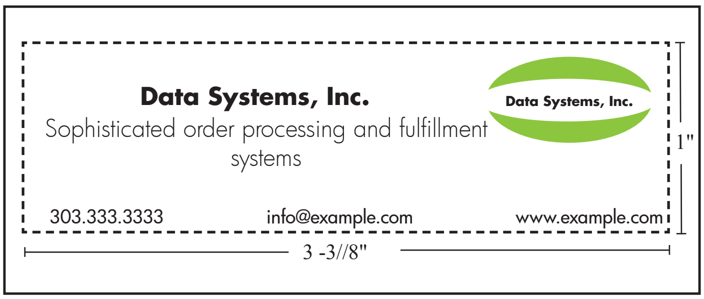
Add to this the fact that we don't have to store our data as 2-dimensional data, we can create complex relationships without the complexity of multiple structured files.

So the next time you have a conversation with management about what a MultiValue database is or is not capable of, take a moment to think about what I've outlined here. IS

MARKETPLACE

ADVERTISER INDEX

HIGH IMPACT 4-COLOR DISPLAY AD



Cost Per Year

1" $1,811.00

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BASIC LISTING: $690.00

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

- Includes company name, website, and phone number
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ADDITIONAL LINES: $280.00 per line

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

ACCOUNTING

Natec Systems
www.natecsystems.com | nrector@natecsystems.com

COMPLIANCE

SJ+ Systems Associates
www.sjplus.com | sjoslyn@sjplus.com

CONSULTING

Clifton Oliver & Associates
www.oliver.com | wco@oliver.com

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HDWP
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PICK Programmers Shop
www.pickprogram.com | brian@pickprogram.com

Precision Solutions
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DATABASE

Ladybridge Systems Ltd
www.ladybridge.com | sales@Ladybridge.com

Revelation Software
www.revelation.com | info@revelation.com

REPORTING

Brian Leach Consulting, LTD
www.brianleach.co.uk | brian@brianleach.co.uk

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CLIF NOTES: DO WE NEED A TEACHER FOR THE APPLE?

Continued from page 23

Apple Maps look like they were drawn by a grade school student. They also have this 3-D view thing. Some reports I've seen referred to the bizarre results as Dali-esque. Not exactly the kind of thing that you would want while trying to find yourself through a strange city after your plane landed at nine o'clock at night, and you're driving in a pouring rainstorm.

Now Apple has known about these problems all along, as reported by beta testers and users of their pre-release developer builds. So why did they do it? Simple. They wanted to put the screws to Google. I'm an independent businessman and a free-market advocate. So I understand competition. In general, I think it's a good thing. But in this case, they purposely did something that they knew would be a detriment to their users. I for one would like to see the free market give them a spanking that would cause Tim Cook to have to attend board meetings standing up for the next two fiscal quarters.

Of course, it's not just Apple. It's Google being caught being "evil." Microsoft releases things that it knows don't work. You can find many examples of companies that release flawed products. And that includes MultiValue companies. We have all seen releases of MultiValue products that couldn't possibly have made it through testing without the developing company knowing full well that it flat didn't work as advertised. Why do they do it? Because they can.

Which is another way of saying because we allow them to; nay, we encourage them to. The new iPhone 5 continues to fly off the shelf as fast as they can be produced. In the weeks leading up to the product release, a friend and I were laughing about how as the date got closer and closer, the less and less you saw anything in the press about users staging an Apple boycott because of labor practices at Foxconn, Apple dropping out of various agreements for "green" products, and so forth. People want what they want when they want it.

So who's to blame? The producers or the consumers? The big box stores were the people who hate them insist on shopping at them? Should the producers go to the time and expense of trying to create superior products simply because it's the "right thing to do" for the users? (I know several that do.) Or should consumers (users) hold them accountable by refusing to buy flawed products? (Figure the odds.)

I don't think Tim Cook has to lose a whole lot of sleep worrying about the state of his buttocks.

(You can replace Tim Cook with the name of the vendor you rail against but continue to buy from.) **IS**

Do We Need a Teacher for the Apple?

BY CLIFTON OLIVER

Well, Apple has done it again. Once again the company demonstrates that what is good for Apple is more important than what is good for their customers. The last time that they ticked me off was when they released the iPhone 4 with its faulty antenna design. And when the reports of disconnects started piling up, their excuses went through the entire range of bad to ridiculous, starting with, “No it doesn’t,” all the way to Steve Jobs arrogant reply to a user, “You’re holding it wrong.” The ensuing fiasco became known as “antenna gate.”

Now we have the fiasco surrounding the release of IOS 6 for the iPhone, iPod touch, and iPad. Specifically, the Maps application. Up until this release, IOS has included the map application written and supported by Google. It was included with IOS until IOS 6. It was an absolutely outstanding application. I used it extensively, not just when traveling, but locally. When I relocated to a different part of the country last year, I would spend an enjoyable Sunday afternoon out driving using Google Maps along with my iPhone’s GPS capability to explore not only the cities and towns but also the countryside surrounding my new home. It was so reliable even on cross-country drives across the Southwestern deserts — where you can drive for hours between towns through terrain that is basically little more than kitty litter — that I gave up my old reliable AAA Club roadmaps and depended exclusively on my iPhone.

So when I updated to IOS 6, one of the first things I looked at was the new Maps application that Apple wrote to replace the Google application.

It totally sux.

The first thing I noticed was that it doesn’t know where I live. It displays my house address as being two streets away from where I actually am. The road that I live on has one name until it reaches the intersection just past me, at which point the road changes names. Maps says that it changes names two intersections in the opposite direction. So according to it, the road I live on is not the one that runs in front of my house. To make matters worse, the road that it intersects with, where mine actually does change names, that road is completely misnamed. Scanning around town, I find other things that are just flat wrong, such as streets shown as being dead ends that are actually through streets, none of the buildings, facilities, or businesses are shown, and streets not shown where streets have existed for years.

Now you might ask what I would expect? After all, I live in a small, rural town. Well, I would expect to see exactly the same thing that I used to see with Google Maps — properly named streets properly drawn, the banks, businesses, police station, etc. clearly marked, and so forth. So I completely reject the, “You can’t expect it to work outside of a large and heavily populated city; you’re out in the sticks.” Well, Google Maps did, does, and I do. But I decided to give Apple Maps another try. That weekend I took it and went for a drive.

I got lost.

In my opinion this alone basically makes the application worthless. What good is a map application that is wrong? And no, it isn’t just in the rural areas. Reports have been coming in of people in large metropolitan cities asking for the location of a business and being taken to a street map showing one in an entirely different state. Or of being told that a particular address does not exist when they are standing right in front of it looking at it. If the lack of accuracy weren’t bad enough, there is the incredibly bad user interface.

Apple says that prides itself on the “user experience.” I guess this means that post Jobs they have all become sadists, because this user experience is downright painful. I only use the map view. Where Google Maps showed everything clearly and well labeled,

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