

INSIDE! Spectrum's First Database Challenge: One Judge Speaks Out

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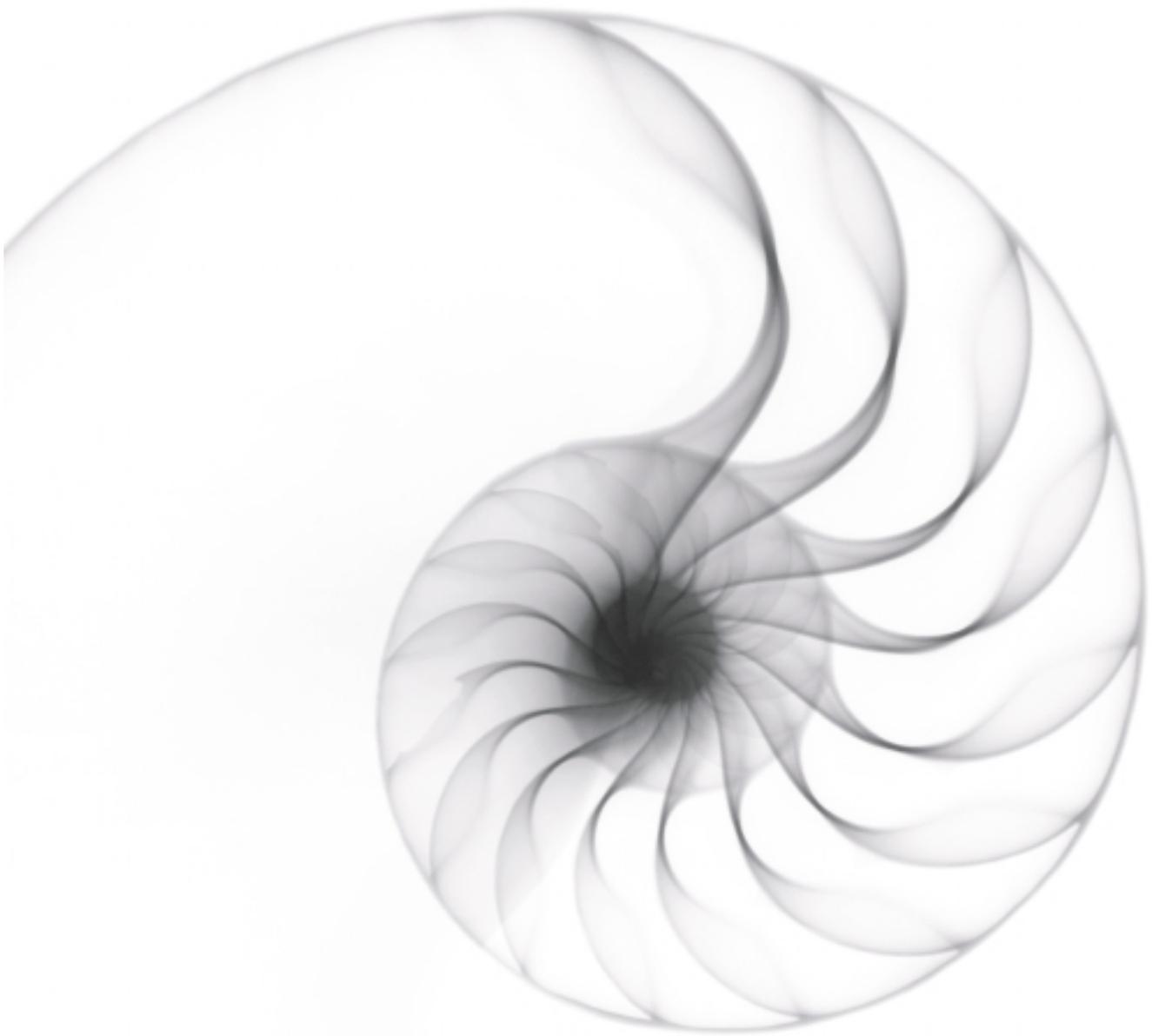
PUBLICATION

Doing Business With

RFID

What You Need to Know
When Checking Out RFID

ALSO! Rapid Application
Web Development and .NET
Top Delegates' Interest Chart at
the San Diego Spectrum Show



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In Part 2, the author discusses uses of RFID and questions you may have about this budding technology.

BY NATHAN RECTOR

10 HIGHLIGHTS FROM SPECTRUM 2005 The Spectrum 2005 show confirmed that the MultiValue market continues to spawn a wealth of products from around the world to address the needs of the user base and stay current with the most cutting-edge technologies. **BY TONY GRAVAGNO**

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44 WEBONOMICS 101: R-S-S-P-E-C-T — HERE'S WHAT THE TAGS MEAN TO ME Although RSS has been utilized by news organizations and publishers of current data, we're now seeing RSS deployed in business information settings, when a change in data can be polled by the RSS reader to update the status of a product, software changes, package delivery, weather or any industry where up-to-date Just-In-Time information is required. **BY MELVIN SORIANO**

35 THE INFORMATION ERA ... KEEPING USERS AND CLIENTS IN THE LOOP The need for data has grown exponentially in the years since computers have become an everyday part of our lives. And users need all that information to be accurate and timely; here are three ways to keep them in the loop. **BY ROBERT COLTUN**

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CORRECTION: In the January/February 2005 issue, the Web site address of the Information Systems Audit and Control Association (ISACA) was misprinted. The correct Web site address is www.isaca.org.

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[FROM THE INSIDE]

Countdown to

25!



The 25th Annual International Spectrum Show

We have a million stories to tell — we who have been in the MultiValue market since Methuselah was a mess cook.

That first show in 1982 at Caesar's Lake Tahoe. Who was the genius that suggested having a tradeshow at 8,000 feet in the High Sierras in the dead of winter? Ooooops, I guess that was me, but nobody will ever forget the evening poolside party in the glass enclosed pavilion with floodlights illuminating snow so thick you couldn't see through it. Sure, we did it again in 1983 and got snowed in again, but decided that was enough tempting of fate.

How about the time Fujitsu filled a Maserati with peeled shrimp and crab in Las Vegas? Was that the same year The Ultimate Corp. built a basketball court on the Spectrum exhibition floor and brought in Jerry West and John Havlicek to sign autographs?

And what about the time Dick Pick brought in rap dancers to his booth. That was the same year ADDS brought in the L.A. Rams Cheerleaders who couldn't spell SPECTRATHON. Then there was the time Tina Turner headlined the Spectrum Final Night party. Ah — the parties. Remember the time we converted the MGM Grand ballroom into a Bedouin tent and reclined on pillows while watching belly dancers and the Golden Men?

A million memories to go with the stories. The Dean Martin-style roasts of MultiValue executives; celebrities that mingled with us at welcome parties — Charles Kuralt, F. Lee Bailey, Jack Anderson, and Apollo 13's Jim Lovell to name just a few.

And, of course, the concept that drove it all and which survives today as one of the world's greatest technologies — the MultiValue database.

Whether you've been in MultiValue a year or 30 years, you won't want to miss what we have in store for you next year at the 25th Annual International Spectrum Show. Mark your calendar now — March 6, 2006, will be the day we hold the next pre-show MultiValue Application Developer's Challenge; March 7-10, 2006, will be the main show; held at the Long Beach Hilton Hotel. See you there!

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

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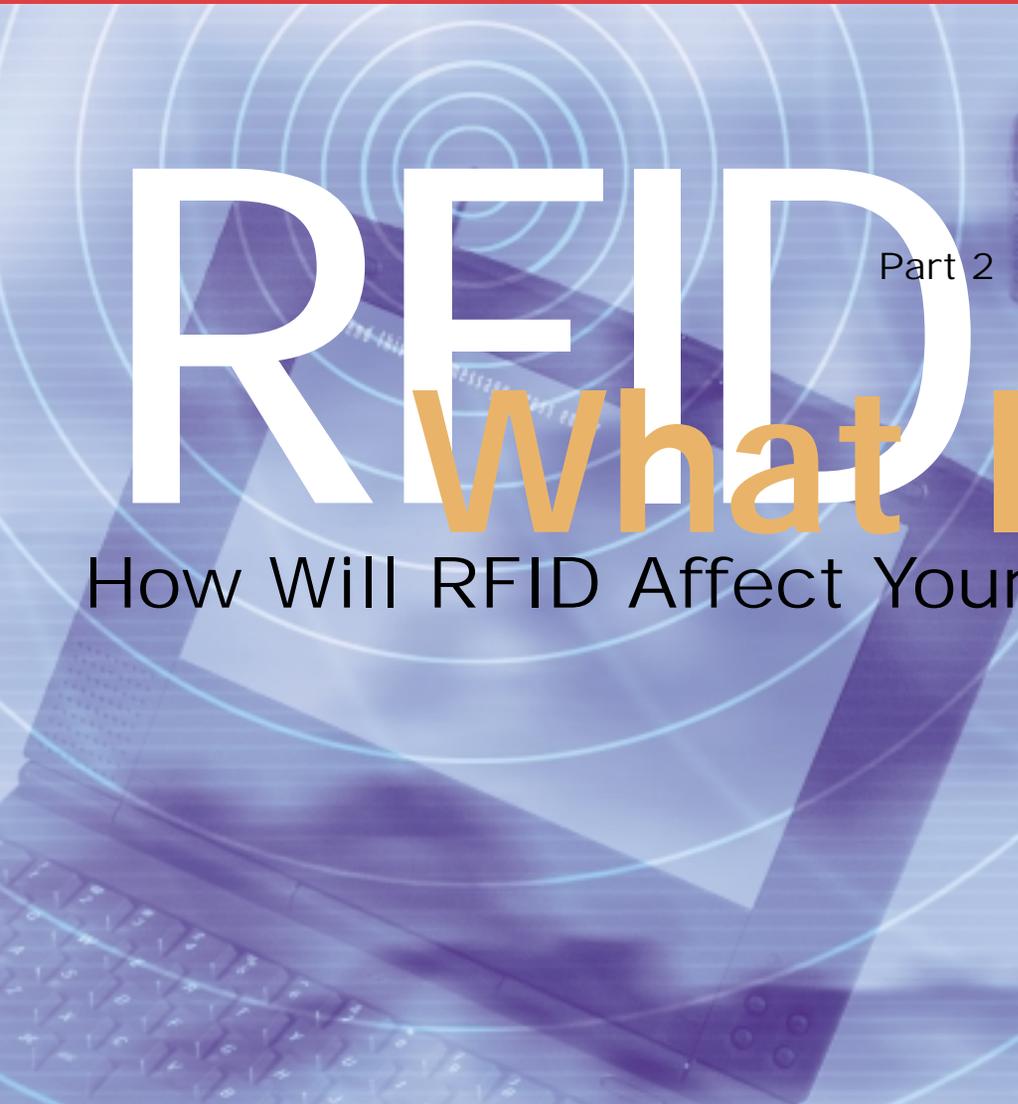
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RFID

Part 2

What Is It?

How Will RFID Affect Your Business?

Last issue I talked a little about RFID and the types you will likely have to interface with in your business. What I didn't talk about was how it will affect your business and many of the questions about the technology that you may have.

RFID vs. Bar Codes

Is bar coding a dead technology? For at least the next five or 10 years, bar coding and RFID will be used together. That 5 to 10 year estimate may change if the RFID tags can become as cheap to use as bar codes.

Bar codes can be generated from just about any printer, and can be found on just about everything. RFID still requires that you purchase the tags from a manufacturer and can cost around 20 cents per tag.

Now this doesn't make it very cost-effective to place an RFID tag in every candy bar at this time. As the cost of manufacturing the RFID tags causes the price to come down, and with the new RFID printers that are being developed, that can change.

There is also a fundamental difference between how RFID tags function and how bar codes function. If you walk into a room with an RFID tag reader, you will pick up every tag in the room. Whereas with a bar code, you have to

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RFID

What Is It?

Continued from page 6

manually scan each box to find what you have in the room. This makes RFID tags ideal for tracking manufacturing and shipping flows, but makes it difficult to find a specific box in a warehouse, other than the proximity of it to you (within 30 feet).

Because of this, I still think bar codes will be used to help identify specific boxes or items in warehousing. You will also likely see the bar code label also contain the RFID tag.

Tag Placement

Believe it or not, RFID tags cannot just be placed anywhere on the box or pallet. You might have thought, or was led to believe, that you can place an RFID tag anywhere on your item. This is not true. Placement of the tag is critical for the reader to read it 100% of the time. For example, you can not place RFID tags on or close to metal, or on items that contain liquid.

Now this is a generality, but a good rule of thumb. Both of these materials cause a lot of reflection of the RF signal, which can cause the reader to not understand the signal or not read the tag at all. Remember, the RFID tags you are likely going to be using are passive. They do not have a power source, so

the signal being returned to the reader is only as strong as the tag can generate from the RF signal it receives from the reader.

It's not just the packaging that can cause interference. Your pallet jacks and forklifts also contain large amounts of metal that will interfere, and the amount of material the signal has to pass through will interfere. If you have a crate that contains 20 boxes, and all the box tags are facing each other on the inside of the crate, then you are not likely to get a good read either.

There is not a hard and fast rule to use for the location of the RFID tags. Even though they do not require "line of sight," it does help to have the tag set in line of sight, but I can also tell you that "line of sight" is not always the best location.

Believe it or not, RFID tags cannot just be placed anywhere on the box or pallet.

You will need to play with tag placement on your merchandise in order to find what works best.

Readers

There are two different kinds of readers. The most common you are likely to work with are fixed readers, which are usually considered "dumb" readers. They will pick up and report any RFID tag that comes within reading distance of the reader.

The other kinds of readers are handheld. They are considered "intelligent" readers because they usually have a program running on the reader itself, and can somewhat isolate the kind of tag you want to read; i.e., specific manufacturers, specific products, or a specific item.

In the manufacturing sector, the most common places you will need to place readers are loading docks, specific locations in assembly lines, and major access points in and out of storage areas.

In a retail environment, you will likely place them at loading docks, warehouse or storage locations, and retail floors. Companies are currently working on a shelf-based reader to help notify you when stock levels are low and help with inventory control.

Next issue, I'll cover privacy issues concerning RFID. is

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Highlights *from*

B Y T O N Y G R A V A G N O



Attendees packed sessions on topics ranging from .NET to Web development tools.

For a unique perspective on the Spectrum 2005 exhibition and conference, *Spectrum* magazine asked Tony Gravagno, president of Nebula Research and Development, to be the “man on the scene,” giving readers an overall review of show and conference happenings. Here, he shares his insights and observations about trends, new products and the newsmakers that emerged at the Spectrum 2005 show.

The recent Spectrum conference confirms that our market continues to spawn a wealth of competent products from around the world to address the needs of the user base. If you haven't been to a Spectrum show recently, then you're depriving yourself of an opportunity to get inspired with new possibilities to satisfy your data processing needs. There were over 30 exhibitors represented at this show. All of the MV DBMS providers were present. Most of the familiar product and service vendors had a booth, though some familiar brands were not present, and we noticed a few newcomers. I was very pleased to see unexpected colleagues from the U.K., South Africa, Australia, and other countries. I hear at least 11 countries were represented.

This show introduced the new Database Challenge (see article by Clifton Oliver). It will be very interesting to



Visitors to the exhibit hall got an up-close look at products such as AdValorem's EasyTax, a software package that lets MultiValue users use well-known sales tax engines to stay in compliance with constantly changing state tax rates and obscure rules.

Spectrum

see how this challenge develops at future shows. Whether people come for the prizes, the challenge, product marketing, or just the adrenalin rush, this will certainly be a show highlight. Speaking of prizes, the treasure trove of giveaways by exhibitors was simply amazing.

A new seminar format was tried for some sessions. Vendors had the usual one hour of introduction and product marketing, and then an extra two hours was provided for an "Extended Technical Session." This was a good opportunity for people to spend quality time with developers to learn about their chosen products, or to get an in-depth look at products being considered.

There was a pleasant buzz of conversation around the exhibit hall but not the normal boisterous activity that we often find at these shows. Over the last two years vendors have done a lot of shows in the USA, Australia, and the U.K. It was good for Spectrum to do the overseas tour again, to renew and revitalize relationships and interest in our market offerings, and some vendors tell me these shows proved to be time and money well spent. But some vendors are simply burned out. The schedule for this year and next is less aggressive, and I'm guessing exhibitors and attendees alike will see more value in fewer and bigger upcoming shows.

With the marathon of shows as a reference, many end users and developers who didn't come to this show thought there wasn't going to be much new to see at this one. There were, in fact, a number of new sessions at this show,

and some attendees were seriously torn between this interesting session or that. But a few vendor sessions didn't offer much more than what could be presented in a booth. People come to these shows to see the exhibitors, but the conference fee is mostly for the presentations where people get inspiration for new development. For upcoming shows, perhaps vendors should advertise more in-depth ses-

sions on product use and technology profiles, and reserve "first contact" marketing for the exhibit hall. This should bring more attendees to the show, create more buzz around the booths, and make it more worthwhile for everyone to participate.

As an example, Nathan Rector had two sessions for an unbiased education on .NET. The first session, "Do you need it?," overflowed with around 50 atten-

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Acknowledgements

Special thanks to the following: **MITI (provider of MITS)** generously sponsored the new Database Challenge.

Internet WiFi services were sponsored by **Rasmussen Software**, provider of PrintWizard software for printers, reports, FAXing, etc.

Email access was provided on the show floor by **Zumasys**, vendors of custom built servers and mobile/wireless technologies.

A refreshing "Ice Cream Extravaganza" was sponsored by **Revelation Software**.

Raining Data sponsored the MultiValue Breakfast where Mario Barrenechea discussed new offerings.

InterSystems provided lanyards and conference bags for all attendees.

OHM Systems provided show notebooks. And of course, International Spectrum sponsored the Welcome Reception with drinks and hors d'oeuvres.



InterSystems

Rasmussen Software



Highlights *from* Spectrum '05

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EasyCo showcased MirroredSolutions and QPBX, hosted PBX solutions that allow small- to mid-sized businesses to manage a phone system to make users around the country look like they're all in the same office. EasyCo, a distributor of "QM," a MultiValue database from Ladybridge Systems, also informed attendees about OpenQM, an open source platform for MultiValue developers.

dees. This is a clear sign that our colleagues hunger for solid information to make their development decisions. In the second session, Nathan described .NET at a more detailed level. As can be expected, the crowd was much smaller, around 12. Armed with unbiased information, some people were able to go speak with vendors as more informed consumer/prospects, and others finally had enough data to realize they really didn't need .NET at all. That's the sort of thing that I think draws people to Spectrum. We get the pulse of our own market, see where colleagues and competitors are going, and see where end users might be taking us. We

want to go home with enough data to move forward, at least until the next Spectrum conference.

So what's new with .NET? jBASE and BlueFinity (both subsidiaries of Mpower1 International Ltd.) are rolling out mv.NET. This is a class library, now in direct competition with the Pick Data Provider .NET from Raining Data. Comparing the products, mv.NET supports more MV DBMS platforms, has some nice extra features, and has a competitive pricing model. FusionWare also announced a new distribution agreement with BlueFinity for mv.NET. Demonstrating the value of a PDP.NET application, Raining Data's new offering allows D3 and U2 databases to closely integrate with Microsoft Reporting Services. Sites with extensive reporting needs should take some

time to understand how Reporting Services can play a role in their operation. IBM continues to offer the free UniObjects.NET, and for more robust applications, Paul Batten from AdvancedWare was available to discuss .NET connectivity via IBM's RedBack, and his software based on that combination. Luke Bucklin of Sierra Bravo (sharing booth space with Zumasy) had some impressive collateral to profile his company's extensive tools and services related to .NET and other technologies. Nathan Rector, of course, offers development services with .NET, with other specialties including PDAs, smartphones, and now RFID.

In addition to .NET connectivity, there was a definite trend in the vendor offerings toward DBMS platform compatibility, as well as connectivity to non-MV environments. Revelation has had an interface for a while now which allows BASIC code in an OpenInsight application to use U2 as a data source. ONCorp's Denise Buttrey demonstrated how ONware allows similar integration with completely transparent use of Oracle and SQL Server from BASIC, TCL, and reports (LIST, SORT, etc). You can even write your code in some MV DBMS platforms and run it in ONware. D3 has OpenDB for similar access to remote relational environments, as well as the optimized Oracle Gateway. For connectivity from outside of the DBMS, as mentioned above, PDP.NET supports U2 plus D3, and mv.NET supports almost all of the MV DBMS platforms. Of course jBASE also provides integration with relational platforms through



Exhibitors ran demonstrations of the latest MultiValue products non-stop on the exhibition floor.

jEDI and other components. Northgate even advertises Reality as “both a MultiValue and an enhanced relational (SQL) database.” All database companies still want business from migration but we’ve seen what that sort of runaround has done to our market. The approach these days is toward selling products which offer integration rather than migration.

It’s interesting and only semi-surprising that while some DBMS vendors want to make it easy to connect to other platforms, they’re not spending the same effort to allow other products to connect to them. Sure, with every DBMS we see .NET this and Java that, and nice diagrams showing the database in the middle with lots of connectivity options from outside. But the connection into every MV DBMS product is different and often proprietary, a real nightmare for tool developers who need to support multiple DBMS platforms and operating systems. The matter is further complicated

when the most reliable connectivity methods are through for-fee, add-on components. In these cases, developers are faced with using free connectivity options that may be slow, buggy, or technically non-elegant, or they need to tell their customers to buy yet another piece of middleware in order to build the package. The dilemma is that DBMS vendors can’t allow end users to multiplex their licenses, but it’s difficult for tool developers to sell their products with N layers of licensing applied too. This situation is evident in one form or another with just about any product

exhibited at Spectrum, and when a vendor says s/he doesn’t support a particular DBMS, this is probably the reason. For those of you who remember the SMA — it was and always has been a good idea.

Following the theme of connectivity, InterSystems made a big splash at this show by announcing development of MultiValue compatibility options with its Caché multidimensional, post-relational database. (Sound familiar?) InterSystems has been present at other Spectrum shows but the company has never presented a firm mission state-

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The MV DBMS vendors should start considering their strategy, as they will soon be faced with a highly successful competitor, a proven marketing machine that intends to migrate MV users and developers to a platform that is familiar and economical, and much more acceptable in the mainstream.

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Highlights *from* Spectrum '05

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Kore Technologies showed WebTeam, a new collaboration and project management groupware environment.

ment for this market. The message is clear now — InterSystems is going to make it easy and attractive for MV sites to migrate to Caché. As part of its MV initiative, the company recently hired Jim Idle (present at the show), formerly one of the chief architect/engineers for jBASE. In addition to an informative session to describe Caché in MV-specific terms, management held an evening presentation which was standing-room only, followed by a social gathering. Note from the crowd that there was definitely interest about what they were doing at “our” show. The MV DBMS vendors should start considering their strategy, as they will soon be faced with a highly successful competitor, a proven marketing machine that intends to migrate MV users and developers to a platform that is familiar and economical, and much more acceptable in the mainstream.

Another theme at this show was Business Intelligence. MITS continues to be one of the hottest products in our market — a

new BI dashboard was announced for MITS. Other products, whether reporting tools or business intelligence tools, continue to compare themselves to MITS in terms of functionality and cost. Informer from Entrinsik is an excellent reporting product for allowing users to create and/or run ad-hoc queries. Via Systems just announced MyViewpoint, a neat new BI tool written in Java. Stamina Software has Visage BIT in addition to its Visage Reporter product. And as a Certified Partner of Microsoft SQL Server Reporting Services, Raining Data has a new entry in this area as well. This area can be confusing for end users: Do you need reporting tools or business intelligence tools like the ones mentioned above? What is a reasonable upfront cost and TCO for the feature set provided? Should you buy a reporting infrastructure or buy tools and write your own reports? I think the answer is first to identify your needs as specifically as possible, then approach each vendor to get a thorough understanding of the vendor’s value-add proposition — including, of course, their costs.

Of course, another major product category included application development tools. A number of enhancements have been made to DesignBais, keeping this high on my personal list of favorite development tools for the Web and now for devices. Since its initial offering at Spectrum last year, DesignBais has sold thousands of seats to large and



Ross Morrissey sings the praises of MITS to attentive listeners.



Raining Data, sponsor of the MultiValue Breakfast, demonstrated the value of a Pick Data Provider .NET application.



Stamina Software's Ross Ferris discusses features of Visage.

small sites all over the world. Spectrum regular Stamina Software took a new approach to marketing the Visage family of products, giving a little spotlight to a wider range of software tools. Most people seem focused on their core offering, the Web development environment, but it was good to try a different approach. The graphical development interface for OpenInsight is built into the software, no extra tools required. It was good to see how easy it is to build OI apps right out of the box — free CDs with OI for Windows and Linux were distributed. OHM Systems demonstrated their OHMWeb Environment, WADE, which produces an attractive and feature-rich Web UI. Via Systems was promoting WebWizard, and Eagle Rock Information Systems was promoting its version of WebWizard as well as a new reporting tool called DataReady. Yes, the wizards are confusing, but be sure to

check out both offerings and make comparisons before making decisions.

This is very subjective, but here are my picks for companies and products that stood out at this show.

Revelation now has OpenInsight for Linux. This is the first “pure MV” Linux desktop development and deployment solution. To my knowledge, Revelation is now the only MV exhibitor at LinuxWorld where there was great interest in this offering — kudos and thanks to Mike Ruane and his team for their technical and marketing efforts. OpenInsight for Windows also deserves a “hot pick” mention. The features and low cost make this platform outstanding for deployment of a GUI app to a large number of small end users. I spent some extra time in sessions to understand the OI option, and I now think it's one of the under-appreciated gems in our market.

EasyCo is a distributor of the QM MV DBMS from Ladybridge Systems, and contributes significantly to development of the software through the open source OpenQM project. Martin Phillips of Ladybridge came in from the U.K. to talk with people about the software. All commercial licenses of QM now include a free single user version of AccuTerm, and free CDs were distributed with a QM/AccuTerm evaluation package. If you want free MV development and very low-cost

deployment on a Prime-flavor platform, then you should take a look at QM and OpenQM.

I spent some extra time with ONware for this show too, and I'm happy I did — that's one of the reasons I like coming to Spectrum, to challenge old notions and learn something new. ONware is largely misunderstood in terms of features and affordability. If you want an affordable way to access relational data as though it's hashed MV, take a look at ONware in addition to the other options available.

On my Web site, profiles and commentary are available for all vendors — good information that simply couldn't fit into this piece. Products and services include hardware, CRM software, Web-based shopping carts, backup services, migration services, imaging, financial payment software, printing solutions, and others. You will also find information on the corporate updates presented by DBMS vendors.

I hope you've found this to be a fair and complete recap of the show, and I hope this inspires vendors and attendees for upcoming shows. My thanks to Gus, Monica, and the Spectrum team for making this all work. is

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Nebula R&D specializes in .NET and

many forms of Web-based development

for MV VARs and end users. Read

profiles of all Spectrum exhibitors at

<http://Nebula-RnD.com/Spectrum>.

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First Annual Spectrum Database Challenge: One Judge's Perspective

BY CLIFTON OLIVER

Candi Hart, one of the Database Challenge's judges and the person who played the role of Doris Frump is shown rating a contestant with judge Clif Oliver.



MultiValue developers
pit their wits, skills
and tools against
each other in
Spectrum's first-ever
Database Challenge

The 24th Annual International Spectrum Show was held in San Diego February 22 - 25. As in all previous shows, there was an exhibit hall with numerous vendors demonstrating their MultiValue-oriented wares and services. Another feature that many look forward to are the sessions where various speakers conduct classes on both technical and management topics and vendor spokespersons present their product's direction and road map.

This year, however, something new was added—the first annual Spectrum Database Challenge, generously sponsored by MITS. This was a chance for

MultiValue developers to pit their skills and tools against each other. It was held all day the day before the show opened. Being the first competition of this kind at Spectrum, no one knew what to expect. But twelve brave souls threw caution to the wind and showed up Monday morning to do battle. Eight judges were also present that morning. But we knew what to expect. We were wrong.

The judges for this year's competition were:

Jeff Jakus
Mike Roberts
Candi Hart
Steve Alexander
Clif Oliver
Ron Jones
Chris Merrill
Henry Eggers

The previous night the judges had met for a briefing with the Spectrum hosts and coordinators, Monica and Gus Giobbi. Gus handed out the specifications, and we settled down to evaluate and grade his ability to write a cogent requirements document. After all, we were judges, many of us for the first time. And we were eager to judge something, so we might as well start on Gus.

The specification was for a registration and meeting management system for the multi-state MultiValue User Group of Wyoming, Utah, Montana, and Pennsylvania (MUGWUMP) to be held in

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San Diego. (Those MUGWUMPers must really rack up the frequent-flier points.) The application had to provide for registration of current members, people who wanted to attend and join the group that night, drink tickets, etc. (You can see the full specification on page 19). The only part of the specification that seemed off base was that the speaker, Von Billygates, was speaking on "COBOL — The Future Is Yesterday." The glaring lack of the presence of and requirement to track sales from a fruit and vegetable stand was noticeable. Apparently, MUGWUMPers anticipate such insults and bring their own produce.

Nevertheless, after a few minutes of consideration, the judges judged Gus's specifications to be sound. After a couple more glasses of wine, they appeared downright brilliant. Then we moved on to the judging evaluation forms.

While we do not want to go into specifics of the evaluation scripts, we can report that they were rather specific and related to functionality and

ease of use. So-and-so does this-and-that. Does the cash box show \$what-ever? (Yes/No) Where you able to enter all of the visitor's information? (Yes/No) In other words, Use Cases. While I love use cases in a QA environment, I will admit my first reaction was, "Gee. Eight judges sitting around checking off the same use cases. Doesn't seem like much room for opinion or 'judging' here." Boy, was I naive.

Jeff Jakus was appointed Chief Justice, meaning he not only had the responsibility of overseeing the process, staying on site during the entire competition while the rest of us checked in and out, but also had the honor of presenting the awards. Candi Hart was selected to play the role of Doris Frump, the MUGWUMP Treasurer. Though "frump" is not her style, we are quite in Candi's debt for agreeing to fill this role; the rest of the judges being guys, and the image of some of us attempting to frump and play the part of Doris, is enough to make you want to poke your mind's-eye out.

Monday morning, we got to the competition room bright and early. Okay. We got there early. Eight teams showed up for the competition, each team consisting of one or two people. They were:

- Natec - Nathan Rector
- Terri Hale and Gary Huffer
- Sierra Bravo - Luke Bucklin and Mike Derheim
- DesignBais - David McLean and Andrew Morris
- Precision Systems - Kevin King
- Revelation - Mike Ruane and Bob Carten
- Stamina Software - Ross Ferris and John Whitbread
- C. Allen Walker - Chubb Reinsurance

At 9 a.m., Doris distributed the specifications to the contestants, and the race was on. The deadline was 5 p.m.

Continues on page 18

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First Annual Spectrum Database Challenge

Each team provided their own equipment, database software, and development tools. In all cases, the equipment was simply notebook computers, some networked, some stand-alone. It was difficult to imagine what kind of logistics would have been necessary to hold a competition like this at, say, the 1985 Spectrum. If each team needed their own unique environment, that would have been eight full-size cabinets with power requirements, a dozen or so terminals with cabling, air conditioning enhancements, etc. Twenty years later everyone just walks in, sets up a notebook, boots up, and ... discovers that some of the provided power is inoperative and the building engineer must be called in. At least some things don't seem to change.

Around noon, lunch and a curve-ball were served. Doris informed the teams that there had been a requirements change. Instead of one speaker, there would be two speakers with parallel sessions in different rooms. The contestants are to be commended for their professional demeanor in accepting such a change halfway through development. At least if there was any swearing, it was kept at an inaudible level.

The real work for the judges started about 3 p.m. when the first solution was presented. Each team brought their notebook to the front of the room where a projector and screen were set up in such a manner so that the teams who had not yet finished were unable to see what transpired.

Unfortunately, unless we kept our voices very low, they would have been able to hear the judging questions. I am sure the murmurs and whispers added to the contestants' stress levels.

As previously mentioned, the judging consisted of asking the contestant to enter certain kinds of transactions and show the results. I don't think most of them expected this. Some teams seemed to be taken aback (and dismayed?) that not only did added features and nice user interfaces not get them any points, but they were not even permitted to demo those items. This certainly was not being handled like a sales call to a prospect, or even a typical pre-rollout demonstration. And the judges were in for their own surprise, also.

Ask the contestant to register a new member with name, contact information, mailing address, etc. Were they able to enter all the information (yes/no)? Was the method provided easy to use (yes/no)? You can see where there might be some disagreement about "easy to use." After all, except in the most tortured interfaces, ease-of-use is largely a matter of opinion, a judgment call. Hmmm. Maybe this judging thing wasn't going to be so cut and dried after all. At least the first question was pretty straightforward. Really?

Let's say the person had a suffix to their name, like "Jr." or "III." Add to that a "PhD." Oh, and they are visiting from England. What if an entry did not have a field for Country, but they put this information in the address line area and left City, State, and Zip Code empty? Or they made up a state code of "EN" and called England a state? One judge might say, "The question says 'Could they enter the information,' and they did, so the answer is 'yes.'" But another says, "That's not a feature; that's a kludge. The intent of the question was to determine if the design anticipated international addresses. So the answer is 'no.'"

Or what about finding out how many people are attending the event and the different speaker presentations, given only a list of attendees? "Yes" to "can you" and "no" to "easy"? Or assuming you may have 50 to 100 attendees and nobody is going to sit at a registration table, looking at a screen, counting, "One, two, ..." is it "no" to both? One judge was heard to be muttering, "Where's the 'maybe' score?" I can't speak for the other judges, but after doing that eight times, my head started to hurt.

Continues on page 19

MultiValue Application Database Challenge

Specification of Challenge

Welcome to International Spectrum's MultiValue Application Database Challenge, a contest for fun, prestige and prizes. Here is your challenge.

You are a member of the multi-state MultiValue User Group of Wyoming, Utah, Montana, and Pennsylvania (MUGWUMP). In a moment of weakness a few months ago, you volunteered to write a software package to manage MUGWUMP's upcoming fifth annual meeting in San Diego's Gaslamp District.

The meeting starts at 7:00 p.m. tonight at Dick's Last Resort in the Gaslamp District, but being the typical IT procrastinator, you haven't even started the project yet. Making it worse, Doris Frump, the grumpy MUGWUMP Treasurer will be here by 5:00 p.m. today to test out your software.

Doris will bring all of the necessary supplies to the meeting to set up the registration table and make sure nobody gets by her without paying. She will have a cash box with \$150.00 in change, name badges, ribbons, drink tickets, miscellaneous office supplies, and she'll be ready and anxious to use your new system in action to register attendees to the meeting.

Doris wants to see a visual display preview from the print queue of what a person's name badge will look like before it is printed. Doris insists that name badges have a minimum of the person's name, their company name, and where they are from.

Tonight's dinner will consist of the usual user group rubber chicken with broccoli and cheese. The price for dinner for members is \$28.00 and that includes two drink tickets. The price for non-members is \$33.00. Non-members do not get drink tickets, but anyone can purchase drink tickets for \$3.00 each. Members' spouses may attend the meeting for the member price. The bartender will not serve drinks without drink tickets. Doris will want to keep track of how many drink tickets and dinners have been issued because she doesn't trust Dick's Last Resort or the bartender.

Tonight's guest speaker is Professor Von Bilygates from Washington State who will be presenting the topic "COBOL - The Future is Yesterday!" Doris is prepared for the fact that the group's usual "cheapskates" will show up saying that they don't want the dinner but just want to hear the after-dinner speaker. Doris wanted to play hard ball and say "the price is the price" whether you eat dinner or not, but the board overruled her at the last board meeting and decided that even though they didn't like it, members could get in free if they just wanted to hear the speaker and skip dinner. They did rule, however, that non-members would have to pay a \$5.00 fee if they wanted to just hear the speaker and skip dinner. At the end of the meeting, Doris will have to write a check to Dick's Last Resort for the meeting costs, which is \$20.00 for each meal consumed, plus \$50.00 for the bartender and \$1.50 for each drink ticket collected.

Doris will want to use the system to recruit and sign up new members during the annual meeting. One benefit of signing up is that tonight's dinner is free. The annual MUGWUMP membership fee is \$100.00. The group accepts MasterCard, Visa, Diner's Club, company checks, personal checks or cash as forms of payment.

A major factor of the competition will be how well you do in anticipating and presenting Doris with the reports she will need to have to do her job as the MUGWUMP Treasurer and to answer questions that members and the board may have during the meeting. Of equal importance will be how well you anticipated requests that people may have at an actual user group meeting and the ease with which Doris will be able to handle them with your new software.

Emergency Last Minute Change

Sorry to advise you of this, but Doris just found out that the MUGWUMP Board has agreed to let Mr. I.M. Grand PooBah of Peddlers 'R Us give a presentation at tonight's meeting at the same time that Professor Von Bilygates will be speaking. Mr. PooBah is only in the country for a short while, so the Board wanted to take advantage of this rare opportunity to have him speak.

Doris said that Dick's Last Resort has a meeting room available for the second presentation, but she is in a panic because one of the meeting rooms is much smaller than the other, so she will now have to keep track of how many people will be attending which session so she can put the right presentations in the right room.

Making it worse, the Board agreed to give each speaker a list of the people that attended their session tonight so they can follow up with the people who saw their speech after the meeting.

We're sorry for this last minute change, but it is necessary to meet the Board's wishes and obligations.

Some BASICS *of* OpenInsig

BY MIKE RUANE, REVELATION SOFTWARE

Is OpenInsight's
flavor of Basic, called
Basic+, that different
from most MV flavors?
Not really, but there
are a few differences.

OpenInsight, as many of you now know, is a full GUI product that works on both Windows and Linux. Originally, back in 1982, it was a port of a flavor of PICK to the PC. Although it is a full GUI product now, its programming language is still a variant of Basic, which we call Basic+. This article will highlight some of the similarities and differences between most flavors of MV or PICK Basic, and OpenInsight's Basic+.

Basic+ is used throughout OpenInsight, both by developers and by the system itself. Most of OpenInsight is written using itself, so the programming language must be flexible and powerful. In our calculated or dynamic columns, the language used there is Basic+, and when using the OECGI Web interface that's included with OpenInsight, the language again is Basic+. There's no need to remember two or three different sets of syntax.

A Word of Caution and Explanation

When reading this article, an MV developer may become discouraged or disparaged about the differences between Basic+ and other flavors of MV Basic. Because we are a GUI tool, OpenInsight developers don't need to write code to do many of the things that other MV developers have to. For example, the following screen shots show a similar screen in an MV environment and one from OpenInsight. Both screens support read, write, lock and delete logic, have field level validations, and lookups. The OpenInsight screen required about 25 lines of code; the other screen required approximately 130 to achieve the same results.

| CATEGORY CODE | UNITS | SALES | LIST |
|----------------|--|----------|-----------|
| 1. DESCRIPTION | | | |
| ----- | ----- | ----- | ----- |
| UNITS | UNITS | SALES | SALES |
| THIS YR | LIST YR | THIS YR | LIST YR |
| MR 1107 | 1480 | 9440.28 | 9402.00 |
| TR 1154 | 1184 | 11390.88 | 9094.17 |
| MR 1192 | 2864 | 6481.88 | 22167.00 |
| SR 0 | 1142 | 0.00 | 9453.63 |
| MT 0 | 1547 | 0.00 | 10272.03 |
| TR 0 | 1881 | 0.00 | 9218.46 |
| TL 0 | 2893 | 0.00 | 12064.62 |
| TR 0 | 1862 | 0.00 | 15267.43 |
| RP 0 | 1891 | 0.00 | 11048.28 |
| CT 0 | 1381 | 0.00 | 11311.97 |
| OP 0 | 1519 | 0.00 | 13046.71 |
| EE 1 | 1141 | 38.68 | 8967.93 |
| OT 3535 | 17625 | 27270.54 | 127067.07 |
| MTFR | 'E' TO CHANGE, 'D' TO DELETE SR 'E' TO END - * | | |

FIGURE 1: Character-based screen requiring 130 lines of code to run.

ht

have keyword highlighting, and the list of keywords can be extended by the developer so that their own routine calls can appear in highlighted colors.

The editor also supports context-sensitive help. OpenInsight has terrific documentation, and it is constantly being updated. By either highlighting on a word in a program, or clicking on the word or command in question, the developer is presented with context-sensitive help, usually with a real-world example, and links to related items.

The OpenInsight Debugger is also a very powerful tool for developers. When debugging code, the developer simply puts a DEBUG command in the program and runs it. The Debugger allows the developer to inspect and modify both local and global variables, step through or over routines, shows the program stack, properties of all running windows, and is especially good at looking at arrays.

Saving and compiling programs is as simple as pressing the F9 key in the editor. Any syntax errors will be highlighted at the bottom of the editor, as well as any suspected unassigned variables.

Screen Handling and Manipulation

As mentioned above, most of the work required to present a screen, lock the record, allow changes, save and unlock the record are handled by OpenInsight's Presentation Manager, the code that displays data entry forms that were created using the Form Designer. In an OpenInsight form, each data entry field, button, or other screen item is called a control. Each control has a set of events that it responds to—for example, a button control has a CLICK event. On each one of the events a developer has the capability to hook in a process—either using what is known as a QuickEvent, where the developer fills in the blanks for whatever process they'd like to have occur, or by writing some code.

When performing screen manipulation, the two most commonly used commands are a pair of functions named Get_Property and Set_Property. Respectively, they are used to inquire about the contents or state of a property of a control, or to set the contents or state of the contents of a control. In this manner they are quite similar to the INPUT and PRINT@ commands.

Continues on page 22

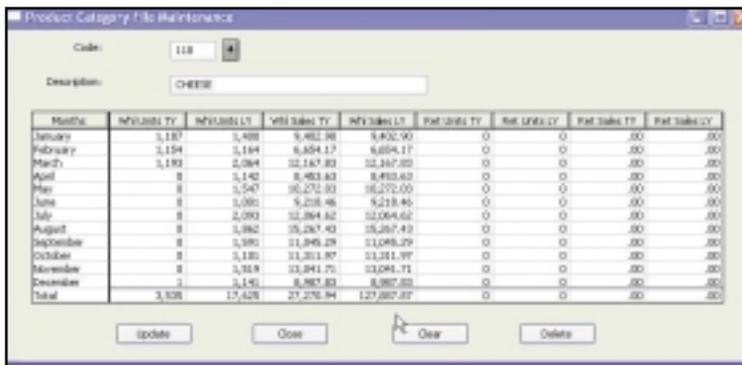


FIGURE 2: OpenInsight GUI screen requiring only 25 lines of code to run.

How to Write, Edit and Debug a Program

OpenInsight is shipped with two editors, an older one, whose roots go back to 1992, and a newer one, released just last year with many new features. There are even third-party editors available from some of Revelation's VARs, specifically SRP Computer Solutions (www.SRPCS.com). For the purposes of this article, we will be using the editor labeled Editor+ in OpenInsight.

The editor is an MDI tool, meaning that it allows the developer to have multiple screens open at once, a real asset when comparing data or programs, or cutting and pasting code. Programs also

have keyword highlighting, and the list of keywords can be extended by the developer so that their own routine calls can appear in highlighted colors.

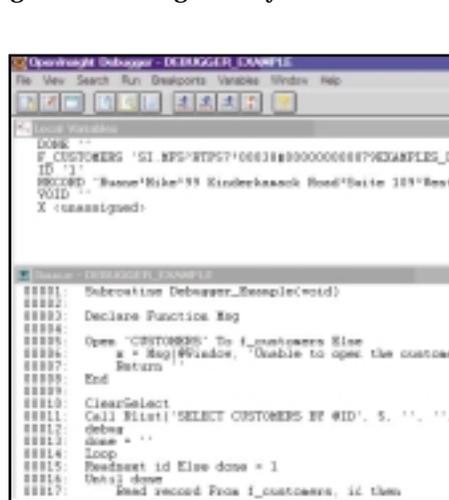


FIGURE 3: An example showing OpenInsight's Debugger

Some BASICS *of* OpenInsight

Continued from page 21

There are other commands such as `Send_Event`, which allows a developer to programmatically execute an event that would normally be triggered by the user. There is also a command called `POPUP` which allows the developer to generate or call up previously saved popups, which are used for providing input options to the user.

The Core: Reading and Writing

Basic+ has the standard read and write logic, with some minor differences. In order to read from or write to a file, we need to `OPEN` the file to a handle. Once the file has been opened, we can read from it or write to it using `READ` or `WRITE` statements. Basic+ also supports the `READV` and `WRITEV` commands to read from or write to specific fields in a record. We also support the `LOOP` and `READNEXT` commands for working through lists of records.

A difference between Basic+ `READ` and `WRITE` commands and MV commands is that Basic+ does not have any implicit locking or unlocking; Basic+ developers need to specifically lock and unlock records with the `LOCK` and `UNLOCK` commands.

Figure 4 shows a sample program snippet that opens, locks, reads, writes, and unlocks a record.

```
Subroutine Basic_Example1(void)
Declare Function Msg

Open 'BOOKS' To f_books Else
  x = Msg(@Window, 'Unable to open the books file')
  Return ''
End

id=10
Lock f_books, id Then
  Read record From f_books, id then
  a=uuu<12> = Date()
  Write record On f_books, id else
    x = Msg(@Window, 'Unable to update BOOKS record 'id)
  End
End else
  x = Msg(@Window, 'Unable to read BOOKS record 'id)
End
End else
  x = Msg(@Window, 'Unable to lock BOOKS record 'id)
End
Return ''
```

FIGURE 4: A sample program

An Array of Features

Arguably, one of the most powerful aspects of the MV architecture is the ability to use dynamic arrays. Basic+ supports both the `INSERT`, `EXTRACT`, `REPLACE`, and `DELETE` commands when working with dynamic arrays, as well as the use of the angle brackets operators for field `<1>`, value `<1,1>`, and subvalue `<1,1,1>` notations. Figure 5 shows a simple example of the similar commands and functionality.

```
Subroutine Basic_Example_2(void)
+ show different ways of manipulating arrays
Debug

array = 'Alpha Bravo Charlie Delta Echo Foxtrot Golf'
Convert ' ' To %fm In array

a = array<3> ;* a = Charlie
b = extract(array, 3, 0, 0) ;* b = Charlie

* both of the next commands do the same thing
array<4> = 'Dog'
array = replace(array, 4, 0, 0, 'Dog' )

* both of the following commands do the same thing
new_array = Insert(array, 1, 0, 0, 'Zulu')
new_array = 'Zulu': %fm: Array
```

FIGURE 5:
Working with dynamic arrays

Printed Output and Reporting

OpenInsight has a number of ways to get output to the screen, paper, or output file of choice, such as HTML, PDF, CSV, etc. First of all, Basic+ supports use of `PRINTER ON`, `PRINT`, and `PRINTER OFF` commands. These commands will send output to whatever printer is set as the default for the workstation, and will only print in the default font and orientation of the printer.

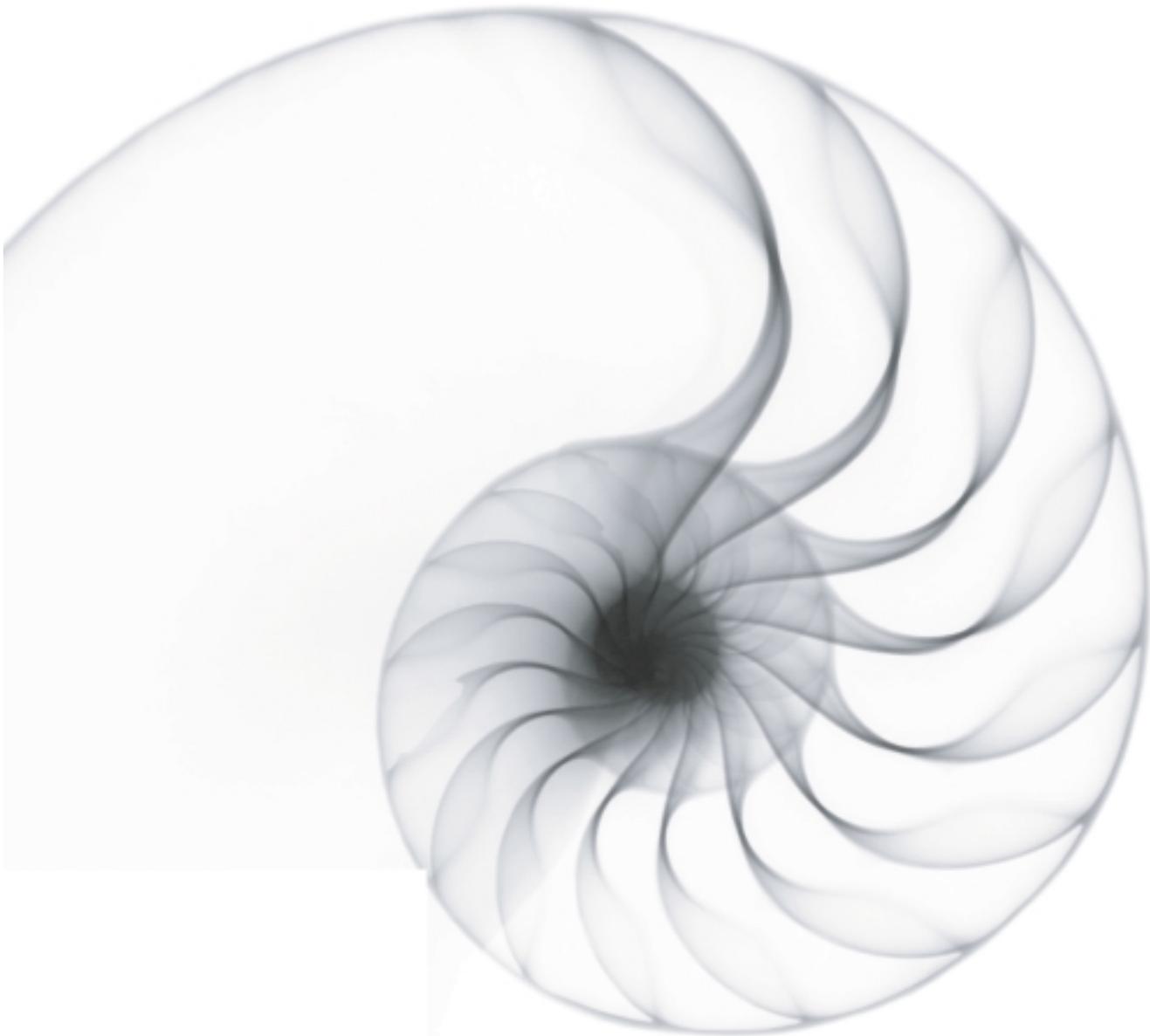
For more complete control of printer output, with the ability to control page size, font, color, orientation, and much, much more, we use the `Set_Printer` and `Get_Printer` functions.

What's Different

A couple of major differences exist between our version of Basic+ and the other MV flavors of Basic. First and foremost, Basic+ doesn't have an `INPUT` statement. `INPUT` stops all other processing and awaits input from the keyboard, and this just doesn't happen in the Windows world. There is always a process running somewhere. However, there are a number of reliable

replacements, such as `MSG`, our message routine, and using our Form Designer which handles all the data input logic for you.

Next, Basic+ doesn't support the `PRINT@` statement. `PRINT@` prints at specific coordinates, based upon a CRT screen size of 80 characters by 25 rows. In the GUI world, there are no fixed screen sizes. Standard screen sizes range from 640 x 480 pixels, up to 1400 x 1050 pixels. There are also issues with font sizes, so the amount of information displayed on the amount of real estate available on a screen can vary greatly. Again, printing to the screen is used mostly in entry screens, for informational messages, or report output. OpenInsight's tools handle many of these



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Taking the Bite Out of COBIT

Part 2 - IT Controls: Diving Into Details

In Part 1, we discussed the need for IT controls and overviewed the COBIT framework. To quickly recap, COBIT consists of 34 high-level control objectives, grouped into four domains. These high-level control objectives are then broken down into 318 detailed control objectives. Each one of these detailed control objectives has a number of documented control practices. As a side note, at first I found the use of the term “control objective” a bit confusing since it is used to describe two different things. So I make it a practice never to use that term without prefixing it with its appropriate modifier.

What I would like to do in this article is to present an example taking one domain, one high-level control objective, one detailed control objective, and some of its control practices to demonstrate the structure of the framework and give you an idea of what to expect when you get into the COBIT documentation (Figure 1).

before they go into production? Or are you one of those shops that lets the programmers do the testing and push to production in order to get things done quickly? Is this increasing your risk? Is the risk acceptable across all applications? See what I mean? There are a lot of discussions you can initiate just from this one point, and that might be enough for a small shop for now. But there is no real reason to

Figure 1

Domain: AI - Acquire and Implement

High-level Control Objective: AI5 - Install and Accredit Systems

Detailed Control Objective: AI5.7 Testing of Changes

The domain we will use is AI, Acquire and Implement. Each domain has a list of high-level control objectives. Let's look at the high-level control objective AI5, Install and Accredit Systems. Each high-level control objective has a description that follows a basic template of the form “Control over the IT process of,” “that satisfies the business requirement,” “is enabled by,” and “and takes into consideration.” The complete description is shown in Figure 2. Just looking at this description might lead you to some interesting conversations within your shop. For example, note the bullet point “End-user involvement in testing.” Do you involve your users in the testing of changes

flush out all the issues by yourself. By looking at the next level, you will see that a lot of the identification of areas to consider has already been done for you.

Let's say you are having a recurring problem with changes to the programs breaking things. It seems like every time you turn around, you are having to explain down time, lost data, and overtime pay. Yet all of your developers swear they test everything thoroughly before putting it into production. Obviously there is a disconnect somewhere in the process. So looking at the detailed control objectives for AI5, you spot AI5.7, Testing of Changes. Its description is:

Figure 2

High-level Control Objective Description for AI5
Install and Accredit Systems
(from COBIT Online)

Control over the IT process of
installing and accrediting systems

that satisfies the business requirement
to verify and confirm that the solution is fit for the intended purpose

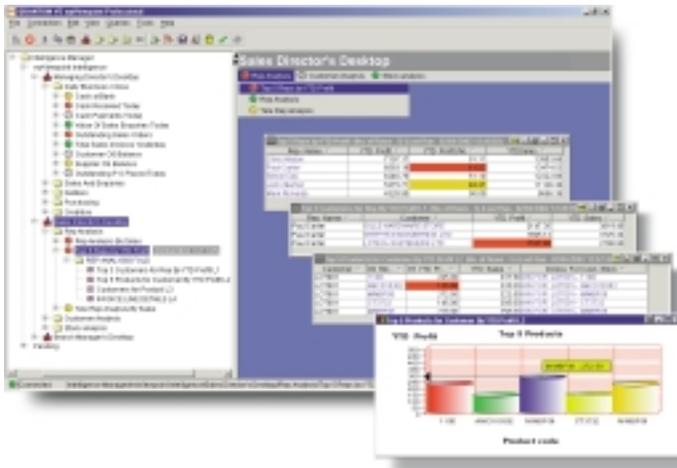
is enabled by
the realization of a well-formalized installation migration, conversion
and acceptance plan

- and takes into consideration
 - . Training of user and IT operations personnel
 - . Data conversion
 - . A test environment reflecting the live environment
 - . Accreditation
 - . Post-implementation reviews and feedback
 - . End-user involvement in testing
 - . Continuous quality improvement plans
 - . Business continuity requirements
 - . Capacity and throughput measurement
 - . Agreed-upon acceptance criteria

“Management should ensure that changes are tested in accordance with the impact and resource assessment in a separate test environment by an independent (from builders) test group before use in the regular operational environment begins. Backout plans should also be developed. Acceptance testing should be carried out in an environment representative of the future operational environment (e.g., similar security, internal controls, workloads, etc.)”

“Oh, oh,” you think. “Management should ensure...” That pretty much assigns responsibility of correcting this situation on your shoulders. Holding another staff meeting and admonishing the programmer to “be more careful” just isn’t going to cut it. “Backout plan, say what? Gee, we’ve never written out a plan to back-out changes; we just go into panic mode when things do not work as expected and hack together a bunch of one-off programs to try to fix the data.”

Continues on page 26



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the last set of changes. One of the older guys points out, "Yeah. It's really difficult for a programmer to adequately test his or her own program. That was pointed out in 1971 in Gerald Weinberg's book *The Psychology of Computer Programming*. Everybody ought to know that."

You go back to your office, close the door, and 20 minutes later are reflecting on how you really need to order a softer desk. But it was, after all, a good exercise. You have identified a problem, determined some probable causes of the problem, and have your staff discussing possible solutions. That is not bad, when you stop to think about it. Okay. One detailed control objective down, only 317 to go.

No, please. Put down the letter opener. The IT Governance Institute understands how overwhelming this can be, especially to a smaller MultiValue shop like yours. It feels your pain, and it wants to help. Meant as a starting point for organizations of all sizes, as well as being targeted to the small to medium enterprise, it has published a subset of the COBIT framework called the *COBIT Quickstart*. We will explore this godsend in the next issue.

In the meantime, at least put a pillow on the top of that desk. is

CLIFTON OLIVER brings over three decades of in-depth experience to his work in the information industry, much of it in the MultiValue market. His expertise includes project management, technology management, application development, data warehousing, and strategic planning for information services. He was an engineer for Devcom Inc., the original team that designed and wrote the landmark Prime INFORMATION database system.

He is well-known as an instructor, speaker, and author for both technical and managerial audiences. These include being an invited lecturer on software development, project management, and business ethics for such diverse organizations as the U.S. Department of Commerce, graduate level business schools, and the Mountbatten Institute in New York.

He also served as the PICK series technical editor for O'Reilly & Associates. Clifton can be reached at 619-460-5678; email: wco@oliver.com.

Taking the Bite Out of COBIT *Continued from page 25*

It does not look like your shop is following what, apparently, are considered by the industry to be Best Practices when it comes to testing. Suspecting that this is the tip of an iceberg, you look deeper into the control practices for this item. You find that there are nine of them. One of them jumps out at you.

AI5.7.3 states:

"Detailed and current system specifications reviewed and approved by management are used to establish expected testing results."

This seems to say that before you start testing, you should know what results you are supposed to get. So you go to the programmers and ask about this. You are likely to be told something along the lines of, "What? We've never worked in the distribution center. How should we know? We run some data through and if it looks all right, we schedule it for that night's code update."

You recall AI5.7.4, which says:

"Testing is conducted in accordance with the test plan or testing approach approved for the system/change and involves applying a sufficient range of valid and invalid (i.e., abnormal, unusual, improbable and/or illegal) conditions."

Inquiring about valid versus invalid data, one of the programmers calls up the source code, looks at a block of convoluted, nested IF statements and starts telling you what the program checks. Bad news. You realize that they don't

really know what the complete data domain is. How could they? They don't work in the distribution center. Then you hear one of them mutter, "Hey. That's not right. That condition should be less-than, not less-than-equal-to."

You quickly return to your office and close the door so as not to demoralize the troops by letting them see you banging your head on the top of your desk.

Well, it is said that half the battle in solving a problem is identifying exactly what the problem is. You suspected you had some testing problems. And with the help of the COBIT framework, you have identified at least one of them. Your programmers are working in a vacuum about this particular application's acceptable inputs. You don't even want to think about what misunderstandings there might be about the data transformations the inputs trigger—yet. At least the framework gives you a clue as to a way out of this that you might consider exploring.

AI5.7.1: "The organization's SDLC process requires that changes are tested in accordance with the impact and resource assessment, in a separate adequately protected test environment, by an *independent test group* and before promotion to the production environment." (Italics mine.)

In the next staff meeting, you propose this idea to get an idea of how the programmers are going to react. Surprisingly, as long as they don't get beat up for change requests taking longer than before, they don't mind the idea. They would rather be skiing on the weekend than sitting in the office, yet again, fixing data that was corrupted from

UniData Dynamic Files

BY JEFF FITZGERALD AND PEGGY LONG



Our last several articles have discussed “dynamic” files. We first gave a theoretical discussion describing what makes “dynamic” files dynamic and how they are able to split and increase in modulo as data are added to them. The next article focused on the specifics of UniVerse dynamic files. It is now time to examine the dynamic file implementation done by UniData. Since we have already looked at the overall dynamic file mechanism we won’t beat that horse anymore — rather, we will concentrate on the unique aspects of UniData dynamic files, contrasting them to the UniVerse implementation as we proceed.

Structural Mechanics

You may recall that a UniVerse dynamic file is implemented as a directory containing two subfiles named “DATA.30” and “OVER.30.” These two files hold the primary data and overflow data respectively. UniData dynamic files are very similar; again

the file consists of a directory containing subfiles for the primary data and overflow data. The UniData subfiles are named “dat001” and “over001” and function very similarly to the “DATA.30” and “OVER.30” subfiles used by UniVerse. There are some important differences, however.

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UniData Dynamic Files

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UniVerse dynamic files allow only one "DATA.30" and one "OVER.30" subfile for each dynamic file. For hardware platforms and UniVerse releases that support 64-bit files, the dynamic file can be created with the "64BIT" option which will allow each subfile to grow well past the 2-gigabyte limit imposed for 32-bit files.

UniData has not yet extended its addressing to support 64-bit files. However, UniData dynamic files can have multiple primary and overflow subfiles, effectively allowing the file as a whole to exceed the 2-gigabyte limit. The UniData configuration file, `udtconfig`, contains a number of parameters related to dynamic files. One of them, "MAX_FLENGTH", specifies the maximum size of the subfiles. The default value of "MAX_FLENGTH" is 1 gigabyte — 1,073,741,824.

When a dynamic file is first created, the subfiles "dat001" and "over001" are allocated and placed into the dynamic file directory. As data are added to the file, primary group buffers are stored in "dat001" and overflow buffers are stored in "over001." When the "dat001" subfile reaches the size specified by "MAX_FLENGTH" a second set of subfiles is created and named "dat002" and "over002". These subfiles serve as logical extensions to "dat001" and "over001" and allow the total file size to exceed the 2-gigabyte limit. When "dat002" reaches the size set by

"MAX_FLENGTH" another set of subfiles is created and named "dat003" and "over003". There can be up to 255 sets of subfiles in any given dynamic file.

UniData refers to the data and overflow subfiles as "part files" and allows them to reside on different filesystems, which allows the system administrator to better manage disk space.

UniData refers to the data and overflow subfiles as "part files" and allows them to reside on different filesystems. This allows the system administrator to better manage disk space. UniData also allows construction of a "part table" which specifies filesystems that can be used for part files and how much space should be left in the filesystem after creation of part files. There is a utility named "mvpart" which can be used to move part files from one filesystem

to another. Note that you should always use UniData utilities to manipulate part files rather than manually moving them because symbolic links and hidden files must be maintained to preserve the integrity of the dynamic file. The default is that all subfiles will reside within the dynamic file directory in the original filesystem where it was created.

Splitting and Merging

The splitting and merging of UniData dynamic files is very similar to that discussed for UniVerse files. That is, when the file load exceeds the parameter set for `SPLIT.LOAD`, the file will split a group, increasing the modulo by one. When the file load goes below the value of the `MERGE.LOAD` parameter, the file will merge the last group into

another existing group, reducing the modulo by one.

A unique aspect of UniData dynamic files is that two different schemes of splitting and merging exist. The UniData documentation refers to them as "split/merge types" and gives them the names of "KEYONLY" and "KEYDATA". The two schemes vary in what portion of the data records are considered when calculating the load of the file. "KEYONLY" implies that only the record keys are to be considered when the load is figured; "KEYDATA" will consider both the record keys and record data when computing the file load.

You will recall from our discussion of UniData static files that two types of overflow can occur — "level one" and "level two" overflow. This holds true for UniData dynamic files as well. Logically, the "KEYONLY" split/merge type seems to be primarily concerned with reducing level two overflow by trying to keep record keys within the primary group buffers. "KEYDATA" causes the load calculation to be more like that seen in UniVerse files in which the record is dealt with as a whole. "KEYDATA" would tend to reduce both level one and level two overflow; however, "KEYDATA" might tend to waste more disk space, especially if the record lengths vary widely.

Here's what the UniData Administration Manual has to say about choosing a split/merge type:

"Use the KEYONLY split/merge type for files whose records differ widely in length (standard deviation from average is large). When record lengths vary widely, the KEYONLY split/merge type makes more efficient use of disk space. Use the guide or `FILE.STAT` command to determine the record length and standard deviation from average for an existing file.

Use KEYDATA for files whose record length is consistent and in which the length of the data portion of each record is large with

respect to the record ID. For files with these characteristics, the KEY-DATA split/merge type provides a better distribution of records and less overflow than KEYONLY."

The default SPLIT.LOAD and MERGE.LOAD values vary depending upon which split/merge type is chosen. The default values can be found in the udt-config file — here are the values from my system:

SPLIT_LOAD=60

MERGE_LOAD=40

KEYDATA_SPLIT_LOAD=95

KEYDATA_MERGE_LOAD=40

The default split/merge type is "KEY-ONLY" which has a default SPLIT.LOAD of 60% and a default MERGE.LOAD of 40%. The split/merge type of "KEYDATA" has a default

SPLIT.LOAD of 95% and a default MERGE.LOAD of 40%.

Hashing Algorithms

UniData dynamic files have two hashing algorithms available to map the data records to the file groups. These two hashing algorithms are the same as used by UniData static files and are known as hash type 0 and 1. The default hash type is 0 for both static and dynamic files.

The splitting mechanism of dynamic files is designed to manage the modulo of the file as data are added, updated and deleted. Overall, for a well-designed file with random updates distributed evenly among the groups of the file, this mechanism does a pretty good job. However, if the hashing algorithm isn't distributing the data records evenly, the dynamic splitting will waste disk space and be ineffective at reducing overflow in the file.

As is the case with UniData static files there is not a "what if" utility that can be used to experimentally test the two hashing algorithms for a particular file. We suggest that you use either GROUP.STAT or FILE.STAT to obtain the percent standard deviation of bytes per group. This statistic "normalizes" the standard deviation by dividing it by the average number of bytes per group — since the standard deviation is relative, the normalized statistic is easier for us to work with. The percent standard deviation is shown directly by GROUP.STAT; if you use FILE.STAT, divide the "Standard deviation from average" of bytes per group by the "Average number of bytes per group." Multiply this number by 100 to obtain a percentage. In evaluating the evenness of hashing, the lower the percent standard deviation the better; the higher the percent standard deviation the more uneven the data bytes are dis-

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UniData Dynamic Files

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tributed among the groups and the more rewarding it might be to try the other hashing algorithm.

If the existing hashing algorithm is producing a high percent standard deviation, you can try the other algorithm by creating a new file that uses the other hash type and then copying the data from the original file to the new one. Then calculate the percent standard deviation of the new file and compare. Remember that there will be cases in which neither hash type does a perfect job.

Block Size

The UniData dynamic files may use the same block sizes as static files. That is, 512 bytes and 1K, 2K up to 16K bytes. We strongly suggest avoiding multiples of K bytes that are not a power of two, such as 3K and 6K — this is because of the possibility of overlapping the UniData file buffer with the underlying disk block size and causing more I/O. If you follow our advice, this leaves 512 bytes, 1K, 2K, 4K, 8K and 16K as the choices.

As an overall default block size we tend to prefer 2K. This is a handy compromise that often provides the best mix of access speed and disk usage. While it seems logical to increase the block size for files with lots of largish records, it has been our experience that the increased block size often doesn't perform better and may perform more poorly. Our best advice is to make small changes and to test thoroughly before buying into a particular philosophy of choosing block size.

Minimum Modulo

As with UniVerse dynamic files, if you can anticipate the volume of data to be added to a newly created file you can specify a MINIMUM.MODULO for the file. This serves to preallocate disk space for the file and will make it much faster to add the initial store of data. For a file in which data is both added and deleted on a regular basis, the MINIMUM.MODULO parameter can also serve to prohibit merging below a set modulo. This reduces the work required when data are added to the file again as the disk space is held in the file ready for use.

While it seems logical to increase the block size for files with lots of largish records, it has been our experience that the increased block size often doesn't perform better and may perform more poorly.

Changing File Parameters

All of the dynamic file parameters can, with the exception of SPLIT.LOAD and MERGE.LOAD, be specified when the file is created using the CREATE.FILE command. The ANALYZE.FILE and FILE.STAT commands will display the current parameter values for a file. ANALYZE.FILE will also show, on a per-group basis, the number of records in each group and the current key and key+data loads of each group. This can be helpful in analyzing the file's performance.

The UniData CONFIGURE.FILE command can be used to change several of the dynamic file parameters, namely SPLIT.LOAD, MERGE.LOAD, MINIMUM.MODULO and split/merge type (KEYONLY and KEYDATA). The execution of the command is very quick as it simply changes the parameters in the file header. The actual changes to the file to restructure it according to the new

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parameters will take place over time as records are added and/or updated.

For example, if the current SPLIT.LOAD of a file is 95% and we use CONFIGURE.FILE to change it to 55%, you would expect the size of the file to increase dramatically to realize the reduced load. This happens, but not all at once — each subsequent write to the file will cause a split to occur until the load is reduced below the new SPLIT.LOAD of 55%. Depending upon the usage of the file, this will take some time.

If you want to speed up the process of realizing new parameters we suggest you copy the file over itself using the UniData COPY command. For example, if the file name is FOO, use the command:

```
COPY FROM FOO TO FOO ALL  
OVERWRITING
```

This command will cause a large number of writes to the file and will accelerate the process of restructuring the file. Depending upon the size of the file

and the changes made, you might need to use the command several times.

UniData supplies a REBUILD.FILE command that can also be used to reconstruct the file after parameter changes. It has been our experience that REBUILD.FILE results in excessive splitting and wasted disk space. As an illustration of this, I created two test files, TESTVOC1 and TESTVOC2. TESTVOC1 was created using the “KEYONLY” split/merge type. TESTVOC2 was created using “KEYDATA” and a SPLIT.LOAD of 70%. The data records from the VOC file were copied to both files. Next I used CONFIGURE.FILE to change the split/merge type of TESTVOC1 from “KEYONLY” to “KEYDATA” and to change the SPLIT.LOAD to 70%.

At this point both test files use “KEYDATA” and a SPLIT.LOAD of 70%. But the TESTVOC2 file has a current modulo of 56 while the TESTVOC1 file has a current modulo of 22. This reflects the more aggressive splitting caused by the

“KEYDATA” split/merge type. I then used REBUILD.FILE on TESTVOC1 — the resulting current modulo was 263! Much higher than anticipated — ANALYZE.FILE revealed very low loads in all groups. Our technique of copying the data in the file over itself resulted in more predictable results.

Changing the block size or hash type of the file cannot be accomplished with CONFIGURE.FILE since it requires an immediate restructuring of the file. The two alternatives are to use the UniData “memresize” command or to create a new file and copy the data to it. The easiest approach is memresize, but as with any resizing operation, please make sure the file is backed up and that no users are accessing it in any way.

The memresize command can also be used to maintain dynamic files. Over time dynamic files tend to accumulate a sizable amount of wasted space. This is partially due to merges that only shrink the file logically; physically, the

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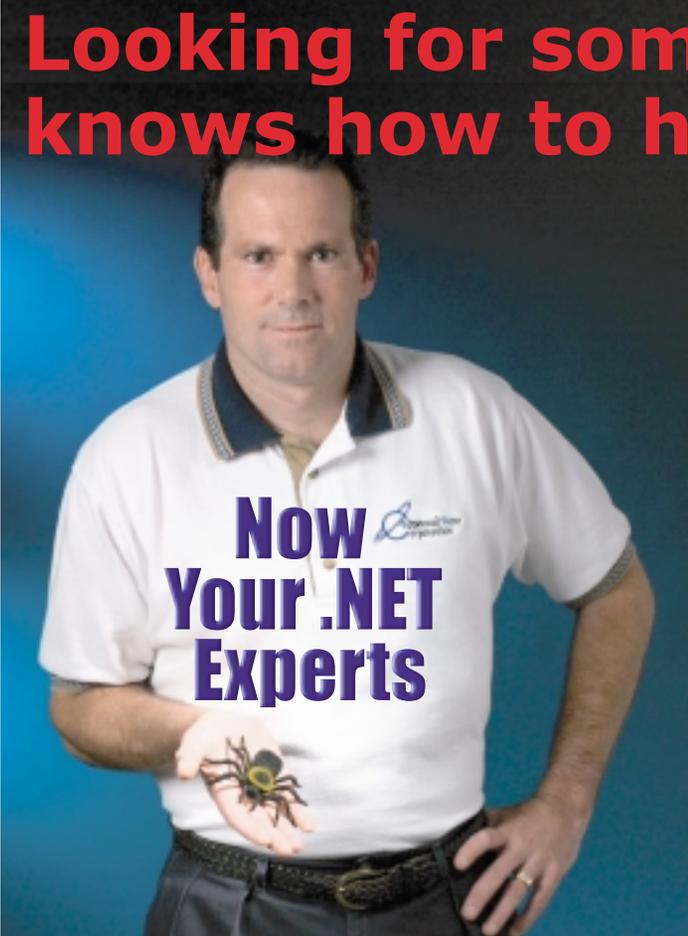
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BlueFinity Signs Agreement With FusionWare to Market mv.NET

FusionWare Corp., an emerging leader in the intelligent integration market, announced that it has signed a memorandum of understanding with BlueFinity to market its flagship product, mv.NET, throughout North America, Australia and the Pacific Rim.

mv.NET is a comprehensive solution for developers wishing to access MultiValue databases from within Microsoft's .NET environment. It enables software designers to combine the power and flexibility of proven MultiValue technology with the feature-rich .NET environment.

"We are excited to add the mv.NET product to our eTools suite of MultiValue developer solutions," stated Alan Davis, CEO of FusionWare. "mv.NET will open up new opportunities for our customers to create .NET-based interfaces to their non-relational databases, which will help them leverage their investment in MultiValue and deploy new innovative business applications."

Under the agreement, FusionWare will market and sell mv.NET through its direct sales force, as well as offer the product through its growing list of VARs, SI and OEM partners.

"The mv.NET products from BlueFinity are currently attracting considerable attention as they are introduced to markets

around the world," said Ian Leeper, managing director of BlueFinity. "This partnership will help accelerate the introduction of mv.NET into new markets where FusionWare has an established customer base and channel. The synergy between our respective product lines and target markets makes this relationship a natural fit."

About BlueFinity

BlueFinity (www.bluefinity.com), a subsidiary of Systems 24/7, supplies software development tools and consultancy services to the MultiValue database and Microsoft developer communities. Founded in 2002 by a group of highly experienced software developers with expertise in all flavors of MultiValue databases, BlueFinity has created a series of products that offer superb programmer productivity along with components encompassing feature-rich business application-centric functionality.

About FusionWare Corp.

FusionWare Corp. (www.fusionware.net) is a privately held software company with offices in the U.S., Canada, and Australia. FusionWare is recognized for creating data access and intelligent integration products that solve today's most complicated integration and interoperability issues. Its solutions enable customers to leverage existing IT investments and quickly and cost-effectively develop robust Web Services which improve operational efficiencies without adding complexity to their existing IT infrastructure.

Via Systems Names Laura Hatfield as U.S. Operations Manager



Laura Hatfield leads Via Systems' sales, support and marketing efforts in the MultiValue marketplace as its new U.S. operations manager.

Via Systems Inc. has promoted Laura Hatfield to the position of U.S. operations manager. She will be leading the company's sales, support and marketing efforts in the MultiValue marketplace. "We are extremely excited that Laura has agreed to accept this new responsibility," said Richard Jowitt, CEO of Via Systems' parent company Electronic Data Processing (EDP). "We feel that the combination of Laura's experience, and our product line, will serve to increase our market presence."

Hatfield was part of the original Via Systems team, starting her tenure with Via in 1991. With a total of over 20 years of experience in the computer hardware and software industry, she will continue to dedicate herself to providing the premier support and service

that has always been an integral part of Via Systems' mission, the company said.

"This year will prove to be one of the most exciting, with the launch of our new product mvViewpoint," Hatfield stated. "Our customer base will discover a business intelligence toolkit designed to present all the pertinent information of the business direct to the desktop in a dramatic, graphical format. myViewpoint will enable managers to monitor business performance against user-defined alert parameters. Managers will be delighted, and IT directors and VARs will become well-deserved heroes in their companies." She added, "With a successful history of other Via Systems products already in the marketplace, such as Via Duct, WebWizard and UniVision, we will continue to innovate for and support our extensive customer base."

Via Systems, a wholly owned subsidiary of EDP Plc., is one of the most recognized names in the MultiValue industry. Established in 1978, one of Via Systems' first products included CompuSheet+, the industry-standard spreadsheet program. In addition to myViewpoint, today's products include the UniVision MultiValue database, the WebWizard Web development environment and the ViaDuct-fx terminal emulation package.

For more information, contact the company at 1-888-TEAM-VIA, www.via.com, or through email at sales@via.com.

AdValorem Signs U.S.'s Largest Waste Management Firm as a New User of EasyTax

AdValorem announced that it has signed the country's largest

waste management firm as the newest client for AdValorem's EasyTax sales tax software. EasyTax makes it possible for a MultiValue application to use any of the standard sales and use tax calculating and reporting software packages that have long been available outside of the MultiValue community.

The new client, MEN Corp., needs the software more for its UseTax capabilities than the Sales Tax component, according to Stan Zegel, president of AdValorem, who said he is flushed with pride for his small Chicago-based business to have been chosen as the

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Power of Wade Grows With Appointment of Chuck Powder to Head New Division

OHM Systems USA has formed a new business relationship with Chuck Powder, PhD, an esteemed colleague of over 20 years. Powder will be heading up OHM's Web-centric Application Development Environment (WADE) division for North America.



Chuck Powder brings a diversified background to his new position as head of OHM's WADE division for North America.

The WADE product was officially released 18 months ago to developers and large end users that have to support and grow their applications package and know that they need something more than an intermediate step. WADE allows rapid new generation of Web-centric applications for Internet and intranet environments. There is no programming except for your business logic, which is ported to the environment via the OHM tool set. Since WADE is 100 percent Web-centric, it requires only the browser to execute. There are no interfaces or required software to the client. WADE was successfully used for OHM's own MRP/ERP applications, which were completely rewritten using WADE. The first full-scale MRP/ERP OHM Web-centric application was released in May 2002

to OHM customers. The full version of WADE also includes a robust report writer, WAVE. The explosive response to the WADE product created the need for WADE to have a division of its own.

Powder has an impressive and extensive background in MultiValue environments. After starting a small consultancy service in 1979 with a partner and fellow university faculty member from the University of Dayton, where he taught undergraduate and graduate mathematics, Powder founded the company Creative Microsystems (CMI) in 1980. The mission of the company was to successfully design, develop, install, and support computer applications for local government and small businesses using all types of MultiValue environments. Powder designed, programmed and managed development from 1980 to 1988. During the same period, he served as the company's president, sales manager and development manager. In September 1999, he sold the company to Sanderson Group, in Sheffield, England, an international computer services group. Powder continued under a services contract, serving as managing director (CEO). In July 2003, he resigned and continued to privately contract with CMI and other companies with similar development requirements.

In taking on this opportunity, Powder commented: "I have known Suresh [OHM's president] and the OHM team since the early 1980s and we have developed a mutual respect for our collective development talents. It is exciting to see a product that is designed for the Web, but more importantly, addresses the real application development needs posed by complex real-world business applications. No other toolset so comprehensively addresses the classic order entry model, which requires field level validation, cost table integration and variety of displays. It is a great pleasure to join forces with the OHM team."

The mission of the WADE division will be to further support and grow the U.S. customer base for use of the WADE product. Powder will be heading up the teams to provide customer on-site project services and customer care from OHM facilities as well as be a liaison between OHM USA and OHM's R&D center in Bangalore, India, for U.S. customers' requests and general new development ideas. This will also provide WADE users in the U.S. with a dedicated staff of professionals to work with them at all levels.

OHM's WADE product is also being represented in other countries by relationships with local established companies in each country and OHM North America. OHM's Catherine Anbil noted: "More information on our alliances and relationships with WADE and other OHM products and services will be announced shortly."

For additional information on any of the WADE products and services in the U.S. or any other country, contact OHM at 800-878-0646 (US), or sales@ohmworld.com.

newsmakers

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exclusive provider of Sales and Use Tax service to the worldwide company, headquartered in Flushing, N.Y.

The MEN Corp. operates numerous facilities in every state, with exclusive low-bid contracts in every public building and branch offices in most private office buildings, where the logo on the doors of its branch offices is recognized by millions of office workers every day. Its advertising slogan, "It's just down the hall," is one of the best-known in history.

Uri Nall, the new chief operating officer of MEN, said that although MEN's services have historically been free to users, with the company making its money through recycling, it is considering expanding its fee-for-service offerings which are now in only limited locales in the USA but are very common in the rest of the world. It will also test market Pay Per View services in San Francisco and other selected areas. MEN is free to explore these options in the USA—which increases the need for Sales Tax accounting to supplement its Use Tax—because of the relaxation of constraints under the Public Interest, Convenience or Necessity clause of the Interstate Commerce Act. It is still required by the Essential Facilities Doctrine of the Antitrust Act to

provide its facilities on an equal basis to all who seek its services.

AdValorem and MEN Corp. first worked together in 2004, when AdValorem did some market analysis work for the company. "We discovered that most customers are truly stand-up guys, but some just sit down on the job," said Nall, who revealed that cubicle rental rates are being studied as an outgrowth of that analysis.

Nall, who joined MEN in 2004, said the company has always

reported solid results, but its liquid assets in recent years have been quickly disappearing. He is part of a new management team recently installed because shareholders decided the previous directors had sat too long and the company was stagnating. Nall said the new management is stepping up to the wall to get income flowing again and the movement toward fee-for-service is part of that initiative.

Nall said AdValorem's EasyTax Sales and Use Tax system was

chosen for its superior automation capabilities because MEN's strict Sarbanes-Oxley compliance policies require the proper paperwork at the end of every job. "Without it, our company would need to wash its hands of the customer, despite our natural desire to have another go at it," he said.

The MEN Corp. is also studying selling auxiliary items, such as newspapers and other reading material, which would also increase the need for EasyTax Sales and Use Tax software supplied by Zegel's firm.

For more information, contact AdValorem at 630-260-0011 or StanZegel@AdValorem.US.

Keystone Information Systems to Sell Entrinsik's Informer Web Reporting Tool

Keystone Information Systems of New Jersey has begun reselling Entrinsik's Informer Web Reporting System as part of its total solution approach to governmental organizations. Organizations using Keystone Information Systems solutions include public school district administration, local government and property assessment administration, and public safety CAD, RMS, and detention management. "As we are committed to providing complete, user-friendly solutions to our customers, Entrinsik's Informer became an ideal complementary tool to satisfy our customer reporting and inquiry needs," said Judd Van Dervort, Jr., vice president of Sales and Business Development for Keystone. "Its intuitiveness and functionality will allow our customers to get a larger information payback for their data investment in their business systems."

According to Doug Leupen, president of Entrinsik: "This is a perfect win-win relationship. Keystone customers have a rich functional system but desire an intuitive way to get at their data, as do many U2 users. Informer satisfies this need and ends up creating happier customers for Keystone."

Informer has a host of features that provide executives, managers, and key administrators easy interactive reporting from very complex database structures. It provides users direct and fast access to U2 database files utilizing UniObjects while presenting the information in an interactive HTML format on their browser. Retrieved data can also be dropped into an MS Excel spreadsheet, an Adobe PDF file, or an email. Informer allows for customization of data views "on the fly" through sorting, grouping and field selection. Security is managed through a robust role-based mechanism that controls who has access to Informer's powerful features while limiting data availability by role down to the data element level. Informer can optionally be integrated with LDAP User Access Management systems.

For more information on Keystone Information Systems, visit www.keyinfosys.com. For more information on Entrinsik and Informer, visit www.entrinsik.com.

The Information Era... Keeping Users and Clients in the Loop

BY ROBERT R. COLTUN

The need for data has grown exponentially over the years since I first got involved with computers. No matter what company I was working with, the need for information has become staggering. Despite the number of reports that are already available with any given application, the need for new ones is never ending.

The truth herein lies with the fact that businesses are constantly changing. These changes can be due to internal or external factors, ranging from a company buying new software to the reorganization of a company to a purchase or merger.

Let's face it ... change is a part of our everyday environment. An IT department is always under stress due to these changes. This is not to say that other departments or the employees working within those departments are under any less stress. The interesting point here is that we as IT professionals work as liaisons with other departments within the organization. The IT department supports the users within these departments, who in turn support clients and customers.

The issue is how to provide the data to your users easily. I find that most users today wish to manipulate the data themselves to some extent. I have no problem with this, but let me make one thing absolutely clear here. With all the systems that I've worked on in the past, as well as those I currently work on, ONLY data which is printed or emailed, and therefore documented, can be deemed as gospel.

With all the systems that I've worked on in the past, as well as those I currently work on, ONLY data which is printed or emailed, and therefore documented, can be deemed as gospel.

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The Information Era... Keeping Users and Clients in the Loop

Continued from page 35

Once the data is out of my hands and a user has the capability of manipulating the data, the responsibility for the accuracy of that data lies with the user. This is a reminder that any process that you put together to generate data needs to have the ability to be rerun. If you're working with a system that is perpetually updated online and real time without the means of being able to reproduce reports, you're asking for trouble. Any reporting process performed from files of this type needs to have its process shutdown and a snapshot made of the data at the time of the original report. Now you have a way to rerun your report using the snapshot, so to speak. Most well-written systems make use of snapshots and date/time stamps to accurately follow the flow of data.

Let me reiterate here that the users within your organization need information/data. They also need the information to be accurate, and they need it to be produced in a timely fashion. I should discuss a few methods for accessing/transferring data. These methods are all relatively simple. Depending on which method is used, you may need to get your System Administrator involved with the initial setups.

There are three different methods available (exported file systems, Zmodem file transfers, and FTP file transfers). All three of these methods will work, but the amount of work that is required to set each up may vary.

Exporting Files Is the Easiest Method

The easiest method of retrieving the data would be to export the files using either Samba or VisionFS. Even though this is the easiest way to retrieve data, it requires the most setup by the Unix System Administrator. Both products—

Samba or Vision F—allow the System Administrator to take a Unix directory and expose it to a Windows environment. The exposed file system will look like any other Windows file system on the network. From here the System Administrator needs to make sure files get written to the exposed directory. Once the program has completed, the user should be able to open the file as if it were written to his PC. Please note that the user must know where on the network this path resides before he can extract the file.

Zmodem Works Well

The second method I use to transfer/access reports is Zmodem. The use of Zmodem works really well and normally requires very little setup. Most terminal emulators support it; and I have not worked on a Unix box that did not already have it installed. A few emulators that support Zmodem are Wintegrate, Softerm, and HyperTermi-



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nal. I normally use Zmodem protocol to handle my transfers between the Host and Client systems. In order to easily transfer data from the Host computer to a Client PC, I will embed the "sz" command within my basic code. There are a few things to remember when utilizing Zmodem. One, of course, is to make sure it exists on your Unix Host. Use the SETPTR command in UniVerse to reset your spooler parameters. The following command "Example. - SETPTR 0,999,32000,3,3,3,BRIEF,BANNER UNIQUE,NFMT,EJECT" will reset the output. The command will change the page length and page depth and reassign the output to the "&HOLD&" file defined in the UniVerse Voc file for the account you're logged into. Please note that the actual Unix location will be determined by viewing the file location by editing the filename "&HOLD&". The Unix path where the data resides will exist in attribute<2> of the record. The simplest way to send a file utilizing Zmodem is the following command.

```
sh -c "(/u/bin/sz -a \&HOLD\&/
filename)" - This command is entered at the
UniVerse Tcl prompt ">".
```

Note: Replace the filename with the actual name of the file you wish to transmit. Remember that not all emulation programs will automatically begin receiving data from a Host system unless the user intervenes. Emulators such as Softerm and HyperTerminal will automatically begin loading the file or prompt you to begin loading the file. Other emulators will just wait for you to manually start the process. If you don't start the process and the emulator is expecting you to do so, the process will eventually time out and fail. One last thing to note is that you could use Xmodem, Ymodem or Kermit to do the same thing. The choice really depends on the systems you are communicating with.



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Using FTP Protocol

The third method is to use the FTP protocol to transfer information. Using FTP works well but requires setup of an FTP client on all PCs as well as the terminal emulators. In addition, there are quite a few steps that the user would have to perform each time to receive his data. For interoffice processing I normally do not use this method. Instead, I accept data from users/customers and have automated jobs that capture and process the data received. A user cannot be expected to open and work with an FTP client to get his data. A user needs to perform his job, not be an IT guru trying to retrieve information from the system.

You Can Transfer Raw Data Instead of Creating a Report

Remember that you can transfer raw data instead of creating a report using all the methods mentioned above. There are some things to determine when sending raw data versus sending a report. Decide if you need to send titles and/or column headings with the data. Ask yourself if the data would be more usable if a delimiter were placed between each field, or should all the fields be generated with a fixed field length? Would it be wise to encapsulate each field with quotation marks? All of these points need to be addressed prior to the actual transfer.

Continues on page 42



The Field Definition Tool is used to define field characteristics for each field in a data record.

A great deal of flexibility is allowed in System Builder when you build an application and it doesn't force you into a structured approach to build the application. This works well when you prototype an application or you are building a simple system.

The field definition tool is always available to change or add to field information and it is related to all the other tools in SB+.

If you are building a complex multi-file system, I would suggest you use a structured approach and carefully design the files, their inter-relationships and all the fields in the files. Your first step in this type of situation might be to prototype the system specifications and then review the specifications and modify or redefine the files and their relationships. Field definitions are the heart of the system because everything you do in an application refers to files and fields. All fields need to be defined in detail or with minimal information or it will be very hard to accomplish much when you design an application.

The field definition tool is always available to change or add to field information and it is related to all the other tools in SB+.

As an example, we could consider its relationship to screen design. During their design you will be prompted for the field names which will be placed in the screen. If you have previously defined the field with the field definition tool, the field will be called up automatically and placed in the screen, using the definition you use for the field when you created it. If you are adding a field to the screen which has not been defined, SB+ will invoke the field definition tool so that you may define the field to the system. At any time you wish to enter the field definition tool, type: /FD from any input prompt in the system. You may also include the filename and/or field name after the /FD.

When working with the field definition tool you will have the following function keys available:

- **F2 - Save**
Saves the Field Definition
- **F4 - Delete**
Deletes the Field Definition
- **F5 - Review**
Provides a summary of the fields defined for this file.
- **F6 - Addit**
Provides additional features such as controlling/dependent, input conversion, justification, and full description.
- **F7 - Template**
Global dictionaries store standard field definitions templates that may be copied and used as a basis when defining fields in a particular dictionary.

- **F8 - Global Dict Copy**
Each system ID may have a Global Dictionary. No field positions are stored in these dictionaries and they ensure that the same field used in different files will be consistent in terms of length, description, and conversion, etc. You may use System Control Record in Housekeeping in the Other Tools menu to define the Global Dictionary. If this key is pressed at the Field Name prompt, you will be asked the name to be retrieved from the Global Dictionary. If this key is pressed at any other prompt on the screen, the current record will be written into the Global Dictionary.
- **F10 - Action**
This allows you to access the Action Bar for this tool.

F2-Save F4-Dele F5-Review F6-Addit F7-Template F8-Global Dict Copy F10-Action

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The Action Bar provides the following function within the Field Definition tool:

- **Xref** - allows you to define any fields for which a BTree index is to be maintained.
- **DeriveF** - generates File Translation correlatives automatically when a field from the current file contains the Key to another file.

Continues on page 40



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- **ReGen** - will regenerate expressions for a file.
You will need to do this if the field positions have been changed and the current expression is out of date.
- **Review** - displays a summary of defined fields.
- **Print** - will print a full or abbreviated report showing details entered for the fields. These reports will be output to the printer.
- **Copy** - allows copying of field definitions from another file.
- **Doc** - allows for the entry of documentation text which will be used by the automatic documentation tool.
- **Help** - provides access to the Help Menu.

Field Name - Enter the name of the field which should be meaningful as

you will refer to it throughout the application. The name should be 12 characters or less, even though SB+ will allow a maximum of 50 characters. Keep the name brief as you will be using it throughout the system. Do not use the following characters as part of the name: +*/<>@#:#|()~&.

Field Description - Enter a description and purpose of this field. This description will be used in screens and on reports and in the Auto Documentation. Putting a meaningful description in this area will immensely help anyone using this application.

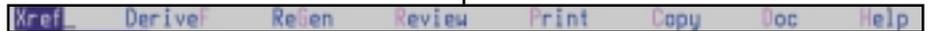
Field Pos.Sub Pos - Use this field to define the position of the field in the record. The field may be defined as a Key, Normal, Multi-value, or Work field. A Key field would be designated by entering a zero (0). Entering an integer would denote a Normal field, a single-

valued attribute in the record. If the field is Multi-value, enter the field position, a period, and M, such as 4.M.

You may also designate sub positions for the field name by entering the position, a period, and the sub position, such as 5.2. Work fields are prefixed by the letter W in the field position such as W2. They are useful because they do not occupy a field position and are used to temporarily store data.

Type(A,N,D,M) - The type of data stored in the field is specified here. This will determine how data is input and displayed in screens and reports. Your choices are:

- A - Alphanumeric
- N - Numeric
- D - Dates
- M - Monetary amounts



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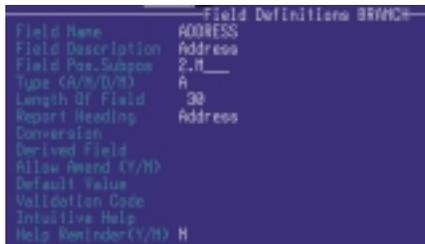
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| LI | Model / Part Number | Price* | Quantity | Ext Price | Instd** |
|----|---|----------|----------|-----------|---------|
| 1 | FD49VPC2000-68794 | \$399.00 | 1 | \$399.00 | 0.00 |
| | Part Number: 08794 | Update | Delete | | |
| | Description: Ruggedized PicoDc: Convergent Laser | | | | |
| 2 | FD49VPLP W/90' | \$345.00 | 1 | \$345.00 | 0.00 |
| | Part Number: 08520 | Update | Delete | | |
| | Description: Ruggedized PicoDc: Polarized Ratio Laser | | | | |
| 3 | | \$0.00 | | \$0.00 | 0.00 |

Length of Field - Enter the number of characters you want to display on a screen or in reports. Use a number which will display most of the information you wish to see and not waste space in screens and reports. If you need to prevent data extending beyond the entered field length or you wish an auto-carriage return when the cursor has reached the field length, enter the length as a negative number, such as -25.

Report Heading - Place the text you wish to display as a column heading on reports or as a prompt on the screens. The default for this heading is the same as for the field description. You should make this heading short and not longer than the field length. For ACCESS reports it is possible to have the heading wrap over two or more lines by entering a] (square bracket) at the point where you wish the wrap to occur.



I will conclude the discussion of the field definition tool in my next article. [is](#)

DANNY PASSIG is a senior software engineer at Natec Systems. He has 33 years experience in the IT field and is currently on the adjunct faculty at Colorado State University - Pueblo in the computer science department. Danny has done customer software development and system installations for various businesses. He has also worked for IBM as a support engineer for System Builder. Danny holds a Bachelor's Degree in Business Administration/Accounting and a MSCIT from Regis University.

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| E-MAIL | WEB SITE | |
| SIGNATURE | DATE | |

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

1. What is your job function/title?

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

2. Is your company a (check one):

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

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

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

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

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

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

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

IS 3/05

The Information Era... Keeping Users and Clients in the Loop

Continued from page 37

My personal preference when writing data for export to a PC is the following, and this procedure eliminates having to use the SETPTR command to adjust my printer's parameters. First, I create a temporary flat file record using the OPENSEQ statement. For uniformity I create all these records in the "&HOLD&" file. I then format all data using either a Tab or Tilda delimiter. Remember to write all data using a WRITESEQ command as well as the Flush command before closing the File.

I cannot stress how important it is to use the Flush command. The Flush command assures that all the data has been physically written to the hard drive before moving it. If the Flush command is not used, timing issues could cause undesirable results when transferring the data. This happens when your application shells out and executes commands at the Unix level. In layman's terms, NOT flushing can cause data to be caught up in processing and not transfer properly.

Eventually the system flushes itself automatically, but by that time it may be too late. Data could be missing in the newly created file. Each time the process is run without the Flush command, the results could be different. Please note that a timing issue such as this where data is lost can be very evasive and difficult to figure out. You can avoid these issues if you ALWAYS use the Flush command.

In closing, there are many methods you can use to keep your users and customers/clients in the loop. You can achieve the same results no matter which method you use. The trick is determining which works better for you and your organization. is

ROBERT R. COLTUN is the president and CEO of Mount Olympus Systems Inc., developer of Zeus Data Management software for IT professionals, and lecturer/vendor at trade conferences throughout the United States, Europe, and Australia. He has been active in the computer industry for over 20 years.

UniData Dynamic Files

Continued from page 31

space is not relinquished to disk until the file is resized. A variety of factors may also prevent the dynamic file mechanisms from shaping the file in an effective way, necessitating a resize.

Conclusion

UniData has done a nice job of implementing dynamic files. They provide an effective means of reducing the administrative burden of file maintenance and also allow the administrator to circumvent the 2-gigabyte file size limitation and to manage disk space by placing parts of the file on different filesystems. The default parameters do a good job in general but performance can often be improved by tuning. We especially recommend looking at the hashing algorithm and the split/merge type for problem files. Periodic resizing may be required to clean up wasted space and reallocate files, even though the dynamic file mechanism may reduce the frequency of this requirement. is

Twenty years ago Peggy Long and Jeff Fitzgerald were running a critical benchmark on a top-of-the-line Prime INFORMATION system. The benchmark aborted. After several hours of detective work they identified a damaged file. That started a discussion concerning performance, broken files and how to check the internal structure of files after a system crash.

After several weeks of work using Peggy's FORTRAN skills and Jeff's INFO BASIC knowledge they were confident that they understood the file internals. This led to a utility that would quickly scan a file, report errors and recommend the optimum MODULO and TYPE parameters needed to RESIZE the file. A year later they began marketing FAST, which evolved from this utility.

Peggy and Jeff are uniquely qualified for their 20 plus years as file maintenance and performance specialists. Jeff was a police detective for 10 years and Peggy has a PhD in Music Education.

Their company, Fitzgerald & Long Inc., is located in Aurora, Colo., a suburb of Denver.

Some BASICS of OpenInsight

Continued from page 22

items, such as our Form Designer, or the User Interface workspace. Basic+ does not support the STOP command, but the RETURN "" command is the appropriate replacement.

Finally, the other major difference is that OpenInsight does not support the PERFORM command. Used mostly for running SELECT or LIST statements, OpenInsight has a command called RLIST that is used for selecting and listing. When OpenInsight was first released in 1992, all of the commands that a developer would run in a PERFORM or EXECUTE command were turned into subroutines. Revelation has a conversion tool that helps convert the PERFORM commands into the appropriate Basic+ subroutines.

Future Changes and Direction

Basic+ has evolved over the years as we add new commands and functionality. We have dozens of commands, functions and routines, but this article covers only a few. For example, in our most recent release, we added a number of new functions for sending email, doing FTP, and handling socket calls directly.

In future releases of OpenInsight we plan to continue to add new functionality, including adding more commands to ensure backward compatibility to other MV platforms as more and more developers continue to convert their systems to OpenInsight. is

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Here's What the

Explaining RSS Part 2

BY MELVIN SORIANO

When last we met, we were looking at ways RSS was being used by news organizations and publishers of current data.

We're now seeing it deployed in business information settings, when a change in data can be polled by the RSS reader to update the status of a product, software changes, package delivery, and weather. One can only guess the many areas in various industries where up-to-date Just-In-Time information might be compelling.

In this article we're going to see what a typical RSS document looks like. You might recall that RSS is a dialect of XML. I'll go over RSS 2.0 for the most part, as it is backwards compatible with the most popular and common release 0.91 syntax. So, whereas RSS 0.91 is the most common of several versions available, it's probably better to use version 2.0 if you're just starting out.

There will be a few things that are now allowed in 2.0. Elements such as <cloud> were added. The <link> and <url> elements have been expanded so that they can include any path, not just http or ftp. The maximum number of items allowed per channel used to be only 15; though many older readers may choke if you try to put too many items, you are allowed to have an unlimited number in the most recent specification.

The other most important addition to RSS 2.0, in a nod to the ever-changing nature of the ever-more popular XML, is the inclusion of namespaces. This is that lovely ability to create a data definition in XML on the fly. The same functionality is now available in the newest RSS.

Remember how HTML documents start out with the <html> element and its many sub-elements? Likewise, the RSS file is made up of a <channel> element and its various sub-elements. This main tag contains elements that represent descriptions or metadata about the channel. Common ones are <title>, <link>, and <description>. Of course, you also have the actual content of this channel, referred to as items. Items are the biggest and most commonly changing portion of the RSS document.

A channel usually has the following self-defining elements:

<title>

Name of the RSS channel

<description>

Short description of what the channel delivers

<link>

The URL of the Web site, ftp location, or other site associated with this channel

Here are just a few of the optional elements that belong to a channel. Examples or descriptions are also shown.

<language>

en-us

<copyright>

Copyright 2005, Eagle Rock Information Systems

<managingEditor>

mel@eriscorp.com

<webMaster>

mel@eriscorp.com

<pubDate>

Tue, 22 Feb 2005 12:00:00 GMT

<lastBuildDate>

Tue, 22 Feb 2005 12:00:00 GMT

<category>

Spectrum Magazine

<generator>

Eagle Rock RSSWizard 2.0

<docs>

http://www.eriscorp.com/rss

<ttl>

The Time to Live tag suggests when the channel should be automatically refreshed.

e-c-t Tags Mean to Me

<rating>

The maturity-describing PICS rating

<image>

Some RSS viewers can show an image associated to the RSS channel.

<textInput>

Some RSS viewers allow input boxes to be displayed.

Let's look at the element called <image>. This tag has some sub-elements that are optional and some that are required.

<url> (required)

The URL of a GIF or JPEG image

<title> (required)

This is comparable to HTML's ALT attribute.

<link> (required)

The URL of the site. When the channel is rendered as HTML, the image can act as a link to the site.

<width> (optional)

Width in pixels. Standard size is 88 but can be as big as 144.

<height> (optional)

Height in pixels. Standard size is 31 but can be as big as 400.

<description> (optional)

A longer text than the title

As I mentioned earlier, items are usually the biggest and most important part of the channel. An item can be a weblog entry, an article like this one, a book review, a job posting, a package delivery status, or anything else that you might want to publish. The elements mentioned above will be fairly stable, but items should change regularly.

The common sub-elements for most items are the same as for the channel element: title, link and description. At least the title or the description must be included. The remaining sub-elements are optional.

<author>

mel@eriscorp.com

<category>

Spectrum Magazine

<comments>

URL of supporting information for this item

<enclosure>

Some items might include media content. This tag permits the use of such tags.

<guid>

The item might be assigned a permanent link.

<pubDate>

Publish date

<source>

Because channels are frequently aggregated, you can organize items using the source tag.

If you look at Figure 1, you can see a sample RSS document.

```
<?xml version="1.0"?>
```

```
<rss version="2.0">
  <channel>
    <title>Webonomics 101</title>
    <link>http://www.intl-spectrum.com/</link>
    <description>Mel Soriano's International Spectrum Column
  </description>
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    </item>
  </channel>
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So, RSS documents are pretty easy to create. In the next article, we'll look at ways you might want to integrate it within your MultiValue database. [is](#)

MELVIN M. SORIANO works at Eagle Rock Information Systems (ERIS), an Internet Application Service Provider and WebWizard/MultiValue Developer. ERIS has deployed enterprise-wide solutions on most MultiValue platforms and operating systems. HTML-Mel can be contacted at mel@eriscorp.com and visited at <http://www.eriscorp.com>. You can always call him directly at ERIS's Pasadena, Calif., offices: (626) 535-9658.

Continued from page 19

First Annual Spectrum Database Challenge

First Place

KEVIN KING, of Precision Systems, won first place in the Database Challenge.



By now you probably know that the winners were:

First Place - Kevin King, Precision Systems, using SB+

Second Place - Ross Ferris and John Whitbread, Stamina Software, using Visage

Third Place - Luke Bucklin and Mike Derheim, Sierra Bravo

Now, for a few observations.

The thing that hurt some entries the most was the cash box. It is mentioned in the spec, the pricing for the various types of transactions is given, and cash was stated as a valid form of payment. But the necessity of tracking the cash box was left to the intuition and experience of the contestants. Some teams tracked the cash correctly, others tracked it incorrectly (bugs), and some didn't track cash at all. Many of the cases we were testing against called for verification of the effect of the transaction on the cash box.

More subjective was what appeared to be "scope creep." I think all of the entries had at least some features that were not part of the spec. This is understandable. After all, part of this competition tested a team's ability to anticipate the user, just like we do in the real world. But also like the real world, extra features got nobody any points when core features were missing or malfunctioning. Unlike our typical practice, the deadline was the deadline; there was no working all night to catch up or tweaking things

during application roll-out as deficiencies are spotted. Could it be that our strength is also our weakness? The MultiValue databases and tools are so flexible, do we tend to downplay in our minds the details, putting them off until later? More than one team admitting to over-engineering.

I also found it interesting that no one objected to the change in requirements over a third of the way into development, even when the change may well have caused some re-working of the underlying database design. Was this only because this was a contest and the assumption was you had to jump through whatever hoops we held up in order to continue to play? Or does the MultiValue community just accept changes with no additional time or money to be normal and wear it like a badge of courage?

Apparently, I am not the only one who got introspective as a result of participating in this event. One contestant reported that his main goal was to learn if he was using the right tools or if something better was available. And another stated that the best thing about the competition for him was identifying some personal work characteristics he thought he could improve. Pretty interesting side-effects from a design and coding event, I think.

Finally, under the "success leaves clues" category, I chatted by e-mail with the first place winner, Kevin King. He says that he spent about one third of his time (he finished about an hour before deadline) designing his application on

Second Place



John Whitbread and Ross Ferris of Stamina Software took second place honors.

Third Place



Sierra Bravo's Luke Bucklin and Mike Derheim demonstrate their software to the judges.

paper, well, Excel sheets to be accurate. Another third was spent coding his solution in System Builder+, and about a third of his time testing and debugging. Sounds like a win for the traditional "think first, code later, test like crazy" methodology to me.

So congratulations to everyone who took part in this competition. Everyone seemed to learn something, and it was great to meet and associate with such a fine group of professionals.

Did I mention it was also a lot of fun?
See you next year in Long Beach. is

CLIFTON OLIVER brings over three decades of in-depth experience to his work in the information industry, much of it in the MultiValue market. His expertise includes project management, technology management, application development, data warehousing, and strategic planning for information services. He was an engineer for Devcom Inc., the original team that designed and wrote the landmark Prime INFORMATION database system.

He is well-known as an instructor, speaker, and author for both technical and managerial audiences. These include being an invited lecturer on software development, project management, and business ethics for such diverse organizations as the U.S. Department of Commerce, graduate level business schools, and the Mountbatten Institute in New York.

He also served as the PICK series technical editor for O'Reilly & Associates. Clifton can be reached at 619-460-5678; email: wco@oliver.com.

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