

INSIDE! COMPUTING TRENDS: WHAT ARE TODAY'S CIO'S LOOKING FOR?

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Throughout history, posters have been used to communicate messages concisely and often beautifully. Take the poster illustrated here. It pays homage to the works of David Lance Goines in the 1970s. A leader in the free speech movement, his linear style and pastel colors express the concept of freedom. A concept that, with jBASE, you'll actually be able to experience firsthand.

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With the dot-com meltdown, followed by the raging telecommunications conflagration in the computer industry, companies aren't blindly buying into glitz and glamour anymore. The trend is toward slashing costs and improving efficiencies—and the Internet provides a surprisingly easy way to integrate at a deep level many aspects of our businesses. BY MELVIN M. SORIANO

20 IMHO (IN MY HUMBLE OPINION)

Today, the mainstream community is still debating things like multiple values and normalized vs. de-normalized data records that the MultiValue community took for granted decades ago. Author Steve VanArsdale jumps into the fray to set the record straight. BY STEVE VANARSDALE

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The author's choice of three ultimate PDAs that almost allow you to carry your office in your hands. BY NATHAN RECTOR

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There are many users out there still chugging away quite effectively on legacy MultiValue systems. A new column, focused on the legacy systems that got us to where we are today, makes its debut. BY MARK JOHNSON

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Hearing the news that www.PickJobs.com was closing down shop, a contract programmer takes up the flag, operating the job posting service for the benefit of the MultiValue community. BY STEVE VANARSDALE

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BY DAVID POCIU

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Yachta Yachta Yachta



Eight months ago, feeling that there was too much peace and quiet in our lives, my wife Monica and I decided to buy a boat. Don't send me any emails about the "two happiest days," I'm still in the first

one — I'll let you know when I get to the second one.

After months of learning and practicing, we decided we were ready for our first true sea trip, so we set off for Oceanside, which is about a 40-mile voyage from our homeport of San Diego. It was a stupendous summer day! Warm breezes, long gentle swells, blue sea and blue sky, and literally hundreds of playful dolphins racing with the boat. Monica was lounging comfortably on the aft deck taking it all in.

We were about halfway there and about five miles off the coast, when I happened to glance at the depth meter. "Seven feet!" "Five feet!" "Three feet!" Then those horrible "dashes" that have the same effect as a heart monitor beeping and leveling off to a straight line! Even though the display defied my senses, I did what any responsible skipper would do under the circumstance. I quickly throttled back; put both engines in neutral!

Monica raced up to the bridge: "What in the world are you doing?" She had a look of fear on her face. "I think we've run aground!" I said. She looked over the edge and said, "You're nuts! I don't see any bottom! We're out in the middle of the ocean!"

If you haven't guessed it by now, the depth meter had only a three-digit display, and we had just crossed a sea canyon where the depth went over a thousand feet. The rest of the trip was uneventful — and extremely quiet. Without looking, I could feel that other look of "my husband is a moron!" behind my back.

I have used this episode in many talks I have given recently about the status of the MultiValue market. It annoys me when someone expresses the opinion that our own market has run aground, when I see the accomplishments coming in every day in the form of new MultiValue users that subscribe to this magazine. The next time somebody asks you who uses MultiValue, tell them to take a look at "About MultiValue" on our Web site, www.intl-spectrum.com. They'll see that our market depth is substantial!

— GUS GIOBBI, CHAIRMAN, IDBMA, INC. —
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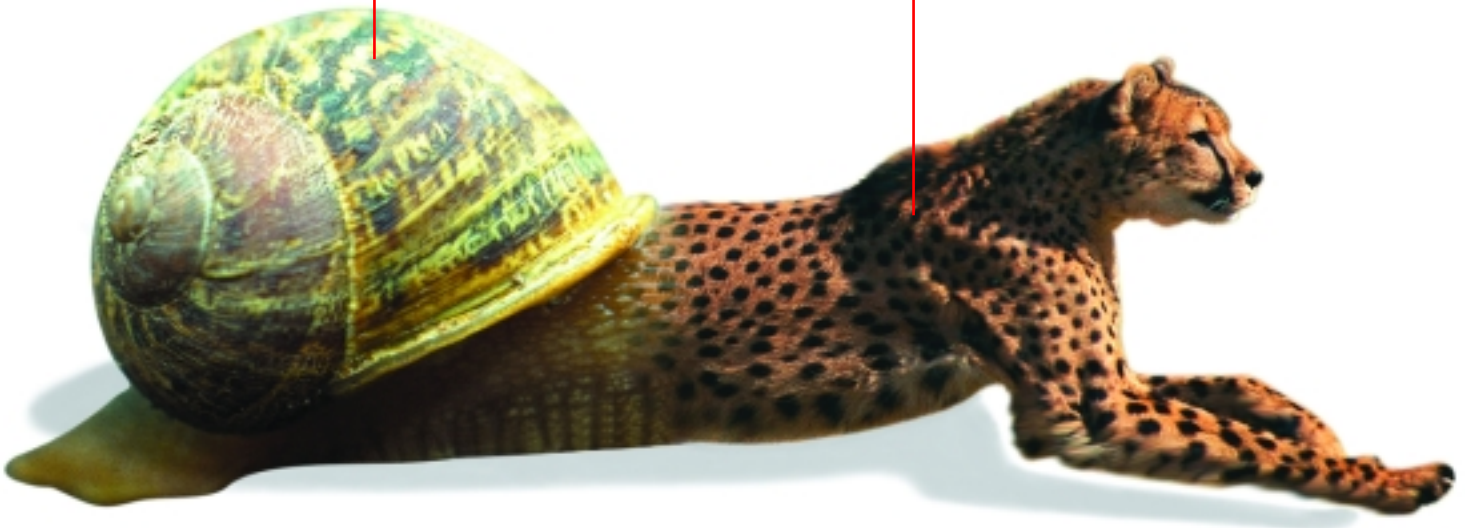
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The Versions Proliferate

B Y G U S G I O B B I

As we saw in the last installment (see "Industry's Best Kept Secret," *International Spectrum* magazine, July/August 2002), the porting of Pick to the Honeywell Ultimate and Applied Digital Data Systems were only the first of many additional ports to come and a few "look-alikes" in the seventies and eighties.

One of the most significant "look-alike" entries was started by Seattle-based Devcom, formed by Rod Burns and John Drumheller with the aim of producing a compatible replacement for the Microdata system.

Financed by a number of disillusioned Microdata customers, the product eventually became Prime INFORMATION, running on the Prime 50 series of computers.

Devcom, lacking the expertise to successfully market its implementation, invited Jim Whelan to become a principal of the company. Whelan eventually convinced Prime to buy the product in 1979, and eventually the whole company in 1982.

Also in 1982, Cosmos (now Revelation Software) implemented the Revelation system under PC-DOS. Like the Prime implementation, a number of enhancements were included in the Cosmos version, but also like Prime, it was not fully compatible with other Pick implementations.

However, Cosmos did manage to move its products into computer stores that sold PC products such as Lotus 1-2-3, which remains a unique accomplishment today in the MultiValue market. In an approach similar to Cosmos' Revelation with PC-DOS, VMark Software introduced UniVerse in 1985, a native UNIX implementation of Pick/Prime INFORMATION. While the internal architectural design and implementation of UniVerse differed from Pick/Prime, the overall design for UniVerse was to create a UNIX environment which supported the execution of applications written for Pick R83 and Prime INFORMATION systems with a minimum of conversion.

The UniVerse product was written in "C" (as a standard UNIX shell/process) rather than Pick Assembler, and therefore, was not a Pick implementation in the true sense. UniVerse eventually became acquired by Ardent Software which was acquired by Informix which was acquired by IBM, who still markets the product today.

Meanwhile, in the same timeframe, Pick and Associates changed its name to Pick Systems (now Raining Data) and set off in earnest to license as many new ports of its system as possible. In 1981, the first imple-

mentation on IBM equipment began on IBM's Series 1 computer, followed by ports on Altos, the IBM 4300 in conjunction with Systems Management Inc., Datamedia, General Automation and the Perotec Computer Corporation.

By 1991, Pick Systems had added ports to Alpha Microsystems, Archford Computer, Data General, Electronique Dassault, Fujitsu, IBC, Nissho Electronics, Pick Blue, PickTel, Sanyo/ICON, Scan-Optics, Sequoia Systems, Siemens/Nixdorf, Stratus Computer, Tau Engineering and Xmark Corporation.

Remaining outside the Pick licensee world then, was McDonnell Douglas Information Systems' "Reality" (McDonnell Douglas had bought out Microdata by then), Prime Computer's "INFORMATION," VMark Software's "UniVerse," and Revelation Technologies' "Revelation."

Time would eventually show that in the battle for market share, many of these players ignored the looming PC revolution and the shrinking role of the mainframe and minicomputer at their own peril. **IS**

NEXT ISSUE: Open Architecture; Advanced Pick; UniData Emerges

Who owns what? Many people today still aren't aware that the core concept of the early Microdata and Pick databases emanated from a U.S. government project and therefore that core technology is in the public domain. There were many battles waged over the years that assert that a specific implementation of MultiValue can be "owned," but not the underlying technology. To our knowledge, this issue has come close, but never actually reached, a jury.

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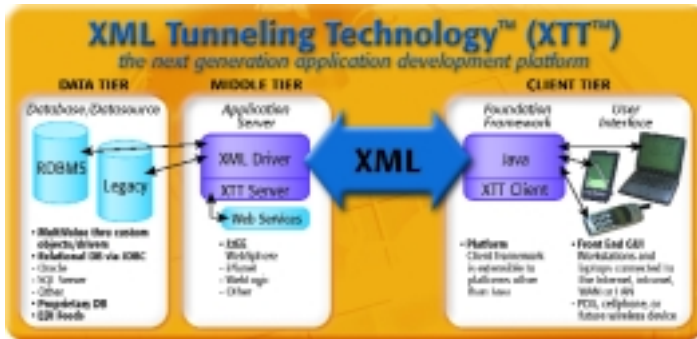
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BY DAVID POCIU

A Promise Fulfilled: Write Once, Use Anywhere Without Being a Java Expert



What is XTT?

- ◆ XTT is a patent pending Java/XML application development platform that abstracts away the complexities of Java development.
- ◆ In addition the XTT framework also provides a Rapid Application Development environment and a robust XML data transmission infrastructure necessary for building network independent distributed applications.
- ◆ The robust data marshalling services inherent to XTT allow the application developer to focus on implementing client specific business logic rather than communication and data transmission protocols.
- ◆ A solution developed with XTT provides all the benefits of a rich client-server type solution delivered in a very thin client footprint over any network - including the Internet.
- ◆ The power and flexibility of the XTT platform comes from the fact that it is built upon the latest Java, J2EE, and XML technology standards.

WHAT IF YOU COULD DEPLOY the same application code as a desktop shortcut or as a browser application, and this same application could also work on any combination of Operating Systems (Windows/Mac/Unix) and network configuration (LAN/WAN/intranet/Internet)?

And what if you didn't have to be a Java/XML/Web Services expert but rather you could focus your application development at the business logic level and even be able to re-use your existing data and logic?

Well, XTT (XML Tunneling Technology) is a development framework that allows you to do all that and a lot more! In the Multivalue community, the XTT Framework is currently available as the technology platform behind Revelation Software's JOI (Java for OpenInsight) development environment.

XTT Framework

One Code Base for any combination of network environment and Operating System

Rich GUI in a very "thin client" (using XML as communications medium)

Re-Use of existing business logic and data

Allows developer to focus on developing business logic entirely not on presentation, communication, or data synchronization.

Enabling environment provides developer the control over selective enabling / disabling of platform functionality.

Rapid Application Development via Wizards

Framework ensures robust architecture to applications developed in it.

Plugs into multiple IDE's

Flexible deployment options

XTT Framework FEATURES

▶ One Code Base for any combination of network environment and Operating System

The framework allows the developer to write only one code base for the entire application without consideration on where it may be deployed in the future:

- ◆ The fact that the front-end is 100 percent pure Java gives the application a rich graphical user interface and platform independence (Windows, Mac, countless Unix flavors).
- ◆ The exclusive XML communication to the client insures network topology independence. The application will work without any changes on a LAN, WAN, intranet, Internet, or any other type of network that allows text transmission over HTTP.
- ◆ The fact that the XML communication is database independent means that the back-end data source can be switched at will without affecting the front-end client piece.

▶ Rich GUI in a very "thin client" (using XML as communications medium)

A front-end developed using XTT is entirely 100 percent pure Java (currently using Swing controls although any GUI control can be brought into the framework). This allows for the development of a "Windows"-like application with a very rich graphical interface that is very user-friendly and intuitive for the average user.

The rich GUI does *not* however mean a "fat" client! Because the details of reading, writing, and formatting the data of the screen, as well as the links to the correct tables is handled internally in the XTT library. The compiled code for each window is on average 15KB. Therefore, an application that has 30 forms would have approximately 450KB of compiled code. However, when the code is put into a JAR (zipped) for deployment, the size usually compresses to approximately 280KB. You could fit 4-5 applications on an obsolete 3-1/2 floppy!

In addition to the small footprint of the application, let us compare the performance of an XTT developed application deployed through a browser with that of a corresponding HTML application:

- ◆ The HTML application will load each page containing the tags that describe the presentation layer, the data embedded in them, along with any pictures. For each time that data changes, a new page is loaded, at an average size of anywhere between 50 and 100KB.
- ◆ The XTT framework loads the library once (and it could be broken down into smaller packets that only load when needed), and from that point on, the only thing traveling back-and-forth over the network is just modified or new data. Assuming new reads and record inserts and updates, the data traveling back and forth is usually 1KB or less depending on the size of the record and the extent of its modification.

It actually turns out that despite its rich graphical interface, for anything but a trivial application, an application developed in XTT is thinner and lighter than its corresponding HTML counterpart!

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XTT Framework FEATURES

Continued from page 11

► Re-use of existing business logic and data

The idea behind XTT is to both allow developers to create new applications, but at the same time allow them to reuse their existing data tables and back-end business logic (usually written in the platform's version of Basic programming language).

The best example of this approach is in Revelation Software's JOI product. A JOI developer can access any existing table he or she had in Advanced Revelation (DOS product) or OpenInsight (Windows product). In addition, the JOI developer can call any function/subroutine that exists in any of the Advanced Revelation or OpenInsight applications that were written in the past.

For XTT out of the box, the developer can create applications against any database capable of ODBC/JDBC. The result is a distributed application that does not rely on exposing an ODBC/JDBC to the world if one decides to deploy the application over the Internet.

XTT also allows a developer to call any "back-end" regular Java class/method, or Enterprise Java Bean, that will then make the connection locally (through the available middleware) to the local application's Basic programming language logic.

► Allows developer to focus on developing business logic entirely not on presentation, communication, or data synchronization

The XTT framework removes the need for the developer to write the "menial" database connection, synchronization, validation, and data formatting code that would be needed with plain Java. XTT also provides the developer with a standard approach to handling data on the front-end and determining which records need to be updated, added or deleted.

The main idea is to allow the developer to ONLY write business logic (which is the value add for a developer) and completely take for granted all the above data connection and display capabilities. This approach reduces the code needed for a GUI form in most cases by a whole order of magnitude (10x), as well as drastically speeding up development time.

► Enabling environment provides developer the control over selective enabling/ disabling of platform functionality

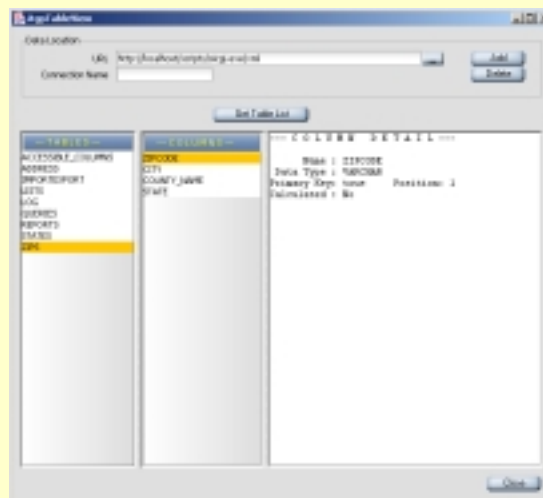
With XTT handling so many of the data and presentation aspects of front-end application development, some developers would naturally worry that XTT would try to go "too far, and be too smart."

Since XTT was written for developers, by developers — have no fear: XTT allows a developer to intercept *any* of its default processing both before and after it executes.

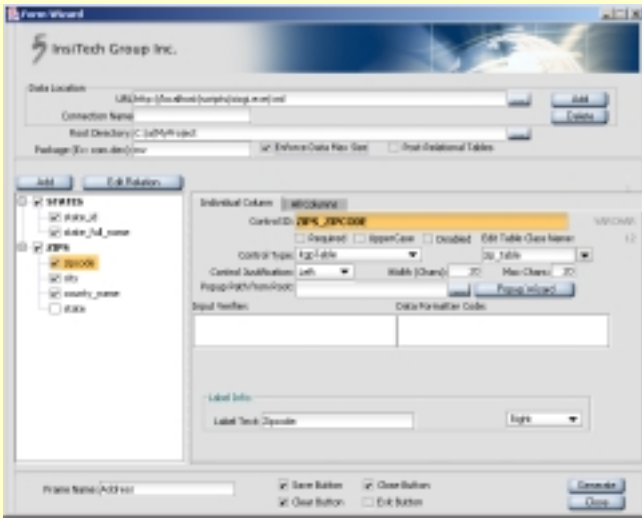
For example, one could intercept a database read request event before it happens, put in custom code that checks if this particular user can see the record requested, and let XTT do the read or not. This is a powerful approach that puts the developer in FULL control of their application, without cumbersome workarounds.

► Rapid Application Development via Wizards

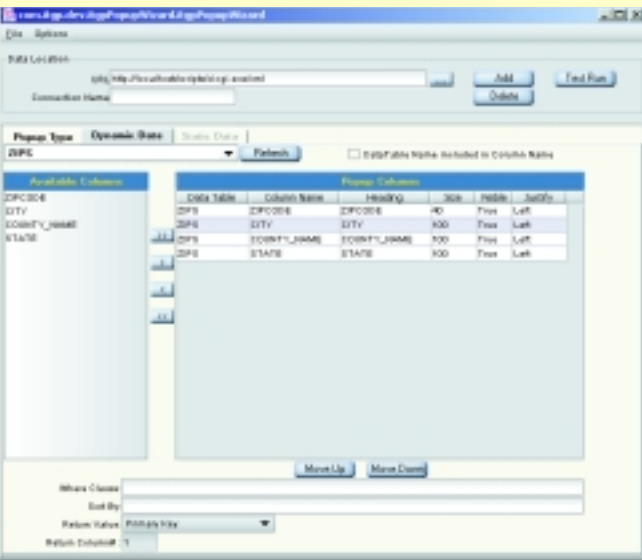
One of the most impressive parts of XTT lies in its ToolBox of Wizards. Currently XTT includes 3 main wizards (written in XTT), with more planned for the future:



TableView Wizard: Just point the wizard to the URL and connection name for your database, and you will be able to look at your table schemas when developing from anywhere in the world. Indeed, there is no need to be on the same LAN as the database to do development, and this wizard lets you look at your table structures when your regular desktop tools would otherwise fail.



Form Wizard: Simply point to the right database, and within seconds have a complete form based on one or more tables from that database, complete with read/write abilities and verifiers/data formatters based on the data type!



Popup Wizard: Point to the table (or combination of tables) that you would like a popup list to be created from, specify the selection criteria, the sort order, and the type of return value, and have the popup built in seconds. Integrate the new popup automatically with the

Form Wizard above for a new form that already knows how to show the data in the table(s) behind the scenes.

Once your initial forms and popups have been created, the only thing left to do is add the business logic, and modify their look and feel using drag and drop if needed.

It should be mentioned that XTT's approach goes far beyond current Web Services by doing more than just retrieving data over HTTP/XML like Web Services do. XTT offers an integrated yet non-proprietary environment, that takes the data, makes it display in the correct controls, with the correct formatting, and implements automatic synchronization of the data between the front-end and the database. XTT provides the developer a standard way of dealing with the data that is always the same and does not require any extra code.

► Framework ensures robust architecture to applications developed in it

The XTT framework creates a “best-of-breed” architecture approach that lets the application developer worry about the business logic, and not the data synchronization and display issues.

The developer simply writes the business logic that pertains to the application, and nothing more. With that in mind, the chances of bugs occurring are reduced to just business logic, because the rest of the application behavior is automatically handled by the XTT library.

In addition, the robustness comes into play when changes to the application are required months later. The developer only has to go through their own business logic, and does not have to worry about scanning through hundreds and thousands of lines of code that deal with non-business logic code.

► Plugs into multiple IDE's

XTT is written as 100 percent pure Java, and follows the Java Beans architecture to the letter, such that it can be plugged into any Java compliant IDE (Integrated Development Environment) available in the market. We currently recommend two of the best Java IDEs available for free on the market (Forte at <http://forte.sun.com> or NetBeans at <http://www.netbeans.org>)

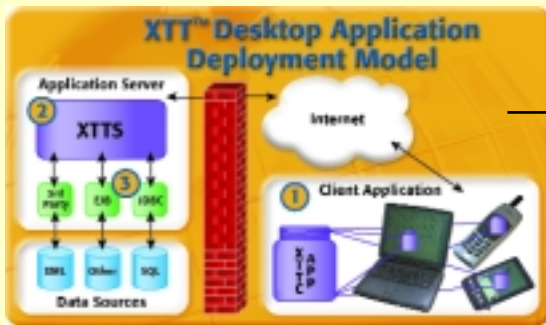
Instead of creating a whole new IDE, the XTT libraries hook themselves into existing IDEs, taking advantage of their existing drag-and-drop, and code helper capabilities. XTT provides both customizers and property editors that the IDEs recognize and use automatically for all the XTT components. The developer can then work with a combination of XTT controls and third party Java components, and mix and match them according to the application's need. In that respect XTT is an *enabling* technology since it lets developers use all of its capabilities, but at the same time does not detract at any point in time from integrating any regular Java techniques or components that might be available. *Continues on page 14*

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Flexible Deployment Options

Applications developed in XTT have very flexible deployment options. In fact the decision on which deployment option to use can be made essentially at deployment time, which is not typical with most distributed applications. The following deployment options are available for applications developed in XTT.



Desktop Shortcut

Simple shortcut on the desktop referencing the code on a shared drive on a LAN/WAN.



Browser

Deploy the application as an applet through a regular browser using the Java Plug-in.



Java Web Start

Best of both worlds: the application automatically downloads and installs itself on the desktop from a Web site the developer provides. Every time the user double-clicks the

desktop shortcut, the application checks if a newer version exists on the Web server that it came from. If yes, then a new version is automatically downloaded, otherwise the locally cached code gets executed without delay.

It should be pointed out that the Browser and Java Web Start deployment models mean that there is AUTOMATIC client deployment both initially and for subsequent releases. For the Desktop shortcut, manual deployment is needed initially, but if the application code is on a shared drive, automatic updates are possible.

Conclusion

The XTT Framework is the next generation tool that enables the creation of one code base for any network configuration, any operating system, and any data source (both multivalue and relational). In addition, the XTT Framework goes far beyond simple Web Services by emphasizing rapid application development, enabling the developer to concentrate on pure business logic and not infrastructure code, while still being able to reuse existing code if possible.

Examine the first instance of this technology in the MultiValue community as Revelation Software's JOI (Java for OpenInsight) and stay tuned for additional platform support in the MultiValue community in the near future. is

DAVID POCIU is the president and chief technology officer for InsiTech Group.

About The InsiTech Group

The InsiTech Group Inc., is a leading edge information technology firm specializing in business analysis, solution design, and distributed applications development. It provides value to its clients by combining IT expertise with its patent pending Java/XML development tool called XTT (XML Tunneling Technology). Applications developed with XTT are 100 percent pure Java-based distributed enterprise solutions featuring a rich GUI interface deployable over any network, including the Internet.

The InsiTech Group is committed to providing its customers with a competitive advantage by providing them state-of-the-art IT solutions through the use of its leading edge XTT Technology.

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Northwest's Largest Waterworks Distributor

Span-Alaska Also Implements 1MAGE Solution

1mage Software Inc. announced that H.D. Fowler Company, a distributor of waterworks, irrigation, pumps and treatment equipment in the Northwest, recently installed the 1MAGE document management solution to manage their large volume of proof of delivery (POD) tickets, accounts payable records and bid files.

Seattle-based H.D. Fowler Company installed 1mage's WinClient for Terminal Server in conjunction with Microsoft's Windows Terminal Server to run 1MAGE within its thin client network environment. The 1MAGE document management system will capture and manage the large volumes of POD's to increase collections and cash flow. In addition, H.D. Fowler will improve accessibility to accounts payable records such as invoices and pack-

ing slip packets, through the use of 1MAGE.

"H.D. Fowler has been investigating document imaging for a couple of years," said Eric DePoule, Systems Manager. "We were pleased to find that 1MAGE is now available for a thin client environment. We anticipate saving boatloads of hours in filing and sorting time. We were so amazed with the ease of installation and the product performance that we have already added faxing to our new system."

Temporal Wave Founded to Provide Services to jBASE Customers

THE MULTIVALUE WORLD has a newcomer on the scene with the addition of Temporal Wave, a new company formed to provide high-quality services to the jBASE community. The company was founded by Jim Idle, one of the original founders of jBASE Software and the chief architect and programmer of the jBASE product.

"It feels good to start out on a new venture after so many years at jBASE," Idle said. "The technical staff at Temporal Wave are former developers of the jBASE product and as such we feel we are the most competent technical resource available to the jBASE community."

The company already has three products available to jBASE users, a generic TCP/IP socket interface, an Interface to IBM's MQ Series messaging server, and a highly efficient spell-checking interface. All products are usable directly from jBC (BASIC) and require no knowledge of C or C++ programming to use.

The company will also provide custom programming services in C, C++, Java, jBC, C#, .Net, COM, etc., as well as porting services from legacy MV products into jBASE, interfaces to other databases (SQL Server, Oracle, et al.) and consulting on all aspects of application design and construction in jBASE. ■

For more information, contact: info@temporal-wave.com, call (503) 317 5629, or visit the Web site at: www.temporal-wave.com.



Installs 1MAGE

1MAGE will be integrated into Fowler's application software through the use of proprietary application programming interfaces (APIs). David R. DeYoung, president and CEO of 1mage Software, stated: "Improving efficiency in business operations has long been our strength. WinClient for Terminal Server is another example of how our customers can reduce their costs, while implementing an enterprise-wide system." ■

Alaskan Freight Carrier Installs 1MAGE Document Management System

Span-Alaska Consolidators Inc., one of the largest transportation companies serving Alaska, recently installed an electronic document management solution to simplify workflow processes associated with shipments in their very specialized market.

Continues on page 18

Modular Information Systems Wins City of Salinas Help Desk Contract

Hires New Help Desk Manager

MODULAR INFORMATION SYSTEMS has signed a contract with the City of Salinas to provide Help Desk computer support to the city. Modular has been an information technology professional services supplier to the city for over three years, but this new relationship will significantly increase the support Modular provides the City of Salinas.

The MIS Help Desk Service, which started on July 1, 2002, allows any of the city's 600 employees to receive support on all computer related problems. The service includes unlimited calls to the Modular Help Desk, two onsite technicians, and regular visits by senior systems engineers.

In the short time that Modular has had the Help Desk contract, the company has already received favorable feedback from employees who have used the service. Jim Garcia who works for the city's Public Works department said, "Today I had my first experience with the new Help Desk and I was pleasantly surprised.... It was fairly easy and I got a quick response from Modular.... I look forward to more experiences with Modular."

Modular Information Systems offers its Help Desk Service to over 200 companies, cities, government agencies, and school districts, allowing clients to call at a moment's notice to get professional help on any computer related issues. Calls may be submitted via phone, fax, e-mail, or a help desk Web site.

Modular also announced the hiring of Clinton L. Burnett as Help Desk Manager. In this newly created position, Burnett is responsible for administering help desk support to clients, deploying technicians to assist clients in need of technical support, and supervising onsite technical staff.

Prior to joining Modular, Burnett worked as a LAN Engineer for SETA Corporation, specializing in database, network infrastructure, Internet, and eCommerce technologies. Burnett holds certifications in: CCNA, MCSE 2000, MCSA, MCP Windows 2000/NT 4.0, CNA 4.0, and A+. In his new position, he will continue to gain expertise in emerging technologies while focusing on the technology needs of clients.

"We are very fortunate to have Clinton as a part of our team," said Eydie Larson, vice president of Application Development, who oversees Modular's Help Desk Service. "His attention to detail and dedication to customer service is a real asset to Modular."

Modular Information Systems recently expanded its Help Desk Services. Previously only available to existing clients, Modular now accepts new clients interested in opening special Help Desk accounts. ■

For more information, visit their Web site at www.miscorp.com.

Alaskan Freight Carrier Installs 1MAGE Document Management System

Continued from page 40

Washington-based Span-Alaska is a full service transportation provider from the lower 48 states to Alaska. It moves products via both truckload and less-than-truckload deliveries to most points in Alaska, with freight terminals in Kenai, Anchorage, and Fairbanks. The 1MAGE document management system will capture drivers' bills of lading and other important shipping documents in order to streamline the required paperwork. Duplex scanning and bar code recognition will also expedite the processing of certain documents.

The 1MAGE document imaging software is being installed on a server running RedHat Linux. The system will be tightly integrated to Span-Alaska's existing freight consolidation software, through the use of Application Programming Interfaces (APIs).

Mike Landry, president of Span-Alaska, stated: "We have always prided ourselves on providing fast, reliable, transportation services to the Alaska market. We are committed to offer unparalleled customer service. State-of-the-art technology, such as the 1MAGE solution, will allow us to move freight faster and more efficiently while capturing the information needed

to improve our billing process. We will be able to increase responsiveness to our customers by making shipping documents, such as delivery receipts, available via the Internet.:

"The scalability of our products and our solid customer service have long been strengths for us," remarked David R. DeYoung, president and CEO of 1mage Software. "The ease of integrating 1MAGE with Span-Alaska's legacy database will allow them to streamline many of their business processes."

For more information, visit www.1mage.com.

Zumasys Inks Reseller Relationship with ORiNOCO

Zumasys Inc. has signed a reseller agreement with Agere Systems and obtained technical certification on the ORiNOCO Wireless product line.

Formerly the Microelectronics division of Lucent Technologies, Agere/ORiNOCO provides the world's most popular wireless LAN and WAN products. Agere Sys-

tems' ORiNOCO line encompasses a full range of Wi-Fi certified indoor and outdoor WLAN products, as well as enhanced security products for public areas and security-conscious enterprises.

Zumasys specializes in implementing ORiNOCO outdoor point-to-point radio backbones, which allow business-

es to connect two locations up to 10 miles apart with no recurring charges. Zumasys' staff underwent technical training to achieve a proficient level of expertise in the use and support of ORiNOCO wireless products in order to become ORiNOCO certified.

"Zumasys is excited to be a part of the ORiNOCO wire-

less family," said Paul Giobbi, president of Zumasys. "The demand for wireless networking continues to grow and this relationship is an important step in allowing our customers to fully realize the promise of 'anywhere, anytime' computing."

For more information, visit www.zumasys.com.

Intuit Acquires Eclipse

Intuit Inc. announced the completion of its acquisition of Eclipse Inc., a leading provider of business management software solutions for wholesale durable goods distributors and a UniVerse VAR. The acquisition will enable Intuit to become a key provider in the wholesale distribution software segment, which has annual sales of approximately \$300 million today and significant opportunity for growth in the future. Intuit acquired substantially all of Eclipse's assets for approximately \$88 million in cash.

"Adding Eclipse to the Intuit portfolio is another key milestone in executing our 'Right for My Business' strategy to serve larger and more complex businesses, provide industry-specific solutions and deliver solutions that extend beyond accounting," said Steve Bennett, Intuit's president and chief executive officer. "Like the other acquisitions we've made this year, Eclipse has a talented management team, great

products and a strong track record that will help drive stronger growth for Intuit."

Eclipse will operate as a separate business unit and will continue to be based in Shelton, Conn., with offices in Boulder, Colo., and West Yarmouth, Mass. Michael London, the Eclipse president, chief executive officer and one of its founders, will lead the new business unit reporting to Steve Bennett as Vice President of the Intuit Distribution Management Solutions Division. Intuit will continue to offer Eclipse's current products and services under the Intuit Eclipse brand.

For more information, visit www.intuit.com.

Continues on page 40

VanArsdale Receives Project Management Professional (PMP) Certification from ANSI Project Management Institute

The Project Management Institute (PMI) announced that Stephen R. VanArsdale has earned the designation of Project Management Professional. According to the institute, VanArsdale's 25 years of distinguished accomplish-

ments in multidimensional database projects is unique among their membership, within the estimated 16 million project managers worldwide.

"All organizations do projects of one kind or another. 88 percent of all projects overrun the schedule or the cost or both."

**—Steve VanArsdale,
Project Management
Professional**

"All organizations do projects of one kind or another," VanArsdale commented. "88 percent of all projects overrun the schedule or the cost or both. The reasons are not well documented, but they are well known.

"First is project definition," he continued. "Second is scope control. Third is risk management. But before all of these is a fundamental project management technique: identifying and quantifying progress."

The PMP certification is the project management profession's most recognized and respected global credential, and there are only 51,000 PMPs worldwide located in more than 25 countries. The Project Management Institute supports the global community of project management practitioners via the Project Management Body of Knowledge (PMBOK). The PMP Certification Program is designed to objectively assess and measure professional knowledge and actual project success in a variety of environments.

"I am grateful to have received the PMP certification from the Project Management Institute," VanArsdale said. "It's an honor to manage projects for a living now, and teach people how."

For more information, send e-mail to steve@vanarsdale.com.

BY STEVE VANARSDALE

IMHO

In My Humble Opinion

The promised article on SQL Server will wait, while we examine a skillful attack on the underpinnings of MultiValue. There was an interesting article in the cutting-edge database e-zine DM Direct, the Web version of *DM Review Magazine*. It seems to slam the door on MultiValue. They say that

when one door closes, another opens. Except you've already been through this one.



Just in case you thought you were old-fashioned. “Normalized” data is stored in flat records with no multiple values. MultiValue files are considered de-normalized when there are multi-valued attributes in the items. Because the fashionable column-and-row databases can't store data this way, they make de-normalized data files by recording a field such as monthly account balance twelve times in the same record. That's what Oracle, Informix, and SQL database people do for multiple values, or what they call “repeating groups.” It's become the standard.

Because though their method isn't very efficient, the intuitive benefits of multiple values just keep coming up. So they have been arguing on and off over multiple values for about as long as MultiValue folks argued about item-ids. Now their debate over normalized versus de-normalized data records is heating up again. And even though it just keeps getting weirder, it has opened a channel for a meaningful dialogue about MV.

SQL database practitioners and theorists alike are arguing over whether de-normalized files (with repetitive values) might provide better systems performance than normalized (flat) files. It really doesn't matter that they are mostly working on data warehouses, or that they are arguing about embedded repeating groups rather than multi-values.

In any case, a vote for de-normalization is a vote for MultiValue. Or at least it will be as soon as we explain it to them.

Recently a maverick expert and national author Fabian Pascal (I'm not making that name up), the founding editor of DATABASE DEBUNKINGS (see footnote 1) has entered the scrum. This guy is a true anti-establishment hero. He once posted this:

“There are no relational DBMSs or databases (warehouses are certainly not that). There are only SQL ones — which are not even close — or worse” (footnote 2).

I would call that MultiValue champion material. Except that he argues against multi-values.

According to Mr. Fabian Pascal, the proper way to store the data in Figure 1 is in flat files. When you have multiple values, he wants you to put them all in other files, with an item-id containing the first file item-id, plus a second unique identifier

FIGURE 1

Real:



Logical:

Sue; Mon: item1,qty1,price1
(and) item2,qty2,price2
Tues: item1,qty1,price1
(and) item1,qty3,price3

(called a composite key). He wants you to repeat that process for every multi-value attribute and again for every associative set in the original item, and repeat it again for

every multiple value that occurs in the second file. Then pull out all the translations that you can, and put them in still other files. But you must use another composite key as the item-id in the translation file. And then you are to index them all together, so that a query can retrieve them all, or any subset of them, at one time.

By the way, it gets worse. Mr. Pascal is thinking in terms of two-dimensional column-and-row databases. He thinks of de-normalized data as you would think of a repetitive flat record. His view of a de-normalized (multi-value) file is a spreadsheet. Each row has redundant data in it, and the only unique data is in an unpredictable number of columns of the multi-value data.

In the latest of a long series of rants (footnote 3), about “the deplorable lack of fundamental knowledge in the database

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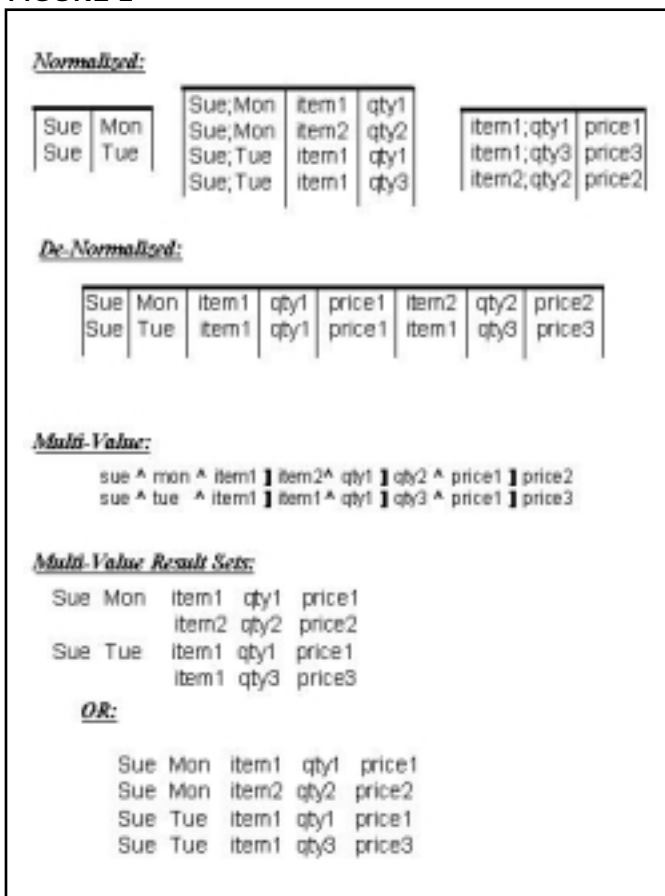
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FIGURE 2



IMHO Continued from page 21

model that was originally developed to support the handling of single record transactions.” (Footnote 4, from the quote of an experienced database user)

“If your database is over-normalized you run the risk of excessive table joins. So you denormalize and break theoretical rules for real-world performance gains.” (Footnote 5, a successful SQL vendor)

Pascal disagrees. He even has an infamous example that I call The Pascal Library.

“Suppose I ask you to retrieve two sets of books from a library:

one set of five books and one of ten. If I ask you which set will take you longer to retrieve, would you know? When I ask practitioners this question, many realize that the time required for set retrieval depends not on the number of books per se, but on the characteristics of the library: how the books are physically stored and retrieved... By definition, normalization increases the number of logical tables — books in the analogy — in the database. If the number of books says nothing about library retrieval performance, how can denormalization — decreasing the number of logical tables — say anything about database performance? ...The only logical conclusion possible is not that normalization slows performance and denormalization speeds it up. To the extent that performance with fully normalized databases is slow and it improves with denormalization, this can only be due to the physical implementation of the database and DBMS” (italics courtesy of Mr. Pascal).

Yep. This is an unassailable argument... given the physical database limitations that he assumes. Later in the succeeding

article, called Part 2: “...When full normalization increases the number of logical tables, the number of stored files also increases; and it is that latter number that affects performance, not normalization... An implementation truer to the relational concept would provide a more complete separation between the logical and physical levels. (Footnote 6)

Inspirational. This guy is very, very close to re-discovering MultiValue for us. Finally, at the end of article Part 2, he says: “In fact, technology that facilitates just such implementations has recently been developed.” One can only wish that Mr. Pascal had read the *Spectrum* article (Footnote 7) and white paper “Diamond in the (Main)stream” which describes various denormalized relational databases which have been in continuous use since 1972.

Multi-valued repeating groups were conceived even earlier. First considered in the original theories and mathematics surrounding relational database rules in the late 1960’s, repeating groups were presumed to be prohibitively inefficient in the computer systems of the time. A simplifying assumption was quietly made that all data should be normal (flat). Today that assumption is being quietly challenged. The simple truth is that real data is not normalized; repeating groups are common (see Figure 1). Multi-value is a database model with a physical layout that allows systematic manipulation and presentation of messy, natural, relational, data in any form, first-normal to fifth-normal. In other words: with repeating groups in a normalized (one-key and one-key-only) table, separate and independent from the logical view of the user or requesting process. (Thank you, Mr. Data, that’s enough.)

The reason you were dragged through all this stuff was a simple illustration of how far advanced you actually are. Right now the mainstream database community today is debating things that you took for granted decades ago. It’s like watching two simple farmers arguing about whether the

trade,” Mr. Pascal argues that de-normalization, or consolidating data into records with repeating groups, is not a good trade-off. He says that the improved performance would be exchanged for the effort to keep the file accurate. In other words, it would be necessary to scan all the records when one of the common values was changed, such as a street name or a new zip code. Or when a product number is changed. Furthermore, it would be a hassle to find the records affected, change them, and get them back into the correct place. He suggests in his article that a new SQL command CHECK will have to be invented, and appended to every update in a denormalized database.

The basis for his argument is understandable, if we think about it. Mr. Pascal is the victim of two-dimensional thinking, brought on by a life-long reliance on column-and-row databases, or as he called them, “SQL DBMSs.” Not everyone agrees; some examples from the current debate:

“A traditional normalized structure cannot and will not outperform a de-normalized... Requests put way too much stress on a

rice will grow better up on the sunny side or shady side of the hill. We know that one day they will grow rice right where they're standing up to their heinies in mud. Their debate is ironic and sad at the same time, because they are simply starving themselves. And us.

But according to Gus Giobbi, the Prime Directive doesn't apply in this case, and so it's OK to just tell 'em. It may hasten re-discovery, and perhaps avert a famine. So this is what I intend to point out to them in *DM Direct* on September 6, and what you should be telling to your significant uppers:

1 De-normalization is here; get over it. People have two phone numbers. And they buy more than one thing, and it has more than one price and quantity. (See Susie in Figure 1.) A truly modern database, data warehouse, or data mart has to recognize and utilize this fact of the universe in order to call itself "business intelligence."

2 MultiValue handles de-normalized data automatically, if and when it appears. Period.

3 Although it is de-normalized, MultiValue doesn't suffer the limitations of a de-normalized database. There are no composite keys required. Indexes are not required either. And most important, random accessing does not require reading the table from the beginning.

4 Redundancy is minimized. Keys are not repeated, only values which are unique in the referential table. No other keys nor data need ever be duplicated, nor maintained in two places.

5 MultiValue is *faster*, when given sufficient hardware, even if only a fraction of the hardware required to hold the data in a conventional database.

6 MultiValue is relatively inexpensive to implement and maintain. Look at us, we've been working for below-scale wages for decades, and would/will probably do it for nothing.

IMHO. Oops. Maybe we'd better leave that last part out. *=/srv*

STEVE VANARSDALE is an MV industry analyst writing for International Spectrum, and contract project manager working for the likes of IBM U2 Data Management Solutions Unit. Criticisms, complaints, or commissions, always welcome at steve@vanarsdale.com or www.mvconsultants.com

1 - "Database Debunking," www.dbdebunk.com, F. Pascal, editor

2 - http://www.pgpro.uk7.net/on_normal.htm

3 - Ibid, footnote 1

4 - DM Review OnLine, June 2002, "The Dangerous Illusion: Denormalizations, Performance and Integrity," www.dmreview.com/master.cfm?NavID=198&EdID=5251

5 - Ibid

6 - DM Review OnLine, June 2002, "The Dangerous Illusion: Denormalizations, Performance and Integrity - Part 2," www.dmreview.com/master.cfm?NavID=198&EdID=5337, page 5

7 - International Spectrum, "Diamond in the (Main)Stream," Sept. 2001 - April 2002

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Lessons Learned in Multi-Value Reporting

A long-time MultiValue programmer spends years and years evaluating a myriad of reporting technologies that can be integrated with some of the most widely used MultiValue applications. What did he uncover about off-the-shelf reporting tools? Why did he steer away from ODBC? What is his advice to anyone trying to do find the same solution today? Here, Michael Ballard shares his first-hand experience in finding, fixing, and fostering the right reporting tool for MultiValue users and their critical business applications.

BY MICHAEL BALLARD

mvReport Card

My Background: I worked for Epicor Software (DataWorks/Platinum) from October 1994 to December 2001. Epicor produces, installs, and supports "complete business solutions for mid-range manufacturers." I worked in the iSolutions division, which supports three U2 solutions for different kinds of manufacturing needs. ManFact II runs on UniVerse, DataFlo runs on both UniVerse and UniData, and Avanté runs primarily on UniData. All three packages are available on both Unix and Windows platforms. Installations range from a handful of users with an NT system to multiple networked Unix boxes with hundreds of users on each.

From Crystal Reports to MS Access — Were Any Reporting Tools Right for MV?

ONE OF MY MAJOR TASKS throughout my time at Epicor was finding the right reporting tools for end users. Even before I began working there, Epicor's users had already been asking for a Windows-based point-and-click reporting tool. Some users even cited examples of colleagues who used Crystal Reports to generate all sorts of useful ad hoc or periodic reports. Since I had significant experience with both PICK (MultiValue) and non-MV databases, I was tasked with finding a good solution that wouldn't require a lot of maintenance, customization, or end-user training.

I began by spending a lot of company time and money evaluating off-the-shelf tools such as MS Access, Forest & Trees, GQL, and Crystal Reports. All of these depend on ODBC to connect to the database. I quickly concluded that ODBC was not a good approach to accessing MultiValue (or any PICK-like) databases. Some of the reporting tools gave me various ways to get around some of the issues that ODBC raised, but it was still much too easy for a user to create a report that was syntactically "correct" but informationally "wrong."

Uncovering the Key Reporting Challenges

The main problems I found in using various reporting technologies with MultiValue environments included these three issues:

◆ Mapping multi-valued data into sub-tables works to a degree but creates almost as many issues as it solves. In the Customer file used in the DataFlo application, for example, there are multi-valued fields for Street, Address and Phone Number.

“I spent a lot of time evaluating off-the-shelf tools such as MS Access, Forest & Trees, GQL, and Crystal Reports. All of these depend on ODBC to connect to the database. I quickly concluded that ODBC was not a good approach to accessing MultiValue (or any PICK-like) databases.”

There is also a single-valued field containing the current Accounts Receivable Balance. To generate a report in MV that would properly display the Customer ID, Name, Address, Phone, and AR Balance (including the total AR Balance at the end of the report), all that is required is a simple LIST or SORT statement, such as: LIST CUSTOMER NAME ADDRESS PHONE TOTAL AR_BALANCE.

Creating the same report using a SQL-based tool required either joining the Address and Phone sub-tables to the Customer main table (which, by default, would create a Cartesian Product [multiply the number of occurrences of Phone by the number of occurrences of Address to see how many lines would display and how many times the single-valued occurrences of ID, Name, and AR Balance would be repeated]), or creating a pre-defined view

(“schema”) that establishes a fixed number of occurrences for the Phone and Address fields. The first solution requires users to know their database structure in much more detail than most end users have the time or inclination to do. The second solution, on the other hand, requires some sort of database administrator to decide what is “reasonable” which, in turn, limits one of the greatest features of the MV data structure.

◆ The difference between how a SQL tool defines “null” vs. how a MultiValue database (and its programmer) defines “null” generally makes it impossible to distinguish between a field that had been deliberately left “empty” (a SQL user would refer to this as an “empty string”) vs. a field that is undefined (the SQL definition of null).

Once upon a time, I worked with an SQL database in which a record in a file (in SQL terms: a row—or tuple—in a table) contained a length code for the whole record followed by one or more structures containing the fields. Each field structure contained a field number, a type indicator, a length code for any fields that were variable length, and finally, the data. If I were to create a record in this database where the only field populated was field 5 and that field contained the string “XYZ”, the record would look something like this: 75V3XYZ (7 is the record length, 5 is the field number, V indicates a variable length string, 3 indicates the length of the string, XYZ is the actual data value). In a MultiValue system, the equivalent structure would be: @AM:@AM:@AM:@AM:‘XYZ’.

Now imagine that we want to select all records in this file (table) where field 37 is null. There would be no disagreement between the MV programmer and the SQL programmer that in both records field 37 is null. But what if the selection wanted to find records where field

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mvReport Card

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3 is null? Now the SQL record would be selected but the MV record would not. If a MultiValue field exists beyond the field of inquiry, there is no way to tell whether the field of inquiry has ever had a defined value or if it was deliberately set to a zero-length string (""). UniData's solution to this problem is to define a character used to mark a field as undefined. Anyone in the SQL world would consider it offensive to put a particular value into a

field to mark that field as undefined. UniData added a UPT.OPTION so that programmers offended by this "solution" could turn it off.

◆ MV dictionaries report on the presumed structure of the data without actually placing any limits on the actual content of the fields they report on. SQL data dictionaries, however, rigidly enforce both content and size limits. The most obvious place this becomes an issue is in

string fields. If my Sales Order dictionary says that my shipping instructions field is 40 characters long, an SQL tool looking at the data will only present 40 characters to the end user. If a data entry person enters "GO TO THE BACK OF THE BUILDING AND ENTER '54962' ON THE KEY PAD TO GAIN ENTRANCE", what displays on an SQL-created delivery sheet is "GO TO THE BACK OF THE BUILDING AND ENTER". On a Multi-Value-based report, the text would simply wrap to the next line.

Another place I've seen this problem occur is in data entry screens that allow characters to be entered into date or money fields (e.g., "T" to indicate "Today" or "M" to indicate "Current Market Rate"). Depending on the tools being used, "unconvert-

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ible" data values may cause records to not be retrieved by the SQL-based reporting tool or they might even break the connection between the tool and the back-end database, leaving the user wondering what happened to the report.

Giving End Users What They Wanted: A Customized Reporting Solution That Worked

Our solution to the mess outlined above was to map out a rough design for a custom tool that would natively understand the MV-like database and give our users

the Windows-based point-and-click capability that they wanted. We also wanted the product to use the file and field security that was already built into our U2 applications. We hired a VMark consultant, Toby Atkinson, to write "Report Wizard" in VB using UniVerse Objects.

Since Toby was a VMark person at that time and this was before the VMark/UniData merger, he was not permitted to write the UniData interface. I quickly learned VB and worked closely with Toby to produce the needed ObjectCall/UniObjects interface module for our UniData users. I also wrote the programs and subroutines that run on the U2 host to provide security administration and to pre-fetch blocks of data to pass to the client to format and display.

Continues on page 28



WEBster Says:

Like to play with words?

Here are some Fancy Schmancy Dictionary Correlatives of the month:

1. A; ("10000" * ((9 * "10") - 25)) / (9 * "10") - *Calculates the gross profit percentage for an inventory item where Attribute 9 contains the list price (MD3), and Attribute 25 contains the inventory item cost (MD4).*
2. A; (9) * "10" (25) * "22" / "1000" - *Calculates salesperson's commission at 22% of gross profit for the same attributes.*



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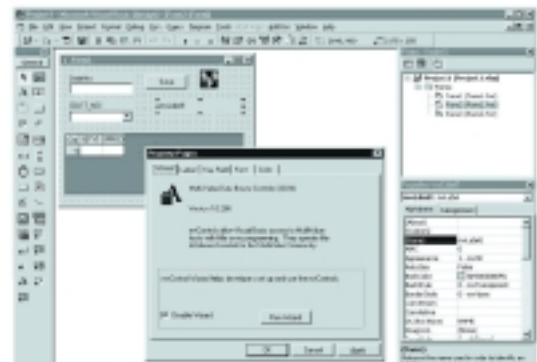
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mvReport Card



Continued from page 27

When Toby's contract ended, I took over the further development and support of the product. Jud Rhode and Charlie Zhang also made significant contributions along the way. As the VB language has grown and changed, significant re-writing has continued to adopt many of its new features. The current version of the product is faster, has a smaller memory requirement, and has many more features than what we started with. Today Report Wizard works with all three of Epicor iSolutions U2 offerings: DataFlo, ManFact, and Avante. It is not currently being marketed outside of the Epicor user community.

A Footnote on Reporting Tools Today

In talking with programmers in other shops, I have heard of developers choosing to build MV applications that have no multi-valued fields and rigidly enforce the field size limits so that most of the ODBC issues simply won't arise. I have to wonder why they would bother to use a MultiValue database at all if they are going to ignore some of its most significant features.

A few years ago, pressure from customers forced Epicor to make an ODBC interface available. Considerable work was done by various programmers to formalize schemas for production data files, and to make those schemas available to the customer base. (Initially this was an additional cost, but later, became part of the new releases of baseline software.) Generally, they took

"Our solution to this mess was to map out a rough design for a custom reporting tool that would natively understand the MV-like database and give our users the Windows-based point-and-click capability that they wanted."

the approach of creating a limited number of instances of multi-valued data (like the Address and Phone examples above) so that, as much as possible, users would see what appeared to be a flat, 1-NF file (table). Epicor became a dealer for Cognos

and some of its consultants now help users to learn PowerPlay and Impromptu.

At International Spectrum 2002 in San Diego, I saw two vendors with MV-compatible Windows reporting tools. One, called mv2Report from GA Services, was a fairly simple and inexpensive tool that allowed the user to get columnar reports onto a plain form. To do more with the appearance of the output, the user would have to paste the output into Excel (or something similar) and do the modifications there. The other tool, mvQuery from Sandri Technologies, allowed for a lot of formatting, fonts, pictures, and export types, etc. If I were still at Epicor, some of the features in the mvQuery tool would be great add-ons to Report Wizard. [is](#)

A B O U T T H E A U T H O R

MICHAEL BALLARD has been programming in MultiValue and MV-like systems for 22 years. His experience includes a variety of systems, including Microdata, GA, ADDS, Prime, UniData, UniVerse, and a Microdata emulator which he co-wrote for IBM mainframes. His expertise has mainly been in tools, utilities, operating systems and data conversion. "Along the way, I've also done work in COBOL, FORTRAN, PL/1, 370 Assembler, C, and Visual Basic on platforms including IBM mainframes, Novell Networks, PCs, and various flavors of UNIX," he said. Mr. Ballard has also found the time to become proficient with other databases, including IBM's VSAM, Oracle, SQL Server, MS Access, and SQL Anywhere. He is currently working for GenSource Corp. (www.gensourcecorp.com) in Valencia, Calif., where he is part of a team using Sybase's Power Builder and UniVerse Objects to build a GUI interface to the company's UniVerse applications.

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Introduction to Legacy Corner

B Y M A R K J O H N S O N

This issue, a new column begins that will focus on the legacy systems that got us to where we are today. Despite the great advances in contemporary MV platforms and their connectivity to today's inter-connected systems, many end users and their companies still depend on more basic forms of MV systems.

It would be great that each installation could convert to the latest and greatest MV environment but that's not going to happen overnight. Many of my clients are completely happy with their native systems and don't see the need to upgrade either for economic or logistical purposes. Despite the headlines, many people just don't need to connect to the Internet or any other external systems.

Pick, er, MV systems have been targeted to the small to medium sized businesses for the last 25 years. The average age of my clients' installed software is 15 years, with one still using code written in 1975. As long as it compiles and can exist on a contemporary hardware platform, many clients are happy where they are.

This column will address the large but under spoken group of legacy systems that are still in existence. My clients' systems will serve as my examples to explore the various implementations of MV systems as well as their continued dependence on contemporary programming ideas fitting into their existing systems.

My clients' systems range from Microdata, Mentor, UniVerse, UniData, D3, AP-Pro, Revelation and R83 running on native, PC and Unix platforms. Being a contract programmer, I accept work on all flavors of MV. Unfortunately, I haven't been exposed to jBASE so I apologize for missing that boat.

While most of my clients are inventory-oriented companies, I will attempt to convey programming ideas that can easily be utilized into any programs, regardless of their industry. Also, most program examples will be using the most common MV statements instead of depending on functions that all implementations may not share.

Don't get me wrong. My client base is not an unsophisticated bunch. Many have regular Novell or NT networks running as a conduit for traditional print/file sharing. Some are using Telnet to connect to their MV system through the main network. Others are running dual network/serial systems. And finally, some are running pure serial as they have since the day they got their original Microdatas.

Many use dumb terminals for their users although as the user's intellect grows, they are replaced with PCs running terminal emulators. One has a monster Novell network with international implications and many foreign users connect to the MV system.

One intent of this column will be to address those programmers, either independent or employees, who don't work on the latest webified MV system. I can't believe that I'm the only programmer supporting clients on Microdata, Ultimate, Prime, Motorola, Altos, ADDS, Sanyo, C.Itoh and other MV platforms that have fallen along the wayside. I will explore the sanity of remaining on these legacy systems as well as the insanity of not upgrading.

I will also focus on the independent programmer who, like myself, needs to focus on generating new clients as existing clients may discard their existing MV systems for more name brand (Wintel) environments. I've been through quite a few situations where the existing MV system was replaced with a non-MV system only to hear of the expense and bother configuring this alleged new system (SAS).

Many clients can squeeze more out of their legacy systems with a little extra effort. I've participated in a few conversions from older platforms to more current ones and each has had its growing pains that are exaggerated during the conversion. Fortunately, time heals all wounds and all but one conversion has had a happy ending.

Many of my programming examples and articles will fall under the utility category. I will not endorse any particular programming style as it only creates conflict. MV programs have always been a blank sheet of paper and we programmers have been the artists. Despite using the same palette of programming tools, each finished program may look different on the inside.

One current observation is that current MV job advertisements have included HTML, Oracle, SQL, ASP and other contemporary skills along with the typical 2 to 3 years of MV experience. I believe that today's crop of freshly minted programmers have focused on the current technologies and may pick up their database (MV) skills in their spare time. Considering that many long-term programmers exist as MV-exclusive, I hope that my articles will help today's new MV programmers catch up to the tricks and hints that are hidden in all MV systems.

I've been working in the MV environment since the late 1970's and have seen a lot of changes to the MV implementations over the years. I've written many articles for other now-defunct Pick magazines and many of those ideas are still valid today. Some of my ideas are now standard issue in most MV flavors. Our beloved MV database model has served us well and will continue to be a contender in today's marketplace. I gladly accept any ideas and criticisms that you may have to offer on any articles that I may write. Information is Power. *is*

MARK JOHNSON is a 23+ year veteran of the MV database and has worked on a variety of implementations. He specializes in maintaining and enhancing legacy systems and is available for contract, short and long term programming projects in the New Jersey, New York and Eastern Pennsylvania areas. He can be reached at majprogramming@comcast.net.

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Trak Auto *Puts* UniVision to Work in its Stores

"The UniVision platform running Linux saved us over \$370,000 in annual communication and support costs, ended lengthy POS waits for on-line information as customers fumed, strengthened our technology investment and placed smiles on everyone's faces in our stores."

Dave Stickney,
*Director, Information Technology,
Trak Auto, 20 years experience in
MultiValue applications*

Located in the mid-Atlantic region, Trak Auto has made a name for itself as a retailer of high-quality, low-cost auto parts that it sells to both repair professionals and do-it-yourselfers.

Ordering, pricing and inventorying those parts are the backbone of Trak Auto's business. The company used three disparate system platforms to run the business: An SCO-based system for parts lookup on two to four CRTs per store; a DOS-based POS system running another two to four POS registers; and three AS400 mid-range servers at corporate headquarters. Pricing and parts data was periodically updated to the SCO systems using a dialup connection to the remote AS400 DBMS. The POS system downloaded its pricing and uploaded its sales data on a daily basis, also to the AS400

systems. Parts activity and general business transactions resided on two incompatible hardware configurations.

New Thinking Using a MultiValue Platform

New management, new thinking, and an acquisition two and a half years ago set the stage for radical changes in systems. Trak's new ownership felt that this mix of technology was inefficient and costly to maintain. A well-known MultiValue (MV) solution was thrown into the technology mix when Trak acquired a small parts house. Eager to reduce costs and streamline the IT operation, Trak's management was convinced that the highly scalable MV solution could dramatically lower costs and consolidate business applications into one platform.

The plans were laid to convert all POS and parts lookup functionality to the MV solution on a large central server running AIX. Each remote store would connect via dial-up Internet connection to the corporate RS6000 system. The search began for someone who could implement the changes. Dave Stickney accepted the challenge head-on.

Dave virtually began his high-tech career in the then named "Pick" database sector, and throughout the 80s and 90s, he developed a variety of successful solutions based on MV platforms. So he was aware firsthand of MV's usefulness developing and running applications that formed the core of Trak Auto's business.

New hardware at checkout with products from nationally known vendors significantly reduced Total Cost of Ownership and improved Trak's technology performance. Each store's POS system features ink-jet receipt printers from Ithaca, cash drawers from Indiana cash register, credit card, check readers, and hand-held scanners from Welch-Allyn. All these products seamlessly integrated with the MV application.

Problem Solving Begins

As the new platform from a national MV vendor got up and running, Stickney began to spot problems. It was slower than everyone wanted. Using the public Internet, data security was an issue, and encryption was needed — especially when handling credit card data. The store's data transfer was susceptible to unreliable dial-up connections that disconnected too frequently. This didn't make anyone happy; the customer, store operations, the front office, even IT! But one plus in the new deal was the MV Auto Shims package, a proven solution.

Stickney thought a switch to DSL technology might make the MV system work better, but his research showed this method of getting connected was available to be installed in only a small percentage of Trak Auto's locations. An alternative was frame relay technology, but the price tag for this form of communication was far too great to be viable in all locations. The dial-up approach was augmented for the highest volume locations with a hybrid network of DSL (where it was available) and frame. This added up to nearly \$17,000 in monthly communication costs.

As the new installation continued, Stickney also spotted problems that could occur at POS. The centralized MV system was in danger of going down if there was a failure at a register, or for that matter, in other parts of the system, and if the problem was severe enough, all Trak Auto stores would be affected. There were major Internet failures: switching centers, fiber cuts, disappearing ISP's, even train fires in tunnels hundreds of miles away! Facing this set of realities, Stickney saw he could not be compromised by the technology and that the reliability of his entire operation would impact the bottom line in a business with razor thin margins.

So, he began rethinking the entire installation strategy. And he made another change.

UniVision Fits the Bill

His new approach focused on ending the centralized computer solution, and replacing it with a distributed model. He would still use an MV platform, but this time he chose UniVision from Via Systems.

Last summer, Stickney began the company's migration process to UniVision, choosing Via's Intel-based Linux Red Hat platform. Relying on his nearly 20 years of MV experience, Dave wrote four major queuing programs to be used to exchange data between the host and remote systems. And, as the new install unfolded, Stickney discovered something that delighted him very much. "Conventional wisdom had Auto Shims perceived as a single set of centralized programs that couldn't be migrated or distributed. Well, we migrated it to Via's Linux platform, and it's running on 80 machines," Stickney explains. Via Systems president Bob Catalano, who worked closely with Dave throughout this entire process, adds, "Trak Auto was able to take

its SCO-based catalogue, and let it live in Red Hat, side by side with the POS application. The UniVision database allows the application to exchange data seamlessly with the catalogue application in Linux and with the AS400 applications."

Another benefit to adopting a distributed solution with UniVision was Stickney's ability to end on-line connections. He changed to a direct access dial-up phone link, which is one-third the cost that Trak Auto would be paying for dialing an ISP-based solution.

Stickney has completed the last of 80 conversions to UniVision's Intel-based Linux platform.

"Trak Auto is far better off now running under Intel and this UniVision platform," Stickney states. "The proof is right in front of every store manager every day. Lightning fast, reliable look-ups; no waiting in line; and the front office realized over \$370,000 annual savings in communication and support costs." is

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THE DEVELOPMENTS OF THE PAST SEVERAL YEARS are astonishing really. We've all watched computing systems slowly evolve from mainframes to fringe ham radio-style game boxes to desktop workhorses. Then all of a sudden, they became household necessities. Internet appliances. Required tools for work and school.

BEER and PRETZELS

BY MELVIN SORIANO

What Are CIO's Looking For?

But the dot-com meltdown, followed by the raging telecommunications conflagration, has exposed a lot of raw nerves, if not unbalanced budget sheets.

Out: Cool In: Efficient

In many ways this makes the customer king. Efficient, pragmatic solutions are meant to be cost-effective and wise. The wild-eyed, java-jolted college dropout is no longer driving corporate infrastructure decisions. It goes beyond computing: the hip thing today is to wear retro '70s and '80s styled sneakers instead of today's over-engineered and uncomfortable Frankennikes.

Which begs a serious question. When did my favorite gym shoes become retro?

The move to more practical solutions should have been foreseen. "The right tool" — blah blah blah. The Internet has offered us a surprisingly easy way to at first cobble and now integrate at a deep level the many aspects of our businesses. Such trends were developing before the current technological financial traumas.

Some companies began these processes several years ago. Wal-Mart is as much a technological company as a retail operation. The behemoth completely depended on its advanced IT systems to drive productivity up over 20 percent in the past few years. Other companies streamlined the operations that got hitched on during the many acquisitions of recent years. SBC Communications, for example, slashed IT costs by 40 percent from its Ameritech, SNET and Pacific Telesis companies.

They're able to do this because they're not buying the glitz and glamour anymore. An IT manager at a large firm was actually found shying away from CRM (Customer Relationship Management) systems! He said that the blinking red, yellow and green lights in front of service reps may

So imagine: we're moving towards practical, customer-driven systems, taking much of the tech drive out of the hands of the developers and matching it against corporate requirements.


be cool, but until there's a difference in customer service, they won't buy it. Other companies are depending on their advanced CRM systems to improve productivity. It's been noted that the Royal Bank of Canada can get an astronomical 25 percent response to its broad-based marketing campaigns.

The move to slash costs and improve efficiencies has been largely centered around the Internet. Although gadgets and machinery may be exciting, they're not the focus of IT staff anymore. Instead, it appears that the information conveyed or gathered by the devices is now receiving the glory. I'm not sure what that portends for the Palm and cell phone, but I suspect that we'll see further segregation of gadgets that carry games and tunes from the gadgets that manage work.

Continues on page 38



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Webonomics 101 continued from page 35

Even the military is getting in on the act. The U.S. Army is creating the Network Enterprise Technology Command, or NETCOM, to establish a single operating environment for its forces. A VPN (virtual private network) will extend from trenches to satellites. On top of all this, the Army is consolidating its support structure. Instead of getting support from one of its thousands of contractors, it's going to contract with just one service agency. One can guess that there are only a handful of companies capable of supporting the entire Army, top to bottom.

But the idea is to streamline problem resolution, so that the support for the organization comes from only one source. To do so requires the support agency to hold all of the support contracts and to demand fantastic support if not bring in its own in-house specialists from the second-party and third-party resellers. And the resellers have to change the way they would otherwise do business.

So industry and government are both moving in similar directions. The trend isn't a good predictor, however, of how much money will be spent. Most companies now are monitoring and re-evaluating their IT expenditures. Most are also reducing IT expenditures. Some companies, however, are moving in the opposite direction. GE and other information-driven financial companies are actually increasing their IT budgets or are expanding their workforces.

Some of the increases in staffing come from bringing work in-house instead of using outsourced consultants. But most of the increases stem from the recognition that information technology, if properly leveraged, can be an obvious competitive advantage. A company's ability to quickly deliver information to its customers or business partners, or to let them gather such information directly, has become a vital weapon in the battle for market share.

So imagine: we're moving towards practical, customer-driven systems, taking much of the tech drive out of the hands of the developers and matching it against corporate requirements. The movement is geared towards creating efficient and cost-effective business or government operations. All this on server-based, centralized data management systems that the Internet promotes.

It sure sounds like MultiValue has a place in this emerging technological climate. As most of our world operates in the corporate middle class, we've always been more value-conscious and pragmatic. Our dot-com bubble first occurred when Windows appeared, so we're well-versed in the fine art of technological trench warfare. If the database vendors and VARs of the MultiValue world play it right, we could see a natural extension of our world into the corporate mainstream. is

MELVIN M. SORIANO

works at **Eagle Rock Information Systems, an Internet Application Service Provider and WebWizard/MultiValue Developer. ERIS has deployed enterprise-wide solutions on most MultiValue platforms and operating systems.**

HTM-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 offices: (626) 535-9658.

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"The choice was clear once we evaluated the options that were available in the marketplace. The fact that ViaODBC handles MultiValues properly and has the ability to display user friendly column names were both key in our evaluation."

Jeff Bender, COO Harris Computer Systems

Just thought I would let you know about a project I have been working on that has used the (ViaODBC) software. Payroll Budgeting info to an EXCEL spreadsheet. It works really great. By using the software, I have avoided writing a huge program to generate the data."

David Calvert, IT dir, Oklahoma City Housing Authority

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3 Ultimate PDAS

BY NATHAN RECTOR

I'VE TALKED A LOT ABOUT THE DIFFERENCES between Palm OS and Pocket PC, but the operating system isn't the sole reason people pick a PDA. Most people will go to CompUSA, Office Depot, Staples, or wherever, to play with the PDAs and decide which PDA they are going to use based on feel as much as functionality.

Because of this, I'd like to talk about three PDAs on the market that I would term ultimate PDAs. There is no PDA currently on the market that will allow a person to carry their office in their hands, but some of them come close.

iPAQ

I have not been very kind to Pocket PC OS in my previous articles, but the iPAQ makes the extra cost and requirements worth it. The iPAQ from Compaq/HP is the device that really allowed Pocket PC to gain on the Palm devices.



The iPAQ's main advantage is its expandability and high-definition color screen. There are other PDAs on the market that have color screens, but the 65,000-color reflective screen on the iPAQ is very nice and easy to read. The best thing about the display is that you can use your iPAQ outside in full sunlight. Other color PDAs can't be used comfortably outside. Their screens basically turn black and non-viewable.

The expandability allows you to do just about anything with the iPAQ. You can add more storage, take pictures with it, or

do a ton of other things. The iPAQ supports existing CompactFlash, PC Card, and double PC Card sleeves. The new versions also include a SD Card slot and integrated bluetooth connectivity.

Here are a few devices that you can attach to the iPAQ:

- ◆ VGA monitor support
- ◆ Credit card reader
- ◆ 802.11b wireless card
- ◆ Barcode scanner

One last feature the iPAQ does quite well is play/record MP3. OK, so you can play those songs that you download off Morphus; big deal. Actually, for your executives and sales people, it may be a big deal. The iPAQ comes with a microphone that allows you to create dictations by just pressing a button and speaking into the device.



Sony Clie PEG-NR70V

The Clie PEG-NR70V has just about everything you would want in a PDA except the cell phone. This PDA is a Palm device that includes a built-in thumb keypad, digital camera, and a color screen.

When you open the NR70V, it's easy to confuse it for some ultramodern cellular flip phone, but unfortunately, no wireless features are built in. The large, colorful 320x480-pixel transfective LCD is the first thing that you'll notice. The screen feels extra large because this model, like all Pocket PCs, uses a virtual Graffiti area. As an added benefit, you see your stylus strokes on the screen, which makes it easier to write accurately.

If you prefer to use a keypad for data entry, a small built-in thumb keypad is included.

The keys are not bunched together like some thumb keypads, but it still takes some time to get used to.

The design of this PDA is pretty clever. When closed, the screen is well protected. You can open the casing up to use the keyboard, or you can rotate the screen 180 degrees, fold it back down to cover the keyboard, and use it like a traditional Palm device.

It is a bit heavier than other PDAs (Palm and Pocket PC devices), weighing 7 ounces, which can be a problem, but is livable.

The major reason I have included this as one of the ultimate PDAs is the built-in digital camera. For most people, this is more of a plaything than a real tool, but there is a major business application where this comes in handy.

Any salesperson who has to describe job locations to installers or delivery people will find this useful. Instead of carrying a separate digital camera, they can use the NR70V.

Now, before you get too excited, this 100,000-pixel camera is able to capture only 320x240 still images at its highest setting. The pictures are decent quality as long as the object is well lit (there's no built-in flash). This camera is best suited for quick shots to use to help describe something than for high-resolution portraits. The NR70V includes a paint program, which allows you to mark the image with text or draw lines to help focus the viewer on what they should look at.



Nokia Communicator

The Nokia Communicator is the best cell phone/PDA combo I've seen on the market yet. The device is a little large when comparing it to existing cell phones at 1.1 inches by 2.2 inches by 6.2 inches, but with the clam shell design that opens up into a PDA with built in keyboard, it's easy to work around.

The Communicator is not a Palm or a Pocket PC device. It runs the Symbian OS, but is fully compatible with Windows and Office tools with the included syncing software. You can even develop your own applications using either their SDK or Appforge's MobileVB, so you are not buying into a mostly proprietary OS.

The Communicator includes support SMS messaging, conference calling with up to five people, as well as being able to use the PDA while talking on the phone. Although it's a nice cell phone/PDA combo, it does lack expandability.

These devices are my personal three ultimate PDAs, but there are many, many more PDAs coming on the market this year. Most of them are cell phone/PDA combos and some look promising. If you would like to share your ultimate PDA with me, feel free to e-mail me at nrector@natecsystems.com is

NATHAN RECTOR, a regular contributor to **Spectrum**, is owner of **Natec Systems**, a consulting firm that specializes in D3, AP and R83 environments and custom programming. He can be reached at nrector@natecsystems.com, (707) 443-6716 or www.natecsystems.com.

Record Growth Reported by @Better Results Inc.

As of June 30, 2002, @Better Results Inc. completed its first fiscal year as a California Corporation and announced record growth in all categories. Originally formed in 1991, the company has been providing products and services for 12 years.

"The past year has been an exciting challenge; particularly with all of the economic issues related to the terrorist attacks and the business climate in general," stated Jeff Jakus, president of @Better Results. "We have had a terrific response to our Business Intelligence (BI) offerings that are centered around the new and improved ViaODBC data exchange engine."

During the past 12 months, @Better Results has installed in excess of 35 new customer sites, spread across 16 states with equal distribution on both coasts and the great lakes area. Larry Christensen, newly appointed vice president of Sales, commented: "It is really great to become part of such a dynamic young company. I am very happy to report that sales have increased in excess of 300 percent over 2001 results with a substantial 250 percent increase between our third and fourth fiscal quar-

ters. This coming year is going to be a lot of fun!"

Along with record sales growth, the company has also grown in head count. In addition to Larry joining as VP of Sales, Carmen Rosendahl has accepted the position of administrative assistant with responsibilities in accounting and marketing support.

The @Better Results professional services team has been enhanced with the addition of Phi Bui and Ken McMullen — both MultiValue specialists — and Steven Nguyen, an expert in Web and Visual Basic technologies. "Quality technical services are important to the delivery of our Business Intelligence solutions. To that end, I am pleased to welcome Phi, Ken and Steven to our team," said Brian Riedlinger, CTO.

In other related news, Dave Meyer has been promoted to vice president of Business Development. This is a move that will allow Meyer's strategic talents to be applied to new product releases as well as identifying new markets. Meyer will be working closely with all the departments within @Better Results in order to fulfill future customer require-

ments. Also, Gary Babykin has joined the sales team from the company's newly opened Reno, Nev., sales office. ■

For more information, contact jeff@betterresults.com.

jBASE Signs Two New Value Added Resellers

jBASE Software welcomes two value added resellers, Dan EII Consulting and Shared Business Services. Dan EII Consulting is a consulting firm located in the Tampa Bay area that provides service to clients throughout the United States. Dan EII started working with MultiValue technology in 1981 and established EII Systems and Software in 1994. Although they still sell and service computer hardware, the emphasis is on consulting including database programming, operating system support, program efficiency auditing, database conversions and Internet connectivity.

Shared Business Services of Acworth, Ga., is a provider that offers services in general computer consultation for MultiValue business applications. ■

For more information, visit www.jbase.com.

Revelation Software Names Sprezzatura to Take Over Distribution & Support in U.K.

Revelation Software, the leader in advanced database development tools for mid-market packaged and custom applications, announced that Sprezzatura will become the exclusive distributor and reseller for the United Kingdom, and will also provide frontline support for Revelation users and developers based in the U.K.

"I'm excited to have Sprezzatura on board as our U.K. partner," said Mike Ruane, president and CEO of Revelation Software. "Sprezzatura's reputation for top quality work and technological excellence is well known in our community. By selecting them as our distributor, we

are keeping with our plan of increasing the value of our products to developers and users, and improve our market in the U.K. and EU.

"It's an honor to be selected as Revelation's exclusive U.K. distributor," said Andrew McAuley, president of Sprezzatura. "We have plans for invigorating the Revelation community with new marketing, classes, and unparalleled technical support for U.K. users."

The agreement was effective July 28, 2002. **Further details are available from Sprezzatura's Web site, www.Sprezzatura.com, or by contacting them at +44 (0) 20 8832 7470.**

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1mage Software Forms ASP Alliance to Bring Integrated Document Management to Healthcare Groups

1mage Software Inc. and Houston, Texas-based Automated Health Consulting, Inc. (AHCI) announced an Application Service Provider (ASP) alliance that will provide integrated document management and specialized application software to hospitals, physician groups and radiology laboratories.

AHCI provides Medical Practices & Billing software, Physicians and Healthcare Management systems, as well as professional services, to hospital-based physician groups and laboratories. Under terms of the ASP agreement, AHCI will offer its clients an integrated, image-enabled version of their medical software

programs for a monthly service fee. AHCI will host the 1MAGE software on an IBM pSeries platform.

David R. DeYoung, president and CEO of 1mage Software, commented, "By integrating 1MAGE and AHCI's medical software products, AHCI's ASP clients will be able to associate electronic

documents directly with the related medical billing and practice records on a shared platform. The improved efficiency should substantially raise the level of customer service provided, while lowering the cost of the overall solution." ■

For more information, visit www.1mage.com.

new products

Raining Data Announces Omnis Studio 3.2

Raining Data has announced the imminent availability of Omnis Studio version 3.2. The development version of this new release was made available for download August 7, 2002 from its Web site: www.omnis.net. The company said the product CD would be available by the end of August by request.

Omnis Studio version 3.2 is another major step forward for Web developers and systems integrators with new Web Client and Server database enhancements.

NEW FEATURES INCLUDE:

- Oracle9i and Informix 9.1 Support
- Windows XP and Enhanced Mac OS X Support
- New Multithreaded Data Access Module (DAM) for Omnis SQL
- Sub-Forms for Web Client Remote Forms
- Web Client Method Debugging
- Netscape 6.2 Support
- Blowfish Encryption
- XML Support

For more information, visit www.rainingdata.com.

Revelation Announces OpenInsight 4.1

Revelation Software released OpenInsight 4.1 in August 2002. The fourth release in the past 18 months, 4.1 solidifies Revelation's commitment to providing timely responses to ever-increasing developer needs.

Release Features

- Increased XML Functionality
- OLE Controls in Forms
- Pick Migration Tools
- Linux Support, Win4Lin
- Unicode Support for OpenInsight ODBC Driver

For more information, visit www.revelation.com.

Raining Data Releases Open DB 2.0 and D3 Oracle Gateway

Raining Data has announced the general availability of OpenDB 2.0 and D3 Oracle Gateway 2.0 for D3 releases 7.2.1. OpenDB and D3 Oracle Gateway address application extensibility, interoperability and enterprise-level integration. The company said the enhanced features of these new releases are in direct response to its customers' request for improved open connectivity between D3 and other relational database products through the elegant simplicity of Raining Data's database environment.

With OpenDB, your BASIC applications can now read and write directly to external RDBMS via Super Q-pointers. This same capability is also available from TCL, AQL and the Editor. In Raining

Data's product documentation (<http://www.rainingdata.com/support/documentation/opendb/UserMan.pdf>), you can find examples on how to connect to MS SQL Server, Oracle and MS Access. For applications that require a more robust connection to Oracle, the company offers the D3 Oracle Gateway product with improved performance and row locking capabilities.

OpenDB is a stand-alone Windows application that provides access to ODBC-compliant databases from the D3 environment. Once the connection is established between D3 and the remote database server, D3 is able to read, write and select data from the RDBMS as if it were a part of D3. As far as the end-user/developer is concerned, the remote RDBMS is just another D3 account, file or item. The integration of the two systems is totally transparent. If the remote RDBMS is Oracle, you would use the D3 Oracle Gateway instead.

D3 Oracle Gateway

D3 Oracle Gateway is the solution for integrating D3 and Oracle. It is an OSFI interface that allows the D3 programmer to open, read, write and select data from an Oracle database with all the standard D3 tools such as BASIC, Update Processor, Editor, AQL, etc. This driver creates a transparent transport mechanism that allows accessing Oracle data to become as easy as accessing D3 data. The D3 Oracle Gateway is available on AIX.

Raining Data's complete suite of connectivity products offer adherence to open standards, ease of integration and efficient multivalue access to target platforms.

Continues on page 44

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IS 9/02

new products

Continued from page 43

Monolith Corporation Introduces the PowerServer 5200

Monolith Corp., a premier provider of information technologies, has released its new Intel Xeon processor-based PowerServer 5200. Built with the powerful Intel Server Board SHG2, the PowerServer 5200 provides the ideal solution to the challenges of building, running and supporting departmental and Internet-driven applications. It is validated with the Intel Server Chassis SC5200, a highly reliable and flexible chassis that is designed specifically to deliver the cost-effective performance

advantages of the PowerServer 5200's dual Intel Xeon processors. The PowerServer 5200 supports three PCI-X slots, contains up to 12GB of ECC DDR200/266SDRAM and includes dual channel SCSI.

Brenda McAllister, director of MultiValue Services, stated: "Monolith is pleased to extend our line of Intel-based servers. We have tremendous confidence in Intel's products; their reliability, warranty coverage, and support services enable us to better serve our customers." With over 16 years of experience in the MultiValue industry and a seven-year relationship with Intel, Monolith offers a full line of Intel-

based servers, as well as the services essential to building successful information management solutions.

"We are pleased that Monolith has chosen Intel building blocks for its new high performance server products," said Philip Brace, marketing director of Intel's Enterprise Platform & Services Division. "Our goal is to provide companies such as Monolith with a breadth of server building block products that allow them to focus on their added value in terms of unique designs, complete server solutions and differentiated services."

For more information, visit www.monolith.com.

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A YEAR AND A HALF AGO, Aussie multi-value maven Alan Bull announced that he was getting out of the job-posting business, and the venerable **www.PickJobs.com** would be no more. That news hit Donna Holdsworth of Ft. Lauderdale especially hard.

Donna had recently left her position with an aviation company in Florida, after the firm moved away from MultiValue. She had started with an Altos, the usual romance. Her interest blossomed in a user role, then bloomed into a full-time programming job, and one day suddenly became an unpredictable profession.

She bravely started Pick Me, Inc. doing contract work and web sites. But when she learned that her friend Alan was turning off the famous lime-green and lemon-yellow Web site, well, in her words, "my heart fell."

No faint heart, this. Ms. Holdsworth has taken up the flag, on behalf of all of us. She arranged to move the **www.PickJobs.com** site to a friend's ISP at American Business Network (**www.ameribiz.net**) and now operates the job posting service gratis. She is now struggling to clear out the obsolete postings and addresses, and once again put together good people with great jobs, working with OSDA down there in Florida. Donna believes that more companies would keep their MultiValue application systems if they knew just how many folks there are at **www.PickJobs.com** to help keep 'em running.

BTW: I agree with her. And I think that those of us who benefit from her efforts on our lazy behalves ought to get on up and check it out. *=/srv*

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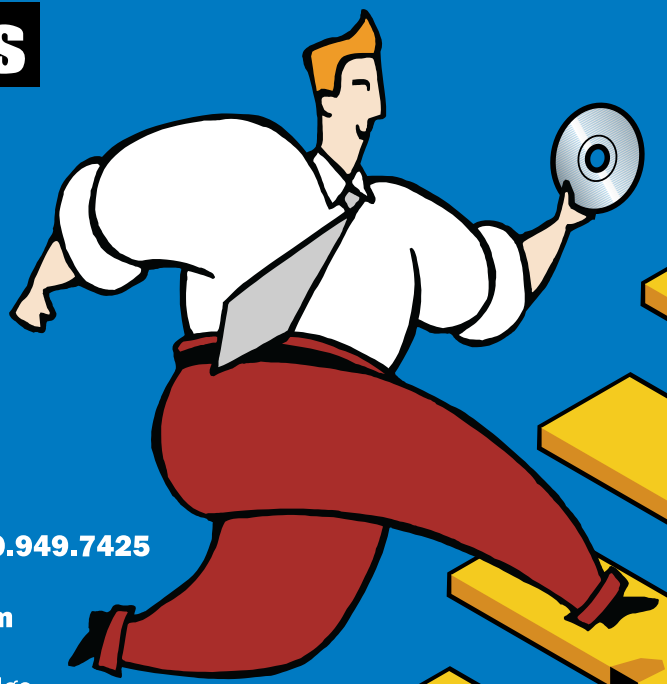
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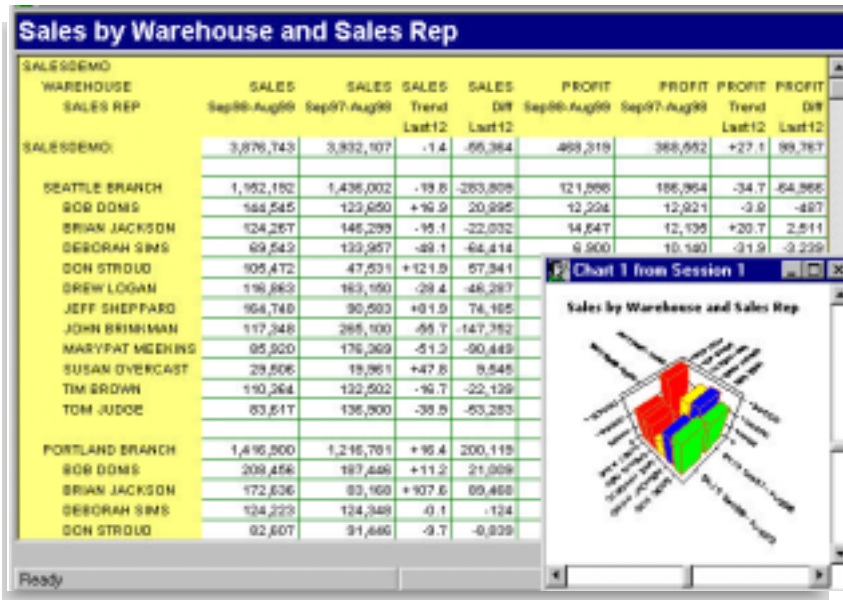
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