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Web Services and
.NET

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I Love My UniVerse, UniData or D³ Database But ...

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[FROM THE INSIDE]

They make you angry. Unwanted pop-up windows and email messages. The other day I was at home watching a program on television, and right in the middle of it, a pop-up ad slithered up into my viewing from the bottom of the screen. At work, I've noticed lately that even our Internet service provider is interrupting the quiet enjoyment of my PC with pop-up ads.

The fact is, in the normal course of things, I really don't mind a "reasonable" amount of unsolicited mail, phone calls and advertisements. If somebody was willing to pay to send them to me, I feel that's their option. It's still always my option to throw them away or hang up.

I remember one time my mother complained to her apartment complex manager that she saw an offensive program on cable TV, and wanted to know what he planned to do about it. "That's what that channel changer is for," the crusty old guy told her. I was on the manager's side back then. If you don't want the junk mail, that's what that trash can is for. Go berserk over telephone sales calls — get an unlisted number. Don't want that email? That's what that delete button is for.

You don't need me to tell you that the problem is that some people are not reasonable. We now know that some of the worst Internet offenders send out millions of emails a day from dynamic IP addresses. Under these extreme circumstances, many people now have to sort through hundreds of unsolicited emails looking for the occasional pony in the pile of crap.

So now, we're going through the usual knee-jerk reactions. There's almost as many new laws proposed to punish the offenders as there are pop-up windows. Next, we'll need a whole new pile of lawyers to argue about what is spam and what isn't. One of the latest trends is to install anti-spam software, however, most of these systems block too many things that you'd like to have as well as the stuff you don't.

I've said this before, but as long as it's free to send email, I don't see how it will ever be possible to eliminate the abuse. Until there's a value placed on sending email, the abuse will continue and get worse. In some circles, our company is considered a spammer, because we occasionally send broadcast emails to people in the MultiValue market who subscribe to this magazine. We use static IP addresses, send only information relative to our business relationship, and we always remove people from our list when they ask us to. I think that's reasonable.

I'll go on record again as being willing to pay for a fair tax to send an email. Then get rid of dynamic IP addresses and tie every computer to a static IP with a physical GPS location. That's the only way we'll ever get rid of the freeloader scum in the pond!

As for pop-up windows, I don't have the solution for that yet.

— GUS GIOBBI, CHAIRMAN, IDBMA, INC. —
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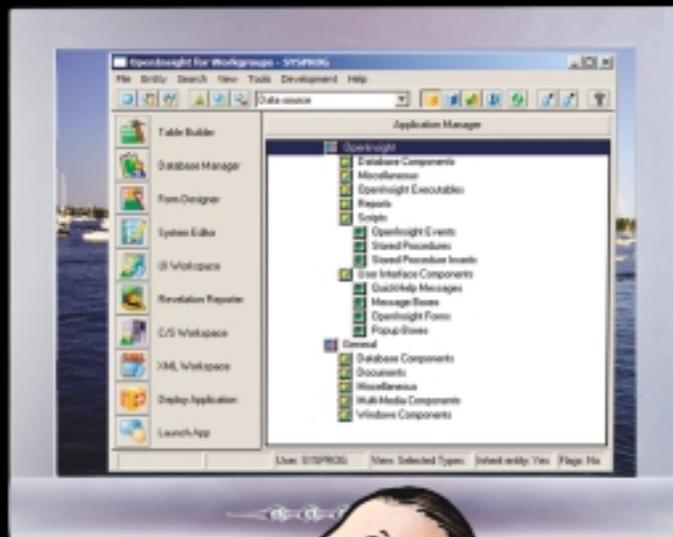
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The Company

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Headquartered in Greenwich, Conn., Nestlé Waters North America Inc. has 7,000 employees, 70 protected sources of spring water, 20 production facilities, and a fleet of nearly 2,300 trucks which source, bottle and deliver its products. Within their four geographic regions in North America, Nestlé Waters makes over 2 million deliveries each month from 80 distribution centers throughout the U.S. and Canada. In every major city, at least one of the Nestlé Waters brands is being delivered every business day.

Managing the logistics of all these deliveries, and efficiently handling the financial side, is quite a task in itself. The talented Information Technology staff at Nestlé Waters has put together a very powerful but cost-effective system consisting of three HP GS 160 servers currently running UniVerse release 10 from IBM. These three servers run four separate databases (one for

each region) and help manage and coordinate all aspects of the operation, including monitoring inventory from the moment it first arrives at the distribution center, scheduling deliveries, and managing all aspects of customer billing and payment.

The Circumstances

Since its inception in 1976, Nestlé Waters North America Inc. has concentrated on a few key aspirations. Among those aspirations are a keen focus on "building customer loyalty" and "constantly improving our company and ourselves." As the company grew, the need to automate various aspects of the operation became apparent. Following these basic philosophies, Nestlé Waters didn't hesitate to move aggressively to meet customer needs and better manage their business. As their market presence grew and new systems were added or improved, more and more customers began to pay for their delivered water with credit cards. These payments were processed through the company's two customer call centers in California and Massachusetts.

In a story now legendary among the IT team at Nestlé Waters, a new manager was hired at one of the call centers. After walking past an employee several times a day for a week or so, he noticed that they always seemed to be hunched over a keypad entering numbers. Finally giving in

to his curiosity, the manager asked what the employee did. The manager found that this employee was dedicated to entering customers' credit card information into a telephone authorization system for payment after the information was captured manually by the call center's customer service representatives.

Recognizing a need to improve the situation, the manager (working in conjunction with the IT department) contacted one of

"When we took the final system live, it was basically a non-event. The technology worked flawlessly."

— Bill Stronge, Nestlé Waters Project Manager

the major credit card companies and arranged to implement a batch system that would capture the credit card information directly from the customer service representatives. Every night, the system would create a file containing all of the credit card transactions received that day. After the file was created from each of the four regional databases and forwarded to the credit card company, a response would come within a few hours, with a list of transactions that were not authorized. Those transactions would then be manually backed out of the database and reprocessed the following day.

By the year 2001, it became clear that in addition to the lag time involved, this system was also requiring too much manual data manipulation. At this time, there were three people dedicated to manually correcting credit card transactions. In

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WEB SERVICES AND .NET: *What Does It Mean for MultiValue?*

BY TONY GRAVAGNO

When it comes to Web Services and .NET, many Pick people are at a loss. What is this stuff? What does it mean to our industry? What's the big deal with XML? Do we have to become a "Microsoft shop"? How can we make money with it, and how much will it cost us? How can we plug our applications into it? Have no fear, you're not alone with these questions. The rest of the IT industry is trying to understand the big picture too.

The technology has been in production for a little over two years, yet the most fundamental questions still confound professionals and lay people alike. Microsoft has done a poor job of explaining the vision of .NET. There are different definitions of .NET for developers and end users. It's difficult to understand what it really is when explanations seem contradictory. Another source of confusion is when people hear about .NET, they hear other terms like Web Services, ASP.NET, ADO.NET, managed code, and so many others, making it tough to define the forest when there are so many different kinds of trees.

This article, and others to follow, attempts to answer many of the questions from a MultiValue perspective. My primary goal is to show how various tools fit with your business applications. I'm enthusiastic about this topic because this new shift in how we use software is largely based on making business rules available for use in new ways. The Pick marketplace is abundant with solid software, tested over many years, that will fit well with the new model. What we need are bridges that allow us to get from here to there.

It's important to note that I intentionally intend to avoid areas that have already been over-explored elsewhere. For example, some of the languages used to create Web Services will be mentioned, but implementation details won't be discussed because we first need to take a view from a higher level. At this point, it's not important to know syntax, but to understand what the code intends to accomplish. Code samples can be found readily on the Internet.

To avoid unnecessary digressions here, I've inserted asterisks* into the text to reference related notes on my Web site (<http://Nebula-RnD.com/Spectrum>).

What is a Web Service?

A Web Service exposes software functions, not just data, for consumption by other software. When you fill in a form on a Web page and submit it, you expect the remote server to execute some function, maybe save your data, and return a response. It's generally assumed that you will be using a Web browser as your client software and that you'll want the results as HTML. But what if you want to use different client software, not a browser but maybe Pick BASIC, and your green-screen application?

Rather than hard coding programs on the server to exchange data with a browser, Pick BASIC application, or even a Palm Pilot, it's to the developer's advantage, and consistent with good programming practices, to keep the programs' business functions separate from the end user/client interface. It's also to their advantage to make interfaces to their functions as standard as possible, so that anyone can under-

stand how to call to their functions and interpret the results. The developer of the client application needs to know where to find the server, what functions are available, and what data will be passed to and returned from the functions.

Various standards are being developed to support Web Services as a common way of enabling client and server components to communicate effectively and securely. Over the years, we've seen many communication "standards." Technologies such as DCOM, CORBA, RPC, and RMI have been developed and have gone through many changes, but there are still problems with using them. Not only do they change unto themselves, but they don't interoperate — at least not without some sort of bridge. Many of these are also language or platform dependent. As a result, a company doing business with many trading partners may need to support many different interfaces. Web Services is a broad label based on the notion that everyone should start communicating using protocols that are language and platform agnostic. We shouldn't know or care what kind of system our business associates use.

So who's using Web Services? The technology has been in development and use for a couple years but it hasn't really "taken off" yet. Industry analysts are still wondering if we're going to see a boom, or a bust in general acceptance. It seems that most companies working with Web Services now are using it to get their internal systems communicating. Larger organizations may have many different systems, and it's difficult to get all of them communicating, so Web Services are currently being used more widely over intranets and extranets. The next largest group of adopters are B2B trading partners — companies who want to do business but don't want to use EDI or custom protocols. As the mainstream IT world becomes more comfortable with the concepts and finds more uses for Web Services, we'll start seeing them more widely adopted.

To apply all this to our Pick world, one of the stigmas we face is that outsiders (and many insiders) don't know how to get data to and from our systems. The sales process can get bogged down if we get stuck discussing languages, protocols, or database models. Most savvy salespeople will tell you that they sell business application software and solutions, and these other discus-

sions should be avoided. But when people do ask what interfaces you support, at some point answering “Web Services” may be the only answer you need at that moment. Further, when I say “the mainstream IT world,” I’m including the Multi-Value community as well. We have an opportunity here to follow along with a paradigm shift, rather than following behind one, as we sometimes tend to do.

How Does a Web Service Work?

I want to avoid real code, but to explain how Web Services exchange data, we can get a little more technical. In Pick BASIC you can pass a dynamic array with “Call MySub (array)”, and on the other side we find “Subroutine MySub(params).” We know, because we’re Pick people, that a dynamic array has attributes, values, and subvalues — and the BASIC programs know how to logically structure the data for these calls. Other people don’t know these things, so we can’t expect them to call our subroutines and pass us a dynamic array. To bridge the gap between different ways to represent data and to exchange this data via Web Services, we use XML. XML wraps “tags” around data

to make its meaning clear. Rather than sending 12^34, we’d send <onhand>12</onhand> <onorder> 34< /onorder>. Yes, the price we pay for standardized communications is bloated data representations.

A single Web Service often provides access to multiple functions, or “methods,” which are equivalent to our BASIC called subroutines. As we saw above, we can exchange dynamic arrays between our own subroutines, but XML is used between different systems. When we call a BASIC subroutine, we expect that the Call statement will be processed by a compiled BASIC Subroutine. With a Web Service though, we have no idea what kind of system will be processing the request. We need to send the request in a format that any system should be able to understand, regardless of the platform or languages used on that system. For this, again, XML is used, but in this case, the data also includes the name of the function (method) we intend to call on the remote server. The client code, or the consumer, sends a request that looks something like this:

```
<server>remotename</server>
<method>functionname</method>
<data><onhand>12</onhand>
<onorder>34</onorder></data>
```

But wait a minute — I just made up those XML tags. We need some standards to more clearly define exactly what those tags represent so that the request can be properly routed to the server, and when the service provider receives the request, it knows exactly what to do with it. Enter SOAP. SOAP is a “standard”* that almost everyone now follows when implementing Web Services. SOAP defines the specific XML tags that are used to allow a client/consumer and a server/provider to communicate.

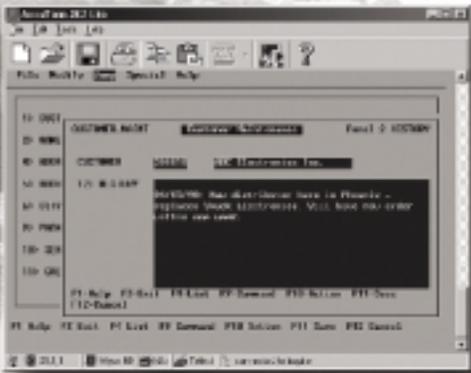
How do SOAP/XML requests and data move between clients and servers? Most Web Services are run through a normal Web server like IIS or Apache. That sounds obvious but using an HTTP server is more of a convenience than a rule; in the future we’ll see Web Services run over other protocols. For example, you could send a SOAP

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request via e-mail to a server that's configured for it. (SOAP over SMTP is a hotly debated topic, I'm just citing an example.) You can set up any TCP socket* to read and process SOAP requests, but the most popular way today to accept requests and return results is with an HTTP server, just like requests for Web pages.

So What is .NET and its Relationship to Web Services?

Microsoft .NET is a strategy and far reaching vision which changes the way we write and use programs. It's not a product, a language, or operating system, and most importantly, .NET is not just Microsoft's name for Web Services. One of many goals of .NET is to facilitate creation and consumption of Web Services. Web Services are just a part (big part, granted) of a much larger vision which .NET defines.

So what's the grand vision? Due to mixed messages coming from Microsoft, it's a little blurry, but it does become more clear over time. Many people working with .NET every day are still having difficulty "getting it." I can tell you that after months of researching .NET-related topics, the more information I review the more "aha" moments I've had. It's like a long book that reveals its plot right at the very end. Fortunately, this article focuses on Web Services, so I can dodge discussion of the bigger picture — for now anyway.

.NET provides different ways of working with Web Services, but .NET is only one option of many for actually implementing Web Services. To their credit, Microsoft has made it VERY easy to implement Web Services as a provider or consumer with .NET. The documentation is superb and extensive, the tools are stable, and there are countless Web sites and books on the topic. Of course, Microsoft is very focused on getting everyone to use Windows, so if you're going to use their tools, you must be using Windows. What this tells us is that it's not Web Services that are platform-specific, but rather the tools that Microsoft produces for implementing Web Services that are platform-specific. If you would rather not use Microsoft's tools to provide/consume Web services on Windows, there is no requirement to do so.

There are some Windows-based tools of note which take advantage of the .NET Framework* for Web Services development. If you wish to examine these tools, the .NET Framework software is very safe, co-exists in harmony with all other Windows software, and is freely downloadable from Microsoft.

The first development tool of note is Microsoft Visual Studio .NET. With a couple clicks you can create a client or server interface for existing functions. The interface is called a proxy, and functions like a translator. You tell the proxy what you want to do. The proxy translates that message into XML following SOAP guidelines, sends it via HTTP to a server, and returns the response from the server as familiar data types like strings and integers. You don't need to see any XML, or any other "foreign stuff" to consume a remote service. For a server, you write your functions, and then tell Visual Studio to expose your functions as Web Service methods on your Web site. When a remote consumer executes one of your methods, the SOAP/XML translation for request and response is done behind the scenes. The question of how to provide or consume these services from your MV code will be addressed in a future article.

Next is Borland's new C#Builder. Creating a proxy for a client or server is as easy as with Visual Studio. Unlike Visual Studio, licensing for C#Builder starts at "free" for the Personal Edition — see <http://www.borland.com/csharpbuilder/>. In this category, Borland also has Delphi Studio and C++Builder.

Maintaining the distinction between Web Services and .NET, there are many other tools for developing Web Services clients and/or servers without .NET. Examples* include Sun ONE products from Sun Microsystems, WASP from Systinet, Komodo from ActiveState, JBuilder and Kylix from Borland, many offerings from IBM, and even more options from the open source community, to be discussed in the next article.

Summary

In this first article I've defined Web Services from a MultiValue perspec-

tive, and even if .NET hasn't been entirely defined yet, it's clear that .NET is only Microsoft's way of implementing Web Services. Other non-Microsoft implementations do exist, and you don't need to be a Microsoft shop if you want to provide or consume Web Services.

In upcoming articles I'll discuss the strategic and tactical reasons why you should or should not adopt Web Services and/or .NET. I'll go over options for coding Web Services with different languages and on different platforms. I won't provide specific code or how-to's; understanding the many options is an adventure by itself. I'll provide information about the options available to us in the MV community, including the Pick Data Provider .NET from Raining Data, the SOAP/XML Gateway from Cromwell Business Systems, Steve Lake's freeware server component, Capillary, and others.

As we go further with this material, I hope you will start to think of your software more in terms of the value it has as a remote resource to other software, and how value can be added to your software by consuming services from other providers. Applications include inventory or shipping status; submission of orders, invoices, or claims; customer or patient address or status inquiries; and so many others.

For follow-up information to this article, including the *references, or to send your comments or questions, please visit <http://Nebula-RnD.com/Spectrum>. is

TONY GRAVAGNO is founder and chief software architect of Nebula Research and Development, specializing in software and services that help developers and resellers add more value to their own offerings. Tony has been involved with the Pick market for over 20 years and has held the titles of QA Manager at Pick Systems and DBMS Product Manager at Raining Data. His latest activities include developing B2B interfaces for customers, and serving as Technical Editor for the new book from SAMS Publishing, C#Builder KickStart. He is often found in the Usenet forum, comp.databases.pick, and many other Pick-related discussion groups.

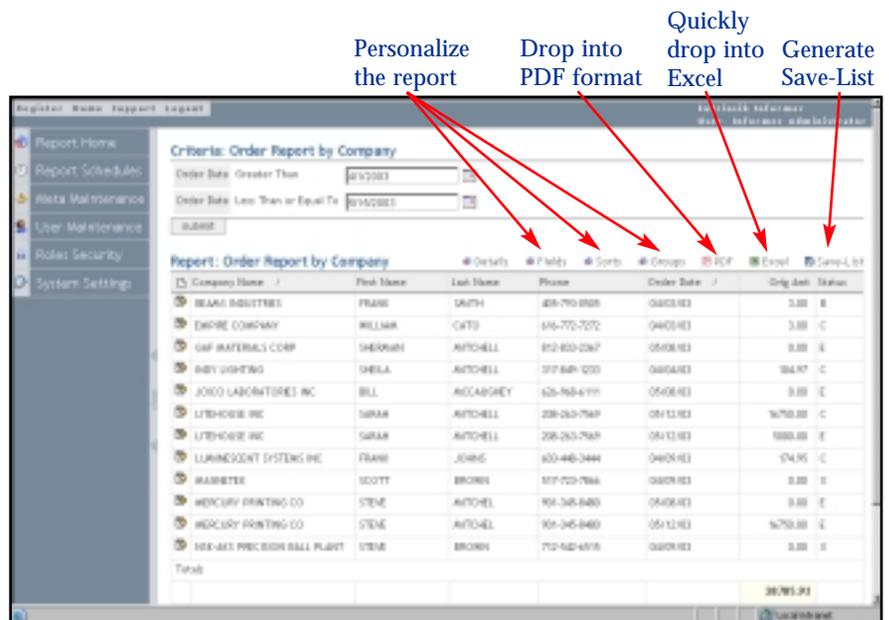
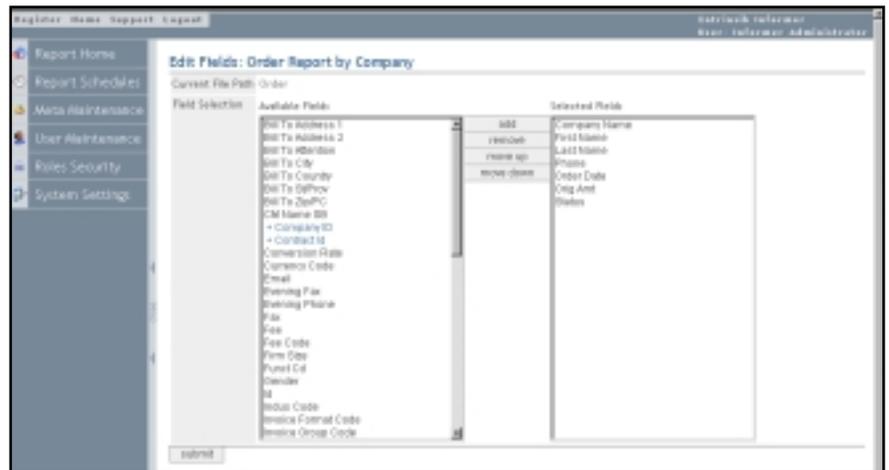
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Beyond Borders: MultiValue Thrives Worldwide

MultiValue has been a worldwide presence for decades; its ease of use, simplicity and affordability transcending borders, languages and cultures. In today's economic circumstances, many companies are focusing a new on cultivating business in regions outside of their traditional scope. The return of the Spectrum Exhibition and Conference to the U.K. (London, Sept. 25-26) and Sydney, Australia (Oct. 23-24) has generated much excitement from exhibitors, end users, and developers who want to convene with others who have the same thing in common: MultiValue. *Spectrum* checks in with several companies who are actively participating in the international MultiValue market.

Product News

jBASE Release 4.1 Features Major Enhancements

jBASE release 4.1, the next step in MultiValue technology, has recently been made available. Major changes in this new release have improved jBASE in many areas. In this major release, a great deal of functionality has been added to make your job even easier, whether you are a developer, an administrator or a user.

Performance improvements top the list — some of the features have been redesigned from the ground up to speed up jBASE and improve an already best-of-breed performer, jBASE International said. For example, current users will find that their jQL use has been speeded up substantially.

Users will find that jBASj41

E is even more flexible in several areas. Developers win with the ability to integrate XML into their applications, to use .NET and Java more extensively, and use the multi-threading features of the languages. A new file type has been added, jPlus files, which offers the ability to use

large files (greater than 2GB) without administrative headaches. jPlus files also include various secure levels for enhanced robustness.

Adding ease-of-use features was also an objective of this release. Administrators will be greeted by a new graphical administration tool, which provides a much more intuitive interface into managing the system. In addition to the current profiling tools, there are many new monitoring tools which will allow people supporting jBASE applications to investigate the system to find out what is going on much more easily.

Release 4.1 is also geared toward enabling jBASE VARs to expand their market into places where only jBASE can take them, the company said. By supporting the UTF-8 standards, jBASE now includes the ability to globalize and localize applications and data, making it more friendly in regions where English is not the language of choice. New platforms include support for the IBM iSeries (AS400) which opens whole new vistas for software developers.

jBASE Enables Database Interoperability with Caché

M/Gateway Developments Ltd., a software house in the U.K. that specializes in integration, enabling and middleware technologies for Caché, has extended its offerings using the jBASE jEDI technology. M/Gateway has provided the ability to access Caché files, in real time, from a jBASE application as if they were native jBASE files, allowing jBASE and Cache to coexist and cooperate.

The unique jEDI architecture is the enabling interface which this jBASE Value Added Reseller utilized to interoperate with existing data held in a Caché database while converting its application to a jBASE application. Any application written using any tool of the jBASE product suite, e.g., jBASIC, Java or COM OBJEX, can access other data stores as if they were native jBASE files with no change of application code.

Currently, the list of databases which can interface with jBASE applications via the jEDI architecture include DB2, SQL Server, Oracle, other MultiValue databases, Progress and now — Caché. **For more information, contact Sharonc @ jbase.com.**

MultiValue Applications on Oracle - ONware Now Available in Australasia and the U.K.

See How UniVerse, UniData, PICK and Prime INFORMATION Applications Can Run on Oracle9iAS in London, Sept. 25-26 and Sydney, Australia, Oct. 23-24

At the upcoming Spectrum shows in London, England, and Sydney, Australia, ONgroup will be showing how simple it really is to redeploy MultiValue applications on Oracle. Oracle9i Application Server, when licensed through ONgroup or its distributors (Apscore in Australasia), now includes a MultiValue API. Many large organizations, including VARs, government agencies, universities, healthcare, financial institutions and Fortune 100 companies are redeploying mission-critical, MultiValue applications on Oracle. Few, if any, changes to the MultiValue applications are required to make the transition from PICK or U2 to Oracle.

Oracle Corporation, in partnership with ONgroup, is providing a MultiValue feature set with Oracle9iAS that supports applications developed on the common MultiValue platforms. BASIC programs, dictionaries, paragraphs, PROCs, sentences, commands such as COPY, LIST, GET.LIST, CREATE.FILE, DELETE, SELECT, SORT — the common MultiValue features — are implemented and work the same as they do in a MultiValue environment. A UniObjects-compatible interface is included as well; so graphical applications that use the UniObjects feature set of U2 will continue to work the same after the transition to Oracle.

With Oracle9iAS and ONware, the unique technology from ONgroup, the problems other MultiValue platforms face when trying to run MultiValue applications in a relational world are gone. Now your existing MultiValue applications can run on Oracle and use industry standard tools such as Crystal Reports and Java to create new applications and update the old.

International Spectrum, October 23-24, 2003

At Spectrum 2003 in Sydney, October 23-24, you'll be able to hear Stuart Fenwick, regional manager, Application Server Solutions, Oracle Corporation Australia Pty

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Northgate is pleased to announce that we will be offering Reality Quickstart — an evaluation version of Reality plus a free day of consultancy to get you started — at International Spectrum Conferences in London, Sydney and U.S. locations.

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Entrinsik Releases **Informer v 2.0**

Entrinsik has announced the general availability of Release 2.0 for its popular Web-reporting tool, Informer. Informer enables direct Web-based reporting from IBM's U2 family of relational database management systems.

Informer has a host of features that provide executives, managers, and key administrators easy interactive reporting from very complex database structures. It provides users direct and fast access to U2 database files utilizing UniObjects while presenting the information in an interactive HTML format on their Web browser. Retrieved data can also be dropped into an MS Excel spreadsheet, dropped into Adobe PDF file, or emailed.

Informer allows for customization of data views "on the fly" through sorting, grouping and field selection. Security is managed through a robust role-based mechanism that controls who has access to Informer's powerful features while limiting data availability by role down to the data element level. With Release 2, Informer can optionally be integrated with LDAP User Access Management systems.

Unlike other reporting tools, which flatten the U2 data structure to a more SQL-like format, Informer preserves the power of the U2 RDMS data structure and avoids the overhead of data translation. It supports multi-values and facilitates dynamic table joins. Informer also can schedule reports to be delivered via email at a given date and time. Scheduled reports can be run once, daily, weekly, or monthly.

"We are excited about Informer and the power it gives our customers to access their data," said Doug Leupen, president and CEO of Entrinsik. "Informer has become extremely popular with our SEMtek customers and now is gaining a large fan base with other U2 application software users."

ABOUT ENTRINSIK

Entrinsik Inc., headquartered in Raleigh, NC, provides software and services focused on event producers. Entrinsik's SEMtek product is the industry leading enterprise software for continuing education, training, and conference providers.

For more information, please visit

www.entrinsik.com

newsmakers

jBASE International to Hold Fourth Annual User Conference

The fourth annual jBASE User Conference will be held in Las Vegas, October 29-31, 2003, at the spectacular Palms Casino Resort (yes — the hotel on *The Real World*). This year's offerings should be very informative as there is a lot more detail on the latest release of jBASE as well as information about a wealth of new product offerings. Of particular interest to jBASE customers are the practical sessions given by other members of the jBASE community about real-life "powered by jBASE" implementations such as: Developing Web applications with Java ObjEX; Real world enablement of J2EE on jBASE; and a next generation jBASE Web Builder application.

As always, there will be technical breakout sessions on core jBASE functionality and advanced development tools such as interfaces with MQ Series and interoperability with relational databases such as Oracle and DB2. As a special option this year, there is a day long technical briefing on jBASE Release 4.1 scheduled for October 28, 2003, the day before the conference actually starts (limited to 25 people).

For more information or to register, visit the new enhanced jBASE Web site at www.jBASE.com.

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Consumer Chronicles

Continued from page 8

order to keep with the principles contained in the company's aspirations, IT Project Managers Bill Stronge and Joe Fagan united to find a new solution that would improve the company's ability to manage their business and better meet the customer's expectations.

The Search

The team began an extensive search for plausible alternatives. Finding something that would truly give them what they needed, however, proved difficult. Nestlé Waters examined and discarded multiple options. As Stronge says, "Our goal was to be able to do live calls straight from our system, with the authorization in real time." Fagan adds, "We also wanted easy integration into the Pick environment... We needed a Pick-based product. We didn't want another server sitting somewhere for our team to broker."

In addition, the system had to be able to handle the volume of required data. Stronge says, "Our nighttime batches were huge... There was no way we wanted to continue waiting four or five hours for our authorizations and settlements to happen."

Finally, Stronge spoke with Jeffrey Kaufman at Key Data Systems. Kaufman had worked with Fred Tuttle and the team at Total Computing Solutions (www.totalink.cc.com) on other projects. Based on his personal experience with them, he didn't hesitate to recommend the company's TotalLink credit card processing product. After a thorough evaluation, the team at Nestlé Waters felt that the TotalLink product was exactly what they needed.

The Solution

They found the TotalLink product provided a full-featured credit card authorization and settlement capability. All major credit and debit cards were supported. The system was designed for easy integration with Web-based e-commerce systems and allowed for both batch and real-time processing modes. In addition, the product included a very robust reporting capability, allowing visibility to transactions based on merchant, register, batch, date or other variables.

Like many companies its size, Nestlé Waters has high standards when it comes to form-

ing vendor partnerships. With a corporate philosophy that focuses on customer loyalty, they feel they have an obligation to their customers to expect the same kind of performance from their suppliers. Stronge states, "Nestlé Waters is very demanding as a customer." Nestlé Waters also had high expectations. Stronge says he gave a very significant challenge to Fred Tuttle of TCS: "I told Fred we wanted our credit card transaction system to be able to grow 100 percent in capacity every year for the first five years."

The IT team at Nestlé Waters began modifying their major systems in January of 2002 and initiated the first test of the new credit card system in April of that year. The TotalLink product integrated very well, but as with every IT project, there were unexpected developments. But at each stumbling block, the TotalLink team proved up to the challenge. Stronge points out, "We encountered a situation in our hardware configuration that caused communication problems because of the volumes we were running through our modem pool. We needed a true IP-based solution... Even though it was really a hardware problem, Fred and his team took on the challenge of solving it for us."

Fagan agrees with Stronge's assessment of the willingness of the TCS team to go the extra mile to meet their needs. "We originally started out with the system on UniVerse 9, and we had a little hiccup when we upgraded to UniVerse 10," Fagan says. "I called Total Computing Solutions and there were no questions asked. Their programmer was up half the night helping me modify our systems." Stronge adds, "Anytime we have called Fred's team, they have been extremely responsive. They are one of the best vendors I have ever worked with in an IT organization. They give top-quality service."

The Results

Because of the hardware communication problem, the Nestlé Waters team went to the extreme in testing before they took the final solution live in July of 2002, testing its mettle and trying their hardest to break it. As Stronge says, "When we took the final system live, it was basically a non-event. The technology worked flawlessly."

The worry the Nestlé Waters team had about transaction volume has continued to be proven a non-issue. Stronge illustrates the point, "No matter what volume we are running, and we often have as many as 400 users on the system at once, authorizations and settlements run about 3 seconds." Says Fagan, "If the volume goes up too high, we can just add a new authorization or settlement thread and the system handles it seamlessly." He adds, "Our final settlement process used to run all night long. Now it is 20 minutes on a bad day. Our delays are now all dependent on other parts of the system, not the credit card application."

The Benefits

The installation of TotalLink has significantly changed the way Nestlé Waters North America Inc. does business. Stronge points out that the company previously was tentative about promoting the ability to take credit card payments. "Before we installed TotalLink, we did not really market or 'push' our ability to take credit card payments because we couldn't handle the volumes." Adds Fagan, "Basically, the only way we would do it was if a customer specifically asked if they could." But with TotalLink installed, Stronge points out that his aggressive expectations for growth have proven correct. "From January of 2002 to January of 2003 we did a 100 percent increase

"From January
of 2002 to
January of 2003
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increase in credit
card transactions
because we can
now encourage
customers to
use it."

— Bill Stronge, Nestlé Waters
Project Manager

in credit card transactions because we can now encourage customers to use it." And the company is on track to double its volume again this year. On high volume days, the TotalLink system now handles as many as 30,000 transactions. "We have told our company 'You cannot break it, we can just open up another port,' but we haven't had to do that. Even on our heavy volume days, the product just works."

In addition to constantly improving the company, the other part of the Nestlé Waters philosophy is to build customer loyalty and TotalLink has delivered there as well. Stronge explains that their telephone representatives are very pleased with the TCS solution. "I have heard from them that, because of TotalLink, we have a better understanding of the customer and a much quicker turnaround time."

The management team at Nestlé Waters is enthused with the resulting improvement in the company's financial performance. TotalLink has enabled them to dramatically reduce the "float" time between billing and settlement. Stronge explains, "One of our key metrics is the number of days sales are outstanding which is normally about 20 days. But with TotalLink, the bill for our recurring credit card customers is paid on the same day it is generated."

The capabilities in TotalLink have brought along a few unanticipated benefits, too. The report features in TotalLink give Nestlé Waters a much closer handle on their business. Says Fagan, "With TotalLink we have much more detailed reporting than we have had in the past."

But what really excites the IT team at Nestlé Waters is the flexibility the TotalLink product provides them. The Nestlé Waters' call center has an inbound telesales application written in Visual Basic (VB) for its representatives to use when a new customer calls in to sign up for water delivery service. The sales group wanted to be able to immediately take the customer's credit card information in the application and authorize them for service. "We were wondering how we were going to do that, because we didn't want to create an entirely different authorization system in VB," Fagan says. They also didn't want to have to rewrite a system that was working well. But with a little investigation, the team found that they could easily tie the VB system into the existing TotalLink solution—problem solved.

Stronge illustrates another change the company is making. "We have one of the first 'e-service' sites for a bottled water company," he says. "You can even pay your bill online. We didn't have TotalLink when that system was created, but we are currently in the process of rewriting it. We feel so confident in TotalLink at this point in time that we are going to have it handle all of our live transactions from the Web site as well."

He continues, "And there are other things already built into TotalLink that we are going to take advantage of. Things we could never do in the past without having days and days of working at it. We aren't even utilizing it to its full potential."

The IT group also enjoys the ability they now have to implement new capabilities with a minimum of fuss and worry. Fagan states, "TotalLink has given us an amazing amount of freedom and confidence. We are currently implementing a new Integrated Voice Response solution. We knew because we had TotalLink that we had the capability to let the customer pay their bill over the phone." Stronge echoes this point, stating, "The customer can call up, say their credit card number and pay their bill just like that

... and it all runs through the same TotalLink system we have already implemented. It integrated very smoothly ... we simply wrote a small routine, plugged it into the TotalLink solution and we were done. In an ever-changing world, TotalLink has proven to be a very flexible product."

When asked to sum up Nestlé Waters' experience, Stronge doesn't hesitate. "We have never had a challenge that TotalLink could not meet... I don't think there is anyone out there that can come close to the TotalLink product. I would implement it again in a heartbeat."

Nestlé Waters North America Inc.'s Web site address is www.nestle-watersna.com. is

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mation, contact (866) 796-7600 or (801) 796-

8320, info@totalink.cc; or www.totalink.cc.

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Harvesting Your Own Project

There is an old law that trips up good intentions. It's not complicated, but I know it's easy to forget. In fact, I forget it. Anyway, it has to do with being prepared when there's bad news to deliver, but being better prepared when there's good news. Or something like that.

Let's start with what we know.

- 1** A project is a temporary endeavor to create a unique product or service.
- 2** All organizations do projects.
- 3** Most projects are planned.
- 4** Most projects exceed the planned budget or schedule or both.
- 5** All projects that "exceed-budget-or-schedule-or-both" are audited ... formal or informal, regretfully or seriously ... but always too late.
- 6** Good projects that don't exceed budget or schedule are not audited ... and shamefully waste value that you created.

The "Good Stuff" — Value Lost Without An Audit

If you do *anything* and don't examine what you did and write down what you see/saw/heard/felt, you *give up*: the experience, the human sacrifice, the organizational torque, and the mistakes+triumphs+failures+frauds. All the "good stuff." And don't believe any of that lame excuse about remembering it all "up here." Anything that resides in the personal store of a Subject Matter Expert that isn't actually written down is called Opinion.

Here's an idea. Let's get a jump on things that are going wrong, before they do. Why not take advantage of those projects where your team did everything right, and get **all** the credit that you so richly deserve.

It's easy to do it up right. Get your projects audited. When you do, and even if you don't, audit them yourself.

First off, let's make sure that we address a common misconception. A good audit isn't just for the boss. A good audit benefits the project team and the sponsor more than the executioner. It's true that sometimes the audit results are used to bash somebody, or to assign blame. But a good auditor is there to find the gold as well as the merde. And to make both visible ... like when a project is late because the deliverables were gold-plated. And all projects have problems, but sometimes wiping the dirt off the bad bits of the project can bring out the silver lining ... like when an inexperienced team member took too long but became an expert. The important thing is that only a seriously twisted auditor makes it a goal to punish the gallant who toiled. A good auditor relentlessly seeks out the facts, and publishes the good news and the bad on the same billboard. It's to your benefit and your team's benefit to get an audit and make certain that the auditor is helped or at least not hindered. The rule is: A "good" audit is not a favorable one; that's just PR. The only Good Audit is one that produces news you can use.

What is "news you can use"? It's all the lessons learned and experience obtained during the project. You'll use it when you plan your next project, and your next promotion. A database of this stuff is worth its weight in gold. The project auditor is actually your personal historian. He is the archivist ... the little ant at the foundation of your growing expertise, laboriously adding bit by bit to your knowledge base of:

- ◆ How long it takes to do specific things.
- ◆ How good are estimates.
- ◆ How good are **your** estimates, and those of others.
- ◆ What common things happen in your organization, and to whom, and how.
- ◆ What has to precede what.
- ◆ What to do, what must be done, and (eventually) what **could** be done.

So what does it take to get a good (productive) audit? Not much, so it's surprising how little effort it takes, and how few times it is done. An auditor can actually spend more than 50 percent of the time, and half the client's money, doing stuff that could have been done to make the audit easier and more productive. Here's the short course in what the project auditor does.

1 Make a "Work Breakdown Structure" (*deliverables => activities => milestones => scheduled costs*). We talked about the WBS in previous articles and there's a wealth of info out on what they are. In any case, a WBS is easy to do after the project is underway, but it's best to make one beforehand. Everything becomes easier after everyone knows what has to be done. More importantly, the WBS tells the auditor and anyone else who is interested: 1) Exactly what is expected from the project, and 2) what is related to how and how much and when. It's like a map. Here's an insight: a work breakdown structure is not necessarily long, with a lot of levels. The deliverables in the WBS and the levels of detail are actually determined by some-

thing that comes later, namely, how long it takes to deliver them. The level of detail in the WBS is supposed to stop at the level where the amount of work is approximately the level of control (period of follow-up). At some places, this was a month, and can be as much as a year, but for most projects it's about a week of work or forty clock hours. More detail than this is usually an unnecessary burden; you never want to see a work breakdown structure that has elements that take an hour to complete, or a month.

2 Record progress, at an adequate but appropriate level of detail. This is the tricky part. It's much easier to do this from the very beginning of the project. The results are more revealing, and more valuable, but the real reason is that the data is more accurate. If the measurable milestones are concise and frequent enough, it's easier to know when they are done ... and more importantly when they are late. The rule of thumb is 40 hours or less. Maybe this means that on a large project that the milestones become "inch-pebbles"

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◆ *At 50 percent check the goals. After step 4, this is an easy step.* Using the goals checklist (and your secret remedies list) “verify” the Scope by determining if each goal is or will ever be achieved. Determine if the goal has been changed, or even simply “re-interpreted.” For example, will all the testing of this goal or deliverable be possible, or even necessary? Have features been curtailed? Or have any features been added? Are any additional deliverables underway or necessary? Most important: confirming with the original sponsors and stakeholders that the preliminary results still match the original expectations, and documenting any changes. You’ll look like the hero or heroine you actually are.

◆ *At 75 percent, tune the project’s course using Earned Value and the “Sextant.”* This is a good time for a cool hand on the reins of the project. Intervention between 50 percent and 75 percent completion is rarely resented, and usually most effective. This is your best shot; make it a good one. Here’s a suggestion: the Project Management Institute recommends the Earned Value technique for calculating progress, and MS Project spits out the numbers automatically. So I put them into a projection that predicts the final outcome of each project goal or deliverable. With this kind of information you can find out what’s hindering the ones that are off-course, and make it a sincere team effort to get everybody on track.

◆ *At 85 percent, bayonet the wounded and clean up the mess.* It’s time to cull out the project deliverables that will not make it this time. Meet with the sponsors about each deliverable or goal that is not at least 90 percent, five percent ahead of the project. Let’s not kid each other any longer, but let’s do the honorable thing. Either defer them to another project or spin off a white space initiative to get them done off the clock.

◆ *At 95 percent, plan the finish ... “tune” the deliverables and order the band.* You know what plays well in your patch. If you’re new, do what I do: research a recent project that was considered a resounding success. Tailor the project results in a way that highlights the accomplishments and the heroes. Analyze the project shortcomings, and turn each into a Lessons Learned scenario. I’ve never been involved in a screw-up yet that didn’t have a reason, and

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but it certainly is easier to detect a misstep while watching one foot at a time instead of from 30,000 feet. Are you worried about all the work involved in recording the progress of each of these tiny steps? Consider having week-long milestones and a weekly team status party. Or perhaps a time recording system that gets updated every time a program or a document or a deliverable is started, and when it is finished, or on Friday midnight, whichever comes first.

3 *Compare progress to actual, while in-flight.* Some people like to call these progress reviews, or quality checks, or status reports, or phase gates. Whatever you call them, do them regularly, and frequently. Whether it is formal, in front of a funding inquisition, or informally on a cafeteria napkin that gets tacked on the war room wall. Here’s a good idea: since you’ve now broken the work down into deliverables, and established short duration “inch-pebbles” with a known start

date, end date, and cost, just calculate the cost variance and the schedule variance for each active task and publish these two simple statistics. A few minutes on the spreadsheet per week, tops. Just please remember to document and save the details on each and every completed task. It’s the stuff I use to create the knowledge base during the audit, and recreating it later is very expensive.

4 *Go back and set measurable goals ... and next time do it first; it’s more interesting.* This step is sometimes tougher than it seems. Make sure the goals documented for your project have a set of delivery criteria. If your project has a formal set of goals, add detail to them by identifying exactly how you will show the sponsor that each specific goal is achieved. Document for yourself how you will know if it is not achieved, and what will be done to correct the problem, even if it is to cover it up. The important thing is to have a checklist for each and every goal, including the deliverables that are necessary to fulfill the goal.

that usually leads to a silver lining for somebody. Harvest the silver linings and create a plan to salve the bruised feelings about each with some simple but sincere recognition in a public forum.

◆ *At 100 percent, kick the residue under the rug and bask in the glory.* Don't just deliver the results like a bundle on the doorstep. Assemble the important stuff and archive the rest. Then hold the party in the best venue that you can afford.

◆ *At 110 percent, assess the damage (an audit) and then don't forget to reap the reward.* This is the payoff. It is not uncommon to see the project manager lay down his cards, win the hand, and walk away leaving the pot on the table. It is much, much harder to wrap up a good project properly than it is a bad one. Who pays an auditor to document a known success? You do, if you want on-time, on-budget projects to be the 70 percent norm instead of the 30 percent exception.

So this is where you make your presence felt. Not with a archive job, or with a pedantic crossing of the tees and dotting

of the eyes. But with a mini-project after the big project. Here is where one converts all the boring information collected during the last half of the project into a useful, accessible audit report. I favor a database, cross-referenced by text and data, date and time, deliverable and "deliverer." Other approaches include standardized forms in large binders. Whatever approach you take, whether you do it yourself or hire a project auditor to do it, the result is your Knowledge Base, and the very best way in the world to plan the next project. You earned it, you should get it and you should get to keep it.

So what's your next step? How are you going to cash in? Here's a final suggestion. Try out these steps right now, on a project that's in progress. Quit whining about how much time it will take, and just do it ... in the long run it probably will save you some time and save the organization some money. After the project is "over" (at least 95 percent), get somebody to audit your work. If you don't want to use a third party, get somebody in your organization who didn't

work on the project and has no skin in the game. Give them your records and your time to understand what went on, and ask them to write an audit report. If the project is a success, your valor is documented. If not, you'll be the one who blew the whistles, and you'd better be prepared with your excuses. In any case, doing your own homework, in advance, pays off handsomely at the end, win or lose. =/s

STEVE VANARSDALE

(steve@vanarsdale.com) is a

consultant and project manager in Chicago (which he calls "the heartland"), and now under contract as senior project management consultant for the firm, PM Solutions, Inc. This company, he says, makes sense, and he is finally getting to put his "heartland" into the work.



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PDDA

BY NATHAN RECTOR

User Interface Guidelines: Palm OS Part 2

In the last issue, I talked about the different types of controls that are available, and what they are best used for. This issue, I'll talk more about the user interface guidelines specific to the Palm OS program.

Most of this information was gathered from some really good articles and documentation supplied at Palm's Web site. From the beginning, they have focused on trying to make all applications written for the Palm OS follow a standard guideline. The information I'm including in this article is a summary of this guideline.

Control Placement

Place the most frequently accessed controls near the bottom of the form. The user interacts most often with the graffiti section and the buttons on the bottom of the device. Putting the most frequently used controls near the bottom of the form, places them closer to this area of the device, making them quicker and easier to access.

Since most people are right handed, many will hold the device in their left hand and the stylus with their right. Because of this, I would

recommend the most used fields to be placed on the right hand side of the screen.

I've said this many times: Do not clutter the screen. Palm OS devices do not have a lot of screen area. Since the Palm is a device that is used mainly for quick review of information, people tend to process the information as a picture. If you clutter the screen, then it requires the user to read the screen in order to process the information, as opposed to glancing at the screen.

Use spacing instead of lines and boxes to separate user interface elements into logical groups. Lines and boxes add to screen clutter and actually make the small screen harder to read.

Labels

Provide a label for any control or option that requires further explanation. Right justify the labels and left justify the fields.

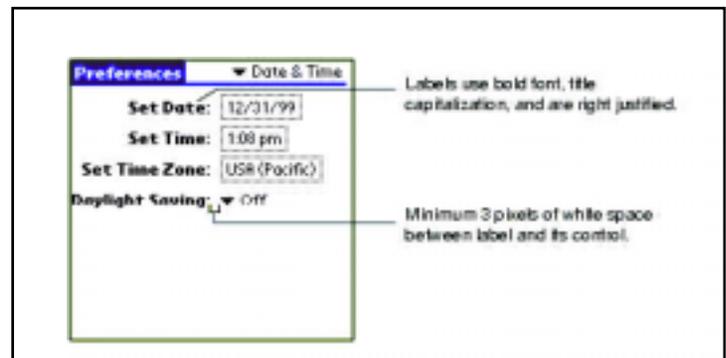
Use bold font and capitalization for the first letter of each important word in the label. This helps make the labels easier to read.

Displaying Data

To display data, you can use text boxes, tables, or lists. Text boxes are good for allowing free-form entry of text and for displaying large documents. Tables and lists display columnar lists of data.

Text Box

Text boxes are good for displaying large amounts of alphanumeric data. Text boxes can either be multi-lined or single-lined. Multi-lined text boxes are best used when you want to display document style information.



NATHAN RECTOR, a regular contributor to Spectrum, is owner of Natec Systems, a consulting firm specializing in D3, AP and R83 environments and custom programming. He can be reached at nrector@natecsystems.com or <http://www.natecsystems.com>.

Multi-line text box

Memo 1 of 1 Unfiled

4 Ways to Enter Text

1. Type into your Desktop software, drop your handheld into the cradle and press the HotSync® button to transfer the typed data.

2. Use the onscreen keyboard. In the Graffiti® writing area below, tap the dot below "abc" for the alphabetic keyboard or the dot below "123" for

Multi-line text fields are good for displaying documents.

Done Details

Single line text box

Address Edit Unfiled

Last name: Ostrem

First name: Jean

Title:

Company:

- Work: 555-555-5555
- Home:
- Fax:
- Other:
- E-mail: jostrem@nowhere.com

Address:

City:

Done Details... Note

Use single-line fields for simple data entry.

Table

Use a Table to display groups of dependent information, or to provide a list of information that needs to have more than one piece of information displayed. Tables can also include icons and other visual information.

Books Unfiled

A Way in the World	Naipaul
Captain and the Enemy	Greene
Deadeye Dick	Vonnegut
Dont Stand Too Close	Allen
Map of the World	Hamilton
Nervous Conditions	Dangaremb...
Rice Room	Long-Lorres U
Sleeping at the Starlig...	White
Smilla's Sense of Snow	Hoeg
Stone Diaries	Shields

Look Up: New

Tables can display multiple columns of text or other elements and can allow direct editing of text.

Continues on page 26

Width	Varies. Make as wide as possible
Height	11
Top	Varies
Left	Varies
Border	None. Dotted underline denotes editable field.
Label	Usually requires label to tell user what to write in the field

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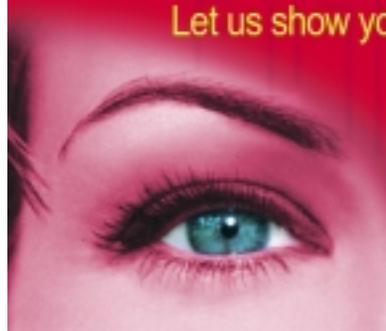
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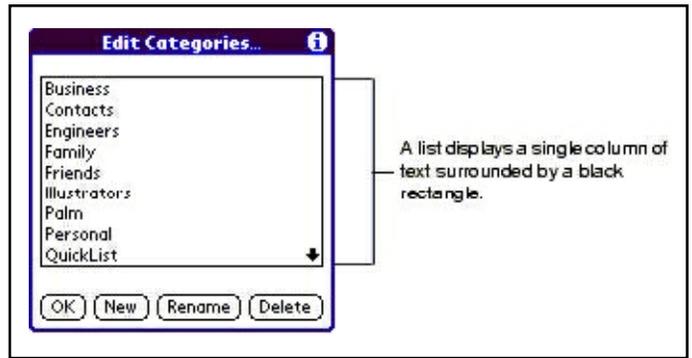
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Width	160 (modeless form) 148 (modal form)
Height	120 pixels (modeless form) 108 pixels (modal form)
Row Height	12 pixels (single-line rows)
Top	18
Left	Left 0 for modeless form 4 for modal form
Border	None
Label	Usually not necessary



List

A list box is used to provide the user a pre-selected list of options in a single column. There are two types of list boxes: List boxes that display more than one option at a time, and a dropdown list, which only displays the item selected, but gives the option to view all the items in the list.

Width	Width of longest item + 5 or width of longest item + 12 to allow scrolling
Height	11 items tall for a full screen list (modeless form) 10 items tall for a full screen list (modal form)
Top	18 for a full screen list
Left	Varies
Border	1 pixel solid rectangle
Label	Usually not necessary

mv://e-Store

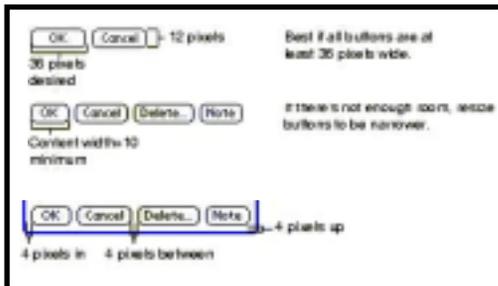
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Command Buttons

A command button is used to perform a command of some kind. For example, it's used to display a detail screen, or to accept the changes to an existing screen. Place a single row of command buttons at the bottom of the form.

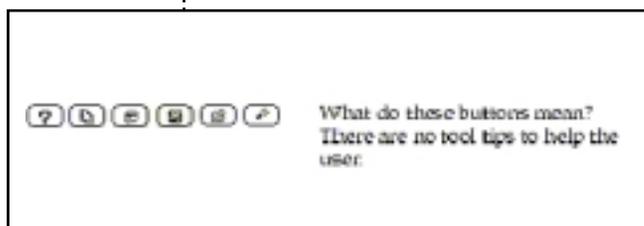


Width	36 or content width + 10
Height	12
Top	47 (modeless forms) or 160 - button height - 1 form height - button height - 5 (modal forms)
First Button Left	1 (modeless forms) 5 (modal forms)
Button(n) Left	button(n-1) left + button(n-1) width + 6 or 4 pixels between each button
Border	1 pixel rounded rectangle
Content	Text or graphic that succinctly describes command

Use an ellipsis (...) in the button name if the user must provide more information before the command is completed. For example, if an additional dialog box or yes/no question will be asked before the program considers the operation complete. The ellipsis can be omitted if you need more space.

Graphical Controls

The command button and push button controls allow you to substitute a graphic for the button name. Only use graphics on buttons if there is a common, clearly defined icon similar to what is currently found in a desktop application. For example:



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- ◆ Web browsers use similar arrow buttons for browsing history.
- ◆ Document readers often use arrows to move to the next page.
- ◆ Most desktop applications use a clipboard to denote paste, scissors to denote cut, and so on.

If there is not a clear predefined icon or symbol, then avoid creating your own graphical symbol for the command. It's difficult to make a graphic small enough to be useful while clearly conveying its meaning. Desktop applications often have several graphic buttons, but desktop applications often rely on tool tips to help the user learn what each graphic means. Palm OS does not provide tool tip support:

Color Support

Some devices support colors, but do not rely solely on color to convey a meaning. Many Palm users have monochrome or grayscale devices and won't see your color changes. Even on color devices, you may have a user with color-vision deficiencies and will miss your visual cue.

Below are the color palates for the different Palm devices out there:

Pallet	Color
Monochrome	
2-bit grayscale	
4-bit grayscale	
8-bit color	

Continues on page 28

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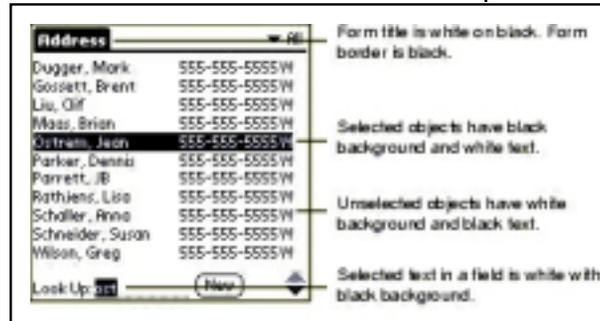
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PDA *Continued from page 27*

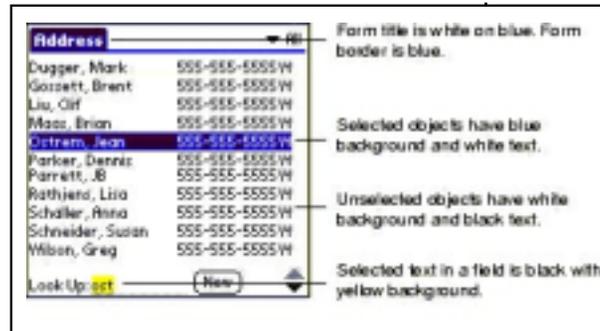
Palm OS uses the same color scheme for user interface elements on monochrome and grayscale screens. In general, monochrome and grayscale screens use black text on a white background. Highlighted or selected text or objects show white text on a black background.

User interface colors on monochrome/grayscale:



On color screens, selected objects show white text on a blue background. Selected text is black with a yellow background.

User interface colors on color screen:



Respect the system color scheme. The user is able to change this information in their settings section. They may have done so for a reason. Always use color in conjunction with some other visual cue so that those with color-vision problems also understand the meaning.

Be sure you do not use too many colors. Too many colors are confusing to the eye and can cause your screen to feel cluttered. This may defeat your purpose of helping the user out.

Launching the Application

Your application must launch quickly. The typical length a user is interacting with your application is one or two minutes. If you do not include some kind of visual change within a second of your application starting, the user will assume they did not tap the screen correctly or the device is locked.

During a normal launch, you should not display a splash screen unless absolutely required. You might display a splash screen if this is the first time the user launched the application, or if the application is running as a demo that will eventually expire and you want to show how much time is left, or if you need to display disclaimer information for corporate reasons.

Always return to the last place the user was at before the application was exited. The user assumes that if they switch programs, the current program they are in is just pushed to the background and is still running. If they are not returned to the same location they left from, they may assume they lost their work.

Exiting the Application

Palm applications should not provide an exit command. Most users do not think in terms of exiting one application and then launching another. They are used to their Windows desktop where

they can just minimize a program and then return to their previous location without a problem.

Allow the user to exit any form, including modal dialogs or alert dialogs, gracefully at any time. If the user has been editing data, save the data before the user exits the form. If the user is in the middle of editing a record then either cancel the information, or save the information to a temporary location to be

retrieved when they return to the program.

For certain environments, it is both possible and acceptable to write your application so that it never exits. This is acceptable only as long as this is the only program the user will ever use on the device.

Conclusion

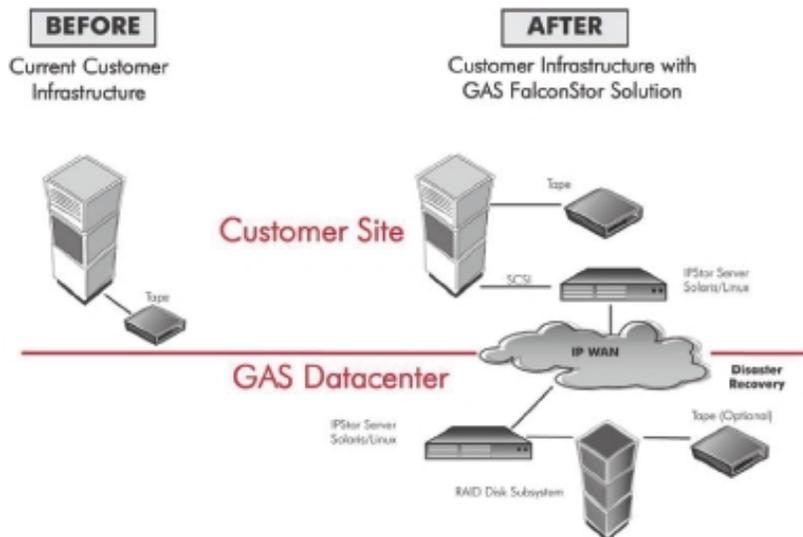
There are a lot of little things you watch for when designing a Palm OS program. Palm was nice enough to lay down these rules so that your users can easily pick up the PDA and use it without much knowledge. The key is to keep the look and feel of the programs the same so that your user does not have to learn to interact differently with each of the programs they have on the device.

Next issue, we'll get to the user interface for the Pocket PC. [is](#)

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OpenInsight *and* Databases **OVERVIEW**

OpenInsight is Revelation Technologies' flagship product. The "open" in OpenInsight refers to the product's ability to connect to and share data with many different data sources. While the primary data source for the product is Revelation's own linear hash filing system, it is possible to work with data from other MultiValue products, with data from legacy ODBC or ASCII data sources, with data pulled from the Web and with XML data. OpenInsight can be configured to use such data in bulk import or export modes, to present the data in traditional Windows-based forms, to serve data to ODBC clients, to serve the data to Web-based html or Java forms, and to support Web-services type transactions. OpenInsight can transform data while moving it from one source to another, allowing it to perform a middleware role. OpenInsight succeeds at these tasks because the various interfaces built into the product, the Basic+ scripting language and the underlying MultiValue engine provide an effective data manipulation environment. This article will provide an overview of the tools and techniques for some of these data interchange tasks, as well as specific examples illustrating the use of the OpenInsight Client Server Workspace. I hope that the article shows you the breadth of techniques available for interacting with other data sources, gives you a feel for the power of the tools, and gets you thinking about how to put it all together.

Converse with Many Sources

Revelation Linear Hash

Linear hash is OpenInsight's native data storage. It stores multivalued data using standard delimiters, albeit with a proprietary hashing algorithm. The "linear" in "linear hash" refers to the fact that these tables are self tuning, continually resizing as data is added so that the average seek time for any single record stays relatively constant. OpenInsight data files are usually married to a dictionary, which stores the information about the data in the file. OpenInsight dictionaries can contain calculated columns. These calculated columns are expressed in OpenInsight's Basic+ scripting language. Calculated columns can call any other calculated field or Basic+ program. This leads to very powerful dictionaries, including dictionary "columns" that link to ODBC or XML data in external databases. The dictionaries allow you to choose to treat your tables as "objects," and the columns as methods and properties. OpenInsight also offers sophisticated triggers called MFS's. These triggers can intercept every database operation. The triggers let you treat each database operation as an event to which you can respond. Once you look at the tables from this perspective you realize that OpenInsight is well suited to behave as the middleware or application engine behind Web-services applications.

Revelation ODBC Driver

Revelation sells an ODBC driver for OpenInsight. This driver lets ODBC clients read data from OpenInsight tables. The ODBC format can feel pretty drab after the excitement of a multivalued data structure, but the driver is very useful when you need to feed other databases or standard reporting tools.

Other MultiValue Sources

OpenInsight offers different degrees of connectivity to different MultiValue data sources. The best connectivity, available for the U2 products, uses the UniObjects to bind directly to tables in the database, allow-

ing you to use OpenInsight as a front end for those products. Currently connectivity to other products proceeds via bulk import or export, telnet screen-scraping, or use of one of the third party Visual Basic or html interfaces. Revelation intends to improve their connectivity to some of the other products. In all cases, you have a product which is completely compatible with the data records and with MultiValue thinking.

ODBC

OpenInsight can connect to any ODBC source. OpenInsight provides high level objects called datasets, which encapsulate the SQL needed to manipulate a specific set of data. OpenInsight forms can use these datasets as if they were native tables. OpenInsight exposes the underlying programs too, so you can write your own programs to execute SQL statements or procedures.

SQL Warehousing

Replicating data to SQL databases is a common requirement. Reporting and geography drive this requirement. OpenInsight provides a warehouse manager to assist with this task. With the tools, you can define a query to export a set of data to one or more tables. The definition can include a rule for normalizing the data, that is, converting it from multi-valued to flat relational tables, and for mapping from OpenInsight data types to native data types for the database you are replicating to. The tools output a script which you can completely customize. The net result is a set of Basic scripts which will run on regular Basic and export data to any ODBC database.

XML

XML is the wunderkind of data exchange. Imagine storing data as plain text with delimiters, then storing a separate table with meta-data describing how to interpret this delimited data. By nesting the delimiters you can express very rich data structures in an easily interpreted format. Readers of this magazine have traditionally called this format multi-valued; nowadays we use longer delimiters and call it XML. OpenInsight incorporates some tools which make it easy to import or export

XML information. The similarity between XML and multivalued database structures means XML is a "natural" way to go. The OpenInsight tools represent the tip of the iceberg. If you are about to embark on any sort of data interchange project, you should strongly consider using XML. For example, if you embark on an ODBC based data replication scheme, then you are responsible for normalizing the data into your customer's schema and expressing it in SQL compatible data types. You have now coupled your product to your customer's product. Changes in the customer's schema will break your product and it will be your fault. If you export the same data as XML, you need not normalize it, you can express the data types in business terms rather than long, char(12), etc. The user of the data is responsible for mapping it to their data structures. You and they can evolve your products; the XML is a neutral interface. Most of the major SQL products now provide tools for bulk import and mapping of XML data.

Bonding

OpenInsight allows for the concept of "bonding," which bonds data from a non-OpenInsight data source to a dictionary that resides in OpenInsight. Using this data

you can store records in a non-linear hash data source but get the benefits of the methods, properties and events available to a native table.

OLE/COM

OpenInsight can host OLE objects. OpenInsight ships an ActiveX dll which can be used to execute any operation on the database. OpenInsight provides a C dll with the same functionality. These interfaces mean that you can tie any external process to OpenInsight. These components communicate via TCPIP, so it is possible to have distributed processes interact with an OpenInsight database. In the context of the current article, these components mean Oracle or SQLServer can exchange data with OpenInsight as part of a stored procedure or data transformation process.

CGI

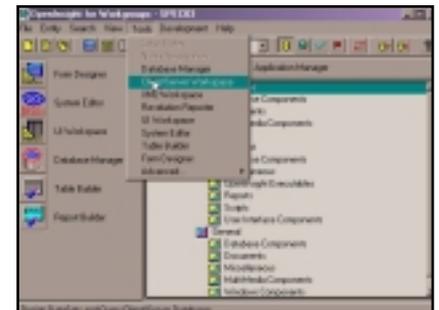
CGI, the Common Gateway Interface, a standard Web interface, is another path to OpenInsight. OpenInsight includes a component named OECGI to implement a Web interface to OpenInsight. Developers can use OECGI requests to return data to the caller, or can treat them as messages which trigger OpenInsight to push or pull data some other

way. You can initiate http or ftp requests from OpenInsight. The ability to send and receive Internet or intranet requests means you can use OpenInsight to implement database connectivity as a Web service.

Using OpenInsight's Client Server Tools

OpenInsight includes a client server workspace to help you work with ODBC data sources. The Client Server Workspace is reached from the Tools menu in OpenInsight.

FIGURE 1



The Workspace creates two types of objects: Connections and Datasets.

Continued on page 36

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OPENINSIGHT AND DATABASES *Continued from page 31*

Connection objects hold the parameters needed to connect to an ODBC database. Usually connection objects just point to an ODBC connection established on your machine.

Dataset objects store parameters needed to work with a specific set of data, including the SQL statements for Selecting and manipulating server data the SQL and OpenInsight data types for the columns in the result set. Datasets exist to hide the complexity of the SQL. Datasets enable client-side filtering and sorting. Datasets can cache rows on the client and share it between different windows or programs. The objective is to let your OpenInsight programs use simple methods like Execute, Commit, Rollback, rather than embedding a lot of SQL statements.

The client server workspace is a tool for visually defining connections and datasets. OpenInsight also supplies a set of functions, called the Connection Objects (XO) and DataSetObjects (DSO) which let you access all of the client server functionality. A third set of Objects, the Query Objects (QRY), let you execute embedded SQL without using datasets. The Client Server workspace does not provide tools for defining query objects.

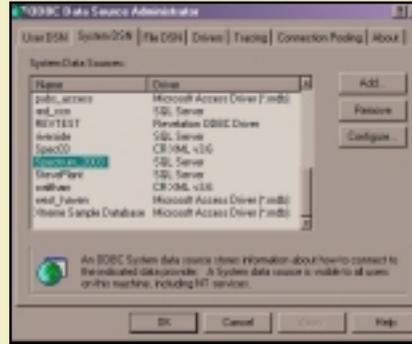
To use data from an ODBC source you must define a connection object. You can use Connections to execute QRY functions without defining a data set. You cannot use a dataset or QRY object without defining a connection.

Example — Create an ODBC Connection

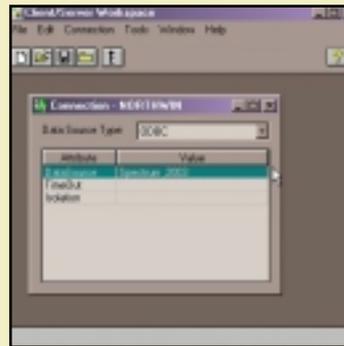
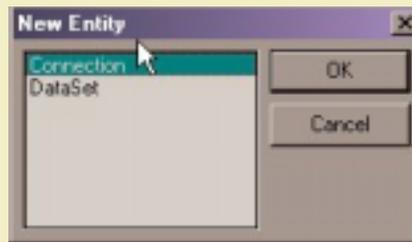
In this example, we will create a form that uses two datasets plus some scripting to create a master-detail form giving us a list of customers and then the orders for each customer. The example will show how to create and use a parameterized query. We will be using information from the NorthWind database that ships with Microsoft SQLServer2000.

Create the Connection
Before OpenInsight can use a SQL Server connection, it must be defined with the Microsoft ODBC administrator.

On Windows 2000, the ODBC administrator is found on the Administrative tools section of the control panel



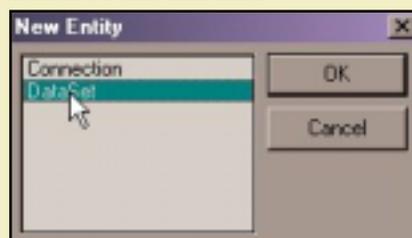
Create the OpenInsight Connection definition by choosing File New from the client server menu.



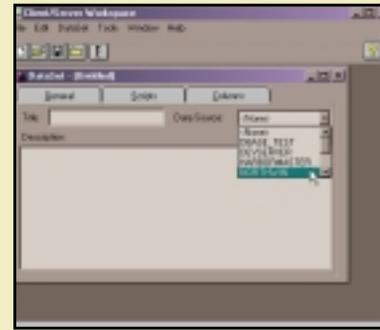
Create Datasets

For our example we need two datasets. One data set retrieves a list of customers; the other retrieves orders for a specific customer. We will use two techniques to create the datasets. First, we will use pure point and click to create a data set, then use it in a popup. Second, we will create a dataset using custom SQL, then use script to manipulate the dataset in a window.

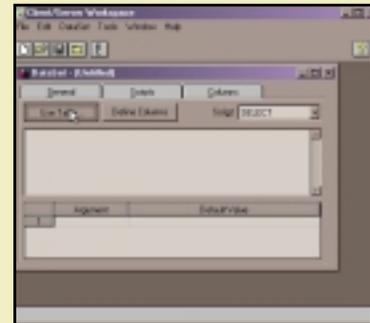
Method 1 Point and Click



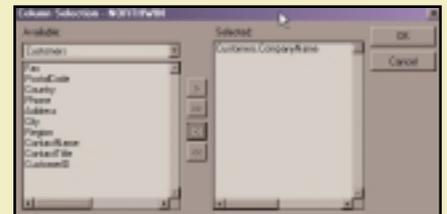
Associate the dataset with a connection



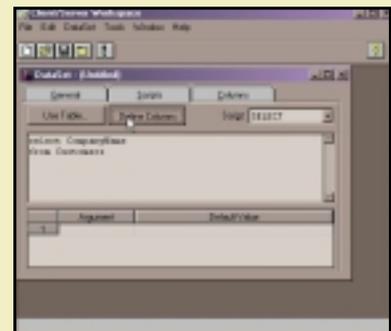
Click to choose a table from the connected database



Choose a table, Click to choose the column(s) you want to return



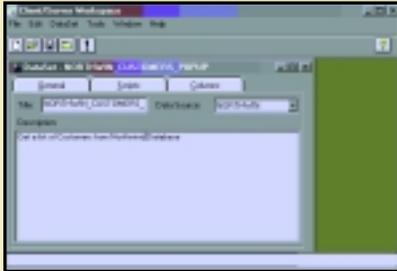
Click to have OpenInsight run the query, determine the data types of the resulting columns



Create a Dataset with Custom SQL

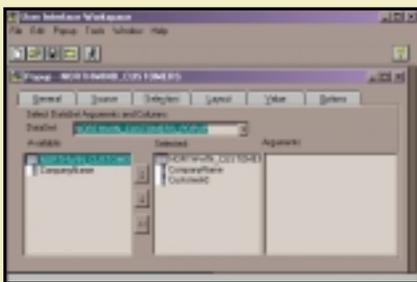
Save the Dataset

We have now created a simple dataset without using code.



Use the Dataset in a Popup

Without explaining the OpenInSight popup tool, we will show that it is possible to use the dataset without any code



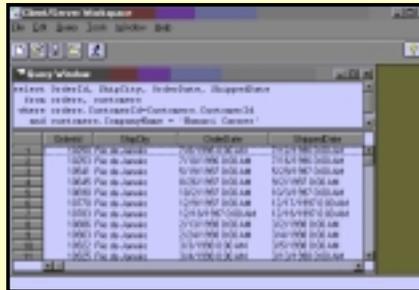
The result



Thus, OpenInSight lets you work in a purely visual mode for simple situations. In practice you will need to employ these tools in complex situations. Complex situations may require you to hand code the SQL and use script to control the actions. The OpenInSight toolset will support you. This ability to test and tune the SQL is a handy feature. In the next example, we build our SQL by hand using the Query Tool, then cut and paste it into a dataset.

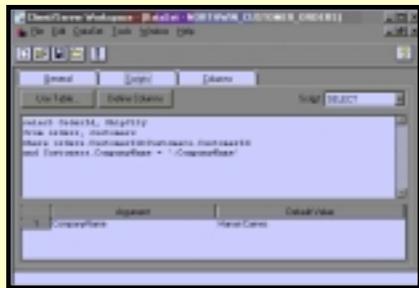
Use the Query Tool to write the SQL.

OpenInSight includes a Query Window, available from the client server tools menu. The Query Window allows you to execute SQL statements and see the results. It also provides you with the ability to list the objects in a database, and list the columns in any object. In the example below we create a query to retrieve the orders for a specific customer.



Create Parameterized Dataset

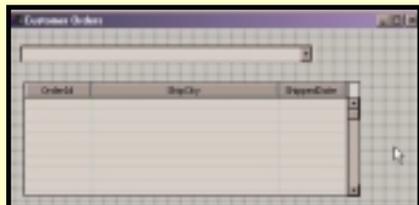
In the next screenshot, we have created a new dataset, then copied the SQL statement from the query window into the select script. Next, we created a parameter. Note that ':CompanyName' has been added to the SQL statement, and that it is inside single quotes. Note that the argument has the same name, without the colon or quotes.



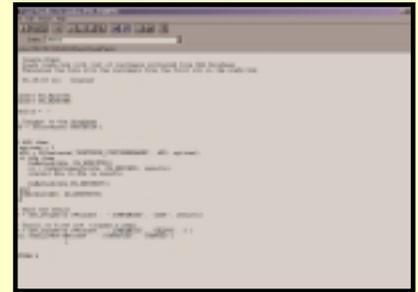
Create a Master-Detail Window

Without much explanation, we will create a window to retrieve the orders for a customer. I will show you the script which loads the list of customers when the window opens, and the script which reads a new set of orders each time you select a customer.

The Window



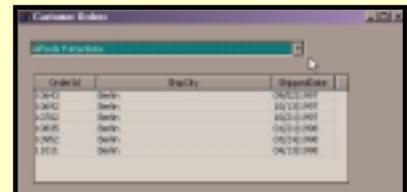
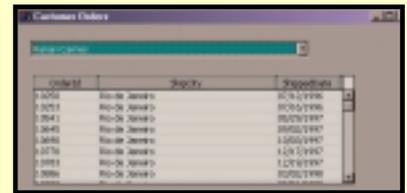
Window Create Script loads the Combo Box



Window Read Script Loads the Orders for a Customer



The result, for two different customers



The above examples demonstrate that the dataset is easily integrated into OpenInSight Forms. The examples also show that you can control exactly what is happening using scripts. The OpenInSight DataSets do a nice job of encapsulating the work needed to create, read and update rows in ODBC databases. The data set includes support for transactions, client side sorting, filtering and caching, and more. OpenInSight's online help provides more information and examples on the uses of these ODBC functions. The use of Connection objects is documented in the help for the XOInstance and XOMethod functions. The use of datasets is documented in the help for the DSOInstance, DSOMethod, DSOGetProperty and DSOSet-property functions. OpenInSight also allows you to use SQL statements in a program without using datasets. This use of SQL is documented in the QryInstance and QryMethod sections of the online Help File.

continued on page 45

LDAP 2

Introduction to

LDAP

When last we got together, we talked about LDAP and saw that it was a way to set up a sort of global directory for your company. It's pretty straightforward in comparison to big heavy hitting directory programs. Then again, that's why it's the "Light-weight" Directory Access Protocol.

B Y M E L V I N S O R I A N O

Since you're familiar with databases in general, it's pretty easy to draw an analogy then. The LDAP node is similar to a record, and its attributes are the fields of that record, and a DN is the record key that defines the record ID.

Let's imagine the following LDAP entry in Figure 1.

This is an entry for a single person, me, who works at ERIS. There are different components of the entry, such as name, email, telephone. They are split into pairs of information, attribute followed by the property or value.

The entire record is referred to by the record id (DN), which is the first line of the entry. Not all of these attributes are required; some are optional. Whether they are required or optional depends on the object class being for the entry. I'll get into

that shortly. In short, however, the entire data description constitutes a single entry, or node, on the LDAP directory tree.

This time around, we'll look at how the thing is structured. It's fairly straightforward if you've ever worked with a multi-value database.

A typical LDAP directory is set up in a hierarchy. Think of a tree of nodes. Sometimes an LDAP directory tree is described as a Directory Information Tree (DIT). It's the node itself which is a record in the LDAP database. It's this junction to different branches that matters here.

The LDAP record consists of a limitless number of pairs of attributes and their corresponding values. Sound familiar? Not too different from a multi-value table for the most part. These records are known as a Distinguished Name (DN).

```
dn: mail=mel@eriscorp.com.com, dc=ERIS, dc=com
objectclass: multivalueGuy
cn: Mel
sn: Soriano
mail: eriscorp.com
telephoneNumber: 1 626 535 9658
```

FIGURE 1

- a. cn=Mel
- b. cn=Mel+sn=Soriano
- c. cn=Mel+sn=Soriano+telephoneNumber=16265359658
- d. mail=mel@eriscorp.com

FIGURE 2

You don't use the "ED" editor to create a DN. Instead, each entry in the directory tree has a Relative Distinguished Name (RDN). The RDN has one or more pairs of attributes and their associated properties. The RDN must be unique at that level in the hierarchy. In the example found in Figure 1, for instance, the following RDNs in Figure 2 are all valid.

So you see, there are no set rules as to which attributes of a particular entry should be used for the RDN; LDAP leaves this decision to the directory designer, who is known as the LDAP king. Just kidding. A little.

The LDAP designer specifies that the RDN of the entry must be unique and that it identifies that entry at that level in the DIT.

Since RDNs exist for every entry in the tree, the DN for any of these entries is created by appending the RDNs of all the nodes between that entry and the root entry to each other. The DN makes it possible to locate any node in the directory tree, regardless of its location or depth in the hierarchy. It's a concatenated key, really.

To better grasp this, let's take a simple example. Consider the LDAP directory in Figure 3. It shows the DN at each and every node.

```

rdn: c=IN [dn:c=IN]
|
|
\--- rdn: o=ERIS [dn:o=ERIS,c=IN]
|
|
|--- rdn: ou=Executives [dn:ou=Executives,o=ERIS,c=IN]
|
|
|
| \--- rdn: uid=David [dn:uid=David,ou=Executives,o=ERIS,c=IN]
|
|
\--- rdn: ou=Worker Bees [dn:ou=Worker Bees,o=ERIS,c=IN]
|
|
|--- rdn: uid=Mel [dn:uid=Mel,ou=Worker Bees,o=ERIS,c=IN]
|
|
\--- rdn: uid=Ray [dn:uid=Ray,uid=Mel,ou=WorkerBees,o=ERIS,c=IN]

```

FIGURE 3

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Given that hierarchy, to identify the node belonging to Mel Soriano - in other words, to obtain the DN for Mel Soriano's entry - all you have to do is combine all the RDNs between that entry and the root of the tree.

Doing this, you get Mel Soriano is at
uid=Mel,ou=Worker Bees,o=ERIS,c=IN

In a similar manner, the DN for the node belonging to David would be

uid=David,ou=Executives,o=ERIS,c=IN
while the DN for the ERIS node would be

o=ERIS,c=IN

So, just remember, LDAP entries are arranged in hierarchically in a tree. Because every node on that tree can be identified by its unique DN, we have some benefits as far as efficiency and relationship identification. LDAP's strengths thus make it powerful when used with sophisticated queries and powerful search filters. You could, for example, limit a search to a particular branch of the tree simply by specifying a different base for the query to begin from. Likewise, you could query only against specific characteristics of the tree. Or do both.

Again, this powerful way to look people up is akin to using numerous cross reference files in the MultiValue world. When matched with some rather fancy software packages, LDAP becomes a technology then that is not just distributed, but quickly and efficiently capable of being queried. is

Melvin M. Soriano works at Eagle Rock Information Systems (ERIS), an Internet Application Service Provider and Web-Wizard/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.

SPAM

What Price Will You Pay to Get Spam Out of Your Life?

For the umpteenth time, you log onto your email and are faced with an inbox full of unwanted, and sometimes crude, emails: requests to refinance your home; solicitations to enlarge a certain part of the male anatomy; or do you want to buy this widget or that? Simply put, "spam is out of control," says Melvin Soriano, MultiValue Web expert of Eagle Rock Information Systems. No doubt about it, spam is an increasingly annoying part of the Internet landscape, and rather than continue to work the delete button, many people are opting to install anti-spam software.

A hot topic these days, spam is drawing a lot of attention from lawmakers as well as computer companies rolling out a steady stream of products to filter email. Bill Gates recently revealed plans to stem the tide of spam. Microsoft Corp.'s newly established Anti-Spam Technology and Strategy Group was formed to find ways to stop spam from reaching customers. The group, part of Microsoft's Trustworthy Computing initiative, is looking at the best technologies to circumvent spam.

In Gates' email to Microsoft customers, "Toward a Spam-Free Future," Gates conveyed that spam represents a major threat to the productivity gains companies have

made in the last decade through the use of email. Besides improving the anti-spam capabilities of its products, Microsoft is sharing information on known spammers with other technology companies. The company is also participating in the "Trusted Sender" program, the goal of which is to help users verify the identity of senders.

Lawmakers have also joined the chorus of complainers about spam and have begun to propose ways of dealing with it, but a problem lies in defining what spam is and what it isn't. One definition of spam being used is "unsolicited commercial email where no pre-existing business/customer relationship exists." This definition has loopholes that would define some legitimate businesses as spammers, however. Many industry pundits warn that hastily implementing anti-spam legislation could unintentionally open up a whole new can of worms. Some legislative solutions that have been proposed will require ISPs to filter spam. As a result, legitimate email can be blocked, which may lead to lawsuits when messages that are wanted aren't received.

Looking at the other side of the coin of the spam issue, do you want to take the time and energy to ensure that every email you send out can't be interpreted as spam by a recipient? If certain anti-spam laws get passed, you may be exposing your company to lawsuits or fines for commercial communications that the recipient decides they don't want for whatever reason.

Vendors have introduced a host of products designed to eliminate spam, many provide broad content security, including virus blocking and email filtering. The products have varying features, some giving the user more control than others. There are products that will allow you to check the message it has designated as spam versus enforced blacklists, white lists and opt-in/opt-out directories that don't allow the

user to do that. Some products are client-based and some are server-based. Soriano says that while server-oriented software is more effective in general, you may end up filtering out too much. "The downside of using anti-spam software is accidentally filtering out good email," he states. "Everyone has done this."

Spectrum talked to one user of anti-spam software to see what the experience has been like and how they've had to modify it to make it most effective. OHM Systems, developer of manufacturing software and WADE, a Web-centric Application Development Environment, uses Web Marshal, an all-inclusive package for its email and Web environment, says Catherine Anbil, vice president of Sales. She rates the product as 93 percent satisfactory. "The system gives us weekly downloads of the latest spam or virus protection," she states. "However, since it is only weekly, any new conditions, if not known or monitored, allows for issues."

Web Marshal allows OHM to have a high degree of flexibility as it is installed on a server that OHM controls. Nevertheless, Anbil says the company has experienced blockage of email that it wants to receive as well as blockage of its own email to customers. "Many clients we send emails to have filters so that if our logo is attached on the letterhead, it automatically deletes it," she says. "Because this has resulted in non-receipt of our information to clients, we have tried to do without the full degree of spam control settings." The solution to this issue was that OHM turned off some of the filter levels.

In instances where OHM's clients have been blocked from receiving its emails, Anbil says that, unfortunately, the sender often doesn't realize it, except through phone follow-up. "In many cases, due to the spam controls on their settings, they don't even know what they aren't receiving," she says.

Asked about her satisfaction with the product, Anbil replies, "It's a start. You have to have something. If there were easier ways to review the filtered items it would be helpful. However, some days the list is so long it would be a waste of time."

Computer users will continue to face this choice: have the spam and use the delete button or use anti-spam software and possibly lose important messages. Speaking for herself, Anbil says, "being a 'control' person, I would prefer the delete button and have the option to manually delete."

Industry observers note that the key to controlling spam lies within technology, not necessarily the law. If you are looking into anti-spam software, take into careful consideration its features and the degree of control that it provides, allowing you to manage your email effectively. is

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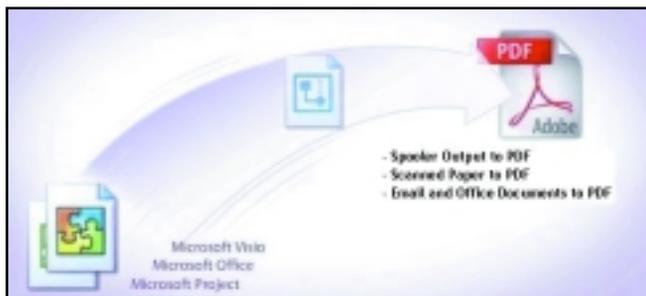
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MultiValue Does Adobe PDF

with Style and Grace

BY JOHN F. WALSH



So what's so paramount about combining MultiValue databases with Adobe PDF files? Well, I am glad you asked. In the past ten years, the dream of Adobe's co-founder, John Warnock, for a universal document format, has become a reality.

The Portable Document Format (PDF) is the de facto standard for the secure and reliable distribution and exchange of electronic documents and forms around the world. It's a universal file format that preserves the fonts, images, graphics and layout of any source document, regardless of the application and platform used to create it. Anyone, anywhere can open a PDF file. All you need is the free Adobe Reader software. And if you download it, you'll join over half a billion people already using it. How's that for pervasive?

Spin back time to 1985, and you'd find Adobe creating what was then called, "the desktop publishing revolution" by introducing the Adobe PostScript page description language. This allowed desktop prints to render complex text and graphics images.

In 1992, John Warnock, co-founder of Adobe Systems Incorporated, created a project team called Camelot. He stated, "There is no universal way to communicate and view this printed information electronically ... What industries badly need is a universal way to communicate documents across a wide variety of machine configurations, operating systems and communication networks." That team developed the PDF standard.

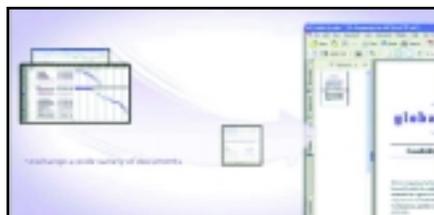


Figure 1 - Multiple document types can be contained within one PDF file (i.e. MultiValue spooler hold files, Microsoft Office documents and email).

And that's just the beginning. Did you know governments around the world have adopted the PDF format to streamline document management and reduce reliance on paper? It is the standard in the United Kingdom and Germany for electronic document exchange. Here in the U.S., PDF is the standard format for the electronic submission of drug approvals to the U.S. Food and Drug Administration (FDA), and for electronic case filing in U.S. federal courts, and of course the IRS. In addition, the ISO's PDF/X specification is the standard file format used for the digital distribution of advertisements for publication.

So how did I get involved with PDFs? Well, most of you know me as the document management maven, having engineered and sold document-scanning systems tied to MultiValue databases for over 20 years.

About two years ago, I was asked to invent a document management solution for AT&T Wireless to keep track of their customer cell phone contracts. While scanning, indexing and storing millions of documents per year certainly seemed a little daunting at first; I sucked it up, bit my bottom lip, and recalled that I had in my bag of experience several highly successful installations of this sort. Installations like the Bank of New York and Armitron that included the handling of large, millions of document repositories, management by MultiValue databases, and the best-of-the-breed imaging software and hardware.

But the one unexpected requirement was that all documents be stored in Adobe PDF format. Okay, I was familiar with the format and liked the Acrobat reader software. The idea was to make the documents Internet ready, easy to email and universally readable. Adobe PDF does all that and more. In fact, the closer I looked, the deeper the product got. In fact, two years later, with Adobe Acrobat 6.0 just out, there are more features than ever.

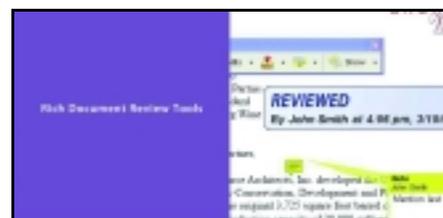


Figure 2 - Extensive Annotation and Collaboration tools are available.

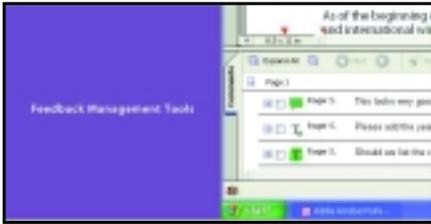


Figure 3 - A history of document review is retained with the document.

Here is a quick list:

- ◆ You can easily create Adobe PDF file from paper scans, Microsoft Office documents and Internet content with a single button click
- ◆ Convert and combine proposals, bids, presentations and other documents into one compact, fully searchable Adobe PDF file
- ◆ Automatically create a list of document reviewers and track feedback
- ◆ Indicate text edits on documents such as insertions, deletions and replacements
- ◆ Add custom stamps, sticky notes and highlights to comment on the document
- ◆ Collaborate on a document concurrently in your office or over the Web
- ◆ Password protect documents
- ◆ Apply 128-bit encryption if needed
- ◆ Approve final documents with digital signatures
- ◆ Verify authenticity and build a list of trusted certificates.
- ◆ Interactive hyperlinks make PDF files easy to navigate
- ◆ Smart display for mobile platforms like Palm OS, Symbian and Pocket PC

O.K., so that's the general hype from Adobe and the good news is the product definitely delivers all that is promised and more! But what's not so apparent is that they have opened up the format and provided developers with plenty of rich tools to go way beyond the standard features and build custom solutions. So as a MultiValue/Windows developer, that's all I needed to hear. So below is a much more

juicy list of things you can do with MultiValue and Adobe PDF:

- ◆ Take any MultiValue spooler output and turn it into a search PDF
- ◆ Overlay spooler output on top of a PDF form
- ◆ You can create your PDF forms with virtually any software you choose including Microsoft Word
- ◆ Use a PDF form as a data entry screen for a MultiValue database even over the Web
- ◆ Link any PDF to any MultiValue inquiry or entry screen
- ◆ Generate automatic correspondence on electronic forms or letterhead from your MultiValue database
- ◆ Generate email, faxes or prints automatically from the PDF repository
- ◆ Add document workflow that moves with the MultiValue application software

Here are some real examples of MultiValue/PDF in action.

In financial organizations such as collection agencies, banks, credit unions, etc., you can automatically generate invoices, statements and letters as PDF files complete with the full color forms that go with each document type. Whether the customer receives the document as an email, a fax or as a print, the integrity of the document is preserved. One of our customers exclaimed, "It is the best-looking output we have ever seen!"

In wholesale distribution, document management consists of managing documents related to the sales order (usually scanned paper), invoice generation, PO generation and report generation. By introducing one file format and one reader for all of the above, a person working with a scanned-in sales order or this month's Aged Trial Balance, will be using the same toolset of document annotation, review, tracking and security. And

when/if these documents are sent outside your organization, the recipient will have the exact same tools and is guaranteed that the document will look the same.

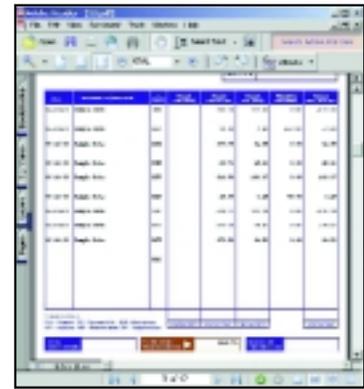


Figure 4 - Sample PDF overlaid with invoice spooler data.

Those are just a few examples. When you consider that the same software can also provide interactive Web entry forms and document collaboration, things really start getting slick!

So how does it work? Here are just the broad strokes:

- 1 Take your spooler hold files and move them over to a text file in the Windows environment. (On some MultiValue systems you're already there!)
- 2 Print the text file to Adobe Distiller and presto! You've got a PDF! (Distiller is automatically installed as a Windows printer upon installation of Acrobat.)
- 3 Scanned documents and Microsoft Office documents can be converted to PDF with a single mouse click. Adobe did the work for us here!

In conclusion, with this article, my hope was to introduce you to the possibilities for your organization if you embrace this technology. If you purchase a copy of Acrobat for your MultiValue system, you will have to do some integration and yes, maybe even some programming, to get the desired results, but it will be well worth it! In addition, if you want a plug-and-play integrated solution, I invite you to explore the document management solutions offered by my firm, Compass Computer Solutions Inc., or other companies offering similar technology. [is](http://www.compasscs.com)

Visit www.adobe.com for more information on Adobe products and www.compasscs.com for more information on Compass products.



JOHN F. WALSH, president of Compass Computer Solutions Inc., began his career over 20 years ago as a MultiValue developer. From newsroom automation and inventory control for CBS News Inc. to accounting systems for collection agencies, wholesale distributors and manufacturers, he is now one of the driving forces in the Enterprise Document Management industry. His experience in records management includes developing major systems for The Bank of New York, Armitron, Florida Power and Light, and JVC Corporation. Currently, his company, Compass Computer Solutions Inc., delivers leading Enterprise and Report Management products. John is a frequent lecturer and his white papers and articles have been published in a number of industry magazines and journals

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Uniware Releases New AusVantage ERP Application Software

Uniware Debuts Secure Web Application Interface for MultiValue

Uniware Pty Ltd, Australia's premier developer of ERP applications utilizing MultiValue database technology, has announced the release of its new AusVantage suite of fully integrated commercial applications software.

Uniware, based in Melbourne, Australia, is a supplier of accounting, distribution, manufacturing and service industry applications in the Australasian region since 1979.

The new AusVantage application delivers all the functionality of Uniware's proven DISTRIB application while offering a bold new graphical user interface.

Uniware supports hundreds of businesses in the region with thousands of users interacting daily with Uniware's commercial applications.

Discussing customer feedback, Colin McMahon, general manager of Uniware, commented, "Our customers are excited that they now have an application providing a contemporary human interface whilst retaining their investment in high-performance MultiValue database technology. The ability to directly interrogate and merge their MultiValue data with other desktop applications offers enormous appeal."

Providing complete E-commerce facilities, AusVantage is the 21st century solution for distribution and manufacturing companies requiring a feature-rich, user friendly, fully integrated ERP applications solution, Uniware said.

Uniware Introduces Clear-Connect Web Application Programming Interface

Clear-Connect is Uniware's highly secure Web application interface for MultiValue database applications. Developed in Java and Perl, Clear-Connect will run on Unix,

Linux or Windows platforms and may be deployed either on the Web server, hosting the Web pages, or on an independent server.

Supporting multiple pipes or connections to the MultiValue database, where required, Clear-Connect is designed to maintain a persistent link to the database.

Web pages may be developed with any of the standard software packages available, and may utilize Web forms or frames on the pages. Integrated with all MultiValue databases including D3, UniData, UniVerse and others, Clear-Connect integrates the database with the Web using Common Gateway Interfaces.

With data encryption between the Web browser and the database, Clear-Connect is highly secure and when installed with Secure Socket Layer (SSL), will be encrypted with 128 bit encryption.

Users will authenticate to the target MultiValue database for security access with all updates performed in "real-time."

Uniware has successfully utilized Clear-Connect as the API for many MultiValue database Web applications.

For more information, please contact Colin McMahon or Craig Alford at info@uniware.com.au or visit its Web site at www.uniware.com.au.

aging director of UniPix Software. "Anyone familiar with Microsoft's Internet Explorer will easily adapt to the browser-based Online 2000 desktop."

"We chose .NET as a development environment," Ellis says, "because it's designed around the use of the Internet and offers a faster development cycle with the flexibility to respond to rapidly changing business conditions. But most importantly, .NET brings the benefits of interoperability between other businesses, 'smart' devices and systems to work together in a way never previously possible. For example, as a Net-connected application, Online 2000 could provide end-user customers with access to rapidly changing inventory and parts information from a key supplier, ensuring customers or partners placing orders through your own systems are accessing their suppliers' most current pricing and inventory levels. All this occurs within a new standard security mechanism ensuring that the right information is available to the right people."

From a technical perspective, the new Online.NET offers some unique capabilities that, traditionally, MultiValue users haven't ever had.

Because the Online.NET "business objects" are native .NET data objects, they can expose the MultiValue data in XML format, effectively removing the typical barriers to data sharing and software integration.

ClearConnect Web Application Programming Interface Schema



Online.NET - UniPix Software Launches Browser-based Version of Online 2000

Browser-based Online 2000, the latest offering from UniPix Software, opens an exciting new door for business users, and offers new ways to make the most of an already feature-rich Online 2000 business solution.

Built on .NET, browser-based Online 2000 will change the way businesses use computing and Internet technologies to grow and manage the business more effectively.

"Our current Online 2000 users have been bowled over by the new interface; and they're amazed at how easy it was to install — as simple as clicking on a URL in an email message," says Rob Ellis, the man-

The Online.NET business objects are available through Web services. It's the Web services that hold the key because they let applications share data, and more powerfully invoke capabilities from other applications without regard to how those applications were built, what operating system or platform they run on, and what devices are used to access them).

The Online.NET interaction with MultiValue databases all happens through a Windows connection pooler that shares database connections via ODBC/Java across multiple end users.

Reporting in Online.NET is outputted via HTTP handlers and includes filters for Adobe PDF, Microsoft Excel, RTE HTML, text and TIFF images. The end-user report designer makes it very simple for users to build and customize their own reports.

Online .NET uses the fully object-oriented programming techniques available in Microsoft Visual Basic .NET. The most talked about new OOP feature in Visual Basic .NET is "inheritance" and the "inheritance hierarchy."

"OOP is all about the ability to piece together software components that help us create our application more easily," Ellis says. "Visual Basic .NET gives us many developmental advantages not found in MultiValue or MultiValue-like environments, including a faster development cycle and more flexibility for specialization in objects."

In summary, browser-based Online 2000 offers:

- ◆ The familiarity of a browser environment
- ◆ Intuitive graphical reporting with the included report designer and report viewer (with a choice of eight output formats including PDF, cube, html)
- ◆ More powerful searches using multiple criteria and the ability to store searches for later retrieval
- ◆ Mix 'n match interface modes - to meet the need for both character and graphical user interfaces in a site. (For example, dumb terminals in the warehouse or point of sale and PCs in the areas that require graphical reporting.)

For more information, visit www.unipix.com or www.unipix.net.

Folder Tabs Provide Easier Navigation With Visual e

ScanNet Systems Corp. has added folder tabs to the robust Visual e 4.0 Suite of Products, making navigation and viewing even easier. Now users can view prior opened windows by clicking on the tab at the top of the screen — no more need to use the Control Tab key sequence. A visual display of all open windows is provided at the top of the Visual e desktop.

Visual e is the most well-suited choice to update and improve the functionality of a MultiValue database through its Microsoft Windows integration. It was designed for: IBM's U2 Suite (UniVerse and UniData), Raining Data's Suite (D3, mvBASE & mvEnterprise), JBASE or Ultimate+. This all-in-one suite of products is designed to empower the user. It is intuitive to use, increases productivity and adds immediate value to your business, the company said. A Windows doorway is provided when you install the enhanced Visual e Internet Client on a PC. Immediate access is given to data with the Windows interface to existing applications.

The built-in productivity tools can be best described, says Terry Turzynski, president and CEO of ScanNet Systems Corp., "by analyzing one of the many impressive real time applications created with the product. For example: a Proof of Delivery system, designed with our Windows Application Development Tool for the trucking industry enables on-line tracing of shipments; thus providing immediate confirmation of the inquiry. The manual and time consuming tracing process required locating the signed Bill of Lading, then either faxing, emailing, or sending a copy of the document to the inquirer. Visual e was used to replace this manual process, which allowed all functions to be performed through Windows screens, totally automating the process.

This empowering tool is designed to reduce cost and improve efficiency. Cryptic methods and processes are a thing of the past with Visual e on the user's desktop. Executives, managers, and staff are given an intuitive Windows friendly tool to perform their analytical tasks. By the push of a button, all data from their MultiValue applications is made available for any detailed analysis or report creation. Visual e Import/Export provides enhanced connectivity, to Microsoft Excel and other spreadsheets and is very intuitive to use, the company said. For example: Sales data could be summarized by Territory, Product Line, Sales Person, etc.; the possibilities are unlimited. The "Query by Form" tool (included in the Visual Search Browser) allows the user to create a window form within minutes, or an existing Visual e window can be used to view the data.

The new 4.0 version of Visual e suite of products is available now; distributors are welcome. A demonstration is available over the Internet and at the London and Sydney International Spectrum shows.

For more information, call (714) 536-7000, access the Web site at <http://www.snsCorp.com>, or send email to sales@snsCorp.com.

OHM Defines True CRM and Releases New Product Line - OHM Galaxy

Some say a rose by any other name is still a rose. But in the technology world of one acronym after another, the interpretation of letters starts to take on life forms of its own. When OHM first started releasing CRM (in OHM's world — Customer Relationship Management) software, the company found CRM had multiple meanings. But once its client base understood the power of what it

was promoting, they quickly became excited.

OHM's CRM module offers the ability to seamlessly integrate with back end servers (real time or scheduled update times based on your security requirements), with ease of maintenance. Now regardless of OHM's customer size, each customer has a large market presence.

"In a matter of a few weeks after the original design and exchange of what level information customers wish to display online, OHM, with its CRM tool suite, is able to provide our clients' end users with the ability to retrieve and review Accounts Payable statements, returns, invoices, credit memos, review payment history, product purchase history, product buying trends as well as place orders, make inquiries and learn more about the products and services," said Catherine Anbil, vice president of Sales. "Each end user that logs in has a profile, so you can personalize price lists or bulletins of information to that end user or associated groups of end users. Now 24x7, an end user can check statuses, print copies of documents, and place orders or inquiries.

The OHM CRM module interface has built in validation and security features for the display and retrieval of the end user's data. OHM has even set up the ability for the smallest of company organizations to host the CRM portion of the transactions as an option.

"OHM clients that have started using this process cannot believe the excitement from their end users," Anbil commented. Additionally the average order has increased by 5 to 8 percent. This was attributed to the end user stating that while they would normally only order a few items from this site and other items from a competitor's site, they found the ease of ordering and information so accessible, it just made sense to place the entire order. Plus, they were given fresh and timely information about discounted items, new products and special deals that help at the time of placing their orders.

For OHM clients, the order entry from the CRM system can be linked directly back to their internal order entry process to reduce redundancy and minimize possible errors from rekeying.

OHM, using its powerful development environment, gives an easy maintenance environment for changes and updates without programming effort, Anbil said. The only programming effort would be specific to the client's application busi-

Continues on page 42

ness logic. In CRM, modifying or personalizing a screen input or retrieval is as easy as pulling up a template and changing the rules and look of the screen. The same is true for any report formatting.

"Cost- and time-efficient, OHM's CRM totally Web-centric module interface is a powerful new way to easily add the needed functionality to your existing Web site for 'clients only' CRM," Anbil concluded.

OHM Introduces New GALAXY Products

With the overwhelming positive response to OHM's Web-centric ERP/MRP application release and implementations, OHM has expanded the market niche with the release of a new product line — OHM GALAXY. OHM GALAXY is a suite of modules formulated to meet the cost considerations of the small user to any size environment. It consists of accounting related functions that are designed to integrate with manufacturing, distribution or other verticals. The concept is popular due to the availability of its "less-than-30-day" implementation approach.

"OHM GALAXY is the fastest way to enter the dynamic Web-centric world using only a browser to execute your programs and functions," Anbil stated. "There is no additional interface software or requirements for your laptops or when you travel. Anywhere there is Internet access, you have the availability to access your OHM GALAXY programs — based on standard firewalls and security setups."

OHM GALAXY is modular to help start clients a la carte with the process. There is low system overhead and easy installation and maintenance, according to OHM.

Visit the new world of OHM GALAXY at www.ohmworld.com.

Management Information Tools Rolls Out a Feature-rich New Version of the MITS Product Suite

MITS Release 5.1 Extends the Power of its OLAP/BI Capabilities with Over 30 New Enhancements; Presentations Available at Spectrum this Fall in London and Sydney

Management Information Tools Inc., the leading developer of Online Analytical Processing/Business Intelligence (OLAP/BI) tools for the MultiValue database market, announced the release of Version 5.1, the latest version of its popular MITS software platform. Over 30 new features have been added, including the ability to run MitsWeb as a Windows service. Further

enhancements to the latest release of MITS focus on improved Flash screen flexibility, additional configuration options, and ease-of-use improvements requested by users and resellers.

"Our end-users and partners have been very vocal and supportive of MITS over the past few years in letting us know how we can further improve our OLAP/BI solution," said Pat Gilbrough, president of Management Information Tools Inc. (MITI). "Our goal with this release of MITS 5.1 was to not only add requested features from our customers, but continue to improve productivity for the hundreds of end-user organizations, resellers and systems integrators that use our software worldwide."

MITS, the acronym for Management Information Tool Software, is a powerful Business Intelligence solution that offers advanced dynamic and interactive data reporting. By design, it takes information in the company's system and makes it quickly and easily accessible. MITS is recognized for its MultiValue integration, flexibility, and customization capabilities and Version 5.1 expands on all of these areas.

MITI will be on the road this fall with the International Spectrum conference and exhibition, presenting the MITS 5.1 product suite to a new international audience in London in September and in Sydney, Australia, in October.

MITS 5.1 offers a slew of new user-friendly features, including:

MitsView and MitsWeb:

- ◆ Multiple copies of MitsWeb gateway can now be run on the same computer, with different configurations. This allows a single server to host multiple MitsWeb interfaces to different MitsServers.

- ◆ MITS Flash screens support a new filtering mechanism for external fields. This allows a reseller to expose a sub-set of the master file dictionaries to the end user.

- ◆ Through expanding eons, columns can now be separated into time periods that make up the original column. e.g., Drill down from Year to Quarters and from Quarter to Months.

- ◆ The top line and Flash screen menus in MitsWeb are now fully customizable, allowing a reseller or end user to fully customize the look and feel of MitsWeb. The standard text links can even be replaced with custom images to further enhance and integrate the user interface.

- ◆ MitsWeb can now run as a Windows service.

- ◆ MitsWeb provides new PDF export capabilities, allowing users to generate printer-ready output using MitsWeb in a browser.

- ◆ MitsWeb now offers a new, normalized Export format so reports can be merged directly into database tables.

MitsMaker:

- ◆ Applications can now be flagged as "read only" so resellers can distribute hypercube definitions to their users and be sure that they are not changed.

- ◆ The MITS.USERS file is now more secure. A new encryption algorithm has been implemented to prevent tampering with the user profiles used in MITS.

- ◆ A custom program may now be executed after the MITS.ATTACH process, which is performed after a MITS.BOOT, allowing resellers to automate customization of their MITS environments.

- ◆ In MitsMaker, more information about the applications that exists on the server is displayed on the download form.

- ◆ A New CallSub function is available in expression fields allowing the user to call an external subroutine from a MITS column definition.

- ◆ MitsSecurity has been enhanced to allow/disallow access to MitsMaker on a user-by-user basis.

All Products:

- ◆ MITS now more fully supports 7 bit data paths, such as those found on certain HP-UX systems.

- ◆ Connection script processing features a new WAITFOR keyword, which allows for faster connections to the server.

- ◆ The connection listing has been enhanced in all client software.

Interest in MITS from the MultiValue community continues to grow as VARs and solution providers increase their support and commitment to integrate MITS into their existing business applications and end-user install base. "We enjoy a leadership role with our flagship product, MITS, as the dominant OLAP/BI tool in the industry," continued Gilbrough. "As a result, this brings a level of responsibility to continue to develop MITS, while maintaining its cost-effective and user-friendly appeal. Version 5.1 certainly strengthens our position to remain the product of choice for end-user companies and resellers who need the right tool to improve strategic and tactical decision-making."

MITS 5.1 is available immediately from OEMs, value-added resellers and system

integrators, including: IBM Corporation, Columbia Ultimate (CUBS), Prelude Systems, Intuit/Eclipse, Companion Technologies, AdvancedWare, and more. It is also available directly from MITI. New users can get a "hands on" feel for MITS by going to www.mitsonline.com and requesting the free MITS CD, or try out the live online MITS System.

Company News

Evolve 360 Appoints a European Distributor for Its Business Solutions

Zafire Ltd (UK) has recently become the first international distributor of Evolve 360's products. Evolve 360 is a leading Australian developer of enterprise software solutions for distribution companies, including advanced warehouse management, distribution and financials applications. The company has more than 30 customers in Australia; its activities include product development, consulting and implementation services and help desk support.

Zafire will be responsible for sales, marketing, implementation and support of customers throughout Europe. "All the products supplied by both Evolve and Zafire are based around UniVerse and UniData," said Roy Dickson, Zafire's client/services director. "The fact that it uses these platforms means it can run on all flavors of UNIX and also on NT, and the performance and cost of ownership is very low."

Evolve 360 products apply tried and proven distribution theories to real-world software applications. These mission-critical applications are built on the company's extensive experience with a wide variety of distributors across three continents. e-360 brings together Evolve 360's financial systems, distribution and warehousing software in a comprehensive and integrated solution. The key components are d-360, Evolve 360's distribution, financial, e-commerce, supply chain and business solution, and w-360, its advanced warehouse management tool.

d-360 gives users ultimate control and management of your inventory, increased productivity and profitability across the supply chain, seamless electronic trading relationships and complete control of financials across the entire organization.

w-360 offers users many exclusive benefits to ensure they have an advanced flexible warehousing tool that will support

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Zafire has already cemented the relationship with the first U.K. customer of Evolve 360's d-360 distribution and finance software, Burton McCall. Burton McCall recently signed an agreement for the distribution of Timberland products throughout Europe and required a distribution package that would support the business. "They attended a site visit, and after only a few hours were so impressed with the completeness and simplicity of the package, they stated d-360 was the best distribution package they'd seen," Dickson said.

For more information, contact Zafire Ltd. at rdickson@zafire.co.uk

Russia's NTC GRAN-Service Ltd. Signs jBASE Value Added Reseller Agreement

NTC GRAN-Service Ltd., based in Moscow, Russia, was founded in 1997 as a department of GRAN-Service Enterprise, a company for cash register supply and maintenance. Since that time, NTC GRAN-Service has grown from a solution supplier for the POS systems market to a company providing a full range of IT services for a variety of businesses. In 2001, NTC GRAN-Service was reorganized into an independent company providing its customers with information systems development, implementation, and consulting, IT migration and integration, Web site development, property and assets appraisal and control, and accounting outsourcing services. Among GRAN-Service's customers are Marriott Hotels of Moscow, Ice Cream Exclusive Ltd. - Baskin Robbins' franchisee, GPVO "Technointorg," and GPVO "Tyazhpromexport," to name a few.

The company's flagship software product is GRAN-Shop, a complete application package targeted at covering the full range of automation for mercantile business, including wholesale and retail shops, supermarkets, restaurants, bars, and hotels. GRAN-Shop is a cost efficient and scalable solution — it is flexible and can be easily tailored to the needs of a particular customer. It can support a virtually unlimited number of POS devices communicating with a database and application server. GRAN-Shop is modular in design and its components may be purchased in any combination, including the Warehouse Management Module, Wholesale Module, Shop Floor Module, Restaurant, Café, and Bar Module, Accounting Module, Property and Assets Appraisal and Control Module,

and Payroll Module. Advantageous features of GRAN-ShopT software are based on post relational MVDBMS technology.

Viktor E. Avdey, GRAN-Service's CIO, states that "jBASE has been chosen because of their capability to effectively help us at this stage of software evaluation and prototyping. Along with excellent support quality, jBASE offers a resource effective database engine, and a unique range of tools providing interoperability with the standard development tools for GUI- and Web-based applications. Our first project with jBASE is aimed at an accounting application migration of our long-term customers from Mentor OS to jBASE. Taking into consideration that the customer plans to re-engineer the user interface, while retaining robust and proven business logic, we were looking for powerful and consistent software," Avdey continues. "From this perspective, we found jBASE's features and support team's responsiveness and skills superior to other MV offerings available on the market. We found the jBASE and MPower1 people easy to deal with, and we hope that our partnership will be both fruitful and pleasant."

MVReportCard

Interdyne Technologies, a U2 developer for many years, recognized that there was a need for a report writer that offered a full-range of capabilities while easily integrating with MultiValue environments. The South Africa-based company decided to take action by developing a product to fill in the gaps.

"We found that there was no easy interoperability with third party report writers as they do not recognize MultiValue database structures, and U2 applications lacked the ability to print rich, professional-looking invoices, purchase orders, etc.," said Justin Styger, business development consultant. "A feature-rich report builder incorporating full Windows printing capabilities was needed. It is from this need that the BTS Report Builder was born."

The BTS Report Builder

The BTS Report Builder interfaces directly with the U2 database and allows the user to create list type reports and view them as graphs or simple lists. The Report Builder also allows the user to drag and drop fields to a template from multiple files, handling multi-values, sub-values and I-Types.

The Report Builder supports three main report types - Graph, List and Template. Here's an overview:

GRAPH: This tool enables the user to have a graphical representation of a report.

LIST: The user is able to create a listing type report calling data directly out of UniVerse and listing it in an easier-to-read format.

TEMPLATES: The user is able create a template for a document (invoice, purchase order, statement etc) or a complex report (that would previously require a program) using the built-in editing tool.

For more information, contact Justin Styger at (+27 11) 804-3260; e-mail btssupport@interdyne.co.za; or visit the Web site: <http://www.btsssoftware.biz>

For more information, NTC GRAN-Service Ltd.'s Web site is located at www.gran-service.ru. jBASE International's Web site is located at www.jBASE.com.

Growth Reported by @Better Results, Inc.

@Better Results Inc. has completed its second fiscal year as a California Corporation and is pleased to announce record sales growth in excess of 40 percent over last year. Originally formed in 1991, the company has been providing software products and services for more than 12 years. @Better Results plans to showcase its product and service offerings for attendees at the Spectrum Exhibition and Conference in Sydney, Australia, October 23 - 24.

"This past year has again proved to be a very exciting time in the growth of our company," states Jeff Jakus, president of Better Results. "We have continued to gain momentum by adding more than 40 new customer sites and we are now servicing more than 500 users. The technological improvements to our flagship product, ViaODBC, this past year have eliminated

Company Profile

the words 'slow' and 'bad data' from our vocabulary. Support calls and customer concerns have plummeted to a new all-time low!"

Better Results has expanded its reach to 26 states including Alaska and Hawaii. Supporting a broad-reaching national customer base prompted the company to open an East Coast sales office earlier this year. The office is located in Wilmington, N.C., and is staffed by industry veteran Kevin McRill, specializing in vertical markets.

"Additionally, in recognition of our Public Housing focus, the Anne Arundel Housing Authority (Maryland) has received the highest National Award for Innovation from NAHRO after implementing our @Your Service automated Public Housing Application system," states Brian Riedlinger, CTO. "This has been a gratifying experience and we look forward to assisting the other 2,800 PHA's with this technology based upon Via Systems' Web Wizard software. @Your Service provides many cost saving features with a very short-term ROI."

The company has increased efficiencies during the past year while strengthening product and service offerings through strategic alliances. Better Results has joined forces with Modular Information Systems in a co-operative agreement whereby Modular provides Help Desk Services for ViaODBC and is integrating the technology into its Vintners Advantage winery software for enhanced reporting capabilities. Synergistically, Better Results is providing incremental sales of Modular's products along with working together on joint marketing initiatives.

In another strategic move, @Better Results has entered into a preliminary agreement with Data Junction to provide data integration services for MultiValue database customers that desire an interface to Data Junction's suite of industry-leading ETL tools. Data Junction provides database connectors to the most popular tools and database solutions, but until now has been without a solid solution for the entire range of MV (Pick) databases.

According to Susan Jakus, newly appointed vice president of Marketing, "We will continue our growth by servicing our current clients, integrating new products into our existing base, adding end-user customers, working with new and existing VARs and building strategic alliances. Plans for this fiscal year call for working closer with our new partners—jBASE, RPM Consulting and HOCMC—in bringing new products to market as well as investigating new vertical markets."

Meier Business Systems - Success Down Under as IBM Distributor
Meier Business Systems (MBS) is a true success story from "down under." From its humble beginnings in the mid-'80s, MBS has remained focused and committed to its core competencies in the MultiValue database marketplace and has grown into one of the leading suppliers of IBM's UniVerse/UniData (U2) and System Builder (SB) product family in the Asia/Pacific region.

Long regarded as a prominent independent MultiValue database, SB, and software services provider, MBS boasts many years of U2 and SB expertise supporting some of the largest installed sites as well as successful software companies in its territory. MBS offers outstanding skills in operating system, database, hardware, system and infrastructure support.

These skills complement MBS's activities in the application software development arena and together with a range of open systems enabling and enhancement strategies, form the primary focus of all MBS systems integration and support activity.

Committed to customer care and increasing its service and support offerings, MBS provides regular product briefings and training in its Melbourne and Sydney offices as well as other locations throughout Australia and New Zealand.

In 2001, having been a successful IBM hardware and software Business Partner for almost 10 years, MBS was appointed as a distributor by IBM for all U2, SB, RedBack and associated products.

Shortly after, in January 2002, MBS acquired the Australian SB Tech U2 and SB distribution business. As an integral part of the ongoing delivery of product and support in the region, MBS provides product licenses, support, maintenance, education and many other products and services to its vast reseller network and end-user community.

Earlier this year, Meier Business Systems (Australia) became the proud new owner of the Masterpack and Warehouse Manager applications. MBS has had a strong and historical commitment to these applications and is excited about the next stage in the growth of its business.

MBS held a series of presentations throughout Australia and New Zealand during a recent road show, allowing them to meet end users and tell them about the future for Masterpack and Warehouse Manager. This included information relating to upgrades, new and additional modules as well as how these applications will be supported, developed, and enhanced. Through regular user group meetings sponsored by MBS, Masterpack and Warehouse Manager users are learning how to get more out of their existing systems.

Masterpack and Warehouse Manager, developed in UniVerse and SB+, provide a totally integrated enterprise-wide solution that spans the depth and breadth of the business enterprise. Comprising comprehensive business management, financial, distribution, services and sophisticated warehousing systems, these applications provide the scalability, flexibility and robustness to allow customers to continue to manage and grow their business with a great degree of confidence. The high level of integration between modules further allows companies to provide a superior level of service by streamlining all major areas of their business.

MBS extends an invitation to:

- ◆ MultiValue software developers or application providers looking to enter the Asia Pacific region
- ◆ Users of MultiValue applications looking for a provider of products or support services
- ◆ Masterpack and/or Warehouse Manager customers, consultants or service providers

Come and see them at Spectrum in Sydney, October 23-24, or contact them by phone +613 9532 9533, email martin.meier@mbs.net.au, or visit www.mbs.net.au.

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OPENINSIGHT AND DATABASES *Continued from page 31*

SQL Data Warehousing

Replicating data from OpenInsight to SQL databases is a common requirement. The OpenInsight Warehouse Manager assists with the task of replicating data to ODBC databases. Before you can use the warehouse manager, you define a connection to the ODBC database as described earlier. There are three steps to using the tool. First you use the Create Warehouse Procedure Option from the Client Server Workspace Tools Menu to define one or more warehouse procedures. Then you configure the Warehouse Manager by specifying which procedures run at which times. Finally you use the warehouse manager to actually perform the replication. Configuring the connection and the Warehouse are one-time steps. Once you have everything configured, you simply start the manager and it will perform the replications on a regular schedule.

Tips

Exchanging data with SQL databases can be problematic. The main sources of trouble are data types, data normalization, and data integrity. Data type issues arise because SQL databases are strongly typed, while MV databases are not. Also, the ODBC driver has trouble with newer data types like images and long text. Data normalization issues arise because MV databases can store associated arrays of subvalues, while SQL cannot. SQL requires you to break your data into a parent table and one or more child tables.

While OpenInsight's warehousing tools allow you to split a table into several parent/child tables, the SQL database may use internal ids to link the parent/child rows, so you cannot succeed. Referential integrity problems arise when the SQL database prevents you from inserting a row into table X unless there is a parent row in table Y, e.g., you cannot insert a row into the orders table unless the customer exists. Data integrity rules may force you to send data in a very specific order.

Finally, if you are working with Microsoft Access, you can have problems because Microsoft Access syntax is not completely compatible with the syntax enforced by the ODBC driver. Thus, you can build and test an SQL statement inside of the Microsoft Access SQL window, paste it into the OpenInsight SQL workspace and have it fail.

My recommendation is that you do not try to solve these problems from within OpenInsight. Forcing your OpenInsight database to know all about the structure and rules of the receiving database couples you to that database and guarantees frequent problems. Try defining staging tables in the SQL database. Implement a normalized version of your MV data with simple data types. I use only character types. Have the owner of the SQL database write stored procedures to move data from staging tables to real tables. Replicate into these staging tables, then have OpenInsight execute the stored procedures. Another common mistake is to try to replicate the data too frequently. As long as you refresh the data more frequently than the client looks for it, then you will be real-enough-time.

Non-ODBC Methods

ODBC is a legacy format. Delimited data, in the form of XML, is now the preferred method of data exchange. Delimited data is also a natural fit for MultiValue database products like OpenInsight. If you need to send data to Oracle or Microsoft SQL server, look into exporting your data as XML files using OpenInsight's XML tools, then use the XML bulk import tools to load the data into the receiving database. The Oracle and SQL Server XML tools provide for the normalization and data type conversions. Using these tools leaves your database decoupled from the receiving database. In fact, you can simply publish the XML to a subdirectory. Multiple databases can subscribe to the same set of XML without affecting your OpenInsight database. You can even point the Crystal Reports XML ODBC driver at the subdirectory and run reports directly from the XML. If you need to receive data from other sources, look into having the sending database push an XML transaction into OpenInsight using the OpenInsight Internet gateway or the OpenInsight COM object.

Conclusion

Today's database applications need to be team players. ODBC is the 500 pound gorilla on the team. Kind of ugly, but you have to deal with it. Delimited data (XML) is the rising star. OpenInsight has the ODBC tools to tame the gorilla. Better yet, like every MultiValue database, when it comes to delimited data, we are the natural. Download a trial version from the demos and download section at www.revelation.com [is](#)

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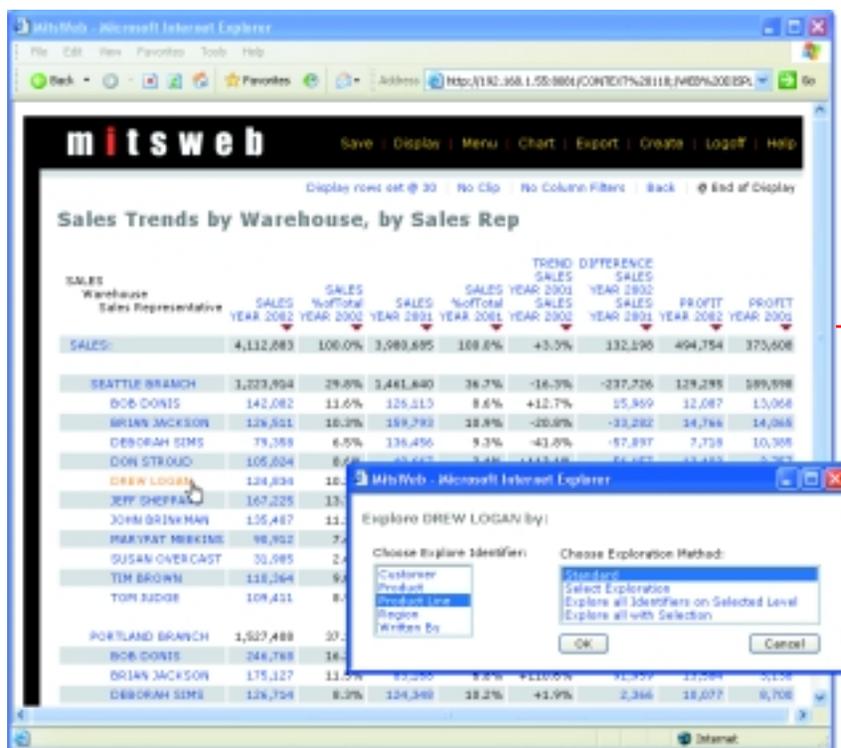
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