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- Business Tech: Communication is Key
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Your Next MultiValue Editor MultiValue sometimes lags behind newer programming languages when it came to editing options. We're a resourceful bunch, so periodically, someone steps up and helps us use the latest and greatest. VSC (Visual Studio Code) has pulled to the front of the pack of modern, extensible IDE (Integrated Development Environments). We now have a way to leverage it in our daily work. **BY DICK THIOT**

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Business Tech: A Seat at the Table: Communication When I was little, I asked my mom if one hundred dollars was a lot of money. She responded with: "Do you have it or do you need it." Context is critical. When we communicate with the other departments in our company, that communication becomes the context that helps them judge us. Let's improve our status but understanding how we contribute to our own reputation by managing, or failing to manage, our context. **BY CHARLES BAROUCH**

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Taking Control: The Argument for Consulting Some of us have a side gig consulting. Some never even dip our toes into paid-by-the-project or paid-by-the-hour work. And, a number of us have gone all-in, where consulting is our entire income. Here's the twenty-five year view of one programmer who went all-in. **BY KEVIN KING**

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Op Ed: Pick (MV) is Dead - Long Live Pick Technology, especially business-oriented technology, doesn't live in a vacuum. Our wins, and or losses, in IT come from wacting and reacting to changes in company needs. They come from understanding what's next and what's a passing fancy. As low-code and no-code solutions continue to gain traction, we need to see to look to the future.

BY BOB MARKOWITZ

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From the Inside

Do you think you are a good coder? Have you been practicing your coding, or have you just been doing your job?

If you haven't been practicing your coding, then you are likely getting rusty in your coding. When you are a musician or a sports star, you have talent and practical demonstrations of what you can do, but you also practice, practice, practice.

Most of us assume that our day to day software development is our practice. This is not the case. Let's use basketball as our example. Your day to day software development is much like an NBA Game. This is where players make their money, they spend most of their time reacting to the game and other players.

Players then spend time between games practicing their jump shots, layups, and passing in order to do better in the games. This is what you as developers need to do.

This is also where "Code Kata's" come into play. Code Kata was a term coined by Dave Thomas, co-author of the book *The Pragmatic Programmer*. A Code Kata is an exercise in programming which helps a programmer hone their skill.

I've talked about using Code Katas in the past, so I decided to introduce a new one.

Kata One — Cash Drawer CountOut

Many Retail locations have a drawer that cashiers have to count in and out every day. At the beginning of each day the drawer must have \$200 bills and change.

At the end of the day, the cashier counts their drawer out and sends all the money that is over \$200 to accounting, but they must have at least the minimum of each bill/coin listed below, and no more than the maximum of the following bills/coin listed in figure 1, totaling \$200.00.

Bills	Min	Max
\$100	0	0
\$50	0	0
\$20	0	10
\$10	3	6
\$5	5	15
\$1	27	45
.25	0	120
.10	0	150
.05	0	120
.01	0	200

Figure 1



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NATHAN RECTOR
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CHARLES BAROUCH
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Layout



Learn more about the MultiValue Symbol and see what MultiValue Technologies and MultiValue Communities exist to help you support and manage your business and systems. To find out more visit

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\$5	17	7	8
\$1	24	30	16
.25	41	10	69
.10	30	50	50
.05	63	59	60
.01	107	114	118

Figure 2

Based on the information in figure 1, how would you code the program to generate the output to accounting using the information on the cashiers ending day Bill/ coin count found in figure 2? IS



NATHAN RECTOR
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This thirty-fourth issue of Tales from the Canyons of the Damned consists of four sharp, suspenseful, thought provoking short stories—each from a different featured master of speculative fiction.

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Your Next MultiValue Editor

BY DICK THIOT

There are lots of ways to edit programs in your MultiValue system. Most everyone has used the original editor “ED”. Others use more advanced editors, many of which are included with your MV database like BDT, JED, SED and as well as popular third-party options like WED, Notepad++ and Sublime.

In non-MV environments, more full-featured IDEs are common today. They offer code highlighting, formatting, and other advantages. Many of these can access MV data, which means we can use them for mvBASIC. In a growing number of cases, people have already extended them to understand our code so that we get the maximum benefit from all the bells and whistles.

The newest option available to MV developers is VSC (Visual Studio Code) from Microsoft. It is an open source editor designed for developers that is not only free but it is also extensible. It's not just driven by Microsoft development teams, but the broader com-

...with VSC you can standardize on a common editor across languages.

munity as well. In a short period of time VSC has become one of the great open source success stories in the industry, with thousands of extensions available for free download. VSC also brings many other features that MV developers can benefit from.

While VSC is primarily a code editor with support for many modern languages including Javascript, C#, Python, JSON, XML, Typescript, Node.js, and many, many others, it has a host of features beyond code editing. One of the particularly beneficial features of VSC is that it is designed to accept extensions that enable the community to further extend the functionality of VSC. For MV developers, ONgroup's Chief Architect has released an extension for editing MultiValue code with the following features:

- Syntax Highlighting
- Intellisense and Code Completion
- Code Folding
- Code Formatting
- Goto/Peek Definition - Automatically jump to or peek internal subroutines
- Goto/Peek Definition - Automatically jump to or peek CALL, CHAIN and INCLUDE routines
- Syntax checking for GOTO's/ GOSUB's, LOOPS, CASE Statements and IF/THEN/ELSE statements
- Access Remote programs and files on U2, D3, jBASE, OpenQM, MVON# and others
- Find all references of a word within the current program
- Shows outline of internal subroutines, include files, and subroutine calls
- Code Snippets

- Git Integration
- Compilation and Cataloging

Beyond editing features, ONgroup has published extensions for executing TCL commands within VSC. And, if you are using MVON#, a full screen debugger.

To begin using VSC, first download it from <https://code.visualstudio.com/>. There are versions for Windows, Mac and Linux. Once you have installed VSC and launched it you will need to download your first extension. The extension from ONgroup for MultiValue is called MV# Developer Extension. To install an extension click on the Extension icon in the icon bar on the left of your VSC [Figure 1].

After installing the extension, you can find documentation for the extension in your `c:\Users\{UserName}\.vscode\extensions\ongroup.mvon-{VersionNumber}\doc`. In the documentation, you can read how to create a workspace and connect to your MultiValue database. Workspaces are configuration files that contain information on how to connect to your MV database as well as other options that you may want to choose like automatically associating your programs with

the MVON# Basic extension, tab and margin size, custom words, using camel case and VSC options like themes/colors and many others.

Why would a MultiValue developer want to use Visual Studio Code as their code editor? You may even already have an advanced code editor. You probably feel very comfortable with it. The best reason is that the development industry has been making incredible advances over the last several years. MultiValue is often perceived as failing to make advancement while the rest of the development world moves to newer technologies. Using the MV extension with VSC allows you as a developer to join in on modern development approaches to coding. Many of you already use multiple editors for different tasks and with VSC you can standardize on a common editor across languages. Besides previously mentioned support for a broad range of languages, there are also extensions that allow calls to RESTful Web Services, encoding and decoding BASE64, support for collaborative development, integration with Git, SVN and other source control systems, live server which will automatically show changes to web pages as you save the files,

SFTP, SQL integration and thousands of other extensions. At the time of this writing there are 13,055 extensions available, all free. Did I mention that Visual Studio Code is FREE?

Recently, ONgroup has joined with senior developers from Zumasy, along with consultants and end-users from the MV industry. to create an industry group to further develop this extension to enhance the features for all of the major MV platforms. The group has adopted the name MVExtensions and can be found on Github at <https://github.com/mvextensions>.

At the time of this writing, the version from MVExtensions has not been published but may well be available when you read this article. With the power of VSC available to MV developers, the group expects to create a standard IDE (Integrated Development Environment) that can be used across a majority of the MV industry with powerful features previously not commonly available to MV developers. Watch for announcements of availability of the MV Basic extension in the near future if it isn't already available. **IS**

DICK THIOT, President/Owner of Maverrick Systems, is a technology guru specializing in software development and application design. He supports these skills with a broad knowledge of systems, networks and security. His application development experience centers around database-oriented business applications including accounting systems and information management using MultiValue and SQL Server databases. He has created and continues to specialize in software for automobile dealers and the financial institutions that support them.

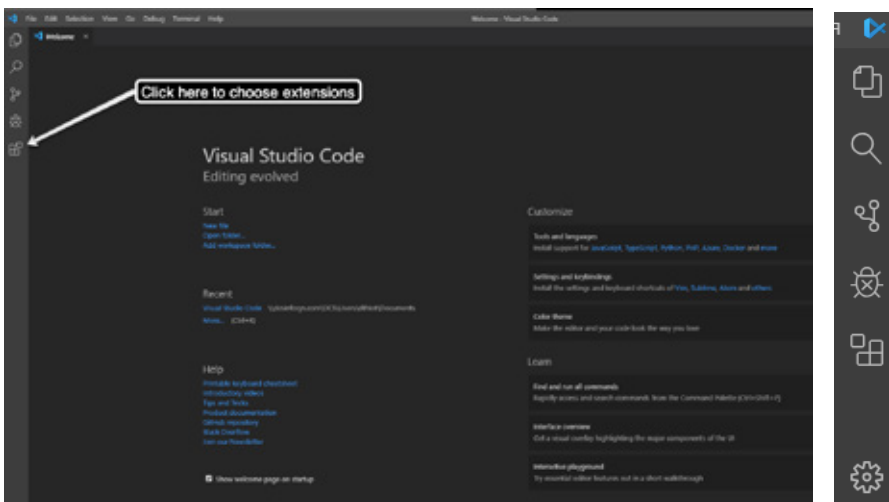


Figure 1

A Seat at the Table

Communication is Key

BY CHARLES BAROUCH

It's two in the morning. Your mom is worried. Why is she worried? Because she didn't hear you come in at nine o'clock and didn't see you go straight to bed. She thinks you're out there, somewhere.

When she sees you in the morning, there will be accusations and allegations. This isn't because you did anything wrong, it is because you failed to communicate. Much of IT's problems are of exactly this sort.

LATE!!!!

You're working on a major project and it requires a couple of all-nighters. You blew off a friend's party to get it all done. We've all starred in this movie at some point.

But you do finish, every bit of it is not only done, but essentially bulletproof. You're so exhausted you oversleep the next day and miss the deadline.

Imagine that exact scenario but, just before you went to sleep, you sent an e-mail. It told the appropriate people that the project was finished. Now, two things have happened: first, they know you finished, second, when they

What you must understand and accept is that it has to be done, even when it isn't easy.

see the time stamp on the e-mail, they might have more empathy when you oversleep.

Some of you are groaning that doing the work is more important. This isn't about what's most important, it's about doing the whole job. And paperwork — e-mail in this case — is part of the job. That's the hard lesson here: You didn't finish on time because you left out a critical step, communication.

Easy?

Anyone who knows me knows that I like to talk. I like to write. The communication part, while it doesn't come completely naturally to me, is easier for me than some.

What you must understand and accept is that it has to be done, even when it isn't easy. The job, pretty much any job nowadays, includes clear and effective communication.

That means timely communication. It means a passable command of grammar and punctuation. It means reading it over before you hit send.

Great Expectations

We also have to face the fact that most of our workmates, in and out of our department, struggle with effective communication. Part of the reason we need to excel is because we have control over us, not them. We are the only part of the equation that we can fix.

So, when the head of operations sends a memo asking for us to build a data unicorn, it is on us to find out what he or she thinks that is. If Dave guesses something when he requested it and we assume something else when we read it, then no one ends up happy and a lot of hours get burned.

Send old Dave a write up on what data unicorns do and don't do. Let him give you feedback so that you can both agree that he meant a data rhinoceros. Or perhaps he did mean data unicorn but not the type you were thinking of.

This should be standard policy. Even when you know Mary will bite back with "I don't have time to read this."

IT audits have you jumping through hoops?



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You still have to do the steps. If I have to defend my department's work, "Mary didn't give us feedback" is stronger than "I assumed she wouldn't be helpful."

Manage expectations. Clarify goals.

However

Now I have to defend the Marys and Daves of the world. Responding is not the same as communicating. You need to know your audience. If I send a technical response to them that's over their heads — we get paid to keep current on IT, they don't — it is on me to be a better communicator. We can't hold their hands or make them read. That isn't our job. It is their job to do their job. However, we have to make sure we have explained ourselves clearly to the audience we are addressing.

This isn't, to quote a previous workmate, a case of "pass the monkey." We aren't responding just to put the ball in their court. The goal is useful information. Even if they aren't being particularly cooperative, we need to be. IT is a service department.

We We We All The Way Home

A lot of people have "I" disease. We need to learn to say "we" more often. There are several reasons for this pronoun shift.

When I tell you what I did, I exclude you from any credit. It is much easier for Andrea in the warehouse to get behind and idea the "we" (Andrea and I) cooked up and executed, even if I did most of the execution.

Additionally, "I" can sound like bragging. "We" is inclusive and therefore is automatically more generous. "Our team did" — as opposed to "I" did" — might feel less fair but the goals are met. And, you do have to understand that we almost never succeed in a vacuum. I once fixed a major A/R problem by finding the last bug after someone else had already fixed the several dozen other bugs. So, yes, "I" fixed it, but "we" fixed it is more honest.

Self-Control

Some of us, maybe all of us have seen that organizational flowchart which implies that the boss' secretary is really in charge, right? We look, we laugh, we admit there's some truth to it. What gives a secretary power? Control of access and control of the narrative.

Access we get, if you are the gatekeeper I have to work with to get to the boss, that's power. The other one, narrative, many people don't understand its power. Imagine if I wrote a memo which said: "IT agreed to complete all work within

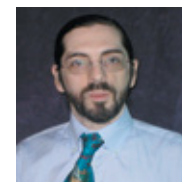
sixty days." Now imagine if it said this, instead: "IT agreed to complete all work in sixty days assuming Accounting has all the data ready in a timely manner."

The second one shares responsibility. The first is unconditional. The person recording the meeting notes might write either one. Unless, of course, the person writing the notes has a stake in the difference. I tend to write the notes for any meeting where my presence is important. That way, the details make it in.

And, I don't just protect Chuck's details or IT's details. I protect everyone's. That's why no one complains when I offer to take the notes.

When I'm done making my notes, I e-mail them to everyone with a request for corrections. Why do I request corrections? First off, I might not get everything right. Secondly, people often wish to clarify things they said in the meeting. Finally, I can't get roasted for doing it wrong over an error or two. It takes the pressure off.

I hope this series has been useful to you as we take our seats at the table. If I missed any important topics, e-mail them to editor@intl-spectrum.com and we can see about covering them. **IS**



CHARLES BAROUCHE is the CTO of HDWP, Inc. and the Publisher at HDWPbooks. You can read his writing in

International Spectrum, Theme-Thology, Novo Pulp, Pax Solaria, PerhelionSF, and the Interrogative series, which begins with Tiago and the Masterless.

Taking Control:

The Argument for Consulting

BY KEVIN KING

Confession: I started Precision Solutions on a bet.

In the early '90s, I was a staff programmer spending countless hours building a solution for my employer. In exchange, I was getting to the end of each pay period with a negative bank balance. With a wife and two children, living in an apartment with a tendency to catch fire at unexpected times, it wasn't exactly what you might call a dream.

That year, one of my team members at work decided to leave and hang a shingle as an independent consultant. Losing her expertise was very difficult for those of us left behind, but we went on. A year later, my story begins...

During a lunch with this same colleague, she told me that I *simply must* get out of the daily grind and get into consulting. She knew my family was struggling financially. She said that in the past year, she had made more money than the last five years of my income combined. Yet, while I hated having a fire extinguisher at the ready — a comfort I could hardly afford — the thought of going from *a steady but insufficient paycheck* to, potentially, *no check at all* was pretty darn terrifying.

...knowing where you are is the only way to keep track of where you're going.

Not to be daunted, she turned it into a bet. Specifically, she said, "I bet you that if you do this, in one year, you'll be successful." And to my eternal shame, I took that challenge. I was literally betting that in one year I would fail. Fortunately, I lost that bet. Twenty-five-plus years later, and still going strong, I can tell you that betting against yourself is a really, really bad idea!

With that in mind, I'd like to share a few lessons learned through growing a one-year consulting experiment into a twenty-five-year-old software company.

Lesson #1: You can do this.

Once I had a couple wins, it became clear that success was not only possible; it was plausible. Unlike working for an employer, where someone else controlled whether I was employed or not, in this arrangement my future was mine to make or break. I started thinking of consulting as having multiple bosses, where each one had some

control over my future, but no single boss had universal control. When one customer moved on, another filled the gap, and the business continued uninterrupted.

One of my favorite quotes is "I am the best hope they have." Despite what appears to be blatant narcissism, it's a reminder that if I don't believe in me, why should anyone else?

Lesson #2: You and Your Business Are Separate Entities.

In the consulting world, people often think of their businesses as an extension of their personal lives. While it's important to have that ownership perspective, when it comes to what's on paper, you and your business should be completely independent entities. Don't run your business out of a personal checking account. Create specific accounts for the business to keep that income and expense separate from your personal income and expense.

One of the hardest things to overcome in the U.S. is that when you have a sole proprietorship type of business, banks, insurance companies, and even the government look at you as being "self-employed". While accurate, that identity can become a significant disadvantage when getting loans or insurance for yourself or for your business.

To overcome this, incorporate (either as a S-Corp or LLC in the U.S.) You'll still be self-employed, but outside organizations will take your business more seriously.

Lesson #3: Accounting Is Essential

At the beginning, I used spreadsheets to keep track of income and expense, for the sole purpose of not being surprised by taxes at the end of the year. And guess what, that first year was SUPER SURPRISING for taxes! Yes, there was a record of what was earned and spent, but virtually no visibility to how any of it worked together. Fortunately, there was almost enough money to cover the tax bill, so it wasn't a tragedy. But keep in mind that knowing where you are is the only way to keep track of where you're going.

Get some good accounting software to keep track of it all. Be able to generate Profit and Loss, Balance Sheet, and Income and Expense statements. And understand what each of those things do to help you understand your business. Your banker will thank you for it. Most importantly, keep a watch on your trend lines (earnings vs. spending) to see how your business is doing.

Finally, if you get to the end of a period and have any money left over, sock it away in some account and do your best to forget about it. Always be saving for a rainy day because there *will* be storms along the way!

Lesson #4: Adapt, Adapt, Adapt!

At the beginning, I didn't have a computer of my own. All my work was on other people's machines. When I bought that first PC, it stunned me. As a person making a living as a programmer, this machine in my home was completely unprogrammable for me. This led to a constant search for more knowledge, from Windows to Unix to Web to Mobile to virtualization to containers to ... the quest continues.

Never be satisfied with "I'm a _____." (Fill in the blank with anything you like, from Multivalued programmer to Java to Web to Python to ... anything.) With the wealth of resources available today, the best way to ensure survival is to stay agile in adapting to an ever-changing technology landscape. Never stop learning.

Business today is not the same as it was a year ago, and it's certainly not the same as it was twenty-five years ago. Limitations are for your competitors. Without being misleading, be a master of the "irresponsible yes". Be willing to say yes to projects that will require

you to learn something new, not just projects which only require your existing knowledge. Take the initiative to stay up to date on current technologies so a ground shift is more of a speed bump than a cataclysmic event.

Lesson #5: Surround Yourself With Like-minded People

Whether employees, subcontractors, vendors, customers, bankers, or baristas, surround yourself with like-minded people who are all working to make each other better. I have been blessed with an amazing staff that is driving our company in positive directions. You see, after twenty-five years, it's not about me. In fact, it never has been. It's about our customers, our staff, and the relationships we have built through the years that produce real results for real people.

But Wait, There's More

Now, there's a thousand other lessons that have been learned through experimentation, stress and hours of intense work. And it's so very true, every business is different so your mileage may vary. But these are something to consider if you're looking for a new chapter.

Having a business has been an amazing ride, filled with ups, downs, joys, sorrows, all of it. I like to think I've lived two lives: one as a person and another as a business owner. That said, I'm *really happy* I lost that bet. **IS**



KEVIN KING is the President and Chief Technologist with Precision Solutions, Inc., a leader in technology solutions, support, and training.

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FROM THE PRESS ROOM



Ashwood Computer, Inc. Announces The New "Enterprise Edition Of ForeMost ERP" is Now Available!

ForeMost ERP version IV Enterprise Edition – includes many new functions.

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- New Improved Quality Modules
- Improved Performance, Faster System Responses
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- Support For All MultiValue Databases
- Low Code App. Dev. Tools, .NET, eCommerce and The Web
- New API interfaces with Shipping, sales tax solutions, Power BI
- Additional Python interfaces and a ForeMost Container

As per Rod Owens, President of Ashwood Computer; "Our A-Team members have worked hard on the development and testing of all of these new features and we are very excited to be able to offer this new ForeMost functionality to our customers and prospective new ForeMost ERP solution users. This is another great example of a WIN/WIN solution for businesses utilizing ForeMost and for MultiValue database users around the globe because with ForeMost we enable them to continue to reap returns on their original investment in a MultiValue system!" ■



Eden Capital Acquires MITS to Enhance Robust Software Platform Featuring Compass Sales Solutions and Tour de Force

Eden Capital acquires MITS, an analytic platform with business intelligence for a broad base of customers within the manufacturing and distribution space. MITS joins sister companies Compass Sales Solutions

and Tour de Force in continuing their delivery of software solutions that empower companies to make the best business decisions.

For over two decades, MITS has help over 1,000 customers gain better insight into their operations and uncover more opportunities through business intelligence and analytics. MITS' industry-specific analytics solution is packed with customizable dashboards and reports so customers get both a long term platform for analytics growth and immediate value and ROI.

Combining MITS with the product offerings of Compass Sales Solutions and Tour de Force allows these three companies to expand value for their customers by integrating CRM and BI / analytics into a single platform for existing and new customers.

"MITS has always believed business results are the key measure of analytics success and becoming a part of this growing and evolving software suite will exponentially expand our abilities to deliver significant bottom line value to our customers," Gary Owen, CEO, MITS. "We've seen tremendous success in the distribution and manufacturing industry, and we're excited to continue our journey with Compass Sales Solutions and Tour de Force to deliver even more value to all of our customers."

MITS, combined with Com-

pass Sales Solutions and Tour de Force, will help empower the manufacturing and distribution verticals with business intelligence and seamless ERP integration to help solve challenges, seize opportunities and make decisions that move the needle.

"We consistently look for ways to better serve our customers with software solutions that help improve business efficiencies and increase revenue," says Doug Braun, CEO, Tour de Force. "All three solutions evolving together allows us to offer a stronger, more robust offerings that will have a positive impact on our customers' bottom line." ■



ONgroup & Zumasys Join Forces, Embracing Open Source to Create Visual Studio Code Extensions For MultiValue

Zumasys, a leading provider of NoSQL databases for business-critical Pick applications, today announced its collaboration with ONgroup to release new Pick MultiValue developer extensions for Visual Studio Code, the

FROM THE PRESS ROOM

free open-source editor created by Microsoft for Windows, Linux and macOS. In just three years, VS Code has grown rapidly to become the most popular Integrated Development Environment (IDE) on the market.

ONgroup pioneered this space with the release of the first Pick extensions for Microsoft Visual Studio Code. Committed to bringing new developers into MultiValue, ONgroup and Zumasys hope to enrich the community and improve the development experience for both seasoned Pick veterans and for the next generation of MultiValue programmers.

The three Zumasys contributions to the MultiValue extensions for Microsoft Visual Studio Code centered around an enhanced architectural direction with RESTful services and making the product configuration driven, which allows other MultiValue databases such as D3, Unidata, Universe, Revelation, Reality, etc. to easily integrate and improve all flavors of Pick and the market as a whole.

Code via ONgroup's MV# product are now available on Microsoft's Visual Studio Marketplace:

- **MV# TCL Extension:** Used for code highlighting, intellisense, and syntax checking for MV# command line development
- **MV# Developer Extension:** Used for code

highlighting, intellisense, program formatting and remote file connectivity for PickBASIC code development

- **MV# Debugger:** Allows developers to visually debug PickBASIC programs

The MV# Developer Extension is available for jBASE, MVON# and OpenQM with linter, syntax highlighting and remote file support. The MV# Debugger requires implementation by the platform provider, such as Zumasys. Presently, it has been implemented only for MVON# but Zumasys is in the process of adding debugger support for its databases as well.

"We greatly appreciate the participation of Zumasys, a top provider of MultiValue platforms," said Chas Stauffer, President of ONgroup. "Together, we can do a lot of great things for this community and become a force for innovation in MultiValue for the benefit of customers and vendors alike."

With this collaboration, Zumasys and ONgroup are enabling programmers to easily code in Pick BASIC using Visual Studio Code. Not only does this empower the current MultiValue developers, but it also embraces the next generation by supporting what has quickly become the world's most popular development environment.

"MV Extensions speak to the next generation of develop-

ers, and it gets them working with Pick in an environment that they're already familiar with, which is a huge benefit," says Mike Wright, Senior Software Developer at Zumasys. "In addition to allowing MV developers to work with Visual Studio Code, the MV Extensions product itself is open source and accepting of community contributions. We encourage everyone to visit <https://github.com/mvextensions>, where they are free to join in the discussion or even contribute to the code. This kind of openness and accessibility is exactly what the next generation of developers are gravitating toward."

An Unlikely Partnership

Zumasys could see value in what ONgroup had done with its MultiValue extensions for Visual Studio Code and reached out to the company to collaborate. "This would not have been possible without ONgroup," says Wright. "They really set the table nicely from the development side, and we're really excited about this opportunity for collaboration and breaking down walls to advance the community as a whole."

"The Pick licensees were historically very competitive with each other; but this is a new era, and we viewed this as an opportunity to join forces and do some good," says Paul Giobbi, President of Zumasys. "It's the first time that we've seen two Pick vendors col-

laborate on an open-source product for the benefit of our customers. And because it's open source, anyone in the global community can improve and contribute to the product, which is truly exciting."

Building on the work that ONgroup has done with its plugins, Zumasys hopes to lend its extensive Pick development expertise and global presence to further the success of this important open source effort. By investing in development tools that will be freely available to everyone, the two companies will continue to grow and expand the global MultiValue community. ■



Rocket Software Announces Universe 12

Rocket software is excited to announce the release of Rocket UniVerse 12.1.1.

This new release is designed to deliver accelerated transaction performance, data integrity, and reliability for enterprises that want to better handle extreme transaction volumes and quick data recovery when system failures occur.

Highlights include:

- **UniVerse Recoverable**

FROM THE PRESS ROOM

File System (RFS): RFS ensures you'll never lose a transaction and reduces the risk of file corruption.

- **Field-level updates during replication:** Field level updates provide better performance via faster replication and decreased disk space usage
- **Change Data Capture (CDC):** Within audit logging, CDC provides change details at a granular level. You'll spend less time and expend fewer resources to meet audit requirements.
- **Performance enhancements:** For

example, SQL query optimization returns query results 10% to 26% faster.

- **Additional features:** In order to stay current with the constantly growing Python library, the UniVerse 12.1.1 Python library has been upgraded to v3.7. Python is now available on AIX and data output to JSON format are just two of the many new features. The ability to output your data to JSON makes your MultiValue data available to more applications and markets increasing opportunities for your business. ■



International Spectrum Announces 2020 MultiValue Conference and Partner Exchange

Change. Adapt. Evolve!
The 39th Annual MultiValue Conference and Partner Exchange will be held on April 20 – 23, 2020 at the Saddlebrook Resort in Tampa Flori-

da. Don't miss out on this valuable opportunity to connect with other MultiValue developers and users. The conference is a four-day event filled with a wealth of sessions and networking events specifically geared for the MultiValue community. Early Bird registration will start on Monday October 28th. Save The Date and plan on attending. ■

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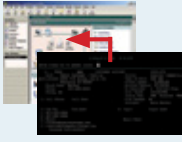
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Pick (MV) is Dead – Long Live Pick

BY BOB MARKOWITZ

The MultiValue world is evolving — slowly, very slowly. The upper management in many of our companies are beginning to appreciate that the way to the future is based in understanding what is happening in software development. It's not just MultiValue development, they are looking at the entire IT marketplace.

In order to appreciate what is happening today we can look back at the history of a U.S. business to understand the disruptions technologies have caused. In the 1800s there was Sears, Roebuck and Company, a small retail business in Chicago, IL.

Someone came up with the clever idea to put all the products they sold into a book. They called the book a catalog. It came from an understanding that there was a need in rural America for people to buy lots of stuff they could not buy at the general store.

Sears shipped catalogs to every person they could find across rural America. Those people liked what they saw and ordered stuff from the catalog. Sears had to hire new people to open envelopes, put money into a pile, place orders into another pile, pick product,

Apps developed by low-code platforms are the fastest growing segment in software.

pack product and ship product. This idea — selling through a catalog to rural America — caused a shift in the way people bought stuff, and not just in the rural areas. It was a disruption in the way people purchased things throughout the U.S.

Companies had to transform to meet the model Sears had created, or disappear. Many brick and mortar stores added catalogs and Sears grew even when faced with competition.

Then came the telephone! People had a new way to communicate. They could pick up a telephone, call a company and order something from that same catalog. Companies again had to transform themselves.

They needed to have a telephone — a telephone switchboard was even better. Companies had to hire switchboard operators to receive and forward the calls. The forwarded the calls had to go to someone. That meant hiring

orders takers. Then they developed ways to offer credit.

Companies like Sears also still had the group that opened mail in addition to the group taking orders over the telephone: two groups taking orders, feeding a common group of pickers, packers and shippers. Companies were transforming themselves again based upon the technologies available.

Companies that did not adapt to these new ways of doing business had less market share or ceased to exist. We might call this an analog transformation. And Sears grew!

And somewhere around sixty to seventy years ago, the commercial computer arrives in the middle of all of this. Orders still arrived in the mail, by phone, and from outside sales representatives, but the extensive manual processes that managed all of that were giving way to automated processes.

Order sheets would be given to key-punch operators that would enter data, the data would be recorded on punch cards, thin pieces of cardboard. All of the cards would be placed in a sorter and checked for errors. Errors would be re-keyed and the process rerun.

Once “clean” the data would be loaded into the computer and massaged by programs that provided various reports. Companies added data processing departments, who used batch processes, to generate reports for accounting, manufacturing, order entry, picking, packing, shipping, etc. Suddenly new categories of jobs appeared: data processing manager, systems analyst, programmer, computer operator, keypunch operator. And the list goes on... Some might call this the first digital transformation. And the Sears IT department grew.

And somewhere around forty to fifty years ago companies like Apple (Steve Jobs, Steve Wozniak, Ronald Wayne), Microsoft (Bill Gates, Paul Allen), and Microdata (MV implemented by Dick Pick) were founded. A new major digital transformation was happening.

Dick Pick’s product allowed for multiple terminals plugged into a single computer. Computer programs were easier to write, leading to the formation of application providers, especially VARs (Value Added Resellers). The application programs that ran on Pick’s operating system allowed for online, real time, interactive verification of data, the checking of inventory, easy creation of reports, etc. and the elimination of paper cards. The Pick system was environmentally friendly! This was a major shift away from batch.

The Pick system could have hundreds if not thousands of terminals attached to a computer. Each terminal had an operator entering data that provided real time processes. Each terminal required a MV license. Companies had “farms” of people entering all kinds of data. Order entry clerks still had paper

forms (orders) to enter. Customer service reps entered orders from customers on the phone. Some companies allowed their customers to place orders directly into the system via connected networks using modems. Since each connection required a MV license, the Pick market grew.

And then came the internet! The web also allowed customers to enter their own orders without dedicated connections. MultiValue databases VARs and end users had to figure out ways to get orders from customers over the web. There was no easy way to connect the web to the MV system. Early on many end-user companies used third party providers that published catalogs to the web and allowed customers to enter orders into third-party systems. The data would be batched overnight — we were back to batch — to the subscribing company and that data would be massaged by DataBasic programs to pick and fill orders, ship orders, and do all the other business steps.

As time went by this caused companies to lay off data entry clerks and cancel MV licenses. The web was replacing mail-in orders and phone orders with orders which were already in a digital format.

The web didn’t just reduce existing licenses, it caused fewer new licenses to be sold. This became a domino effect. The loss of MV licenses caused the loss of revenue for VARs and the MV database providers, which caused the laying off of staff, and so on. The MV database providers needed to find ways of having a direct connection between the web user and the MV database as a way to increase revenue and remain relevant to their user base.

As a defense against market conditions, some MV database providers bought

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or created MV oriented web development tools. For example, Rocket (one of its predecessors) bought Redback eventually leading to Web DE. jBASE created jBASE Web Builder. Revelation Software create O4W among others. The canceling of MV licenses still hurt the MV database providers and VARs and the Pick market shrunk.

And that shrank the knowledge base. Aging and retiring programmers also contributed to companies leaving to go to non-MV application providers. As an aside, and in my opinion, the MV database providers did not and are not planning for the next wave of disruptions that are coming. Like all previous waves, those changes will be caused by the change in customer preferences as well as changes to current and future technologies.

Adding new backend languages, restful web services and .NET connectors doesn't make the adoption of modern technologies easy to use or learn! There is a learning curve and the requirement to do longhand coding.

There is the need for Agile Software Development (fast development times, easy app enhancement and app modifications) so that VARs and end-users could react to technological changes and market conditions. The VARs (creators of MV applications for sale using the MV database) must react to the market conditions their customers (users of MV applications) and their customers' customers — the buying public — live in!

The MultiValue technology from forty plus years ago is still the technology that MV developers rely upon today. Oh there are some advances into web and .NET connectivity but the basic underlying technology is still the same.

And as markets change the apps must change. The company using MV must find a way to quickly transform their application code in order to meet current and future market conditions and technologies. One way is to shift toward low-code solutions.

The rest of the world *is* adopting low-code. As a result RADP (Rapid Application Development Platforms) are becoming more important. An even newer wave, MXDP (Multiexperience Development Platforms) is low-code on steroids!

Apps developed by low-code platforms are the fastest growing segment in software. Along with low-code adoption comes new procedures and processes that invade all segments and departments of a company, not just IT – to understand this better, Google “citizen developer.”

In MultiValue, we've always talked about user ownership of data, low-code/no-code is the move toward user ownership of code. The IT department is shifted, in this paradigm, from the keepers of data into the role of strategic differentiators. IT is finally being seen as a way to increase customer value, profit and market share. Low-code platforms provides a solution to the digital transformation (Google “digital transformation”) that is disrupting current business processes.

Digital transformation, like every disruption before it, requires the adoption of new technologies. It impacts company cultures and processes. Disruption isn't easy because it changes the way a company conducts its business and that involves risk.

We see the Pick model as the world's best for writing business applications.

At one time, it was. But it is no longer appears to be true. That battle is over.

We in the MultiValue world have not been successful in gaining a mass conversion of businesses from the SQL world. There are too few software development companies writing new MV apps. You will not find new development in MV applications coming from developers that began their software journey in the SQL world. And no matter what the MV database providers say about their efforts to recruit young blood, we do not have a high percentage of new (YOUNG) developers in the industry writing MV apps today.

What we can do however is extend the life of MV installed applications by doing today what the rest of the software development world is doing. We can create new apps and enhance our legacy apps by applying new methods to MV. The web, mobile and desktop apps we create can use MV data and mvBASIC, incorporating new and legacy code. Legacy apps can be modernized (in some cases replaced while still using the MV database). Low-code IS the quickest, easiest, least expensive and perhaps the only long-term solution for saving MV.

Market conditions are driven by customers and technologies. Employees also want apps that adopt modern technology to make their jobs more productive and easier. Customers seek ways to use apps as a portal into their vendor. They want it on mobile devices, their desktop and through the web.

According to Freshworks, 70% of customers globally prefer brands that provide service across multiple channels (email, chat, social, etc.) and multiple devices. It is not just IT that has to service that change, it is all departments

that are being disrupted by the new technologies and customer requirements.

Customer preference and behavior now, more than ever, drives enterprise technology decisions.

With all that said, MV software based end-user applications, application development companies, consultants, and the MV database providers themselves will go on forever. The MV platform is primarily used by small and medium businesses that have yet to be as heavily impacted by changes in market conditions and may never be fully impacted by the technology evolution.

These companies' internal MV applications are solid and they provide management with everything they need to run their business. Their greatest challenges may be in the programming backlogs that haunts every company and a shrinking programmer population.

Low-code development now includes web, desktop, mobile and multiexperience development. According to Jason Wong, Research Director on the App Design & Development team at Gartner, Multiexperience Development Has Arrived: "Application leaders must adopt an appropriate multiexperience development platform to create a plethora of digital user experiences. And by 2020, at least 50% of all new business applications will be created by high-productivity tools sets such as low-code and no-code development platforms."

Plus, in the just published Gartner Magic Quadrant for Enterprise Low-code Application Platforms (August 2019): "By 2024, three-quarters of large enterprises will be using at least four low-code development tools for

both IT application development and citizen development initiatives. By 2024, low-code application development will be responsible for more than 65% of application development activity." And "The boundary between web and mobile development has largely disappeared as development platforms now meet customer expectations of building across digital touchpoints" — see Freshworks above.

A low-code platform also provides significantly more than just creating mobile apps and/or modernizing legacy applications in a fraction of the time of other methods. It means that a company can have a competitive advantage in their marketplace to quickly react to customer preferences, changes and adopt the newest software technologies. Low-code benefits include but are not limited to:

- Fast development times
- Apps created by low-code platforms can be modified and enhanced quickly to reflect customer, market and technology changes and advances — Agile Software Development
- Some low-code platforms even provide for develop once/deploy everywhere for most mobile devices; most desktops; operating environments (Android, iOS, Windows, *nix), native, hybrid and web, MXDP...
- Significantly decreased development costs
- Significantly decreased development time
- Increased productivity
- Improved code quality

- Easily incorporate 3rd party components and component libraries into an app. For example Chatbots, Artificial Intelligence, IOT, MXDP, etc.
- No-code option for citizen developers
- Elimination of programming backlogs
- Protection from a shrinking programmer population
- A single set of skills can create web, mobile and desktop apps
- Elimination of risk
- Provides for a better customer experience leading to customer retention and new customer acquisition **IS**

BOB MARKOWITZ is an Evoke Evangelist and Sales Manager for BlueFinity International. You can read his blogs at <https://evoke.blog/>.

BlueFinity develops and markets Evoke, a cost-effective, low-code/no-code rapid app development platform that provides the complete environment for existing staff to design, develop and deploy business apps across multiple devices (IOS, Android and Windows phones and tablets plus Windows, Apple and Linux desktops). Evoke low-code/no-code solutions can evolve into fully customizable native apps. It allows the Developer to create web, hybrid and native Apps (via Visual Studio and Xamarin projects) and to integrate and synchronize with existing back-end systems for a wide array of SQL and MultiValue databases.