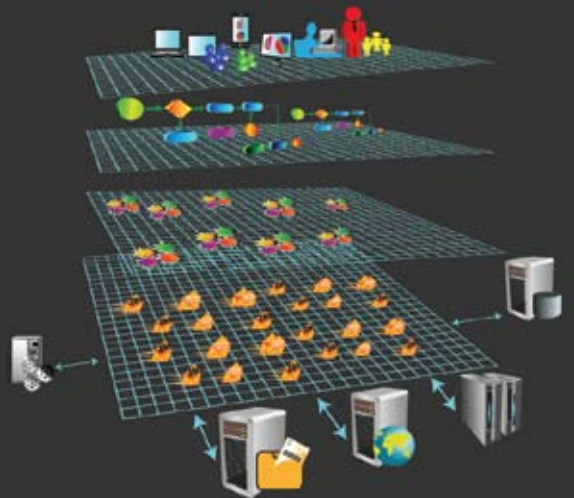


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INTERNATIONAL Spectrum

THE MULTIVALUE  TECHNOLOGY MAGAZINE | NOVEMBER/DECEMBER 2014

One Year of MultiValue Solutions



INSIDE: 2014 MultiValue Industry End of Year Recap

From the Inside

I have talked in the past about changes in business practices, application interfaces, and database choices. At the conferences, I've talked about the intensified focus on UI and UX (User Experience) required to make our LOB (Line of Business) applications functional as we move forward.

All this stems from *who uses our software* more than from evolving business practices. Businesses have been reacting to this on the front end, due to changing customer types and customer expectations, but there is a generational shift in our LOB users as well.

As businesses re-invent their customer interfaces, the average worker is now left wondering why the core LOB interfaces don't simply work the same way that the customer interfaces do. The workforce is going through a paradigm shift from Generation Xers to the Millennials. More and more users are wondering "why can't it do this? I can do this in other places."

Millennials demand more flexibility and personalization in software than previous users. You might ask why. The answer: because that's what they know.

This generation has grown up with mobile devices, web sites and web applications, and software in general. They have never lived in a world without PCs, laptops, and tablets. For them, data exchange, interactive research, data mining, and technology in general, are a given. They expect to look for their own information to support their own decisions.

As they enter the workforce, they are expecting this approach in the existing LOB applications. If it isn't there, they start using ad hoc and semi-custom reporting to generate information. They then apply their own knowledge, minor micro-programming, and other such things they learned in school, to create little BI (Business Intelligence) solutions. All

of this is being done outside of the LOB systems.

So what does this all mean for applications developers? It is no longer about *appeasing* the Millennials with GUIs and reports. Your LOB application is now going to have to be flexible in how it presents the information, on which devices it presents, and how it interacts with the environments on these devices. If it doesn't, your work will be maligned and sidelined.

Your LOB application can no longer be locked into one interface or device. It MUST integrate. It MUST communicate.

Millennials have different communication habits as well. They e-mail, text, instant message, and post on social media as seamlessly as they talk on the phone or in person. These communication habits must be melded into the LOB applications just as seamlessly.

Bolting on a quick Outlook e-mail pop-up used to work, but the need to have a consistent conversation thread is now a requirement. Look at how people use Apple's iMessage or Google's Gmail between devices as an example. It is no longer about sending single e-mails and getting a response. Whole conversations are now linked together and accessible where the user needs that history, on any devices and inside any applications. Also, e-mail, text, and IM threads must be managed cohesively since people use e-mail for delayed non-urgent communications, but will use text and IM to clarify something a related e-mail says.

Your LOB application must go further. It must link these conversation threads to your accounting history, order processes, workflow managements, and everything else. Communication is no longer something separate. Instead, it is an integral part of your business applications.

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INTERNATIONAL Spectrum

NOVEMBER/DECEMBER 2014

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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

<http://www.intl-spectrum.com>

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6 2014 MultiValue Industry End-of-Year Recap

The year 2014 continued to provide us with changing technologies and changing market demands. But the economic landscape seemed to improve somewhat. The demand for mobile access to data continued to increase. We asked some of our MultiValue partners to share with us some of their accomplishments from this last year and what to look for in the next.

10 7 Must-Haves for every (ERP) Enterprise Application

ERP applications are made to serve a specific purpose — running your business. People use them every day, and their value lies in the depth of service they provide your business. But if your ERP system does not have these seven “must-have” capabilities, its stands a good chance of failing to live up to the requirements necessary for it to be the main hub of your business. **BY NATHAN RECTOR**

12 Big Data

Everybody is talking about Big Data. But a lot of people have trouble defining exactly what that means. Are we talking about “tons and tons” of data? (Volume) Are we talking about terabytes of data that is changing every few minutes? (Velocity) do we capture it in a traditional data warehouse or some other structure? And what tools are available to process this stuff? Here is an overview of some of the problems that big data presents and a couple of tools that have been developed to deal with them. **BY SUSAN JOSLYN**

16 Marketing Basics for MultiValue: How to Market Without a Marketing Background

Not all of us have Marketing Departments. If your marketing is do-it-yourself, you should be reading this to learn about all the latest marketing terms and what they mean to your business. **BY ANITA MACKIE, MARKETING ASSISTANT, KORE TECHNOLOGIES**

18 Business Tech: Identity

As technologists, identifying people uniquely, whether customers, vendors, or employees, is a core component of many of our tasks. As people, our identities are at risk. **BY CHARLES BAROUCH**

20 What Should I Learn Next? - JavaScript and Python

Rocket has picked Python as an important alternative to BASIC. Find out what Python brings to the table, and see why you might be adding ‘Python Programmer’ to your resume. **BY BRIAN LEACH**

DEPARTMENTS

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- Fundamentals
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- Discuss issues with Developers and Sponsors

MANAGEMENT AND CIO

As a manager or CIO working with MultiValue Databases and Technology you need to have all the information in front of you to help make decisions. Knowing what tools are available, and how to best to leverage your enterprise is essential.

- NoSQL/MultiValue and SQL database
- Team Integration
- ROI and Benchmarking.

MODERNIZING

There is a lot to the term “modernizing” systems. We will look at how to enhance existing systems to be more modern. What modern systems require and what needs to be implemented.

- Lab: Converting Console (green screen) to GUI
- Generating a responsive UI
- Creating User Experience to please Management and Users

WEB ENABLING

Web enabling your business system has been something that IT has been working on doing for years. There are many different solutions to this as well as providers to solve the problem. Having an interactive website is now just as important to your employees as it is to your customers.

- Using Web Services
- Providers and Tools
- Ajax and jQuery solutions
- ASP.NET
- PHP

APPLICATION DEVELOPMENT

Application development is the key to any database or enterprise. Learn how to combine MultiValue development with .NET development. We will talk about the best way to combine the two technologies, and give your .NET developers training on how to use MultiValue techniques in a language they understand.

- Architecture
- Development
- Web Development
- Mobile Devices
- Programming
- Administration

MULTIVALUE FUNDAMENTALS

If you are new to MultiValue Databases or are an End User that needs to get better access to you systems, then fundamentals are for you. Fundamentals session are designed to teach you how to access, update, and alter your system.

- File Design and Maintenance
- Terminologies and Comparisons
- Dictionaries and Virtual data
- PROC and BASIC languages
- APIs Available to Connect from Outside.





MultiValue Industry 2014 End of Year Recap

HDWP

What new features or services did HDWP introduce in 2014?

We have been doing more data architecture work. The increasing volume of report and dashboard requests are sending people back to the drawing board on data structures. It's been nice to dive that deeply into database development.

What was the greatest or most exciting thing that happened to your company or product in 2014?

The most exciting thing was being promoted to Editors at International Spectrum.

What would you like Spectrum readers to watch for in 2015?

We're looking forward to seeing how technologies change as we keep increasing the number of formats in which it is consumed. Tablets, phones, watches, augmented reality systems... they all bring variations in display size, available memory, and connectivity options. As readers ourselves, we want Spectrum to watch the industry for tools, tricks, and tips on how to make our systems more adaptable.

Kore Technologies

What new features or services did Kore Technologies introduce in 2014?

Our focus on eCommerce is showcased with our new KommerceServer eCommerce Suite Release 5.3. Offered as a traditional license or as a SaaS solution, KommerceServer has a unique blend of tightly integrated B2B capabilities coupled with true B2C features which help expand market reach. New features include a rich Content Management System (CMS), advanced document management, and a more responsive design, making it even easier to style. So far, we have interfaced to five different ERP platforms thanks to our award-winning Kourier Integrator solution supporting both real-time integration as well as scheduled data integration.

With Kourier Integrator Release 4.2, we've increased the performance of loading SQL Server by orders of magnitude for our clients using the Extract Transform and Load (ETL) method to build a data warehouse for Business Intelligence reporting. The Kourier ETL now supports Point-in-Time data extraction for fast and efficient trend analysis reporting.

For our clients using the Enterprise Application Integration (EAI) to build real-time bi-directional interfaces to third-party solutions, we've beefed up our template-based RESTful Web Services. Now it's even easier to integrate the back office to

best-in-class solutions, such a Salesforce.com, epaCUBE, and more!

What was the greatest or most exciting thing that happened to your company or product in 2014?

Kourier Integrator ETL/EAI solution was named "Trend-Setting Product of 2014" by Database Trends and Applications magazine, and earned its second-consecutive listing in DBTA's "Top 100 Companies Who Matter Most in Data".

We also made significant inroads into the Higher Education industry to go along with our existing clients in Manufacturing, Distribution, Retail, Government, and Healthcare. We attended many national and regional collegiate conferences, demonstrating our capabilities.

On the eCommerce side, we changed to a continuous deployment methodology so that all of our eCommerce clients are kept up-to-date with the latest release of featured enhancements.

Oh yes, and celebrating 16 years in business is pretty exciting for us too!

What would you like Spectrum readers to watch for in 2015?

We will be developing a tighter coupling between our Kourier and KommerceServ-

er product lines. We believe this will bring more synergy within the company and more benefits to our clients. An emphasis on mobile applications and analytical reporting are planned for both products.

With so many of our clients using Salesforce.com, we plan to implement a streamlined integration end-point within Kourier Integrator. We also feel it is a natural integration point between the KommerceServer eCommerce website which has the capability of collecting new leads through promotions.

Look for Kore to roll out its new corporate website on our latest release of the KommerceServer platform. By using our own software, we “practice what we preach” and can more effectively solve the challenges we share with our clients and continue to deliver the best product features.

Ladybridge Systems Ltd.

What new features or services did Ladybridge Systems Ltd introduce in 2014?

As usual, there have been many minor enhancements as requested by our users as well as a few more major developments.

We have introduced VB.Net and C#.Net libraries for the QMClient API and a 64-bit version of the Java library. These libraries are critical to applications developed by our business partners and continue to reinforce the role of QMClient as the common API for external access to a QM system.

The main development released in 2014 was the addition of support for arbitrarily multi-dimensional data collections as an integrated part of the QMBasic language. Data collection support was announced in a Spectrum Conference presentation and caused much excitement, including a comment from a major user “OpenQM has just made multivalued relevant again,” perhaps highlighting the point that many modern applications need to go beyond the three dimensions provided by the multivalued data model.

Primarily intended for use in web applications as a simple and highly efficient way to create or process JSON strings, the name/value pair representation of data collections is a great way to handle other

data structures that may be complex or inefficient using conventional multivalued programming constructs. Combined with OpenQM’s object oriented programming capabilities, data collections make it very easy for an instantiated object to have, for example, a representation of property values where the names or data types of these properties are not known until run time.

Continuing the process of bringing QM-Basic in line with modern programming languages, we also added exception handling.

What was the greatest or most exciting thing that happened to your company or product in 2014?

Our OpenQM product was chosen by Pick Cloud, Inc as the multivalued database on which they now offer their low cost cloud computing hosting service. This allows users to deploy applications in a secure environment without the need to purchase and maintain server hardware.

What would you like Spectrum readers to watch for in 2015?

The web development mentioned in last year’s recap was deferred and is expected to appear in 2015. Other key developments planned for 2015 include a live backup tool, addition of connection pooling capabilities to QMClient and several items aimed at easing migration to OpenQM.

Pick Cloud, Inc.

What new features or services did Pick Cloud introduce in 2014?

After coming off a sensational year offering the first ever OpenQM DBaaS (Database-as-a-Service) for as low as \$15 per user per month, we now offer a short-term server leasing option for those clients who only need a server for a short period of time. There are instances where companies need servers but don’t want or need to purchase a costly server that may sit there idle for the majority of the year - depreciating in value. We also provide this service for as low as \$15 per day with no long-term commitments or contracts.

There are a multitude of benefits for both offerings. For DBaaS, you get your OpenQM license, AccuTerm 7 license, and reasonable levels of support, all in a worry free managed hosted environment. We also provide secure cloud printing via Cirrus-Print. For short term server leasing you get the benefits of a server and infrastructure without the heavy costs.

What was the greatest or most exciting thing that happened to your company or product in 2014?

In 2014 we received industry awards such as DBTA’s Top 100 companies that matter in Data (for the second consecutive year) as well as DBTA’s Trend Setting Products in Data in 2014 (this was their inaugural list). We were proud to be recognized alongside such great MultiValue companies as Rocket Software, Entrinsik and Kore Technologies.

In addition to being the only PICK MultiValue provider to offer a true MultiValue DBaaS with OpenQM, Pick Cloud, Inc. also introduced a short-term server leasing

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option for as low as \$15 per day with no long term commitments or contracts. This is unique to Pick Cloud, Inc. as no one else in the MultiValue industry has this offering. We are very excited, as the new offering now provides MultiValue users the ability to use a server in the short term, cost effectively, without the costly outlay of more monies they could be putting into their companies and bottom lines. These servers could be used for test/dev for application upgrades, end user testing, or for temporarily housing a server in the case of a disaster while the primary server is being repaired.

We also offer a complete cloud computing solution, including secure cloud printing CirrusPrint, with our partners at Synergetic Data Systems, Inc.

What would you like Spectrum readers to watch for in 2015?

Pick Cloud, Inc. will continue providing more products and services that are cost effective for MultiValue application owners and companies of any size. Since our inception, we have introduced the first

true MultiValue DBaaS (Database-as-a-Service) with OpenQM, as well as a short term server leasing option for those PICK MultiValue companies who only need a server for a short period of time, but don't want to outlay monies for a server that will sit idle. We provide both of these for as low as \$15 per day! We are also increasing the backup and disaster recovery options we provide to cover any budget – from daily saves to up to the minute transactions.

Look for Pick Cloud, Inc. to continue its support of the MultiValue community in the form of PICK MultiValue User Groups as well as participation in International Spectrum Exhibition and Conference.

Rocket Software

What new features or services did Rocket MultiValue introduce in 2014?

Rocket U2 Toolkit for .NET 2.1 allows .NET programmers to leverage Native Visual Studio Integration and develop .NET application without normalizing the MultiValue account/database.

Rocket U2 Clients July2014 enables the user to install just the clients they need - not a large grouping as previously packaged. Rocket DBTools August improves usability and includes updates to security, EDA, and support for Java 7.

Rocket U2 High Availability and Disaster Recovery solutions, including services with U2 Replication, enable the user to recover from outages quickly with minimal business impact.

Since joining Rocket, many products were released this year within the Rocket D3 family. Rocket D3 Windows 9.2 and Rocket D3 Linux 9.2 included enhanced security, data retrieval auditing and streamlined product installation. Full support in Rocket wIntegrate 6.3.5 was added for Rocket D3 DBMS and Rocket mvBase DBMS. Rocket mvBase 3.2 was released with features for improved overall database performance. The 64 Bit version of Rocket D3 Linux 10.1 beta also began.

Rocket U2 applications can leverage other Rocket software technologies. They can be paired with tools within Business In-

When was the last time you read something fun?

Bottom line: Tiago and the Masterless is a book that only a programmer could have written, but not one that only a programmer can love.
- Jon Frater's review on Amazon.com

Upcoming
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telligence (Rocket CorVu NG 3.0 Native Query), Application Lifecycle Management (Rocket Aldon Lifecycle Manager), Enterprise File Sharing (R/Link), and Network Monitoring (Rocket NetCure).

What was the greatest or most exciting thing that happened to your company or product in 2014?

The Rocket MV TechDays kicked off a world tour in the UK, before moving to the US and then Australia. Rocket U2 developers, architects, and IT staff responsible for business solutions are invited to see what is possible with their applications and how easily they can evolve from character-based to desktop GUI, web, and mobile. They also learned how to manage their application lifecycle, secure their data and system, use reporting and business intelligence and more!

Rocket Software called for applicants to its Python – U2 Beta program. With a working version of UniData with Python now available, this integration allows the U2 developer to natively program in Python or embed U2 into Python itself. Rocket is also working with those interested in a Python beta with UniVerse as well.

The Mad Genius Controller is a new product from a Rocket partner which is powered by Rocket UniVerse and U2 Toolkit for .NET. With a Thunderclap announcement and a Kickstarter campaign underway, this highly specialized and innovative game controller is getting ready to make a lot of buzz in the gaming industry. For more information about the console independent controller with customizable game profiles, check out: <http://www.madgeniuscontrollers.com>.

What would you like Spectrum readers to watch for in 2015?

In 2015, the Rocket MV TechDays will be covered from the perspective of the Rocket D3 product family of MV databases.

Rocket UniData 8.1 will introduce true 64-bit files with improved performance. Likewise, Rocket D3 Windows 64-Bit will complete the effort to move all three Rocket D3 DBMS products (AIX, Linux and Windows) to a true 64-bit architecture.

Rocket U2 Web DE and Rocket SB/XA will be enhanced in order to expose them via REST so they can integrate with Web and mobile applications. SB/XA will have new grid functionalities, such as filtering, grouping and sorting. Rocket U2 Web DE 5.0 will offer new monitoring capabilities: <https://www.youtube.com/watch?v=ECPHxxdF5AE>.

We will be offering services for Rocket U2 Audit Logging with UniVerse. Audit Logging tracks the usage of database resources and related authentication and authorization operations. Helping to satisfy compliance requirements such as HIPAA, HITECH, PCI, and SOX, it provides flexible reporting so that custom reports can be built.

CorVu NG for Rocket D3 and Rocket mvBase will be supporting on-demand web and mobile dashboards and reports within the first half of 2015.

Back by popular demand, and expanded to include the Rocket D3 family of products, Rocket MV University will take place in the latter part 2015.

Zumasys

What was the greatest or most exciting thing that happened to your company or product in 2014?

AccuTerm was acquired by Zumasys on July 1, 2014. With the technology and intellectual property gained from the acquisition, Zumasys is developing new enhancements and services to AccuTerm, focused around mobile access capabilities for iOS and Android devices. These new features will enable AccuTerm customers to access their Pick data anytime, anywhere, on any device. Additionally, the MultiValue Dashboard was acquired by Zumasys on July 1, 2014. Now you can present your critical Pick data to users with our intuitive, browser-based dashboard. Look for many new features and licensing options, including a free single-user edition which can be downloaded from www.zumasys.com <http://www.zumasys.com> **IS**

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7 Must-Haves for every (ERP) Enterprise Application

Originally Published in International Spectrum Digital Edition January/February 2014

ERP applications are made to serve a specific purpose — running your business. People use them every day, and their value lies in the depth of service they provide your business.

While they help run your business, most ERP packages these days are in really bad shape. They can be the least friendly and most difficult to use.

But still, people have to use them every day. And if they don't like them, they gripe. The huge battle between functionality vs. cost to replace them suddenly looks pretty small compared to dealing with unhappy employees. No enterprise application can last forever in the face of employee dissatisfaction, regardless of its value in the enterprise.

All those employees, including C-level management, have consumer items that they are comparing the business ERP application to: Cell phone, big screen TV, PDA, tablets, etc. They begin to expect the company's ERP to employ the same features and functions, and wonder why they don't.

The whole concept of any software application, ERP or consumer, is to increase a user's productivity, or make their life easier. If it makes someone's job harder, or relies on the user to do things in a specific order, then the software application has failed the business.

Your ERP application should be the hub of all your data and business, not just another system where data exists.

Here are seven things that every ERP application should have going forward. If you do not include the majority of these, if not all of them, then your application is going to have an uphill battle in the next five years.

1 - Choice of UI Delivery Model

It is no longer about the User Interface (UI), and what it looks like. It is all about the User Experience (UX). Part of the UX is providing the user a choice of interfaces: Desktop GUI, Web/Browser, or Mobile/Tablet. But that is not all of it.

A user expects the same experiences in the ERP application as they have in their consumer products like QuickBooks, Microsoft Office, and their local bank. They want to be able to do their job, or access their information, from where ever they are and from whatever they are in.

They demand the ability to do things their way, and they expect the ERP application to do just that.

If part of their job is to be notified that something needs to be done, they want to choose their preferred notification method: Email, SMS, Push Notification, Social Media, or Instant Message. Or any combination of those.

If part of their job is to manage things away from a desk, then they want to access the information they need away from the desk by using mobile devices.

They want to use their own cell phones, their computers, and work from home just like they work from their desk at the office. An ERP application should provide the user a choice so they can do their work when and where they want, in the manner this is most productive for them.

2 - Collaboration

Everything is about Social this and Social that, but when it comes down to what people really want to do, it is collaboration. Let's talk, let's share. This isn't just internally. It is also with vendors and customers.

Vendors would like to see your sales information for their products. They would like to share with you the orders and status of their products. Their whole goal is to encourage you to buy more, if they can provide you with information about why a product will sell better in your area than another. But

they need information to make these recommendations.

Accessibility of data by your suppliers and customers through self-service portals and feeds allows them to see more value in your company than in others. Not only that, but by providing sales information to them, many times they can provide you better costs because they know what you are likely to sell or manufacture in the future.

3 - Flexible and Modifiable Platform

This has always been a key feature of our MultiValue ERP applications, but in many ERP applications, modifying and enhancing can't be done, at least not done easily.

Even the best, more flexible, ERP package won't fit every business out of the box. If it did, then the setup and configuration would be so complex it would become almost unworkable. Most ERP packages only handle 80% of what your business needs "out of the box." The remaining 20% is the difference between you and your competitor.

Companies should not sacrifice that 20% (it's your profit margin) by having to conform to the way an ERP packages wants you do to do business. The ERP package should be conforming to the way you do business.

Flexibility doesn't stop at the ERP software. The business should be in charge of deciding what hardware they want to run their ERP package on, not the ERP software package. If they want to run on in-house hardware, then let them. If they want to outsource to a Cloud server, then let them. If they want to use Windows over Linux, or AIX over Linux, they should have that option.

4 - Push Based information

Traditional ERP applications require a user to ask for the information they need to do their job. Whether this is working with a menu tree, or favorites and short cuts, it all comes down to the user having to ask for information.

ERP should be pushing the information to the user when something needs to be done, not requiring the user to constantly pool or ask for it from the computer. This concept has been what is successful about social media — push the information to the user, do not wait for the user to enquire what the status of something is.

5 - Anytime, Anywhere access

Mobile, Mobile, Mobile... If the user does not have access to the ERP information away from the their desktops, then your users are not being productive.

Users now expect to be able to see information on their tablets, smartphones, and laptops. This goes back to UX (User Experience) as well. While users now expect this, most ERP applications don't even have a basic read-only mobile interface.

Most don't even have a web portal to ERP information or generated reports.

6 - Improved Business Intelligence

Business intelligence is a must, and we have been doing this for years, but they have been simple, static, and "here is the answer, don't ask for more" type reports. The new C-level execs are now very computer literate. This means they expect to be able to take the raw information from these reports and run it through the BI tool of their choice.

At the bare minimum, they want to be able to manipulate the reports and information provided by the ERP system to a limited degree: add a new calculation, filter the data, sort the data, export into Excel.

7 - Works with Existing Applications

It's a fact of life, there is no such thing as only one application that does everything these days. Most enterprises have a minimum of three applications that help run the business. Most are specialized routines that do specific tasks, but they are "islands" unto themselves most times.

It is the ERP application's job to exchange data with them so that the user doesn't have to do double enter or live with "out of date" information. Your ERP applica-

tion should be the hub of all your data and business, not just another system that data exists in.

It's important that it can exchange information, even if it's one-way.

Most of these points are easy to implement, and do not always require you to purchase not software. Spending a few hours to implement even one of these to a very limited degree would provide a big bang and boost to your IT departments.

I will repeat this, because it the best way to think of your ERP application:

Your ERP application should be the hub of all your data and business, not just another system that data exists in. **IS**



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Big Data

B Y S U S A N J O S L Y N

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Your data is big and it's getting bigger. (No, I didn't just call you fat.) Companies that collect and process data are getting bigger, often through mergers and acquisitions, but also through organic growth. The number and types of devices producing and capturing data have exploded in recent years. The data we are accumulating has reached epic proportions — and is growing by exponentially epic proportions every day. The vaguely childish code name “big data” doesn't begin to cover it. That name almost seems to imply that the problem is limited to ‘really big files’. You know, like your sales history file after forty years on the same computer system. Yes, it's big. It is really big. But *that* is a really simple problem. It's a defined data set of a known structure and presumably you have the tools to manipulate it. Even with the added complication of mergers it is still pretty simple. It's just that now you have two sales history files and they are in different formats. That is something we have been dealing with for decades — mapping one to the other or both to some middle ware — often a “cube” for report processing. All simple, still manageable. This concept of “Big Data” goes beyond all of that. It goes beyond do-able. That's probably the most succinct definition: “Beyond do-able.” The more formal definition gets into the three V's that define Big Data: Volume, Velocity, Variety. And a fourth “V” comes in the effort that must be made to determine the Value of a stream of data. So we must deal with data that is large (volume), that is growing quickly (ve-

Retailers understand that customers generate a trail of “data exhaust” that can be mined and put to use.

locity) and that has varied structure (variety) and that has some weighted value that must be determined.

Each of these “V”s brings its own inherent challenges, that is sure. But the scary and impressive one is “Velocity.” We can deal with the variety of data — if we have some time to poke around with it. We can deal with the size of a large file. We can use indexes, reporting cubes, programs to reformat and to compress. We can do most anything, given time. But velocity comes along and eats our time for lunch. *We don't* have the luxury of the time to poke around and build giant data cubes. The new data is coming at us so fast that it is outpacing our efforts to deal with it! We are sitting in a pool of water trying to bail with one-liter bottles, but our pool is at the base of a waterfall. That is the problem with “Big Data.” When you braid in the other two V's, it gets so much worse. Because it's not just a *high value* of *various* data that is coming at *velocity*, the variety itself is increasing at velocity, too! It is the velocity of the variety — and the variety of the velocity. I'm sure you get the drift, but let's look at this analogy. Let's say we step out of the pool and onto dry land. We take the time we need to programmatically churn through

five data streams coming over that waterfall. What we need, what don't we need, how are we going to consolidate the stream and what do we want to use from it. We lost some ground while we tinkered with it, but that's okay. We've decided to accept that loss because now we have data to play with. We have a way to sample the streams in the most intelligent fashion (predictive analytics). We've stratified and prioritized, we've stacked and compressed, we've powdered and perfumed. We're feeling pretty good about our data. But while we were looking away, three more streams of data dug new grooves over the dam. Data that we didn't know about, didn't expect, don't understand. By the time we figure out what we *need* from that data, we look up and... well, you can guess the pattern. *That* is the real issue behind big data. People talk about those other “V”s, but it's that V for Velocity that is creaming us.

The image most often associated with big data is an elephant. Even Hadoop — the predominate tool for managing Big Data — is named for an elephant. Doug Cutting, Hadoop's creator, named the framework after his child's stuffed toy elephant. My own Dad has an adage about elephants. He got it from his Dad. And like all of my grandfather's wise sayings, the real impact comes in the corollary. You ask: “How do you eat an elephant?” The answer is easy, “One bite at a time.” But the corollary? “That last bite can get pretty gamey.” It was always a good aphorism, applying well to most big projects. If you spend too

much time solving a problem, the nature of the problem itself will have changed — and not usually for the better. While this still applies in the case of Big Data, those slowly lumbering elephants have become giant rabbits. You know, hopping around quickly and multiplying like crazy.

To cope with all of those bunnies, a divide and conquer approach known as map reduce has come into use. Unlike a centralized database system where you have one disk connected to one or more CPUs with a limited amount of horsepower, MapReduce allows you to distribute the data across clusters of servers that include distributed storage and multiple processors. So while your program for indexing your data may not have changed much (yet), you can get results faster by sending your application and a chunk of the data to each of servers in your cluster. Each server operates on its own chunk and then the results are then delivered back in a unified whole.

The idea — and the name — for MapReduce came from Google, a company that has always been pretty good with data.

Their breakthrough was realizing that a search engine could use input other than the text on the page. The joke is that they “thought outside of the (search) box.” They needed to usefully index all the rich textural and structural information they were collecting, and then present meaningful and actionable results to users. There was nothing on the market that would let them do that, so they built their own platform in 2004. They named it simply enough with the two verbs that describe its action (no stuffed animals were injured): MapReduce. MapReduce allows developers to write programs that process massive amounts of unstructured data in parallel across a distributed cluster of processors. The framework is divided into two parts, the two actions. Mapping is the process of breaking up a task and the data to multiple nodes and Reducing is the function that collates the work and resolves the results into a single value.

Google’s innovations were incorporated into “Nutch”, an open source project, and Hadoop was later spun-off from that. Yahoo has played a key role developing Ha-

doop for enterprise applications. Hadoop is written in Java as part of the Apache project (sponsored by the Apache Software Foundation). Both Google’s MapReduce and the open source Hadoop have to rely on distributed file systems. Hadoop uses a standard distributed file system the HDFS (Hadoop Distributed File Systems) while Google MapReduce uses the proprietary GFS (Google File System). In both cases, the distributed file system facilitates rapid data transfer rates among nodes and allows the system to continue operating uninterrupted in case of a node failure. This approach lowers the risk of catastrophic system failure, even if a significant number of nodes become inoperative.

Using this approach a lot of interesting *data products* have emerged. Google used the technology to include spell-checking (by building a dictionary of common misspellings and their context), to integrate voice search and for useful functions such as tracking the progress of the Swine Flu epidemic of 2009. And Google isn’t the only company that knows how to use data. Facebook and LinkedIn use patterns of



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friendship relationships to suggest other people you may know, or should know, with frightening perspicacity.

No stranger to this sort of trickery from its very inception, Amazon saves your searches, correlates what you search for with what other users search for, and use the data to create disturbingly accurate and budget-busting recommendations. These recommendations help to drive Amazon's more traditional retail business. Retailers understand that customers generate a trail of "data exhaust" that can be mined and put to use.

It is still hard to implement a Hadoop solution and there are not that many experts. This is where Amazon has taken things a step further and has "packaged" a cloud-based MapReduce service which they are calling Amazon Elastic MapReduce (Amazon EMR). This is a user-friendly pay-for-user service. It is worth your time to watch this instructional video:

<http://s3.amazonaws.com/awsVideos/AmazonElasticMapReduce/AmazonElasticMapReduce.html>

Learning how to develop code using Map Reduce and Hadoop is a completely different way of thinking from traditional programming paradigms. Most traditional programming shops will have to re-tool to take advantage of this new paradigm. Seriously? The paradigm shift again? Not only that. Not only might we want to "re-tool" and build some programs that we pass off to these clusters to mine our data but we may also want to think about modifying our approach to our routine data processing applications.



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MapReduce on the fly, as it were. So there we are — retooling and refactoring. Again. It's something we might want to start thinking about now, even if we aren't ready to make any serious moves in that direction.

Everywhere you look you see the discussions about Big Data and because of the (let's face it, dumb) name it is easy to start thinking of the "problem" as how to manage a lot of data. And that is a challenge, no question about it. But it is not the juicy part. The juicy parts are the new ways that we will *use* our giant data. Whether or not an organization is able to figure out innovative uses of data is going to be critical to its survival in coming years. This is where the new field of data science comes in. According to Harvard, "Data Scientist" is the sexiest job of the 21st century. Quoting from that Harvard Review Article:

"... thousands of data scientists are already working at both start-ups and well-established companies. Their sudden appearance on the business scene reflects the fact that companies are now wrestling with information that comes in varieties and volumes never encountered before. If your organization stores multiple petabytes of data, if the information most critical to your business resides in forms other than rows and columns of numbers, or if answering your biggest question would involve a "mashup" of several analytical efforts, you've got a big data opportunity."

A "data opportunity"! These opportunities will lead to "data products" that are developed using "data science" through "data conditioning". These are all interesting new ideas, with the real excitement of getting ahead of your data using "predictive analytics".

So what we've started with here is a simple definition of "Big Data" and an overview of the mechanical tools and methodologies that are coming into use for managing it and for mining it. What's next, and way more fun, is to take a look at how people are using all of this structured and unstructured data. It is fascinating to think about how your company might use their Big Data. What jewels are out there in your data, waiting to be mined?

We aren't just changing how we store and access data. We will change the way we think about data. We will change how we market and sell and will certainly change how we buy. This all necessarily leads to new views on privacy and to some ethical dilemmas. There is a line — and sometimes it is a very fine line — between opportunity and exploitation, between providing a service and committing an offense. This is where the Big meets the Data. **IS**

SUSAN JOSLYN is the President of SJ+ Systems Associates, Inc. and is the author of PRC, a complete, integrated software development life-cycle management / IT Governance tool for U2. She has worked with U2 (nee Pick/Multivalve) and SB+ software from the beginning (both hers and its) and has specialized in IT Governance, including quality, compliance and life-cycle productivity issues since the early 1990's.



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How to Market Without a Marketing Background

BY ANITA MACKIE
MARKETING ASSISTANT, KORE TECHNOLOGIES

Originally Published in International Spectrum Digital Edition May/June 2014

Marketing builds brand awareness and recognition. It is essential in every business for us to have direct communication with our target audience. The basic fundamentals and principles of marketing help shape the way messages are created. The resources available to large corporations and chains differ from that of a small business. Agencies can be costly. So, what do you do on the small business level?

I have listed some common terms that we hear during day-to-day operations. Understand the similarities and differences to effectively and creatively connect with your audience.

Marketing

Marketing is profit driven. It is about the exchange of goods and services for a profit. It is targeted and strategic with messaging to specific audiences.

Public Relations

Public relations (PR) is the practice of maintaining the *relationship* between a business and the audience(s) it communicates with; employees, competitors, clients, prospects, etc. A good PR person is able to predict how an audience will react to a message before it's sent.

Advertising

Advertising is **paid** messaging that reaches larger audience.

Brand yourself as an expert in your industry with news stories, graphics, social media posts, and community involvement. Remember, people want to talk to people.

Branding

Branding is another term that pops up in marketing lingo. Branding is how a company distinguishes itself from the competition by means of ideas, concepts and symbols. Take Coca-Cola for example, its logo and status in the soft-drink industry are relatable to the audience. Next time you see a Coca-Cola commercial, look for the branding aspects; the product brings people together around the world to give you the *feeling* of being connected.

Communication is a life-long process; it's the way we interact with each other to exchange meaning. Traditional face-to-face communication is the most trusted and effective mean but, for most businesses, it's impossible to connect with every client this way. Marketers and public relations practitioners are successful because they are good communicators. They are able to think of innovative and affective ways to persuade, educate and inform their target audience.

- Know your audience.

I cannot stress how important this fundamental element is. The demographics and psychographics of your audience will guide you when you plan your next project. Demographics include the age, gender, income, and education level among a group of people. Psychographics measure *feelings*, hobbies, and how a particular group of people react under different circumstances.

- Set goals and objectives

Goals are broad and difficult to measure. Focus on your objectives; on how you're going to achieve your goals. Objectives are tangible, precise and measurable and should affect your target audience's awareness, acceptance and actions. Essentially, you want them to be aware of your organization and the purpose of your message, you want them to accept it and you want them to take action.

Keep in mind that most initiatives take time, so your objectives should include a time frame to set the stage for your evaluation process.

- Language

Language sets the tone of your message, so determine what approach would work best: conversational direct, or perhaps formal. In the MultiValue industry for example, you communicate with other IT professionals

so it's okay to use some technical jargon. On the other hand, not all projects focus on the same audience so if/when you're speaking to a non-technical crowd think of the language that will work best.

- Time

Marketing and PR campaigns will take time to generate results. Think of your sales cycle -- for example, if it's six months to a year -- your long-term marketing campaign will be longer. Of course, there are other factors at play but I want to keep this article basic. Don't feel that your efforts aren't working if you haven't put the time in.

Today, consumers do their homework before inquiring on a product or service. Your marketing and advertising efforts are designed to grab their attention and when that happens it's time to nurture them with more information to then turn them into a client.

- Content Creation

Content marketing is a trending topic among marketers. It is very time consuming. If you're just getting started, don't assume that you have to create, edit and publish new materials immediately. Look at what you already have and decide if your target audience would find it useful. If it is, write a follow-up piece or create a graphic that will link the existing material as a reference. When it's time to create new material, you want it to have a long-term shelf life so you can talk about it in numerous and creative ways.

Brand yourself as an expert in your industry with news stories, graphics, social media posts, and community involvement. Remember, people want to talk to people and if you're going the social media route, beware of too much self-promotion.

- Social Media

If you haven't gone the social route, you should consider it. In today's digital age more and more people turn to a company's social media pages before they engage directly. When it's time to go social, remember rule number one: know your audience. Which outlets are they using? When do they check their profiles?

A common trend I've seen among Multi-Value professionals is that they are not very active on social media and/or they understand the value, but aren't sure how to incorporate it for business purposes. It's time for you to put on your 'PR hat' and do some homework. Find out the demographics of your audience and how it compares to that of Facebook, LinkedIn, Google +, etc. Remember, social media was not designed or intended for business use so; self-promotion must be kept to a minimum. Keep in mind that its strategic and continuous. Each medium must be managed in a precise way to generate results.

- Visual Communication

You don't have to be a graphic designer to tell a story visually. A basic understanding of color psychology may sound silly but there is truth behind it. An abundance of red -- in some cultures -- says, 'warning,' 'alert,' or 'danger.' While blue represents a 'calming' or 'tranquil' feeling. Your advertisements, banners, flyers, graphics, etc. should be simple, not too busy, and not too blank. The use of color and whitespace can go a long way. You don't want too much text in your ads because you want the receiver to visit your website, blog, or to pick up the phone and call you.

- Evaluation / Measurement

The evaluation and measurement processes vary from project-to-project but always ask yourself, how do the results compare to the objectives? If the numbers are on the rise it's a sign you're on the right track. Always put yourself in your audience's shoes. If they're not opening or clicking links on your emails, ask why? Is it too 'sales-y'? Was the email sent at a bad time? Also, don't obsess about the number of 'likes' and 'followers' you have, it will happen in time. You should be concerned with the levels of engagement you have with your current following. That is the true testament of social media success.

So, there you have it, the basics of marketing. Whether you're a 'one man band' or director corporate communications these rudimentary points will help guide you on future endeavors. The Internet is your friend and we marketing people love to

talk about what we do. Ask us questions; follow our blogs and connect with us on LinkedIn. We are always happy to point you in the right direction. You just have to ask. **IS**

ANITA MACKIE brought her passion for marketing communications and public relations with her when she accepted the position of marketing assistant at Kore Technologies. She is responsible for content creation, event planning, PR, social media management and assisting with other marketing initiatives. She holds a bachelor's degree in public communication from SUNY Buffalo State College and in her free time she enjoys shopping, cooking and spending time with her husband in their new Calif. home. She can be contacted at: Kore Technologies, www.koretech.com, 858.678.0030

The image shows a logo for 'Quality Counts' with a green bar containing the word 'PASS' and a red bar containing the word 'FAIL'. Below this is the text 'mvTest' and the URL 'http://www.brianleach.co.uk'.

Identity

BY CHARLES BAROUCH

Originally Published in International Spectrum Digital Edition July/August 2014

Recently, Syd and I were victims of Identity Theft. In the process of straightening it out — we are still in the process of straightening it out — we’ve had time to think about how people use and misuse identity.

Who Are You

The primary identifier we all have in common is a name. They are required for birth certificates, driver’s licenses, all sorts of documentation. From a tech standpoint, this is a really bad design. I’m sure you’ve all noticed the lack of uniqueness in names.

In the US, the Social Security Administration tracks baby names. According to the SSA, in 2013, these were the most popular baby names: Noah, Sophia, Liam, Emma, Jacob, and Olivia. You can do your own research on other years here: <http://www.ssa.gov/oact/babynames/>. What does this mean? It means that if you have a common last name, the odds are that your darling little Liam is going to have a non-unique name.

I’m lucky, in the United States, I have only found one other Charles Barouch. He died in Baltimore, Maryland, in 1928. My father, on the other hand, wasn’t even the only person in his family with the same name. His first cousin, who he ended up in business with, had

Pro tip: Lie! I never give a real pet’s name or a real mother’s maiden name. The problem with lying is that you have to remember which answers you gave to which institutions. That’s the other pro tip: don’t use the same lies with everyone. Otherwise, one compromise can lead to another.

the same first and last. Neither had a middle name.

Despite this, we issue credit cards, security clearance cards, passports... all manner of ID which fully or partially rely on name. As data professionals, what is our obligation toward this type of imprecise information? If our employers have timesheets, non-corporate customers, or mailing lists — just a few examples — we have this sort of data to manage.

Bank On It

Since we had a bank account compromised, let’s talk about account security. Typically, a bank handles ID in two key ways: internally we become numbers and

externally... we’ll get to that in a minute. The bank doesn’t see me by name, it sees me as one or more account numbers. So long as I never interact with the money, this is a perfect arrangement.

Once I want to deposit, withdraw, or check balances, they have to get back to names. The bank can manage my identity in a few ways. First, they have an address for me — either physical or e-mail — and they feel free to send confidential information to that address without any other controls. I might be the five thousandth “Mike J. Smith” doing business with them, but I’m the only “mikey@KeyAlly.com” on record. E-mail address are unique, right?

That works for one-way data. They can’t trust the return address on an envelope as proof of identity. They can’t trust e-mail completely either. So, when we want to interact, we usually have two options. One is ID card (bank card) and password (PIN). The other is challenge-response.

This is where public information can be dangerous. *What’s your first school?* I might be able to look that up. *What’s your favorite color?* That might be more secure, although there are only a few common answers.

Pro tip: Lie! I never give a real pet’s name or a real mother’s maiden name.

The problem with lying is that you have to remember which answers you gave to which institutions. That's the other pro tip: don't use the same lies with everyone. Otherwise, one compromise can lead to another.

You are Perfectly You

Are these challenge-response methods perfect? I have personal proof they aren't. Are the ID/password methods perfect? No. What's that leave? Biometrics? Sadly, that's only a little better. Here's the gigantic hole in biometrics: once you scan that eyeball, or fingerprint, or face, once you take that blood sample or skin flake, it becomes data. Quick show of hands: raise your hand if you know how to change data in a computer system. While our bodies are unique, even in twins, triplets, etc., once the data becomes data, it becomes suspect.

What does that leave us? Best efforts.

A Different Angle

Let's take Identity from a different angle, something simpler: deduping. How do we make sure that we capture each unique

person exactly once? I tell "Mike J. Smith" from "Mike J. Smith" by looking at their e-mail addresses, for example. Oh, wait. I can't. mikey@KeyAlly.com might also use mikey@intl-spectrum.com for work. Mismatched addresses do not necessarily assure me that I have two different people.

Then we have variant names: Is Peggy Ng also Margaret Chen? They share an e-mail address and Peggy is short for Margaret, but perhaps Peggy is Margaret's daughter? Score card so far: E-mail, no good. Physi-

cal address, no good for the same reasons e-mail is suspect. Real name, not even close. Between nicknames, married names, other legal name changes, duplicate names... It's a mess. **IS**



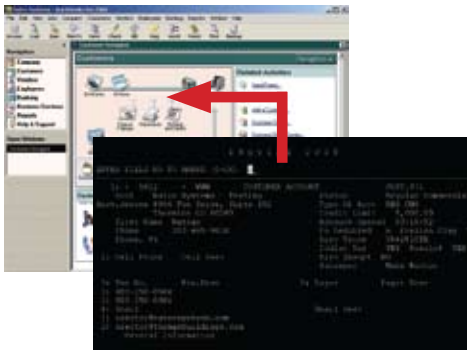
CHARLES BAROUCH is the CTO of HDWP, Inc. He can be contacted at www.hdwp.com

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WHAT SHOULD I LEARN NEXT?

JavaScript and Python

BY BRIAN LEACH

Originally Published in International Spectrum Digital Edition September/October 2014

So what languages are the hip young developers writing in today?

Why JavaScript?

JavaScript obviously is the first language that comes to mind. From humble beginnings, as a means of adding dynamism to web pages, it has escaped the tyranny of the browser. A good example of this is Node.js for server application development and Phonegap for native mobile development. They are both based around JavaScript as their programming language.

Additionally, JavaScript has an ever-growing wealth of frameworks and libraries which have ably expanded its power. It is proving to be not only the world's most popular language, but also, according to Google's benchmarks, extremely fast.

Because it is an interpreted language, it is easier to optimize. JavaScript can outperform even C# for many tasks. Douglas Crockford's excellent books <http://javascript.crockford.com/> have done much to awaken people's understanding of, and respect for, the inherent capabilities of this language. JavaScript expertise has become, for younger techies wanting to show off their skills, a part of their bragging rights. For mass appeal, JavaScript is certainly more than just the flavor of the month.

Rocket's research points to this being a popular choice; cross-platform and easy to integrate and license. If you were going to add support for another language, which one would you choose?

Why Not JavaScript?

If you look a little deeper, you'll see that this is not the whole story. While JavaScript has a huge impact on the client tier, some impact on app development, and occasional forays into the middle tier through Node.js, it's not really statistically significant for other types of development. 'Real' programmers will still look to C# as the standard today (long gone are the days when C++ was used for anything other than geeky low-level code hacking, and few tears should be shed over that) and Java sadly refuses to die in the corporate world. If you want to see where the interests of the bright young things of today's programming generation lie, you just need to pick up one of the raft of web or app development magazines. Behind the RWD frameworks, lifestyle consumer goods, jQuery tips, designs of the month

and how-to-hack-WordPress articles, you will see (admittedly rare) examples of other languages at work.

Not so incidentally, this makes Rocket's recent announcements that their U2 products will be adding support for one of those languages - Python - all the more interesting.

Why Python?

Of course, nothing is new in IT. Right now, dynamic is hot. Currently, dynamic languages are very much the *in thing*, with two hairy old contenders - Ruby and Python - leading the field. These languages are made for an impatient generation who want quick and easy results. They are blessed with the horsepower to deliver to those who are not easily wooed by the cleverness of a short and cryptic C function. And that is not a bad thing, since focusing on delivery is something that should strike a chord with many readers of this magazine - it is, after all, a chief benefit of our own technology niche.

Why Python? Well, from their stated point of view, Rocket's research points to this being a popular choice; cross-platform and easy to integrate and license. But then, by the same arguments, why not JavaScript, Ruby, Java or that other old workhorse, Perl? If you were going to add support for

another language, which one would you choose?

JavaScript would seem to be the clear winner in popularity alone. But here's the rub: it is a fully interpreted, prototypical, enormously flexible language whose code is dynamically extensible at *runtime*. Halfway through an application you can choose to add or remove methods from an object, arbitrarily discover new code, and inject new properties. These are the very things that make JavaScript a perfect choice for the front end. However, they all ring alarm bells for DBAs.

The potential for error is just too high. Prototypical inheritance and extensible classes are not natural for a generation of developers who grew up with a more standard OO model. JavaScript code, which works in very different ways depending on what has gone before, may be fine in the limited context of a browser or app. But across a large business system, that is the sort of headache that over-stretched support teams can do without. Java is owned by Oracle, so it is hardly a likely choice for another database vendor. C# under Mono would have been a nicer option. And as for Ruby - well that's just weird.

Python may not be every developer's favorite, but it is simple, easy to read, has object orientation, and supports procedural and functional models as well as structured programming. It does allow dynamically adding and subtracting methods and properties to classes, but that is possibly less prevalent with Python than with JavaScript. Libraries like Require.js, in JavaScript, allow the downloading of code on demand. This has evolved as a response to browser speed rather than a need within the language itself.

Python is *mature*, having first been designed in the 1980s, and *open* since 1991. It has hooks which allow you to extend it using C, as well as hooks to bind it into other environments. Iron Python, the version for .NET using DLR, increased its popularity with another, more skeptical, group of programmers and did much to inject new excitement around it as a scripting language. Because it is a dynamic, untyped language, it should work well with

the vicissitudes of MultiValue data. The large number of extension libraries (or 'modules') bring a wide range of new functionality to the table.

But do we need it? Surely the existing languages have stood the test of time, haven't they?

Python Does Not Have GOTO

Consider UniBasic. Now I'm the first to expound on its advantages as a simple, clean way to express clear business intention. In the server world, clarity is king - especially when supporting the latest arbitrary business changes foisted on developers with few resources and fewer hours. But UniBasic has a problem - several problems in fact - that makes it a hard sell.

The first problem lies in the name. The only thing we can all agree about - whether we use UniBasic, UniVerse Basic, PICK Basic, DATA/BASIC, mvBasic or whatever - is that it has the word 'Basic' in it. That's not a selling point: you only have to look at the way Microsoft pitches its two

.NET languages, VB.NET vs. C#, to see the problem. VB.NET (the BASIC one) is a language for hobbyists; C# is a language for professionals, even though what can be achieved is 99% the same. They pretty much compile to the same code.

Having a well known and loved language may well prove more attractive. That must be Rocket's hope. They know their customers need to attract new programmers.

Then, even for those who wish to use mvBASIC, there are problems of implementation when using the various flavors. There's no unified standard: not only does the name differ between platforms, but, while I can write robust software for any one flavor, it is impossible to write anything, outside of the simplest CRUD style application, in a portable fashion. That is understandable, to an extent, between competing manufacturers. It makes no sense when multiple platforms are all owned by a single vendor. Writing for UniVerse, UniData and D3 as I do, the differences are a constant — *unnecessary* —



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overhead when it comes to releasing code. I wonder how hard it would really have been for Rocket to harmonize the language into a super-set that worked across at least the two U2 platforms, even if they held D3 aside. Implementing Python uniformly is an alternative to unifying mvBASIC.

Finally, we come to the question of inherited code. It is possible to write beautiful, clean, modern, well structured, legible, fully tested, high quality, highly supportable and effective code in any flavor of mvBasic. But if mvBasic (or whatever you want to call it) has a bad reputation, it is primarily for a galling reason: It allows for the creation of some truly terrible code. Python gives us a reason to rewrite things instead of pouring even more badly-formed, ugly-looking hacks into the Charybdis of a legacy base.

The irony is of course, that in a very real sense, Python is the new BASIC. Beginners' All-purpose Symbolic Instruction Code – BASIC – was conceived as a language for teaching programming to non-

technical students. Today, Python inhabits this same niche. The shelves at Amazon and other bookstores are full of works with titles such as Python for Complete Noobs Who Have Never Seen A Computer Let Alone Programmed One and Learn Python In Even Less Time Than That Other Book Promises. Raspberry Pi focuses on Python. Next year, England will become the first country in the world to mandate the teaching of programming to children from the age of five. Python is being touted as a possible choice for primary schools. Hackers are rumored to prefer Python for real-time attacks. Are we swapping one dirty hobby language for another?

What Is Python Good For?

Python certainly has many features that will be familiar to MultiValue programmers and to those who support MultiValue applications. It is compiled into intermediate byte-code and interpreted by a cross-platform virtual machine, just like mvBasic, with garbage collection and reference typing. Variables do not need to be

declared before use because it has dynamic variable typing. And more subtle things that speak well to MultiValue integration: strings can be single or double quoted, Boolean values are zero (false) or non-zero (true). That matches the way MultiValue databases work, unlike the more common 'true is -1 and 1 is false' other languages use.

Python is designed for rapid development and scripting. It is designed to produce highly legible code. Python aims squarely at the same people who historically would have been users of other non-technical languages (in the strict sense): business owners and rule makers. Its mantras, as set out by Tim Peters in *The Zen of Python (PEP_20)* <intl-spectrum.com/s/19z4F>, should strike a cord with MultiValue developers:

- Beautiful is better than ugly.
- Explicit is better than implicit.
- Simple is better than complex.
- Complex is better than complicated.

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- Flat is better than nested.
- Sparse is better than dense.
- Readability counts.

Python has very good documentation and tutorials. It runs on Windows, OSX and UNIX. And it's named after Monty Python's Flying Circus. What more could you want?

A MultiValue developer, wanting to try their hand at Python, will find as many differences as there are similarities. Some of these are subtle. For example, strings are immutable as they are in C#, so any changes to a string must create a new copy. Also, strings and array types, such as lists, are indexed from zero. And most programmers are, at least anecdotally, accustomed to the strangest feature of Python: the use of indentation for statement blocks. Never ever reformat a Python script!

There are other things which are, possibly, more welcome. Python has simple object orientation, with classes that bind together both functions and locally defined data. Python does it without the more formal aspects of other OO languages. There are no private methods, for example, and all methods are essentially class methods. Named arguments provide more flexibility in method calling, though they can be difficult to get your head around at first. Namespaces are used liberally to import functionality from other modules, leading to easy-to-follow and easy-to-extend scripts. But its biggest strength lies in the huge library of packages that can extend it. There are, as of the time of writing, nearly 50,000 packages on the Python Package Index <intl-spectrum.com/s/19z81>. They cover everything from web communications to unit testing to image handling.

And it has a style guide: PEP 8 <intl-spectrum.com/s/19z6t>.

Ministry of Funny Walks

So Python is well-liked, extensible, and an easy step for existing developers versed in MultiValue development. Is that enough to extend the appeal of U2 to a new generation?

In my opinion Python is a safe bet. And, if the integration is done well, the same hooks could be used to accommodate other languages in the future. Rocket has worked hard to pack functionality into their databases. They have targeted the front end through an ever-broadening raft of interfacing technologies and APIs. However, Rocket has been more reticent in their approach to the fundamental elements of the languages.

Their version of local functions, released last year, preferred legacy over innovation. While adding support for JSON style objects (UDOs) was a great step, it was marred by hiding it behind an ugly and obfuscating set of function calls rather than making it a first-class part of the language. They have never added the sort of object-oriented BASIC extensions found in OpenQM. Set against such a conservative background, in a conservative industry, any radical enhancement to our programming options should be applauded. The chance to bring in a new language, any new language, is a good thing.

The integration of Python with U2 is an interesting concept, and one that works both ways. Python developers (and therefore, Rocket customers hiring Python developers) get the ability to call into the U2 databases, execute subroutines and commands, and generally interact with the database in a sensible fashion. MultiValue developers get the ability to call out to Python from within their applications in a way which allows them use all the features of the extensive Python package library. Even if nobody is about to re-code their cherished applications in Python tomorrow, it is a good move that gives U2 sites a lot of benefits for free.

And maybe, for once, we can hang out with the cool kids. **IS**

BRIAN LEACH is a MultiValue developer, consultant, trainer and author, and a board member of the Rocket Software Users Group. You probably knew that. Find him at <http://www.brianleach.co.uk>.

FROM THE INSIDE

Continued from page 2

Millennials are a different type of customer as well. They research. They talk. They review. They complain — and compliment — publicly. This is all done before a purchase. Monitoring social media is no longer something you can ignore. You must mine this data and respond to it.

They expect to have access to their sales, orders, invoices, accounting, and everything else at their fingertips. This is the customer experience that Google, Amazon, and Intuit have pioneered. It's now expected in any software that consumers use, including day-to-day Line of Business software. In 10 years, these Millennials will be in a position to start deciding when to replace LOB systems.

If you don't start planning and altering systems *now*, you will find your LOB systems replaced with a new system that is slicker, flexible, multi-device friendly, and integrates into anything. Something that doesn't require your skills.



NATHAN RECTOR
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Feedback

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