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# INTERNATIONAL **Spectrum**

THE MULTIVALUE  TECHNOLOGY MAGAZINE | MAY/JUNE 2017

## 36<sup>TH</sup> ANNUAL INTERNATIONAL SPECTRUM CONFERENCE RECAP

### ALSO IN THIS ISSUE

- THE WHY OF UX/UI
- CASE STUDY: DOVER SADDLERY



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COVER

**6 Spectrum 2017 Conference Recap**  
 International Spectrum 2017 was a hit with new and existing developers. See what you missed at this year's four days of education, networking, and fun. Also read about important industry talks that went on at the conference this year.

FEATURES

**9 Business Tech: UX/UI Part I** Programming has escaped the computer. It's in our phones, our TVs, even in our kitchen appliances. Now might be a good time to re-think how your programs connect to the people who use them. UX and UI are the current words for a very old idea: making things obvious. **BY CHARLES BAROUCH**

**19 Case Study: Dover Saddlery Powers Online Growth and Expansion** In the early 2000s, Dover began adding new stores and acquiring existing tack shops, ultimately expanding their presence to thirty-one stores in nineteen states. To support its rapid growth, Dover required a robust application database platform that could drive its expansion. This case study explores what Dover did to solve the problem.

DEPARTMENTS

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# From the Inside

## User Group Members Wanted!

Are you looking to meet up with MultiValue Professionals in your area? Well, you are not the only one. I've talked with many people that want to start up User Groups again, but didn't know who else would be interested.

For those that have been in the market for a few years, you remember the old user group meetings that had 30 or more people attending. Then, over time, the meetings seemed to get smaller and smaller, until people stopped planning new meetings.

Ok, so you are saying that is proof that the User Groups are dead? I disagree. Many of the people that attended the meetings in the past, would be interested in attending again now; they are just waiting for someone to tell them when and where the meetings are.

There are 2 road blocks many people find when restarting a user group meeting: location and time. Some might say attendance, but in reality, that is usually just an issue with the location and/or time.

Let's start with the location issue. Many of us work in buildings or for companies that have conference rooms that can hold 10-20 people easily. Check with your boss to see if you can use the conference room for one evening. This allows you to set a location to

start with. If you get a large turnout, you can always talk it over with the people that attend to see if they want to do it at another location that you many have to pay for.

I've talked with a lot of people over the last couple years that would love to be part of a user group again, and would be willing to contribute \$10-\$20 to pay for a room and/or food.

Now for the time question. Set and plan your meeting 1 or 2 months in advance so people have time to schedule. You'll also find that if you schedule 2 or 3 meetings over the next 6 months, you'll get different people each time. Some people can't make it for the 1st meeting, but will be able to make the 2nd or 3rd one, if they know when and where. We all live busy lives, so don't expect a major turnout every meeting.

You don't have to have a meeting every month, but you should always have the next 2 meetings marked on the calendar.

Once you have decided when and where, advertise it to the community. How, you ask? Well, send me an email, and I'll included it in the newsletter, and post it in the social media outlets so that others will know.

Now, the question of topic. That is the easier part. Talk about why your company uses

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*Editor*

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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*

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

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#### NEWS RELEASES/UNSOLICITED ARTICLES

*International Spectrum* is eager to print your submissions of up-to-the-minute news and feature stories complementary to the MultiValue marketplace. Black and white or color photographs and diagrams are welcome. Although there is no guarantee a submitted article will be published, every article will be considered. Please send your press releases, articles, and queries to: [editor@intl-spectrum.com](mailto:editor@intl-spectrum.com). *International Spectrum* retains all reprint rights.

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MultiValue, or how your company implements a product or hardware, or what your company does on a day to day basis. It does not have to be anything extravagant.

Talk about how you just upgraded your system, installed new hardware, or hired a new employee. You can even talk about what your company does and how MultiValue Technologies have made it successful.

The trick to the User Group is keeping it going. It really isn't very hard, and only takes about 1 hour a month (outside of the meeting of course). If you need additional help, just ask. International Spectrum is here to help the community.



**NATHAN RECTOR**  
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International Spectrum  
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# 2017 Spectrum Conference Recap



If you are doing anything in MultiValue, the 36th Annual International Spectrum Conference & Exhibition was the place to be for networking, solutions, and education. MultiValue professionals from North America and around the world gathered in Phoenix, AZ, from May 1st through April 4th, 2017, for a week of professional development and networking.

This year's attendees walked away with over thirty hours of professional development in MultiValue database technologies and integration from sessions alone. This year's sessions included topics for beginners, as well as our advanced topics that include information that was not MultiValue specific.

To see a videos and pictures for the 2017 conference, go to:

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*We as developers can get caught in a rut and like to stay in our comfort zone. The conference brings together developers and vendors of different backgrounds and expertise. The Spectrum conference has given me new ideas and product solutions which I was able to implement in our business.*

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<http://www.intl-spectrum.com/resource/842/2017-Conference-Recap-Pictures.aspx>

During the Welcome Address on Monday, Nathan Rector, President of

International Spectrum, talked about how to explain MultiValue Databases, Applications, and Technologies in a single 1-liner.

Nathan explained why MultiValue Database technology was always hard to define. One of the reasons was that we (as developers and users) have always called it a "database." While very accurate in one aspect, it was not the whole story. MultiValue Databases are not just databases. MultiValue Databases are full fledged application development environments that just happens to includes a Database, Application Development Language, and Natural Language Reporting System.

So the 1-liner that Nathan used to explain MultiValue Databases was:

"A MultiValue Database is an Enterprise Class Business Application Framework with a built-in application



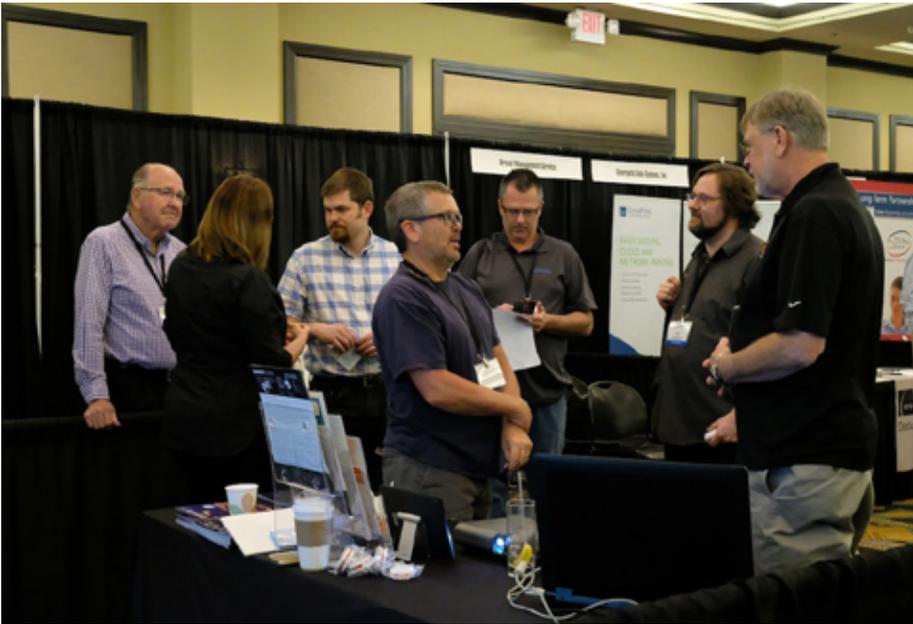
development layer for 3-Tier programming that combines the power and stability of a Relational Database with the Flexibility of a NoSQL database.”

This explanation provided a new perspective to attendees on how Multi-Value Databases could and should be used when enhancing and developing applications. By creating a new point of view on how 3-tier database development can be done, the conference included many topics on building integrated software, APIs, and design consideration that would take your business data from “green-screen” and CLI (Console Line Interface) applications into sharing data with GUI, Mobile, Web, Windows 10, Outlook, and other external applications.

Along with talking about how to enhance existing MultiValue Applications, there was a lot of information for the new MultiValue developer and administrators. These sessions on the Fundamentals of MultiValue Database covered programming, dictionaries, and overall system design.

On Monday at Lunch, Dick Thiot from Maverick Systems, gave a talk on “MultiValue Servers: In-house vs. Private Cloud vs Public Cloud.” He spent a lot of time explaining the differences between In-House and Cloud, and the advantages and disadvantages of using In-House, Private, and Public Cloud options.

In addition to this talk there were many other topics on cloud and virtualization. With many businesses looking closely at whether to buy new hardware or virtualize their existing systems, these sessions talked about questions on speed, storage, and design consideration, and check lists for when and if you plan to virtualize into a private or public cloud.



Security and Encryption was a hot topic as always. How to secure your data and protect yourself from ID Theft, Crypto Viruses, and other issues, there was a lot of good conversation and information that your business needs to know and implement.

Following up on modernizing application, Mobile and Web Developer was of interest as always. These are no longer new technologies to the enterprise, but are turning into required technologies that companies need to implement.

On Tuesday and Wednesday, the attendees were able to talk to our sponsors about tools and products that would help their business. As we've done before, we started with our "Vendor Speed Dating," which is always a blast.

For those that do not know what "Vendor Speed Dating" is, all the sponsors get 5 minutes to talk to the attendees before the "sneak preview" party, to inform them of things their companies can do for the attendees and the MultiValue marketplace in general.

During Lunch and in the evening attendees gathered in various places to Network. One of the greatest advantages that the conference brings to the MultiValue Community is its ability to bring together the novice and the expert to compare notes and talk about what issues they are having. The Spectrum Conference has always been a place to reinforce the community aspect of the MultiValue developers and users.

In addition to the non-scheduled networking time, there were Meet-the-Experts appointments where attendees could talk with our conference speakers and sponsors about any topic they chose outside of the sessions. We originally introduced this in 2016, and enhanced it in 2017 to allow easier scheduling and access to speakers. It was well received by our attendees, and we will continue it in future conferences.

The conference wrapped up on Thursday with our traditional Closing Conference party. As Attendees enjoyed one last time to talk, laugh, and network with each other, they enjoyed the

sun, food, and drinks before returning to work the following day.

Most of the attendees took advantage of our post-conference downloads and on-demand session videos as well. These downloads and videos are one of the perks of attending the conference. It provides attendees a chance to revisit popular sessions or review something that was provided in a session they were not completely clear on to begin with.

If you didn't get a chance to attend this year, and would like to access to the session videos and downloads, you can still can at:

<http://www.intl-spectrum.com/conference/show/17/SessionDownloads.aspx>

Now that this year's conference is over, it is time to start planning for the 2018 Conference.

If you have a topic or session you would like to see at the Spectrum Conference in 2018, please let me know. I am always looking for new ideas, as well as, presenters. **IS**

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# UX/UI Part I

BY CHARLES BAROUCH

**M**y green screen does what I like, and I like what it does. I've used that line in presentations. Not because I feel that way, but because I understand that feeling. There is something comforting about living in a 24x80 world. You can't be expected to do much that's new or different in how the software looks on the screen. You get to concentrate on the engine work, the power of the application. GUI, HTML, smart phones, etc., these push the needle more toward form and less toward function. What's an engineer to do when we also have an obligation to be artists?

Non-artists tend to think of art as a world without rules. Oddly enough, it is quite the opposite. Art is endlessly subdivided into genres, styles, movements. Those names build a constraint around each type of art. While novels in Science Fiction and Romance are both collections of words, the reason we call them by different names is because the rules for each are different. Art is about playing within the rules in addition to playing against the rules. In that way, it is very much like programming.

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*Differences that make sense are distinctions. Differences without sense are sloppy.*

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## IOU UI

UI (User Interface) is the aspect to the program that connects the person to the process. It can be a green screen, a voice (think Google's Assistant, Siri, Alexa, or any other auditory interface), a watch, a webpage, or any number of other things. If you want to see how esoteric interfaces can get, look up an electronic musical instrument called a Theremin.

On the other hand, UI can be very physical. The modern car has a surprising amount of tech inside it. The steering wheel, the gas, and the brake are UI elements. When we design a user interface, we have to understand more than just the engine it connects to, we have to understand how people will want to use it.

And we have an obligation to do that. Just because the green screen didn't give us a lot of options, didn't mean that we weren't responsible for doing it back then, either. Let's talk green for a moment.

## \EQX/

Imagine if you went to work in the early eighties and every screen you used had a different way to exit. One program requires a "Q" for quit. This one wants you to "slash out" with a back-slash, while another wants you to "slash out" with the forward-slash. I've seen systems of that era that wanted you to "TOP" out in some places and "X" for others.

You might guess that I'm making a case for consistency, but I'm not. Let's examine one of the most successful modern interface elements to see how far off that assumption really is. Consider the humble HTML link. What happens when you click on it?

1. It takes you to another page.
2. It takes you to a completely different site.
3. It rebuilds the current page with and additional criteria.
4. It opens a hidden area on the current page.
5. It changes information on the current page.
6. It brings up a pop-up box.
7. It presents additional menu options.

## Is Your Membership Profile Up to Date?

International Spectrum is currently working on updating membership information for all our readers. We always like to have the most current information so that we can keep you informed of current news in the MultiValue Market.

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8. And so on.

Links do not have a single, assured behavior. No one cries foul and demands we fix this terrible problem. People are okay with this far-from-singular approach. I mentioned cars before, let's get back to that for a second. Assuming your car still uses an ignition key — some don't — what do we all know about what happens when we turn the key and remove it? It shuts the power, right?

Wrong.

If I turn my key and take it out but I don't open the door, I have an, ahem, window of opportunity to roll up my windows, because removing the key doesn't turn off all of the power. Oh, and the headlights still work. Of course, the blinkers still do, otherwise you couldn't use your four-way flashers with the keys out. And no one is demanding that this be more consistent.

What our web link and our car key have in common is that every way in which they break the rules makes sense to us. I'm fine with "E" to end here and "Q" to quit there if I perceive a difference between the two types of exits. Differences that make sense are distinctions. Differences without sense are sloppy.

### No Exit

UI isn't just about exits. We need to navigate from field to field. We need to have a way to correct errors. A way to ask for help. The list goes on. Just like we need a rule that tells us to put last name in attribute one of a particular table, we need rules for how we design the controls in our software. And we need to understand the bias in our rules.

I've played games where your character is told direction by using the keys W-A-S-D because they are grouped together on a QWERTY keyboard. That's not a good interface for a voice module. Can you imagine guiding a robot through a maze by shouting A-W-W-W-D-S-W-W-W? For voice, using words — left, right, forward, back — makes more sense. And on my iPhone, the keyboard is unlikely to be visible during my game. That's screen real estate I can't give up.

Using the back-slash to go back in a green screen might make sense, but the availability of the mouse makes the whole idea of field-back obsolete. Touch screens require us to re-evaluate the use of indirect methods like the mouse. So, we need a guide that works for each medium.

Ultimately, UI is about creating the shortest ramp from new to experienced. The more the controls make sense, the less time the user has to spend learning how to make your amazing tech do what it was designed to do. We have the power, and the obligation, to make things easier.

### UX Again and I'll Still Say No

UX (User Experience) is the sum of the UI plus other design elements. We'll talk about UX in the next installment. **IS**



**CHARLES BAROUCH** 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.

# FROM THE PRESS ROOM



## Zumasys, Cook Medical and Ivy Tech Partner To Educate College Students on jBASE and MultiValue

Zumasys announced today that Indiana-based Ivy Tech Community College has collaborated with Cook Medical and Zumasys to integrate jBASE, a MultiValue database management system, into its Software Development certificate program. Specifically, jBASE is being used to simulate real-world programming scenarios.

With training and assistance from Zumasys, Ivy Tech Community College developed a curriculum that challenged Ivy Tech students with problem-solving projects to prepare them for careers in manufacturing management at companies such as Cook Medical.

"The partnership with Cook Medical and Zumasys creates opportunities for students to learn skills with immediate practicality in the workplace," said Jennie Vaughan, chancellor at Ivy Tech, Bloomington. "Our students are learning high-demand skills so they are career-ready on graduation day. This is not only im-

portant for the success of our students, but also further develops a skilled workforce in Indiana."

Under the leadership of Associate Professor, Dr. Diana Nixon, students mastered foundational programming skills in jBASE. The course culminated in a final project that required students to write programs for employee time-entry and customer order management.

"Attracting new developers to MultiValue is a top priority for the market and we are excited by the potential of this program," said Paul Giobbi, President of Zumasys. "The native architecture of jBASE appeals to new developers familiar with NoSQL databases and this is an excellent way to expose up and coming technicians and programmers to the power of MultiValue."

"Cook uses jBASE to manage many aspects of its business, such as inventory management," said Dave Breedlove, vice president of Information Technology at Cook Medical. "Programs like this spotlight the power of community partnership. These students' creative problem-solving on this program offers valuable insight. We need employees with jBASE experience, and these students show significant potential."

Multiple students from the class will be offered an internship at Cook Medical, with an opportunity to earn a full-time position after successful completion of the internship. ■



## Kore to Release Version 4.4 of Kourier Integrator, Enhancing Key Features of APIs

Kore Technologies is releasing the latest update to its signature platform, Kourier Integrator, focusing on enhancing two areas including REST API and new API documentation.

The latest release introduces a new Subscription capability for published REST APIs. This gives developers the ability to Subscribe to published REST APIs to get changes from the source application as they occur, instead of having to manually ask for changes repeatedly. This is done via Webhooks.

Essentially, this new tool will notify API subscribers of changes or deletes to specific data sets from the source application and it enhances the developer's toolkit for application integration, giving them another way to communicate in real-time with other applications. It does not replace the ability to read or write data in real-time.

"We are making it easier for API consumers to interact with legacy U2 systems," said Mark Dobransky, co-founder and managing partner. "It

breathes more life into your business system because you can communicate with outside systems."

Additionally, 4.4 of Integrator adds a new ability to produce REST API documentation in Swagger format. Swagger is emerging standard for REST documentation.

The tool is now integrated into the Kourier API development process and it improves productivity of building API documentation.

API consumers will have better documentation of the published APIs which makes it much easier for them to consume the APIs. API developers can Preview their APIs in Swagger format while building the API, which helps to visualize the interface more easily

This gives users the ability to generate and save the Swagger document file for website publication, which can be customized as needed.

"This particular release targets API developers and the API consumers who use the APIs to communicate through the applications with these developed API," said Keith Lambert, vice president of marketing and technologies at Kore. "The Subscriptions and Swagger documents are going to help both sides of the equation."

The company will continue to aggressively keep up with emerging standards, Dobransky explained.

# FROM THE PRESS ROOM

"We're very connected with our clients, so we're constantly getting feedback and trying to roll that into products as quickly as possible," Lambert said. ■



## DesignBais Announces the Availability of Release 7

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New and improved features

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- Form Section Control
  - form sections automatically sorted so setting up section collapsing is much simpler
  - redundant section names removed automatically

- sub sections sorted to the end of the section list where they need to be
- check of collapsing sections reports on section overlap that will disturb correct collapse functionality
- Form Tab Indexing
  - the ability to set an increment greater than 1 between tab index settings
  - facilitates the insertion of new form elements within an existing sequence
- Click Timeout parameter to allow a delay for the click event to complete
- Mouse Out event now available
- Encode HTML option enhances security against XSS injection attacks
- Hit Blocker allows form elements to be hidden and following events to be blocked
- Custom Attributes for a field (added to the HTML tag and then available for javascript)
- DesignBais styles (class) have been completely reviewed
  - standard class names
  - two Style Groups, dbaisWeb for forms and dbaisRep for reports
- Default button class that is applied to any button with no display class definition
- Ability to replace the grid control symbols (+, >, x) with symbols (which may be HTML)
- Menu styling improvements with the ability to control container size
- New options in Active Users
  - Phantom Status gives visibility to long-running jobs with ability to kill the process
  - Hit Status displays started, failed and timed out hit details
  - Display Como option for developers to quickly view the important content of their como file
  - Long-running reports and other phantom processes can be reviewed and killed
- Exclusive Locks extended with new option to display locks in your account only
- System and Global Parameter functions now maintained via forms rather than editor
- Form Compare routine provides developers with ability to display differences between two forms
- Comprehensive improvements and additions to the Reference Manual
- Improved File Upload
  - allows multiple file uploads
  - is not sensitive to app pool recycling
  - is not prone to session hijacking
  - provides encoded virtual path

- provides the option to assign unique file names
- shows only those files having allowed file extensions when picking a file using the Windows File Explorer
- DesignBais can now provide a Web Service
- DesignBais can access an external web service such as a SOAP service
- New Date Picker calendar display
- Session restoration
- New and much improved Code Editor
  - Retains file and record name of last routine edited
  - Only prompts to save changes if record has changed
  - Improved find and replace functionality
  - Auto tabbing
- A full manual is available at [www.designbais.com](http://www.designbais.com) ■



## Rocket SB/XA 6.5 Now Available

Rocket Software is happy to announce the release of Rocket SystemBuilder Extensible Architecture (SB/XA), Version 6.5. This eagerly anticipated release will enable

# FROM THE PRESS ROOM

you and your customers to modernise your applications by extending your business logic to web and mobile and supporting modern frameworks.

First, Rocket has made enhancements to SB/XA for use with your current deployments. Version 6.5 includes the ability to:

- Accommodate the use of multiple versions of SB/XA with multiple Communications Servers installations, or upgrade an existing Communications Server;
- Increase flexibility with a new navigation method: EBO. With EBO, the Rich Client uses a Microsoft Outlook-style interface without MainWin while the GUI client uses SBExplorer with MainWin;
- Save keystrokes with AutoComplete. Use one of the three built-in styles or create your own. (To use AutoComplete, you must have intuitive help defined);
- Keep track of crash-specific events with automatic log collection;
- Avoid unnecessary resource consumption by tracking the activity of server processes attached to the client with the new Communications Server Monitor.

If you're ready to leverage your existing investment in SB/XA to drive new types of applications, including web and mobile, you can take advantage of the new SB/XA

Services by adding the Connection Manager.

With Connection Manager, you can extend your SB/XA applications to new devices, languages, and frameworks, because SB/XA Services enables you to use RESTful services to call any non-interactive process with an HTTP interface. With Rocket SystemBuilder Extensible Architecture, Version 6.5, and the new Connection Manager, you can take your applications to the web or mobile without rewriting your business logic. ■



## **BlueFinity Announces a New Generation Rapid App Development Platform for SQL and MultiValue**

Developing and deploying the right business apps are a proven way of helping companies become more efficient and profitable. Business apps that integrate with existing IT infrastructures or provide new applications can either help management teams and employees run their operations more effectively, or can be a really effective way to

better engage customers to boost growth.

To date, the creation and implementation of quality and high functionality apps has been considered challenging, resource intensive and expensive. Many companies have been deterred because of concerns about the speed and cost of development, how to cope with multiple device types, the integration with different databases or existing systems, changing business requirements and technology, and how to ensure growth potential and flexibility in to the future.

Today, BlueFinity International has provided a solution with the release of Evoke, a new Rapid Business App Development platform. Evoke is a cost-effective product that delivers web, hybrid and native apps. It integrates with all major SQL and MultiValue databases and can be deployed across multiple devices and platforms, all from a single design project.

Designed for the rapid development and deployment of mobile, desktop and web apps, Evoke allows companies to build business apps more easily and to extend their enterprise applications to customers, employees, and partners in a fraction of the time and cost of traditional methods.

It offers all the major features of a typical RAD environment, including menu creation, integration of device specific features, styling and data

management, along with a WYSIWYG screen designer. A key benefit of Evoke is that it is future proof - no matter how much the business needs change or technology evolves, it still offers an unlimited growth path.

Evoke offers an extensive array of UI widgets, dynamic adaptations and industry standard component integration to support the deployment of apps across all major platforms and devices, all from a single design and code set. All the major devices including the iPad, iPhone, Android and Windows phones and tablets, plus Windows, Linux and Apple desktop are supported and can dynamically adapt a single user interface design so that multiple screen sizes and operating systems of these various devices are provided for, and the users of each device are presented with optimum visual displays.

The powerful Evoke designer provides developers with everything they need to produce high quality business apps. They can quickly and cost-effectively build interfaces, define and manage data, and use Evoke's unique business logic components to create apps. As the business requirements change, then speedy enhancements can be made to the app in the Evoke designer. With its single design structure, changes only need to be made once and the revised app can be immediately generated, automatically incorporating any

# FROM THE PRESS ROOM

customization, for your multiple devices.

Malcolm Carroll, a director of BlueFinity said, *"Evoke guides developers through all aspects of design - supporting them every step of the way. Its extensive functionality and the sheer usability of the product means companies no longer need to recruit specialist development staff to produce sophisticated apps. Following initial familiarisation, existing staff who know the business inside-out will quickly be able to start developing apps."*

The cloud-based development process means that management and business users can be fully involved by reviewing the app at various

stages of its build, and will be able to pass comments and make suggestions. This ensures the development becomes a truly iterative process, resulting in better apps that meet genuine business requirements.

Data management is also one of the fundamental design features of Evoke. The system presents multiple options for designing apps without being restricted by the way the data is held. Multiple databases (including all the major SQL and MultiValue databases) can be used and accessed in a single app, and the information can be combined for optimum use in the app

design. Evoke's sophisticated data modelling ensures that the apps can easily be fully integrated with back-end systems, and that there is immediate synchronisation of data between user devices and the back-end databases and systems.

Businesses also have a choice of how to deploy their apps as Evoke will support the generation of Web apps, Hybrid apps or as full, industry-standard Visual Studio and Xamarin projects which can be deployed as native apps or form part of the onward development program.

Carroll adds, *"This is a really powerful aspect of Evoke. Busi-*

*nesses can start by developing a web app, and quickly deploy it, achieving instant benefits and a fast return. But at any stage, they can choose to progress to a hybrid or native app or to Visual Studio or Xamarin projects that you can customise and enhance further. As each stage can be based on the last, they won't be wasting or duplicating any of their design or development efforts."*

Evoke is designed to offer the best of both worlds; fast, cost effective development and deployment of business apps, and the option to progress to a fully native environment, all the while benefitting from the flexibility of Evoke's single design structure. ■

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## IS.UUID.V4

### UUID V4 Random Generation

A Universally Unique Identifier (UUID) is an identifier standard used in many non-MultiValue databases and software to generate a Unique ID outside of using incremental numbers. A UUID is simply a 128-bit unique value that can be expressed as either a larger number or a string.

The common format for a UUID is a string format that looks like the following:

```
123e4567-e89b-12d3-a456-426655440000
```

The intent of a UUID is to generate an ID that can be used across different databases, and will always be unique. This is different from a sequential number that would only be unique in the file or table itself, and not across files, accounts, or databases.

There are several different versions of UUID. This article is based around the Version 4 of the RFC 4122 specification for UUIDs. Version 4 is used to generate a Unique ID based on random number generation.

Version 4 is also commonly referred to as a GUID. While a GUID doesn't follow the same specification as UUIDs, it is the same basic format.

#### About Random UUID

Random Generation of UUIDs has a flaw in it that a software developer will need to handle on their own. Since this UUID is based around a randomly generated value, and

not a sequential or managed value, there is NO guarantee that the value being generated will be unique within the file, table, or database.

All a Version 4 UUID does is generate a UUID string in the 8-4-4-4-12 format. There is high likelihood that the UUIDs generated in small batches will be unique, but since MultiValue BASIC uses a pseudo-random generate, you can't guarantee you won't generate the same UUID more than once.

#### Generating the Random Number

Some of the algorithms that I've seen in other SDKs generate a large random number and then encode that random number into the 8-4-4-4-12 format. I chose to do it a little different.

Instead of generating a single large random, I chose to create sixteen random numbers between one and two hundred fifty-five. This was easier and didn't cause any BASIC runtime overflow errors.

I then converted those sixteen random numbers into a HEX string in the 8-4-4-4-12 format.

#### Conforming to RFC 4122 Specification

There is one last thing that needs to be done to make this a valid RFC 4122 value. There are 2 values that must be something specific:

1. Set the four most significant bits of the 7th byte '0100', so that the Hex value always starts with a 4,
2. Set the 2 most significant bits of the 9th byte to '10', so that the Hex value will always start with a 8, 9, A, or B.

AA97B177-9383-4934-8543-0F91A7A02836

^ ^  
1 2

This is all done using BITAND and BITOR. To keep this program generic, I chose to use Bit math to do the logical AND and OR, instead of the built-in BITAND and BITOR found on some systems.

The code to replicate the Logical AND and OR was borrowed from Dave Meagher's code found in the FOSS4MV/mvCrypt code on BitBucket:

<https://bitbucket.org/foss4mv/mvcrypt>

### Example

See Figure 1

### Output

See Figure 2. IS

```
FOR I = 1 TO 100
  CALL IS.UUID.V4 (UUID,ERROR)
  CRT UUID : " Error: " : ERROR
NEXT I
```

Fig. 1

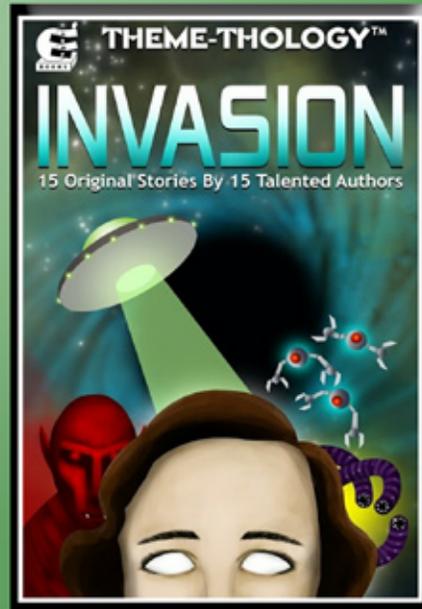
```
25A8FC2A-98F2-4B86-98F6-84324AF28611 Error: 0
81F8D30C-C12F-44BD-A299-2F9BC67B9945 Error: 0
4A768B81-6928-496C-81BE-E2AA107A0126 Error: 0
2DC77B85-5819-46A6-BCDE-C34CE6A6562D Error: 0
45AC3202-9353-4B91-A7EF-9B876C7F706F Error: 0
77029FEF-3818-489F-899E-EB49221E02E4 Error: 0
ED21503F-4AF9-413F-ABF4-9FB1E507D974 Error: 0
36F94C73-F0EB-43A9-AB69-676D219878CD Error: 0
```

Fig. 2

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# Dover Saddlery

## *Powers Online Growth and Expansion*

### **Company**

Headquartered in Littleton, Massachusetts, Dover Saddlery specializes in equestrian products, outfitting both horse and rider for any level of competition and riding. It was founded in 1975 by competitive equestrians who had been members of the United States Equestrian Team Foundation's 3-day event team. Since then, Dover has expanded its retail presence through a combination of new store roll-outs and acquisitions in multiple states. Today, the retailer operates a catalog and online business to serve riders across the country.

### **Challenge**

In the early 2000s, Dover began adding new stores and acquiring existing tack shops, ultimately expanding their presence to thirty-one stores in nineteen states. Today, more than half of the business comes from physical stores while the balance is divided between online catalog orders and call-center purchases. All stores run a heavily customized retail solution (TOPS) that forms the foundation of the order fulfillment system. To appeal to a wide range of customers, Dover Saddlery maintains approximately thirty thousand SKUs, primarily apparel and equipment—often with multiple sizes and color choices—in a sixty-five gigabyte database. Much of the higher-end

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*“The software just works...it never goes down, and it makes it easy to support the needs of our different stores and businesses without having a big IT team.”*

*- Rich Sueltenfuss*

*IT Director Dover Saddlery*

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merchandise is physically located in the stores, although Dover also guarantees in-stock items will be delivered to customers within a few days.

To support its rapid growth, Dover required a robust application database platform that could drive its expansion into different geographies. The company also needed a platform that was flexible enough to support its complex inventory and shipping processes across the stores as well as drive online operations.

### **Solution**

The Dover founders, having come from a retail background, had used the Rocket® mvBase database framework in previous operations. mvBase is an embedded multidimensional database management system that powers thousands of ERP and other retail applica-

tions worldwide. The founders recognized that the combination of flexible design and high performance would provide the platform they required to grow quickly with a minimal IT footprint. In fact, despite the retailer's quadrupling in size since 2000, the IT team today stands at just five professionals and, for much of the company's growth, hovered at one or two IT employees.

### **Results**

Explains Rich Sueltenfuss, the IT Director who oversaw much of Dover's expansion over the last decade, “The software just works...it never goes down and it makes it easy to support the needs of our different stores and businesses without having a big IT team.”

Maintaining an inventory for the broadest customer selection is critical at Dover but that becomes complicated at times. The Rocket mvBase platform is ideally suited to handle complex data with its “table-within-a-table” structure. Because of the different color and size offerings, a single item can often explode out to sixty or more thirteen-digit SKUs. Thanks to variable-length record fields, the IT team isn't restricted to character limits—making it easy to maintain a variety of customer choices and SKUs.

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Tracking demand and associated inventory on a daily basis requires constant collaboration with the physical stores and warehouse. Located at the Littleton headquarters, the IT team maintains ongoing communications with the stores. A batch process feeds data to the back-end for inventory management and orders are uploaded

to the main system every hour, where 85-90% are processed automatically.

The Rocket MultiValue environments align to the way people — not just developers — think and learn. This design makes implementing changes, such as seasonal promotions, easy. For example, the database facilitates applying automatic promotional discounts for Black Friday sales by enabling IT

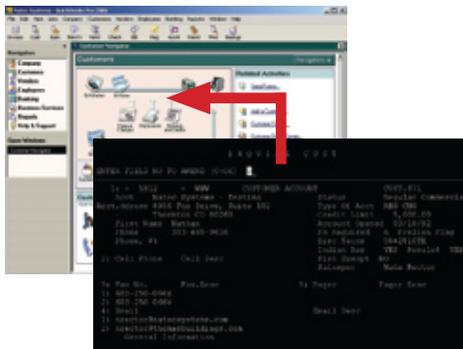
staff to simply type in the item number, discount, and date range. Promotions automatically aged out and could be easily changed without any re-coding.

Notes Sueltenfuss, “Rocket MV is designed to be embedded into retail and other applications, reducing the need for database administration and making life easier for non-technical users. The platform is so stable and reliable that we’ve been able to run lean and mean from an IT standpoint while focusing on giving customers more relevant and customized marketing offers.”

Dover Saddlery prides itself on offering a consistent buying experience whether it’s online, the physical stores, or via a catalog order into the call center. In the future, Dover will continue to focus on the needs of its customers, while exploring new product lines. **IS**

mv  
QB

## QuickBooks API for the MultiValue Database



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