Session Abstracts for Friday, July 22, 2016

From Node.JS to Angular.JS and Everything in Between: Navigating Frameworks, Libraries, and Design Patterns in JavaScript – David Aktary

The newcomer to JavaScript has a lot of confusing inter-dependencies to navigate when reviewing existing code and a lot of decisions to make when trying to implement their own solution. In this talk, we'll discuss what solutions exist for each part of the web application stack, how to identify them in the wild, and when to choose them when designing an application.

A Shallow Dive into Database Modernization – Patrick Behr

Learn how easy it is to convert DDS files to SQL tables (and why you should).
- Without recompiling anything!
- Remove those pesky "extension" files (you know, the ones you created because you needed additional fields but didn't want to add them to the file).
- Data-centric programming.
- Getting separation between applications and the database.

Mask and/or hide sensitive data with RCSC (Row and Column Access Control).
- Limit data access on a need-to-know basis, even if users have *ALLOBJ authority!
- Virtually no application changes.

Encrypt your data with FIELDPROC.
- Data, index, journals on disk or tape are encrypted.
- No one can get the data without the FieldProc program.

Run programs using adopted authority.
- No more granting super powers to the users.

Daily Care & Feeding of IBM i – Larry Bolhuis

IBM i and IBM Power Systems combine to deliver a fabulously reliable environment. The operating system has rich work management capability and strong error reporting. Despite that you shouldn't ignore it or you will eventually find yourself dealing with something serious. In this session we'll cover the things you need to watch and understand allowing you to deal with them before they become serious issues.
Learning Objectives:

- Learn where to look and what to look for to know how your system is running
- Learn what to configure for automatic reporting of errors and problem
- Learn the points at which you need to begin to apply effort well before issues occur
- Be able to tell management: "Yes our IBM i is running well!"

Rapid Fire Admin – Larry Bolhuis

This jam packed session written by Steven Pitcher is designed to help ensure every IBM i administrator and operator has at least a backpack full of valuable tips for when they return home. From command line to Qshell to IBM Navigator for i, Larry will sprint you through Steve's tips at a pace of at least two tips per minute, for at least 150 tips!

Power Systems Virtualization, the Nuts and the Bolts – Larry Bolhuis
Power Systems has had Logical Paritioning capability for many years and it just continues to get better. In this session we will cover the requirements, the options, and the choices that must be made to build logical partitions on Power System servers. This session will arm you with information necessary for a successful LPAR implementation. The hardware required including the Server choice (Traditional, Blade, Flex); Host operating system; Operating system choices; Console Choices; Storage options.
We will cover topics from basic LPAR requirements, through requirements for various operating systems, and issues relative to various hardware models. We'll discuss RAID cards, disk rules, cabling rules, loop rules and power issues as well as some helpful hints and knowledge not frequently found elsewhere.

Learning Objectives:

- By the end of this session, attendees will
- Understand what is needed for successfull Server Virtualization
- Know many tricks that will save time in the implementation process
- Learn what to avoid to stay out of trouble in the process

IBM i Advanced IP Networking and Troubleshooting – Larry Bolhuis
For many releases we just used it. However as server virtualization becomes more and more mainstream IBM began to add enhancements and capability. Starting with IBM i 7.1 and the Technology refresh capability group IBM has added significant new capability to IBM i.
In this session we'll cover the basic Line description and making it reliable.We'll discuss adding of IP addresses both real and virtual IPV4 and IPV6 addresses. Then we'll dig into the new capabilities of aggregated lines and bridging Next we'll discuss load balancing and Ethernet line failover in a virtual IP environment. Finally we'll discuss Ethernet and IP Troubleshooting including new Comm Trace options, Traceroute, Ping, NSlookup, Dig and more!

Learning Objectives:

- After this session you'll understand:
- All the important parts of the IBM i Ethernet Line Description
- How to set up IP addresses and Routes properly both IPV4 and IPV6
- Setting up load balancing and IP address failover
- How to build an aggregated line description
- How to configure an Ethernet Bridge
- How to use some of IBM i's IP Troubleshooting tools

IBM i in the Age of Digital Transformation – Alison Butterill
Modern technologies such as mobile interfaces, cloud, analytics and social are evolving quickly. This session will cover how IBM i is uniquely positioned to support these environments, allowing clients to achieve and maintain a competitive advantage in their business.
Learning Objectives:
- Learn the main modern technologies
- Understand how they can be implemented with IBM i

What's Happening in the World of Application Development on IBM i - Alison Butterill
The world of application development on IBM i is rapidly changing. What is happening today and where is development on IBM i headed in the future. Regardless of the starting point, the end goal is the same - modern applications. The various technologies for building a solution will be explored.
The session will follow three main focal areas. It will begin with a focus on the traditional application code and languages. IBM has continued to enhance and improve traditional languages by adding new functions and improving options for better user experiences.

Next, there are new tools for creating both traditional and modern applications. The enhancements added recently to the Rational tools will be covered and some "best kept secrets" will be uncovered.

The last focus will be in the world of Open Source languages and tools allowing even greater flexibility for leveraging IBM i. There have been significant announcements in this area including the new XMLService, providing access to IBM i resources (including programs, data and commands) from client scripting languages such as PHP, Ruby and Python as well as the traditional languages like RPG, Java, etc.

At the end of the session, attendees will understand that the world of IBM i application development has a modern, rich and growing set of languages and tools for the development of application solutions.

Mobile to Go – Alison Butterill
Android, Blackberry, iPhone, iPad, tablet, and on and on. So many mobile devices, so many applications. Employees want to work 24X7! They want access to email, to development, to data, to the system. They want to use their own interface from where ever they happen to be! How can you deliver the right interface to the right person at the right time? What is available to make the job easier? We will explore the various IBM i solutions that can help you deliver on the request to "Make Mine to Go".
Learning Objective:

- Learn about all the mobile options on IBM i and how start leveraging Mobile in your shop.

Modernizing IBM i Apps Chapter 9 Database Reengineering – Dan Cruikshank
This session will provide an overview of the 3 phased approach to database reengineering as described in Chapter 9 of the Modernizing IBM i Applications Redbook. This begins with the technique for transparently re-engineering existing databases using the "measure twice, cut once approach". In other words, exploiting Data Centric constructs with little or no impact to existing programs. The session will cover the process of building a solid database foundation using a physical, virtual and data access layer framework. The use of IBM development tools (i.e. Infosphere Data Architect, IBM Data Studio and Rational Developer) will be discussed. In addition, minimizing the impact of change via the use of bridge techniques such as "surrogate" files (DDS and SQL), RPG Open Access, Global Variables with Triggers, and Instead of Triggers (i.e. creating updateable SQL Join views) will be discussed.
The following is the agenda for this session:

- Overview of the IBM Reengineering Strategy
- Reverse Engineering an existing Database
- Refactoring Data Access
- Restructuring the Tables

Over the last 4 years or so, the IBM Lab Services DB2 for i team has been heavily involved in contributing to, and/or completely writing, several new IBM Redbooks including "Modernizing IBM i Applications from the Database up to the User Interface and Everything in Between", "Row and Column Access Control (RCAC) Support in IBM DB2 for i" and most recently, "SQL Procedures, Triggers, and Functions on DB2 for i" (aka SQL Routines). The Friday sessions, and 3 of the Saturday sessions, are based on these Redbooks.

SQL Routines Chapter 8 Developing Flexible and Reusable SQL Procedures – Dan Cruikshank
A reusable procedure is one that can be called from multiple procedures. A flexible procedure is a procedure that can be reused and accepts different inputs and produces output based on that input. Dynamic SQL falls within this definition. But what about the procedures that take advantage of dynamic SQL? How can they be written in such a way that they easily adapt to the ever changing needs of the business? This session provides the answers to those questions and many more.
Topics covered will include:

- Global SQL descriptors
- DB2 global variables
- Procedure parameters with default values
- Importing and exporting data between procedures
- Single procedures that perform all add, update, delete and read operations
- Implicitly hidden DB2 database columns
- DB2 auto generated columns such as row change timestamps

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Modernizing IBM i Apps Chapter 10 Moving From RPG to SQL Using Open Access – Dan Cruikshank
Over 25 years ago IBM delivered SQL as an application development tool on the AS/400 platform. Almost every non-5250 client application that accesses information from a DB2 for i server uses an SQL interface; however many IBM i RPG shops are reluctant to adapt SQL as the database access language of choice. Yet these same customers continue to use non-standard query products (i.e. OPNQRYF, RUNQRY, etc.) to dynamically access database data. Go figure. A good first step in standardizing your existing IBM i applications is to convert non-standard query commands to industry standard SQL. The RPG Open Access support, combined with the power of ILE, provides an excellent opportunity to convert existing programs. This can be done by just adding a single line of code to an F-spec in the RPG program.

In this session you will learn how to make use of RPG Open Access to allow RPG programs to take advantage of flexible and reusable SQL procedures as described in the prior session. Using OPNQRYF as an example, you will utilize the RUNSQL CL statement to set global variables which replace the OVRDBF and OPNQRYF CL statements. A handler program using result set consumption, can call a flexible procedure which imports the previously set global variables and opens a dynamic SQL cursor. The data associated with the cursor is now accessed by the handler using SQL set based operations.

Note: Although Open Access is not available to COBOL, the concepts of shared result sets and bridge programs will be beneficial to COBOL developers who need to eliminate OPNQRYF file from their applications.

The following is the agenda for this session:

- Understanding Transactions and set based processing
- Reasons To Consider Conversion
- Handlers to the Rescue
- Conversion Methodology

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From Modernization to DevOps: Faster Value at Minimum Risk – Floyd Del Muro
This session takes a pragmatic view on enterprise modernization on IBM i and the factors involved in a successful modernization project. Full benefits of modernization include two strategies that need to be conducted in parallel: a short term approach, focused on modernization of the user interface for rapid results, and a long term approach, including:

- o Analysis of the existing system from a business standpoint
- o Retro-documentation of the strategic and functional areas of the system
- o Modernization of the development environment
- o Adoption of new languages for graphical and mobile front-ends
- o Redefinition of IBM i programming standards (Free Form RPG, ILE, SQL)

In this session we present customer experiences and a complete roadmap and methodology for successful modernization.

Learning Objectives:
- o Alternative approaches to IBM i modernization
- o Where to start the modernization process
- o Essential keys to success, whatever modernization path you choose

The Power Grid: Where will we be without it? – Paul Forney
The power grid as we know it today sustains our way of life and our society in ways that we take for granted, until it is not there. Based on technologies that are ancient in today's modern science, it systemically overproduces enough energy in the United States alone to power all of India, Germany and Canada just to ensure our citizens that when they flip a switch the lights will come on. Though usually isolated to some extent, the computer systems that monitor and control this vast network of distributed nodes were built in an era when cyber security was not included as part of the design. To make matters worse, the evolution of the Smart Grid, an effort to optimize energy production and balance fossil fuels with renewables, seeks to build upon and connect these insecure disparate systems into networks that will traverse public communication channels. This paper seeks to enlighten programmers and system analysts to the dark truth that lies sleeping so close, using real world examples of cyber-attacks on the power grid.

BiModel-IT & Citizen Integration with IBM i - Vijai Garg
Gartner predicts that, by 2017, at least 65% of new integration flows will be developed outside of central IT.
Bimodal IT is having two modes of IT, working cohesively without any disruption in business process, each mode is designed to develop and deliver information and technology-intensive services in its own way:

Mode 1: Traditional — emphasizes safety and accuracy, aka as System of Records, such as Legacy ERP or other home-grown systems on IBM i

Mode 2: Innovation — emphasizes agility and speed, aka System of Innovation, such as SalesForce, WebSphere, etc..)

Each mode has all the people, resources, partners, structure, culture, methodologies, governance, metrics, attitudes, value and risk to operate independently. New investments are deployed through one of the two modes, depending on the balance of needs. When the balance changes, existing investments and operations move between the two modes.

Gartner has recently coined the term "Citizen Integrator" to refer to business users taking integration into their own hands. Organizations cannot afford to wait for IT to integrate and connect disparate applications. By strategically fostering citizen integration, IT can enable business users to automate connections themselves; saving valuable resources and ensuring users have what they need – when they need it. These people must be empowered to do so with tools and techniques, which make it easier to synchronize their data across diversified systems.

But IT leaders are often unprepared to deal with Citizen Integrators, nevertheless IT leaders can add value to the organization by facilitating Citizen Integrators while ensuring effective Governance is in place to minimize organizational risk. In addition, this approach ensures that IT professionals to focus on strategic initiatives.

Fighting against business users' desire to sort out their personal integration issues in a do-it-yourself way is futile and counterproductive. IT leaders have no choice but to facilitate citizen integrators while putting in place guardrails to minimize risks and potential long-term debts.

This paper discusses the bi-Modal approach with emphasis on Citizen Integration tools and techniques, specially focused on IBM i platform.

The emphasis of selecting these tools and techniques should depend upon the non-abrasive nature, cost effective, and future proof, meaning should be ready for the technologies that are not invented yet.

Putting the Pedal to the Metal for Web Services on IBM i – Charles Guarino
You keep hearing about these web service "things" but are not really sure what they are, where they fit into your toolset or why they're important. IBM continues to add native functionality, positioning the Power System as a key player in this technology. In this fast moving session, we will discuss the ins and outs of web services and the many ways you can work with them on IBM i. Points of discussion include how web services work, where to find them and a demonstration of the tooling you will find, TODAY, already available in your own shop.
Learning Objectives:

- A quick study on web services and how they're implemented on IBM i
- Both consuming and providing web services will be discussed

The "Best Stuff" of Advanced RDi Topics – Charles Guarino
Once you have a solid basic understanding of RDi you will want to attend this advanced session that demonstrates many of the finer points of application development.   Here is where you can truly customize RDi to watch your development time shrink and performance soar.

JavaScript & JSON a Match Made in the Browser – Pete Helgren
If you are developing any type of web application you'll run into JavaScript and JSON, the building blocks interactive web design. In this session we'll take a look at the client side: JavaScript and consuming JSON. We will also take a look at the server side: Generating JSON in RPG, SQL, PHP or Java on IBM i. We'll overview the technology, the available resources and the technique that will make you successful in implementing these mainstays of web development.

Learning Objectives:
- Learn how to make the most of JavaScript and JSON in your web applications
- How to create JSON strings using multiple tools on IBM i

Ruby on Rails on IBM i – Pete Helgren
This session will introduce Ruby on Rails (RoR), an Open Source, web application framework written in Ruby that allows developers to quickly develop database driven applications. Specifically, we'll look at installing RoR on i (in PASE) and walk through a simple CRUD application written in Ruby connecting to IBM i data.
Although billed as a "Ruby" session, we will be using JRuby as the Ruby engine because of it's database compatibility and it's ability to run native on i.

Developing Defensible Web Applications on IBM i – Pete Helgren

An application server platform is only as secure as it's weakest link. In the 21st century the exploit of choice is the web application. Even on a very secure platform like IBM i, poorly written web applications can lead to catastrophic security failures. This session will cover the most common web application vulnerabilities and how to fix them. The course will cover the RPG, PHP and Java languages and how they can be exploited on IBM i.

Learning Objectives:

At the end of the session the participant will be able to:

- Identify the most common web exploits
- See practical ways of defending against those exploits
- Have resources where additional help can be found

Organizing an ILE Application – Brian May

Over the years, I have come up with my preferred way of organizing an application. This method was developed from experience as well as from knowledge of Object Oriented programming concepts. In this session, we will discuss building service programs and procedures in object like structure. These service programs will encapsulate File I/O and business logic into reusable and maintainable pieces.

Data Structures & Data Structure Arrays: Making them work for you – Brian May

Most RPG developers use data structures within their code on a daily basis. But, are you using all of the powerful enhancements made to data structures in RPG over the years? This session will bring you up to speed on the many useful features of data structures in modern RPG.

Moving to HTML5 – Brian May

In this session, we will take a simple RPG CGI application designed for a mobile device and modify it to make use of HTML5 and AJAX. If you have ever wondered how to bring your dated CGI application into the modern world of HTML5, this session is for you.

Learning Objectives:

- Learn the basics of what HTML5 really is
- Learn how to use AJAX to communicate with the webserver instead of reloading pages when forms are submitted
- Learn about new input types and validations

A SMART Approach to Web and Mobile on IBM i – Eamon Musallam

Moving from 5250 to Web and mobile can seem like a mammoth undertaking, but it really isn't. In this practical session, Eamon will show you how you can modernize your RPG and COBOL applications the smart way, by leveraging proven templates and tools to eliminate risk and minimize the cost of implementation. Learn how to develop for full screen, tablets and smartphones using optimal methods, so that users get the best experience without incurring excessive development and maintenance overhead.

Free Open Source PHP Utilities – Mike Pavlak

There are thousands of applications and utilities already written in PHP that the world depends upon every day. From spreadsheets to PDFs to full blown Content Management Systems, the open source community around PHP has very much to offer. Come to see what you can use on IBM i and Power Linux that will enhance the value and productivity of your IT department and business organizations.

30 PHP Tips in 60 Minutes – Mike Pavlak

Inspired by longtime presenters at the Summit, this discussion looks at the most popular tweaks, hacks and just plain good practices the for IBM i PHP community to enjoy. Sometimes you just need a shopping list of things to watch out for and many of the tips that are scattered throughout these presentations are consolidated in a single place. Performance, security and best practices and more will be discussed.

PHP Web Security in an Insecure World – Mike Pavlak

The security of many business applications running natively on IBM i has been thought out several years ago in many cases. Introducing PHP into the IBM i environment can cause folks to start asking questions about access, security and authentication. In this session we will discuss application security, PHP IFS and Root file system access and several options to authenticate to a PHP application running natively on IBM i. This is a must see session for anyone who is looking to go live with PHP and/or a web technology on IBM i.

Getting a Handle on RPG Open Access – Alex Roytman

A native graphical user interface for RPG has been a widely requested feature from the IBM i community for quite some time. Previously, complicated API were required to make RPG work with a Web browser. Now, a native solution is possible though RPG Open Access, a new feature in RPG that allows you to communicate with browser interfaces directly!

Learning Objectives:
- Handlers are the key to making RPG Open Access work. In this session, you will learn:
- How information is exchanged between the Handler and RPG
- How to create a simple handler using RPG code
- Options for where to store Handler metadata
- How to use prebuilt Handlers for more advanced modernization projects

IBM i 7.3 Installation / Upgrade Planning: Considerations for upgrading to IBM i 7.3 and where to find information to plan for a successful upgrade to IBM i 7.3 – Mark Ruberry

This session will include the following planning topics for IBM i 7.3

- Upgrade paths
- Hardware support
- Planning information
- Some key product information
- Tips and best practices

Replacing Humans with Machines: IBM i in the Era of Cloud – Clayton Weise
Cloud is all about automation and abstraction; infrastructure as code. New development models and toolsets have been evolving quickly and a number of great platforms are being built around i. The ways that we deploy, manage, monitor, and integrate need to continue to evolve. In this session we will discuss the lessons we have learned in automating operational tasks, and introducing new monitoring techniques to provide better visibility to the state of the system and application. We will also discuss how our clients have started to make use of this automation to modernize their applications, including replacing simple 5250 sessions and basic web enablement to rich HTML 5 applications for desktop and mobile.

SQL Easy as Magic! – Steven Wolk
Do you use SQL? Do you use it to its full capabilities? SQL is an amazingly powerful tool, but can seem overwhelming at first. In fact, it can sometimes seem like magic!
Come join us for a session on SQL that begins with the basics and builds into very useful techniques you can use every day. Using magic to help explain some key concepts will make this session entertaining as well as educational. Discover how to use SQL not only for data definition and data manipulation, but also as a wonderful ad-hoc query tool. Save time writing reports and get the answers your business needs in seconds. Learn how to easily execute an SQL statement on your PC that will pull data from your IBM i into an Excel spreadsheet! We will cover other practical examples, such as easily processing a job log for the information you need.

Learning Objectives:
After participating in this session, attendees should have the skills and tools to:
- Use SQL to perform both simple and sophisticated ad-hoc queries
- Create and modify database files using SQL
- Modify your data quickly and easily without writing any RPG code
- Set up your own PC to pull data from your IBM i to Excel using SQL

Command Jeopardy – Steven Wolk
The IBM i operating system includes hundreds of commands that we use every day. Everything you type on a command line is a command! But did you know that you can create commands of your very own? Commands that can save you valuable time? Commands that can be used as building blocks to make program development more efficient? Come to this session to learn how - and to have some fun! We'll start with the basics, and then proceed through more advanced topics such as validation using DEP & QUAL, error handling, help text in panel groups, and more. We'll look at a number of useful examples of custom commands, and you'll even leave with free source code you can use as is, or leverage as a starting point for your own commands. We'll reinforce the concepts we learn by playing Command Jeopardy... for prizes! Learn some great techniques, have some fun, and maybe leave with a prize!

Learning Objectives:
After participating in this session, attendees should have the skills and tools to:
- Develop your own custom commands
- Add validation using DEP and QUAL
- Properly handle error conditions

- Write RTVxxx commands with optional parameters
- Have fun and possibly win prizes playing Command Jeopardy!

Mission: Possible! Journaling Forensics 101 (with Free Tools) – Steven Wolk
Learn to think like a spy! Many shops use journaling for a variety of reasons, but may not be familiar with how to use these journals for forensic purposes. Mining your journals for the who, what, when, where, how – and sometimes even why – can be very useful, not to mention fun! Come join us for a lighthearted and entertaining "Mission: Impossible" themed look at one of the most useful things you can do with your journals. This session will introduce journaling concepts and share tuning tips to optimize your journal environment for forensics. After reviewing the "old fashioned" way to dig into your journals, we will demonstrate how much easier this is with the right tools. The DMPJRN and CVTJRNDTA commands used in this presentation will be made available as a free download to all attendees, including source code!

Learning Objectives:
After participating in this session, attendees should have the skills and tools to:
- Optimize your journal environment to maximize the forensic information available to you
- Understand what your journals are trying to tell you, and how to interrogate them to get the answers you need
- Dump your journals quickly and easily using the free software made available
- Be able to interpret the content of your journals to determine what really happened to your data
- Use the techniques demonstrated in the provided source code to develop your own tools
- Save the world from evil-doers

When Management Turns its Back on Security – Carol Woodbury
The data residing on your IBM i is a valuable asset to your organization – Is it protected adequately given its value?   If not, what are the consequences your organization faces when data is not adequately secured? This presentation will discuss the real-life consequences that can – and have – happened to organizations when management chooses to ignore that IBM i needs to have proper security controls applied to ensure data is adequately protected. Contrary to popular belief, the system is not inherently secure … but it is secure-able by using the features that are integrated into the operating system.

Guidelines for the IBM i Security Administrator – Carol Woodbury
The role of the security administrator is a role that is often the responsibility of the overall System Administrator. Unfortunately, on the list of To Dos on the System Administrator's list, the security tasks typically fall to the bottom and are often never performed. Security is being neglected and it shows in the system's security configuration reports.
This session hopes to raise the awareness of the need for security to be administered and to educate the person tasked with security administration about the tasks that need to be performed. The need for security administration is increasing, but the number of administrators that know what they should be doing in this area is shrinking. This session will educate the attendees on the appropriate tasks that should be accomplished by a security administrator.