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Rational Developer for System i (RDi)

September 17 Speakers
Don Yantzi & Nazmin Haji



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Vaughn Dragland

IBM Power System 520

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Every year, when TUG is about to embark on a new season, the TUG Board of Directors elects the officers which comprise its executive committee.

TUG bylaws stipulate that “*The Officers of the GROUP shall be a President, one or more Vice Presidents, a Secretary and a Treasurer*”. At the July 2008 Board meeting two officer seats have been re-assigned out of a total of five. I say five because TUG has two vice presidents.

The seats that changed are one vice president and the treasurer. So, while **Kumar Rajendra** went from vice president to treasurer, **Russell Pangborn** got a seat as vice president beside **Stephen Bingham** who is keeping his title. The two other unchanged positions are secretary **Jay Burford** and myself (**Léo Lefebvre**) as president.

The other directors sitting on the TUG board are: **Glenn Gundermann** (TEC chairperson) **Ken Sadler** (immediate past treasurer) **Kimberly McNally**, **Aziz Saleh**, and **Garth Tucker**.

Our new Association Manager, **Lindsay Sutherland** is also part of the TUG Board with a non-voting function.

As you all know (I will assume you do), IBM has gone through many important changes during the last twelve to eighteen months and many people have been moved or re-assigned to different positions. It is the case of our former IBM / TUG liaison, **Stephen Quan** sat on the TUG

Board for about four years as a non-voting director. The IBM / TUG liaison position is highly valued by TUG as it is our window

into IBM, a source of information, and the TUG representative at IBM. During his time as liaison, Stephen really exceeded all of TUG expectations for his position. Recently, he has been assigned to “Senior IT Specialist, Mainframe z/OS Techline”. As you can see, it is a different section at IBM that takes Stephen—a bit far from the Power platform. We really wish Stephen all the success he deserves in his new functions.

This IBM/TUG liaison position has existed for most of TUG’s twenty-three years. Some of the people who have helped TUG in that Position are **Frank Carpenter**, **Phil Bennett**, **Lisa Jobson**, **Tom Hoover**, **Dale Perkins**, and **Stephen Quan**.

Since Stephen is no longer available for the position, we needed a new IBM/TUG liaison. Here comes Dale Perkins for a second stretch! Stephen Quan had replaced Dale as liaison, now it is Dale’s turn to replace Stephen.

It is really with great pleasure that we learned Dale had agreed to come back as our liaison. He is coming back as our liaison but Dale never really left TUG. We often see him at TUG events. Welcome back Dale!



IBM / TUG Liaison
Dale Perkins

One person I have not mentioned yet, who is always with us at every Board meeting, at every TEC meeting, an active member of many committees, and always there when there is a TUG event, a former TUG director and president—is **Vaughn Dragland**. Vaughn has been the TUG magazine editor for over fifteen years. He is the one who brought colours to the magazine and its recognition throughout all the users groups.

As you can see, many people are responsible for the success of TUG and the success of TUG is what we all have at the bottom of our hearts.




Jay Burford

TUG President Léo lefebvre

Remember that TUG is a volunteer organization. If you want to help TUG in any way, let me know. TEC 2009 is being planned and organized. If you think you would like to get involved, send me a note.

There are many committees set up for various TUG projects. They are listed on the TUG website at www.tug.ca/committees. Take a look at them. If there is an area where you would like to help, let us know.

As you know, IBM has recently merged the System i and the System p onto a single hardware platform—Power Systems. What does this mean for TUG? We have traditionally seen our membership made up of programmers, managers, and system operators on the System i and its predecessors, but now our universe is a lot larger. In order to stay relevant and fully engaged with the greater Power community we will need to come up with a new strategy for 2009—to better serve our old friends and also make some new ones. If you have any thoughts about this, I would like to hear from you. Send me a note at leo@tug.ca.

And stay tuned for a fabulous 2008/09 TUG season... 

Rational Developer for System i (RDi)

By George Farr

IBM i customers have long asked for a more lightweight tooling that focuses on the work at hand. Shops have reported that WDS*c* and WDS*c* AE are too big, contain features they are not using, and cause a slow start-up time. The new lightweight Rational Developer for System i (RDi) tool offers significant enhancements to let System i customers improve their application development. IBM's Eclipse based answer to ADTS is RDi! (The product ID on the configurator is 5733RDi, and on passport advantage is 5724T82.)

Like all other strategic IBM tools, RDi is based on the Eclipse platform and is exceptionally light with minimal resource requirements. It is certified to run on a desktop machine with as few as 512 MB of memory. IBM has focused on the needs of RPG, COBOL, and CL developers and is offering high-performance edit, compile, and debug capabilities along with access to i5/OS resources and facilities. In case you have never used the Remote System Explorer (RSE) which was included in WebSphere Development Studio Client, now RSE is included in RDi and offers you many powerful functions compared to the existing CODE/400 product as well as ADTS.

New features of RDi include:

- **Full RPG and COBOL syntax checking and program verification** allows you to test compile your members locally without generating an object and reports the errors through the Error List view. You can then with a click of the mouse imbed the errors in the source member at the location they occur for easy fixing.
- **Content Assist** allows you to display help anywhere in your source member. For example, if you are on a D specification and want to get a list of keywords that are allowed to be entered, you simply key Ctrl+Space and that will display the list of allowable keywords. In a column oriented language such as RPG, Content Assist comes very handy.
- **Outline View** allows you to display the structural elements of the source

member that is currently open in the editor. For example, for an ILE RPG source member, the outline contains all the structures, fields, subroutines, procedures indicators and so on. This comes in real handy as you modernize your large monolithic applications

- You now have the ability to **display copy members** by simply moving the mouse over the "/>copy" statement and issuing a command.
- You can also go to any **file specification** for an externally described file. Right click the mouse, and select to see the details of the file. In a view, you will now see all the records and fields defined in the file.

RDi 7.1 also comes with many major new enhancements:

Application diagram was first introduced in version 7.0 and helped shops visualize their applications using capabilities such as call graphs showing subroutine, procedure, and program calls. To see an application visually, you select resources by right clicking and selecting Visualize Application Diagram. You can select any native members that includes programs (*PGMs), service program (*SRVPGMs), IFS files, local files on your machine, and iSeries i5/OS project resources.

If you happen to have the source member open in the LPEX editor, you can also do the same command by right clicking the mouse and selecting Visualize Application Diagram.

Application Diagram helps you to modernize by expediting the turning of existing RPG applications into service programs and letting users participate in SOA. The new application diagram in RDi brings additional capabilities, such as:


- **Functional zoom**, which is the ability to start with top-level resources and drill down to see lower-level details as desired.
- **Program call support**, which is represented as a connection from the calling subroutine or procedure node to the called program.

- **CL support** by way of application diagram.

In addition, RDi includes the second phase of the screen designer to use for 5250 screen design directly in RDi. All the functionality of the screen designer and the application diagram that originally was available in WDS*c* AE is now available in RDi.

RDi 7.1 comes with more new enhancements. It offers V6R1 language support for RPG, COBOL, and CL; Remote Systems LPEX Editor with language parsers, syntax checkers, program verifiers, and RPG content assist and wizards; online language help; error list view enhancements; outline view enhancements; and new find-date in the editor.

RDi will not contain the Web development tools or other features previously included in WDS*c*. This tool is built specifically for RPG, COBOL, and CL developers. In addition, RDi is user-priced so that you can buy as many or as few copies of the product as you need. RDi integrates with other Rational products, giving additional features and functions. The key to this is the fact that you add these features as needed.

Don Yantzi and **Nazim Haji** will explore this subject at the TUG Meeting of Members on September 17. 

George Farr is the World Wide product line manager for IBM i tools and compilers. George is an award-winning speaker and author of *Java for RPG Programmers*, *Java for S/390 and AS/400 COBOL Programmers*, *ILE: A First Look*, and *RPG IV by Example*. He can be reached at farr@ca.ibm.com.



TUG™ magazine

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* All articles are the views of the authors and do not necessarily reflect those of the TUG magazine or of the Toronto Users Group for Power Systems.



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The Shortage of People for Jobs

By James O. Armstrong

There is a tremendous disconnect between what the professionals in the economic development community and the human resources community know about the job situation versus what the typical man or woman in North America believes about jobs.

The most common misconception is that there is an abundance of people for the jobs. In fact, there is a shortage of men and women for jobs. Even more significant, there is a skills shortage. It is fairly acute in certain areas and it is going to become worse. This is particularly true as baby boomers begin to drop out of the work force, either in whole or in part, in the coming years. This is going to become quite serious in our nations.

Today, many of the major television networks and big city daily newspapers focus their coverage almost exclusively on the loss of jobs at major corporations. In the process, they have taken a shortcut in evaluating what is really taking place in our society, which has been and continues to be that smaller companies in the U.S. and Canada have become the real job growth engines in our society. In addition, the health care sector and hospitals in particular, plus the government at all levels, are hiring.

Bear in mind, for example, in the recent past we have had a 4.4 percent unemployment rate in the United States and even lower in Canada, which is the equivalent of a full employment economy. And, that is with the 11 or 12 million illegal immigrants in our society. This situation does not exist without them. In the future, we will be 800,000 RN nurses short of what we need. We are already 20,000 or 30,000 truck drivers short of what we currently require. We also have a shortage of IT workers, engineers, school teachers, and government workers at all levels of government. By the way, these trends are becoming more acute all the time.

What Can We Do About This?

Instead of giving up, if we happen to be the victim of a downsizing, rightsizing or reorganization exercise, it's time to reinvent ourselves. It's time to look at things in a new way because it's a new day in our lives. It's time to explore all of our options. Of course, one of our options includes the possibility of moving from a higher unemployment area to an area of low unemployment in our society, such as the Rocky Mountain states, or the prairie provinces. Almost every one of them currently has 2 to 3 percent unemployment rates.

Now is also the time to consider going back to school for more education. In many instances, for example, a person may have lost a manufacturing job. The federal and state governments may be willing and able to pay for that individual to go back to school.



James O. Armstrong

And, it could be entirely free. In other words, the entire cost of the re-education or training effort may be paid for by the government, which is certainly an option that needs to be explored.

Have an Optimistic Attitude

In my book, which is "Now What? Discovering Your New Life and Career After 50," I profiled 19 different men and women from all over North America, with all different jobs and education levels. They also had different ethnic and religious backgrounds. And, they ranged from high school graduates to PhDs on the top end. But, what I found was this: There are many more similarities than dissimilarities between all of the men and women who were profiled. The ones who succeeded in this transition process continued to have an optimistic attitude, in spite of changes they were experiencing. ➔



For example, there was a college professor from Austin, Texas, who was a locally prominent man. And, he is a PhD who was teaching MBAs and PhDs about labor arbitration and mediation. Meanwhile, he was serving part-time, in that capacity, from a federal government standpoint. But, now that he is retired, he receives his full retirement benefits from the University of Texas pension system. In fact, he receives a very fine retirement benefit from that system for the rest of his life.

Now, three or four days a week, depending on how many of these assignments he accepts, he goes out all over the southwestern part of the U.S. especially to arbitrate and mediate labor disputes. My questions to you are this: "How can we possibly outsource, to China or India, a labor negotiator or mediator? And, when will there ever not be a demand for someone in his position?" He told me, often times, just the threat of binding arbitration caused people to settle on their own even without him being physically in the room. He is in his early 70s, and he is, in fact, CEO of a small company that is headquartered in his home. He travels on behalf of the federal government and the mediation organizations that he represents.

Opportunities

Let's say that you're a nurse, or you're considering a career option within the medical community. There are job openings or opportunities in virtually every kind of medical category

you can imagine. There are even shortages of dental hygienists in our society. If someone goes back to school for two years and becomes a dental hygienist at 35 or 45 years old, they can have quite an excellent income. Plus, they will have a choice of dentist's offices, where the hygienist gets to choose. Of course, MORE opportunities automatically go with the more education that someone pursues.

For example, someone who has been a CPA all of his or her life and who wants to continue to work part-time after age 65 or 70, can certainly continue to do that. In fact, the former senior partner of the CPA firm I use for my family, as well as for my two small businesses, has an older partner. He comes back to work at the beginning of January and works through the end of May. In other words, he continues to work with his former clients each year during tax season. This is because small companies have had this partner as their CPA and they would still like to do business with him. But, during the other seven months of the year, he travels with his wife extensively throughout the U.S., including catching up with his family and friends.

That's a very common model among professionals in our society, whether it's doctors, dentists, CPAs, architects, engineers or public relations professionals. So long as they don't have the professional liability responsibility for plans, which they would have as an architect or an engineer, these valuable professionals in our society can go back and assist on projects.

The Current and Coming Labor Shortage

Over and over again, I have found this situation to be true. Specifically, there is a tremendous discrepancy between what people believe the job market to be like today and what it really is. There are wonderful opportunities, in almost every direction you can imagine in the marketplace. This situation exists because of the current and coming labor shortages plus the skills shortages that exist in our society. This analysis actually works in favor of baby boomers and not against them.

Our options are broad, as we move forward into the next chapter of our lives. Once again, they aren't narrow; they are without limit.

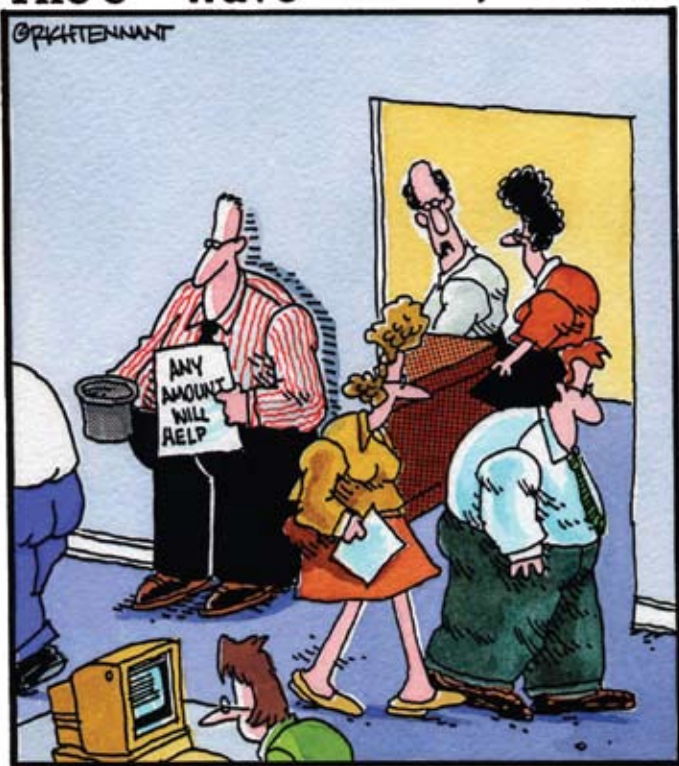
My role today is to speak hope to my generation of fellow baby boomers. Despite the bad circumstances they may be encountering at this moment, there is hope for their future. They can have a better tomorrow than they have had today.



James O. Armstrong, President of NowWhatJobs.net, Inc., (www.nowwhatjobs.net), also serves as the Editor of NowWhatJobs.net, the resource for job and career transitions for workers 40 years old and over, Baby Boomers, and Active Seniors. Read NowWhatJobs.net for skills training, relocation options, job opportunities and much more. In addition, James is the author of "Now What? Discovering Your New Life and Career After 50" and is the President of James Armstrong & Associates, Inc., a media representation firm based in Suburban Chicago.

The 5th Wave

By Rich Tennant



"And tell David to come in out of the hall. I found a way to adjust our project budget estimate."

What Is the Likelihood that You Can Achieve Financial Independence?

By Clinton R. Thomson and Amy Ho

Many people talk about wanting financial freedom; however, few are able to achieve it. Perhaps the question to ask is this: “*What is the likelihood that you can achieve financial independence?*” In a country like Canada, where taxes can be almost 50% of your taxable income, saving taxes should always be a priority.

“*But I maximize my annual RRSP contribution so I save taxes.*” You

may be paying less tax now but the taxes are still due, you are just deferring taxation to a later date—not saving them! RRSP

contributions are an effective strategy to help reach your goals and accessing their trapped wealth with different strategies (*RRSP/RIF MELTDOWN*) will be addressed in a future issue. A sound investment approach incorporates tax planning to minimize your investment tax bill each year and to maximize after-tax returns. A tax-smart portfolio is a portfolio that focuses on maximizing after-tax investment returns. After all, it’s not how much you earn, but how much you keep that matters most.

The concepts we are interested in are: tax-efficiency; tax deductibility; and fast tracking the building of your tax-smart financial portfolio, using other people’s money through leveraging.

Some types of income are more tax-efficient than others.

After all, it’s not how much you earn, but how much you keep that matters most.

What Does Tax-Efficient Mean?

Tax-efficiency is measured by the amount of tax you must pay annually as a result of owning the investment.



Clinton Thomson



Amy Ho

A tax-efficient fund ensures that as little as possible ends up in the hands of the tax collector.

The amount of tax you pay depends not only on the **amount** of the income earned on your investment, but also on the **type**: interest, dividends (small and large company) or capital gains.

Tax-Deductibility—Zero Taxation!

Borrowing to invest requires an investor to pay an interest expense associated with the debt. The Income Tax Act of Canada sets out rules that apply to the tax deductibility of interest expense by taxpayers. At the time of writing, interest deduction is permitted where borrowed money is invested in common shares or mutual funds even where capital growth is the primary objective, ➔

FACT:
\$1000 of leveraged interest expense produces the same tax deduction as a \$1000 RRSP contribution

\$1000 of Different Investment Income	Interest	Small Company Dividends	Capital Gains	Large Company Dividends
Income	1000	1000	1000	1000
Tax	434	276	217	202
After-Tax Income	566	724	783	798

Based on top tax bracket of Ontario for 2008

provided there is a reasonable expectation of income from the investment. This means that the interest expense on a loan taken out to buy mutual funds in a non-registered account (this excludes RRSPs) will be tax deductible on the borrower's tax return in the year the interest is paid¹. \$1000 of leveraged interest expense produces the same tax deduction as a \$1000 RRSP contribution – AND you still have the RRSP contribution room remaining that can be used to double up on the tax deduction or to defer taxes when the investment is “cashed out”.

Conservative Leveraged Investment

Leveraging, or borrowing to invest, is a wealth-building strategy that has been used by the rich to get richer for years but poorly understood by most investors. Leverage is a tool that can help or hurt you, depending on how you use it. At issue is how you apply it. While

borrowing to invest is a riskier strategy than leaving your money in a GIC, it is possible to leverage in a conservative, responsible way. The key is to borrow only 10-50% of what your lender has calculated you can afford, the result is limiting financial or emotional strain - the definition of conservative leverage.

Leverage magnifies returns, making good returns better and bad returns worse. Only consider leveraging conservatively, after you fully understand the pros and cons, with the guidance of a trusted advisor.

The key to financial success is not what you know, it is what you DO. Once you are aware of the basics of conservative leverage, you must ACT if you want to benefit from:

- Tax-deductible investing beyond RRSPs
- Converting “bad debt” (expensive, personal debt used to purchase cash items by credit card) to “good debt” (money borrowed at lower interest rates to purchase instruments that will appreciate in value and has the added benefit of being tax deductible)
- Increased discipline using forced savings.



How It Works

A conservative leveraged investment strategy provides you with the potential to accumulate significantly more capital for retirement without needing to increase the amount you currently are saving once you factor in the tax refund.

- You apply for an investment loan, once approved the full amount is invested based upon your risk tolerance.
- Interest only payments are made at regular intervals to service the investment loan. (This requires an 8 plus year time horizon.)
- Invest borrowed funds NOTE: to offset market risk, segregated contracts (similar to mutual funds except purchased from insurance companies) can be used that have the benefit of both maturity and death benefit guarantees of up to 100% of the investment.
- Prior to retirement you withdraw sufficient capital from the investment to payout the investment loan.

Although borrowing to invest can be one of the most effective long-term wealth-building strategies, the real benefits of any RESPONSIBLE leverage plan are the forced higher level of commitment to your investment goals and strategy diversification.

One major difference between a regular savings plan and a conservative leverage strategy is that you cannot normally stop making loan payments due to unforeseen financial circumstances. You should not enter into this type of arrangement if you are not sure you will be able to maintain the required payment schedule.

What is the likelihood you can achieve financial independence? The answer to that question may be scary to you now, but with the resources at hand, we hope that answer will turn into a positive one. Yes, you can certainly achieve your financial goals with a proper financial review and implementing achievable targets with proper monitoring. It definitely can be done, and it does not have to be a dream.

Mutual funds are not guaranteed. Their values change frequently and past performance may not be repeated. Commissions, trailing commissions, management fees, and expenses may be associated with mutual fund investments. The purchase of mutual funds using borrowed money (i.e. leverage) magnifies the gain or loss on the cash invested. Investors considering a leveraged purchase of mutual funds should be aware that a leveraged purchase involves greater risk than a purchase using personal cash resources only. The extent of that risk will vary depending on the circumstances of the investor and the type of mutual fund purchased. If you borrow money to purchase securities, your responsibility to repay the loan and pay interest as required by its terms remains the same even if the value of the securities purchased declines. Before investing, read the prospectus and speak to a financial advisor.

¹ Note: At time of writing, the interest deductibility rules are under review. Ask your financial advisor for an update of any potential change that may affect your strategy.

Conservative Leveraged Investment Example

Your Deposit

Your initial deposit	\$50,000
Your loan	\$100,000
Total initial investment amount	\$150,000

Your Loan

Leverage ratio	2:1
Loan interest rate	5.25%
Number of years outstanding	10
Loan payment option	Interest only

Your Costs to Borrow

Marginal tax rate	46%
Taxable portion of return	0%
Tax rate on investment income	46%

Your Investment

Investment asset class	Equity
Investment return assumption	9.5%

Your Detailed Investment Results

(based on the parameters listed above)

Investment Results	Leverage	No Leverage
Your initial deposit	\$50,000	\$50,000
Total initial deposit including the loan amount	\$150,000	\$50,000
Total cash contributions	0	\$28,350 ²
Tax on fund income	0	0
After tax loan interest (assuming interest payments are fully deductible)	\$28,350 ³	0
Outflow	\$28,350	\$28,350 ⁴
Total cost of investing	\$78,350	\$78,350
Investment at period end	\$371,734	\$168,025
Less repayment of loan principal	\$100,000	0
Capital gains on the investment	\$221,734	\$89,675
Less CG tax on liquidation	\$50,999	\$20,625
Client equity at period end	\$220,735	\$147,400
Total net gain/loss on investment	\$142,385	\$69,050
Internal RR (after tax)	12.9%	7.9%

² Yearly total of deposits added to non-leveraged account

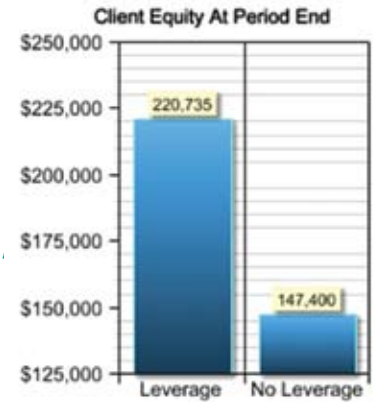
³ Yearly total of loan interest – payment interest only loan on \$100,000

⁴ Outflow of dollars are equal for "out-of-pocket" costs

Investment Results

The value of a leveraged vs. non-leveraged investment:

Based on the above assumptions, after 10 years the net leveraged investment exceeds the non-leveraged investment by **\$73,335.75**. This illustration assumes that interest payments on the loan are fully deductible.



Based on these assumptions, after 10 years the net leveraged investment exceeds the non-leveraged investment by \$73,335.75. Using a leveraging strategy allows you to start with a larger initial investment amount. Because a larger amount is growing on day one, performance is magnified through compounding. Due to the tax deductibility of interest payments in non-registered accounts, the costs associated with this strategy are significantly reduced. To confirm the eligibility for this deduction, please consult with a tax specialist.



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TUG AGENDA



WEDNESDAY, SEPTEMBER 17, 2008

AGENDA AT A GLANCE

Time	Topic
5:00	Rational Developer for System i (RDi) for Beginners (Don Yantzi)
6:00	Intermission / MoM & Networking (Complimentary Buffet)
7:00	Remote Systems LPEX Editor – The Best of Both Worlds (Nazmin Haji)

Please register in advance on the TUG Website!

Rational Developer for System i (RDi) for Beginners

5:00 pm Session Abstract:

This session will cover the tools that are available in the Rational Developer for System i, and their seamless integration. It will cover the Remote System Explorer, which is used to create and maintain the RPG, COBOL, DDS and CL programs, and the Integrated i5/OS Debugger. It will also include the Application Diagram and Screen Designer tools which are part of RDi and were previously only shipped in the advanced edition of WDSC. The Application Diagram creates diagrams that represent the structure of RPG, COBOL and CL applications; providing both a call graph view and an ILE bindings view. The Screen Designer Technology Preview provides a graphical, point and click way to design DDS display files.

5:00 Speaker

Don Yantzi

Don Yantzi is the technical lead for WDSC and Rational Developer for System i (RDi). He works at the IBM Toronto Lab and has been involved in the design and development of the Remote System Explorer and Application Diagram since their inception. Don is a coauthor of an upcoming book on the Remote System Explorer and is a frequent speaker at COMMON and System i user group meetings.



Remote Systems LPEX Editor – The Best of Both Worlds

7:00 pm Session Abstract:

This session will cover the Remote Systems LPEX Editor, which is the default editor in RSE. It will go over the basic editing functions, the language-specific features that facilitate editing, customization, and keyboard shortcuts. Most importantly, if you are an SEU user, this session will show that you can use the SEU commands in Remote Systems LPEX Editor and much more!

7:00 Speaker

Nazmin Haji

Nazmin Haji has a Master's degree in Computer Science from the University of Western Ontario. She joined IBM in 1988 and has worked on the development of ILE RPG compiler and was one of the key developers involved in the early design of RSE in WDSC and RDi. She is currently the Technical Lead for RSE and is responsible for design, development, testing, and maintenance of RDi. Nazmin is a coauthor of an upcoming book on the Remote System Explorer. She is also a frequent speaker at COMMON and System i user groups.



MoM Location

Sheraton Parkway Toronto North,
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See TUG Notes (on page 20) for more info about Don & Nazmin's new book.



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Seneca Update

The Passion of Pioneers

By Russell Pangborn

Have any of you had the chance to be a pioneer in your company? Well, here in the Computer Studies Department at Seneca, a few of us get that opportunity once in a while. Fortunately the innovators doing this have struck out in different directions. In my opinion this is one of the strengths of our department. It is the breadth of technologies that are supported by a passionate faculty. My zeal with regards to System i technology has probably made me a little predictable to my colleagues. In this column I am going to do something that will surprise them all—talk enthusiastically about other areas in our department.

I would like to give a brief history of how our department evolved into a multidimensional entity and how some people on our staff were pacesetters. Next, I will tell you about some of the exciting things accomplished by the Seneca Centre for Development of Open Technology.

Many years ago we shared an approach common to a lot of colleges with regards to curriculum. There were only a few choices a student could make. The faculty decided which subjects were most important in getting a diploma. In order to give our

curriculum more flexibility to adapt to a quickly changing knowledge base, we introduced an approach that allowed a student to make up to seven professional option selections and a couple of programming language selections in a three year program. This is where the pioneers come into play. Faculty needed to step up to the plate and provide subjects that reflected the changing computer landscape. Learning new things is a fact of life for all computer professionals—but imagine having to study something and become the resident guru a few months later!

While all of us at the college have a computer background, the pace of new methodologies means sometimes we have to start almost at the beginning with a newly developing body of knowledge. That is what Professor **John Selmys** did in the fall of 1996 with Java. Java was launched as an Internet extension for browsers in early 1995. It went into production in December 1995. John studied up on it in the summer and became an expert for the students a few months later in the Fall of 1996.

Students can be a tough crowd. This is rightfully so because they are spending their hard earned money, usually working a part time job, and investing their time in your subject. You had better know your stuff. Fortunately John had been interested in



Smalltalk before so he had a bit of an OO background. Here is what John had to say to me about his experience, “I believe we beat out all Ontario colleges and possibly most universities. I think University of Toronto came on board the following year but I can’t be sure. I do recall getting phone calls from U of T Computer Studies students looking for tutors. I wasn’t interested so I recommended one of my students”. So we were probably the first. Java later became so widespread that it was elevated to a language choice in our fourth semester.

A number of us struck out in different directions. I made a professional option available based on the AS/400. I remember there was a healthy turnout. Employers from that area were hiring some students based on AS/400 experience before they even graduated from our program.

Since there were only a limited number of students, there was a little competition to get students to select your professional option. I remember one semester there was a drop off in the number of students selecting the AS/400 professional option. One student told me there were more students se-



lecting Database option subjects. It turned out that one of our innovative faculty members, (I think it was **Carol Terentiak**), had come up with the idea of students graduating with a specialization. Students had bought into the idea of graduating with a specialization designation which required taking a specific set of subjects. Carol was a database person and now students were selecting more database professional options. That still is probably our most popular student choice. Unfortunately for me, our database experts on staff were more enamoured with Oracle than DB2 on the AS/400. Actually this was close to the time that IBM did not have a name for the AS/400 built in database. IBM had got a little complacent with their lead in relational database technology and had fallen a bit behind the innovations included in an Oracle database. IBM woke up to this with a competitive relational database in 1994 called DB2 on the AS/400.

I think of the person(s) who started the idea of a CPA program specialist as pioneer(s) with the CPA Program because they put together a structure that allowed students to get excited about a certain area in computer studies and identify themselves with it and focus on it. One diploma now had some important nuances for students without our college going to the ministry of education and getting approval for different types of diplomas. Industry has used a similar approach with the marketing of certifications. I believe our college was the first to adopt this type of approach with the CPA curriculum. In later years I would see other educational institutions come up with synonyms for “specializations” in their course load.

If my area was to survive I needed more AS/400 subjects, so an AS/400 specialist designation was born. This allowed me to offer CL Language, Advanced RPG, DB2, and Lotus/Domino subjects that counted towards the iSeries specialization.

One specialization area that I would never have predicted back in the 1990's was “Game Developer”. This was pioneered by our current chair, **Evan Weaver**. I remember one student had not done so well in my second semester iSeries subject. He had gotten a “C” when I knew he could have easily scored an “A” with his prior industry experience. He confided in me the reason why, “I am really here for the Game Developer specialization.” He had some advanced standings which did not include the iSeries and was throwing all his effort into subjects like Game Programming Techniques. I do not think there is any other College in Ontario that has included these types of subjects into their Computer Programming and Analysis diploma.

Evan, reflecting on the bigger picture, recently told me the following: “Game programming combines real-time control with advanced hardware utilization and massive data manipulation, it is one of the most difficult areas in which to program. Students come to the program because we offer them the opportunity to learn game programming, and while they are here, they get a balanced, full-featured software development education, which includes System i. No matter what happens in the IT industry, they are prepared to cope.”

There have been a lot of defining moments through the years where a faculty member has fought for inclusion of a new technology and stepped up and learned and then delivered a different subject to our students. (I am only scratching the surface with this little bit of history.) **Dr. Frank Soltis** in a recent talk at our college, fondly remembered working on the VAX DEC VMS. Our professors who championed the move from this college favourite to a UNIX platform faced stiff opposition. It turned out to be a good move as Digital Equipment seems to have fallen off the radar. Our post diploma programs and degree program have also turned out to be really good ideas.

But, it is time to move up to the present day. Although it pains me to say this, some of our younger professors have also been really delivering the goods. No, I'm not jealous of their accomplishments. It's only that at one time I used to be referred to as “younger”. Now I am referred to as “older”.

As older people tend to do, I am going to go off topic a bit with a little bit of advice for my older readers. Going to a **Tim Conway** show should help with those feelings of being too ancient. My wife and I went to a show that included Tim, **Don Knotts** and **Harvey Korman**. On leaving we were a little impatient because everyone was moving really slowly in front of us. There were a lot of people actually using walkers. Then it dawned on us. Everybody looked older. We felt like adolescents again. Maybe walking with this crowd wasn't so bad after all...



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Let's get back on topic to our younger Seneca innovators. Two years ago **Professor David Humphrey** developed a very impressive professional option that introduced our students to Open Source Development. This involved a close cooperation with the Mozilla community who suggest projects that the students can bring up to a "0.3" release level (stable but not necessarily feature complete or fully polished). This has been so successful that more professional option subjects have grown from this effort.



Russell Pangborn

\$100,000 grant to support the joint efforts by Seneca's Center for the Development of Open Technology and Mozilla.

Here is part of our news release:

Seneca College is pioneering new and innovative ways to train the next generation of software developers. We've been very happy with

the quality of the students Seneca has produced and the contributions they've made to the Mozilla project," said Frank Hecker, Executive Director of the Mozilla Foundation. "Through our ongoing relationship with Seneca we hope to see this success story continue, and have Seneca's Mozilla and open source curriculum serve as a model for other academic institutions around the world."

One of those options now has students taking their projects to a fully-polished "1.0" release state. Computer World and CBC television have reported favourably on this. If you want to see David talking about this on a CBC news report, click on <http://zenit.senecac.on.ca/wiki> and start the available video.


There are now four Seneca students interning at Mozilla in California this summer. I contacted Dave recently and this is what he had to say, "Yesterday Mozilla released Firefox version 3 around the world, and with it the work of hundreds of Seneca students. Seneca students have been involved in writing new features, fixing many bugs, improving tools, documentation, QA and testing, and everything in between. Our collaboration with Mozilla is a model of how to make industry-academic partnerships work, and more, how to have them produce world-class software."

In March of 2008 the Mozilla foundation provided a

We have Professor John Selmys to thank for an annual event that occurs in the Fall. The Free Software and Open Source Symposium or FSOSS. John started this with an iBox fund from Seneca seven years ago. FSOSS now ranks as an important event in the Canadian Open Source Calendar. FSOSS is scheduled to run on Thursday, October 23 and Friday October 24. It is an excellent way for students to meet premier developers and

visionaries from the open source world. The URL to get more information about this is <http://fso.senecac.on.ca/>. I would encourage all of you to drop by when this event occurs.

Another professor, **Chris Tyler** is leading the way in the development of a Build Automation professional option for our CTY program in Winter of 2009. Red Hat Inc. has generously provided a \$50,000 grant towards this and Seneca's work with the Fedora Linux distribution.

There are many more unique individuals driving our programs. I have only mentioned a few that have crossed my path. If you've read this far, my pride in our School of Computer Studies should be quite evident. It has allowed passionate people the opportunity to pursue what excites them in our industry and hopefully that has rubbed off on our students. 

Russell Pangborn is a professor at Seneca College, and a vice president of TUG. He can be reached at russell.pangborn@senecac.on.ca.



Seneca College @ York campus



Zorro Rides to the Rescue

By John Slykhuis, Georgina Advocate

Who was that masked man?

Joyce Pangborn didn't have to wait long to find out. It was her husband, Russell, galloping (well, almost) to the rescue as that famous outlaw of the old west, Zorro. The occasion was a surprise 50th birthday present for Joyce, fulfilling a longtime fantasy and helping a good cause at the same time.

Joyce whooped in delight when she realized her husband was the man astride the horse, sword drawn, ready to carve out the famous "Z" on anyone who tried to stop him.

"In past years she mentioned it would be neat to see me wearing a Zorro outfit," Russell said.

Russell's mother **Vangie**, a cancer survivor, was also in the crowd of laughing well wishers.

"I charged my guests a small fee to pose for a digital photo with Zorro, proceeds to the Canadian Cancer Society," Russell said — explaining, "My mom wasn't supposed to survive cancer 12 years ago and beat the odds." A group of TUG Board members also chipped in over \$100 for this worthy cause.

He said his birthday surprise for Joyce has "put a lot of pressure on all the other husbands in the neighbourhood" to come up with a similar stunt. (Is that the Batmobile?)

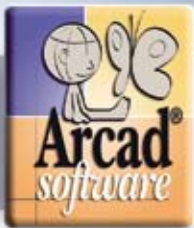


Vaughn Dragland



Zorro (aka TUG Director **Russell Pangborn**) was a birthday surprise for his wife Joyce, celebrating her 50th.

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Placing the Workload of an Entire Enterprise on Fewer Servers Requires Elevated System Resiliency

By Bill Hammond

Server consolidation will be a top priority for many IT departments in the coming year. In a recent research study conducted by Gartner Group, 61% of the companies polled were already paring their server count, and 28% were planning to do so in the near future.

The backstory on consolidation is interesting. Life often smacks of irony and the renewed interest in centralization is certainly ironic. Starting with IBMs 1400 series machines in 1960, mainstream

computing topologies were centralized. When Datapoint launched the minicomputer it dubbed ARC (Attached Resource Computer) in 1977, a significant new computing paradigm emerged. On paper, this new decentralized computing model allowed organizations to continue to extract value from early investments in hardware and software by enabling them to simply add needed resources to their existing network of systems. Compared to scrapping a reasonably good mainframe or minicomputer whenever capacity restrictions called for such action, incremental and relatively inexpensive enhancements can be made in the form of memory and disk.

Over time, server decentralization has mutated into server sprawl. Under utilized computer hardware litters the floor of the enterprise like mercury from a broken thermometer, and large numbers of technicians are needed to maintain all of these systems. Erosion to profit also comes from unused and under used software licenses. And, going one step further in the opposite direction of simplicity, rogue departments have been known to take it upon themselves to select and implement their own software and only later call on IT to sort out the problems. These factors and others have pushed the argument in favor of centralization past the tipping point.

Organizations are now striving to become lean and green, and derive maximum value from their investments in technology, manpower, and energy. Reducing server counts by consolidating user workloads onto fewer systems is swiftly becoming a top-down driven priority for many organizations.

Virtualization is a key component to the consolidation movement and the System i has been poised to handle virtualization for years. Logical partitions (LPARS) were introduced to the System i landscape ten years ago—well in advance of the present partitioning movement. LPARS support fully dynamic logical partitioning (virtualization) and the ability to divide a single processor into multiple partitions, making possible the existence of multiple images of i5/OS, Linux, and AIX to exist on one System i server. New BladeCenter options extend support even further to Windows XP and Vista. The upside is a fully integrated application environment.

Transitioning to a centralized environment that supports virtual machines is a big undertaking and requires that systems be unavailable for several hours in best case situations, or several days in more complicated ones.

The 5th Wave

By Rich Tennant



"Slackware does a lot of great things, I'm just not sure running a word processing program sideways without line breaks on butcher's paper is one of them."

A Single Point of Failure

When the whole of your business runs on one or two systems, a hardware, software, or network failure that results in downtime has a much greater impact on the enterprise. In distributed topologies, a single failed system out of several is certainly going to hurt, but it will only impact the segment of the business it serves.

To enjoy the benefits of server consolidation and minimize the shock of planned and unplanned downtime organizations can deploy a high availability solution to protect hard and soft assets. Versus tape backups, vaulting, and hot site backups, recovery is almost immediate in instances where high availability is deployed, a consideration that is very important in situations where 24/7 access is necessary, or when web-based market-facing access is supported. Sometimes you can use one of your decommissioned servers and the data center it resides in as your HA backup server and disaster recovery site.

A high availability configuration also allows a consolidated computing environment to be established without interrupting business by switching system users from the primary production system to the backup. Application availability is maintained throughout the reengineering process, for the exception of an interval of roughly 20 to 40 minutes which can be scheduled over a weekend or holiday. Even more value can be derived from the HA tool because it can be used in the consolidation process as the data transfer agent, replicating data from multiple distributed servers back to the consolidation point. In contrast, tapes that are traditionally used to perform this critical step can fail during the restore process because of normal wear, accidental damage, or environmental issues.

Seeking Balance

Finally, workload management is a key facet to maintaining acceptable response times in a consolidated computing environment. When the work of eight servers is performed by one or two, for example, acceptable response times can be tough to deliver. And if the server is accessible to large groups of users over the Web, demand can be unpredictable.

Automatic load balancing features are available in some high availability solutions. While load balancing is not very complicated in instances where users have read only access, read/write servers are trickier because of contention issues. High availability tools can be well suited to accommodate positive synchronization between primary and backup servers and bypass these problems.

A robust high availability solution will require some additional investment, but the benefits of using HA in conjunction with consolidation/virtualization can be easily justified by the value of providing a simplified transition path, and markedly shorter recovery times.

Vaughn Dragland



With a capacity of up to 80 logical partitions, 256 GB of memory, and 30.6 TB of disk — the IBM Power 550 is a server consolidation workhorse.

Bill Hammond directs Vision Solutions' product marketing efforts for information availability software solutions. Hammond joined Vision Solutions in 2003 with over 15 years of experience in product marketing, product management and product development roles in the technology industry.

At Vision Solutions, Hammond is responsible for product positioning and messaging, product launches and marketplace intelligence for Vision Solutions' high availability, disaster recovery, systems management and data management solutions.

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JACKIE'S Forum

calculating Fields in DB2 Web Query



Jackie Jansen

DB2 Web Query allows you to control and create two different types of temporary fields. These fields are known in Report and Graph Assistant as Define fields and Compute fields. Developer Workbench uses the terms Virtual columns and Compute columns.

The basic difference is when the field is actually calculated. Define Fields (aka Virtual Columns) are calculated early in the process. They are calculated when the source data is passed to SQL for optimized processing or immediately following the data retrieval. Each record in the result set will have a Define field and it will be treated just like one of the source data columns.

Compute columns, on the other hand, are calculated after all the required data has been retrieved, sorted and summed. In other words the calculation is performed using the aggregated value of the selected fields.

Defines and Computes can give very different results because of when they occur in the processing. You need to be conscious

PRODUCT_TYPE	PRODUCT_NBR	REVENUE	QUANTITY
Audio	1	100	5
Audio	2	150	10
Audio	3	50	2

Figure 1.

of the differences when you are designing your report. Let's demonstrate this with an example. In **Figure 1** we have a very simple table with three records. We are creating an Average Price field by dividing REVENUE by QUANTITY. With Define fields, as we read each of the three records we calculate the Average Price. In this example the

Average Price for product 1 would be \$20, for product 2 it would be \$15, and for product 3 the average price would be \$25. By default, when we output the total record for Audio, the Average Price field will be summed giving a value of \$60—which is obviously not correct in this case. We can override the default and ask to have this column averaged on the total line instead of summed. The average of 15, 20, and 25 is \$20. This is closer but probably not what we are looking for either.

The Average Price Compute field will be calculated after all of the Audio records are

Product Type	Revenue	Quantity	Average Price (Compute Field)	Average price (Define Field)	Average (not SUM) of Define Field Average Price
Audio	300	17	17.65	60.00	20.00

Figure 2.

selected and summed. In this case Average Price will equal the total Audio Revenue of 300 divided by the total Audio Quantity of 17 for a value of 17.65. This is probably the value we were looking for. (See **Figure 2**.)

Normally with calculations involving aggregations you will want to use Compute fields. Notice in **Figure 3** that in Report Assistant you will use the wizard on the left in the Available fields box to create a Define field. The wizard near the Sum box on the right is used to calculate Compute fields. If you are defining the fields using Developer Workbench at the metadata level, selecting the option to add a Virtual Column will create a Define field. You can create a Compute field

by selecting the option to add a Compute.

There are other differences between Define and Compute fields based on when these temporary fields are created. You can select and sort on a Define field because it is essentially part of the input result set. You can also join tables using the Define field. A

Define field can be used as an Across field if your report is in a cross tab format. You cannot sort, select, join or use a Compute field as an Across field.

If you are doing calculations on aggregated data you need to use a Compute field. Compute fields can be more efficient than Define fields as they are only calculated on the aggregated values whereas Define fields are calculated for every source data record selected.

DB2 Web Query has excellent functionality when working with aggregated data. This continues with the Total check box on the sorting panel and the WHERE TOTAL option on the Selection panel allowing you to sort and filter on aggregated data. The flexibility is all there for you to use. Enjoy!

Jackie Jansen currently works with Information Builders specializing in DB2 Web Query. Jackie is a frequent speaker at Technical Conferences and User Group meetings. Contact her at jackie_jansen@ibi.com.

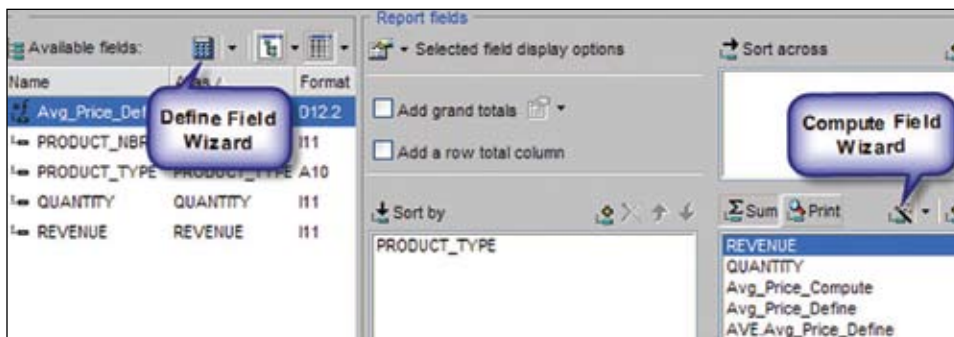


Figure 3.



GOLD PAGE

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PowerVM™



The Remote System Explorer: Modern Developer Tools for the System i (Paperback)

By: Don Yantzi and Nazmin Haji

Publisher: MC Press

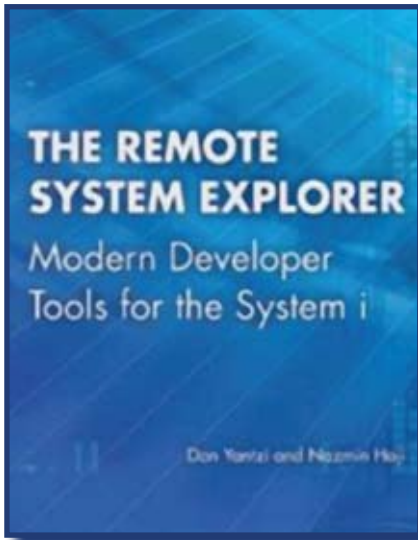
Order online from Tower Books at:
<http://www.tower.com/remote-system-explorer-modern-developer-tools-for-don-yantzi-paperback/wapi/111995539>

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Release Date: September 1, 2008



Publisher's note:

Focusing exclusively on the Remote System Explorer (RSE) within the popular WebSphere Development Studio Client (WDSC), this comprehensive study contains both technical and practical tutorials. Allowing developers to use modern techniques within several programs, this survey covers topics such as getting started, terminology, installation, managing i5/OS objects and members, editing, compiling, and debugging. Each chapter features key views, actions, keyboard shortcuts, and troubleshooting tips. Illustrated with countless examples and detailed screen shots, this reference makes the RSE accessible for any developer.

Upcoming Events

- ⊗ **September 17, 2008: TUG MoM** (at the Sheraton Parkway)
 - ▶ 5:00 Rational Developer for System i (RDi) for Beginners, Speaker: **Don Yantzi**
 - ▶ 7:00 Remote Systems LPEX Editor – Best of Both Worlds, Speaker: **Nazmin Haji**
- ⊗ **November 19, 2008: TUG MoM**
- ⊗ **January 21, 2009: TUG MoM**
- ⊗ **March 18, 2009: TUG MoM**
- ⊗ **March 24–26, 2009: TEC 2009** (16th annual technical education conference)
- ⊗ **May 20, 2009: TUG MoM**
- ⊗ **June 25, 2009: TUG Golf Classic** (21st annual charity golf tournament & banquet)
- ⊗ **September 23, 2009: TUG MoM**
- ⊗ **November 18, 2009: TUG MoM**



Please remember to register on-line for each Meeting of Members. It helps us to plan for seating and food, and you could win a fabulous door prize!

TUGsudoku # 24.1

By Cornelia Dragland

Improve your memory! Solve this TUGsudoku puzzle, and bring your solution to the Meeting of Members on September 19. You will win a free 1 GB memory stick.

TUGsudoku rules: Every row and every column, as well as every major block of nine squares must contain each of the following characters: 3,32,34,36,38,400,i,p,x. (No duplicates.)

x		36		400		38	32	
p	34			38				
		400		p				34
		i					38	
34				3	38	i		36
		32			x			
	3				400			32
			34			3	x	400
36			p					

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