

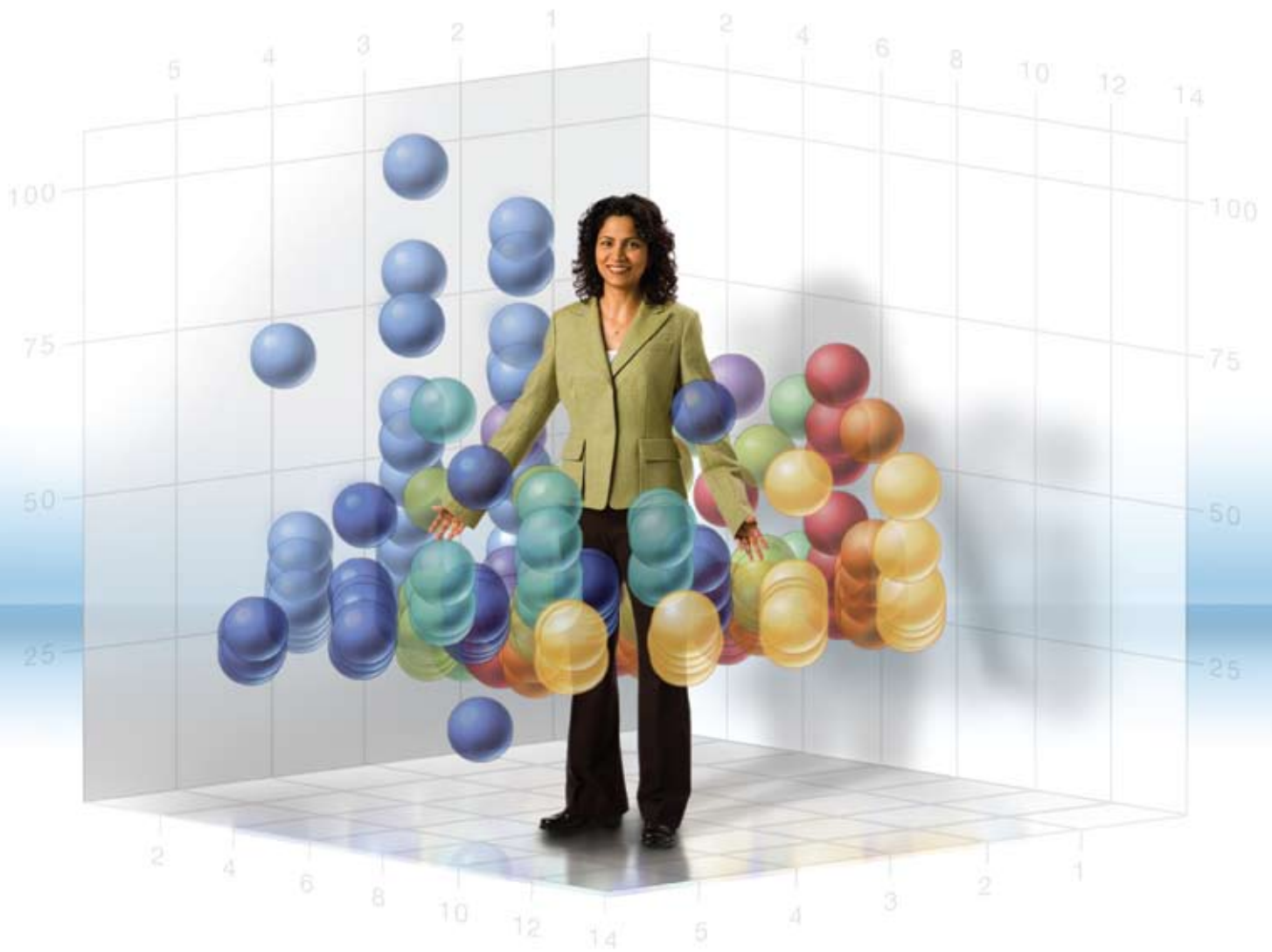


where
Discovery
meets
Innovation

DISCOVERY 2009
Sept. 16 – 18

INNOVATORS' SUMMIT
Sept. 18 – 19

Swissôtel Chicago



You're there.

You're here, you're there, you're in places you've never been, discovering things you never expected. With JMP® software, you don't just explore your data. You experience it. You understand it. And then you communicate it. JMP statistical discovery software is dynamic data exploration and compelling data presentation. It's data visualization from SAS. www.jmp.com/there



ANALYTICS, ANYONE?



John Sall, Co-Founder and Executive Vice President, SAS

Simply put, to *discover* means to find something for the first time. To *innovate* means to do something for the first time. These terms describe our dual intentions for this week. We are here to reveal the new and inspire the novel. By bringing together **Discovery 2009** and the **Innovators' Summit**, we are for the first time uniting two conferences dedicated to this type of forward thinking. This is where Discovery meets Innovation.

We begin with Discovery 2009. This event, originally called the JMP Users Conference, is dedicated to learning more about what JMP users have accomplished in their fields. During these three days we will discuss best practices, teach proven statistical techniques and explore the latest data visualization and data modeling trends. We also are including several opportunities to “meet the developers,” a conference feature that has become quite popular over the years.

Keynote speaker Malcolm Gladwell, bestselling author of *Outliers*, *Blink* and *The Tipping Point*, will illuminate ideas that are being realized for the first time and show how they can be applied directly to everyday work and personal experiences. His presentation will bridge our two conferences, marking the conclusion of Discovery 2009 and the beginning of the Innovators' Summit.

The Innovators' Summit picks up where Discovery leaves off. Here, we will seek to provide an environment for creativity to emerge among thought leaders who have successfully leveraged statistics and technology to advance a variety of disciplines and industries. One highlight is the annual “dinner dates” meal, where conference participants dine with the knowledge leader of their choice from our distinguished panel of speakers and VIP guests.

Welcome. We hope that you find both the practical strategies for new ways to approach business challenges and inspiration for exploring new vistas. By introducing Discovery to Innovation, and vice versa, we are building a powerful network, grounded in statistical analytics, that is capable of taking knowledge to soaring new heights.

Thank you for leading the way.

John Sall

The Discovery conference officially starts with a kick-off dinner on Wednesday evening. But for quite a few attendees, the conference begins with pre-conference training offered by SAS Education. All of the following classes on Monday, Tuesday and Wednesday are offered at the SAS Chicago Office.

Monday, September 14

9:00 a.m. – 5:00 p.m. **JMP Software: Data Exploration**

9:00 a.m. – 5:00 p.m. **JMP Software: Stability Analysis**

Tuesday, September 15

9:00 a.m. – 5:00 p.m. **Reliability Analysis**

9:00 a.m. – 5:00 p.m. **Introduction to the JMP Scripting Language — Part 1**

Wednesday, September 16

9:00 a.m. – 4:00 p.m. **Introduction to the JMP Scripting Language — Part 2**

9:00 a.m. – 12:00 p.m. **Beginner JMP Scripting Workshop**

1:00 p.m. – 4:00 p.m. **Advanced JMP Scripting Panel Discussion**

2:00 p.m. – 5:00 p.m. **Discovery Registration — Swissôtel Chicago**

4:30 p.m. – 7:00 p.m.* **Discovery Tram Tours of Chicago Botanic Garden**

5:30 p.m. – 7:00 p.m.* **Discovery Cocktail Reception at Chicago Botanic Garden**

7:00 p.m. – 9:00 p.m.* **Discovery Dinner at Chicago Botanic Garden**

*Transportation to the Chicago Botanic Garden will be provided from the Chicago SAS Training Center at 4 p.m. and from the Swissôtel at 3, 4:15, and 5:30 p.m. Buses will offer return transportation to the Swissôtel at 8:30 and 9 p.m.



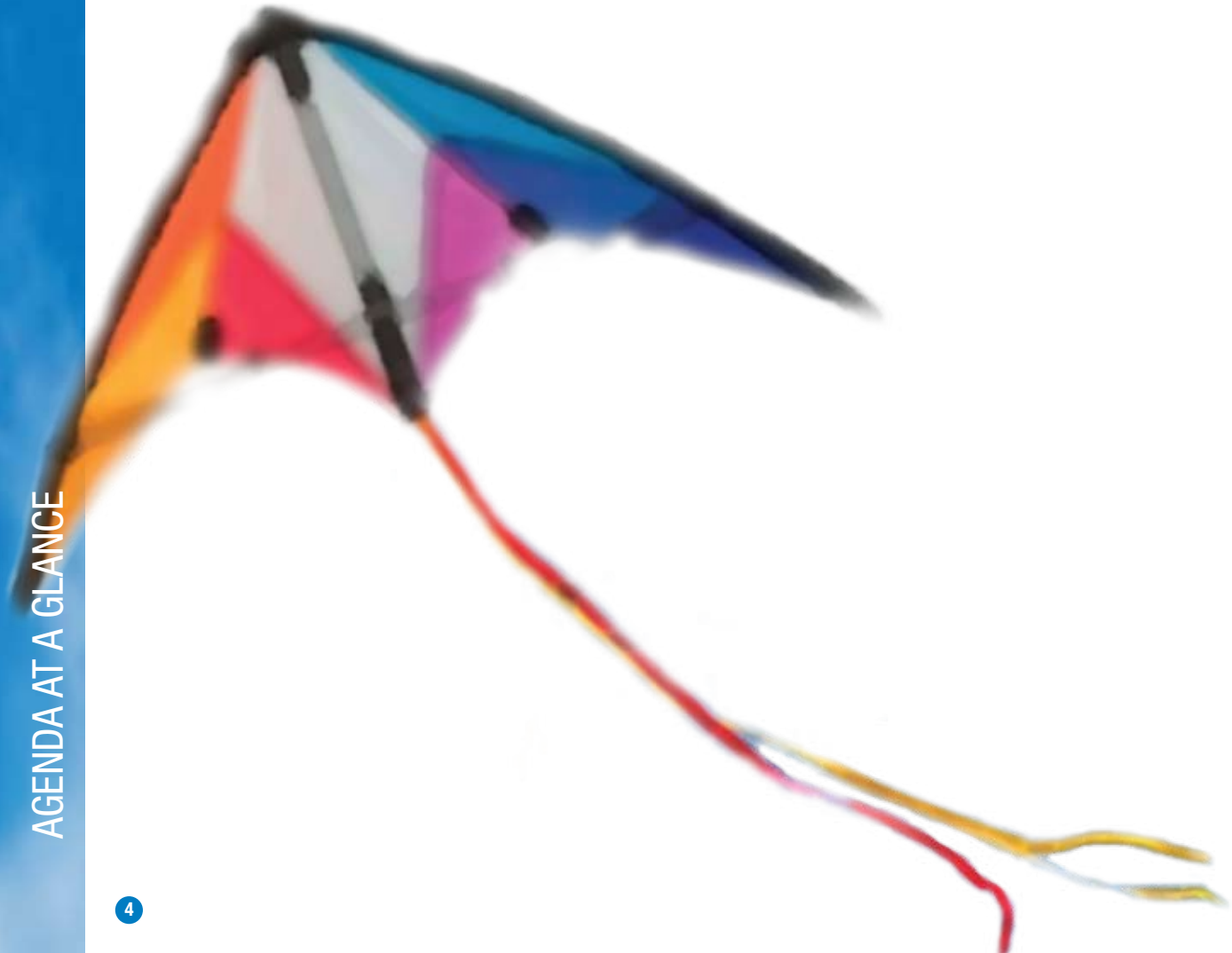
- 7:00 a.m. – 8:30 a.m. **Discovery Registration and Breakfast Buffet**
- 8:30 a.m. – 8:45 a.m. **Discovery Welcome**
- 8:45 a.m. – 10:00 a.m. **Discovery Keynote Talk: John Sall, SAS**
- 10:00 a.m. – 10:15 a.m. **Break**
- 10:15 a.m. – 11:30 a.m. **Discovery Keynote Talk: Dick De Veaux, Williams College**
- 11:30 a.m. – 1:30 p.m. **Lunch, Meet the Developers and Poster Presentations**
- 1:30 p.m. – 2:30 p.m. **Discovery Breakout Sessions: Select One — See Page 10**
- 2:45 p.m. – 3:45 p.m. **Discovery Breakout Sessions: Select One — See Page 11**
- 4:00 p.m. – 5:00 p.m. **Discovery Breakout Sessions: Select One — See Page 12**
- 5:00 p.m. – 6:00 p.m. **Discovery Cocktail Reception, Meet the Developers and Poster Presentations**
- 6:00 p.m. – 8:00 p.m. **Pizza and DOE with George Box**

Enjoy a casual, Chicago-style pizza dinner in the Vevey Ballroom with **Dr. George E.P. Box**, father of modern-day statistics, as he discusses a sequential approach to design of experiments (DOE). Box is one of the most influential statisticians of the 20th century and a pioneer in the areas of quality control, time series analysis, DOE and Bayesian inference. The chemist-turned-statistician is known for the popular quote, “Essentially, all models are wrong, but some are useful.” Box has held numerous leadership positions, including director of the Statistical Techniques Research Group at Princeton University, founding chairman of the Department of Statistics at the University of Wisconsin – Madison and president of the American Statistical Association. The University of Wisconsin conferred on him the title of Professor Emeritus upon his retirement in 1992. His name is associated with many statistical concepts, including Box-Jenkins models, Box-Cox transformations and Box-Behnken designs. Box co-authored the classic textbook, *Statistics for Experimenters*, with J. Stuart Hunter and William G. Hunter.



Friday, September 18

- 7:00 a.m. – 8:30 a.m. **Discovery Breakfast Buffet**
- 8:30 a.m. – 8:45 a.m. **Discovery Welcome**
- 8:45 a.m. – 10:00 a.m. **Discovery Keynote Talk: Mike Cramer, McDonald's**
- 10:00 a.m. – 10:15 a.m. **Break**
- 10:15 a.m. – 11:30 a.m. **Discovery Keynote Talk: Stephen Few, Perceptual Edge**
- 11:30 a.m. – 12:45 p.m. **Lunch, Meet the Developers and Poster Presentations**
- 11:30 a.m. – 2:00 p.m. **Innovators' Summit Registration**
- 12:45 p.m. – 1:45 p.m. **Discovery Breakout Sessions: Select One — See Page 18**
- 2:00 p.m. – 2:30 p.m. **Where Discovery Meets Innovation: Jeff Perkinson, SAS and Michael Schrage, MIT**
- 2:30 p.m. – 2:45 p.m. **Break**
- 2:45 p.m. – 4:30 p.m. **Keynote Address: Malcolm Gladwell
Author of *Blink*, *The Tipping Point* and *Outliers***
- 4:30 p.m. – 6:00 p.m. **Discovery and Innovators' Summit Cocktail Reception and Book Signing**
- 6:00 p.m. – 9:00 p.m. **Innovators' Summit Dinner Dates in Edelweiss, 43rd Floor**



Saturday, September 19

- 7:00 a.m. – 8:30 a.m. **Innovators' Summit Breakfast Buffet**
- 8:30 a.m. – 8:45 a.m. **Innovators' Summit Welcome: Michael Schrage, MIT**
- 8:45 a.m. – 10:00 a.m. **Innovators' Summit Keynote Talk: Stephen Baker
Author of *The Numerati***
- 10:00 a.m. – 10:15 a.m. **Break**
- 10:15 a.m. – 11:30 a.m. **Innovators' Summit Keynote Talk: Daniel Arneman
University of North Carolina at Chapel Hill**
- 11:30 a.m. – 1:00 p.m. **Lunch and Stephen Baker Book Signing**
- 1:00 p.m. – 2:15 p.m. **Innovators' Summit Keynote Talk: Sig Mejdal, St. Louis Cardinals**
- 2:15 p.m. – 2:30 p.m. **Break**
- 2:30 p.m. – 3:45 p.m. **Innovators' Summit Keynote Talk: Joel Best, Author of *Stat-Spotting***
- 3:45 p.m. – 4:00 p.m. **Break**
- 4:00 p.m. – 5:00 p.m. **Analytic Exchange Panel: Michael Schrage, Moderator
Panelists: Daniel Arneman, Stephen Baker, Joel Best, Sig Mejdal,
Dan Obermiller of Dow Chemical and John Sall of SAS**
- 5:00 p.m. – 6:00 p.m. **Dessert Reception and Joel Best Book Signing**



New this year, the Discovery Steering Committee is guiding the annual conference. This 12-member panel is made up of experienced JMP users who are vocal advocates of advanced analytics and who partner with SAS to educate others about the many uses of JMP and its benefits. We are honored to have the privilege of working with these professionals as we strive to assure that this year's Discovery conference meets the needs of JMP users worldwide. Their contributions have been immeasurable. The same committee will help plan next year's conference as well.



Mike Cramer, McDonald's, Chicago, IL



Lynn Dickey, Biolex Therapeutics, Pittsboro, NC



Ed Hutchins, Cree, Durham, NC



Stan Koprowski, sanofi-aventis, Bridgewater, NJ



Don Lifke, Sandia National Laboratories, Albuquerque, NM



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Di Michelson, SEMATECH, Austin, TX



Jeff Perkinson, SAS, Cary, NC



Heath Rushing, SAS, Cary, NC



John Sall, SAS, Cary, NC



Deanna Starbuck, Aera Energy LLC, Bakersfield, CA



Manny Uy, Johns Hopkins University, Laurel, MD



Cy Wegman, Procter & Gamble, West Chester, OH



Wednesday, September 16, 4:30 – 9:00 p.m.

DISCOVERY COCKTAIL RECEPTION AND CHICAGO BOTANIC GARDEN DINNER

A season for growth.

The **Discovery Cocktail Reception and Dinner** marks the start of Discovery 2009. The season to stimulate the growth of your JMP knowledge is here.

We could think of no atmosphere more conducive to cultivating intelligent conversation than the lush Chicago Botanic Garden. Think of this event as a holistic experience for developing your mind with exploratory dialogue, nourishing your body with delicious “food for thought,” and enlivening your spirit in the beautiful surroundings. Tram tours will precede the dinner, starting at 4:30 p.m.

The Chicago Botanic Garden is a pre-eminent center for learning and scientific research, a fitting location for the start of a conference dedicated to both concepts. Its 385 acres, numerous waterways, 23 display gardens and three natural habitats contribute to its distinction as a highly regarded teaching garden and plant conservation program – which, by the way, uses JMP software to analyze its research data.



JOHN SALL

Co-Founder and Executive Vice President, SAS 8:45 a.m.



John Sall is a co-founder and Executive Vice President of SAS. He leads the JMP business division, which creates interactive and highly visual data analysis software for the desktop and provides a visual interface to SAS. Sall was elected a Fellow of the American Statistical Association in 1998. He serves on the board of The Nature Conservancy and is a member of the North Carolina State University (NCSU) Board of Trustees. He received a bachelor's degree in history from Beloit College in Beloit, WI, and a master's degree in economics from Northern Illinois University in DeKalb, IL. Sall studied graduate-level statistics at NCSU, which awarded him an honorary doctorate in 2003.

The JMP® 9 Learnflow

JMP 9 is still a year away, but some of the themes are emerging now. As we listen to practitioners and work with story cases, we see plenty of amelioration opportunities to make JMP 9 a more robust tool. Real data is often messy data in many different ways, with long names and levels, missing values, outliers, multimodal distributions, mixtures, and large models that are prone to overfitting. Large problems challenge us to improve performance and take advantage of multicore processing. Large tables also allow us the luxury of cross-validation subsets. Specialty problems challenge us to provide more robust scripting, better reference tools, and even tools for building scripts more automatically. We will be listening as you describe the complexities of your real worlds, so that we can build better analytic tools to work there more gracefully.

RICHARD D. DE VEAUX, PhD 10:15 a.m.

Professor of Mathematics and Statistics, Williams College



Dick De Veaux is a Professor in the Department of Mathematics and Statistics at Williams College in Williamstown, MA. An expert in applied statistics, his professional interests include data mining methodology and its application to problems in science and industry, as well as model selection and other problems for large data sets. De Veaux holds a doctorate in statistics and a master's degree in education from Stanford University. A summa cum laude graduate of Princeton University, he earned bachelor's degrees in civil engineering and mathematics. De Veaux is a Fellow of the American Statistical Association.

Data Mining – Fool's Gold or the Mother Lode?

See how exploratory data analysis helps uncover patterns. Through case studies, renowned applied statistician Richard De Veaux explores this analysis technique for knowledge discovery.

Data mining is the exploration and analysis of large data sets, by automatic or semiautomatic means, for the purpose of discovering meaningful patterns. You can then use these patterns for decision making via a process known as knowledge discovery. Exploratory data analysis and inferential statistics also address these problems. What's different about data mining? How is data mining similar? This presentation will answer these questions by looking at a series of case studies using the tools of a typical data miner. We will demonstrate how to:

- Identify appropriate problems for data mining.
- Explore and prepare data for mining.
- Use a variety of techniques, including decision trees and neural networks, to build accurate predictive models.
- Evaluate the quality of data mining models.

MONTREUX SALON 1

Yield, Statistics and JMP®

FRANÇOIS BERGERET, PhD, General Manager Ippon Innovation (France)
ALEXANDRE COUV RAT, Senior Engineer SOITEC

In a large-volume semiconductor manufacturing plant, hundreds of process parameters have to be controlled with regards to product quality parameters, including yield. Advanced statistical methods are necessary in order to quickly discover any process issue and to find the root cause of complex yield issues related to some process tools or stages. From the user point of view, a statistical tool is needed with two characteristics: automated, to quickly highlight a very limited set of process parameters responsible for yield losses; and interactive enough to be able to tune the analysis using JMP discovery capabilities. From a statistical point of view, two innovative methods have been developed for this application and will be presented in this paper: 1) smoothing splines at each process stage, allowing ranking of all the stages with a statistical criterion. This new application is able to detect a faulty process stage with unique information – process dates at each process stage; and 2) likelihood ratio test in order to be able to deal with binary response variables, like the presence of a given pattern on the product. This application is able to analyze any yield issue when the only available response variable is binary. JMP software was selected for three reasons: 1) Its advanced statistical tools are adapted to semiconductor complexity; 2) It is very user friendly; and 3) It includes a powerful programming language, JSL, to develop automatic analysis for thousands of input and output parameters. A live demo of JMP with all these features will be presented.

MONTREUX SALON 2

The Best of Both Worlds: Designing Experiments in the JMP® and SAS® Environment

JOSÉ G. RAMÍREZ, PhD, Industrial Statistician W.L. Gore and Associates Inc.

Complexity and supply chains that may expand across the globe require us to design experiments that must take into account: 1) the multistep nature of manufacturing processes; 2) the large number of factors involved; 3) the different sizes of experimental units; 4) the restrictions in randomization that occur; and 5) the constraints on the number of experiments that can be run. Designing experiments for these situations can challenge many design-of-experiments software packages. However, the integration of JMP and SAS now allows us to take advantage not only of the flexibility and power of the Custom Designer, but also of new capabilities in SAS 9.2 PROC FACTEX to design experiments for multistep processes. The gamut of manufacturing situations that can now be handled with JMP and SAS will be illustrated using the Custom Designer to design an experiment for a complex manufacturing situation involving a hard-to-vary factor, nine process factors and eight mixture factors, demonstrating how a JMP and SAS application can be used to design experiments for three-, four- and five-step processes.

MONTREUX SALON 3

Analysis of Military Occupational Skills Requirements for the Army National Guard

CHRISTOPHER K. MITCHELL, MS, Research Analyst Army National Guard Bureau – Training Division

Each fiscal year, the Distributed Learning branch performs a Military Occupational Skills (MOS) analysis to identify those most needed for transition (reclassification) to meet Army National Guard (ARNG) readiness and deployment needs. Before 2004, the methodology for selection had been to request input from the field, compare the Army Training Requirements and Resources System (ATRRS) database with the Standard Installation/Division Personnel System (SIDPERS) database and survey the ARNG Chief of Training for future needs. The selection criteria and the analytical methods were weak and lacking probative value because they primarily relied on two sources of information that rarely agree – the ATRRS and SIDPERS databases. Using JMP we visually demonstrate the “how and why” value of JMP software’s principal component analysis (PCA) by: 1) effectively and efficiently determining which courses warrant recommendation; 2) determining courses that are underutilized, under- or over-funded, understaffed or in too few locations; 3) identifying skills that, due to density or length, should be considered for inclusion or exclusion from funding or staffing; and 4) providing more finite strength management input and training requirement expectations.

VEVEY BALLROOM

Classification of Breast Cancer Cells Using JMP®

MARIE GAUDARD, PhD; PHIL RAMSEY, PhD, Partners North Haven Group
MIA STEPHENS, MS, JMP Academic Ambassador; LEO WRIGHT, JMP Product Manager of Quality and Six Sigma Solutions; IAN COX, PhD, JMP Marketing Manager – Europe SAS

This paper illustrates the use of JMP software’s powerful visualization and modeling capabilities in the context of a classification effort. We will utilize the Wisconsin Breast Cancer Diagnostic Data Set, a set of data used to classify breast lumps as malignant or benign based on the values of 30 potential predictors, obtained by measuring the nuclei of fluid removed using a fine needle aspirate. We begin by illustrating visualization techniques that help build an understanding of the data set. After partitioning our data into a training set, a validation set and a test set, we fit four models to the training data. These include a logistic model, a partition model and two neural net models. We then compare the performance of these four models on the validation data set to choose one. The test set is used to assess the performance of this final model.

MONTREUX SALON 1

The Turning of JMP® into a Semiconductor Analysis Software Product**JIM NELSON, Manager IT, Yield Management Systems** **Freescale Semiconductor Inc.**

The semiconductor manufacturing environment is a very specialized area of manufacturing. Fabrication of a computer-integrated circuit is a very complex process. Chemical, photographic, mechanical, electrical and spatial factors all have to intersect in a highly choreographed process to produce a working computer chip. The process of optimizing the yields or investigation of unexpected yield losses require both specialized data visualization tools and sophisticated statistical analysis to quickly find the root cause of the low yield. Out-of-the-box JMP is not a semiconductor analysis software product. While a skilled engineer can manipulate data and various JMP platforms to approximate the required visualizations and analyses, today's marketplace does not permit such a time-consuming process. Engineers need analysis tools that quickly provide the precise visualizations and analyses they need with the fewest number of mouse clicks. This paper details the processes, additions and modifications made to JMP to turn it into a semiconductor software analysis product.

MONTREUX SALON 2

Predicting Health Care Outcomes by Physical and Mental Health Population Data Modeling**ALBERTO M. COLOMBI, MD, MPH, Corporate Medical Director** **PPG Industries Inc.**

We probed the chronic disease continuum – from risk to outcomes – in 29 working populations. The interactions of obesity, depression, worker's compensation, productivity loss and musculo-skeletal comorbidity were profiled in prediction models in order to support health investment decisions. Worksite-based measures of mental health (percent screened for depression and percent reporting a neutral stress and satisfaction offset score) interact significantly with worksite obesity prevalence (body mass index 30 and over) in predicting the average worksite medical plus wage disability compensation in case of injury. Additionally, annual depression episode rate and severity/risk-adjusted payment per episodes show significant differences in the presence of musculo-skeletal disorders comorbidity. Finally, certain mental health services utilization outcomes are significantly predicted by a host of factors, including productivity loss, showing that productivity can be enhanced by increased mental health services use, when needed. Screening and modeling techniques from JMP allowed using historical and population data to prioritize health investments.

MONTREUX SALON 3

Life Data Analysis with JMP® 8**EDWARD KRAM, PE, President** **Blue Arc Energy Solutions Inc.**

Life data analysis is an important tool for reliability engineers. JMP 8 recently upgraded its lifetime data analysis capabilities to provide useful new features for reliability engineering applications. This paper discusses the use of JMP 8 with field data challenges, such as sparse failures, heavily censored data and failure data truncation. The use of JMP software's other tools (e.g., Graph Builder, tabulations, etc.) are also discussed as useful visualization tools in reliability analysis.

VEVEY BALLROOM

Conjoint Marketing Experiment Design Considerations**CHRIS NACHTSHEIM, PhD, Professor and Chair of Operations and Management Sciences**
University of Minnesota**ROB REUL, MS, Founder and Managing Director** **Isometric Solutions LLC**

Unlike operational design-of-experiments implementations where a very select set of trials can be easily completed, marketing choice experiments are easy to "trial," but often difficult to complete. The conjoint challenge is to maximize the amount of quality information any given respondents provide before either their responses become indistinguishable or they quit the survey. Conjoint designers have many variables with which to tailor a marketing choice experiment, including the number of levels within each attribute, the number of attributes in the study, the number of profiles a respondent chooses from and the number of choice tasks given to each respondent. The mathematical basis directing various design considerations will be explored along with accompanying client case studies.

MONTREUX SALON 1

Standard Least Squares Model for Identifying Problem Tools in a Manufacturing Environment

ED HUTCHINS, Sustaining Engineering Manager Cree

We describe an analytical method to identify problem tools in a manufacturing environment. Using JMP, we visualized a yield problem, collected a relevant data set and created a standard least squares model to identify the tools contributing most to the problem. Once identified, further analysis in JMP gave insight into the underlying root cause that allowed us to fix the problem and prevent future occurrences. On numerous occasions, we have found this to be an effective and efficient method to identify problem tools.

MONTREUX SALON 2

A Prospective Study of Cognitive Fluency and Originality in Children Exposed in Utero to Carbamazepine, Lamotrigine, Valproate Monotherapy

KELLY M. MCVEARRY, PhD; JOHN VANMETER, PhD; WILLIAM D. GAILLARD, MD; KIMFORD J. MEADOR, MD

Georgetown University Medical Center

Anti-epileptic drugs (AEDs) can produce behavioral teratogenesis in animals at dosages lower than required to produce anatomical teratogenesis, but cognitive effects of fetal AED exposure in humans are uncertain and predominantly limited to assays of psychometric intelligence. This paper examines the effects of fetal exposure to commonly used AEDs on psychometric creativity. It is a substudy of a prospective, multicenter, parallel-group study of neurodevelopment that enrolled pregnant women with epilepsy on AED monotherapy (carbamazepine, lamotrigine and valproate exposure) from 1999 to 2004. Children were tested with the Torrance Thinking Creatively in Action and Movement (TCAM), a standardized behavioral measure of cognitive fluency and originality. Assessment was blinded to drug exposure. Forty-two subjects met inclusion criteria (lamotrigine = 17; carbamazepine = 16; valproate = nine). Mean age was 4.2 years (SD = 0.5). Analyses included one-way ANOVAs, Student's t-test and bivariate regression models. TCAM fluency was reduced in the valproate group (mean = 76.3; SD = 7.53) vs. lamotrigine (mean = 93.76; SD = 13.5; $p < 0.0015$) and carbamazepine (mean = 95.5; SD = 18.1; $p < 0.003$). TCAM originality was reduced in the valproate group (mean = 84.2; SD = 3.23) vs. lamotrigine (mean = 103.1; SD = 14.8; $p < 0.002$) and carbamazepine (mean = 99.4; SD = 17.1; $p < 0.01$). These effects were not explained by factors other than in utero AED exposure. Children exposed to valproate in utero had impaired cognitive fluency and originality compared to two other AEDs.

MONTREUX SALON 3

Lure Your Black Belt Students into Learning Six Sigma Statistical Tools by Using Real-Life Examples

DON LIFKE, MS, Process Engineer Sandia National Labs

Teaching statistical tools to reluctant black belt students can be a challenge. One successful technique is to use examples that they can relate to, and to show that these tools can be applied to their personal lives as well. Two such examples will be presented. The first example will show how home prices can be predicted using the Fit Model feature in JMP. The example shows how a realtor could inadvertently list a home at much lower than its fair market value due to inaccurate evaluation by only using the typical \$/square foot calculation. More factors need to be considered, such as age and lot size. The second example will demonstrate how design of experiments can be used to improve the golf game; specifically, the stance setup for hitting a drive optimized using the Custom Design feature in JMP (note: This was presented at the Better Golf Through Technology Conference at MIT in February 2008). Both examples have proven to be useful in capturing the students' attention and motivating them to apply these tools to their work, and perhaps even their personal lives.

VEVEY BALLROOM

Designed Experiments that Changed the World

BRADLEY JONES, PhD, Director of JMP Research and Development SAS

Folklore has it that great breakthroughs come as a result of a genius thinking out of the box and coming up with something creative – think Edison and Einstein. While this myth of genius makes a good story, it does not provide a reproducible way for organizations to make quantum jumps in innovation or productivity. This talk tells the story of several applications of designed experiments that “changed the world.” Its moral is that designed experiments provide a systematic approach that can pave the way from concept to customer.

Meet the Developers

This year, JMP marks its 20th anniversary, and we are celebrating our family tree. Under the guidance of John Sall, the SAS co-founder who inspired the creation of JMP statistical discovery software and remains its chief architect, JMP has branched out in many directions. The interactive visualization capabilities in JMP are now helping researchers, engineers and business professionals around the world and in almost every industry make discoveries, overcome challenges and launch exciting new ventures. Our talented team of developers is constantly enhancing the software, helping it evolve to meet new challenges in new arenas. The Discovery Cocktail Receptions and Meet the Developers opportunities are your chances to exchange ideas with members of this team. And they're ready for your toughest questions. Bring them on!

Discover Posters Featuring Forward-Looking Applications

Just as we hope you'll spend time challenging our technical staff and planting seeds for future JMP features, we also hope you will spend time with our poster presenters, learning about their forward-looking applications of JMP.

POSTER 1: Characterizing Penetrator to Lobe Gap Variation Using JMP® Software

Christopher Sperry, Chad Naegeli, David Herridge Incisive Surgical

Understanding the variation in penetrator to lobe gap (PLG) was paramount in our speed-to-market plan for Incisive Surgical's third generation skin stapler. PLG controls the amount of dermis captured by the staple cleats, and an equal capture on both sides is important for strength and healing. In previous generations of our product, we utilized JMP in our design for assembly process to create components in CAD that are less sensitive to PLG. Using Six Sigma methodology and JMP software's custom DOE platform, we set up and verified a multifactor model that predicted assembly variation based on component variation. Development of highly accurate predictive models led us to perform more stringent measurement system analysis, develop robust process control charts and update the component tolerances. In fact, while some component tolerances were unnecessarily tight, many were too loose to control PLG. The JMP Profiler and Simulator allowed us to visualize how the inputs affected PLG using production lot data and Monte Carlo methods. The corporate benefits from using JMP included faster development time, better understanding of the causes of variation (inputs) and their relative effects on the final assembly dimension (outputs).

POSTER 2: Simple Statistics for Simple Genomics (in "Plain Vanilla" JMP®)

John A. Wass, PhD

There are many circumstances under which significant genomic analyses may be performed without resorting to sophisticated (and expensive) genomics software. Although many academicians prefer the use of freely available R-based programs, JMP offers a number of advantages, not the least of which is its menu-driven simplicity coupled with powerful analytic capabilities. Add to this JMP software's inherent strategy of pairing automatically generated graphics with the numeric output and the researcher is presented with a fast and easy tool to do preliminary yet sophisticated genetic analysis. This example employs JMP 8 to analyze tumor cell line resistance to a metabolic inhibitor. It employs the Multivariate platform to: 1) separate resistance classes by discriminant analysis and clustering; and 2) further examine these differences by principal components. These types of strategies have been employed in many instances in drug discovery and find widespread use in molecular biology. Studies such as these are now implemented and greatly extended in JMP Genomics 4.0.

POSTER 3: Identification of Potential Causes for Processing Issues During the Compression of a Drug Product Using JMP® Software Data Analysis

Neman Khan, Inna Ben-Anat, Heather Sturtevant, Process Engineering TEVA Pharmaceuticals USA

An investigational study was performed on a drug product to identify the potential causes for the processing issues (broken compression tools and dies, tablets embossing erosion, and broken tablets during coating and packaging) experienced during commercial batch manufacturing. It was speculated that lower tablet hardness values obtained during commercial production due to over-lubrication of magnesium stearate may be the cause for the processing issues. Several predictor variables (i.e., blender type, blender volume, press speed, etc.) and their relationship to the response variable (tablet hardness) were evaluated. The data collected from the study was analyzed by JMP software to identify trends and relationships between tablet hardness and the predictor variables. The JMP analysis provided a suitable standard least squares model fit for the tablet hardness response and its relationship to the factors ($R^2 = 0.845$, six significant factors with p -value < 0.05). The Prediction Profiler function provided an optimum factors setting output in order to achieve higher tablet hardness. The results conclude that tablet hardness can be increased by minimizing the over-lubrication effect of magnesium stearate. This can be accomplished by reducing the amount of magnesium stearate in the formulation, reducing the final blend mixing time and/or minimizing the tablet press speed.

POSTER 4: Estimation of the Relationship Between Two Instruments A and B, and Conversion of Instrument A Criteria of 0.25 into Criteria for Instrument B

MaryAnn Chamberlain, Sarah Lin, Katherine Hughes Abbott Laboratories

We collected data from instrument A and instrument B over time until the reading of instrument A reached its first value greater than its criteria 0.25. We used two approaches for this analysis. In the first approach, we used linear regression from the JMP Analyze Fit Model platform. Instrument B was the dependent variable and instrument A was the independent variable. We calculated the predicted value and 95 percent confidence interval for instrument B at an instrument A reading of 0.25. Using JMP software's data visualization, we gained additional insight by plotting the data by instrument over time. We noticed that the differences between instruments increased over time. Thus, using linear regression to predict the relationship between the two instruments at the end time point may underestimate their actual difference. In the second approach, we calculated the ratios of instrument B / instrument A. The ratios at the end points were the data of interest for our analysis. We tested the data for normality at 5 percent significance level, and calculated the mean, standard deviation and 95 percent confidence limits.

In this approach, we calculated the end-point ratios using the first values of instrument A that exceeded the criteria of 0.25, values that were not exactly 0.25 as was used in the linear regression model. However, the ratios represented the relationship of the two instruments at the values used, and no underestimation of their differences occurred.

POSTER 5: Using JMP® 8 in Database-Oriented CRM Classes

Wynd Harris University of Connecticut

This poster paper will highlight how I have used JMP software to support experiential learning in a database-oriented customer relationship management course at the University of Connecticut. The class is driven by what I call a 3-D pedagogy of discuss, demonstrate and do. Each module of the course begins with presentation of the core concepts in a discussion/lecture session. Once the background material has been covered, the analytical elements are demonstrated using spreadsheets for databases and JMP procedures for analysis and interpretation of the data. Finally, the students are given hands-on exercises to perform in class with faculty support and take-home exercises to be performed and submitted for review. The major course modules that have been developed focus on describing customers and predicting customer responses to marketing programs. These modules are: Obtaining Customer Data, Preparing Data for Analysis, Basic Descriptive Analysis, Building Latent Structural Variables, Customer Segmentation and Predicting Customer Response. The poster will provide one-page examples of each module and the course syllabus.

POSTER 6: Use of JMP® in the Development of Next-Generation Explosives for the Warfighter

Paul E. Anderson, Energetics and Warheads Division, Explosives Research Branch US Army Picatinny Arsenal

JMP is currently being used by the US Army in the development of next-generation explosives for the warfighter. The inherent safety risks and costs associated with explosives research and development dictates that a minimum number of experiments be designed to maximize the level of characterization and knowledge gained from each test. Additional constraints such as insensitive munition requirements, performance requirements and voice of the customer further require the investigator to properly utilize an array of design of experiments tools. JMP software is uniquely suited for such a myriad of requirements and potential design space. Particularly, mixture designs have proven extremely effective in screening of initial formulation designs and requirements. Because theoretical thermodynamic calculations are used for potential design space, custom mixture designs, model development and subsequent profiler analysis has greatly aided in rapid downselect of initial formulations. This poster presents an overview of a typical explosives development process, from concept to final testing. JMP results from selected tests will be reported and compared to typical "one variable at a time" processing techniques.

POSTER 7: Visualization of Urban Transportation Data Generated by Wireless Sensor Network Using Modern Approaches

Manni Huang, Department of Computer Science Trinity College Dublin

Distributed wireless sensor networks are one of the first real-world examples of “pervasive computing” – the notion that small, smart and cheap sensing and computing devices will eventually permeate the environment. Nowadays, it has proven to be useful in various applications. In a large sensor network, no matter if the sensors are large or small, the data are especially complicated and unintelligible. We should make it easy to understand with the help of technologies of existence. Certainly, data visualization, which is defined as the interactive graphical presentation of data, could present data in the forms of aesthetic layout rather than traditional tables, pie charts and bar graphs, making the data more beautiful, elegant and descriptive. This poster aims to demonstrate the technology of both wireless sensor network and data visualization with the basis for the critical problems, challenges and future goals of development and applications. And I propose a simulative model, which integrated the two above technologies, with an emphasis on the processing. The framework is based on Google Maps; thus it allows robust navigation and communications within several different spatial ontologies. Our approach factors the problem into the following subgoals: deploying the sensors in an urban crossroad, acquiring and analyzing data, and representing the data with aesthetic forms.

POSTER 8: Automating JMP® via Scripting Tools and MS Windows COM

Matt Flynn The Travelers Companies

One occasionally has a need to automate and control an analysis using JMP on a Windows platform. Perhaps you are a *nix SAS coder with plenty of scripting experience, but are not up to speed with common Windows technologies such as VB or Visual C++. A standard JMP installation comes with automation examples in those technologies. But beyond those languages, it can be difficult to find examples for scripting JMP on a Windows platform. This paper attempts to remedy that situation by providing a walk-through of a JMP scripting session using common external scripting tools. We'll show and discuss the example using TCL. Appendix A provides parallel code in Tcl, Python, Perl, VBscript, Ruby and even R. The magic ingredient for this to work so well is Microsoft Windows Component Object Model, or COM.

POSTER 9: Automating the Data Cleaning Process

Michael E. Haslam National Semiconductor

Cleaning data sets that contain large numbers of columns can be very tedious and time-consuming. This data cleaning can often take the majority of the time in what would otherwise be a routine analysis. It can also be a barrier to a more detailed exploration of the different facets of the problem under analysis. Real data sets contain several categories of data that may or may not be relevant to the analysis targeted. These categories include boundary data at the extreme edge of the test range, stuck values, missing data reported as actual data from the measurement equipment, tails of the distribution versus the core of the distribution and extreme fliers. Depending on the analysis targeted, many of these categories will need to be eliminated or separated out from the data set prior to analysis. This presentation covers the script construction, user interface and algorithms used to automate the data cleaning process in JMP.

POSTER 10: Multidimensional Scaling via JMP and SAS Integration

Philip J. Ramsey, PhD; Marie A. Gaudard, PhD North Haven Group

Multidimensional scaling (MDS) is an exploratory visual technique used to study relationships (usually similarities or dissimilarities) among objects. For example, the objects might be product concepts, protein structures, stimuli in a psychology experiment or species in a wildlife study. MDS originated in the field of psychometrics where it enjoys widespread popularity. However, MDS methodology is gaining increasing popularity in many areas, such as the life sciences, genomics, marketing and engineering. Proc MDS in SAS provides a comprehensive platform for MDS analysis whose output can be viewed using JMP software's rich visual capabilities. In this talk, we will use case studies from marketing and the sciences to provide a tutorial on MDS methodologies, with a focus on demonstrating how the JMP and SAS integration facility allows a synergy of Proc MDS and JMP software's graphics capabilities that enhances MDS analysis.

POSTER 11: In Support of the Lean 6 Sigma Improvement Process

Vin Kane Tellabs

The paper describes the use of the JMP partitioning capability as the primary analysis tool within the DMAIC process to identify the significant variables influencing the time required to improve order closure times. Once the significant variables are identified, P charts are used to obtain visual confirmation of statistical significance between categories of attribute data. Weibull and ANOVA charts are used to display variables data identified by partitioning. These charts are then used to obtain both baseline performance as well as improved performance values resulting from corrective actions. The learning curve was significantly shortened by using JMP scripts for partitioning as well as all the output charts.

POSTER 12: JSL Scripts for Teaching Core Concepts in the Introductory Statistics Classroom**William Duckworth, PhD, Department of Information Statistics and Technology Creighton University**

Simulation has become an important tool in teaching topics related to sampling distributions and inference in the introductory statistics classroom. Many traditional simulations have been developed as Java applets and made available online. While these applets are easy to use and readily available to statistics instructors, they usually do not match classroom, laboratory and homework activities. As a result, students can struggle with the transition between the classroom and the computer simulation activities. This talk will showcase JMP Scripting Language (JSL) scripts developed to take advantage of JMP software's powerful interface features and to provide flexibility to match the simulation experience in JMP to classroom, laboratory and homework activities traditionally used to teach the concepts of sampling and inference in the introductory statistics classroom.

POSTER 13: Multivariate Analysis in a D-Optimal Design of Nutrient Optimization for in Vitro Growth of Turmeric (*Curcuma longa* L.)**Sean Michael Halloran; Jeffrey Adelberg, PhD, Department of Horticulture Clemson University**

Most plant tissue culture utilizes Murashige and Skoog media (MS 1962), a work that maximized fresh weight of tobacco callus tissue (nutrient uptake and requirements dissimilar to whole plants) with few second-order interactive effects. We re-evaluated macronutrients in a d-optimal design as: sucrose (1.5 – 6 percent), plants per vessel (three to nine), volume (25-45 mL), nitrate (10-50 mM), and potassium: ammonium as a two-component mixture (summed concentrations equal to nitrate). Plantlet quantity (assessed as most new plants), came from nine plantlets, 25 mL, 10 mM nitrate, and a 3:1 potassium: ammonium ratio. Plantlet quality (measured as greenhouse dry weight gain), was best at 1.5 percent sucrose, 10 mM nitrate, and a 1:1 potassium: ammonium ratio. The paired model maximization was 1.5 percent sucrose, six plantlets, 25 mL, 10mM nitrate, and a 3:2 potassium: ammonium ratio. An important second order is found in nitrate, where at the 40 mM concentration (MS 1962 level) nearly all macronutrient interactive effects are negligible. Murashige and Skoog-era researchers were limited by statistical tools that no longer impede the scientific community.

POSTER 14: Who's the Most Valuable Player in the NBA?**Douglas M. Okamoto, PhD Data to Information to Knowledge**

Who's the most valuable player in the NBA? Kobe Bryant, of the Los Angeles Lakers, LeBron James of the Cleveland Cavaliers or Dwyane Wade of the Miami Heat? Although these players rank among the league leaders in individual point, rebound and assist totals per game, these measures of offensive skill do not take into account defensive ability. Adopting plus/minus scores from ice hockey, a player is credited with a plus, "+," every time his team scores while he is on the court. Conversely, a player is assessed a minus, "-", whenever the opposing team scores. Total minuses during a game are subtracted from total pluses to get an individual player's plus/minus. Odds ratios estimate the relative risk of being a plus during a win versus a minus during a loss. For example, the LA Lakers won 65 and lost 17 of their 82 games. Kobe Bryant was a plus in 58 of their wins and 2 of their losses. He was a minus in 15 losses and 5 wins. The odds ratio or relative odds of the Lakers winning when Kobe was a plus were 87 to 1 compared to the chance of losing when he is a minus. In this poster presentation, odds ratio charts will be shown for the league's first, second and third NBA All-Star teams with odds ratios and 95 percent confidence intervals estimated using logistic regression (Fit Model in JMP). Bubble plots comparing team winning margin versus all-star plus or minus with minutes played per game as a continuous scale variable will be created using a JSL program developed by Mark Bailey.

MIKE CRAMER 8:45 a.m.

Director of Operations Research for Worldwide Restaurant Innovation, McDonald's



Michael Cramer leads a corporate group of analysts providing decision support for McDonald's Global Restaurant Solutions, serving 34,000 restaurants in 118 global markets. His team's work includes predictive modeling, predictive analysis, video ethnography and data mining. Before joining McDonald's five years ago, Cramer spent eight years as the CLO for Hub One Logistics. He also worked for Kellogg's in Logistics and Competitive Intelligence, and for Tompkins Associates, an engineering consulting and implementation firm. He is a member of the Council of Logistics Management, INFORMS and the INFORMS Roundtable. He graduated in 1984 with a bachelor's degree in industrial engineering from North Carolina State University.

Synthesizing Science and Innovation

Given today's business challenges and an unforeseeable future, McDonald's is relying more and more on innovative solutions to grow its market share. The opportunity costs and energy required to develop and validate these solutions are driving us to think differently in regard to our innovative processes. We are adopting a new term, "Innovience," to describe the synthesis of innovation and science. The benefits of Innovience are accelerated failure at early stages of discovery/design and accelerated validation of solutions prior to launch. This discussion will cover the dimensions of Innovience and the critical need to develop the right infrastructure to execute.

STEPHEN FEW 10:15 a.m.

Principal, Perceptual Edge



Stephen Few has worked for 25 years as an IT innovator, consultant and teacher. Today, as Principal of the consultancy Perceptual Edge, Few focuses on data visualization for analyzing and communicating quantitative business information. He provides consulting and training services, writes the monthly Visual Business Intelligence Newsletter, speaks frequently at conferences and teaches in the MBA program at the University of California, Berkeley. His most recent book has just been published: *Now You See It: Simple Visualization Techniques for Quantitative Analysis*. Few has also written two additional books: *Show Me the Numbers: Designing Tables and Graphs to Enlighten* and *Information Dashboard Design: The Effective Visual Communication of Data*.

Exploring Predictive Analytics and Data Visualization with JMP®

What-if scenarios that predict what might happen given different business conditions and decisions are most enlightening when we understand the relationships between the variables that influence potential results. What is defined as good visual analytics? How can predictive analytics be used to understand the past, monitor the present and predict future outcomes? We will seek to provide a better understanding of how the JMP Prediction Profiler is used to build predictive business models and interact with data and graphs to observe how changes in one variable influence changes in the others. Not a statistician? This presentation will help you learn how many analytical tasks can be handled through the use of relatively simple visualizations.

MONTREUX SALON 1

The Basics of Experimental Design for Multivariate Analysis

STEVE FIGARD, PhD, Senior Scientist Abbott Laboratories

This paper is designed for beginner to intermediate practitioners of a form of analysis known as design of experiments (DOE). Specific objectives include: 1) defining some of the terminology; 2) introducing major thought processes, philosophy, strategies and rules of thumb; 3) keeping objectives in the context of JMP as an example of how this type of analysis is implemented in the software; 4) presenting a relevant example of the use of DOE in assay development; and 5) letting the software worry about “the how” of DOE, and instead focusing on “the when and why” of DOE.

MONTREUX SALON 2

Resected Pancreatic Adenosquamous Carcinoma: Clinicopathologic Review and Evaluation of Adjuvant Chemotherapy and Radiation in 38 Patients with the Use of the JMP® 8 Reliability/Survival Platform

K. RANH VOONG*, JON DAVISON, TIMOTHY M. PAWLICK, MANNY UY*, CHARLES C. HSU, JORDAN WINTER, RALPH H. HRUBAN, DAN LAHERU, SONALI RUDRA, MICHAEL J. SWARTZ, HARI NATHAN, BARISH EDIL, RICHARD SCHULICK, JOHN L. CAMERON, CHRISTOPHER WOLFGANG, JOSEPH M. HERMAN* Johns Hopkins University

***CO-PRESENTERS**

The purpose of this study was to examine the impact of adjuvant chemoradiation therapy (CRT) on overall survival, identify clinicopathologic features associated with prognosis and assess whether the percentage of squamous differentiation is associated with an inferior prognosis in pancreatic adenosquamous carcinoma (PASC). PASC is a rare morphologic variant of pancreatic adenocarcinoma with an especially poor prognosis. Forty-five of 3,651 patients who underwent pancreatic resection at Johns Hopkins Hospital between 1987 and 2007 were identified as having PASC with any squamous differentiation. Statistical analyses were performed using JMP 8 statistical software on the remaining 38 patients amenable to adjuvant chemo-radiation therapy (CRT) with clinical outcome data. Survival curves were estimated using Kaplan-Meier techniques based on JMP software's survival platform. Our series supports that survival following pancreatic resection of PASC is poor (median overall survival: 10.9 months [95 percent CI: 8.2-12.8]). However, treatment with adjuvant CRT is associated with improved survival ($p = 0.0048$), suggesting that patients with this rare form of pancreatic adenocarcinoma could benefit clinically from the incorporation of adjuvant CRT into their treatment regimen.

MONTREUX SALON 3

JMP® and SAS® Complement Each Other to Produce a Virtual Laboratory

BRIAN MCFARLANE, Senior Consultant; WAYNE J. LEVIN, MS, Founder Predictum Inc.

This paper describes a system that combines the scripting and design-of-experiments functionality of JMP with the powerful modeling capabilities of SAS to create a virtual lab. This new approach replaces the previous practice of one-factor-at-a-time physical experiments with a rigorous system of custom designed experiments that estimate responses using models built on years of empirical observations. The complementary use of JMP and SAS produces a productive system that has the potential for significant results in reduced time to market for new products.

MALCOLM GLADWELL
AUTHOR, *OUTLIERS*



We've asked Malcolm Gladwell to address both **Discovery 2009** and the **Innovators' Summit**, in large part because he's been writing and speaking for more than 10 years. Well, there is obviously more to it than that, but his tenure is a huge factor. In his most recent book, *Outliers: The Story of Success*, Gladwell posits that a decade is about how long it takes for a person to become truly adept at what he or she does. He notes that accomplished individuals like Bill Gates, Mozart and members of the Beatles put in 10,000 hours of dedicated practice before achieving greatness in their respective arenas.

Gladwell has an incomparable gift for interpreting new ideas in the social sciences and making them understandable, practical and valuable to business and general audiences alike. But he would argue that it was his particular set of circumstances and opportunities that fostered this capability. Since 1987, Gladwell has been writing for a national audience. Currently, he is a staff writer for *The New Yorker* magazine and has written three *New York Times* No. 1 best-sellers, including *The Tipping Point: How Little Things Make a Big Difference* and *Blink: The Power of Thinking Without Thinking*, which led to his inclusion on the list of *Time* magazine's 100 Most Influential People in 2005. He was previously a reporter for the *Washington Post*.

With his first book, Gladwell embedded the concept of "the tipping point" in our everyday vocabulary and gave organizations new tools for understanding how trends work. In *Blink* he analyzes first impressions – the snap judgments that we all make unconsciously and instinctively – and he explores how we can master this important aspect of successful decision making.

Always ready to tell a compelling story that brings his message into relief, Gladwell writes and discusses subjects ranging from spaghetti sauce to Abraham Lincoln's IQ. Despite the seemingly random nature of his examples, he is sure to return to a profound statement. In *Outliers*, he proposes that in order to achieve extraordinary things we must surround ourselves with extraordinary people. Overachievers are labeled as such because of their support systems. The "self-made man" is a dangerous myth.

It is liberating to realize that grand-scale success is dependent on years of hard work, being ready to notice and capitalize upon exceptional circumstances and drawing from strong support systems. This insight provides us with the confidence that we, too, can achieve greatness. Gladwell is here to inspire that greatness in each of us, providing the perspective that discovery and innovation are waiting for all who seek it here.

Friday, September 18, 6:00 – 9:00 p.m.

Dinner Dates

The courtship of ideas.

Traditionally, Friday night is date night – a time to cultivate camaraderie, often with the hope of finding a compatible companion with attuned interests.

We are honored that you have dedicated this particular Friday to the Innovators' Summit, but we certainly don't expect you to sit alone in your hotel room, waiting for someone special to call. Instead, we are keeping your social calendar full with our Dinner Dates event, a favorite from last year's conference.

This is an opportunity to engage in meaningful conversation with thought leaders you admire and fellow conference participants who share similar interests. Stu Hunter, Dick De Veaux, Stephen Few, John Sall, Michael Schrage and other experts each will host a table of "dinner dates," facilitating a courtship of ideas. Table groupings for these dinner dates are based on requests you made when you registered for the Innovators' Summit. If you are not yet registered for the dinner but would like to join a table, please ask a JMP staff member if there are extra seats available.

The most successful and memorable dates feature an unexplained magnetism that fills the air. Let yourself be captivated by this opportunity to commune with others who share a passionate love of knowledge. Last year's participants found the dialogue so compelling that they extended the date past the allotted dinner hour.

This is not a fling, but a relationship with discovery and analytic exchange. We hope you will fondly remember this "date" as the occasion when you were allured into a lifelong engagement with innovation.



STEPHEN BAKER 8:45 a.m.

Author, *The Numerati*



Stephen Baker has written for *BusinessWeek* for more than 20 years, covering Mexico and Latin America, the Rust Belt, European technology, and a host of other topics, including blogs, math and nanotechnology. But he's always considered himself a foreign correspondent – an approach that was especially useful as he met the *numerati*. “While I came from the world of words, they inhabited the symbolic realms of math and computer science,” Baker says. “This was foreign to me. My reporting became an anthropological mission.” Baker has written for many publications, including the *Wall Street Journal*, the *Los Angeles Times* and the *Boston Globe*. He won an Overseas Press Club Award for his portrait of the rising Mexican auto industry. He is the co-author of blogspotting.net, featured by the *New York Times* as one of 50 blogs to watch. He's also launching thenumerati.net.

Humanity by the Numbers

Every day we produce mountains of data, ready to be mined by the *numerati*. Billions of personal details that represent our lifestyle preferences are living in databases and cyberspace. The talented few mathematicians and computer scientists who make up the *numerati* are employed to sift through the details, searching for patterns that tell them “who we are.” This mass accumulation of data has ushered us into the age of the mathematical modeling of humanity. When analyzed properly, the data can help campaigns to reach key voters, retailers to target consumers with focused ads, businesses to decide whom to fire based on productivity and government agencies to thwart potential terrorists. Our data is like a valuable precious mineral, perilously positioned for a data mining free-for-all.



DANIEL ARNEMAN 10:15 a.m.

Environmental Specialist, University of North Carolina at Chapel Hill

Daniel Arneman is an Environmental Specialist at the University of North Carolina at Chapel Hill. He was hired in 2008 to measure the university's carbon footprint and to help it achieve climate neutrality through renewable power, energy efficiency and sustainable transportation. Arneman holds degrees in biotechnology and physiology, but discovered a passion for environmental science late in his graduate career.

The Vital Signs of Building Energy Efficiency

The buildings in which we live and work are alive with energy: they can breathe, regulate temperature and even get sick. Their physicians are the engineers who tune performance and treat the symptoms of inefficiency, poor air quality and occupant discomfort. But as extensive metering and data warehousing become the norm, IT professionals and analysts are discovering new diagnostic tools to support a more holistic approach to building energy management. Daniel Arneman will show how the University of North Carolina at Chapel Hill is using data from an 18-million-square-foot campus to save energy and achieve its goal of climate neutrality.

SIG MEJDAL

Analyst, St. Louis Cardinals 1:00 p.m.



Sig Mejdal has been working as a Senior Quantitative Analyst for the St. Louis Cardinals since opening day of 2005. He provides analysis, player projections and data-driven decision making for the general manager's office. Mejdal's work is used for the amateur draft, and both the minor and major leagues. While his baseball playing career ended in Little League, he has had an almost unhealthy interest in baseball research ever since. This led him on a quest to become one of the few "quants" within baseball's front offices. Mejdal has degrees in mechanical and aeronautical engineering, masters degrees in industrial engineering and human factors engineering. He has worked both as a travel writer and a NASA sleep researcher.

Data-Driven Decisions for the Diamond

The baseball industry is going through a paradigm shift. And, as an analyst for the St. Louis Cardinals, Sig Mejdal is right there to experience it. Mejdal tells of his experience as one of the first in this field, shares quantitative problems he's run up against and shows off techniques he uses to bring data-driven decisions into the front office of the big leagues.

JOEL BEST 2:30 p.m.

Author, *Stat-Spotting: A Field Guide to Identifying Dubious Data*



Joel Best is Professor of Sociology and Criminal Justice at the University of Delaware. He has written widely about the importance of statistical literacy. He is the author of many books, including *Stat-Spotting: A Field Guide to Identifying Dubious Data*, *Social Problems*, *Flavor of the Month: Why Smart People Fall for Fads*, *Damned Lies and Statistics*, and *More Damned Lies and Statistics*. Best's research focuses on deviance and social problems. He is a former President of the Midwest Sociological Society and the Society for the Study of Social Problems, and a former Editor of the journal *Social Problems*. Best received master's and doctorate degrees in sociology from the University of California, Berkeley, as well as a master's degree in history from the University of Minnesota.

Damned Lies and Statistics

"If you had no idea things were so bad, they probably aren't." Although waves of epidemics crash over us in the news, on the Web and from our neighbors, the numbers used to back the barrage of shocking claims are often miscalculated, misinterpreted or misleading. Beware of big numbers. They are an SOS, garnering attention and gaining credibility with repetition. To navigate the information age, we must be statistically literate "stat-spotters" who are able to wade through a swelling sea of information that astonishes, arouses and alarms. We must recognize that statistics are socially constructed. By asking who did the counting and why, what they counted and how, and what they are telling us, we have a field guide for identifying dubious data, and it is a lifesaver.

Analytic Exchange:

Extending the Reach of Analytic Excellence

By this point in the proceedings, Discovery will have met Innovation. And rubber will soon be hitting the road. But don't run off just yet. There's one important element still to be considered, one important topic still to be discussed: What does all this mean to you and to your organization?

You've seen what analytic success looks like across industries. You've gotten a glimpse of how analytics will help shape the future. But have you figured out how you will incorporate higher analytics into your day-to-day existence? And, just as importantly, do you have a plan for spreading the use of analytic techniques within your organization?

Moderated by MIT researcher Michael Schrage, the closing session will be more of a discussion than a talk, and it'll go wherever you want it to go. For this session, we'll bring back some of the thought leaders who have already taken the Summit stage. And we'll introduce you to two new thought leaders: Dow Chemical's Dan Obermiller and John Sall from SAS.

As Six Sigma Technology Leader at Dow Chemical, Dan Obermiller knows what it means to achieve analytic excellence in product and process innovation and improvement. He also knows that getting people to adopt best practices is more easily said than done. Obermiller will share his secret to success.

Also joining the Innovators' Summit closing session is John Sall, Executive Vice President and co-founder of SAS. Like Obermiller, Sall has seen innovation prosper in the corporate world. And, like executives of most 30-some-year-old corporations, he's seen products flounder and divisions disappear. What is the answer, then, to creating the right environment for analytics to soar and innovation to flourish?



JOHN SALL CO-FOUNDER AND EXECUTIVE VICE PRESIDENT, SAS

John Sall is a co-founder and Executive Vice President of SAS, the world's largest privately held software company. He leads the JMP business division, which creates interactive and highly visual data analysis software for the desktop and provides a visual interface to SAS. Sall was elected a Fellow of the American Statistical Association in 1998. He serves on the board of The Nature Conservancy and is a member of the North Carolina State University (NCSU) Board of Trustees. He received a bachelor's degree in history from Beloit College in Beloit, WI, and a master's degree in economics from Northern Illinois University in DeKalb, IL. Sall studied graduate-level statistics at NCSU, which awarded him an honorary doctorate in 2003.



MICHAEL SCHRAGE RESEARCHER, MIT

Michael Schrage is one of the world's leading experts on the economics of innovation. He helps companies worldwide design innovation processes that maximize return on investment by managing the links between innovation, the supply chain and the customer cost-effectively. Schrage is a research associate at MIT Media Lab and author of the groundbreaking book, *Serious Play: How the World's Best Companies Simulate to Innovate* (Harvard Business School Press, 2000). Schrage lectures and consults on these themes at several MIT executive education programs, overseas business schools and corporate workshops worldwide, showing audiences how to become more innovative and control costs without jeopardizing either their internal culture or their business model.



DANIEL OBERMILLER SIX SIGMA TECHNOLOGY LEADER, THE DOW CHEMICAL CO.

Dan Obermiller has been the statistical software contact for Dow since joining the company in 1990. He worked as a consulting statistician for the entire company and has supported R&D, consumer products and emulsion polymers. Obermiller has been the JMP Product Manager for Dow since 1992 and was responsible for JMP being named Dow's global statistical software standard in 1998. He has also co-written a JMP companion guide for the book *Statistical Methods for Engineers* by Geoff Vining.



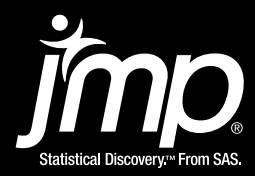
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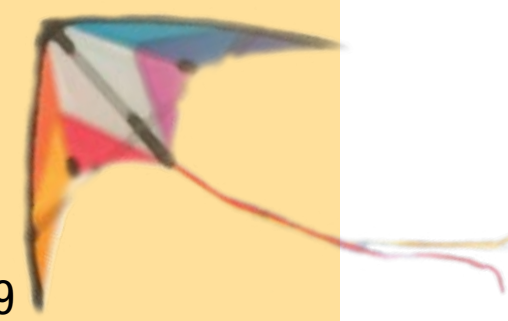
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