



Leveraging VM Program Best Industry Practices for Enhanced Agency Performance

By Anna M. Bremmer & Jerry DeMuro

Using VA best industry practices has been proven to get the highest return on investment for public agencies. Four agencies with mature VM programs average project savings of 6.4%, return on VA study investment of 147:1, and implementation rates of 68%. Why isn't this happening for everyone? There are many factors that contribute to success—and many organizations that fail to grasp them. In late-2011, Seattle-based Sound Transit conducted a first-of-its-kind audit of its VM program. The audit was conducted under U.S. Government Auditing Standards issued by the Comptroller General, by SAVE International® certified value specialist (CVS™) subject matter experts. The audit benchmarked Sound Transit's VM program against North American transit and transportation agencies including the Toronto Transit Commission; Ontario Ministry of Transportation; TriMet, Portland, Oregon; Denver Regional Transit District; WSDOT; and AASHTO. Each agency was interviewed on specific program performance parameters, ranging from VA policy to their selection system for projects requiring VA, VA program performance, level of acceptance of function improvement proposals—and 20 other factors. The results of the Sound Transit audit revealed BIPs that leverage VM programs to optimize agency cost management, operations, facility function, risk, and life-cycle cost (LCC). Across the board, high-performing VM programs have the following characteristics: they involve all affected phubertdies, train the right people appropriately, scope VA as phubertd of design, use procurement and contract mechanisms appropriate to VA, integrate cost and risk into VA, use the proven SAVE International® value methodology, have clear policies and procedures, commit to implementation, and track results. The audit has raised awareness among Sound Transit executives and financial managers. Now, at the budget approval stage, the question will be asked, "Have you completed a VA study and what were the results?"

Anna M. Bremmer, CVS, LEED AP

Since 1990, Anna M. Bremmer, Value analysis Consultant at Bremmer Consulting LLC, has facilitated marketing, project management analysis, and VA for environmental consulting, transportation and land use planning, civil engineering, geotechnical engineering, architecture, general contracting, construction management, and dispute resolution. She has a comprehensive understanding of the multidisciplinary project process—and the management approaches that make it successful. For the Sound Transit VM program audit, she interviewed Sound Transit's senior management and project controls, construction and project management, design project management, engineering, finance, operations, planning, procurement, and public relations staff, as well as the U-Link project team.

Jerry DeMuro, PMP

Jerry DeMuro, Project Control Manager for the Central Puget Sound Regional Transit Authority, Sound Transit oversees annual capital budget development, capital program status reporting and strategic business planning with additional responsibilities for

development and successful implementation of business improvement initiatives. He applies his over 20 years of project and business management experience to ensure successful delivery of the Agency's capital construction program. Prior to joining Sound Transit, Mr. DeMuro managed a number of complex, multi-year, multi-million dollar environmental remediation programs for private industry, the US Environmental Protection Agency and the US Department of Defense.



Value Analysis in Determining Scope for Capital Projects in Alberta Schools

By Dr. Avi Habinski

During the past four and a half years, Alberta's departments of Education and Infrastructure have jointly undertaken 25 Value Analysis studies to gain insight into the nature of proposed school capital projects, reach consensus on their scope, and more accurately estimate the required funding. With the participation of a broad range of stakeholders, these studies have enabled the assessment and prioritization of needs, exploration of creative solutions, estimation of costs, identification of risks, and analysis of investment vs. value. In addition, the collaborative approach to exploring options and reaching consensus has resulted in "buy-in" from the school jurisdiction, parents and community and avoided cost escalation during the planning, design and construction stages. The presentation will focus on the processes and outcomes associated with the use of Value Analysis in Alberta school jurisdictions. Case studies and examples will be used to illustrate the type of projects and circumstances which may benefit most from Value Analysis and are most likely to yield successful outcomes.

Dr. Avi Habinski, PhD.

Dr. Avi Habinski holds the position of Director, Capital Planning South with Alberta Education. He is responsible for the southern half of the province, which consists of 32 school jurisdictions including the Calgary boards and 8 charter schools. He is also oversees projects on a number of school facility related topics including regional planning, sites for new schools and leasing of school facilities. Dr. Habinski joined the Government of Alberta following an extensive public service career with Edmonton Public Schools. In his capacity as Executive Director, School and District Services, he was responsible for a number of support services including finance, planning, design and construction, facility maintenance, transportation, district technology and student information. Dr.

Habinski holds a Doctorate in Educational Administration from the University of Alberta and an MA from Simon Fraser University in Burnaby, British Columbia.



Applying Value Analysis for the City of Nanaimo's South Fork Water Treatment Plant; an Owner's Perspective

By William Sims

The City of Nanaimo has developed a 50 year vision for long term water supply. Key directions resulting from the Water Supply Strategic Plan include providing a safe, sustainable and affordable water supply, and adopting a multi-barrier approach. The City of Nanaimo is one of the largest municipalities in British Columbia that still relies solely on chlorination for surface water treatment. The Vancouver Island Health Authority altered the City's WaterWorks Permit to require both filtration and disinfection, to attain a given standard of finished water quality. Safe drinking water is a cornerstone for public health, social and economic well-being, and is a fundamental human need. In 2009, the City began the process to design and construct a water treatment plant. In the beginning, it set several key goals for the project, including:

- Adopting a multi-barrier approach
- To meet or exceed GCDWQ, VIHA
- To proceed with sustainable design objectives
- To minimize liquid discharge from the site
- Meet 20 year max day demand
- To achieve the lowest Life Cycle Cost

To meet these goals, the City is currently in detailed design, and about to tender, for a 116 ML/d submerged membrane water treatment plant, interconnecting pipelines, and new clear well. The unique element of the project is that the water will be drawn through the membranes by siphon, taking advantage of the existing hydraulics to avoid pumping the water supply. In support of the key objective of achieving the lowest life cycle cost, the City undertook two Value Engineering Studies under the direction of a Certified Value Specialist – one at completion of preliminary design; the second at completion of the 50% detailed design. The timing and results of the VE Study produced an extremely positive result on the project, in terms of operability, lower cost and preparation for future expansion. The VE Team, consisting of experts from across North America, were particularly supportive towards the project and enabled the City to realize great benefit, value and excellent return on investment for the Study. The presentation will provide a brief overview of the project, including major 'before and after' changes, lessons learned about VE, and an Owner's perspective on the value of Value Engineering.

William Sims, AScT

Bill Sims is the Manager, Water Resources for the City of Nanaimo. His portfolio includes responsibility for the long-range capital planning, design and construction of the City's water supply and water supply infrastructure. Mr Sims guided completion of the City's 2007 Water Supply Strategic Plan, a 50-year vision for water quality, water quantity and infrastructure asset management. Mr Sims has completed several major infrastructure projects as project manager, and is currently in the midst of overseeing the development of the City's first water treatment plant, as well as developing a future water supply for the City's 88,000 residents.



Value Analysis from the School Jurisdiction Perspective

By Dean Lindquist

In this presentation "Value Analysis from the School Jurisdiction Perspective," Dean will be drawing on his experiences as superintendent to provide an understanding of the expectations and reservations a school jurisdiction might bring to the Value Analysis table. He will outline some of the benefits that school jurisdictions might hope to gain from participating in Value Analysis exercises, the elements of Value Analysis that they are likely to find most beneficial, and the contributions that school jurisdiction staff can often make to the Value Analysis process. The presentation will include a specific example of a Value Analysis study where two school jurisdictions collaborated in the design of a joint capital project.

Dean Lindquist, Ed.D.

Assistant Deputy Minister Learning Supports and Information Management Alberta

Education, Government of Alberta

Dean Lindquist serves as Assistant Deputy Minister, Learning Supports and Information Management at Alberta Education. In his role, Dean is responsible for overseeing school capital planning; field services operations including First Nations, Métis and Inuit Services programs; school accreditation and programs of choice; early learning and inclusive education; learning and technology resources for teachers and students; interdepartmental initiatives relating to children and youth services; and corporate information and technology services. Dean's academic credentials include a Doctorate of

Education in Leadership Studies from the University of San Diego, a Master of Education degree in Educational Administration from San Diego State University, and a Bachelor of Education degree from the University of Saskatchewan. Dean previously served for 8 years as Superintendent of Schools for the Grande Yellowhead Public School Division and 4 ½ years as the Associate Superintendent / Deputy Superintendent, with the Aspen View Regional Division. Between 1990 and 1999 he held principal positions in eastern Alberta.

Value by Design – Integration of Value Engineering and Sustainability

By Dr. A. P. Sukumar

Value Engineering has long been established as a mature methodology for improving value of infrastructure projects Worldwide, although the practice is somewhat sporadic in Canada due to lack of strong buy-in from the senior officers of the owner organizations. Many consider the process as just 'costcutting' or scope reduction exercise. 'Value by Design' can help close this communication gap by demonstrating the fact that Value Engineering is not just about reducing life cycle financial costs of the project, but it is an integrated approach of improving social and environmental benefits as well. This is particularly important for publicly funded infrastructure projects as whatever approach we take, that should reflect a strong strategy for the greater good of the society. In this presentation, the integrated approach –"Value by Design" will be introduced along with its relevance in the Triple Bottom Line concerns of the society. "Value by Design" is a collaborative and systematic approach to project or process design that draws out creativity and innovation of the people integrating their ideas to develop the most efficient and value enhanced solutions. Social and environmental aspects are well integrated along with the financial goals of the study. Final decisions and selection of alternatives are based on strategic decision making technique in which the various factors are given due weightage based on the owner organization's strategic intent and vision. Sustainability is not just a buzz word these days and the public has a great interest in ensuring their tax dollars be invested in sustainable initiatives, especially in infrastructure projects. Two specific hydroelectric projects in British Columbia that underwent Value Engineering with a view to improving the integrated life cycle value will be featured in the talk to establish the concept of Value by Design. In these projects, there were significant financial impacts (several \$ millions) along with highly desirable environmental and social benefits.

Dr. A. P. Sukumar, MBA, PMP, P.Eng

Dr. A. P. Sukumar, P.Eng., P.E., MBA, PMP has over 25 plus years of experience in the

academia, consulting, and government sectors in Canada and abroad. He was a Team Lead and Division Manager at BC Hydro for 5 years and prior to that he managed the Structural Engineering department at Metro Vancouver for 7 years. He was also a consulting engineer in Vancouver for 10 years. He is a PEng in BC and PE in Washington, USA. Dr. Sukumar has published/presented papers widely and he has been a key note /invited speaker at many conferences including the Concrete Platform-2007 held at Belfast, Northern Ireland, UK in 2004. He has received many industry awards for the projects he managed including the SAVE - "Outstanding Accomplishment of the year Award" for the Value Engineering study he managed for BC Hydro's Ruskin Dam Upgrade project. He is pursuing and promoting VE as the "Value by Design" initiative.



Is Traditional Project Management Increasing Project Cost?

By Jack Warchalowski & Duncan Patrick

Most projects are late, over budget or under-scope. Globally, companies spend almost \$1.5 trillion on project management annually. However, project management has not significantly improved in over 60 years

Most projects suffer from the following symptoms and complaints:

- Original due dates are not met
- Too many changes
- Resources are not available when needed
- Necessary things are not available on time
- Fights about priorities among projects
- Budget overruns
- Too much rework

In fact, if we were to have asked a project manager 40 years ago to speak about his or her problems, the complaints would have been the same. This is because we always try to deal directly with the above complaints rather than with the deeper causes for their existence. Traditional Project Management fails to address the two deeper causes of poor project performance:

- Task delays accumulate and task gains are wasted
- Too much bad multi-tasking

Worse, Traditional Project Management often reinforces these two primary issues

causing most projects to be late, over budget and / or under scope. Critical Chain Project Management (CCPM) is THE significant improvement to the Project Management body of knowledge. The three simple rules of CCPM are:

- Stagger the release of projects into execution in order to limit the number of active projects in the pipeline
- Buffer project plans in order to better protect against unknowns
- Prioritize task execution based on project completion vs. buffer consumption

Companies that successfully implement CCPM usually realize the following gains with the same or fewer resources:

- 25% to 40% faster projects
- 95%+ on time
- 25% to 50% more projects

This presentation will further elaborate on the root causes of projects, provide an overview of CCPM, an in-depth explanation of the three rules of CCPM and how to apply them, plus share several client success stories.

Jack Warchalowski, P. Eng., MBA, CMC

Jack Warchalowski is the President of CMS Montera Inc. Jack's business consulting career is focused on strategy development and implementation for a variety of manufacturing and engineering clients. Prior to CMS, Jack was the head of operations for the high tech manufacturer, Ernst & Young management consultant, and a project engineer with Babcock & Wilcox. Jack is a Certified Management Consultant and a Professional Engineer registered in Ontario. He holds an MBA degree from the Wilfrid Laurier University in Waterloo, Ontario and a Bachelor of Applied Science in Mechanical Engineering from the University of Waterloo. In addition, Jack is certified by the Theory of Constraints International Certification Organization (TOCICO) in all aspects of TOC including supply chain management, project management and a holistic strategy.

Duncan Patrick, B.Comm, MBA, CMC

Duncan Patrick is Executive Vice President of CMS Montera Inc. where he is working with clients to assist them design and implement Theory of Constraints based solutions focused on accelerating project execution, optimizing production execution and synchronizing inventory replenishment. Prior to CMS Montera, Duncan was a member of

the senior leadership team of an industrial distributor, Consulting Manager at Ernst & Young, and Landman with Husky Oil. Duncan holds an MBA degree from the Richard Ivey School of Business, Western University and a Bachelor of Commerce degree (with distinction) from The University of Calgary. Duncan is certified by the Theory of Constraints International Certification Organization in all aspects of TOC including project management, supply chain and holistic strategy. Duncan is also a Certified Management Consultant by the CAMC.

Serendipity – or Creativity on Demand?

By Eric Meng

What aspect of the Value management process consistently produces the most substantial results? Certainly Functional analysis is the tool traditionally used to set the stage for the creative speculative phase; and it is a reliable driver for producing useful alternative concepts. But often other elements of the process, outside of the functional model should receive credit for the breakthrough concepts. This presentation highlights a half dozen Value Management studies that produced considerable project impacts ; and explores where those breakthrough concepts actually occurred in the Value management process. Highlighted projects include major water infrastructure, buildings, industrial plants, energy, and transportation projects. All of them produced ideas that were unexpected; and these ideas came from unpredictable components of the process. Team structure, risk, criteria, cost modeling, and historic reference are all elements that typically play supporting roles in function-driven VM; but in these examples they were used for creative drivers, rather than merely supporting components. VM, with a strong rigid work plan claims to produce creativity on demand – right on time during the speculative stage of the process. But many creative people outside of VM will claim that the process is often serendipitous, and cannot be controlled. This presentation agrees in phubertd with that characterization. These examples, however, illustrate how serendipitous creativity can in fact be recognized and used in the VM process to enhance productivity outside of the limited time often available for pure speculation in the traditional VM work plan.

Eric Meng, AIA, CVS Life

Eric Meng leads the design and construction consulting fuewccsvm MENG Analysis, providing value engineering, constructability, facility condition analysis and performance analysis for complex projects. He has led over 1000 value analysis studies for major infrastructure projects, including such diverse areas as highways and bridges, large

metropolitan water and environmental systems, transit systems, universities, nuclear reactors, and management organizational studies for clients such as Westinghouse, the City of New York, Hong Kong, and various state and provincial programs. He has facilitated projects throughout North America, Asia, Australia, Europe, and the Middle East. Eric is active as past president of the Seattle Chapter, SAVE (Society of American Value Engineers); is Northwest VE in Construction Chair, past AIA board member, and has served on the State construction advisory panel for over 30 years. His studies have received "outstanding study of the year" awards numerous times, including this year's SAVE award for outstanding VE in government projects. As a leader in applying Value Management to design, he frequently presents papers, workshops, and training seminars throughout the world.

Leveraging on IT for Value Management in Construction Projects

By Dr. Faisal M. Arain

Value management (VM) in construction is urgently required due to the escalating complexity of building projects. Building projects are complex because they involve many human and non-human factors and variables. VM, if implemented during the early stages, can save costs while maintaining or even improving the performance and quality of construction projects. The integration of project knowledge and experience at the design phase provides the best opportunity to improve overall project performance. In this presentation, the participants will learn about a knowledge-based decision support system (KBDSS) to assist effective implementation of VM for controlling variations in educational building projects. The system provides an excellent opportunity for the project team to learn from past experiences. The system also assists in reducing costs and improving designs because the most likely areas in which to focus to reduce variations can be identified early during the design stage of building projects. In short, as part of the VM processes, the system is able to assist the project team by providing accurate and timely information for decision making. In addition to the above-mentioned system, the presentation will also briefly present the potentials of Building Information Modeling (BIM) in the context of value management in construction projects. BIM is an integrated process which is used to facilitate the exchange of design and construction information to project participants. During any design process, the architectural team needs to track numerous design options until they have enough information to support the decision. BIM makes the construction process more efficient and eliminates as many uncertainties as possible before starting the construction process. A Centre of Excellence for Building Information Modeling (aceBIM) is recently established under the Government of Alberta's initiative. Significance of BIM in managing value in construction projects and initiatives by aceBIM will be discussed. The presentation would be valuable for all building professionals in general.

Dr. Faisal Arain, PhD

Dr. Faisal Arain is an Architect with a MS and Ph.D. in Construction Project Management. He has extensive experience of working at management and leadership positions in construction industry and academia in Pakistan, Saudi Arabia, Singapore and Canada. Dr. Arain has consulted, researched and published widely in the discipline of Construction Engineering and Management, Project Management, Architecture and Design Management. He has authored over 70 research publications, 2 book chapters, and 5 books (<http://www.amazon.com/-/e/B0028ORPJK>). He serves on editorial boards of several international research journals. He is the editor-in-chief of the International Journal of Construction Project Management published by Nova Science Publishers Inc., USA. He is one of the panel judges for professional awards conferred by PMI, USA, and also an expert member of the World Association for Sustainable Development, UK. Dr. Arain is currently working as Chair, Construction Project Management and Civil Engineering Technology with Southern Alberta Institute of Technology (SAIT), Calgary, Canada. He also involved with construction industry as a construction project management consultant (AR Management Global Inc. Canada/ UK). He can be reached at faisal.arain@sait.ca.



Enhancing Value With Road Safety Analysis Within Value Engineering Studies

By George Hunter

This presentation will feature how Road Safety Analysis tools, techniques and benefits can be applied and integrated into VE studies. Furthermore, it will highlight the use of risk management techniques as they relate to road safety analysis, to be incorporated into VE studies. Where applicable the presentation will also integrate the application of project performance measurement / analytical hierarchy process (AHP) and discuss how these techniques and processes can be applied and integrated with risk-based road safety analyses. The presentation should appeal to wide audience, ranging from a novice to expert and to both VE facilitators and VE program managers in the transportation field interested in enhancing decision-making capabilities with the integration of Road Safety Analysis into Value Engineering studies. The paper will be seeded with real study results.

George Hunter, PE, PMP, CVS

George Hunter is a Certified Value Specialist (CVS) and a registered professional civil engineer. He is an experienced VE team leader, trainer, and the former Value Analysis

(VA) Program Manager for the Caltrans. He has conducted multiple training courses and advised foreign government agencies on value management program development. In addition to his value management experience, he has extensive experience in the design, construction, and management of transportation projects. Mr. Hunter's 23 years of experience in design and construction includes 13 years of transportation sector value management as well as service on the AASHTO Value Engineering Technical Committee. Since receiving his Bachelor of Science in civil engineering, he has performed as a project manager, VE program manager, VE team leader (VETL), and trainer. He has led more than 150 studies of diverse construction projects throughout the United States, Latin America, Western Europe, and Asia. As a certified Project Management Professional (PMP), Mr. Hunter focuses on applying VE as a project management tool to improve and balance project scope, schedule, budget, and quality. To this end, he has developed a project performance measurement tool, and his work integrates risk management and value management.

Function Driven Risk Management for Infrastructure Projects

By Gregory Brink

The effect of uncertainty on value can play a major role in decision making. Lack of data, incomplete information, and overly cautious designs are just a few examples of the many symptoms of delayed decision making. Often, when it is not immediately clear what the best value decision may be, these symptoms can manifest themselves in the form of project risks that need to be managed. Threats can just as surely erode project value, as can the overlooking plausible opportunities. The improvement and utilization of quantitative risk analysis and management techniques in recent years has brought greater attention to the role of risk in effectively evaluating and delivering projects of all scope and scale. Risk studies are becoming commonplace; however, there exist gaps in thinking that directly link to a lack of understanding of project functions. The exploration of relational dependencies of risk on project functionality can allow for uncertainty to be evaluated and managed in a more effective and proactive fashion. In addition, a developed understanding of project functionalities that drive risk affords proper management of the impacts of uncertainties involving threats and potential opportunities throughout the project lifecycle. This paper explores the application of the Function Driven Risk Management (FDRM) process to fully integrate value-based function analysis and risk response mechanisms into project and program risk management practices. The approximate \$1.5 billion US-41 Highway Reconstruction Mega Project in the US state of Wisconsin will be used as a case study in which the FDRM techniques have been successfully applied for the management of risk in both design and construction. The case study will discuss the integration of value principles into risk management practices on a functional basis to bring focus to identifying project risks, aid in prioritizing risks, and focus critical thinking on the development of appropriate risk response strategies.

Gregory Brink, CVS, PMI-RMP, PMP, CCE/A

Gregory Brink is the Principal Economist and Director of Risk Management for Value Management Strategies. He is a Certified Value Specialist, Risk Management Professional, Project Management Professional, and Certified Cost Estimator/Analyst with 10 years experience. Mr. Brink has pioneered many unique and innovative analyses performing risk analysis, risk management, financial and life-cycle costing analysis, forecasting, value analysis, and economic impact analysis on projects of all scale and scope. Mr. Brink's specializations in the use of Value Methodology include quantitative/qualitative risk and uncertainty modeling and analysis, risk management, project management, financial analysis, economic analysis, market analysis, and economic forecasting for both private sector and government organizations. Mr. Brink's experience includes working on infrastructure (particularly transportation), vertical construction projects, and business improvement initiatives of varying scale and scope.



Existing tunnels - Assessment of Refurbishing priorities based on

Functional Analysis

By Hubert Dubois

The studies on both Montreal tunnels begun in 2010 and since there he visited several tunnels in Europe; Öresund (between Denmark and Sweden), Mont-Blanc, tunnels in Stockholm and in Lyon. He participated in the 4th International Symposium on Tunnel Safety and Security in Frankfurt in November 2010 and in the conference on Human and Organizational Factors in Road Tunnel Safety in Lyon. The visits and discussions with experts and awareness of publications in the domain have allowed him to develop a particular approach to tunnel rehabilitation. During the 5th ISTSS Symposium in New York last March, he presented some aspects related to the refurbishing of tunnels regarding investigation of hazard where the functional analysis was used as one of the tools in the evaluation. The present paper will discuss in details the elements of the functional analysis as a tool to assess the priorities arising from the results of hazard investigation. Each function of the tunnel is included in the functional analysis to create a "CRINIFLEX" matrix ("CRITère" - criteria, "Niveau" - level, "FLEXibilité" - flexibility) to determine actual performance with the aim of elaborating a holistic solution. The paper will demonstrate how the CRINIFLEX was developed in relation with the specific functions of a tunnel and how it is linked with the existing conditions of the infrastructure. A link between the CRINIFLEX for emergency functions and a performance scale ensures objectivity in the assessment of the performance. There is no regulation in Canada for road tunnels. Therefore, the feasibility studies carried out are based on a performance approach; the goals of the feasibility studies being to understand the existing conditions of the tunnel systems and infrastructure and to make the necessary recommendations for their upgrade based on an increase in the

safety of their performance.

Hubert Dubois

Hubert Dubois is associate with CIMA+ Consulting Engineers in Montreal; one of the leading (over 2000 employees) engineering organisation in Canada. Over the past 10 years, he had the opportunity to participate in many tunnel rehabilitation and improvement projects, both as a project manager and a designer. The engineering process applied in these projects allowed him to develop an expertise related to the issues associated with the technical and human aspects. Projects he was worked on included also both major Montreal infrastructures: La Fontaine Tunnel crossing the St-Lawrence River and Ville-Marie Tunnel in the city core.



Project Selection for Industrial Products

By James Guyette

Many industrial companies have diverse product portfolios with many permutations. New products and component features are added every year while the old ones remain, resulting in a profusion of potential Value Engineering projects. Competitive pressures and technological advances force companies to continually improve their product designs, but in which ones should companies invest their resources? With design engineering jobs declining, slow R&D investments and ever-increasing demands for design engineering productivity, choosing the right quantity and best quality Value Engineering projects is imperative. Past approaches analyze profitability, revenue, cost or a combination of criteria. These approaches typically aim to cheapen products by reducing cost; they are cost-centric, ignoring value from the customer's perspective. Business schools use two-by-two matrices to illustrate complex concepts in simple terms. Using value-centric two-by-two matrices, practitioners will learn a new method of evaluating large industrial product portfolios to select the best project for a Value Engineering study.

James Guyette, EVP Argo Consulting Inc.

As Executive Vice President and Partner, James is responsible for Argo's North American Operations. He combines industry experience – The Boeing Commercial Airplane Group and The Boeing Defense & Space Group – with 13 years of operations and engineering management consulting. At Argo, he has worked mainly in heavy industry (aerospace, agriculture & automotive) and transportation (airlines, coach lines and railroads). The assignments have ranged from simple design engineering projects to complex systems

integration programs, including complete product portfolio redesign, multi site merger integrations, plant turnarounds, global procurement & supply chain, operational due diligence and operational strategy alignment. James holds a bachelor's degree in Economics from St. Mary's College of California and an MBA in Engineering and Technology Management from City University of Seattle. He's completed Harvard Business School's executive education programs in Leading Professional Service Fuewccsvms and Turnaround Management.



Cost Risk Assessment and Value Engineering (CRAVE) By Ken

L. Smith

Why not give your project managers something they really CRAVE. By combining a Cost Risk Assessment workshop with the Value Engineering workshop, you can focus your value analysis on reducing or avoiding risk. Project risk is much more than just threats to the project budget and schedule. Often times an opportunity from a cost risk assessment can be brought into the evaluation and development of the value analysis. Value engineering proposals are similar to any other project opportunity; if they are not tracked and managed they can become a missed opportunity. This interactive process uses a Monte Carlo simulation models including likelihood of implementation of individual Value Engineering proposals. This presentation will include case studies of how the process was applied and the results achieved.

Ken L. Smith, PE, CVS (Life)

Ken is HDR National Director for Value Engineering. He is a Certified Value Specialist and Professional Engineer. For 28 years Ken worked for the Washington State Department of Transportation (WSDOT) in project management, design, and construction. He was instrumental in developing WSDOT's project management process including the risk

assessment and cost estimate validation process (CEVP). Ken has developed a process on combining cost risk assessment with value engineering (CRAVE). He also led over 200 value engineering studies. Agencies have implemented recommendations made by VE teams he has led resulting in cost avoidance in excess of \$1 Billion. Ken has vast experience in facilitating workshops on controversial complex urban projects with extensive stakeholder involvement.

Why Does the Best Value not Arise Automatically?

By Lucie Parrot & Árpád Fodor

If you know this profession, you are aware of the fact that by carrying out a certain series of steps we can not only improve the quality but also make a 10% cost saving possible thanks to the application of this developmental methodology. It does not seem like much; however, if the topic is of HUF 1 billion, then the expectable savings amount to HUF 100 million. And this is not a small amount. All this is for each project! When we launch a project, we are always scared a bit. If, for example, we receive a railway authority licensing plan of 2 m³ that have been drafted with total work expenditures of 100 planner's years, the question arises: how could we dare to change it? Can we find any quality or cost reserve in it? It should be perfect with so much work expenditure. And then we take a deep breath and get started. Our key encouraging slogan is: trust the method! We do everything that is required by the value analysis standard step by step, and the result is always the same: there is a lot of reserves in it. (The managers usually react like this: "We knew that there was some reserve in it, but we didn't know that there were so many!") But how is it possible? Did the planner/developer not want the best? Did they not wish to create the solution of the best value? Yes, they sure did. We cannot doubt their expertise, their fair attitude, their conscience or the amount of the invested work. Yet, there are still some reserves. This is a contradiction... In the past one or two years we have started to collect the factors and causes that in our opinion prevent that the best value comes into being at once. This lecture cannot present each of the 40 factors explored by us. However, we wish to demonstrate some of them. Most examples are from the value analysis of infrastructure investments (motorway section, stream bridge, nuclear industry, subway, industrial hall).

Lucie Parrot, M.Eng., CVS-Life

Mrs. Parrot is an industrial engineer. Since 1991, she has been involved in optimization projects of products or processes, using the value engineering methods. She has worked before in the aerospace and IT sectors. As a Value Engineering consultant, Mrs. Parrot has helped numerous clients increase the value of their products or services, either by

reducing the costs and/or increasing the performance and the needs satisfaction. This approach has been used successfully at small and large companies. She implements the methodology more and more often in the development of new innovative products. But she also applies VE to major construction projects and on government services. Mrs. Parrot has facilitated over 300 workshops. She is a certified value specialist from the Society of American Value Engineers (SAVE International) and is a member and the actual president of the Canadian Society for Value Analysis, which gave her in 2003 an award for her outstanding contribution to the methodology. In 2007, she received the life certification from SAVE International.

Árpád Fodor, CVS, VM Consultant of MicroVA, Inc.

Árpád Fodor, CVS, VM Consultant of MicroVA, Inc., Licensed Mechanical Engineer, Licensed Economist, SAVE Certified Value Analyst, and Professional of Value Management (EGB). He has specialized in the field of value analysis since 1979. He founded his own VM consulting company in 1993. He led more than 320 VM studies including construction, manufacturing technology, investment, quality assurance system (QAS), software development, local government budgeting, proposed legislation, organization, highway and transportation, and nuclear industry related projects. He is a lecturer on VM at Budapest University of Technology and Economics Institute of Continuing Engineering Education, the Óbuda University, TÜV Rheinland InterCert Academy (German Quality Assurance Firm), MODULE I and MODULE II courses. He is the author of three books and approximately 70 articles on VM. He is former President of SHVA (2001-2004), at now Vice President of Communication.



How can you manage value if the project is not well run?

By Michael Dallas

We all know the power of Value Management in improving value in projects. Too often, however, it is applied piecemeal, through one or more interventions at specific milestones through the life of a project. Sometimes these interventions are not planned at the outset of a project but only when things are perceived to be going wrong, to restore the balance between the benefits that are required and the cost of their delivery. This, turn leads to the most common, although misguided, measure of the success of a VM intervention - cost savings. Furthermore, a badly run project can undermine the fruits of even the best managed value programme. This paper explores how VM can be significantly more effective if integrated with the broader systems used to control programmes and projects, designed to realise benefits at business level. We will use the UK Cabinet Office's Best Management Practice portfolio to demonstrate how VM may be used to enhance the delivery of benefits across all types of programme including transformational change, IT Systems and Capital Infrastructure. The UK Cabinet Office lies at the heart of the spending and growth reforms to put Britain back on the road to prosperity. It reports directly to the UK Prime Minister's Cabinet. The portfolio of Best Management Practice thus enjoys support at the highest levels. The system is

available worldwide and is administered by the APM Group. It provides qualifications at Foundation and Practitioner level across all products. This paper will outline MoV and describe how it compares with other Value Management systems such as The Society of American Value Engineers (SAVE) and the European System (Value for Europe) and is broadly consistent with the international Standards in Value Management. It will go on to describe, with examples, how it complements the other Best Management Practice methods, including Benefits Management, to enhance performance that could otherwise be lost through failure to deliver the expected benefits.

Learning points:

- How the Best Management Practice portfolio helps to deliver business benefits
- Overview of MoV in the context of other Value Management systems
- Its integration with Portfolio, Programme and Project Best Management Practice
- Its relevance in improving organizational performance
- Case studies to demonstrate effectiveness across a broad range of challenges, drawn from the author's experience and other sources.

Michael Dallas

Michael Dallas is a non executive director of APM Group Ltd which, since its inception in 1993, has grown to be one of the world's foremost organisations in accreditation and examining professional qualifications. He led the development and embedding of Value Management within Davis Langdon (now an AECOM Company) between 1997 and 2011. He is Lead Author and Chief Examiner for Management of Value (MoV™). Michael led the development of the European and British Standards in Value Management and the development of the European Training and Certification System. His book, Value and Risk Management - a guide to best practice, was published in 2006. He is a regular speaker at international professional events and an internationally recognised practitioner of Value and Risk Management.



Integrating Asset Based Risk Assessments for the Efficient and Effective Allocation of Capital

By Michael Wright

Many municipalities across Canada are experiencing constraints on the delivery of services posed by rapid growth, aging infrastructure and limited funding. This presentation will outline the challenges, key results and lessons learned in developing and executing an effective Asset Management Program. This includes developing a risk framework to increase understanding of critical assets and how they support service levels, and the long-term funding requirements for sustaining service delivery. The development of an asset management plan (AM Plan) provides a structure to understand the function and value of a municipality's diverse services and departments. The development of an AM Plan provides the impetus to move from understanding municipal service functions to applying asset management principles, obtaining feedback, and continuously improving toward the goal of providing reliable services, at the lowest lifecycle cost.

The above mentioned scope has been completed for the Region of Waterloo and the City of Barrie; either or both clients may be used as an example; however permission needs to be obtained.

Michael Wright

Michael has 6 years of international experience in project management, planning, financing and operations of infrastructure in the private and public sector. As a chemical engineer Michael has developed his analytical abilities through projects which maximise value and improve return on equity in capital-intensive industries. He also has extensive knowledge and experience in project development including preparing feasibility studies, business plans and project agreements. Michael is a team player with proven leadership, investigative and diagnostic abilities.



VE and Environmental Stewardship in the Private Sector: Selenium Reduction of a Coal Mining Operation in British Columbia to Benefit Fish Habitat.

By Paul Johnson

Paul Johnson, CVS will provide an overview of the Value Engineering study he facilitated in January 2012 for a coal mining operation in British Columbia. This private sector client desired to utilize the Value Engineering process to confuewccsvm optimal technologies early in the design phase for a planned Selenium Active Water Treatment Facility. Selenium reduction goals are a cooperative effort between the environmental

jurisdictions, the community, and the private coal mining company. Reduction of selenium to target levels is for the purpose of benefitting the environment and fish habitat. If successful, this facility will be replicated at other coal mining operations in western Canada. As this project is being financed by a private company, use of VE in the design process was an optional service for which the company expected to receive a suitable return on investment from the VE study, while delivering a facility that will maximize selenium reduction at an optimal cost. This is the first project of its kind in Canada, with only one other facility of its kind in the world that is currently being designed in West Virginia. Paul's presentation will provide an overview of the VE process and the results.

Paul Johnson, CVS

Paul Johnson is a Certified Value Specialist, CVS, and has been a member of SAVE – The Value Society since 1987. For the last 25 years he has been employed with CH2M HILL, having worked in Seattle from 1987 to 1992, and the last 20 years in Boise, Idaho. In addition to his Value Engineering duties, Paul serves as a Senior Project Manager on hospital and public sector building projects, such as justice and public safety facilities. Paul has led over 200 VE studies over the last 25 years, including studies for water and wastewater projects, transportation, environmental, and educational facility projects throughout the United States and Canada. Paul recently completed a 4-year assignment with Saint Alphonsus Regional Medical Center in Boise, where he was the Owner's Representative on a \$200 million hospital expansion. This is the third time Paul has presented at a CSVA Conference, the first time being in 2004, and the most recent one in Montreal in 2010. Paul's interests outside of Value Engineering include distance running, and driving an old British sports car.



Are Combined Risk and Value Workshops too RSCAVE™ ?

By Scot McClintock & Paul Lewis

Both Risk Assessment and Value Analysis are important tools in the quest for the delivery of excellent projects within today's ever tightening budgets. Some clients require a separate workshop for each tool while others embrace the concept of performing them together in a single workshop. In the first half of 2012, the co-presenters had the opportunity to apply both approaches for the Ministry of Transportation, Ontario (MTO) and Stantec on two very similar highway route planning study projects in Northern Ontario, using essentially the same team members. From this "laboratory" of case studies, the advantages and disadvantages of each approach will be discussed and opinions expressed on which approach is preferred.

Scot McClintock, PE, CVS (Life), PVM, FSAVE

Scot McClintock, PE, CVS-Life, PVM, FSAVE, and Head of Value Management for Faithful+Gould is a well-qualified value practitioner with 30 years of VA/VE experience. Scot has balanced cost and quality in over 300 VA project and training workshops to identify value improvements of nearly \$4 billion on projects totaling over \$20 billion. He has used customized applications of VA tools to meet the needs of the client, from facilitation of public meetings through extended VA workshops. Scot has incorporated the use of Risk Management into his VA workshops, as well as leading edge consensus-building techniques such as Performance Criteria and Measures, Choosing by Advantages, and Functional Performance Specification. Scot was instrumental in helping MTO adapt Performance Criteria and Measures techniques to their VA program. He also introduced Risk Registers and Cumulative Cost FAST Diagrams to their workshops. Approved by SAVE International since 1994 to teach Module1 value training workshops, he has trained over 400 personnel for agencies and corporations in the U.S. and Canada. Inducted into the SAVE International College of Fellows in 2008, Scot currently serves the VA community as President of the Mid-NYS Chapter of SAVE; CVS Director for the SAVE Certification Board; and Director of the Canadian Society of Value Analysis.

Paul Lewis, Technical Director

Based in Denver, CO, Paul Lewis is Technical Director of Faithful+Gould's Risk Management group. Paul works on the application of qualitative and quantitative risk management principles within all business sectors with special emphasis on construction. The emphasis of Faithful+Gould's risk management group is the development and implementation of data-driven decision-making tools to ensure effective service delivery to client. Paul is responsible for training on these issues within the Faithful+Gould group, as well as developing and delivering risk management services to clients in North America and Worldwide. Paul's global experience includes work in The Netherlands, Azerbaijan, and the UK in a variety of industry sectors including oil and gas, commercial real estate, and nuclear decommissioning. Paul has over 25 years of experience in the construction industry including 17 years in Risk Management. Paul has a BSc in Quantity Surveying and is a Member of the Royal Institution of Chartered Surveyors.



Why commissioning and VM lead to efficient asset management?

By Rock J. Antonios

I have been performing engineering studies and construction supervision in mechanical/electrical engineering: HVAC, plumbing, fire protection, electrical systems for more than twenty five years and simultaneously value analysis for more than ten years. Recently I have been leading an effort in commissioning and all came together that we can not only improve the quality of a project but also make over 10% cost saving possible thanks to the application of the commissioning process along with the value methodology. We start with a comprehensive design, a high-quality construction oversight, and a defined occupancy and operations management. When we launch a project, I am always concerned that design engineers do not follow the instructions dictated by the owner's project requirements (OPR) and the basis of design BOD may divert from the real objective initiated by the client and the commissioning agent (CA) unless you establish a process which is in this particular case the value engineered commissioning process (Cx). We will use the HVAC design and particularly the air handling units of a specific project and their commissioning as case study. The above will be essential for the asset project management and an excellent ROI for the client. The OPR with the BOD are the two topics of VM in order to "SAVE". In addition, pre-design, design, construction phase, operations and occupancy tied with a value engineered methodology will enhance the Cx process and help the CA in his various tasks pertinent to the project throughout all its phases from inception to occupancy.

Rock J. Antonios

Licensed Electro-Mechanical Engineer from Claude Bernard Lyon France, graduate studies in Aachen Germany, SAVE Associate Value Specialist, Professional Engineer in New York and Connecticut and Certified as Building Commissioning Professional . He has specialized in the field of value analysis since 1999. He worked for TAMS Consultants/Metcalf & Eddy/EarthTech as AECOM companies for fifteen years since 1989. He founded his own consulting engineering company in 2005. He works as group leader for CH2M Hill since 2010 on the DFW airport renovations project of two terminals. He was a mechanical engineering expert as VE team member for more than 10 VM studies including construction, manufacturing technology, quality assurance system (QAS), software development, local government budgeting, water pollution control plants , highway and transportation related projects. He attended MODULE I and MODULE II courses and obtained the certification after passing the exam. Over 25 years of HVAC and PFP experience he is Project Manager and Construction Manager, he helped numerous clients increase the value of their products or services, by reducing the costs and increasing the performance. Knowledgeable in Civil, waste management and Environmental projects he designs sustainable systems for facilities and infrastructure projects. His expertise is in: in HVAC, Plumbing, Fire Protection, TQM and Evaluation of existing buildings and extends to QA/QC of all facilities: specialist in airports, water treatment plants, vertical buildings and infrastructural.



Process Improvements to Alberta Infrastructure's Value Management Program

By Jay Sagoo

Alberta Infrastructure has endorsed the use of Value Management in its successful practice towards capital projects over many years. Several improvements have been made to the current Value Management program, such as the importance of data collection, coordinating risk management activities with value studies, identifying initiatives within the organization that may benefit with a value study, as well as training staff in value management. Other areas of improvement will be discussed in the presentation. This presentation will be of interest to those individuals who have been tasked to implement a Value Engineering/Management program within their organization.

Jay Sagoo, Jay Sagoo, CCE, AVS, MBA, P.Eng.

Jay Sagoo is a Cost Engineer with Alberta Infrastructure. One of his responsibilities is to lead and coordinate Alberta Infrastructure's Value Management program. Jay is a Professional Engineer (P.Eng.) and holds a Bachelor's Degree in Engineering, as well as an MBA. He is a Certified Cost Engineer (CCE), as well as an Associate Value Specialist (AVS). His fifteen-year experience in engineering and management spans over government, utilities, and the manufacturing sector.



Value Engineering and Risk Analysis for Tunnelling Projects

By Siri Fernando, Holly Parkis, and Dr. Hussien Al-Battaineh

Value engineering is a proven engineering technique which utilizes a systematized approach to seek out the highest value option; initial and life cycle costs are paramount in the value engineering. This presentation will highlight an integrated methodology of Value Engineering and Risk Analysis for Tunnelling Projects, which are considered high risk operations due to the high uncertainty associated with the available information required for construction. This methodology couples value engineering based on SAVE International standards and a structured risk analysis process, and utilizes sensitivity analysis for life cycle cost. The proposed methodology differs from current practice in each of its three steps: risk analysis, criteria evaluation, and sensitivity analysis. In the proposed methodology, firstly, risk analysis is a quantitative analysis in which risk

factors are evaluated for each of the options and the expected cost of risk is evaluated for each option which is later added to the options cost. Secondly, criteria evaluation is done using the analytical hierarchy process (AHP) which accounts for consistency. Thirdly, the value calculation has a direct relationship with life cycle cost, which can vary based on assumptions for the financial parameters (interest rate and inflation rate); sensitivity analysis is used to explore the assumptions' sensitivities and account for those variations. The presentation will showcase successful tunnelling projects in Alberta.

Siri Fernando, P.Eng.,

Siri Fernando is the Engineering Manager of Design and Construction, Drainage Services with the City of Edmonton. Siri holds a B. Sc degree in Civil Engineering from The University of Ceylon, Sri Lanka and a M. Eng. degree in Construction Engineering and Management from the University of Alberta. Siri is a registered Professional Engineer with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA) and is a Fellow of the Canadian Society for Civil Engineering. He is also the recipient of the Prix Walter Shanly Award with the Canadian Society for Civil Engineering in 2009. He is an enthusiastic member of North American Society for Trenchless Technology and the Tunneling Association of Canada. He was the Chair of Canadian Society of Civil Engineers Edmonton and Northern Alberta Section and the Regional Vice President for Canadian Society for Civil Engineers, Western Region. He has Coauthored and presented several Technical and Journal papers on use of computer simulation in Tunnel Construction. Siri's career with the City has spanned over three decades mainly in Design and Construction of Utility Tunnels. He is long term user of Academic Research in tunnel construction process improvement studies through collaboration with University of Alberta and has participated in the use of computer simulation techniques to plan, monitor and evaluate Tunnel construction in City of Edmonton.

Dr. Hussien T. Al-Battaineh, Ph.D., P. Eng., AVS

[Click Here for Biography](#)



Value Engineering for a Risk Based Design Project: Edmonton Southeast and West LRT Project

By Dr. Hussien Al-Battaineh & Art Washuta

The City of Edmonton Southeast and West Light Rail Transit (LRT) project is intended to encourage green, compact, integrated, urban-style long-term growth, while meeting the City's current and future transportation needs. This project total length is 27 km and includes the construction of 29 stops, 5 transit centers, 5 bridges and two tunnels; the project budget is about \$2.75 billion dollars (2010/2011). ConnectEd Transit Partnership (CTP) led by AECOM was awarded the preliminary design on August 2011, and proposed an innovative Risk-Based Design approach for this project. A Value Engineering workshop was held in October 2011 to collect and evaluate creative ideas which can be used to increase the value of the Southeast and West Light Rail Transit Project. The workshop participants including comprehensive representation from several City of Edmonton departments – LRT Design and Construction, Urban Planning, Edmonton Transit, Parks, Transportation, and Drainage – as well as the ConnectEd consulting team. International advisors representing 6 additional countries were also present (US, UK, Norway, Sweden, Finland, and Germany). A total of 509 ideas were generated at this workshop, 241 of which were recommended to be carried forward for further analysis and consideration. This presentation will cover how Risk-Based design was incorporated in the Job Plan, the integration of Risk Analysis and Value Engineering, the challenges of facilitating a workshop with a large number of participants, and the mitigation plan. It will also cover facilitating workshop with participation from the owner side and the consulting team, and a discussion about the workshop major findings.

Dr. Hussien T. Al-Battaineh, Ph.D., P. Eng., AVS

General Manager, SMA Consulting Ltd.

Academic Training:

PhD in Construction Engineering & Management, University of Alberta, 2007
MSc in Construction Engineering, Western Michigan University, 2002
MSc in Structural Engineering, Jordan University of Science and
Technology, 2000

BSc in Civil Engineering, Jordan University of Science and Technology, 1998

Dr. Al-Battaineh was recognized for his construction engineering and management work through a number of awards and scholarships including the Joseph D Thompson/Zurich Canada Award, 2005; the Province of Alberta Graduate Fellowship, 2004; the NASTT North West Chapter, Scholarship, 2004; and the King Hussein Scholarship, Jordan, 1993-1998.

Relevant Industry Experience:

Dr. Al-Battaineh is an expert in risk analysis, value engineering, infrastructure modeling and project management for civil engineering applications. Dr. Al-Battaineh is a General Manager with S.M.A. Consulting Ltd. He has completed risk analysis, value analysis and constructability reviews for major civil projects including drainage, light rail transit, highways, airports, tunnels, wastewater treatment plants, water treatment plants, buildings and bridges throughout Western Canada. Dr. Al-Battaineh is an experienced facilitator who has successfully facilitated more than 100 projects over the past five years.

Art Washuta, P.Eng.,.

Vice-President, Alberta North District, AECOM Canada Ltd., Edmonton Mr. Washuta has 38 years of experience in planning, design, project management, and construction management for heavy civil, environmental, and transportation projects. Art is a strong proponent of effective project management procedures with a focus on quality systems. His strengths are in management of diverse major projects, effective teamwork and financial accountability. Art also has a keen personal interest in planning and implementation of LRT projects in Edmonton. Major projects for the City of Edmonton have included management of the North LRT Extension to NAIT, South LRT extension from Century Park to Ellerslie Road, and the new Southeast to West LRT from Millwoods to Lewis Estates. All of these projects have included co-ordination of multi-consultant, multi-discipline project teams, value engineering and risk management. Education: B.Sc. Civil Engineering, University of Alberta, 1973.



Government of Canada Energy Services Acquisition Program District Heating and Cooling VE Study

By Steven Taylor

This presentation will describe a Value Engineering (VE) Study carried out by Bytown Engineering (BTE) for Public Works and Government Services Canada (PWGSC), Energy Services Acquisition Program (ESAP) for a future District Heating/Cooling System in the National Capital Area (NCA). The decision to utilize value engineering and its team approach was made to: accelerate the schedule of the project; to validate the cost model; and build confidence in the budget for the project by including private sector industry experience in the review. This step was to validate the budget and create cost certainty before taking the project forward. The project will be a future Private-Public - Partnership (PPP) initiative to change the delivery model for the Canadian government for its 102 buildings in the National Capital area. Today the system is a government

owned and operated system of 7 separate central heating and cooling plants. The future will include the transfer of the operation for a 30 year concession period to a private sector utility. The \$0.5 billion undertaking will include the conversion from a steam heating system to a direct buried low temperature distribution system. As a private sector utility it will then be able to attract private sector customers. This model is in operation in Europe and several cities in North America.

Steven Taylor, P.Eng., P.E., M.Eng., CVS-Life.

Steven Taylor is President of Bytown Engineering. He is a professional engineer licensed in the Province of Ontario and states of Vermont and Florida. Mr. Taylor has undertaken value planning and value engineering studies for numerous municipal, provincial and federal projects across Canada. Studies have included transportation, building, water and waste water and design build projects. Mr. Taylor sits on the CSVA Board and has been a past president of the society.



Using “Early Wins” and Collaboration to Create and Sustain a Value Management Program at a Major Water/Wastewater Utility

By Terry Martin

Seattle Public Utilities (SPU) is a municipal utility funded entirely by the rates paid for its services. It consists of four lines of business, providing retail drinking water, wastewater, storm drainage, and solid waste service to approximately 700,000 customers within the City of Seattle and wholesale drinking water service to 1.6 million customers throughout the metropolitan Seattle area. SPU has approximately 1,400 employees and operates with an annual capital budget of roughly \$250 million. SPU's Value Engineering (VE) program began in late 2009 in response to two particularly controversial large CIP projects that executive management felt required objective third party analysis. The resulting studies highlighted substantial savings opportunities and were viewed by management as big “early wins”. In response, SPU formally adopted a VE program shortly afterwards whereby every project with a lifecycle cost in excess of \$5M is mandated to undergo an externally facilitated VE study at approximately the 30% design stage. Multiple successive VE workshops have in turn shown added value and substantial cost savings, to the point that VE is now viewed as a permanent way of doing business at SPU. These successes led SPU to further broaden its value-based approach in 2011. The VE program has now been expanded into a more comprehensive Value Management (VM) program with the addition of a Value Analysis (VA) stage of workshops for large projects. At SPU Value Analysis is similar to VE but occurs earlier in the project lifecycle during the options analysis phase. As is the case with VE any SPU

project in excess of \$5M must now also undergo a VA study. This presentation will include several examples of SPU's recent VE and VA studies, highlighting specific ways that costs were saved and value added. Additional discussion will also include the challenges of creating a Value Engineering "mindset" within a public organization, and how eventual cultural acceptance can lead to increased collaboration and value on all projects, not just those undergoing a value-based analysis.

Terry Martin, PE.

Terry Martin PE is the Acting Director of the Asset Management and Economics Services Division at Seattle Public Utilities (SPU). His work over much of the last decade has included creating and developing risk models, authoring multiple wastewater and drainage-related strategic asset management plans, and working on tactical plan items with particular emphasis on risk management, triple bottom line (financial, social, and environmental) costing, and lifecycle costing principles. In addition to the above technical items Mr. Martin has spoken at numerous venues over the last nine years on Asset Management within the water and wastewater industry and in addition has authored or participated in development of multiple Asset Management-related journal articles and publications. He has over 20 years of experience in both the private and public sectors involving the planning, design, and construction of municipal water, wastewater, and drainage system infrastructure. Mr. Martin holds a B.S. in Civil Engineering from the University of Washington as well as a B.A. in Political Science from the University of Washington.



The Application of Value Management Methodology on behalf of Alberta Infrastructure on Major Alberta Public Sector Projects

By Chris Baker

In the fall of 2008, Alberta Infrastructure (AI) was advised of projected overruns against the Treasury Board approvals for two major health care projects: the South Health Campus in Calgary and the Edmonton Clinic. Value Management Inc. was commissioned by AI to carry out strategic analyses of each project's scope and estimated cost to identify reasons for the overrun, the magnitude of the problem and to identify potential mitigation strategies. Subsequently VMI was tasked with facilitating development of the mitigation strategies to re-scope the two projects and bring them within the approved budgets through the application of value methodology. VMI was then commissioned to provide ongoing value management oversight of the projects through to completion to

ensure they remain on scope and within budget. This paper will discuss the value methodology applied, the mitigation strategies adopted and the on-going value management oversight process. Participants will learn leading edge techniques in analyzing program scope and design solutions for institutional buildings, and techniques for maintaining positive financial control of major public sector construction projects through a process of value management oversight.

Chris Baker, PQS (Fellow), LEED AP.

Chris Baker is a Fellow of the Canadian Institute of Quantity Surveyors (CIQS) and has been a Professional Quantity Surveyor and cost engineer for over thirty five years. Chris is President of Value Management Inc. (VMI) and is a full member of CIQS - British Columbia and CIQS - Prairies and Northwest Territories. Over the past twenty years Chris has practiced as a Value Analysis/Value Engineering Facilitator. He is a Past Vice-President of the Alberta Quantity Surveyors Association (now known as CIQS - Prairies and Northwest Territories) and a Past President of the Quantity Surveyors Society of British Columbia (now CIQS -British Columbia) and currently sits on CIQS - British Columbia's VA/VE Facilitators Accreditation Committee. Chris has lectured and presented training seminars on value management and has worked with three BC provincial government task forces to improve value for money in public sector construction. He is also the co-author of the Value Analysis/Value Engineering Guidelines for the BC Ministry of Transportation and Infrastructure. Over the last fifteen years he has provided value management services on behalf of a number of Ministries within the Governments of Alberta and BC.



Region of Peel Water Distribution System Risk Assessment

By Aman Singh

Regional Municipality of Peel (the Region) through its growth projections will be tasked with supplying over 2.5 million residential and commercial customers with a reliable and high quality supply of drinking water over the next twenty (20) years. In response to this, and building on its commitment to provide high levels of municipal services, the Region has undertaken a review of its transmission and sub-transmission infrastructure to ensure it can continue to deliver drinking water services that meet its customer's needs. This project is intended to complete a risk and resilience assessment in order to understand and proactively manage threats and opportunities to the Region's Water System which forms a key component of the Region's municipal services. Key objectives identified to meet the needs of the project include:

Aligning the project with corporate risk and infrastructure management goals and objectives

Managing stakeholder expectations and project ownership

Building on strategic growth objectives within the Region's business and infrastructure planning processes

Use a tailored version of the RAMCAP (AWWA J100-10) approach to assess risk and resilience relevant to the Region

Utilizing detailed hydraulic modeling using the Region's InfoWater model to support inputs to the risk and resilience assessment and project recommendations.

The key focus for the project is to develop a long term strategy to manage and reduce risk through capital and operational planning. In addition, it is necessary to link corporate asset management objectives to risk impacts and resilience enhancements to ensure they are translated into, and support the appropriate business planning processes and life cycle management strategies for the critical assets. This risk project is a fundamental building block of asset management at the Region of Peel.

Aman Singh, PMP, P.Eng.

Aman is an experienced management consultant with diverse consulting and project management experience. Aman's key capabilities include strategic business planning, asset management, risk management, business process improvement, capital delivery, design, stakeholder management, and professional project management. Aman is a qualified professional engineer (P.Eng) and a certified project management professional (PMP). Aman is the Business Group Manager for GHD's Business Consulting Canadian operations.

Value Engineering (VE) 401: Pitfalls and Missteps and How to Avoid Them

By Jill Woller

Many VE professionals have contributed to the NYC VE Program over its history. The NYC government environment has been a de facto laboratory setting for testing out various styles and approaches. This presentation will focus on lesson learned over nearly twenty years in Value Engineering (VE). It will cover specific problems encountered and solved, sometimes through trial and error. It will summarize the key elements which have worked best, and those which have been problematic. It will describe examples of pitfalls and missteps which have arisen in the course of conducting hundreds of VE workshops, and how NYC ultimately worked out a

preferred approach for dealing with them. Applying the VE methodology is more of an art than science. How the basic job plan is executed varies among different VE practitioners, and certain techniques methods or practices may be more or less effective in a specific environment. Elements to be discussed include the VE Job Plan, Team Management, Study Focus Areas, Documentation, and Presentation.

Jill Woller, CVS, FSAVE

Jill Woller directs the City of New York Value Engineering (VE) Program, located within the Office of the Mayor's Office of Management & Budget (OMB). She has degrees in Public Administration and Architecture. She has been working for NYC OMB for over eighteen years, and has developed the Program almost since its inception. Prior to this position, she worked for design and project development firms. Ms. Woller has initiated many contracting and organizational innovations to create a climate which fosters the application of classical VE to publicly funded projects and services. Over time, the Program has become institutionalized and is now an accepted part of the City's approval process.



A Structured Approach to Innovation in Infrastructure, IT, Business Processes and Change Management with VA in the Ontario Government

By Steve Holmes

The Ontario Ministry of Transportation is the leading government proponent for Value Engineering in Canada. The expanding use of and advocacy for Value Engineering by the Ontario Ministry of Transportation has occurred because Value Engineering meets 3 key needs:

1. Maximizes use of resources
2. Establishes common understand of business needs
3. Delivers Innovation

This paper will highlight how the Ontario Ministry of Transportation uses value management to achieve innovation in infrastructure projects, improve the effectiveness and efficiency of business processes, define the requirements of IT systems, generate organizational change, and develop innovative standards.

Stephen Holmes, P.Eng, CVS

Stephen Holmes is a Professional Engineer with the Ontario the Ministry of Transportation with extensive experience in the planning, design and construction of highway infrastructure. Stephen has coordinated the Ministry of Transportation's VE program since 1999. MTO's VE program has achieved over \$900 M in cost savings/avoidance over the past 15 years. Under Stephen's leadership, Ontario's VE program has won awards from the American Associate of State Highway and Transportation Officials, and the Canadian Society of Value Analysis. Stephen has also led the ministry in using the Value Methodologies in service delivery and organizational change.



Aligning staff resources with business priorities at MTO; a First-Timer's Experience with VA through Functional Performance Specifications (FPS)

By Mark Mis

In March 2012, Mark Mis completed his first Value Analysis project, the Ministry of Transportation of Ontario's (MTO) Provincial Highway Management Value Analysis (VA) Initiative. His presentation will outline how the MTO used VA and Functional Performance Specifications (FPS) to obtain the ability to strategically deploy available human resources and his experiences applying the VA and FPS process for the first time. This session is recommended to individuals who are either interested in using FPS to deploy resources or new to VA and FPS.

Mark Mis, MBA

Mark Mis, MBA is a project manager with HDR. He has ten years of transit industry experience working with HDR, the Canadian Urban Transit Association (Director of Technical Services), GO Transit (Bus Operations Performance Advisor), and Orion Bus (Accounts Coordinator). During his time with these companies, Mark has participated in numerous studies over a wide breadth of areas such as long-term strategic planning, service and operations planning, feasibility studies, transit station and

multi-modal terminal planning, performance indicators, business case assessments for funding applications and most recently value engineering.

Within the last year, Mark has participated in two Value Engineering studies including the Provincial Highway Management Value Analysis Initiative, the topic of his presentation. Mark's presentation will focus on how Function Performance Specifications is used to strategically deploy available resources and his experience using Value Analysis for the first time.

Mark has a Master of Business Administration (MBA) from Dalhousie University where his studies focused on transportation and finance. Mark is also an active member of the Canadian Urban Transit Association's Technical Services Planning Committee and Statistics Committee and the Canadian Society of Value Engineering.



Target Value Costing – The Scenic Drive Success Story

By David Wilson

"We just can't afford this!" How many times have you heard these five words uttered? A fair guess would be lots. In fact, these same words, or some variation, are repeated over and over across the country. But why? Why do senior managers have to deal with these price-tag surprises? How can this be avoided?

Target costing is an approach used in the manufacturing industry to map out a product delivery strategy. Manufacturers know how much it will cost to develop and bring a product to market. They'll know the selling price and their projected profit. Most importantly, they'll know all of this before they ever begin.

Infrastructure projects, on the other hand, typically follow a circuitous route from inception to implementation. Project budgets are often established upfront before a clear understanding of the project has crystallized and are equally fixed. Scopes of work change during development to appease stakeholders. The finalized project may bear no resemblance to what was initially intended.

What happens if target costing principles are applied to infrastructure projects? Can infrastructure sticker shock be avoided? You bet! Applying target costing principles during the project development phase can effectively harness runaway budgets.

This presentation/paper provides an overview of target costing principles and how they can be applied to a variety of construction projects. A case study, Lethbridge's Scenic Drive North Extension project, is reviewed to showcase how target value costing enabled the City to successfully proceed with the project even though the

projected cost was 190% over the budget allocated.

David Wilson, CVS, P.Eng. NCE Value Engineers Inc. Markham, ON

David Wilson is President of NCE, a value engineering firm specializing in infrastructure projects, located in Markham, ON, Canada. He is a civil engineer with 30 years of experience in both the public and private sectors. During his career, Mr. Wilson has led major infrastructure projects through the planning, design and/or construction phases, including several design/build projects. He has been involved in value management projects since 1995 and is a member of the Canadian Society of Value Analysis, SAVE International, and the Institute of Value Management. He recently completed a four-year term as the President of SAVE International from 2007 to 2011 and currently serves as SAVE's Immediate Past President.

Mr. Wilson has a Bachelor of Engineering Science (BESc) degree from the University of Western Ontario in London, ON, Canada, and is a licensed Professional Engineer in Alberta, Ontario, Nova Scotia, British Columbia, and New Brunswick.

Most recently, Mr. Wilson has been exploring innovative approaches to enhance the value engineering process including the application of target costing principles to infrastructure projects. Mr. Wilson is the author of over 34 technical papers and articles, including SAVE International's Paper of the Year Putting the Value Back into Planning, and NCHRP's definitive Value Engineering Applications in Transportation.