



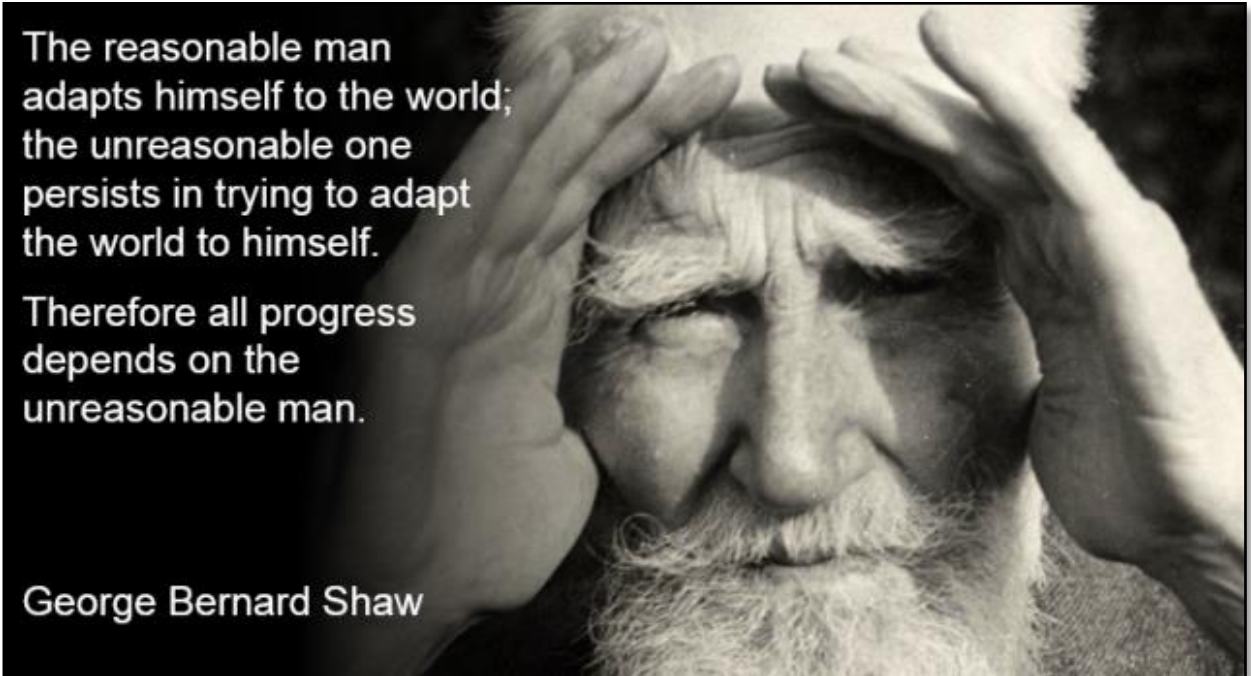
## IMPLEMENTING VALUE MANAGEMENT AT THE CITY OF CALGARY



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The reasonable man  
adapts himself to the world;  
the unreasonable one  
persists in trying to adapt  
the world to himself.

Therefore all progress  
depends on the  
unreasonable man.

George Bernard Shaw

### ***Acknowledgement***

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## ***Abstract***

The purpose of this paper is to outline the evolution, development, application, and eventual adoption of Value Management (VM) by the City of Calgary as a standard business practice to demonstrate value in capital infrastructure investments. In practice, the municipal services in the City of Calgary are delivered by 33 business units. The concept of value to citizens was and has always been there in various services. However, there was limited or no structured approach to demonstrate value for informed decision making, option selection and prioritization or for fostering a culture of innovation. For the longest period, the traditional approach to delivering municipal programs and projects was deemed suffice by various capital-intensive business units as a clear demonstration of value added activity.

In this paper, the author draws from his personal and professional experience as part of this journey and will document how once a good idea has now become a mandatory requirement to demonstrate and deliver value in municipal services to the citizens of Calgary.

Organizational culture and business processes have a longer lifecycle than any tangible assets. Wherever there is a resistance to change also lies a great opportunity for success. In this case, the journey took nearly 7 years to acknowledge the power of Value Methodology at the highest level of this public-sector organization in Canada.

## ***About the Author***

Mushtaq Rabbi is an architect, an urban planner and a Certified Value Specialist (CVS®) accredited by SAVE International. He has over 20 years of experience in both private and public sectors. Mushtaq has been with the City of Calgary for 13 years. Currently he is working as a Project Management Consultant with Corporate Project and Asset Management. He is a member of the Board of Value Analysis Canada and involved in promoting, advocating and applying Value Methodology for City's infrastructure investments. He can be reached at [mushtaq.rabbi@calgary.ca](mailto:mushtaq.rabbi@calgary.ca).

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## ***Introduction***

The City of Calgary, in the Province of Alberta is the largest urban centre in this Prairie Province and the fourth largest municipality in Canada, with a metropolitan population of approximately 1.4 Million. The City is led by a 15-member elected Council and strives to deliver the highest possible quality of municipal services to the citizens. The City of Calgary is a program and project intensive organization. In 2015 November, the City published a Value Management (VM) Standard (What to do) with an accompanying Value Management (VM) Guidance (How to do) document, as developed by the author. These documents became formally operational on February 01, 2016. Every capital infrastructure program or project at or above C\$25.0 M must undergo one VM study prior to its implementation. Program or projects greater than C\$75.0 M, must undergo two VM studies prior to its implementation. The City of Calgary is possibly the first municipality in Canada and amongst select few municipalities in North America to mandate the application of Value Management for its capital infrastructure investments.

## ***Context for Calgary's Infrastructure Investments***

Over the past decade and a half Calgary has experienced strong economic and population growth. This is due to a combination of natural population increase, and significant immigration and relocations from other Canadian provinces, driven by well-paying direct and indirect oil and gas sector related jobs. Every year for the past seventeen years, 25,000 to 40,000 people have chosen Calgary as their new home. Due to of this ongoing growth the need for capital infrastructure investments has grown rapidly. The City of Calgary's Water Resources and Transportation Infrastructure business units alone currently deliver an excess of C\$500 million in capital projects each year to meet demand. On an increasing number of programs and projects, the asset owners, sponsors and project managers have chosen to apply VM, also known as Value Engineering (VE) or Value Analysis (VA), at various times in the project life cycle. The City of Calgary has experienced several business benefits by conducting Value studies. Value Management,

- offers an effective, structured and consistent approach for a business unit to improve value on any program or project;
- ensures informed decision-making prior to proceeding with an investment,
- aids in problem solving and utilizes team innovation skills for organizational benefits,
- promotes identification, selection and evaluation of possible alternative(s) that add value,
- reduces risks, streamlines schedules and improves stakeholder satisfaction;
- demonstrates to the City Council, public and senior management that the program or project team has performed due diligence to ensure infrastructure money is being spent responsibly, and most importantly,
- increases corporate accountability and transparency in The City's investments of capital and operational programs and projects for effective service delivery.

At the beginning of 2015, the City of Calgary administered six Infrastructure Investment Plans (IIPs) with a combined estimated capital investment of approximately C\$12.0 Billion over the next 10 years. Based on recent experience with VM, the City recognized that if a formal VM review requirement was introduced, the City could significantly improve investment decisions, clearly align scope and budget, and potentially achieve more projects within the same budgets. It was estimated that potentially C\$700 Million or more of cost avoidance or deferral could be realized utilizing VM on high value programs or projects. The City administration was looking for opportunities to increase the application of VM to infrastructure investments managed by nine capital intensive business units.

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The Corporate Public Accountability framework in the City of Calgary and the place of the concept of “Value” is shown below:



Fig. 1. The City Administration's view of Corporate Public Accountability

## ***Use of Function Analysis to Strategize Implementation of VM***

In early 2011, an opportunity driven Function Analysis was undertaken by the author to develop strategy to implement VM within The City in a collaborative approach. The prevailing general corporate culture was taken as a baseline to develop a FAST diagram (Fig. 2). The FAST diagram was used as a road map moving forward. The identification and classification of functions later supported various change actions undertaken (with support from management) to socialize the concept and practice of VM.

Identification of several functions, slowly but surely, paved the way to institutionalize VM in this organization. While the basic function was to “**Adopt VM**”, a critical path function was to “**Convince Management**” of the power of the Value Methodology. In answering how to do that, “**Demonstrate VM**” was key and led further downstream to “**Perform VM**”. Under the function “**Procure VM**”, the Supply Management division of the City identified the author as a “discipline champion”. While VM was not in the core job description of the author, through word of mouth and his presenting VM information across several business units, City staff viewed the author as the unofficial champion of VM.<sup>1</sup> This unofficial role is also represented on the FAST diagram by “**Identify Champions**”.

The procurement of VM services, coordination of pre-VM, VM and post-VM activities with City staff, reporting VM results to management, responding to queries from program sponsors and projects managers on the applicability of VM to their programs and projects, and being instrumental in the creation of corporation wide VM Standard and Guidance documents all led the author to pursue the highest-level

<sup>1</sup> After several years of service in different business units of the City, by 2009 the author was the most knowledgeable person about VM in the organization. This was a direct result of attending 2008 Canadian VM conference, completing Module I training in 2009 in Edmonton, Alberta with Alberta Infrastructure, obtaining AVS certification, membership in SAVE International and being on the Board of Value Analysis Canada (VAC). By 2011, the author had completed Module II seminar at SAVE International conference in Portland, Oregon and in September 2014 obtained VMP designation.

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certification i.e. Certified Value Specialist – CVS® through SAVE International. In addition, an in-house CVS would help sustain current momentum and advance future application of VM in this organization.

<b>Classification of Functions</b>	<b>Function</b> (Active <b>VERB</b> – Measurable <b>NOUN</b> )	
<b>Higher Order Function</b>	Enhance Value	
<b>Basic Function</b>	<b>Adopt VM</b>	
<b>Required Secondary Function(s)</b>	Sell VM <b>Convince Management</b> <b>Demonstrate VM</b> Deliver Benefits	Implement Alternatives Generate Alternatives <b>Perform VM</b> Select Projects <b>Procure VM</b>
<b>Secondary Function(s)</b>	Build Support Advocate VM Promote VM <b>Identify Champions</b> Identify Users Target Managers Satisfy Business Objectives Resolve Performance Gaps	Find Success Create Awareness Organize Trainings Host VM Events Generate Interest Demonstrate Results Share Case Studies
<b>Objectives</b>	Deliver Right Project Foster Innovation	Avoid Cost Improve Quality
<b>All The Time Function(s)</b>	Align Stakeholders Improve Decision-Making	Secure Budget Document VM Results
<b>Assumed Function</b>	Identify Opportunities	

# Implement VM at the City of Calgary

March 18, 2011

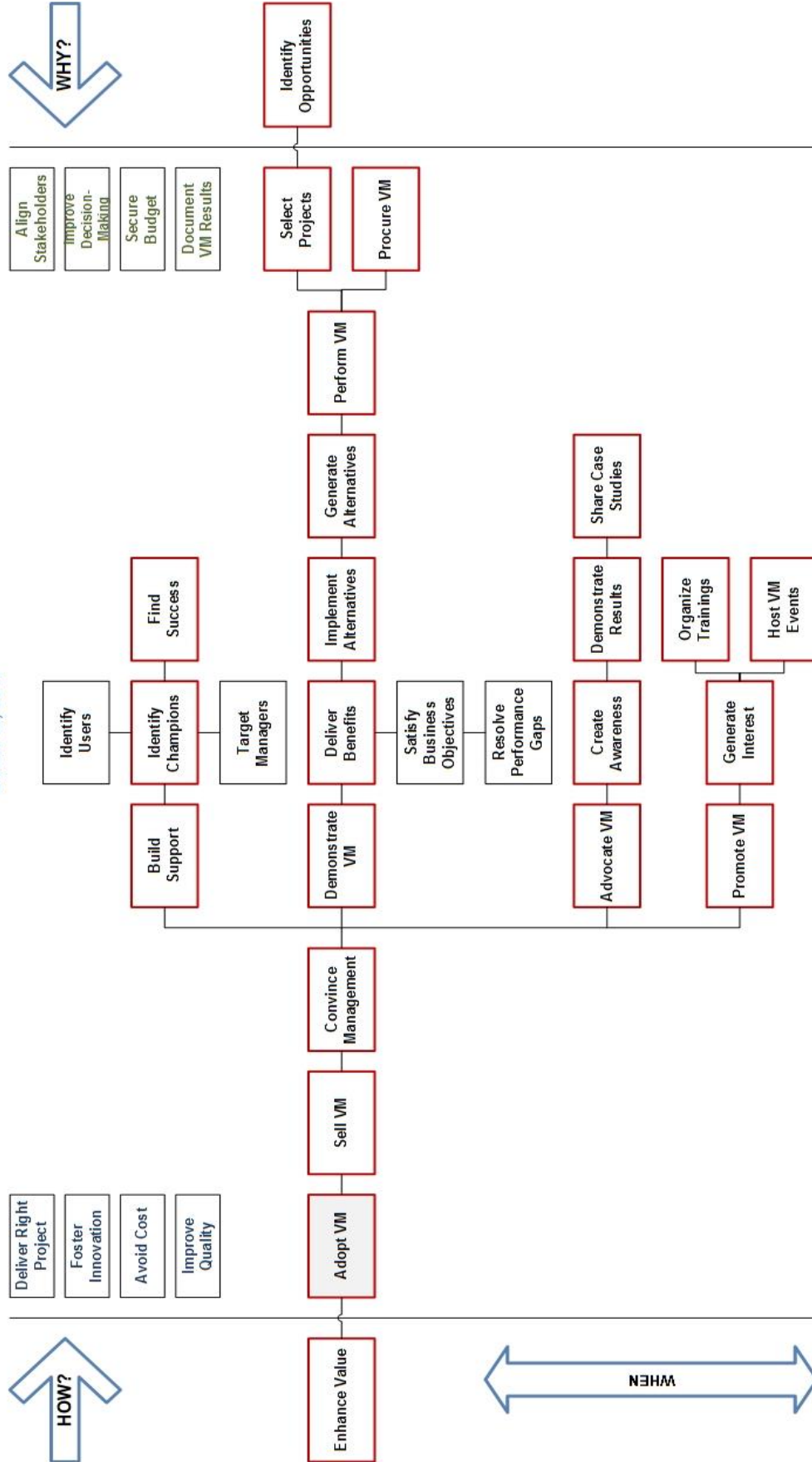


Fig. 2. FAST Diagram: In 2011 March, the author created a FAST diagram to structure, organize and clarify own thought process and necessary actions needed to eventually adopt and implement VM in the City of Calgary



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## ***Calgary's Experience with VM***

The earliest VM studies at the City of Calgary were undertaken on water, waste water and transportation infrastructure capital projects in the late 1990s and early 2000s. The City of Calgary had performed seven VM studies between 2000 and 2008. The outcome of these seven studies was deemed successful, but not well documented and the results could not be validated. These studies were performed at the discretion of program sponsors. There was no corporate direction or requirement in place for VM during this period.

However since 2009 there was a renewed interest in VM, especially within Water Resources and Transportation Infrastructure business units. In a public sector organization, a procurement process can be time consuming and require significant effort on the part of the sponsor or the project manager. In 2011-12 these two business units jointly created and closed a Request for Proposal (RFP) for "Professional Services for Value Analysis". Through a competitive process, the City shortlisted five qualified companies with six Certified Value Specialists (CVS®). These companies were selected to execute VM service on a rotational basis. With this rotation in place, business units willing to undertake a Value study on a program or a project, would for the first time have easy access to a qualified VM facilitator, more specifically a "Certified Value Specialist". The RFP specified requirements for VM services in accordance with the requirements established by SAVE International and Value Analysis Canada (VAC). This RFP was an important milestone in promoting, advocating and facilitating the application of VM on major infrastructure investments.

Between 2009 and 2014, sixteen additional VM studies were undertaken on various City projects. The timing and scope of these studies served as "gate" reviews on a variety of capital and operational programs and projects. All VM studies were undertaken in accordance with SAVE International's "Value Methodology Standard". All these reviews were conducted as part of an exploratory phase of applying VM at an executive and/or a program/project sponsor's discretion. No corporate or departmental VM standard or guidance or program existed during this time either. However results and output from all these studies were documented and analyzed for senior management.

An analysis of the data from these sixteen (16) VM studies revealed the following:

- Avg. VM study cost vs. project estimate: 0.23%
- Avg. Return on Investment (ROI): 130:1 (owner benefit to every C\$ spent on VM study)
- Avg. % of total cost avoidance or capital deferral identified: 12.6%
- Avg. VM study cost: C\$90 K
- Range of projects reviewed: C\$6.0 M to C\$523.0 M (C\$60.0 M median)
- Avg. project capital cost: C\$84.0 M
- Total estimated capital investment (at VM study): C\$1.34 B
- Total cost avoidance (Capex & Opex) identified: C\$156.0 M
- Total cost of 16 VM studies: C\$1.2 M

As stated earlier, multiple non-financial benefits such as improved or enhanced functional performance, project implementation timeline reductions, risk reduction, and a strengthened program or the project team alignment were also achieved with every VM study.

The procurement of VM services via the RFP process was complemented by a number of training and learning events for the City staff. This was part of a change management strategy.

- In April 2009 a one day training session was organized in Water Resources, "Value Engineering for Project Managers";
- In July 2011 four separate one day training sessions were held on VM. "Value Analysis in Action", Ministry of Transportation Ontario's (MTO) award winning one day training was jointly organized and presented by Value Analysis Canada (VAC) and the City of Calgary;

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- In November 2011, the City in collaboration with VAC and PMI-SAC (Project Management Institute - Southern Alberta Chapter), organized a dinner event focusing on the application of VM within the Government of Alberta.
- In addition to the above, between 2009 and 2014, the City's only AVS met with staff of various business units, shared information on Value Methodology and made numerous presentations to generate interest and create awareness.

These events and presentations at various times - all generated a greater interest in VM and created a favourable environment for hosting a VM conference in this city. In 2012 the City of Calgary sponsored the Value Analysis Canada's (Canada's professional value society) annual conference in Calgary. The author served as the local liaison for Value Analysis Canada in coordinating all conference logistics. This was the first VM conference in Calgary and the first one in Western Canada. The conference was attended by 164 participants from across Canada, the USA and Europe. Nearly a third of the participants came from the City of Calgary. This conference had a positive impact on City staff. Collectively the VM training and the conference demonstrated the VM approach and outcomes, and motivated City's capital business units to apply VM in their programs and projects. VM was gaining a lot of interest and attention but still was not mandatory at this time.

### ***Council's and Senior Administration's Interest in VM***

Every infrastructure project is a unique endeavour. Traditionally, capital project delivery has often suffered from scope, schedule, and cost overruns leading to a high level of stakeholders' dissatisfaction. An effective VM approach can help to mitigate these shortcomings and can lead to a much higher levels of satisfaction for all.

In 2011 a City Auditor's report on a major project identified several shortcomings in the planning and execution of capital infrastructure. The report found,

*.....that project management best practices were not always adhered to. This is important given the size (in cost, time and resources) and complexity of this project, and the importance of the Project to the City. Insufficient project planning reduced the effectiveness of project management throughout construction. In particular, the lack of: a) a formally agreed and finalized design, and b) detailed timelines (including critical path, time contingency, and checkpoints), led to a situation of continual change and reactive day to day management of issues. The absence of effective project management added both additional costs and time to the Project.*

**(Source: 16 Avenue North Urban Corridor Project Audit, CAO Reference: AR11-02; City Auditor's Office Page ii)**

In response to this report the City's senior administration initiated the development of a "Corporate Project Management Framework" (CPMF), a multiyear program that requires strong internal stakeholder engagement and significant change-management activities. A steering committee was established with representation from nine major capital-intensive business units.

Early on in the steering committee's review, VM was identified by the steering committee chair as one of the methods that would significantly address the questions and concerns rose in the audit reports and could help sound decision making in major capital infrastructure investments. The development of the corporate framework was led by the Corporate Project and Asset Management (CPAM) division of the City.

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Further to CPMF program and after several years of practice, in 2015 February Calgary City Council endorsed a motion directing City administration to report on,

*..... the current project management practices that the City of Calgary uses for capital construction and present alternatives and a business case that outlines how the City can further enhance project management capabilities;*

The Council motion further stated that this business case should include:

- a) *The application of innovative quality and project management approaches, including value management and stage gating,*
- b) *The identification of ways to better capture capital construction project savings and increase project efficiency,*
- c) *Analysis on how the City could better demonstrate economic benefit and the multipliers of all construction projects,*
- d) *Options to reduce capital construction project delivery timelines.*

**(Source: Notice of Motion NM 2015 February 10- Project Management on City Projects)**

A report to Council was submitted. With the impressive track record of VM in the City, in 2015 September, the Calgary City Council passed a motion and directed administration mandating VM for all capital projects at or above C\$25.0 M. With Council support, the City administration directed CPAM to develop a VM Standard and an associated VM Guidance document to support sponsors, program and project managers responsible for delivering large capital infrastructure projects. Council's clear direction coupled with senior administration's recognition of the effectiveness of VM was critical in formalizing and implementing VM at the City of Calgary.

One point to note in this context, the CPMF program consciously chose the term, "Value Management" over "Value Analysis" or "Value Engineering". The reason for that, City administration recognized, Value Methodology can be applied to any types of program or project and multiple times in the asset and/ or service delivery cycles. Hence the term "Value Management" is more inclusive, covers a broader array of application and also appeals to a wider range of audiences.

### **Corporate Positioning of Value Management Service**

Once Council's direction and senior administration's support was in place, CPAM division in collaboration with representatives from all capital business units created a VM Standard and a VM Guidance document. A dedicated small team worked for two months and crafted these documents for approval and endorsement by the steering committee. The author led this initiative. With input from all interested stakeholders the Standard was published in 2015 November. The associated Guidance document was endorsed in 2016 January. These documents became operational on February 01, 2016. Both these documents were created in alignment with SAVE International's Value Methodology Standard and the European Standard for Value Management.

In most public-sector organizations VM is not effectively applied by a sponsor or the project team on a consistent basis. The consistent and effective application of VM requires an organized approach, dedicated effort, selection of the right disciplinary experts and team members for a study, identification of the right VM facilitator and finally, offer oversight to ensure the independence of the process. In order to provide effective and impartial corporation wide support, VM coordination resources have been strategically positioned in the CPAM division, reporting directly to the Deputy City Manager's Office (DCMO). This corporate positioning further solidified VM within the organization; gained trust, confidence, and offers greater credibility to staff both new and experienced.

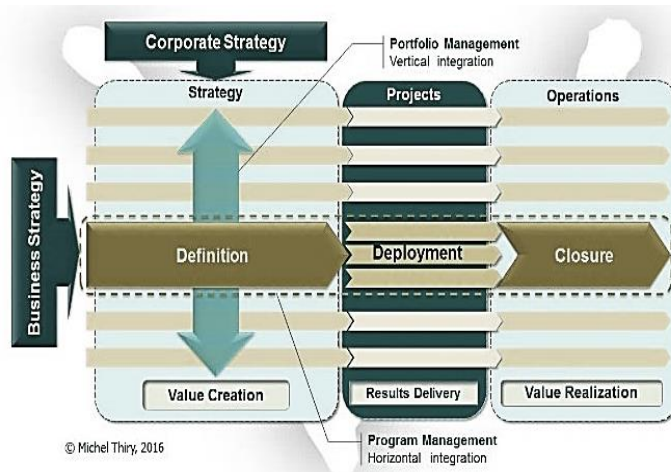
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## Future Opportunities

In conclusion, VM is a proven program and project management tool, when undertaken in accordance with SAVE International's Value Methodology Standard and at the appropriate time(s) in the program/ project life-cycle. Over the last seven decades numerous organizations and various sectors across the world have achieved extensive business benefits by applying VM. At the City of Calgary there is a tremendous opportunity to increase the application of VM further. Every City service to the citizens of Calgary require some type of infrastructure investment or business process improvement. Function analysis is a powerful technique within VM to generate large number of alternatives to support these change initiatives.

In 2015 The City Council's had identified Five Imperatives as follows:

1. **Integrated Service Delivery** – Council is consistent in its view that the Corporation needs to provide services in a much more coordinated and integrated way
2. **Engaged Leadership** – Council wants collaborative organizational leaders and managers that function together as a team
3. **Trust and Confidence** – Council is asking for an organization that is reliable, honest, effective, and has Council's confidence and trust
4. **Public Service Culture** – Council wants the organization to deliver its services with a citizen and customer focused approach
5. **Investment and Value** – Council expects a sustainable financial plan from Administration that is responsible and creates value for citizens.



**Fig. 3. The City Administration is focusing on a corporation wide strategic “portfolio management” (source: Michel Thiry 2016)**

Effective 2019, the City is moving towards a single Corporate Infrastructure Investment Plan. This means City's business plans and budgets will be presented by the services that The City provides rather than by the way in which it is organized i.e. by departments or business units. Council and Administration believes, services are what matter to citizens, not how The City is organized.

As a result, the organization is shifting from department-based to service-based plans and budgets. Effectively this means that the City is shifting the focus from who does things and how they do them to “*what we are delivering and why*”. With this perspective, the connection to citizens and their needs become greater, and there is an opportunity for Council to make decisions about service levels and expectations, as well as service value and costs.

With VM's demonstrated success within the City of Calgary over the past nine years, senior management believes increasing the strategic application of VM will significantly benefit the City's portfolio of capital and operational investment programs and projects related to various services. With the current VM Standard and Guidance documents in place, through additional demonstrated success with VM over the next few years, senior management would consider reducing the threshold for mandatory application of VM from the current C\$25.0 M and adopting VM as an even more widely applied business improvement practice within the organization for enhancing service delivery to the citizens.