

The Inukshuk: A Canadian Knowledge Management Model

By John P. Girard, PhD

Introduction

This paper introduces a new model of knowledge management enablers, which was designed to help Canadian Government leaders conquer the knowledge challenges of today. The review begins with an overview of the knowledge challenges facing the Canadian Public Service; clearly there are parallels in other public and private sector organizations. Next, a review of a number of knowledge management models concludes that five enablers are the most important. These five enablers are molded together to form a new exemplar based on the Japanese structure of the Torii. The results of a quantitative research project validate the Torii's components of Technology, Leadership, Culture, Process and Measurement.

However, as interesting as the model appeared to some groups, it simply did not garner support from the target audience. Ironically, it was neither the components nor the logic of the model, but rather it was the symbol itself that created challenges. Upon portraying the model as a symbol with which the desired end users could associate, there was immediate and unconditional acceptance. The lesson is clear, if one wishes to capture the imagination of potential users, the packaging may be as important the content.

This paper is the culmination of a research project that began several years ago. Through formal presentations to various groups including: the World Congress on Intellectual Capital and Innovation; the Canadian Interdepartmental Knowledge Management Forum; the International

Association of the Management of Technology and the National Securities Studies Course at the Canadian Forces College, the ideas of the project have been refined. The model presented in this paper is now deemed mature enough to share with the wider KM community. In the spirit of sharing and learning, it is hoped this paper will invoke debate and discussion so collectively we may become wiser.

The Challenge

Practitioners and academics alike suggest that knowledge management might be the solution to many organizational challenges. Frequent journal articles add to the body of knowledge in the domain of knowledge management and yet we seem no closer to the Holy Grail. For many years governments have acknowledged this new found business sphere as a possible panacea and yet heretofore there have been few successes.

In the last decade management gurus have offered a variety of reasons why leaders should consider knowledge management as a way ahead. Some of the more popular suggestions include: deregulation (Wilson, 2001), globalization (Johne, 2001; Prusak, 2001; Wilson, 2001), technology (Wilson, 2001), downsizing (Johne, 2001; Wilson, 2001), and information overload (Hanka & Fuka, 2000; Johne, 2001). Though each of these notions bears merit, the last two demand the attention of government leaders. In addition, and unique to governments, are the knowledge challenges presented by countering terrorism.

The aim of this paper is to provide government leaders a model that may be useful in combating these destructive forces,

which unfortunately are commonplace in our organizations of today. The review begins with an overview of several contemporary knowledge management models from which five enablers emerge as the most important for government organizations that wish to succeed in the future. These five components are blended to create a new archetype. The model was included in a recent survey instrument with a view to conducting exploratory research into the viability of the model. Though space constraints preclude a detailed analysis of the quantitative results, a brief summary of the study and the major findings are included.

Knowledge Management Models

Considerable recent research indicates that knowledge management may be a useful tool in conquering the challenges of new and innovative organizations. Though the research is inconclusive, there is growing evidence that the adoption of knowledge management programs may assist managers in dealing with these new and exciting challenges. Such programs typically include a number of components or enablers. As is often the case when academia and government meet, a number of models exist, each of which includes different enablers.

In *If Only We Knew What We Know*, O'Dell and Grayson describe four enablers of knowledge management, all of which must be present in a successful knowledge management program (1998). Their excellent thesis was based on a review of many research projects conducted by the American Productivity and Quality Center (APQC), a much larger database than most researchers are able to access. Grounded in system theory, their premise is that the four enablers – Infrastructure, Culture, Technology and Measurement – are interrelated and independent but all are

essential elements of a knowledge management model.

The second model worthy of note was developed by Dr Stankosky and his team at George Washington University, a leading university in the field of knowledge management (Calabrese, 2002). Their excellent representation, often referred to as the *Pillars of KM*, remains one of the most studied and quoted descriptions of the complex knowledge management system. Each of the pillars represents a key element critical to knowledge management programs – Leadership, Organization, Technology and Learning. Recent research further strengthened the authority of the model by statistically validating the existence of the four key elements and supporting their professed values and comparative significance (Calabrese, 2002).

The penultimate model originates from Europe and “aims to identify and support commonality in KM terminology, application and implementation in Europe.” (Weber, Wunram, Kemp, Pudlatz & Bredehorst, p. 1, 2002). This model is particularly interesting as it provides the view from Europe. Although technically a draft, this robust model offers a holistic and concise view of the major elements – much of which supports current North American academic and business views of knowledge management. Like the previous models, the European model is based on the tenets of system thinking.

The final model comes to us from the U.S. Department of Navy (DON), the genesis of which is experience rather than academic research. The DON is world renown as a leader in public sector knowledge management and though their model is experience based, the similarity to the academic models is striking. The DON model resembles a ship's wheel with five

spokes, each representing one of their enablers of: Technology, Content, Process, Culture and Learning. As knowledge management principles are relatively immature and continue to develop, one would be remiss to consider only the findings of academia when organizations such as the Navy have codified their extensive experience. The Navy’s practical experience adds credibility to the theoretical models presented by academia. To use a knowledge management analogy, the DON model is akin to tacit knowledge whilst the academic models are analogous to explicit knowledge.

	Technology	Leadership	Culture	Measurement	Process	Organization	Infrastructure	Learning	Content
KM Pillars	*	*				*		*	
European	*	*	*	*	*	*			
DON Balanced	*		*		*			*	*
Enablers of	*		*	*			*		
KM Assessment	*	*	*	*	*				

Figure 1 – KM Models

Figure 1 is a summary of the knowledge enablers embedded in each of the four knowledge transfer exemplars. In addition, the components of the Knowledge Management Assessment Tool or KMAT are summarized. The KMAT was developed as a measurement instrument, which organizations may self-administer in order to determine their strengths and opportunities in managing knowledge (O’Dell & Grayson, 1998). The five enablers shown in green – Technology, Leadership, Culture, Process and Measurement – are common in at least three of the five models.

A detailed review of the remaining four enablers – Organization, Infrastructure, Learning, and Content – reveals that the essence of the latter cluster is in the former group. For example, the designers of *the Enablers of Transfer* model wrote, “Infrastructure includes the *transfer-specific mechanisms* put in to ensure best practices flow throughout the enterprise. These include technology, work processes, and networks of people” demonstrating the spirit of process is in what they call infrastructure (O’Dell and Grayson, 1998, p.107). Similarly, Dr Stankosky opted to include the concept of process within the broad category of organization and placed culture within the leadership pillar. Thus, one may conclude that the core components of each model are extremely similar; arguably, the sole difference is semantics. For this project, the precise titles are less important than the underlying concepts.

This review of the major knowledge management models conclusively indicates that five elements (Technology, Leadership, Culture, Measurement, and Process) capture the major themes presented in the various models. Thus, these categories form an excellent basis for the examination of knowledge enablers. This section introduces a new structure, the Torii, to describe the key enablers of knowledge management.

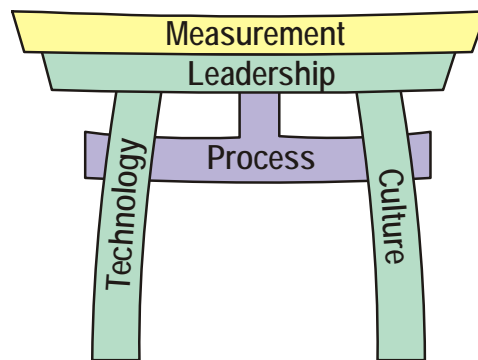


Figure 2 – The Knowledge Torii

This traditional architectural structure is an excellent symbol to illustrate the enablers as the Japanese often use a Torii as a portal to enter a sanctuary. Normally the Japanese construct a Torii with two vertical bars supported by two or three horizontal bars. Key to the structural integrity of the Torii is the lowest horizontal bar, or Nuki, which binds the remaining horizontal and vertical bars. In the Torii (Figure 2), the Nuki of Process bonds the trinity of Technology, Leadership, and Culture.

The *process* component of was based on the SECI model of Nonaka and Takeuchi (1995), within the context of socialization, externalization, combination and internalization (see Figure 3). The highest bar in this Torii, known as the Kasagi, is Measurement. Like a real Torii, this highest bar is not essential to the structure's integrity; however, it plays an important role in ensuring the notary and the respect of the Torii.

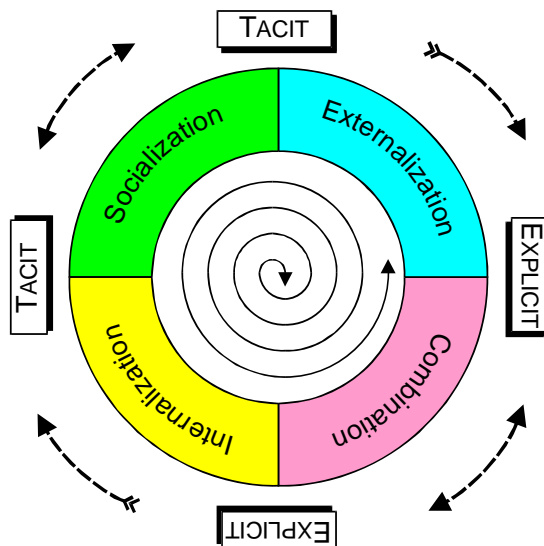


Figure 3 – The Process Component

Quantitative Research Results

The second stage of this investigation was to subject the theoretical construct to a

quantitative analysis. To achieve this aim, one section of a recent survey instrument was dedicated to the component parts of Torii model (Girard, 2004). Though exploratory in nature, the findings proved very interesting and therefore are worthy of review. The population under examination was the Canadian Public Service middle managers. The sampling technique used for this project was the snowball technique, which is not totally random. In reality this sampling technique relies on motivated volunteers to complete the survey and solicit the support of their colleagues. This does not mean that this sample is not representative of the entire population; however, one must use care in generalizing the results too broadly. Ideally, additional research should be undertaken to corroborate these findings.

In order to moderate the risk of generalizing the research findings, the sample was compared to a large randomly selected sample, which is known to be representative of the population. The comparison sample was the 2002 Public Service Commission (PSC) online survey of Canadian Government Middle Managers. The survey yielded 2,650 usable responses, for a 31% response rate, a confidence level of 95%, and a confidence interval of 1.8 (PSC, 2002). Though the confidence levels were the same for both projects, the PSC Survey's confidence interval of 1.8 was significantly lower than this study's confidence interval of 10.

A series of null hypothesis tests, including gender ($t(2768) = 1.341, p = .1801$), education ($t(2768) = 0.155, p = .8768$), and language ($t(2768) = 1.012, p = .3117$), indicate that this sample is not statistically different from a recent large-scale survey. From this finding, one may conclude that this sample is likely representative of the population. Whilst acknowledging that bias exists in all studies utilizing the snowball

sampling technique, the analysis of the demographic data indicates that the sample is not statistically different from the PSC Survey indicating that one should be able to generalize the findings.

The online survey instrument included the statement *<blank> is an important enabler of knowledge management*. Using a five-point Likert scale, respondents rated each of the five enablers. Of particular note was the discovery that 90% of respondents agreed or strongly agreed that Leadership is an important enabler of knowledge management. It is also interesting to note the high scale reliability (Cronbach Alpha > .700) – see Table 1.

A one-factor ANOVA between enablers was performed to determine whether there was a significant difference between the means of the enablers. The F-statistic was significant at the .05 critical alpha level, $F(5, 616) = 10.756$, $p = .0000$ (see Table). Therefore, we may reject the null hypothesis and conclude that the difference between enablers was significant. To continue the analysis a series of post-hoc t-tests were completed between all combinations. The most interesting post-hoc finding is that the difference between the Leadership's mean and each other enabler's mean is significant at the .05 critical alpha level. In total, there are six combinations with significantly different means, four of which involve the enabler of Leadership.

The importance of Leadership as an enabler was echoed in the qualitative comments, including "Projects that start today have the distinct advantage of all the advances in Information/ Knowledge Management. However, the best tools available won't be any use if Senior Management does not recognize the value of Knowledge Management" or

Starting knowledge management in an organization was one of the biggest challenges of my life. It involved adapting KM theory to the culture. Using a KM strategic document and a number of communicative means like workshops, published articles and a conference, we were able to move the organization in the direction of KM with the support of a KM champion.

An intriguing discovery is that Culture was seen to be of equal importance as Technology, that is the two had statistically the same means ($t(119) = 0.168$, $p = .867$). It would be interesting to explore, empirically, which of the two the population believes will play a more important role in the future. At least one respondent had very strong views on the relative importance of the two, especially if one compares the past to the future:

In our organization, I believe that computers have deteriorated our information and knowledge systems. They have enabled individuals to develop and hoard their own systems and information in a fashion that would not be useful OR EVEN KNOWN to others in the organization. Great efforts have been made to provide and change culture to centralize information electronically, but is not consistently used and even less is it used to retrieve information that is pertinent to a current situation. Corporate Culture is the key to change. Then Measurement can be done more meaningfully and improvements in the organizational output realized.

The survey instrument encouraged respondents to include an additional enabler,

if they thought something was missing from the model. Some 26% opted to add a new enabler, though the responses varied dramatically. As there was little agreement in which other enablers should be added, one may conclude that the most important enablers were captured in the model. The most common themes were: Experience, suggested by 5% of respondents; Resources, suggested by 4%; People, suggested by 3%; Respect and Benefits, each suggested by 2% of the sample.

**The Missing Links – Association,
Appreciation, and Acceptance**

This review of the major knowledge management models conclusively indicated that the five elements of Technology, Leadership, Culture, Measurement, and Process captured the major themes presented in the various models. The quantitative research supported the premise; however, something was missing. Each time the results were presented to Canadian audiences there were questions about why the Torii symbol was used to illustrate the model. Virtually all managers agreed the model was sound and a useful tool for considering the enablers of knowledge management, but why they asked, use the Torii?

Many attempts at explaining that the Torii was a great symbol failed; despite the acknowledgement that the Japanese used it to mark the entrance to a sanctuary – in this case it was explained that the sanctuary was knowledge. Audiences were regularly reminded that the ‘process’ element of the Torii was based largely of the work of Nonaka, a Japanese pioneer in field of knowledge management. Despite or perhaps in spite of the many explanations, it was realized that the design of the model was one with which the target audience could not

associate, appreciate or accept. And so began a quest to find a symbol for the model.

The selected model is based on an Inuit structure called the Inukshuk. The Virtual Museum of Canada describes an Inukshuk as:

Like a person. An arrangement of stones, often resembling the shape of a human. The inukshuk is used as a navigational aid, as a marker for hunting grounds and caches of food or supplies, in hunting to lure geese and corral caribou, and as a way to mark sacred ground. These stone cairns embody strong spiritual and ancestral connections and have been erected by Inuit on the Arctic tundra for many generations.

The Canadian Museum of Civilization suggests that Inuksuit (plural form) vary in size and function:

Inuksuit vary not only in size and shape but also in their functions. One was to drive herds of game to where they would be killed in numbers. Another was to guide the hunter travelling on land, or on the sea or ice within sight of land. There are places in the Arctic where networks of inuksuit reach from the interior to the sea, and along the coast in both directions. Some inuksuit were built to serve as message centres. They could indicate, for example, dangerous places, the depth of snow, the direction of the mainland from an island where seals or fish could be taken. These inuksuit were designed to be messages fixed in time and space. Others were personal notes left on the landscape – perhaps for a

wife to follow her husband at a later date, or as an expression of grief marking the place where a loved one perished.

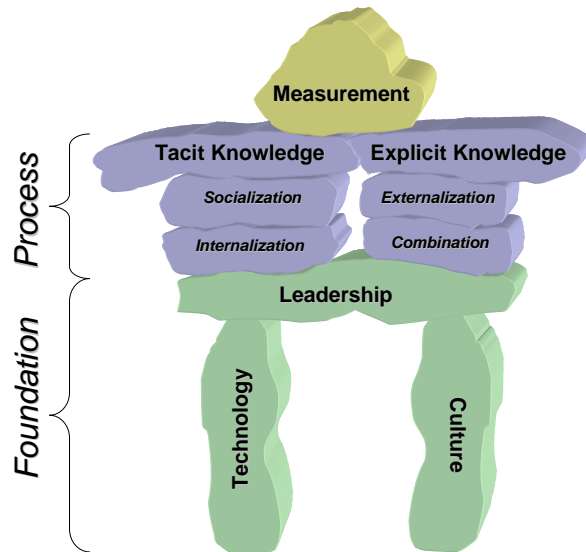


Figure 4 – The Inukshuk: A Canadian Knowledge Management Model

The Inukshuk, as shown in Figure 4, is an excellent model of Canadian knowledge for a variety of reasons. First, inuksuit are well-known symbols in Canada and play an important role in our history and tradition. Second, most Inuksuit resemble people, to remind us that it is people who play the most important role in knowledge management – knowledge management is simply not possible without people. Finally, while most Inuksuit are similar they are nonetheless distinct from one another, much as each knowledge management implementation will be unique.

The level of acceptance and association with the Inukshuk has been unprecedented. Most managers instantly appreciate how the Inukshuk symbol may be used in their organization to guide their pioneering work. Anecdotal evidence supports this initial finding as many managers have reported

apparent success when using the Inukshuk. For some, such a finding may seem unbelievable – how is it that changing the symbol can make such a difference? Surely it is the substance of the model and not the symbol that is important? Well perhaps from an academic point of view; however, for practitioners – at least Canadian managers – the symbol is very important.

Conclusion

Knowledge management will be one way that leaders of the future may conquer the many challenges confronting their organizations. However, to ensure the best return on their knowledge investment one must understand and apply the enablers of knowledge management. The Inukshuk knowledge model, which includes the enablers of Technology, Leadership, Culture, Process and Measurement, may go some way in ensuring organizations derive maximum benefit.

Anecdotal evidence suggests that it is important for organizations to have an association with, appreciation and acceptance of the model used to symbolize knowledge management. In Canada it appears that the Inukshuk symbol fulfills that need. In other countries it seems likely that other symbols may be more appropriate. Such a revelation may go some way in helping others find a symbol that helps achieve organizational needs.

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Table 1. Enablers of Knowledge Management Descriptive Statistics

Frequency of Response – Torii	N	Mean	SD	1	2	3	4	5
Leadership	120	4.43	0.718	0.0	1.7	8.3	35.8	54.2
Technology	120	3.99	0.939	1.7	7.5	11.7	48.3	30.8
Culture	120	3.97	0.912	0.0	9.2	15.0	45.0	30.8
Process	119	3.96	0.741	0.0	2.5	21.8	52.9	22.7
Measurement	118	3.75	0.857	0.0	6.8	31.4	41.5	20.3
Other	25	4.60	0.500	0.0	0.0	0.0	40.0	60.0

Cronbach's Alpha = .731

(1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree)

Table 2. Analysis of Variance for Enablers of Knowledge Management

Factor A (Fixed): <blank> is an important enabler of knowledge management

Enabler of Knowledge Management	N	Mean	SD
(A) Level 1: Technology	120	4.43	0.718
(A) Level 2: Leadership	120	3.99	0.939
(A) Level 3: Culture	120	3.97	0.912
(A) Level 4: Process	119	3.96	0.741
(A) Level 5: Measurement	118	3.75	0.857

Source of Variation	DF	Sum of Squares	Mean Squares	F-Ratio	Significance Level
A	5	36.835	7.367	10.756	0.000
Error	616	421.904	0.685		
Total	621	458.740			