Connecting Knowledge and People

Knowledge Management Framework

Knowledge management is receiving increasing attention in organizations across Canada, with knowledge becoming viewed as an integral component of an organization's asset management strategy. This is largely being driven by the identified need to retain the institutional memory of the increasing numbers of skilled workers approaching retirement age.

Knowledge management is a multi-faceted practice, incorporating a wide range of techniques to address the many elements that can help an organization maximize the use of existing and available knowledge. The concepts of knowledge management are not complex, but there can be challenges to implementing an effective and sustainable knowledge management strategy.

TAC's Education and Human Resources Development Council undertook the development of a knowledge management framework. This document provides background and key definitions, presents a framework of knowledge management activities, and describes an implementation process.

This document does not reflect a technical or policy position of TAC.

Background

Organizations intuitively appreciate the value of knowledge. Workers need access to knowledge in order to do their work, and as they work, they learn and generate new knowledge. To do their jobs proficiently, individuals need to know what to do and how to do it.

The importance of knowledge management is emphasized by the fact that, as the workforce ages and retirements occur at increasing rates, a process for ensuring the preservation of institutional memory has become critical. Similar needs arise due to a competitive job market with the resulting "transient" work force, and increasing pressures to do more with less.

It is apparent that without a concerted and orchestrated Knowledge Management (KM) program an organization's effectiveness can be deficient and / or negatively impacted.

Some Knowledge Management Definitions

Knowledge management can be defined in different ways, with each definition emphasizing some of its important objectives. For example, knowledge management is:

- a multi-faceted business management practice that maximizes use of knowledge,
- a systematic approach to identifying, capturing, transferring and using knowledge, for delivering, creating, competing and improving business practice,
- a process for ensuring that the right information gets to the right people, at the right time, in the right way, to help make the right decisions.

A multi-disciplinary asset management practice

Knowledge management is an important strategy for effective and efficient business practice and workforce planning. Accumulated knowledge can be considered the fourth major asset to be managed as part of typical business processes, comparable to physical assets (buildings and equipment), financial assets and human resources.

Knowledge management involves people, process and technology. It includes the multi-disciplinary skill sets of organizational science and human resource management, computer science, management science and psychology.

Explicit knowledge

Knowledge may be explicit, captured in a document, DVD, e-mail, chart, book, content database, or similar medium. Explicit knowledge includes systems, tools, procedures and contacts, which can be easily articulated, standardized and shared or stored.

Implicit or tacit knowledge

Knowledge may be implicit or tacit, i.e. held only in the minds of people. It encompasses thinking, interpretation, knowing and improvisation. Tacit knowledge may not be easy to articulate or transmit to another.

Institutional / Organizational memory

Institutional memory is the body of knowledge, formal and informal, that is essential to the effective functioning of an agency. Increasingly, the practices for managing institutional memory are included in knowledge management practices.

Knowledge Transfer - an element of Knowledge Management

It is important that knowledge is captured before it leaves an organization, ensuring service continuity. Knowledge transfer requires the sharing of the knowledge between a “giver” and a “receiver”. A primary consideration is that if knowledge cannot be applied by the receiver, it is not considered to be effectively transferred.

A Knowledge Management Framework

A knowledge management framework, including five major elements, is presented in Figure 1. Knowledge management activities for each element are described below.

A: The Basic Elements

A1. Records management

Records management is the practice of maintaining the records of an organization from the time they are created up to their eventual disposal.

- Records include items such as communications, requests and decisions, and minutes of meetings.
- Records management may include the tasks of classifying, storing, securing, and destruction (or in some cases, archival preservation) of records.
- Records management also facilitates efficient and accurate responses to requests for information from elected officials, media, legal staff, historians, researchers and the general public.

A2. Accessible information

Accessible information enables workers to conveniently access the information they need to do their jobs effectively.

- Knowing what information is available and having convenient access to this knowledge (e.g. information stored in databases, GIS systems, historic reports, guidelines, manuals and procedures) is fundamental to knowledge management.
- Another important consideration is the concept of corporate yellow pages; a list of individuals who have knowledge in certain areas, with contact information. This includes the consideration of both technical and procedural topics.

B: Improving Efficiency

B1. Documented procedures:

Organizational procedures – step-by-step methods for conducting routine tasks in an efficient manner – are normally documented in detailed procedures manuals.

Process maps are flow charts of the sequence of events or steps to produce an outcome, defining exactly what a business entity does, who is responsible, and to what standard a process should be completed.

B2. Tools and templates:

- Tools are job aids that are developed to improve the efficiency of undertaking specific tasks, generally applied to analytical techniques.
- Templates may exist for repetitive documentation tasks. For example, the preparation of meeting agendas and minutes, letters, memoranda.

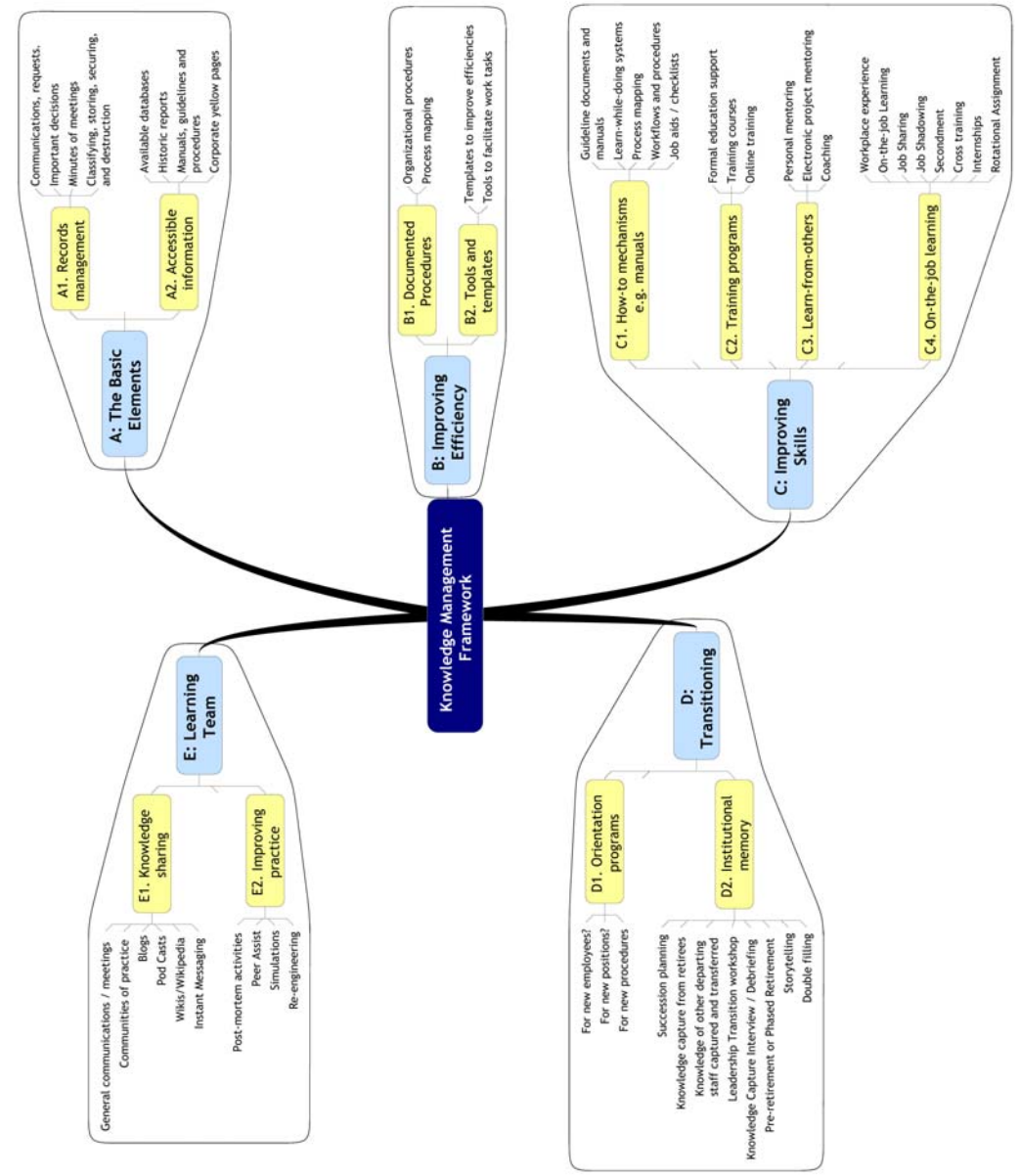

Figure 1: Knowledge Management Framework

C: Improving Skills

C1. How-to mechanisms:

- To avoid having to reinvent the wheel, it is important to document best practice processes, especially for tasks that are undertaken repetitively and by new staff.
- The documentation can take a number of forms such as:
  - guideline documents / manuals
  - process mapping, workflows and procedures
  - job aids / checklists.
- Instructional designers recommend the application of electronic learn-while-doing systems as the most effective way of empowering users in the practical application of new knowledge.

C2. Training programs:

- Training is a learning process that enhances the performance of employees through:
  - acquisition of knowledge
  - sharpening skills, concepts and rules, and/or
  - changing attitudes and behaviours.
- Training can be formal such as attending courses, conferences, or informal such as attending meetings. Formal training includes:
  - courses by corporate trainers or in-house specialists
  - bringing in external specialists to offer in-house training
  - sending staff to attend off-site training events.
- Online learning is self-directed, allowing the student to choose content and tools which may be more suited to their style of learning.

C3. Learn-from-others:

Learning from others involves interaction between more knowledgeable and less knowledgeable workers, aimed at the transfer of knowledge from the former to the latter. Strategies include:

- Mentoring – a dynamic, reciprocal relationship in a work environment between an advanced career incumbent (mentor) and a new hire (mentee) aimed at promoting the career development of both.
- Coaching – a professional relationship between incumbent and leader (coach) focused on improving performance. Coaching seeks to enrich the incumbent's knowledge, skill-set and competencies.
- Storytelling – a way of passing on complex information, experiences and ideas through narrative, typically between people with different contexts.

C4. On-the-job learning:

On-the-job learning involves active participation and observation and can be achieved through a variety of approaches:

- Secondment – an employee is placed on loan to another department or division.
- Internships – a system of training for a complex skill, mostly done on the job.
- Rotational assignment – an assignment to another position for a short term (six months to two years) for developmental purposes. The job of the person who is on rotational assignment is then filled by another individual from elsewhere in the organization and his or her job is backfilled by someone else.
- Cross training – involves the training of employees to do one another's work, providing an opportunity to develop new skills.
- Job sharing – an employment arrangement allowing one permanent full-time position to be shared between two employees.
- Job shadowing – a work experience where individual learns about a job by walking through the work day of a more seasoned employee.

D: Transitioning

D1. Orientation programs:

Orientation programs accelerate the development of new hires and the transition of employees transferred or promoted to new positions. Orientation programs may also be used to inform staff about the introduction of new procedures in the organization. A good orientation program can answer many questions and start employees working in the right direction.

Orientation programs may address:

- the structure of the company, its culture, and its goals
- the requirements of a position
- guidance on available information and resources
- guidance on policies and procedures

D2. Institutional memory:

The following strategies can help manage the retention and transfer of institutional memory:

- Succession planning – a strategic approach to ensuring that the necessary talent and skills will be available when needed, and that essential knowledge and abilities will be maintained when employees in key positions leave.
- Knowledge capture – gathering knowledge from individuals in a manner that others will find useful. It is primarily accomplished through interviews and/or questionnaires that document knowledge so that others can reuse and adapt it for their particular use (i.e. a book, a website, information repositories, etc.).

- Knowledge transfer – in addition to various forms of documentation, knowledge transfer can be facilitated through the development of virtual mentoring, which virtualizes the processes and techniques used by experienced and soon-to-be-leaving practitioners.
- Pre-retirement or phased retirement – a leave policy that allows employees, at their option, to use a certain number of retirement allowance credits as leave during the years prior to retirement, in lieu of cash payment of the allowance on retirement.
- Double-filling involves hiring replacements prior to the departure of the employee.
- Leadership transition workshop – facilitated sessions to help an incoming leader and team "let go" of the departing leader and begin building new relationships.

E: Learning Team

E1. Knowledge sharing:

Learning organizations encourage knowledge sharing and communication between practitioners, promoting the synergy that can be achieved through collaboration of individuals with unique contributions to offer. Knowledge sharing tools include:

- Community of practice – a voluntary group of peers whose members regularly engage in sharing and learning to improve their performance as individuals, teams and organizations.
- Blogs – a Web log used to broadcast content created by single author across an entire organization or the Internet.
- Pod casts – a way to communicate, share and transfer knowledge to a broad audience.
- Wikis/Wikipedia – facilitating fast creation, sharing, and transfer of collaborative knowledge content in a highly accessible and visible manner.
- Instant messaging – enables transfer of knowledge instantly by sending text messages in real time.

E2. Improving practice:

Learning organizations continually reflect upon experience to proactively try to improve business practices by undertaking, for example:

- Post-mortems – learning from past experiences, through a detailed evaluation of an event that just ended.
- Simulations – re-enacting a situation or event to evaluate behaviours or strategies.
- Re-engineering – aimed at improvements by means of elevating efficiency and effectiveness of the business process that exist within and across an organization.
- Peer assists – a facilitated meeting or workshop where peers share experiences, insights, knowledge.

Implementation Challenges

Implementers of knowledge management programs may face challenges, and some actions or responses are offered that may overcome those challenges.

Knowledge management not deemed urgent

Knowledge management is often treated as an important, but not urgent issue. Organizations may adopt an attitude that "we understand that knowledge management is important, but if we do not urgently implement knowledge management, our organization will not collapse."

Response:

1. Present a consolidated summary of the importance of knowledge management to an organization.
2. Lead managers through a process of describing the impacts of the current shortcomings in their knowledge management activities to develop an understanding of the importance of knowledge management to the efficiency and effectiveness of their organization.

Knowledge management not institutionalized

The lack of institutionalization is often a direct outcome of knowledge management not being viewed as being urgent. A primary requirement for a successful knowledge management program is that it be institutionalized, as a foundation for the undertaking of knowledge management activities. This would include that:

- knowledge management be an explicitly recognized objective / activity in an organization's business plan;
- a knowledge management program manager be designated, with the required accountability and authority;
- a budget be allocated to knowledge management activities;
- proactive knowledge management procedures be developed and adopted; and,
- knowledge management responsibilities be included in employee workplans and in performance reviews.

Response:

1. After getting agreement on the importance of knowledge management - present the elements of institutionalization that should be considered.
2. Lead managers through a process to identify institutionalization shortcomings and encourage that these be addressed.

Staff do not have time to undertake knowledge management activities

Staff are already overloaded with demands in delivering their basic job functions, as well as responding to "firefighting" issues. Knowledge management will require additional time commitments, which will be compounded by the need to maintain the captured knowledge.

Compared to the delivery of transportation infrastructure and services, knowledge management is not a mainstream activity for transportation staff, nor is it a recognized skill-set of employees.

Response:

There is no silver bullet to address this issue – a multi-faceted response by leading managers through the systematic consideration of elements that could help redress this situation, includes the following:

- Institutionalize knowledge management; encourage staff to consider knowledge management as a basic function
- Designate staff for the undertaking of knowledge management activities, or contract knowledge management resources
- Share limited knowledge management resources between branches, divisions, departments etc.
- Allow flexibility in staff schedules to accommodate knowledge management activities.
- Implement knowledge management incrementally. Do not try to implement a comprehensive knowledge management system overnight. Take small steps but keep momentum going.

The staff culture / ethos relating to knowledge management is not supportive.

Staff may not volunteer (enthusiastically) to participate in knowledge management activities, and there may be resistance or uncooperative attitudes. The reasons for this could be one or more of:

- simply being overloaded with day-to-day tasks;
- not buying in to the need for knowledge management, and their contributions in addressing the issue;
- being uncomfortable with knowledge transfer tools e.g. generational preferences; and/or
- being intimidated and out of their comfort zones.

Response:

Promote the importance of knowledge management and the need for participation by all - this should be reinforced through the institutionalization of knowledge management.

Knowledge management is perceived as a difficult-to-achieve objective

In addition to extra workload and time constraints, the practicality of transferring tacit knowledge from a "giver" to "receiver" may be viewed as a formidable task.

Response:

1. Present one or more successful case studies of how knowledge can be effectively transferred at the program and project levels.
2. Use the practical application of the information presented in this framework as a demonstration of how knowledge can be effectively transferred.

Knowledge Management Implementation

A process has been developed to guide agencies through the initial steps of developing a knowledge management plan and is outlined in Figure 2. This process reflects the following principles:

- All organizations are likely to have implemented some elements of a knowledge management system, but unlikely to have effectively implemented all the elements of the comprehensive knowledge management framework.
- Most organizations are unique with respect to their current level and nature of knowledge management activities. A customized incremental approach is required for each organization, reflecting their current knowledge management situation and other unique conditions.

Forms to assist users apply the process are provided in Appendix A.

Step 1: Gap Assessment

Conduct a gap analysis of the knowledge management system within the organization, identifying associated deficiencies. This analysis should consider each element of a comprehensive knowledge management framework and the extent to which the organization is effectively addressing each element. To obtain a representative perspective, the gap analysis should be conducted by individuals at different levels within the organization, for example executive management, middle management and a junior or new employee.

Step 2: Impact Assessment

The impact of deficiencies in each element of the knowledge management framework should be considered. In other words, to what extent is the effectiveness and efficiency of the organization impacted by these deficiencies? This step should be undertaken at different organizational levels. It will be necessary to consolidate the respective gap and impact assessments to determine the overall gaps and impacts on the organization.

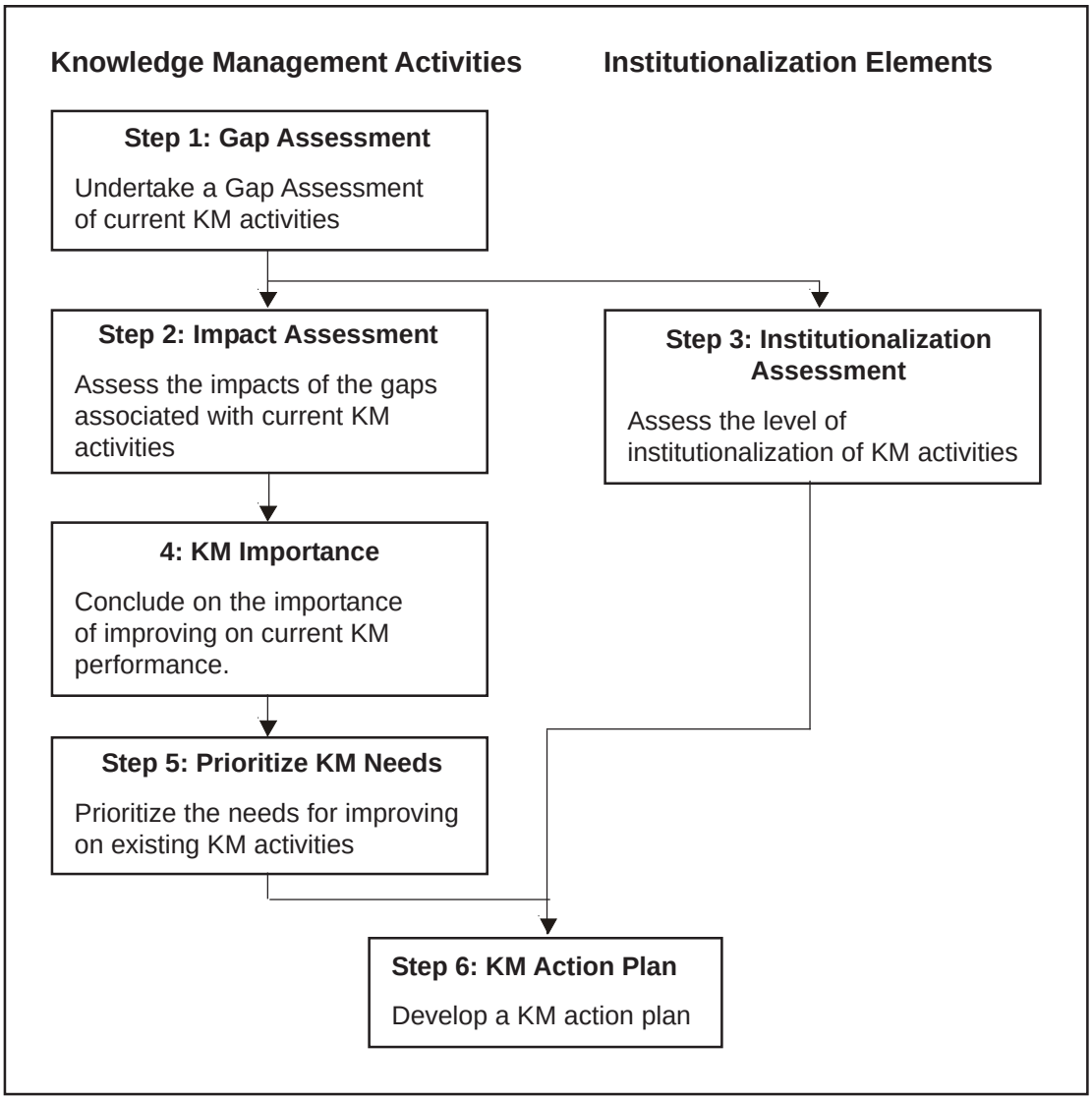

Figure 2: Knowledge Management and Implementation Process

Step 3: Institutionalization Assessment

Effective institutionalization of knowledge management is required to provide a sustainable foundation for knowledge management activities. This is true regardless of the current knowledge management gaps and helps identify shortcomings in an organization's institutionalization foundation.

Step 4: Knowledge Management Importance

Review the overall impacts of gaps and determine the importance of enhancing the knowledge management program.

Step 5: Prioritize Knowledge Management Needs

This step assists the user in considering a range of important factors in prioritizing knowledge management activities. A priority list of activities is generated.

Step 6: Knowledge Management Action Plan

Develop an action plan for institutionalization and knowledge management activities.

Summary and Conclusions

Knowledge is a critical component of an organization's assets and knowledge management is increasingly seen as a necessary component of asset management. A knowledge management framework has been presented that includes elements and activities to improve efficiency, skills, transitioning employees, knowledge sharing and learning.

Achieving a sustainable knowledge management system may be a challenge within an organization. It is important that organizations acquire an understanding of the importance of knowledge management by assessing the impacts of knowledge management deficiencies on the effectiveness and efficiency of their organization's operations. An implementation process has been described that emphasizes conducting gap, impact and institutionalization assessments out of which knowledge management priorities can be identified and an action plan developed.

APPENDIX A
Knowledge Management Implementation

Assessment and Planning Forms

Step 1 and 2: Gap and Impact Assessment

Enter information for each knowledge management activity.

KM Activity	Current Activities[1]	Current performance[2]	Level of Impact[3]	Comments[4]
A1. Records management				
A2. Accessible information				
B1. Documented procedures				
B2. Tools and templates				
C1. How-to mechanisms				
C2. Training programs				
C3. Learn from others				
C4. On-the-job learning				
D1. Orientation programs				
D2. Institutional memory				
E1. Knowledge sharing				
E2. Improving practice				

1 Description of current activities

2 Rating for level of current activities on a 1-5 scale - maximum score of 5, i.e. all considerations being effectively addressed

3 impact of deficiencies (gaps) on organizational effectiveness / efficiency on an A-C scale – A being no impact, C being severe impact.

4 Any comments relating to the items

Step 3: Institutionalization Assessment

Effective institutionalization of knowledge management is required to provide a sustainable foundation for knowledge management activities. The current degree of institutionalization within an organization should be assessed.

The checklist below identifies the constituent elements of institutionalization. Implicit in this approach is that each of the elements contributes to enhanced institutionalization, and if any of them are deficient, there is potential to improve the level of institutionalization.

Undertake assessment:

1. Indicate, in the "In Place?" column, whether each potential element of institutionalization is in place.
2. Indicate, in the "Respond?" column, whether you consider that a response is required to address deficiencies relating to any element.
3. Summarize, in the "Comments" column, any thoughts (e.g. status or future ideas) relating to each of the elements.

Element	In Place?	Respond?	Comments
Importance of KM			
Is KM generally deemed to be an important and urgent issue?			
Is KM included as a priority in the organizational business plan?			
Resources			
Is there a designated KM Manager?			
Is there a dedicated KM budget?			
Are the limited available KM resources shared between departments?			
Has the contracting out of some KM functions been considered?			
Is KM addressed incrementally - rather than trying to do everything at once?			
Processes			
Are there corporate KM procedures in place?			
Do job descriptions include KM responsibilities?			
Are KM achievements recognized e.g. in performance reviews?			
Is there a general staff willingness and enthusiasm to contribute to KM?			
Do managers serve as role models for KM?			

Step 4: Importance of Knowledge Management

Knowledge management may be viewed as an important, but not urgent, issue. A review of should be conducted of the previously defined impacts of gaps or deficiencies in the current knowledge management system. If the impacts of the gaps or deficiencies are considered significant, organizations may assign a higher level of priority to enhancing their knowledge management program.

Considering the impacts described during the Gap and Impact Assessment, answer these questions.

Question	Yes / No	Comments
Are KM deficiencies significantly impacting the **effectiveness** of the organization?		
Are the KM deficiencies having a significant impact on the **efficiency** of the organization?		
Are there urgent **institutional memory** issues arising e.g. pending retirees?		
Conclusion – should KM be addressed as an urgent issue?		

Step 5: Prioritization of KM Activities

To prioritize the relative importance of addressing each of the elements of the Knowledge Management framework, the following three prioritization parameters are applied:

1. Impact: The impact of the performance gaps on current operations
2. Urgency: How urgent it is (memory soon to be lost)
3. Ease: The ease with which it could be addressed (potential for easy early successes)

A weighting and rating process can be applied to obtain a quantitative indicator of the relative importance of each element. Based on the scores, a Manager can assign an overall priority to each KM category.

Weighting of Importance:

The relative importance of the three prioritization parameters, as it would apply to the organization, can be weighted (e.g. Impact = 2, Urgency = 2, Ease = 1). These ratings will be applied to the performance ratings of the prioritization parameters, to obtain a total “Score” for the importance of addressing each.

Parameter	Importance weighting	Comments
Impact		
Urgency		
Ease of addressing		

Rating

Indicate in each of the columns, on a 1-5 scale, the value assigned for each of the prioritization parameters, as they relate to each KM activity.

1. The “Impacts” are carried forward from the gap and impact assessment.
2. The user assigns values to the “Urgency” and “Ease” parameters.
3. The total “Score” of the summated weighting rating can be calculated and recorded in the column titled “Total Score”
4. Based on the Total Scores, a Manager can assign an overall priority to each KM category.

KM Activity	Impact	Urgency	Ease	Total Score	Comments
Basic Elements Score					
A1. Records management					
A2. Accessible information					
Improve Efficiency					
B1. Documented procedures					
B2. Tools and templates					
Improve Skills					
C1. How-to mechanisms					
C2. Training programs					
C3. Learn from others					
C4. On-the-job learning					
Transitioning					
D1. Orientation programs					
D2. Institutional memory					
Learning Organization					
E1. Knowledge sharing					
E2. Improving practice					

Knowledge Management Virtual Mentor: Beta-Test Opportunity

An electronic support system – a *Knowledge Management Virtual Mentor* – has been developed to facilitate the practical application of the knowledge management framework. This support system offers an electronic version of the information in this document and leads the user through the step-by-step process for developing a knowledge management plan of action.

In a beta-testing phase through 2011, a limited number of licences to access the Virtual Mentor are available. If you are interested in testing the Knowledge Management Virtual Mentor, please contact swells@tac-atc.ca.

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- Elaine LaPointe, New Brunswick Department of Transportation
- Carolyn MacDonald, Yukon Highways and Public Works

Transportation Association of Canada
2323 St. Laurent Blvd., Ottawa, ON K1G 4J8
Tel. (613) 736-1350 Fax: (613) 736-1395
www.tac-atc.ca