



**ASSET MANAGEMENT
COMPETENCY FRAMEWORK
FOR CANADIAN COMMUNITIES**

Supporting
communities
to develop
their asset
management
capacity

Brought to you by
the Canadian Network
of Asset Managers



THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (AMCF)

Brought to you by:

The Canadian Network of Asset Managers Association (CNAM)

In association with the “AMCF National Partners”:

The Government Finance Officers Association (GFOA),
the Canadian Public Works Association (CPWA),
the Institute of Public Works Engineering Australasia /
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the Canadian Institute of Planners (CIP),
the Canadian Society for Civil Engineering (CSCE),
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(together referred to hereafter as the "AMCF National Partners")

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2.0 PROGRAM BACKGROUND AND INTRODUCTION



Canadian communities are faced with increasingly difficult challenges that hinder their ability to deliver services from infrastructure. These challenges include an aging asset base, financial deficits, climate change, demographic changes, a constrained public funding model, expectations for higher levels of service, rapid and unpredictable technological change, and loss of organizational knowledge as experienced employees retire. Fortunately, infrastructure asset management (AM) can help organizations navigate these challenges and move towards sustainability. When AM best practices are implemented, they can help decision-makers in Canadian communities fully understand the scope of the issues, find and communicate the optimum balance of service, risk and cost for their infrastructure, and plan a financially, environmentally and socially sustainable way forward.

However, industry and public sector infrastructure owners across Canada say their **organizations face a serious hurdle when dealing with the country's infrastructure challenges: They are struggling to build the workforce capacity and capabilities required to develop and implement formal, organization-wide AM programs.** The Canadian Network of Asset Managers (CNAM) brought together a broad coalition of national associations involved in supporting AM, community planning and management,

and AM-related industry professions in Canada to use their collective expertise to meet this challenge. The Asset Management Competency Framework for Canadian Communities (AMCF) was the result. (See Appendix B for a description of the development process). The AMCF was developed to:

- 1 Provide alignment on the scope of AM, while highlighting the connections between the various professions that overlap with the interdisciplinary practice of AM. These disciplines are represented by the range of national partners involved in the development process.
- 2 Establish a shared understanding of the competencies (the knowledge, skills, and behaviours) that a community's workforce should possess to best deliver their AM programs.
- 3 Provide communities with a foundation to identify AM capability gaps and a planning structure to address those gaps with targeted development opportunities.
- 4 Provide communities with better information to facilitate hiring qualified candidates in their organization.

The AMCF is not intended to be a 'how to' guide for AM practices. There are many other resources available for that. Instead, it details the competencies that staff and contractors should have to successfully carry out those

2.0 PROGRAM BACKGROUND AND INTRODUCTION (Continued)

practices. A person possessing these competencies will then be able to support delivery of AM programs and successfully integrate AM practices into organizations.

The AMCF is intended for Canadian communities, including municipal and regional governments, indigenous communities, and other similar public organizations that own infrastructure and/or provide infrastructure services. It was explicitly developed to be useful for communities of all sizes, small to large, and for all levels of AM maturity, from those that are just starting out, to those with more advanced

AM operations. While the AMCF has been worded specifically for Canadian communities, it is expected that the framework could benefit communities globally who face similar challenges in building AM capacity and capabilities within their organizations.

The AMCF is intended to apply to a very broad definition of “infrastructure” as well. Beyond just engineered, stationary, physical assets, “infrastructure” also includes to a community’s fleet assets, natural assets, information technology (IT) assets, data, and organizational knowledge base.

WHAT IS ASSET MANAGEMENT?



AM is defined as “the coordinated activity of an organization to realize value from assets” [ISO 55000, 2014 (3.3.1)]. It is an interdisciplinary practice that connects the different parts of an infrastructure-oriented organization to make better decisions – bringing together management, finance, engineering, operations, maintenance, planning, and more.

Communities must make sound decisions with scarce resources for both today’s users and future generations. Planning for infrastructure renewals, growth, and new demands amidst increasing service expectations, risk exposure, compliance requirements, and financial challenges can put elected officials and community staff in a difficult position. AM can help.

There are many resources available to help develop an understanding of AM.

- CNAM has developed a “New to AM” program which includes the **AM101 Booklet** as well as webinars and training workshops. Visit www.cnam.ca/NewToAM for more information.
- Other national associations and the Regional AM Communities of Practice have developed a range of excellent resources.
- The FCM also holds a library of AM-related resources that can help communities get started.

Visit www.cnam.ca/resources for links to learning materials and partners.



3.0 AN INTRODUCTION TO COMPETENCY MANAGEMENT

3.1 Competency Management Terms

A **Competency** is the integration of a group of related knowledge, skills, and behaviours that contribute to individual and organizational performance, i.e., the ability to perform a set of related tasks.

Competency Management is the cataloging, management and development of competencies in an organization. Competency management links human resources (HR) management with the organization's strategic needs. It gives an organization the ability to assess and manage the capacity of its people to achieve its vision, mission and goals. Competency management includes conventions and standards that form an organizational approach to three key components:

1 Competencies focus on an individual's ability to achieve an outcome. They support performance across the multiple work tasks required and methods available to achieve that outcome. Competencies typically apply to a broad but defined audience (e.g., all employees, all leaders, or a job family, discipline or function). A competency description usually follows a well-defined structure consisting of a title, a definition, and statements that provide examples of effective behaviours.

2 Competency profiles outline the specific competencies and corresponding target proficiency levels required to be successful within a role or defined group. A job description describes work activities (duties), whereas a competency profile describes the knowledge, skills and behaviours required to carry out those duties.

3 Competency assessment is the process of measuring and judging evidence of an individual's capability or proficiency relative to a defined standard. The integrity of the assessment is foundational to the success of a competency management program. The assessment must be based on a valid and reliable tool, and a well-defined and executed process. Key features of a quality competency-based assessment include transparency, validity, equitable application, and reliability.

To support structured and organized competency management, competencies are grouped into competency models and frameworks. These frameworks and models are decision tools used to ensure an organization has the capabilities and capacity needed to be successful.

A **Competency Model** is a set of key competencies that define the required capabilities for superior performance in a job, job family, or functional area within an organization. To achieve this superior performance, it is necessary that the competencies are aligned with the organization's vision, values and goals.

A **Competency Framework** is a broad conceptual structure for integrating, organizing, and aligning multiple competency models. A framework may align models across an organization's various functional areas, or across many organizations who share a similar professional practice area. A competency framework will also include details of the governance of processes and data management.

Competency models and frameworks have four main functions:

- 1** Provide information on the required knowledge, skills and behaviours for select jobs or roles within the organization;
- 2** Facilitate gap analysis of current versus desired skill sets;
- 3** Provide a foundation and shared language for communicating about employee capability and development; and
- 4** Manage relationships between the competencies and learning activities.

3.2 Competency Management Uses

Competency management provides a means to identify, assess and mitigate any current and future capability gaps that may exist within an organization. By clearly identifying and mapping the knowledge, skills, and behaviours needed to create and sustain an effective AM program, organizations can be sure that their staff are adequately qualified, suitably trained and have enough experience to perform their AM responsibilities to the desired standard.

3.0 AN INTRODUCTION TO COMPETENCY MANAGEMENT (Continued)

Competency management can be used to build capability in the following ways:

Learning & Development

- To identify and develop strategies and programs for AM education and training, covering a mix of AM principles and practices together with the “soft” skills necessary to achieve success in AM.
- To select or develop relevant training material and align staff development initiatives with organizational competency gaps, by utilizing the organization’s competencies as a clear and verified set of requirements.
- To provide targeted development opportunities for individual staff to address competency gaps.

Recruiting & Selection

- To streamline and support the recruiting process, by crafting job postings, evaluating candidates, and making selections based on the required competencies.
- To identify those capacity and capability gaps within the organization that could be outsourced to an external service-provider or consultant.
- To build teams with the right mix of knowledge, skills, experience, attitude, and conduct to deliver AM services in the organization.

Performance Communication

- To give managers and staff clarity about the job responsibilities in a role.
- To support coaching around performance expectations by creating a shared language for defining objectives, measuring achievements, and delivering honest and constructive feedback.
- To provide a structure for easier identification of skill deficiencies and areas of strength.

Succession & Workforce Planning

- To provide information for understanding workforce capabilities and capacity: What an organization currently has, what it will need in the future, and what gaps that it needs to address, whether through internal or external means.

- To understand the current internal candidate pool and provide development opportunities that address skill gaps and prepare staff for long-term careers in the organization.
- To design and structure AM roles and responsibilities, and associated job descriptions.

3.3 Competency Management Benefits and Challenges

By incorporating competencies into its HR processes, an organization can benefit from an integrated, consistent and strategic approach to its people management. This enables hiring, training, evaluation, and staffing decisions to all be made based on common, foundational competencies and criteria.

The benefits an organization can achieve from competency management include:

Better strategic alignment

When competencies are derived from organizational values and objectives, they make organizational culture tangible, inherently reinforcing desired culture in both staff development and hiring.

Modular, but integrated development

Allows for the development of individual staff, while still applying consistently across the entire organization.

Clear communication of expectations

Competencies give managers and staff the language they need to discuss performance expectations and accountabilities, and where staff can focus to improve their performance.

Improved diversity, inclusivity and equality

With validated criteria which are measured uniformly and transparently throughout the organization, competencies create a more objective standard. This structured and objective basis for feedback and selection can make bias more identifiable and visible in an organization, leading to its reduction.

Consistent people management processes

Organizations able to target the required competencies in the recruitment and selection process increase their chances of hiring the best qualified people. Onboarding, performance communication and

3.0 AN INTRODUCTION TO COMPETENCY MANAGEMENT (Continued)

development planning are also more effective with information from competency assessments.

Improved resource and succession planning

Competency assessments give organizations high quality information about their staff and can provide a clear view of skill gaps across employee groups. Competency analysis is a powerful tool for staff allocation and career progression.

However, competency management, just like AM, can be challenging to implement. It is important that an organization recognize and respond to these challenges early in the planning stages of their program. These challenges can include, but are not limited to:

Organizational culture and change management

Both the successful adoption of an organization-specific competency framework and the shift to a more collaborative, cross-functional AM model will necessitate change. This change will be both organizational and cultural. The effort to achieve and sustain cultural change in an organization should not be underestimated. Organizations should consider following a structured change management approach to ensure the benefits of these initiatives can be realized.

Ensure active and visible leadership support and top down buy-in. Consider engaging dedicated change agents, skilled in change management practices. Ensure there are supports in place to aid the transition and alleviate the emotional tension created by change. Develop a sound communication strategy, based on stakeholder impact, leveraging multiple methods of reaching staff, and with clear messaging for all levels

of the organization, to create bottom up staff buy-in. Develop and sustain an effective support model to maintain the change after implementation.

The key to successful change management is changing behaviour on an individual level. Competency management can therefore be a strong enabler of organizational change. When individuals develop competencies that align with AM principles and organizational values and goals, they are also aligning their behaviour with the organization's desired culture.

Union considerations

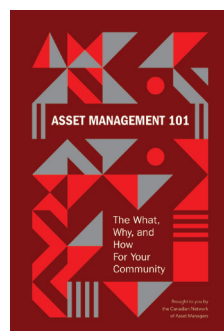
Given the impact on staff training, outsourcing, and potential changes to job descriptions, those working in unionized organizations should work with their HR department and union representatives to understand what the changes will mean to staff (and management) and ensure there are supports in place to help with the transition.

Ongoing use

A competency framework should be a living document that is used continually. This is important for effective change management. Make sure it is fit-for-purpose, it is useful for staff and contractors, and helps reach AM and organizational goals. Consider making it part of the organization's performance review processes.

Training costs

An organization will also need to consider how their training budget can best be used to meet the staff training requirements. Employee development is a long-term process. Prioritize training in line with the AM roadmap and annual development plans.



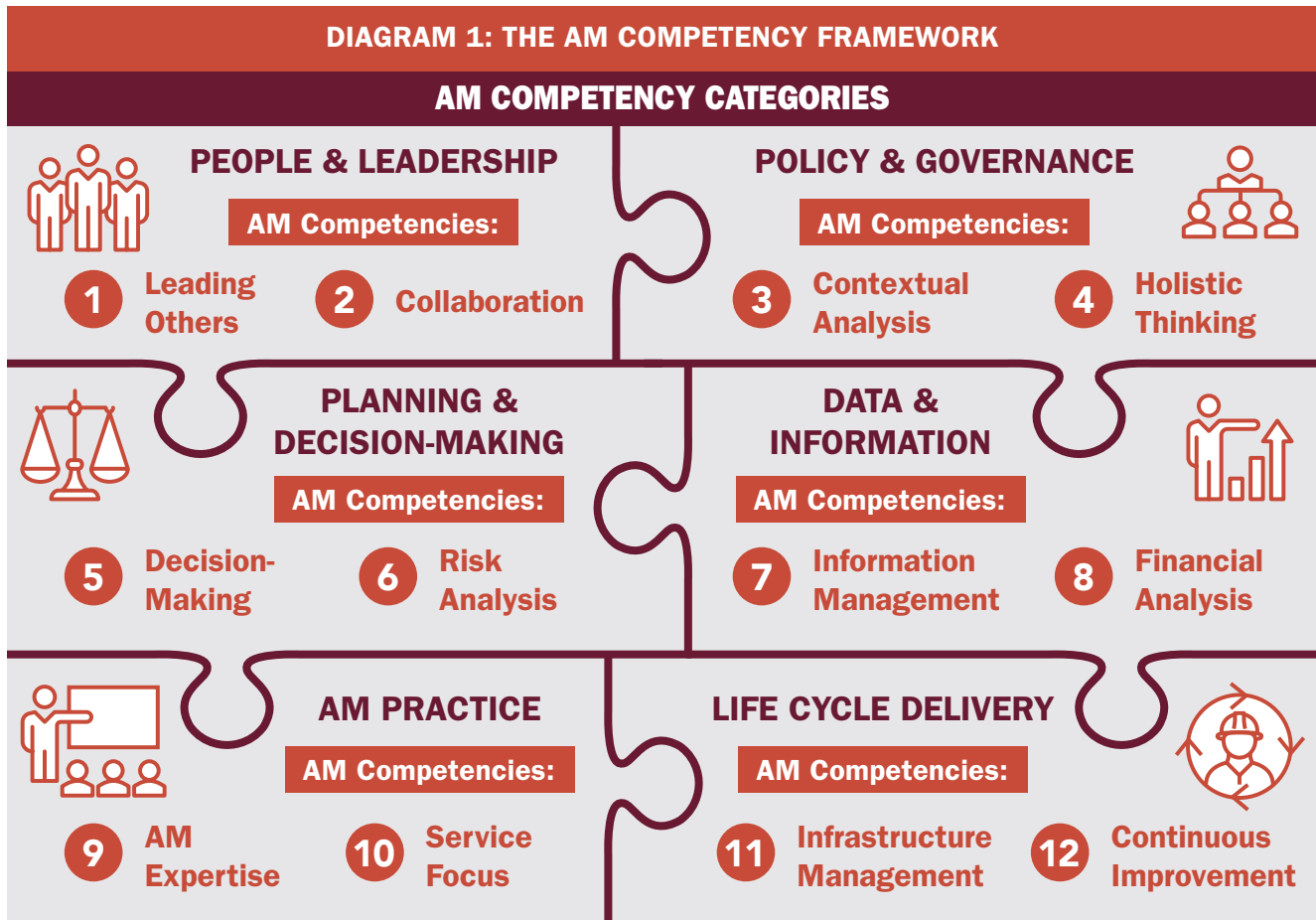
NEW TO AM?
CNAM has developed an **Asset Management 101 Booklet**, with the **What, Why, and How on infrastructure asset management for your community Infrastructure Asset Management.**

Electronic PDFs in both English and French are available for FREE, as well as printed copies for purchase (also in English and French).

For more information, visit cnam.ca/newtoam/ambooklet to download or purchase.



4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES



4.1 The AM Competency Categories

There is no one thing an organization can do to achieve sustainable infrastructure service delivery. AM is about managing all the things required to sustainably deliver the right level of service. This means building a robust understanding of all of a community’s service needs and the asset systems required for those needs, then implementing good practices for acquiring, operating and maintaining those asset systems across their entire life cycle. For an organization to do this successfully, it must build competencies and practices in six main areas, as illustrated in Diagram 1 above.

These six interconnected areas are the AM Competency Categories. Each category forms a piece of the larger whole of AM. Within each one, there are two AM Competencies, which are the key competencies enabling that aspect of AM.

The AM Competency Categories are broadly based

on the FCM’s AM Readiness Scale (AMRS). The product of a previous MAMP initiative, the AMRS is a tool to assist communities in evaluating an organization’s level of maturity in AM. **More information about the AMRS can be found here:** <https://fcm.ca/en/resources/mamp/tool-asset-management-readiness-scale>.

The first four AM Competency Categories (People & Leadership, Policy & Governance, Planning & Decision-Making, and Data & Information) are the same in the AMRS. The fifth area described in the AMRS is the “Contribution to Asset Management Practice” area. This has been adapted into the “AM Practice” category, which is focused on the unique concepts, activities and methods that make up AM practice. A sixth AM Competency Category, “Life Cycle Delivery”, has been added to address the on-the-ground aspects of AM and managing infrastructure.

The AMCF diagram illustrates how the AM Competency Categories fit together into the framework, and how the AM Competencies are aligned under each category.

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

TABLE 1: THE AM COMPETENCY CATEGORIES

COMPETENCIES	CATEGORY DESCRIPTION
PEOPLE & LEADERSHIP	
<p>1 Leading Others</p> <p>2 Collaboration</p>	<p>People do AM, and AM is about providing services to people. It requires building relationships, integrating many perspectives, and balancing competing interests. AM practitioners need to work and communicate effectively with people across the organization and in the community. Developing competencies in this category will help create and sustain connections across teams and within the community, and build AM culture in the organization.</p>
POLICY & GOVERNANCE	
<p>3 Contextual Analysis</p> <p>4 Holistic Thinking</p>	<p>AM is a management system (i.e., a formalized approach to managing an organization to achieve an objective, in this case, sustainable infrastructure services delivery). Effective AM needs formalized policies, accountabilities and goals aligned with community needs and interests. And it needs strategies and a roadmap to bring those policies to life. Competencies in this category help create line-of-sight between the community, the organization and its policy structures, AM goals, and strategies.</p>
PLANNING & DECISION-MAKING	
<p>5 Decision-Making</p> <p>6 Risk Analysis</p>	<p>Plans and decisions are the core of AM. All the other parts of AM come together to align, support, and improve an organization’s decision-making and planning. The competencies in this category help empower AM practitioners to evaluate long-term, life cycle impacts, make consistent, structured decisions, and develop risk-informed AM plans.</p>
DATA & INFORMATION	
<p>7 Information Management</p> <p>8 Financial Analysis</p>	<p>Assets, performance, service and financial data, and information about the organization’s and community’s people, are the key supports for AM planning and decision-making. Competencies in this category will lead to improved data analysis and information management strategies and practices, giving organizations the evidence needed to make informed choices.</p>
AM PRACTICE	
<p>9 AM Expertise</p> <p>10 Service Focus</p>	<p>There are many principles, concepts, activities, skills and tools that are specific to the discipline of AM, like AM maturity assessments, level of service, or life cycle analysis. These things make up “AM Practice.” Competencies in this category help build the organization’s AM capacity and capabilities by ensuring staff are current with, and contribute to, leading AM practices. This is accomplished through training, education, knowledge sharing, and maintaining focus on sustainable delivery of services for citizens.</p>
LIFE CYCLE DELIVERY	
<p>11 Infrastructure Management</p> <p>12 Continuous Improvement</p>	<p>Life Cycle Delivery is about the application of AM practices to the assets an organization manages. It is where “asset management” meets “managing assets.” It means making the AM management system work on a day-to-day basis throughout the life cycle of an organization’s infrastructure. Developing the competencies in this category allows organizations to constantly improve the balance of infrastructure service, cost and risk in their communities. This means effectively designing, operating and maintaining the physical and operational aspects of individual assets, and properly managing their disposal.</p>

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

4.2 A Note on Usage

It is important to read the AMCF strictly from the perspective of the delivery of AM in an organization. As an interdisciplinary field, the full scope of AM is so broad, and interconnects so many different professions, that this framework will overlap with many different jobs and departments in an organization. Many of the AM responsibilities in an organization will also not be performed by a person who is solely dedicated to AM. This is especially the case in smaller organizations. Readers should always keep in mind that the competencies and proficiency levels described in the AMCF are only related to the performance of the relevant AM responsibilities discussed. Appendix C contains a complete list of the AM Responsibilities used as the foundation for the AM Competencies and the rest of the AMCF. Where an individual has AM Responsibilities, and only for the scope of those responsibilities, that person is referred to as an “**AM Practitioner**” in the document.

Readers should recognize that many individuals will be proficient in other competencies, whether related to their background, profession, or non-AM duties in the organization. Many will have greater or lesser proficiency in competencies similar to or overlapping with those identified. Some may have job requirements for certifications, professional designations or technical training programs. These competencies and requirements will often be related to underlying technical knowledge and skills that, while important for understanding and engaging in the practice of AM, may not directly relate to AM responsibilities. These topics are therefore outside the scope of the AMCF.

Further, the AMCF does not specify AM-specific requirements for certifications, professional designations or technical training programs. Where such programs are identified they are for purposes of example only and should not be considered an endorsement, an assessment of their content or outcomes, nor a comprehensive listing. There are also regional and local requirements that cannot be accounted for in such a broadly focused document. These are important considerations for any organization and any implementation of the AMCF

will need to include an exploration of these additional aspects of each organization’s needs. However, they are also beyond the scope of the AMCF.

Readers should also be aware that the AMCF is intended as a guide for developing the AM Competencies rather than a prescriptive set of requirements for performing AM. The AM Competencies will show organizations and individuals how to practice AM better. It should not be expected that every organization or individual practicing AM will have fully developed the AM Competencies or have a competency management program in place. This is why goal #2 of the AMCF program specifies that these are the competencies that “a community’s workforce **should** possess to **best** deliver their AM programs.” Take the AMCF as a starting point in an AM Competency development journey.

4.3 The AM Functional Areas and Roles

Not all competencies apply equally to all roles in the workforce. Within AM, there are distinct roles where targeted development of different AM Competencies are required. These roles are grouped below into the “AM Functional Areas.” Each AM Functional Area is described in Table 2, along with its key responsibilities for successful delivery of an organization’s AM program. These key responsibilities are a subset of the total of the AM Responsibilities described in Appendix C. In Section 4.5 the AM Competencies are mapped to each AM Functional Area, resulting in a competency profile for each.

The General AM Functional Area is further broken down into three generic generalist AM Roles, reflecting a common job structure in many organizations with a dedicated AM team. These generic roles are meant to assist communities in describing and assessing some of their own AM-specific positions. They can provide a foundation for standard AM Competency profiles which can guide customization efforts in individual organizations. These generic roles are also starting point for ongoing development and later improvement of the AMCF.

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

The functional areas and roles described in the table should apply to any organizational structure. AM Roles in any AM Functional Area could be found in a central AM department, or, they might equally be part of a decentralized AM structure. A central AM department might be part of an organization’s corporate services branch. A decentralized AM structure might situate AM Roles in the public works, development services, or finance departments for example. Also, these AM Roles might encompass a person’s entire job, or only a portion of that job. Small organizations will likely not have a dedicated, full-time AM position. Instead, several different people will have a piece of their job devoted to one or more of the AM Roles or AM Functional Areas. All these approaches are equally valid. When managed appropriately they have no bearing on AM outcomes. They are simply a product of the unique circumstances of the organization.

As described above, the AMCF makes a distinction between generalist AM Roles and specialist AM Roles.

The key difference is that the generalist roles in the General AM functional area are focused on the whole of AM. They are intended to support the development and sustainment of the entire AM management system and AM program. The roles making up the other AM Functional Areas would be specialist roles. These specialist AM Roles would be focussed on only a portion of AM, as represented by the functional area they are found in. Generally, these roles would include subject matter experts in that functional area, often with backgrounds, skillsets and experience in the related domain (e.g., engineering, finance). Such roles might include AM Financial Specialist, AM Data Analyst or AM Professional Practices Coordinator.

Last, organizations of all sizes may outsource some of their AM Responsibilities. Any of the AM Functional Areas or AM Roles described in the table can be delivered by external service providers or consultants. The required competencies and proficiency levels outlined in Section 4.5 apply equally to these groups.



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4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

TABLE 2: THE AM FUNCTIONAL AREAS AND ROLES

AM FUNCTIONAL AREA	AM ROLE	DESCRIPTION	KEY AM RESPONSIBILITIES
General AM		<ul style="list-style-type: none"> Encompasses those roles that are directly responsible for developing and managing an organization's AM management system and AM program. May be in a centralized AM or infrastructure services department, often under a corporate services branch of the organization. Or, may be an AM champion or supporting role that is part of an infrastructure-related department like public works. Can be a dedicated, full-time AM position or can be only a portion of a person's job. Can be an individual AM position or part of an AM team. 	<ul style="list-style-type: none"> [Refer to the AM Roles under this functional area, described below.]
	AM Manager	<ul style="list-style-type: none"> A management role for an AM team. May be in an AM department or may be embedded in an infrastructure-related department in the organization. A common first AM Role filled in an organization. 	<ul style="list-style-type: none"> Develop and sustain the AM management system. Manage the AM program. Develop and maintain AM principles, policies, and strategies. Standardize AM systems and processes. Manage the AM team. Establish an AM culture throughout the organization. Communicate AM culture to the organization.
	AM Project Manager/AM Advisor	<ul style="list-style-type: none"> An AM subject matter expert or advisory role and/or an AM project management role. Responsible for planning and delivering AM projects and entrenching AM practice in the organization. May be in an AM department or may be embedded in an infrastructure-related department in the organization, either as part of a team or alone. 	<ul style="list-style-type: none"> Develop and maintain AM plans and the AM roadmap, in alignment with the AM strategies. Maintain and integrate AM systems, processes and practices into the organization. Plan and deliver AM projects. Develop and maintain AM culture in the organization. Communicate AM benefits and practices to the organization.
	AM Coordinator/AM Analyst	<ul style="list-style-type: none"> An AM analyst, coordinator, technologist or other supporting role. May be in an AM department or may be embedded in an infrastructure-related department in the organization, either as part of a team or alone. A common first AM Role filled in an organization. 	<ul style="list-style-type: none"> Support and assist the AM Project Manager/AM Advisor in developing the AM strategies, plans, and management system. Support and assist infrastructure-related departments in integrating AM practices and AM culture. Monitor and report on AM performance measures. Analyze AM data and information.

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

TABLE 2: THE AM FUNCTIONAL AREAS AND ROLES (CONTINTUED)

AM FUNCTIONAL AREA	DESCRIPTION	KEY AM RESPONSIBILITIES
Senior Leadership	<ul style="list-style-type: none"> ● Focus is on directing and managing the overall operations of the organization. ● Encompasses senior management roles (director, general manager, and similar) with overall responsibility for infrastructure-related departments in the organization, possibly including an AM or infrastructure services department. ● Also includes the organization’s executive management role(s), typically a chief administrative officer or equivalent in a public organization. ● May include council or other publicly elected officials. 	<ul style="list-style-type: none"> ● Authorize, commit to, and communicate the AM policy, AM strategy, AM governance structure. ● Commit to, reinforce and communicate AM culture to internal and external stakeholders. ● Participate in, review and approve other strategic AM or AM-related processes. ● Support the AM Manager and AM team
Engineering	<ul style="list-style-type: none"> ● Focus is on identification of service-delivery solutions, planning, and selection, design, and delivery of infrastructure. ● Encompasses professional engineer, engineer-in-training, and similar roles in the organization. ● Typically embedded in one or more departments like development services, facilities, and public works. 	<ul style="list-style-type: none"> ● Support development of AM strategies and plans, the AM management system, and levels of service. ● Manage engineering-related AM life cycle activities, including project delivery. ● Support AM decision-making and analysis. ● Integrate AM into engineering practice.
Operations & Maintenance	<ul style="list-style-type: none"> ● Focus is on operation and maintenance of infrastructure. ● Encompasses operations and maintenance (O&M) roles in the organization. ● Typically, in public works, facilities, and fleet departments. But, also found embedded in parks, recreation, police, emergency management services, community and health services, IT or other similar departments responsible for physical assets. 	<ul style="list-style-type: none"> ● Support development of AM strategies and plans, the AM management system, and levels of service. ● Manage O&M-related AM life cycle activities. ● Support AM decision-making and analysis. ● Integrate AM into O&M practice.
Planning	<ul style="list-style-type: none"> ● Focus is on the rules of developing land and planning land use, and associated infrastructure, to meet future needs. ● Encompasses planner roles in the organization, including development, zoning, land use, community, master, and long-range planning. ● Typically, in development services and planning departments. 	<ul style="list-style-type: none"> ● Support contextual analysis and stakeholder engagement. ● Support development of AM strategies and plans, the AM management system, and levels of service. ● Manage planning-related AM life cycle activities. ● Support AM decision-making and analysis. ● Integrate demand and growth management into AM. ● Integrate AM into planning practice. ● Support stakeholder engagement and communications.

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

TABLE 2: THE AM FUNCTIONAL AREAS AND ROLES (CONTINTUED)

AM FUNCTIONAL AREA	DESCRIPTION	KEY AM RESPONSIBILITIES
<p>Finance</p>	<ul style="list-style-type: none"> ● Focus is on financing the capital and operating requirements of infrastructure and managing the life cycle costs of same. ● Encompasses public finance roles in the organization, including accountants, controllers, business analysts, financial analysts, risk managers, and financial officers. ● Typically, in a finance department and/or embedded in a department they support. 	<ul style="list-style-type: none"> ● Develop AM financial policies and strategies with the AM Manager. ● Perform AM financial analysis. ● Support development of AM strategies and plans, the AM management system, and levels of service. ● Develop the AM long-term financial plan with the AM Manager. ● Manage finance-related AM life cycle activities. ● Support AM decision-making and analysis. ● Integrate AM into finance practice and organizational financial planning, including budgeting, funding, and rate-setting.
<p>Human Resources</p>	<ul style="list-style-type: none"> ● Focus is on meeting human resource capacity and capability needs for AM throughout the infrastructure life cycle. ● Encompasses HR professional, HR generalist, HR specialist, HR analyst, HR consultant, recruiter, professional practices coordinator, and similar roles in the organization. ● Typically, in an HR department and/or embedded in a department they support. 	<ul style="list-style-type: none"> ● Develop strategies and plans to resource AM teams, projects and activities. ● Support and manage the resourcing of AM. ● Support development of AM governance structure and AM culture. ● Support the development of AM capabilities and AM knowledge retention and sharing. ● Integrate AM into HR practices.
<p>Procurement/ Supply Chain</p>	<ul style="list-style-type: none"> ● Focus is on meeting needs for infrastructure-related services, goods, and equipment from outside the organization. ● Encompasses procurement specialist, supply chain specialist, contract analyst and administrator, supplier management, strategic sourcing and similar roles in the organization. ● Typically embedded in corporate purchasing and/or corporate services departments and/or the departments they support. 	<ul style="list-style-type: none"> ● Develop strategies and plans to resource AM teams, projects and activities (with contractors and external service-providers). ● Support and manage resourcing of AM (with contractors and external service-providers). ● Support development of AM culture (in contractors and external service-providers). ● Support the development of AM capabilities (in and with contractors and external service-providers). ● Support the management of life cycle activities (with contractors and external service-providers). ● Integrate AM into procurement and supply chain practices.

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

TABLE 2: THE AM FUNCTIONAL AREAS AND ROLES (CONTINTUED)

AM FUNCTIONAL AREA	DESCRIPTION	KEY AM RESPONSIBILITIES
Information & Records	<ul style="list-style-type: none"> ● Focus is on infrastructure data collection, management, and analysis, aligned with the organization's information and records practices and standards. ● Encompasses data scientist or analyst, geographic information systems (GIS) specialist or analyst, business analyst, records management analyst or administrator, and similar roles in the organization. ● Typically embedded in departments they support and/or in a central corporate services branch. 	<ul style="list-style-type: none"> ● Develop strategies and plans for asset information, data governance, data analysis, information communication and visualization. ● Support the management of life cycle activities. ● Support AM decision-making and analysis. ● Integrate AM into information and records practice.
Information Technology/ Information Systems (IT/IS)	<ul style="list-style-type: none"> ● Focus is on supporting infrastructure, infrastructure operations and AM staff with telecommunication services, IT infrastructure and AM-related business systems. ● Encompasses asset system manager, database administrator, network analyst or technician, programmer analyst, business systems analyst or administrator, and similar roles in the organization. ● Typically embedded in a departments they support and/or in a central IT department. 	<ul style="list-style-type: none"> ● Develop strategies and plans for asset information, AM management, GIS, financial, analytical and work management systems. ● Support the management of life cycle activities with IT/IS. ● Support AM decision-making and analysis with IT/IS. ● Support asset monitoring, measurement and analysis with IT/IS. ● Integrate AM into IT/IS practice.

4.4 Proficiency Levels

Best-practices in competency management suggest that providing examples of effective behaviours in terms that are actionable and observable helps managers and individuals understand how an effective worker achieves success. But, not all roles in an organization, discipline or job family require the same level of proficiency in each competency. As a general example, a business analyst would require a high level of proficiency in some kind of “data analysis” competency to effectively execute his or her duties. A recruiter in the same organization might only require a basic skillset in this competency to be able to perform their job well.

To differentiate proficiency requirements across roles and functional areas, Table 3 outlines a four-level

standard proficiency level scale. This standard scale describes, in general terms, an incremental progression from basic knowledge, skills and behaviours toward a more complex understanding and mastery of any competency. In Section 4.5, each of the AM Functional Areas or AM Roles will be assigned a proficiency level for each AM Competency using this scale. For the functional areas without defined roles, the expected proficiency identified would be for a practitioner-type role. This would be the person who is normally carrying out the responsibilities identified in the AM Functional Areas and Roles table, as opposed to the person managing or supporting them.

For the purpose of establishing expectations of, or assessing, an individual's proficiency, this type of scoring guide presents generic descriptions or examples of

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

TABLE 3: AM PROFICIENCY LEVELS SCALE

BASIC	INTERMEDIATE	ADVANCED	EXPERT
<ul style="list-style-type: none"> ● Familiar with basic concepts and terminology. ● Developing understanding of the competency within the scope of the job. ● Applies simple, well-defined processes and established practices in routine situations. ● Requires structured direction and guidance. ● Seeks to understand broader context and develop capability. 	<ul style="list-style-type: none"> ● Well versed in theory and applies key concepts or principles. ● Understands context, rules and processes. Anticipates and addresses problems. ● Applies a structured analytical process to unfamiliar or more complex problems. ● May require guidance and review with complex or non-routine applications. ● Applies judgement and takes appropriate actions within job scope. 	<ul style="list-style-type: none"> ● Capable of guiding and coaching others in theory and practice. Acknowledged go-to person. ● Has a thorough understanding of the competency within the local application. ● Leverages internal and external best practices to break down systemic barriers and resistance to change. ● Provides creative solutions to complex or undefined problems without assistance. ● Explores innovative ways to enhance processes and procedures to improve overall results. 	<ul style="list-style-type: none"> ● Possesses extensive knowledge and experience, both broad and deep – an authoritative source and recognized thought leader. ● Improves standards of practice relative to the competency area. ● Contributes integrated thinking at a strategic level. Anticipates and facilitates change. ● Applies abstract or conceptual thinking to resolve problems where no precedents exist. ● Drives continuous improvement, leads transformational change and/or industry innovation.

expected behaviour. The behavioural descriptions in the table encompass the dimensions of knowledge, cognitive ability, experience and emotional intelligence. These generic behaviours are described in distinct and escalating terms so that the table provides consistency and alignment across the four levels.

It is important to note that the standard proficiency scale is not intended as a performance evaluation tool. Instead, the scale is a communication support tool that provides a commonly understood way to discuss expectations. In this way, it helps focus on the individual's degree of understanding, ability or expertise. Naturally, there is a relationship between capability and performance, however proficiency in specific competencies is only one of many factors that weigh into a performance evaluation.

Notwithstanding the above, it is understood that a general awareness of all competencies in the AMCF is applicable for all AM Functional Areas and AM Roles, even though this awareness is not considered a 'level' in the table. It is expected that anyone performing any type of AM Role (i.e., any AM Practitioner) should begin, at minimum, with a general familiarity with all twelve of the AM Competencies. All AM Practitioners should understand the principal application of each competency, how the competencies relate to each other, and their significance for AM goals and objectives. In establishing competency profiles for each of the AM Functional Areas and AM Roles, where the responsibilities require more than this general understanding, a proficiency rating from this four-level standard scale is indicated.

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

4.5 The AM Competencies

PEOPLE & LEADERSHIP

4.5.1 LEADING OTHERS

Leadership skills enable practitioners to guide initiatives and achieve results through others. An AM practitioner must exhibit confidence, drive and tenacity and be able to foster a culture of accountability and execution with respect to AM strategies and goals. The AM practitioner must be able to build trust and communicate with energy to inspire individuals and teams toward a unified sense of purpose around AM in their organization.

Effective Behaviours:

- ✓ Lives and acts on the vision, values and principles of the organization and of AM personally in their day-to-day conduct. A consistent advocate for individuals, teams, the organization, the community and the practice of AM. Respects and values the contributions of others. Recognizes and communicates examples of excellence in AM practice. Takes accountability for and learns from mistakes and communicates this learning to others. Appropriately balances information and analysis against the need to act.

- ✓ Motivates and inspires individuals and teams to achieve organizational and AM goals. Communicates a vision and set of values and convinces others to embrace and embody that vision and those values. Creates a sense of direction and purpose for stakeholders. Communicates, fosters and creates momentum for change, continuous improvement, and alignment. Utilizes a competency-based shared language to communicate about performance expectations and job requirements.
- ✓ Supports and empowers superiors, peers and subordinates in the organizational hierarchy. Appropriately delegates accountabilities & objectives to allow staff to realize their full potential. Translates visions and values into concrete, clear, and achievable goals and empowers others to collaboratively achieve them. Applies knowledge of organizational and community dynamics to persuade or convince key decision-makers and influencers to support teams, the organization and AM practice and culture. Removes barriers and creates opportunities for others. Transparently and consistently holds themselves and others accountable for their responsibilities and actions.

Expected Proficiency:

TABLE 4: EXPECTED PROFICIENCIES FOR LEADING OTHERS COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance		X		
Human Resources			X	
Procurement/Supply Chain	X			
Information & Records		X		
IT/IS		X		

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

PEOPLE & LEADERSHIP (Continued)

4.5.2 COLLABORATION

Collaboration involves the ability to identify and initiate working relationships and to develop and maintain them in a way that benefits both parties. An AM practitioner would use their emotional intelligence to effectively manage relationships, facilitate team problem-solving, and communicate purpose, values and vision. They would build and support cross-disciplinary and cross-functional teams. They would foster collaborative, contextual decision-making and planning that empowers individuals and teams.

Effective Behaviours:

- ✓ Works with others towards shared goals. Participates actively and equitably in group work. Facilitates the same in others. Able to identify, initiate, and maintain relationships between the right stakeholders to effectively achieve goals.
- ✓ Facilitates the sharing of diverse viewpoints to achieve a more comprehensive understanding of a problem or situation. Encourages respectful dialogue which explores underlying perspectives, interests, and biases, acknowledges feelings, and gives all participants equitable attention and

consideration. Can appropriately and effectively identify, surface and communicate disagreements and sensitive topics. Focuses on facts and reasoning, while being descriptive and non-judgmental. Utilizes direct, simple, transparent, and honest communication. Maintains a calm, rational and attentive demeanor. Tactfully challenges conclusions and seeks verification of evidence and assumptions from other unbiased sources. Leads value-based discussions on solutions or trade-offs.

- ✓ Observes both verbal and nonverbal cues from others to recognize feelings, interests, thinking and perspectives. Asks questions to clearly understand what is being communicated and the underlying causes, feelings, biases and reasoning behind what has been communicated. Applies knowledge of organizational and community emotional currents and power dynamics to persuade or convince key decision-makers and influencers.
- ✓ Communicates complex or technical concepts effectively to all audiences. Identifies the audience for communications, then assesses and applies best methods for communicating to that audience. Produces clear, concise, logical and grammatically correct written material to convey intended information in a compelling manner.

Expected Proficiency:

TABLE 5: EXPECTED PROFICIENCIES FOR LEADING OTHERS COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance		X		
Human Resources		X		
Procurement/Supply Chain		X		
Information & Records		X		
IT/IS		X		

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

POLICY & GOVERNANCE

4.5.3 CONTEXTUAL ANALYSIS

Contextual analysis is based on the principle that all action or behaviour occurs within specific contexts. It includes all the factors that affect sustainable delivery of the infrastructure services a community desires and needs. These factors can be both internal and external, and positive or negative. An AM practitioner would identify and analyze these influences and effects. Examples of AM contextual factors include the community's assets and their condition, internal and external stakeholders, current and desired levels of service, population and demographic trends, regulatory conditions, climate change, and budget.

Effective Behaviours:

- ✓ Identifies and maintains an understanding of the community's stakeholders, interests and interactions, including influencers, leaders, groups, culture, background, history, politics, legal basis, incentives and motivations, and appropriate communication channels. Assesses the socio-economic factors that influence community demands, needs, expected service levels, and service affordability. Analyzes the environmental context of the community, including how it interacts with the built environment and the services natural assets provide.
- ✓ Identifies and maintains an understanding of the organization's stakeholders, interests and interactions, including influencers, leaders,

departments, organizational culture, legal basis, regulatory requirements, roles and responsibilities, organizational structure, processes, information flows, risk appetites and allocations, and decision-making processes. Appropriately applies knowledge of asset requirements, processes, and procedures involved in AM life cycle activities in day-to-day work.

- ✓ Recognizes, assesses and considers relevant interrelated aspects of a problem's context, including people, places, events, systems, processes, and the interactions, interdependencies, and relationships between them. Selects and applies appropriate strategic analytical techniques, both qualitative and quantitative (including appropriate statistical methods), to understand aspects of community context. Identifies potential hidden biases or assumptions in analyses. Balances the need for a holistic understanding of context with the need for identifying the most pressing or immediate considerations or contextual factors.
- ✓ Applies stakeholder engagement principles and best practices to the analysis of context. Assesses how citizens interact with the organization's assets, people, and processes. Identifies where improvements can be made to meet citizens' expectations for service and service experience, and how to achieve those improvements. Applies this knowledge to improve the community and organization's operations, plans and tasks.

Expected Proficiency:

TABLE 6: EXPECTED PROFICIENCIES FOR CONTEXTUAL ANALYSIS COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering		X		
Operations & Maintenance		X		
Planning				X
Finance		X		
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records		X		
IT/IS	X			

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

POLICY & GOVERNANCE (Continued)

4.5.4 HOLISTIC THINKING

The term holistic thinking refers to a “big picture” mentality in which a person recognizes the interconnectedness of various elements that form larger systems, patterns and objects. In the case of AM, a practitioner thinking holistically would take a long-term, life cycle, service-focused view incorporating risk, sustainability, the diverse perspectives of all stakeholders, and the community and organizational contexts involved. This would include system and network interdependencies and interactions, and interdepartmental relations.

Effective Behaviours:

- ✓ Conceptualizes problems from different viewpoints. Combines distinct concepts to form a cohesive understanding. Takes a broad view of potential solutions and integrates solution approaches. Evaluates solutions from a fundamentals and constraints perspective to mitigate bias and organizational inertia. Assesses options probabilistically and systematically, considering direct and indirect impacts at multiple scales and to multiple dimensions of the community context.

- ✓ Focuses on systems and processes when problem solving, especially those required to deliver effective, reliable, resilient, and sustainable services. Continually assesses and appropriately applies an understanding of the interconnections and interdependencies between assets, asset systems, facilities, other assets, and the environment to solution identification and planning. Acknowledges that natural assets provide core services and applies this knowledge in planning and decision-making. Analyzes how connections and relationships, both internal and external, interact with and influence each other. Looks for root causes, instabilities and resiliency.

- ✓ Aligns community context, organizational vision, values, and goals, AM strategies and plans, and levels of service. Takes a long-term, life cycle view. Focuses on the achievement of long-term, sustainable service delivery of a community's needs by using an AM framework. Incorporates an understanding of the underlying needs and desires of citizens, and their relative importance to each other, and uses the results to develop strategies to improve alignment with organizational and AM values, and levels of service. Utilizes integrated planning practices.

Expected Proficiency:

TABLE 7: EXPECTED PROFICIENCIES FOR HOLISTIC THINKING COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	ADVANCED
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering			X	
Operations & Maintenance		X		
Planning			X	
Finance		X		
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records		X		
IT/IS		X		

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

PLANNING & DECISION-MAKING

4.5.5 DECISION-MAKING

Effective decision-making is making choices that successfully solve or prevent emerging problems in a timely manner. It involves taking responsibility for, and demonstrating commitment to, decisions that have been made. Effective AM decisions are based on fair policies and rules, consistently applied, and aligned with organizational and AM principles and values and the organization's level of service framework. Decision-making involves planning, and adapting plans to changing situations. Thinking long-term, strategically, and creatively is critical to making sound decisions and good plans.

Effective Behaviours:

- ✓ Analyzes decision requirements, and applies appropriate decision support tools, information and methods in accordance with best practice. Translates decision processes, risk frameworks, scenarios, criteria and scoring methodologies into analytical models. Utilizes business process management to improve and manage decision processes. Applies a comprehensive framework and consistent methodology to scope, document and assess solution options, ensuring all matters important to the organization are addressed.
- ✓ Creates decision processes that give affected parties opportunities for input. Provides sufficient and credible information necessary for affected parties to participate effectively in decision

processes. Ensures key information for decision-makers is clearly identified, highlighted and concisely described. Is transparent on the criteria used to make decisions, what the final decisions are, and how they were reached.

- ✓ Integrates life cycle information and analysis in decision-making processes. Takes a long-term and life cycle view when analyzing options and costs. Takes a systemic, network view when setting priorities and analyzing constraints and opportunities. Views benefits and costs holistically, fully considering all primary and secondary impacts to environmental, social, economic, and infrastructure dimensions. Balances affordability, risk, and level of service in decisions.
- ✓ Utilizes a transparent, consistent and documented process, with common criteria, to prioritize which capital projects to fund, in which order, and to choose between funding mechanisms. Ties financial information from funding models to the project prioritization process to identify constraints and opportunities. Effectively integrates the organization's prioritization and budgeting processes. Balances formal, objective scoring with common sense, rational evaluation to realize highest value or "best" outcomes.
- ✓ Maintains a sense of urgency to complete a task or achieve an objective that is considered a priority. Proactively seeks out information, resources, and support to make timely, but rational, decisions on the best available data. Acts confidently and decisively, but with purpose, direction and respect.

Expected Proficiency:

TABLE 8: EXPECTED PROFICIENCIES FOR DECISION-MAKING COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering			X	
Operations & Maintenance			X	
Planning			X	
Finance			X	
Human Resources	X			
Procurement/Supply Chain		X		
Information & Records			X	
IT/IS			X	

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

PLANNING & DECISION-MAKING (Continued)

4.5.6 RISK ANALYSIS

Risk analysis is the process of identifying potential future adverse events, assessing the likelihood of those events occurring, and their potential consequences. It is also the study of the underlying uncertainties of a given course of action. Risk analysis in AM examines the risks and uncertainties around assets, infrastructure services, cash flows, projects, and contextual factors. An AM practitioner employing risk analysis will often work in tandem with the organization's financial, O&M, engineering, planning, and other groups to identify and mitigate potential future negative events, impacts and outcomes.

Effective Behaviours:

- ✓ Appropriately applies probability concepts and common risk assessment and audit techniques. Utilizes a common framework for describing and quantifying risk types, sources, consequences, likelihoods, and interactions. Maintains awareness of, and analyzes changes in, direct and systematic risks. Maintains an up-to-date risk register. Systematically evaluates the effectiveness of risk controls and mitigation actions. Engages a diverse set of stakeholders in risk identification and consequence analysis. Identifies and assesses sources of uncertainty, especially the quality and comprehensiveness of information. Applies skills in root cause analysis. Seeks out evidence to test forecasts, cause and effect, and likelihood.

- ✓ Applies common infrastructure and infrastructure systems risk concepts appropriately. Assesses both asset failure and service performance degradation. Identifies potential infrastructure risk sources and types, including asset, service, system, stakeholder, legal, financial, environmental, economic, social, political, operational and other risks. Assesses common infrastructure risk components, including reliability, resiliency, redundancy, criticality, failure modes and patterns, and asset deterioration. When planning risk mitigation and management, considers quality and performance management, emergency and incident response, and contingencies planning. Includes risks to assets, asset systems, and infrastructure services in the risk register.
- ✓ Integrates risk analysis appropriately in decisions and problem-solving. Utilizes scenario analysis to assess the potential effects of actions, and the interactions between and likelihood of those effects. Evaluates the uncertainty and biases of scenarios, forecasts, and projections when making decisions. Assesses and corrects probability-related cognitive biases.
- ✓ Analyzes the risks and uncertainties of environmental effects. Considers the risks and uncertainties related to natural assets, including a lack of understanding of natural assets and the services they provide, and the implications of their degradation and failure. Considers the risks and uncertainties related to climate change, including a lack of understanding of potential consequences and severity, forecasts, speed of change, and interdependencies with other systemic effects.

Expected Proficiency:

TABLE 9: EXPECTED PROFICIENCIES FOR RISK ANALYSIS COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager			X	
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering			X	
Operations & Maintenance			X	
Planning		X		
Finance			X	
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records	X			
IT/IS		X		

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

DATA & INFORMATION

4.5.7 INFORMATION MANAGEMENT

Information and knowledge management is the systematic governance and administration of an organization's information and knowledge assets for the purposes of creating value and meeting tactical and strategic objectives. It consists of the initiatives, processes, strategies, and systems that sustain and enhance the creation, storage, refinement, sharing, and analysis of knowledge and information. An AM Practitioner will collect, manage and analyze information about assets, infrastructure services, the community, and the organization's people to meet the organization's AM needs and objectives and provide evidence for infrastructure decisions.

Effective Behaviours:

- ✓ Can explain the full life cycle for asset information from multiple perspectives, including information systems and data, assets, asset systems and hierarchies, people and knowledge, business processes, and communication. Understands the sources, acquisition methods, scope, structure, uses, and governance requirements of AM information, including asset, infrastructure service, and community contextual data.
- ✓ Maintains an understanding of AM-related information and information systems needs, sources, architectures, opportunities, and constraints in the organization. Assesses compliance of data and

systems to best practices and industry standards. Maintains up-to-date knowledge of industry standard data models and works to align the organization's data structures with them. Balances information accessibility, usability, privacy and security.

- ✓ Collects and integrates data to close gaps and achieve organizational, AM and team objectives. Develops effective data collection processes to meet AM requirements, while appropriately balancing benefits, uncertainties, quality and cost. Develops or enhances existing data systems, controls, and processes to improve relevance, accuracy, access, timeliness, and presentation of data for AM decision support.
- ✓ Collects, sorts, compares, summarizes and describes qualitative and quantitative data. Applies appropriate statistical, graphical and logical methods and tools to interpret data sets. Uses common data analysis software appropriately. Develops and uses models, such as forecasts and simulations, to discover patterns and connections, and make interferences and predictions.
- ✓ Communicates information effectively to a variety of technical and non-technical audiences, utilizing appropriate methods for the audience. Identifies and communicates the key pieces of information that stakeholders need make decisions. Communicates information clearly and accurately with a variety of methods, including charts and graphs, spatial visualizations, numbers and statistics, and narration.

Expected Proficiency:

TABLE 10: EXPECTED PROFICIENCIES FOR INFORMATION MANAGEMENT COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager			X	
AM Role: AM Project Manager/AM Advisor		X		
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership			X	
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance		X		
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records				X
IT/IS			X	

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

DATA & INFORMATION (Continued)

4.5.8 FINANCIAL ANALYSIS

Financial analysis is the process of evaluating budgets, business objectives, projects, and infrastructure needs to support financial decision-making and to optimize long-term asset investments. An AM practitioner aligns organizational financial and AM practices. They understand the links between financial and non-financial functions related to AM and coordinates financial information across the organization. This sharing enables the development of effective life cycle costing models and long-term investment plans that consider funding constraints, affordability and the impact to service delivery.

Effective Behaviours:

- ✓ Can explain the concept of life cycle cost (i.e., the total cost of owning an asset over its entire life) within a common frame of reference like Net Present Value. Utilizes life cycle cost analysis in business case development, options analysis, and investment planning. Develops and follows policies for determining and recording values and costs of AM activities and assets. Tracks, analyzes and verifies unit cost data for relevant local asset systems. Assesses, benchmarks, analyzes, forecasts, monitors, reviews and reports on the full life cycle costs of assets throughout their life.
- ✓ Utilizes financial expertise to identify and contextualize financial constraints and define financial criteria in business cases, budgets and financial plans. Utilizes accrual accounting methods for financial analysis and planning. Considers intergenerational equity in financial planning. Utilizes business cases to ensure risks and

benefits are accurately monetized and that proposed investments derive maximum value from the asset over its full life. Develops analytical models with capital and operating funding scenarios to prioritize and recommend short- and long-term investments. Effectively develops, maintains and supports an AM long-term financial plan for their organization. Can effectively support, build and balance a multi-year capital budget, including consideration of expenditures and relevant public funding sources.

- ✓ Considers and assesses the full value of natural assets to the community, including the reduction of financial risk, and the financial liabilities the community may be exposed to should natural assets degrade or fail. Looks for opportunities to integrate this information into financial reporting, planning, budgeting, and communications.
- ✓ Utilizes appropriate affordability indicators to measure the financial tolerance or burden placed on the government and/or taxpayers to achieve desired levels of service. Utilizes common AM financial sustainability metrics to track trends and analyze the long-term ability of the community to fund life cycle activities.
- ✓ Can visualize, present and communicate AM financial concepts and outputs in a meaningful way. Communicates detailed financial information in a way that is relatable to audiences up, down and across the organization. Uses financial information to communicate, support and drive community desire for financial sustainability. Communicates budget information in a service context. Communicates the budget implications of other potential levels of service. Communicates the financial sustainability of a level of service with information and scenarios from budgets, AM long-term financial plans, and reserves and tax rate analyses.

Expected Proficiency:

TABLE 11: EXPECTED PROFICIENCIES FOR FINANCIAL ANALYSIS COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager			X	
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership				X
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance				X
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records	X			
IT/IS	X			

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

AM PRACTICE

4.5.9 AM EXPERTISE

AM expertise encompasses the knowledge, concepts, terminology, artifacts, processes, methods and skills specific to the practice of AM. This expertise includes knowledge of AM best practices, AM maturity assessments, level of service, and life cycle analysis. An AM practitioner ensures that internal stakeholders are well-informed, and that the organization stays current with, and contributes to, leading practices, training and education. The AM practitioner is often involved in the management of AM knowledge, supporting staff in AM training, communicating the benefits of AM, coaching or mentoring others, and participating in external knowledge sharing.

Effective Behaviours:

✓ Demonstrates a solid theoretical and practical grounding in the concepts, philosophy, principles, methodology, and techniques associated with AM. Applies recognized methods to design and implement AM-specific frameworks, strategies, processes and plans to achieve organizational and AM objectives. Selects from a range of AM tools and techniques, depending on the business need, to provide information and tactics to resolve issues and organizational challenges. Leverages information from AM maturity assessments to understand, map and identify gaps between current and “ideal” organizational AM maturity.

- ✓ Analyzes asset- and service-specific condition and performance, in isolation and as part of a larger system. Uses this analysis to determine the current and expected future performance of an asset and the impact of that performance on level of service measures. Applies and communicates the balance between service, risk and cost in day-to-day work. Identifies, assesses and develops plans to manage the full scope of infrastructure services, including natural asset monitoring, maintenance and enhancement actions.
- ✓ Maintains up-to-date knowledge of best practices for how organizations obtain, improve and retain skills and knowledge and applies them appropriately to the organization. Acknowledged expert in relevant legislation, regulations, standards and processes and can interpret and present this information to stakeholders.
- ✓ Develops AM capabilities in others through knowledge sharing, training, skills development, transfer of knowledge, and development of formal documentation. Acts as a resource for others on the job. Answers questions in a way that builds knowledge and skills. Recognizes and corrects knowledge gaps. Provides support for the development of AM skills that link to business realities.

Expected Proficiency:

TABLE 12: EXPECTED PROFICIENCIES FOR AM EXPERTISE COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst			X	
Senior Leadership		X		
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance		X		
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records	X			
IT/IS	X			

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

AM PRACTICE (Continued)

4.5.10 SERVICE FOCUS

Service focus refers to the ability to address the needs and expectations that citizens and stakeholders value, while balancing the cost, capacity and capability of the supporting infrastructure. An AM practitioner assesses service performance from the citizen's perspective, evaluating quality and experience. They use effective AM planning to realize value through the delivery of appropriate levels of service within an acceptable level of risk while minimizing an asset's life cycle costs.

Effective Behaviours:

- ✓ Identifies the full scope of services delivered to the community (including the services natural assets provide), the contributions of operational and other non-infrastructure solutions, and the higher-order wellness benefits provided by community services. Facilitates development of, and supports, a level of service framework, including development of associated customer and technical levels of service. Set goals aligned with organizational priorities, levels of service, AM plans, and life cycle requirements.
- ✓ Actively fosters and builds relationships with the community through workshops or public engagement events to build trust, seek out mutual benefit and provide diverse context into future planning and service delivery. Identifies and categorizes service

user groups and their competing short and long-term needs and desires, including the need for sustainable delivery of the service.

- ✓ Applies performance measurement concepts, methods, tools and practices in an AM context. Develops criteria, key performance indicators, measurement methods and targets that effectively evaluate the performance of services, service-providers, infrastructure, and infrastructure operations. Uses key performance indicators to systematically evaluate an asset's ability to meet a level of service within the community context and compare that performance to benchmarks, and to organizational and AM values, principles, policies, objectives, and outcomes. Recognizes regulated levels of service as minimums.
- ✓ Analyzes problems from a variety of viewpoints using a service-oriented mind-set. Objectively evaluates a broad range of solutions, considering direct and indirect impacts to citizens, and a community's willingness to pay. Views services from both a user and asset system perspective. Analyzes the needs, desires, demands, and service outcomes of citizens. Considers innovative service delivery solutions. Adapts methods of work, organizational processes, communications, and plans to new situations or problems that can arise from changes to organizational culture or public need.

Expected Proficiency:

TABLE 13: EXPECTED PROFICIENCIES FOR SERVICE FOCUS COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership			X	
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance	X			
Human Resources	X			
Procurement/Supply Chain	X			
Information & Records	X			
IT/IS	X			

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

LIFE CYCLE DELIVERY

4.5.11 INFRASTRUCTURE MANAGEMENT

Infrastructure Management is the process of effectively designing, constructing, operating and maintaining the physical and operational characteristics of an asset (or asset system) to meet a given performance standard throughout its life cycle. It requires application of design, construction, operations, and maintenance concepts, principles, practices, procedures, systems and tools. An AM practitioner would apply existing standards, requirements and professional practices in the planning and delivery of infrastructure services.

Effective Behaviours:

- ✓ Identifies and selects service delivery models and concepts to best meet organizational and sustainable service delivery needs. Able to bundle and develop cross-sector assets into coherent programs and projects. Develops conceptual frameworks that guide analysis of capital project alternatives, including cost effectiveness and reliability. Establishes relevant technical and performance specifications for assets, asset services, and asset systems that meet the requirements for all asset life cycle stages.
- ✓ Demonstrates an in-depth knowledge of the operations and maintenance requirements of current and planned assets owned or operated by the organization. Evaluates the range of conditions

over which the asset can operate and the how that impacts its capacity. Identifies potential asset failures and develops an understanding of the immediate and long-term impacts to capacity and functionality of the assets. Plans for maintenance and disposal related service outages and communicates the need for and the impacts of the outages. Effectively audits infrastructure projects and uses appropriate monitoring and inspection tools, methods and procedures. Utilizes zero waste management and circular economy principles and practices.

- ✓ Incorporates knowledge of natural assets into planning processes. Includes natural asset solutions as options for infrastructure services. Manages, maintains, rehabilitates, and restores natural asset health. Seeks out and maintains knowledge of current best practices for managing natural assets. Maintains general and local knowledge of the natural and urban environments and how they interact. Applies a current working knowledge of hydrological management, environmental assessment, and remediation and restoration practices in urban environments to infrastructure projects.
- ✓ Applies best practices for the design and construction of infrastructure. Coordinates projects to optimize life-cycle costs. Administers and manages projects to ensure on-time, on-budget delivery at the required level of quality. Applies professional codes of conduct and values in day-to-day work.

Expected Proficiency:

TABLE 14: EXPECTED PROFICIENCIES FOR INFRASTRUCTURE MANAGEMENT COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager			X	
AM Role: AM Project Manager/AM Advisor		X		
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership	X			
Engineering				X
Operations & Maintenance				X
Planning	X			
Finance				
Human Resources				
Procurement/Supply Chain		X		
Information & Records		X		
IT/IS	X			

4.0 THE ASSET MANAGEMENT COMPETENCY FRAMEWORK FOR CANADIAN COMMUNITIES (Continued)

LIFE CYCLE DELIVERY (Continued)

4.5.12 CONTINUOUS IMPROVEMENT

Continuous improvement is the process of continually working to understand, engage in, and implement organizational and community changes that improve processes, practices, and outcomes. It is a formalized, evidence-based cycle of planning, executing, assessing the outcomes of, and learning from actions. Utilizing common tools for quality assurance, process improvement, and performance management, an AM practitioner looks for opportunities for incremental or all-at-once “breakthrough” improvements.

Effective Behaviours:

- ✓ Appropriately applies the continuous improvement process (identifying performance measures, setting targets, assessing performance, identifying gaps, identifying improvement actions, planning, executing and reviewing the outcomes of improvement actions, and revising measures, targets, plans, actions and processes accordingly). Regularly utilizes the continuous improvement process with the organization’s people, assets, services, information, systems, AM practices, AM maturity, and competency maturity.
- ✓ Continuously seeks out best practices, industry standards, and other improved and innovative statistical, quantitative and qualitative reference points for AM performance measures. Develops effective quality management plans, standards, procedures, controls, monitoring, analysis and reporting.

- ✓ Applies continuous learning and improvement as a standard practice and fosters the same in the culture of the organization. Continuously seeks out new and better ways to complete tasks and projects. Routinely researches, shares, and engages in peer-to-peer learning to identify other community’s innovative approaches and best practices.
- ✓ Maintains an up-to-date understanding of organizational and community dynamics. Influences key decision-makers and influencers to achieve the community’s goals. Champions individuals, teams, the organization, the community, and the practice of AM. Mitigates organizational inertia, and encourages positive cultural change.
- ✓ Explicitly ties the quality of AM decisions, plans and analysis to the accuracy and relevance of the data that informed those actions. Utilizes data validation, integration, master data management, and auditing techniques to verify and improve data quality. Incentivizes better data quality by developing strategies to systematically use and document data for accountability, evidence, learning, and communications. Utilizes good data audit practices to improve data validation and control. Sets an example for the rest of the organization by following good practices on data privacy, including anonymization and ethical sharing.

Expected Proficiency:

TABLE 15: EXPECTED PROFICIENCIES FOR CONTINUOUS IMPROVEMENT COMPETENCY

AM FUNCTIONAL AREA	BASIC	INTERMEDIATE	ADVANCED	EXPERT
General AM				
AM Role: AM Manager				X
AM Role: AM Project Manager/AM Advisor			X	
AM Role: AM Coordinator/AM Analyst		X		
Senior Leadership			X	
Engineering		X		
Operations & Maintenance		X		
Planning		X		
Finance		X		
Human Resources		X		
Procurement/Supply Chain		X		
Information & Records			X	
IT/IS		X		



5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK

5.1 Implementing an AM Competency Management Program

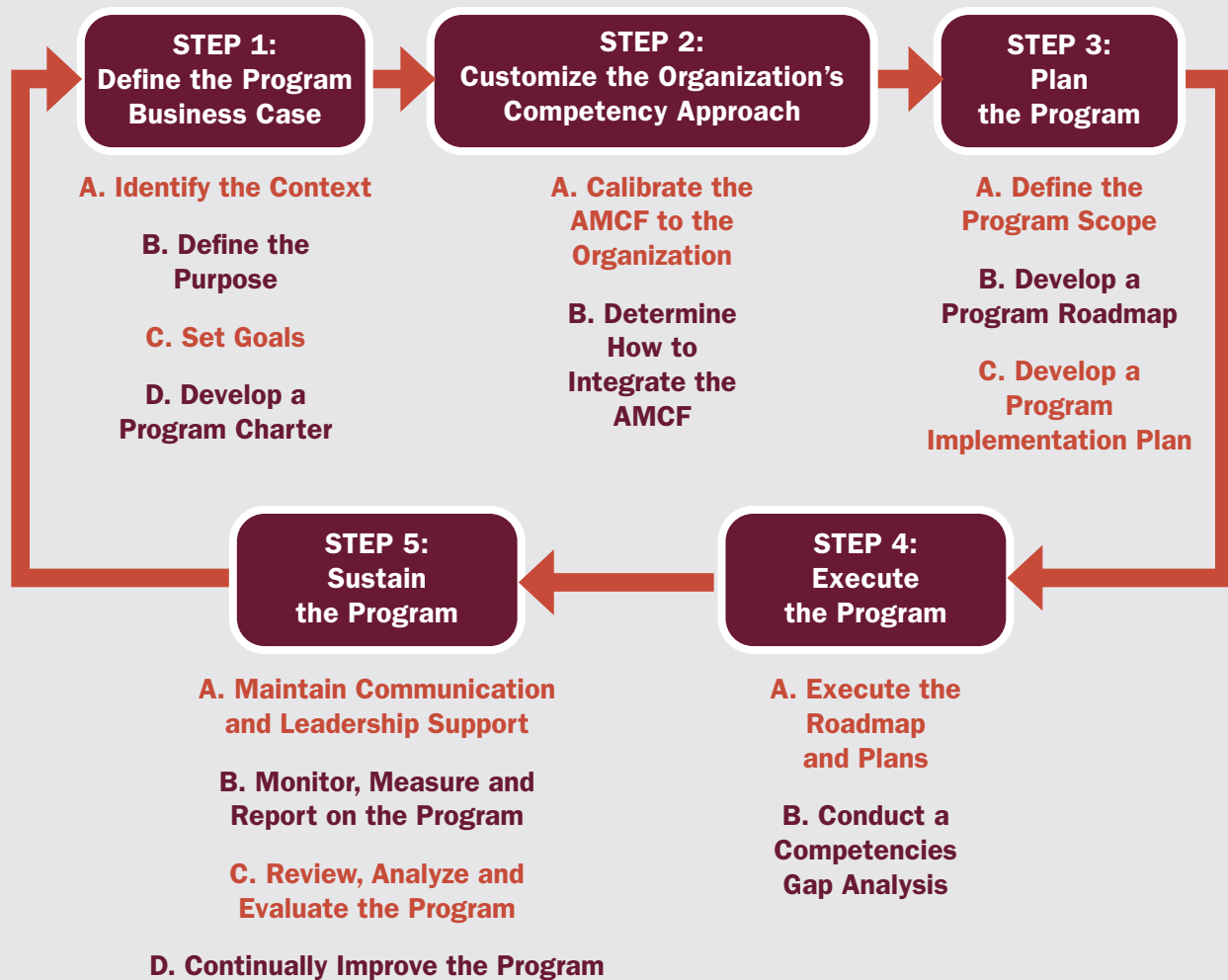
Identifying capability gaps within an organization, then providing the structure and support to address those gaps, is one of the most effective ways to be more successful. A Competency Management Program based on the AMCF will identify AM Competency gaps and provide a foundation for a path of learning to help individuals in an organization build the required level of competence.

It is important to note that formal (classroom) training is not the only option for developing

an AM Practitioner's competencies. On-the-job experiences and learning from others should actually comprise most of an individual's development activities. Regardless of the activity, it is critical to establish clear expectations and learning objectives before it takes place. It is also important to follow up afterward to ensure that the expected learning outcomes have transferred to on-the-job behaviour.

The process described below provides a guide for any organization to implement a Competency Management Program based on the AMCF.

DIAGRAM 2: COMPETENCY MANAGEMENT PROGRAM IMPLEMENTATION PROCESS



5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.1.1 Scaling Options

One of the goals of the AMCF was to develop a tool for use in Canadian communities of all sizes, types, AM maturity levels, competency management maturity levels, and staffing configurations. This guide highlights areas in the Competency Management Program Implementation Process where the processes will vary depending on these different organizational scales. It also identifies which competency management activities can be useful at these different scales. Suitable process options and competency management program activities are identified for:

1 Small / New to AM Communities ("S/N")

Communities with a small population and/or a limited infrastructure base and/or are new to the practice of AM and/or are new to competency management and/or do not yet have any staff whose jobs are primarily AM-related.

2 Mid-Sized / Developing AM Communities ("M/D")

Communities with a mid-sized population and/or a mid-sized infrastructure base and/or are developing AM practices and/or are progressing competency management and/or have a single staff-member whose job is primarily AM-related.

3 Large / Mature AM Communities ("L/M")

Communities with a larger population and/or a large and complex infrastructure base and/or a mature AM practice and/or a mature competency management program and/or one or more teams or departments dedicated to AM.

5.1.2 The Competency Management Program Implementation Process

STEP 1: Define the Program Business Case

A. Identify the Context

Identify issues, concerns, and pains

Examine what problems exist in the organization right now. Many of these problems can be traced back to competency gaps that may not be obvious. Update the organization's AM readiness assessment for potential additional insights.

Review organization's strategic context

An organization's vision and values set the direction and priorities of the organization. In order to progress, the organization needs to know where it is going, and the Competency Management Program can only be effective if there is clear alignment on the goals and culture that are the eventual target.

- In addition, the AM policy and strategy will be the key documents required for AM-specific competency management. The AM principles set out in the AM Policy form a starting point for how to describe the desired AM culture.
- Consider the need to adapt organizational HR and governance policies, programs, and processes to support AM culture and outcomes.

Know the organization's strengths and weaknesses

Undertake a SWOT analysis. Identify the strengths, weaknesses, opportunities, threats, constraints, and limitations of the organization. This improves understanding of what the organization is capable of doing well, what it is not capable of doing well, and why that is.

- Assess the organization's readiness for the change associated with the Program.
- Assess which issues may be caused by, or impacted by, staff capability or capacity. Identify which strategies or objectives are undermined due to a lack of these capabilities or capacity.

B. Define the Purpose

Define the problem

Consider the issues identified earlier. Identify those that are related to competency gaps and decide which ones to tackle in the competency management program.

Define the program vision

Everything needs a purpose, including the organization's Competency Management Program. Determine what the organization's desired outcome is, i.e., the reason for doing the program. Or, take the problem you identified above and flip it into a positive vision.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

C. Set Goals

Take the vision for the organization's Competency Management Program and make it concrete. Define the targeted results or outcomes.

- See Section 3.2 (Competency Management Uses) for some options.
- Evaluate the organization's Competency Management Program goals for alignment with the broader organizational and AM goals. The Competency Management Program is a tool to help achieve these goals.

D. Develop a Program Charter

Gain leadership support

Secure commitment for the program, funding and resources from senior management. All organizational activities have an associated cost, and the Competency Management Program is no different. Make sure the organization's senior management understands the need for, scope, and benefits of competency management. Visible and vocal communication of the need and value of the work is crucial to the success of the program.

Develop the program governance structure

Consider whether ownership of the program would best be placed with the HR department or with the AM team. If the organization's HR department has not yet been involved in the process, engage them. Decide on the program's ownership and set out its decision processes, rules, roles and authorities.

Develop a program management framework

- Develop a performance management framework and initial program key performance indicators.
- Adopt a project management and controls framework. If available, utilize the organization's project management office resources and adopt the organization's framework for similar programs.
- Identify initial needs and the corresponding sources of funding, resources, information and other support. If the organization includes unionized staff, consider union requirements.
- Identify initial resource needs for AMCF calibration, change management analysis and program planning.

Create the AM Competency Management Program team

The program team should include a diverse selection of people from different departments across the organization. Ideally, representation should include senior management, HR, the AM leader, and line staff for "on-the-ground" insight.

This step will seem overwhelming for a small organization, but it can be greatly simplified. A "team" of one does not need a lot of process. Adopt existing procedures and just keep organized. However, a successful program will need leadership support. This is a critical requirement. Focus attention here.

STEP 2: Customize the Organization's Competency Approach

A. Calibrate the AMCF to the Organization

Conduct job analysis

Understand and document how AM work is, or needs to be, allocated throughout the organization. While outside the scope of competency management, it is critical to have a foundation of clear accountabilities and expectations of performance relating to the AM Responsibilities. Once roles and responsibilities are understood or defined, the appropriate competencies and levels of proficiency can be determined. The organization's internal AM stakeholders can help validate role descriptions and competency expectations to ensure they are accurate, relevant and speak to the appropriate audience.

In large/mature AM organizations with a high staff count, it is more likely AM Practitioner roles will have been identified and AM Responsibilities will have been assigned to individuals. In small / new to AM organizations, individuals may perform many roles and their AM responsibilities may not yet be fully defined. Additional effort may be needed at this stage to fully understand what AM Responsibilities will be required in a small / new to AM organization and how they will be allocated.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

Review and adjust the AM Competencies for the organization

Review the competencies as defined in the AMCF and, if necessary, adjust them to reflect the organization's approach to AM, any existing competency models the organization may be using, and the organizational vision, values and goals. When adjusting the competencies, ensure the statements are:

- Evidence-based to improve performance against organizational goals
- Outcome-based (i.e., focused on results, how the results were achieved)
- Fair and transparent
- Teachable and/or developable
- Observable and measurable (i.e., describe performance excellence in a way that can be objectively observed, recorded and measured)

Adopt the standard proficiency levels in the AMCF

Ideally, organizations should have proficiency levels that fit their circumstances and requirements. However, developing or adapting organization-specific proficiency levels without expert assistance from an HR professional is not recommended.

- The 4-level standard proficiency scale in the AMCF should be generic enough to apply to any organization. Carefully review the standard scale to understand and correctly apply the levels.
- Organizations with existing Competency Management Programs may choose to adapt the AMCF proficiency levels to their own to standardize their approach.

Adopt appropriate competency assessment methods

Depending on the level of rigor and competency assurance required, typically based on business or operational risk, a variety of assessment methods are available, including:

- **Self-Assessments:** A self-assessment is an individual's thoughtful opinion of their own

proficiency. When used to identify development requirements, a self-assessment can be a very effective tool. Often competency assessment begins with a self-assessment which is then brought into a conversation with the manager. An honest assessment of an individual's own strengths and accomplishments, as well as their challenges, will help the manager see that individual's capability and bring to light information that may not have been considered otherwise. This is valuable input to the manager responsible for assigning a rating that accurately reflects the individual's proficiency.

- **Manager Assessments:** While initial baseline assessments for identifying competency gaps can be done immediately, it is important to observe and assess changes in behaviour over a long enough period that measurable and continuing change can be identified. This is especially the case for behaviours that may occur infrequently. It is recommended that assessments are undertaken at 6- to 12-month intervals for this reason. However, managers must still provide the projects and tasks necessary to improve competency during this period.

Create competency profiles

For each role, identify the competencies and competency levels a person would need to achieve to successfully execute that role's AM responsibilities. Map these using the organization-specific proficiency levels and competency elements. For most organizations, the required competencies are set at the level of a successful performer (not at a threshold or exemplary level).

In small / new to AM organizations, individuals may wear many hats. It is up to the organization how they choose to define, organize, and communicate roles. When determining the required competencies for an individual, identify the responsibilities that person has been assigned to determine that person's expected competencies and proficiency.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

B. Determine How to Integrate the AMCF

Referring again to Section 3.2, consider how the organization can best leverage the AMCF to improve AM capability, practices and culture in each of four key areas of people management:

- Learning & Development
- Recruiting & Selection
- Performance Communication
- Succession & Workforce Planning

Section 5.2 describes specific activities an organization can undertake in its Competency Management Program for each of these four areas. Suitable activities for the different organizational scales are identified below. The guide can be used as a foundation to understand and lead the organization through this step in the implementation process.

Identify how competencies are currently incorporated into people management practices

Working with those in the organization responsible for people management, examine what is being done to incorporate AM capacity building in each of the four areas. Assess what is working and what is not. Identify the current process gaps.

Identify opportunities to incorporate the AMCF into organizational processes

Consider how the process gaps identified above can be closed. Brainstorm potential options to improve AM Competency management in the organization. Options may include updating existing activities or developing new activities.

Collaborate with other areas in the organization

Identify integration opportunities and define integration plans for:

- Resource planning processes and systems
- Succession planning, recruiting and selection, and employee development processes and systems

- Organizational design, roles and responsibilities, decision authorities and other related HR and governance processes and policies
- Performance communication processes
- Information systems and data services
- The organization's AM Roadmap

Evaluate and set priorities for program activities

Consider both current and potential program activities and the benefits to the organization of successfully implementing them. Evaluate the costs, resource and time requirements, likelihood of success, alignment with organizational and AM goals, and any other strengths, weaknesses, constraints or co-benefits associated with the proposed program activities. Determine what is realistically achievable given the size and structure of the organization.

Decide on the program activities to pursue

Utilizing the decision process developed or adopted as part of the Program Charter, decide on the course(s) of action to take to meet the program goals. In addition to the Program team, it may be beneficial to include other key people management stakeholders in these decisions.

STEP 3: Plan the Program

A. Define the Program Scope

Set objectives and milestones

Determine what the organization can accomplish with the resources and timelines available, then set objectives and milestones to achieve those outcomes. Consider the integrations, pilots, communications, performance targets, and data that will be required to achieve those objectives.

Determine program supports

Identify required program supports, including corporate services, technology, training, AM expertise, and ongoing leadership support.

Decide on a pilot program vs. wide roll-out

Decide if initial program implementation should utilize a pilot program, or proceed directly to a

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

wide roll-out. A pilot provides an opportunity to test structure, processes and content with a small group, with the option to make improvements before deploying to a broad audience. A wider roll-out strategy can also be accomplished in a staged manner, by work group or department, to enable continuous improvement.

B. Develop a Program Roadmap

A Competency Management Program does not happen all at once. Many of the benefits of competency management are only achieved over time. Map out a roadmap of short- and long-term activities and objectives using the priorities identified earlier. Integrate these plans with the organization's AM Roadmap.

C. Develop a Program Implementation Plan

Confirm Leadership Support

Communicate expectations and set the organization up for success by ensuring that leadership is well-informed, and their support is active and visible.

Develop program communication and change management plans

Complete a stakeholder impact assessment for the Program and identify critical success factors for the change. Determine change impact on people, processes, technology and culture. Determine key communication messages and training for leaders, managers and employees.

Depending on the size of the organization, in-house change management resources may or may not be available for the program. If not, decide how best to meet those needs. It may be beneficial to hire or contract a person with change-management skills to initiate and oversee the program. Change management is a critical factor in the success of a competency management program but requires specific expertise. This may require some creative solutions for Small / New to AM communities. One option would be to coordinate and share a resource across several programs or even several communities.

Develop detailed project plans

Develop project plans for implementing the program activities and achieving the program objectives. Consider the likely individual development actions that will be required across the organization. Include details on scope, cost, schedule, milestones, quality, resources, and performance metrics.

STEP 4: Execute the Program

A. Execute the Roadmap and Plans

- Ensure pre-rollout activities are completed and communicated to key program delivery personnel, including program training and support models.
- Utilize project management and change management best practices to execute the plans.
- Ensure leaders and managers are well prepared and visibly ready to work with their employees using the competency framework.

B. Conduct a Competencies Gap Analysis

Assess and map the state of the organization's AM Competencies

Working with individuals and their managers, facilitate the competency assessment of individuals throughout the organization. Managers will use the standard scale to measure each person's proficiency level on the organization-specific AM Competencies relative to the appropriate role-based competency profile. Record each person's current proficiency level for each required competency and identify the gap between this and the target level identified in the competency profile. Consider this initial assessment a baseline. Ongoing evaluation over time will reveal growth in competency strengths and reduction of gaps.

Explore the organization's competency gaps

Document the competency gaps at individual, team, departmental, and organizational levels. Identify areas of strength and areas needing attention in the organization.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

Set the organization's priorities

Assess whether there are critical competency gaps that must be addressed to meet current AM priorities. Identify where team resources can be shared to meeting proficiency level targets. Decide the relative importance of the organization's gaps. Prioritize urgent needs and leave less critical gaps to be addressed later.

Consider how to resolve the gaps

Determine which of the competency management program activities in which of the four key areas of people management will best reduce the gaps. For example, assess the benefits and costs of in-house versus external learning and development. Or, consider whether it may be appropriate to recruit to fill the gap, develop current staff, or outsource to an established expert. Perhaps more effort needs to be made in the performance communication process to emphasize the importance of AM Competency development for an individual. Section 5.2 will identify specific program activities that can be undertaken in each of these areas to close the gaps.

STEP 5: Sustain the Program

A. Maintain Communication and Leadership Support

- Ensure that leadership continues to be well informed and their support is active and visible.
- Continue to communicate expectations, program progress, and the availability of program supports to all key stakeholders

B. Monitor, Measure and Report on the Program

Monitor the organization's competencies

Monitor and report on the current state of individual, team, departmental, and organizational competency. Periodically review and evaluate each individual's success in achieving target proficiency in each AM Competency, as set out in the organization's competency profiles. Assess against team, departmental, and organizational targets. Track trends over time. Identify where in the organization gaps are not closing according to

plan. Identify actions to improve and maintain progress towards targets. Utilize appropriate assessment methods including:

Key Performance Indicators: Carefully choose indicators that effectively measure changes in proficiency level on an individual and group scale. Measure individual, team, departmental and organizational results against key performance indicators. Organizations might consider tracking:

- The increase or maintenance of self- or manager-reported proficiency levels by individuals
- Percentages of individuals in various groups meeting proficiency targets or improving proficiency
- Trends in incidents that could be attributed to competence
- Improvement in compliance reporting capability and accuracy
- Trends relating to compliance training and recertification
- Reference to specific competency development on individual development plans
- Increase in the performance of employee development activities specifically attributable to the pursuit of competencies

Benchmarking: Identify industry best practice performance measures and compare the organization's performance against these year over year. Focus on trends, improvements and how the organization compares to similar organizations rather than a 'score.' Because the AMCF is new however, note that there is currently limited availability of best practices on the AM Competencies. This will be an area of focus in future development of the AMCF.

Small / new to AM organizations can utilize a yearly staff review process to document the proficiency of individuals in their organization. Use a simple spreadsheet to track changes over time. Make an informal exploration of these changes part of the review process as well.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

Monitor the organization's competency management

Monitor and report on how well the AM Competencies have been integrated and incorporated into organization's people management processes, procedures and practices. Compare outcomes to activity objectives, milestones and performance metrics. Track trends over time.

Monitor the organization's Competency Management Program

Monitor and report on the utilization and success of the organization's program. Document the program's governance structure, management framework, decision processes, program goals and implementation plans. Track trends over time.

C. Review, Analyze and Evaluate the Program

Evaluate the organization's competencies

Periodically, It is useful to critically review the competencies themselves to ensure that the competencies and profiles are still relevant for the organization.

Evaluate the organization's competency management

Review and evaluate the results of the competency development activities. Analyze potential root causes for missed targets. Identify potential solutions.

Evaluate the organization's Competency Management Program

Audit the organization's program management systems. Identify where changes are needed to improve program governance, decisions, and plans.

D. Continually Improve the Program

Continuous Improvement is one of the twelve AM Competencies. Ensure that this competency is not omitted from the Competency Management Program. Implement the solutions the organization identified above to fix issues and maintain timelines. Nothing is perfect, and the organization's Competency Management Program can always be improved.

5.2 Competency Management Program Activities

Competency Management Programs can include activities in each of the four key areas of people management described in the Section 3.2, consisting of:

- 1 Learning & Development Activities;
- 2 Recruiting & Selection Activities;
- 3 Performance Communication Activities; and
- 4 Succession & Workforce Planning Activities.

A description of each activity type is provided in the following sections, along with a table of example activities. The tables provide a sample list of activities that can help organizations identify options which may work in their specific circumstances. However, the tables are not intended to be an exhaustive or comprehensive list of potential activities. Also, regardless of the activity being considered, it is important to make sure it aligns with and enhances organizational and AM goals, closes priority AM Competency gaps, and can do so within any organizational cost or time constraints.

This guide also identifies which of the activities may be useful at different organizational scales. The right-hand "Suitability" columns in each table identify whether the activity listed would be appropriate for organizations at each of the three scales described previously in Section 5.1.1: Small / New to AM Communities ("S/N"), Mid-Sized / Developing AM Communities ("M/D"), and Large / Mature AM Communities ("L/M").

5.2.1 Learning & Development Activities

Learning and development is what most people think of when they consider implementing a Competency Management Program. It involves identifying and developing strategies and programs for education and training, aligning staff development initiatives with organizational competency gaps, selecting or developing appropriate training material, and working with staff to provide targeted development opportunities to address individual competency gaps.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

When developing learning and development activities:

- Consider the most effective type of learning experience for the competency being developed (see the box below);
- Clearly define the audience for the learning activity;
- Create well-defined learning objectives and follow instructional design principles;
- Outline expected standards for completion;
- Develop an approach for ongoing follow-up and practice; and
- Consider the systems needed for tracking achievement.

If an organization is developing a more comprehensive program, additional considerations would include the recognition that:

- Modular, progressive systems enable building on previous learning and enhance recall;
- Including context and providing interactive activities improves integration of complex processes, tasks, and competencies; and
- Common language and understanding promotes transferability and mobility within and between organizations.

THE 70-20-10 LEARNING MODEL

In trying to determine the most effective balance of learning approaches and activities, many organizations apply the **70-20-10 Learning Model**.

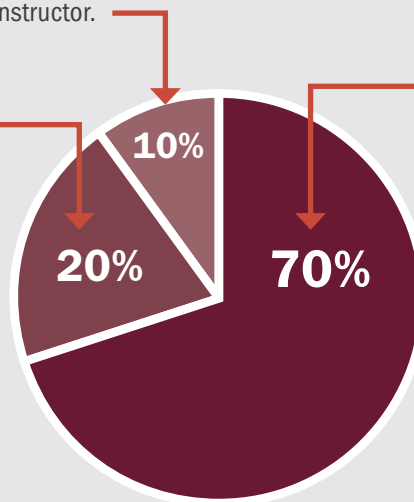
This model, developed by the Centre for Creative Leadership, has been adopted as a practical guideline for planning learning and development for employees at all levels of the organization.

Learning that results in behaviour change on the job, is most effectively achieved when the learning experiences come from the three categories in roughly the 70-20-10 ratio.

Formal learning: provides theory and facts, and is typically provided in a structured, classroom environment with defined learning objectives, and facilitated by a trained instructor.

Social learning: through interactions with more experienced individuals for guided observation or guided practice. It is typically self-directed learning and is less structured than formal learning.

Experiential learning: hands on experience with daily tasks and challenges. Application of theoretical knowledge in a practical environment.



Research has shown that people learn and retain more through informal channels than they do through formal means. When organizations can provide learners with a blend of these types of learning experiences, there is a greater likelihood that the new skills will transfer to the workplace and improve job performance.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.2.1.1 Experiential Learning Activities

Experiential or on-the-job learning activities should comprise 70% of all learning and development activities. This is achieved through hands on experience with daily tasks and challenges, applying theoretical knowledge in a practical environment. Formal learning and social learning provide some of the foundation, but people need to experience things first-hand for it to really be effective. Generally experiential learning progresses from guided observation, to practice, to performance. It involves evaluating or reflecting on

what was done, identifying what worked and what was important, and then using that new knowledge or ability to perform a similar task.

There is a strong link between effective experiential learning and the culture of an organization. Organizations should strive to create a culture where staff feel safe to try new things. Staff will benefit from exploring AM practice, as it aligns with the organization's vision and objectives, with a safety net for their fear of failure, or things not being perfect the first time.

TABLE 16: AM EXPERIENTIAL LEARNING ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Assignment of new responsibilities or increased accountabilities	Getting hands on with a new challenge or experience is proven to be a significant contributor in expanding an individual's competency. This could include getting involved with a specialized task force or committee.	<ul style="list-style-type: none"> Expand the responsibilities of an individual in their existing role(s). [All AM Competencies] Expand the responsibilities of an individual to include roles or accountabilities in a new area that will allow them to develop the target competencies. [All AM Competencies] Look for opportunities to provide staff with new responsibilities or accountabilities to address a team's competency gaps. [All AM Competencies] Have staff facilitate an internal workshop or take a turn at chairing their next department meeting. [Collaboration, Leading Others] Have someone start to develop the organization's first AM plan, or AM policy. It is ok that all the data or information required is not there. The process of starting to develop these documents will significantly boost individual AM understanding and help the organization better understand its position. [AM Expertise] 	X	X	X
Participation in a project or working group	New challenges or experiences do not have to occur only on an individual basis. They can also be part of a team effort in the organization. This can be a way to share the burden of a significant initiative or get an individual comfortable with learning in an unfamiliar area.	<ul style="list-style-type: none"> Perhaps the AM plan that was started is too much for one person to tackle on their own. Put a team together and have them work on it as a group. [AM Expertise, Collaboration, Leading Others] Just interacting constructively with others and working towards a common objective has the added advantage of improving on several of the AM Competencies, regardless of the nature of the project. [Collaboration, Leading Others] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 16: AM EXPERIENTIAL LEARNING ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
More interactions with experienced staff and senior subject matter experts**	<p>Experienced staff and senior subject matter experts hold the knowledge capital of the organization. But it is only valuable if it is used and transferred to others. Simply seeing how an experienced, highly proficient person does a task can be an effective method for transferring this knowledge and skill. This also gives less proficient staff the opportunity to observe and ask questions in a focused way. These experiences have the added benefit of strengthening working relationships between coworkers.</p> <p>** We recognize that for Small / New to AM communities there may not be someone in the organization that is already engaged in AM practice and individuals may need to look externally for this experience. See below for other options like working with consultants or external mentoring relationships. Also look for those in the organization that may exemplify one of the AM Competencies, but may not necessarily have an AM background. Many of the AM Competencies are similar to competencies for other professions and practice areas.</p>	<ul style="list-style-type: none"> • Have new hires or team transfers shadow experienced staff in their roles and at meetings. [All AM Competencies] • Have experienced staff support new staff while they work through existing systems, processes, and procedures. [All AM Competencies] • When new initiatives, processes or systems are implemented in the organization have the staff who worked on them communicate about, support, and reinforce their use. [All AM Competencies] 		X	X
Living the AM Competencies	<p>From a cultural and change management perspective, it is important for staff to see managers and subject matter experts ‘walking the talk’ on AM. Having managers and subject matter experts communicate the importance of and exemplify the competencies identified in this framework can be very powerful for staff.</p>	<ul style="list-style-type: none"> • Managers should dedicate time to communicate AM principles, the value of AM practice, and how the AM Competencies will help improve performance. [All AM Competencies, especially Leading Others for manager and subject matter experts] • Managers and subject matter experts should also prepare for and look for opportunities to highlight the above points in day-to-day situations. [All AM Competencies, especially Leading Others for manager and subject matter experts] • Managers and subject matter experts should work to consciously align their behaviour with the expected behaviours of the AM Competencies and support each other in doing so. [All AM Competencies, especially Leading Others for manager and subject matter experts] 	X	X	X

* “S/N” = Small / New to AM Community, “M/D” = Mid-Sized / Developing AM Community, “L/M” = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 16: AM EXPERIENTIAL LEARNING ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Working with experienced professionals	Some organizations utilize consultants and/or service-providers to support their AM efforts. Consultants and vendors can bring new skills and competencies closer to an organization and staff. Leverage this as an opportunity for staff to learn new things.	<ul style="list-style-type: none"> Follow the process the consultant uses to support the development of the organization's AM strategy. [Leading Others, Collaboration, Holistic Thinking, Contextual Analysis, Decision-Making] Observe how the consultant facilitates a risk management or investment planning workshop. Note how the session is structured, what framework(s) they follow, and what questions they ask during the session. [Collaboration, Decision-Making, Risk Analysis, AM Expertise, Service Focused] Have a staff-member shadow the consultant in the condition assessment process. Observe how site assessments are conducted and what assumptions are made. Note how age can be used as a proxy for condition. [Infrastructure Management, Information Management] 	X	X	X
Participation in a job rotation program (if available)	Typically done in onboarding programs for new graduates in larger organizations. New hires spend a few months in different departments across the organization to experience the breadth of the organization and better understand its functions, interests and needs.	<ul style="list-style-type: none"> An AM job rotation program could be developed in an organization, encompassing some of the departments which overlap the AM Functional Areas [All AM Competencies] 			X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.2.1.2 Social Learning Activities

Social learning and feedback activities should comprise 20% of all learning and development activities. Mentoring relationships are the most recognized social learning activity. Such interactions with experienced individuals can be valuable, but

there are other options as well. Many social learning activities can be peer-based, often in groups. Social learning is often self-directed and less structured than formal learning. It involves guided or assisted observation or practice, sometimes with feedback on performance.

TABLE 17: AM SOCIAL LEARNING ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Arranging mentor relationships	Mentorship is a relationship in which a more experienced or more knowledgeable person helps to guide a less experienced or less knowledgeable person. Organizations should encourage senior staff to form mentoring relationships with more junior staff to provide personal and professional guidance based on similar experiences and situations. Mentor relationships can be formed between individuals within an organization or between individuals across organizations, through a professional network or similar community.	<ul style="list-style-type: none"> Internally, connect senior staff to junior staff to support and guide them in their careers and the development of competencies. Staff should also be encouraged to make this connection themselves. Note that these relationships will not necessarily be with a staff-member's direct manager. [All AM Competencies] Externally, look for mentors for staff across the AM profession. With online communication so effective, these relationships could even be maintained across the country. [All AM Competencies] 	X	X	X
Requesting informal feedback	Informal feedback creates a more relaxed setting which can create a more fluid exchange of constructive criticism, while increasing the frequency at which a person would receive these remarks. This is a useful technique for making consistent incremental progress.	<ul style="list-style-type: none"> Have staff ask peers, managers or subject matter experts for feedback during day-to-day work. Simple questions like "how do you think I did on X?" or "Do you have any advice for improving Y?" or "What did I miss?" can be answered in-the-moment without need for formal structure or record-keeping. [All AM Competencies] 	X	X	X
Debriefing work with peers and/or managers	Describing and assessing work and learning objectives helps solidify a person's understanding of relevant topics by requiring them to accurately articulate their perspective. This is also an excellent opportunity for them to inquire about other perspectives and implications that may help recalibrate their next steps. Additionally, peer-to-peer dialogue within an organization helps create organizational alignment by fostering a transparent environment to exchange, inquire, and act collaboratively.	<ul style="list-style-type: none"> Have staff engage in retrospectives or lessons learned meetings after the completion of projects or other initiatives. [All AM Competencies] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 17: AM SOCIAL LEARNING ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Engaging in peer group discussions or exercises	Properly facilitated discussions and exercises (scope and objectives identified) are effective tools for disclosing and inquiring about relevant information. This progresses the concept of organizational alignment by creating an environment where the workforce is encouraged to debate and define organizational objectives. These discussions help prevent decisions being made in isolation, which in turn can help mitigate risks, improve impacts, increase efficiencies, and foster collaboration.	<ul style="list-style-type: none"> Have staff engage in a peer exercise (search online for examples, e.g., the leadership envelope exercise or role model exercise). These are usually self-directed or peer-facilitated discussions on a narrow topic within a set of guidelines. There are many suggestions online related to several of the AM Competencies. [All AM Competencies] Have staff engage in a peer game (search online for examples, e.g., coach the builder game or stranded in the office game). These are similar to the above, but generally involve more rules, and more fun! [All AM Competencies] 	X	X	X
Joining online discussion boards	Online discussion boards are a primary tool for facilitating industry or profession peer-engagement outside an organization. By providing a medium that enables the sharing of ideas, provides an open question forum, and connects individuals with industry experts, online job boards can help advance an organization's AM maturity by tapping into available people and knowledge capital.	<ul style="list-style-type: none"> Be strategic about what elements the organization or individual needs and/or wants to improve on and find an organization that caters to that specific need and/or want or the perspective to gain insight into (e.g., for public finance look to the GFOA, or for public sector AM in Canada go to CNAM). [All AM Competencies] 	X	X	X
Engaging with AM Communities of Practice	Canada has AM communities of practice across the country that individuals can connect and engage with to network, learn, and share their experiences.	<ul style="list-style-type: none"> CNAM is Canada's national AM community of practice. More locally, provinces and territories in Canada also have regional AM communities of practice to help better relate to the opportunities and challenges faced within each region. Please visit www.cnam.ca/resources for a list of these groups. [All AM Competencies] 	X	X	X
Expanding professional network(s)	Many people in the industry are willing to share their experiences and learnings with others. Staff can start to form connections with other organizations and individuals who are at a similar stage, as well as those who are more advanced and can help them develop. They can connect with other organizations nearby or with similar demographics elsewhere in Canada.	<ul style="list-style-type: none"> Peers and managers can introduce staff to experienced AM professionals or professionals from an area they are interested in. [All AM Competencies] Staff can attend AM networking events. CNAM holds an annual conference every year that brings hundreds of AM professionals together to network, share practices and experience, and learn about the future of the industry. Staff could even present! The AMCF National Partners also host many events, both large conferences and smaller regional events, that staff can attend and get involved in. [All AM Competencies] Online, tools like LinkedIn can be a very valuable platform for connecting professionals. Encourage staff to reach out to someone on the platform in an interesting or complimentary position for a chat. [All AM Competencies] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.2.1.3 Formal Learning Activities

Only 10% of all learning and development activities should be formal learning activities. Formal learning provides theory and facts, and is typically provided in a structured, classroom environment with defined learning objectives and facilitated by a trained instructor. The challenge, however, with formal learning is transfer of the new learning to the job. Recollection, practice and application of theory through experiential learning activities amplify the effectiveness of formal learning activities. This follow-up to the formal learning improves the retention of knowledge and long-term

maintenance and improvement of competency. Some formal learning can involve interactive and collaborative learning which can replicate complex on-the-job challenges and practice to capture some of the advantages of experiential learning.

There are many courses, accreditations and other formal learning activities available to increase proficiency with the AM Competencies. A selection of options are included below, however, there are many more courses available. Each organization likely already has a list of courses that are available.

TABLE 18: AM FORMAL LEARNING ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Taking formal training courses	<p>Formal training courses deliver theory and facts verbally and/or visually in a classroom setting. Content is defined in advance and generally delivered by a trained instructor who is knowledgeable in the area or practice being taught.</p> <p>Organizations may already have a list of approved courses. Managers and HR should approve attendance based on needs for mitigating competency gaps individually and for teams or departments. Affordability will be a consideration for any formal learning activity as well.</p>	<ul style="list-style-type: none"> See below for a list of training courses, workshops and seminars in AM from the national partner associations. [AM Expertise] 	X	X	X
Taking workshops and seminars	<p>A workshop or seminar is like a training course but often delivered over a shorter period (e.g., 1 to 3 days) for more extended lengths of time. Some may involve practical application of topics learned in an exercise that simulates on-the-job tasks.</p>	<ul style="list-style-type: none"> See below for a list of training courses, workshops and seminars in AM from the national partner associations. [AM Expertise] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community, See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 18: AM FORMAL LEARNING ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Certification	<p>Certification generally consists of a combination of the completion of formal training courses plus related experience, in the form of a prescribed number of hours spent performing relevant tasks.</p> <p>Certification can provide some measure of certainty in the level of proficiency of a person who has attained a certification and is therefore sometimes required or recommended for relevant positions.</p>	<ul style="list-style-type: none"> See below for a list of certifications in AM from the national partner associations. [AM Expertise] Staff might also consider certification in a related technical discipline like: Engineering (Professional Engineer) [Infrastructure Management]; Finance (Chartered Professional Accountant) [Financial Analysis]; O&M (Certified Water and Wastewater Operator, Certified Public Works Professional, Maintenance Management Professional) [Infrastructure Management]; Project management (Project Management Professional) [Infrastructure Management] 		X	X
Pursuing higher education	<p>Diplomas or degrees provide foundational learning in a discipline. They are often a requirement for relevant positions and/or are often a pre-requisite for more advanced training courses.</p> <p>A diploma or degree in AM from a recognized institution is currently unavailable, but some individual courses are being offered. There are many options in AM-related disciplines that can develop many of the AM Competencies.</p>	<ul style="list-style-type: none"> Many post-secondary institutions have now included introductory courses in AM in their engineering curriculums, varying between undergraduate, masters or doctorate level courses. University and college course designers and instructors are encouraged to review and integrate the AM Competencies into their courses. It is critical to equip future AM practitioners with these competencies. 		X	X
Engaging in E-learning and webinars	<p>Formal training courses, workshops or seminars that are delivered online instead of in person.</p> <p>E-learning tutorials and webinars can be a low cost and highly accessible option for continuing learning, especially for individuals in small and/or remote communities.</p>	<ul style="list-style-type: none"> CNAM, NAMS Canada, and the other AMCF National Partners deliver webinars on a variety of AM topics on a regular basis. Explore their websites for upcoming virtual webinars. [AM Expertise, Financial Analysis, Infrastructure Management] There are several e-learning platforms that offer paid or free e-learning modules that will cover some of the scope of AM Competencies. Some are even available through local libraries. [Leading Others, Collaboration, Decision-Making, Risk Analysis, Information Management, Continuous Improvement] 	X	X	X
Undertaking self-study and research	<p>There is a wealth of AM and AM Competency related information online and/or in print.</p>	<ul style="list-style-type: none"> Explore TED Talks on YouTube. [All AM Competencies] Explore articles and research on the various aspects of AM practice, and on related technical topics in engineering, maintenance, finance and other related disciplines. [All AM Competencies] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community, See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.2.1.4 AM Courses and Certifications

The following table highlights a few of common AM training courses and certification programs available in Canada. For municipalities in Canada, most of the courses listed are eligible for subsidies or grant funding from various levels of government. However, this is not a comprehensive list of the courses or certifications offered. Nor should this list be taken as

an endorsement of the content or outcomes provided. These courses have not been assessed for their ability to improve the AM Competencies. Moving forward, CNAM and the AMCF National Partners will be working to assess this ability and to better integrate the AM Competencies into their training materials. They will also be encouraging other training providers in the industry to do the same.

TABLE 19: SELECT AM COURSES AND CERTIFICATIONS AVAILABLE IN CANADA

<p>CNAM's "New to Asset Management Program" provides courses and resources that are ideal for those who are starting their AM journey and want to build a basic understanding of AM, quickly, and at low cost (with some resources being free and many in French). Many learners typically follow CNAM's intro course with one of the more advanced courses below.</p>	 <p>CNAM Canadian Network of Asset Managers</p> <p>https://cnam.ca/NewToAM/</p>
<p>NAMS Canada is an affiliate of the IPWEA and uses IPWEA's NAMS+ system to assist local governments and public works entities to improve the way they manage their public infrastructure assets. Their professional certificate on-line training course utilizes applied learning and is aligned with ISO 55000 and the International Infrastructure Management Manual (IIMM).</p>	 <p>NAMS Canada INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA</p> <p>https://www.namscanada.org/</p>
<p>PEMAC's Asset Management Professional online certificate builds participants' knowledge and skill in key subject areas such as risk management, knowledge management (enterprise database systems), and strategic decision making through the asset lifecycle.</p>	 <p>PEMAC</p> <p>https://www.pemac.org/education/</p>
<p>IAM appoints endorsed trainers around the world, including Canada. Various approved trainers deliver courses that are aligned with the IAM's professional qualification exams including the IAM Certificate and IAM Diploma.</p>	  <p>iam qualifications</p> <p>https://theiam.org/</p>
<p>Regional / provincial AM communities of practice across Canada provide various free and advanced courses. Typically targeting municipalities and communities, these regional / provincial groups can help infrastructure owners better understand what provincial regulations they are subject to, as well as identifying specific grants that they might be eligible for.</p>	 <p>https://cnam.ca/resources/</p>

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.2.2 Recruiting & Selection Activities

Direct learning and development are not the only way to develop competent individuals at a team, departmental or organizational level. Competency gaps can also be filled through hiring, or by contracting a service-provider or consultant, to build teams with the right mix of knowledge, skills, behaviours, and experience to best provide AM services in the organization. Using the AMCF

as a foundation to inform and support the recruiting process, organizations can craft competency-based job postings or advertisements, evaluate candidates, and make selections based on the AM Competencies they need filled. Procurement and supply chain staff can also use the AMCF to identify those capacity and capability gaps within the organization that may be outsourced to an external service-provider or consultant.

TABLE 20: AM RECRUITING & SELECTION ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Incorporate competency requirements into job postings	Utilize the content in the AMCF to craft a competency-based job posting	<ul style="list-style-type: none"> Utilize the organization's competency profiles for the appropriate AM Role to describe the AM Responsibilities for the job, and the associated AM Competencies, effective behaviours, and proficiency levels required. [All AM Competencies] Make one of the AM certifications a recommended or required qualification. [AM Expertise] 	X	X	X
Develop competency-based interview questions	Use targeted questions during interviews to assess critical role competencies. Develop interview questions that can evaluate an individual's proficiency at specific AM Competencies. Utilize the descriptions of effective behaviours under each AM Competency and the standard proficiency scale to develop appropriate questions.	<ul style="list-style-type: none"> Ask questions like: "Tell me about a time when you worked on a diverse team?" or "Describe a project you worked on with different departments?" [Collaboration, Holistic Thinking] Ask a question like: "What interests you about infrastructure?" (Wanting them to make a connection with services that communities receive.) [Service Focus] Ask a question like: "What makes a good AM Plan?" [AM Expertise] 	X	X	X
Ask for a competency-related interview presentation	Have candidates prepare a short 3-5 minute, single-slide presentation on a set topic. This allows evaluation of multiple things simultaneously including the candidate's understanding of a topic, and their ability to communicate it effectively. Think about the role being hired for and pick an appropriate and reasonable topic for candidates to research and present on.	<ul style="list-style-type: none"> "What is the purpose of an AM policy?" [Holistic Thinking, Contextual Analysis] "What is the Gas Tax and how does it relate to AM?" [Holistic Thinking, Contextual Analysis] "What is the difference between leading and lagging indicators?" [Service Focus, AM Expertise, Infrastructure Management] "What is included in life cycle costing?" [Holistic Thinking, AM Expertise, Infrastructure Management] 			X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 20: AM RECRUITING & SELECTION ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Ask for a competency-related interview case-study or exercise	Case studies can be a very useful selection tool if used correctly, particularly when looking for more advanced staff. Put forward a real-world business problem, ideally related to the organization's AM challenges, and have the candidate work through the problem, either live during the interview or have them prepare their solution in advance. Again, think about the role being hired for and pick an appropriate and reasonable topic for candidates to respond to.	<p>Ideas for case study or exercise themes include:</p> <ul style="list-style-type: none"> ● Reviewing and critiquing an AM policy ● Identifying customer vs technical levels of service ● Developing a life cycle cost spreadsheet ● Prioritizing a short list of capital projects against each other ● Developing condition estimates based on age data <p>[AM Expertise]</p>			X
Describe competency expectations (recruiting expectations) for select roles	Describe the competencies and the proficiency level required to successfully perform a given role. The effective behaviours together with the standard proficiency scale can be used to describe requirements in detail.	<ul style="list-style-type: none"> ● Develop a competency profile for each AM role to be filled in the organization. Use the AM Functional Areas and Roles descriptions and AM Competency proficiency levels as a template. <p>[All AM Competencies]</p>	X	X	X
Provide guidance on evaluating competency requirements	Provide managers who create job postings and do interviews with guidance on how to evaluate candidates based on competency requirements of the role.	<ul style="list-style-type: none"> ● The HR department can provide standards, benchmarks, guidelines, and examples for competency-based candidate evaluation. <p>[All AM Competencies]</p>		X	X
Look to fill specific competency gaps	Direct candidate search efforts towards filling priority competency gaps at the team or organizational level.	<ul style="list-style-type: none"> ● Those responsible for recruiting can translate the requirements detailed in the organization's competency expectations into a specific search profile for candidates. <p>[All AM Competencies]</p>	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

5.2.3 Performance Communication Activities

The process of performance communication is intended to ensure that employees have a clear understanding of the organization's expectations of them in their role, and an opportunity to receive feedback on how well they meet those expectations. This conversation is also one of the more formal opportunities for a manager and a staff-member to discuss learning and development. Many factors play into employee development, including a supportive learning environment, time to learn, encouragement, and budget. Perhaps the most impactful factor, however, is the focused conversation with the manager about personal growth and development priorities.

Organizations now realize that there is clear value to be realized in strengthening communication between staff and managers around competency requirements for the role and opportunities for the staff-member to develop their capability. Building employee capability requires taking a deliberate and sustained approach to enhancing the individual's knowledge, understanding or skill. By increasing the focus on staff development organizations ultimately strengthen their performance

overall and increase retention because staff needs for career development are being met.

Where an organization has a competency framework the competency descriptions have a vital role in outlining the qualifications and training necessary for the role. By identifying and mapping the knowledge, skills, and behaviours needed to create and sustain an effective AM program, organizations can be sure that their staff are adequately qualified, suitably trained and have enough experience to perform their AM responsibilities to the desired standard. Staff understand what is expected of them, what their areas of strength and deficiency are, and the steps they may need to take to improve their performance.

Competency evaluation, using the standard scale, is not a performance evaluation, but rather focuses on the individual's degree of proficiency, ability or expertise. As described above, there is a relationship between capability and performance, however proficiency at specific competencies is only one of many factors that weigh into a performance evaluation. Competencies underpin performance, but performance is about achieving an outcome, not just the ability to do so.

TABLE 21: AM PERFORMANCE COMMUNICATION ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Communicate job requirements	In addition to outlining the role and key accountabilities, some job descriptions include the required competencies.	<ul style="list-style-type: none"> When onboarding a new employee or orienting someone to a new role, a manager will start by explaining key areas of responsibility. However, based on the requirements of the job, the discussion will turn to the expectations of knowledge, skills and abilities necessary to achieve the organizational objectives. Competencies can support this discussion. The AM Competencies can provide a clear explanation of the key competencies and expected proficiencies required for each AM Role. Furthermore, each competency lists expected behaviours that can be used to guide the new employee's on-the-job performance. [All AM Competencies for staff, Leading Others for managers] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 21: AM PERFORMANCE COMMUNICATION ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Communicate performance expectations	<p>Every staff-member deserves to have clear expectations set with their manager that provide focus for their day-to-day efforts and a foundation for ongoing feedback.</p> <p>As managers and staff discuss performance expectations and set goals, part of the conversation is about the skills and capabilities required to achieve the outlined results.</p>	<ul style="list-style-type: none"> Managers can utilize the AM Competencies as a framework for a common understanding of expectations and as a standard for discussing any desired development. Managers can leverage the material in a variety of situations (e.g., when new hires are onboarding, or new initiatives, processes or systems are being implemented). [All AM Competencies for staff, Leading Others for managers] 	X	X	X
Assess staff competency	<p><i>(See Section 5.1.2 The Competency Management Program Implementation Process, Step 4(b) – Conduct a Competencies Gap Analysis)</i></p> <p>Assess individual competence relative to the profile assigned to the role, for the purposes of identifying capability, strengths and gaps.</p>	<ul style="list-style-type: none"> In preparation for feedback sessions, staff are encouraged to use the AM Competencies to self-assess. A self-assessment is a great opportunity for staff to honestly and objectively consider and document their perspective on their competencies. [All AM Competencies] Managers will use the same standard scale to assess each person's proficiency level in each competency required for their role. This information results in a gap analysis which is used to support development conversations for the individual, the team, and for organizational competency management. [All AM Competencies] 	X	X	X
Coach staff on behaviours	<p>The purpose of positive or constructive feedback is to help a person understand their behaviour and its impact, with the intention to help them learn. Competencies provide a common language to discuss work challenges and opportunities, and to talk about the behaviours that will achieve the best results.</p>	<ul style="list-style-type: none"> Using the AMCF, with its well-defined competencies and a competency profile for the role, the manager and staff-member have a foundation from which to build a shared understanding of the behaviours that will achieve the best results and ensure the coaching conversations are positive, reinforcing and developmental. [All AM Competencies for staff, Leading Others for managers] 	X	X	X
Annual performance review	<p>The performance review is an opportunity for managers to discuss the individual's achievement of results compared to the objectives and priorities of the position. Underpinning the entire process are the ongoing, candid conversations between staff and managers.</p>	<ul style="list-style-type: none"> Often these discussions include a component of competency assessment and a discussion of skill requirements. The AMCF can be especially useful when determining next steps for setting development priorities for a current role or an upcoming role. [All AM Competencies for staff, Leading Others for managers] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 21: AM PERFORMANCE COMMUNICATION ACTIVITIES (CONTINUED)

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Career development discussions	Individuals can discuss and reach agreement on development needs, targeted development goals, and action steps, with the full support of their managers.	<ul style="list-style-type: none"> As part of performance communication, a good manager will ask staff about their career aspirations. Staff and managers using a common competency model, with competency profiles as guidance, can understand and consistently interpret the expectations for future roles. Managers can provide information about available tools and resources. In this way, staff can be highly engaged in the continued development of their skills and capabilities. [All AM Competencies for staff, Leading Others for managers] 	X	X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.2.4 Succession & Workforce Planning Activities

Succession and workforce planning are continuous processes used to align the needs and priorities of the organization with the capabilities and capacity of its staff. It is an ongoing balancing act, driven by labour supply and demand. It involves understanding what talent an organization has now, what it needs now and in the future, and how to meet those needs. This means determining which other program activities to use. Organizations will need to determine whether to develop existing staff competencies, recruit, or outsource, and in what circumstances.

Workforce planning is usually broken down into strategic and operational activities. Strategic workforce planning usually covers a 3- to 5-year forecast period and is aligned

to business needs and outcomes. Operational workforce planning usually covers a shorter 12- to 18-month period and should align with the organizational planning cycle. With the AM industry facing a global labour supply shortfall, which was the trigger for the development of the AMCF, workforce planning is a real challenge for all Canadian communities.

Succession planning focuses on maintaining the availability of experienced and capable employees to assume roles that become available through staff attrition (turnover and retirement). It is about considering who can fill critical roles in the future of the organization with the right mix of competencies and experience, and ensuring there is an adequate pipeline of talented staff coming into the organization.

TABLE 22: AM SUCCESSION & WORKFORCE PLANNING ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Understand the organization's capabilities, capacity, and talent pool	Apply a systematic process to ensure that there is a high-quality pool of internal candidates who are ready and available to move into key positions at various levels.	<ul style="list-style-type: none"> Map each staff-member's competencies and proficiency. Clearly define the competencies required for key roles and evaluate the high-potential candidates relative to those requirements. Identify any critical gaps and target with specific actions to develop or hire. [All AM Competencies] 		X	X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.

5.0 A GUIDE TO IMPLEMENTING THE AM COMPETENCY FRAMEWORK (Continued)

TABLE 22: AM SUCCESSION & WORKFORCE PLANNING ACTIVITIES

ACTIVITY	DESCRIPTION	EXAMPLE(S)	SUITABILITY*		
			S/N	M/D	L/M
Conduct a position review	Take a critical look at the skills and capabilities needed in priority positions to ensure that competency needs are highlighted for business continuity.	<ul style="list-style-type: none"> Clearly define the competencies required for key roles. This should include a view into future competency needs. Use competency assessments to ensure that critical gaps are identified, and plans are in place to resolve the gaps. <p>[All AM Competencies]</p>		X	X
Conduct a talent review	Assess key talent, highlighting staff who demonstrate the highest capability and potential. Identify and actively groom the next generation of leaders.	<ul style="list-style-type: none"> Determine readiness based on ability, engagement, and aspiration to take on the applicable roles. Use competency assessment to determine an individual's capability to take on more senior positions. Understand their desired career paths and competency development plans to complete the readiness assessment. <p>[All AM Competencies]</p>	X	X	X
Analyze succession gaps	Identify candidates for priority roles. Mitigate business risk and enable business continuity by identifying risks and gaps in key skill areas.	<ul style="list-style-type: none"> Build a 'Replacement Chart' that offers 'ready' candidates for each critical role. <p>[All AM Competencies]</p>	X	X	X
Action planning	Determine risk mitigation and development needs, and any critical moves required.	<ul style="list-style-type: none"> Collaborate on meaningful development plans and actions with key impacted individuals. Allocate resources toward developing those who show the most promise. <p>[All AM Competencies]</p>		X	X
Develop workforce plans	Ensure the organization has access to enough staff with the right capabilities to ensure business needs are met.	<ul style="list-style-type: none"> Analyze staffing requirements for current and future operations. Consider competency requirements, staff turnover, and retirement numbers. <p>[All AM Competencies]</p>		X	X
Utilize competency mapping in resource planning	Identify project or program resource needs and identify staff with the right competencies to perform necessary tasks. Plan how to optimally utilize resources to successfully execute projects or programs.	<ul style="list-style-type: none"> Capture competency mapping information in project management systems to integrate competency-based resource planning into standard project management processes. <p>[All AM Competencies]</p>			X

* "S/N" = Small / New to AM Community, "M/D" = Mid-Sized / Developing AM Community, "L/M" = and Large/Mature AM Community. See Section 5.1.1 for details.



APPENDICES

Appendix A: The ACMF Development Team

CNAM would like to recognize and extend thanks to the following individuals for contributing to the development

of the ACMF. Most of these individuals did so on a volunteer basis, collectively contributing hundreds of hours of time towards making the ACMF a reality.

CNAM PROGRAM MANAGEMENT TEAM (AND AMCF CONTRIBUTORS AND REVIEWERS)	
Valerie Williams*	CNAM Chair and Program Sponsor
Doug Cutts	CNAM Executive Director and Program Contract Manager
Iain Cranston	Program Manager
Ian Gerritsen	Assistant Program Manager and Chief Editor
Lynn Sikorski	Competency Management Expert
Chris Stuart	Program Coordinator
Nathan Romanchych	Program Coordinator
PROGRAM NATIONAL STEERING COMMITTEE (AND AMCF CONTRIBUTORS AND REVIEWERS)	
Anne Jackson	CPWA
Brandon Searle	CSCE
Cindy Snedden*	PEMAC
Doug Cutts	CNAM
Harry Burchill	CIP
James Jorgensen*	IAM
Nicole Allen*	IPWEA / NAMS Canada
Roy Brooke*	MNAI
Shayne Kavanagh*	GFOA
Valerie Williams*	CNAM
PROGRAM WORKING GROUP MEMBERS (AND AMCF CONTRIBUTORS AND REVIEWERS)	
Anissia Nasr	FCM
Abimbola Grace Oyeyi *	CSCE
Andrew Stevenson	CPWA
Arnold Yuan	CSCE
Bernard Gaudreault	IAM
Carlos Osterroth	PEMAC
Catherine Dallaire	IAM
Chris Klos*	CNAM
Chris Murphy	PEMAC
Christine Callihoo	CIP
David Albrice	IAM
Dean Hendrickson	PEMAC
Dr. Dan Pickel	CSCE
Dr. Luke Zhao	CSCE
Dr. Vimy Henderson	CSCE
*CNAM would like to recognize these people for their extra contributions to the ACMF development process and for going above and beyond in their volunteer efforts	

APPENDICES (Continued)

PROGRAM WORKING GROUP MEMBERS (AND AMCF CONTRIBUTORS AND REVIEWERS) – CONTINUED	
Ebenezer Adjei	GFOA
Ed Kaemingh	GFOA
Gracelyn Shannon	MNAI
James Jorgensen*	IAM
Jessica Achebe	CSCE
Kala Harris	GFOA
Loretta Gette*	CNAM
Lourette Swanepoel	CIP
Luis Amador	CSCE
Milos Posavljak	CSCE
Nicole Allen*	IPWEA / NAMS Canada
Osama Moselhi	CSCE
Rajeev Ruparathna	CSCE
Roy Brooke*	MNAI
Samantha Mark	CIP
Shayne Kavanagh*	GFOA
Thomas Froese	CSCE
AMCF MUNICIPAL COHORT PARTICIPANTS (AND AMCF REVIEWERS)	
Amanda Aasen	Municipality of Port Hope
Andrew Nichols	City of Richmond Hill
Atiq Rahman	City of Markham
Bernadette O'Connor*	WSP
Beth Thola	Town of Westlock
Bill Brenner	City of Dauphin
Calvin Efford	Town of Port Blandford
Carlos Osterroth	City of Medicine Hat
Cassandra Pacey	City of Waterloo
Cindy Snedden*	PEMAC
Dave Brett	Town of Drumheller
David Baxter	Municipality of Port Hope
David Waterfield	Halifax Water
Dean Rurak	Niagara Region
Denny Boskovski	Town of East Gwillimbury
Erik Nickel	Corporation of City of Niagara Falls
Floyd Beattie	Municipality of Port Hope
Geoff Brown	City of Regina
Heather Miller	Halifax Water
Jacqueline Frizado*	City of Winnipeg
*CNAM would like to recognize these people for their extra contributions to the AMCF development process and for going above and beyond in their volunteer efforts	

APPENDICES (Continued)

AMCF MUNICIPAL COHORT PARTICIPANTS (AND AMCF REVIEWERS) – CONTINUED	
Joline McFarlane	City of Kelowna
Karen Esarte	Parks Canada
Lee Anne Harder	City of Saskatoon
Lisa Ellis	Town of Newmarket
Logan McVeity	Town of East Gwillimbury
Nathalie Gionet	Government of Yukon, Highways and Public Works
Nathan de Witt	Corporation of the City of London
Nick Larson	GM BluePlan
Patrick Laforest	Town of East Gwillimbury
Pious Maposa	Halton Region
Renee England	City of Markham
Rob Grech	City of Markham
Ryan Melanson	Town of Conception Bay South
Sameem Shah	City of Markham
Shawn Boast*	Town of Oakville
Shawn Didluck	City of Airdrie
Suzanne Grouchy	Town of Conception Bay South
Valerie Williams*	Halifax Water
Zoe Coull	Ice Dragon Corrosion

*CNAM would like to recognize these people for their extra contributions to the AMCF development process and for going above and beyond in their volunteer efforts

Appendix B: The AMCF Development Process

To develop the AMCF, CNAM brought together the AMCF National Partners, eight other national associations that are involved in supporting the various aspects of AM, community management, and associated industry professions to leverage their collective expertise (see Section 1.0).

“This is a great opportunity to help local governments solidify their approach to asset management. We are excited to be a part of it.”

Shayne Kavanagh, Senior Manager of Research,
Government Finance Officers Association (GFOA)

The AMCF National Partners came together to form the AMCF development program’s National Steering Committee (NSC). The NSC met regularly throughout the course of the development of the AMCF. They provided oversight to the program, ensuring the development remained in line with objectives, and addressed and mitigated any issues that arose. Several working groups

were also created with volunteers from the AMCF National Partners’ memberships. Each group focused on a different aspect of the AMCF. The working group meetings were held virtually. The groups debated both the bigger picture and finer details of implementing AM in communities across Canada. They reviewed and considered industry best practice and standard methodologies that are being applied across the country.

The AMCF was a truly collaborative effort, leveraging the collective expertise of CNAM and the AMCF National Partners’ members. AMCF content was developed based on collective decision-making and by consensus where possible. The working groups provided draft text, content suggestions, review and editing, and decision-making. A team from CNAM coordinated the efforts of the working groups and the NSC (the “Program Management Team”). The Program Management Team provided program management, coordination of regular working group sessions, and document drafting, content consolidation, and editing as well.

APPENDICES (Continued)

Hundreds of hours of volunteer time, in addition to the resources funded through the FCM MAMP program, were spent developing the AMCF. This process has been a tremendous effort by everyone involved.

The AMCF was developed over the course of 2019. A deliberately long draft development and review cycle was used to allow for the framework to be widely reviewed and piloted by the industry before being finalized. The development team utilized an 'alpha' and 'beta' release schedule to issue working draft versions of the AMCF for review before the final product was made widely available. CNAM and the AMCF National Partners agreed before the program began that the AMCF would be a free, publicly available resource. Anyone working in public-sector AM in Canada can leverage the AMCF to support development of their AM capacity. This benefits both the wider industry and the country as well. CNAM and the AMCF National Partners intend to maintain the NSC to review the adoption of the AMCF and improve or expand it in the future.

The AMCF was also piloted with groups of community staff during the development phases through the creation of two cohorts. These cohort groups of communities were provided basic AM training, an AMCF implementation workshop, regular virtual meetings, and help-desk-based coaching support to apply the AMCF to their organizations. The cohorts also provided the development team feedback on the working releases, which was incorporated into the ongoing development of the document.

- Alpha Release, May 2019 – the first working release of the framework was issued to the first cohort group in May 2019. An AMCF implementation workshop was held immediately prior to the CNAM 2019 Conference in Kelowna, BC on May 5, 2019.
- Beta Release, October 2019 – the second working release of the framework was issued on October 1, 2019. It was used by the second cohort in an implementation workshop held in Ontario held that same day. It was also distributed for review and comment to a wider group of industry experts and users, including the country's Regional AM Communities of Practice, as well as various academic institutions.
- Version 1.0 Release, February 2020 – with feedback incorporated from the alpha and beta releases,

the final version of the AMCF was released to the public at the beginning of 2020. **For the most up to date information on the AMCF please visit www.cnam.ca/AMCompetencyFramework.**

CNAM would like to extend a special thanks to the GFOA, the CPWA, and IPWEA / NAMS Canada, who stepped up to provide additional financial support for the program to supplement the main support provided through the FCM's MAMP, which is funded by the Government of Canada.

Appendix C: The AM Responsibilities

The table below provides a high-level summary of the primary responsibilities an organization must undertake for an AM program. These are the general actions involved at different stages of the development and implementation of an AM management system. While described differently, these responsibilities broadly overlap with and maintain consistency with other key industry frameworks including ISO 55000, the GFMAM AM Landscape, and the IAM Anatomy.

The table outlines a general area of responsibility and then describes the typical actions undertaken by each AM Functional Area or AM Role in relation to that area of responsibility. The actions are intended to connect the who (AM Functional Areas and AM Roles) with the what (AM Responsibilities) and serve as the foundation upon which the AM Competencies were defined, and the AM Competency profiles were built. They are the tasks that the AM Competencies are required to best perform. They can also serve as a general reference when building an AM program.

As previously described, there are different organizational scales in Canadian communities and different levels of AM maturity depending on organizational goals. The organization's size, current and target levels of AM maturity, and AM and competency management goals, will determine how the organization should plan its organizational structure and roles, and adapt the AM responsibilities to them. Several of the AM responsibilities are likely already being done by staff within the organization. Start with those and with the organization's AM roadmap and determine what immediate, and long-term responsibilities the organization needs to prioritize.

APPENDICES (Continued)

TABLE 23: THE AM RESPONSIBILITIES

AM RESPONSIBILITY	DETAILS	AM FUNCTIONAL AREA ACTIONS											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
Community Context <ul style="list-style-type: none"> Analyze, integrate and manage the community context 	<ul style="list-style-type: none"> Integrate community master plans and organizational strategic plans Analyze needs, demographics, forecasts and scenarios for future and/or growth, service demand, PEST, SWOT, community resources, Service ID, and valuation Manage needs, growth, and demographic, environmental, economic, social, technical, and political changes 	Know, Use, Integrate	Know, Use, Manage, Integrate	Analyze, Manage, Integrate	Support, Advise Know, Use, Manage, Integrate	Use, Integrate	Use, Integrate	Support, Advise Know, Use, Manage, Integrate	-	-	-	-	-
AM Governance <ul style="list-style-type: none"> Develop, follow and maintain an AM Governance Structure 	<ul style="list-style-type: none"> Includes authorities, accountabilities, and roles and responsibilities 	Develop, Review, Update	Support, Advise (Manager)	Assist, Follow	Support, Advise, Auth., Approve, Commit, Comm.	-	-	-	-	Support, Advise	-	-	-
AM Policy <ul style="list-style-type: none"> Develop, follow and maintain an AM Policy 	<ul style="list-style-type: none"> Includes intent, outcomes, principles, and values 	Develop, Review, Update, Maintain	Support, Review, Advise, Follow	Assist, Follow	Support, Advise, Auth., Approve, Commit, Comm.	Follow, Integrate	Follow, Integrate	Follow, Integrate	Assist, Follow, Integrate	Follow, Integrate	Follow, Integrate	Follow, Integrate	Follow, Integrate
AM Strategy <ul style="list-style-type: none"> Develop, follow and maintain an AM Strategy 	<ul style="list-style-type: none"> Includes AM goals (strategic objectives), decision processes, objectives and targets, key initiatives, and risks 	Develop, Review, Update, Maintain	Support, Review, Advise, Follow	Assist, Follow	Support, Advise, Auth., Approve, Commit, Comm.	Follow, Integrate	Follow, Integrate	Follow, Integrate	Assist, Follow, Integrate	Follow, Integrate	Follow, Integrate	Follow, Integrate	Follow, Integrate
AM Management System <ul style="list-style-type: none"> Develop, follow and maintain an AM management system framework Manage the AM program Plan and deliver AM projects 	<ul style="list-style-type: none"> Includes practices, procedures, tools, and documents Integrate organizational management frameworks and practices (environment, health and safety, risk, information management, performance management, stakeholder engagement, quality management) Standardize AM systems and processes 	Develop, Review, Update, Maintain Manage (prog.)	Support, Review, Advise, Follow, Maintain Manage (systems, process) Plan, Deliver, (AM projects)	Assist, Follow, Comm. Monitor, Assess, Measure, Report	Support, Advise, Auth., Approve	Follow	Follow	Follow	Assist, Follow	Follow	Follow	Follow	Follow
Level of Service <ul style="list-style-type: none"> Identify and value the community's infrastructure services Develop levels of service (LOS), set targets, and measure service performance 	<ul style="list-style-type: none"> Identify and value infrastructure services Identify LOS (customer, technical) Set LOS targets Measure performance Integrate growth and demand management 	Support, Advise, Review, Approve	Develop, Review, Update	Assist, Monitor, Assess, Report	Support, Auth.	Identify, Support, Advise Integrate Measure, Review, Update	Support, Advise Integrate Measure, Review, Update	Identify, Support, Advise Integrate Measure, Review, Update	Support, Advise Integrate Measure, Review, Update	-	-	Support, Advise Integrate Measure, Review, Update	Support (IS)

APPENDICES (Continued)

TABLE 23: THE AM RESPONSIBILITIES (CONTINUED)

AM RESPONSIBILITY	DETAILS	AM FUNCTIONAL AREA ACTIONS											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
Project Prioritization <ul style="list-style-type: none"> Develop, follow and maintain a project prioritization decision-making framework 	<ul style="list-style-type: none"> Develop framework, model, process, decision criteria, weighting, and scoring 	Support, Advise, Review, Approve	Develop, Review, Update	Assist, Manage, Monitor, Assess, Report	Support, Auth.	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise Follow, Analyze, Integrate	-	-	Support, Advise Follow, Integrate	Support (IS)
Project Assessment <ul style="list-style-type: none"> Develop, follow and maintain a project identification and assessment framework (Business Cases) 	<ul style="list-style-type: none"> Identify and describe needs, options, impacts, outcomes, and integration opportunities Analyze, review, evaluate and decide on preferred option Includes documenting and storing, processes and procedures 	Support, Advise, Review, Approve	Develop, Review, Update	Assist, Manage, Monitor, Assess, Report	Support, Auth.	Identify, Support, Advise Follow, Integrate	Identify, Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise Follow, Analyze, Integrate	-	-	Support, Advise Follow, Integrate	Support (IS)
AM Plans <ul style="list-style-type: none"> Develop, implement, review and update AM plans (AMPs) 	<ul style="list-style-type: none"> Develop AMP(s) for organization (all assets and asset systems) OR asset class or system level OR department level Includes state of infrastructure, target LOS, life cycle management strategies, and financial and resourcing strategies 	Support, Advise, Review, Approve	Develop, Review, Update	Assist, Manage, Monitor, Assess, Report	Support, Auth.	Identify, Assist, Manage, Review, Update	Identify, Assist, Manage, Review, Update	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise	Support, Advise	Support, Advise	Support, Advise
AM Long-Term Financial Plans <ul style="list-style-type: none"> Develop, follow and maintain policies and strategies for describing AM financial needs Communicate AM financial needs Develop, implement, review, and update an AM long-term financial plan (LTFP) 	<ul style="list-style-type: none"> Develop policies for describing AM financial needs (including accrual accounting methods, depreciation analogue based on current replacement cost) Develop financial sustainability metrics Develop financial communication and visualization strategies Develop LTFP: identify and describe long-term financial needs from required long-term life cycle activities and LOS (from AMPs), including: <ul style="list-style-type: none"> Funding analysis (projected costs, gaps, options, risks) Funding strategy (reserves, tax rates, debt, revenues, grants and other) Financial performance measures and targets 	Support, Advise, Review, Approve Use, Comm.	Develop, Review, Update Use, Comm.	Assist, Manage, Monitor, Assess, Report	Support, Auth. Use, Comm.	Support Use, Comm	Support Use, Comm	Support Use, Comm	Assist, Develop Use, Comm.	-	-	Support, Advise (data, vis.)	Support (IS)

APPENDICES (Continued)

TABLE 23: THE AM RESPONSIBILITIES (CONTINUED)

AM RESPONSIBILITY	DETAILS	AM FUNCTIONAL AREA ACTIONS											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
<p>Organizational Financial Integration</p> <ul style="list-style-type: none"> Develop, follow and maintain policies, strategies and methods for life cycle financial analysis Integrate AM and organizational financial principles, policies, methods, and outputs 	<ul style="list-style-type: none"> Life cycle financial analysis includes asset costing and valuation Assess how financial needs and forecasts address service and LOS needs; Assess financial reporting, monitoring, and funding needs for AM Integrate AM principles and concepts and LTFP outputs into investment planning, budgeting, tax rate setting, and similar Integrate organization's financial policies and procedures into AM financial planning 	Support, Advise, Review, Approve	Support, Advise	Assist, Advise Follow, Integrate	Support, Auth., Approve (policies)	Follow	Follow	-	Develop, Manage, Review, Update	-	Follow	-	Follow
<p>Risk Integration</p> <ul style="list-style-type: none"> Develop, follow and maintain an AM Risk Framework (based on the organizational risk framework) Integrate, analyze, and manage risk in all AM strategies, plans, and practices 	<ul style="list-style-type: none"> Develop AM Risk framework based on the organizational risk framework Integrate risk into all AM practices, strategies, and plans. Analyze risks 	Support, Advise, Review, Approve Comm.	Support, Advise, Review, Approve Comm., Manage	Develop, Manage, Review, Update Analyze, Integrate	Support, Auth.	Integrate Follow, Analyze, Update	Integrate Follow, Analyze, Update	Integrate Follow, Analyze, Update	Integrate Follow, Analyze, Update	Integrate Follow, Analyze	Integrate Follow, Analyze	Integrate Follow, Analyze	Integrate Follow, Analyze

APPENDICES (Continued)

TABLE 23: THE AM RESPONSIBILITIES (CONTINUED)

AM RESPONSIBILITY	DETAILS	AM FUNCTIONAL AREA ACTIONS											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
<p>Life Cycle Management</p> <ul style="list-style-type: none"> Manage the life cycle activities of the community's infrastructure systems, including developing, implementing, and maintaining operational strategies and plans for: <ul style="list-style-type: none"> Design, construction, O&M, renewal, and disposal Collaboration, integration, and innovation Quality and performance measurement Emergencies, faults, and incidents Shutdowns and outages Projects and project management Health and safety Compliance and standards 	<ul style="list-style-type: none"> For life cycle activities: acquire, create or upgrade, operate, maintain, renew, and dispose Operational strategies and plans for design, construction, O&M, renewal, disposal, innovation, departmental collaboration and integration, corridor optimization, and compliance and standards (including benchmarking, processes and procedures, methods), management of natural assets, opportunities for growth and demand management integration Adverse event management: emergencies, faults, incidents, and contingencies Quality and performance management: condition, asset and service performance, reliability, and resiliency Project management: health and safety, compliance, planning, contingencies, shutdowns, outages, and resourcing 	Support, Advise	Support, Advise Assess, Review	Assist, Advise Monitor, Measure, Analyze	-	Develop, Manage, Review, Update Monitor, Measure, Analyze	Develop, Manage, Review, Update Monitor, Measure, Analyze	Develop, Manage, Review, Update Monitor, Measure, Analyze	Support, Advise Monitor, Measure, Analyze	Support, Advise Develop, Manage, Review Update	Support, Advise Develop, Manage, Review Update	Support, Advise Monitor, Measure, Analyze Develop, Manage, Review Update	Support, Advise Develop, Manage, Review Update
<p>AM Roadmap</p> <ul style="list-style-type: none"> Develop, follow, and maintain an AM roadmap 	<ul style="list-style-type: none"> Develop long-term plan for AM actions, activities, and projects 	Support, Advise, Review, Approve	Develop, Review, Update	Assist, Manage, Monitor, Assess, Report	Support, Auth.	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate	-	Support, Advise Follow, Integrate	Support, Advise Follow, Integrate

APPENDICES (Continued)

TABLE 23: THE AM RESPONSIBILITIES (CONTINUED)

AM RESPONSIBILITY	DETAILS	AM FUNCTIONAL AREA ACTIONS											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
<p>Information</p> <ul style="list-style-type: none"> Develop, follow, implement, manage, and maintain strategies and plans for: <ul style="list-style-type: none"> AM data and information Information governance Data analysis Information sharing, communication, and visualization AM knowledge retention and sharing 	<ul style="list-style-type: none"> Includes data and information on assets, asset and service performance, information systems, resource capacity and capabilities, AM management system, strategies and plans, and similar Information strategy: requirements, integration, sharing, compliance, and methods Information governance: validation and controls, standards and models, access, security and privacy, processes, and procedures Information planning: resource capacity and capability, systems capacity and capability, collection, storage, cleaning, updating, and delivering (location, audience, format, visualization) Information analysis: Identify, assess, and utilize tools, methods, and techniques; analyze info Information communication and visualization: methods (e.g., GIS, tabulation, graphing), effectiveness for differing audiences, and similar 	Support, Advise Use, Follow, Comm.	Support, Advise Assess, Review Use, Follow	Assist, Advise Monitor, Measure, Analyze Use, Follow	Support, Auth.	Support, Advise Monitor, Measure, Analyze Use, Follow	Support, Advise Monitor, Measure, Analyze Use, Follow	Support, Advise Monitor, Measure, Analyze Use, Follow	Support, Advise Monitor, Measure, Analyze Use, Follow	Support, Advise Monitor, Measure, Analyze Use, Follow	Support, Advise Monitor, Measure, Analyze Use, Follow	Develop, Manage, Review, Update, Integrate Monitor, Measure, Analyze	Support, Advise Use, Follow, Integrate
<p>Information Systems</p> <ul style="list-style-type: none"> Develop, implement, manage, and update strategies and plans for, and deliver, AM information systems, including <ul style="list-style-type: none"> Financial systems Analytical systems Asset information systems Geographic information systems (GIS) Work management systems 	<ul style="list-style-type: none"> For analytical capabilities, collection, storage (capacity), cleaning, updating, logging changes, and delivering (location, audience, format, visualization) 	Support, Advise Use	Support, Advise Assess, Review Use	Assist, Advise Monitor, Measure, Analyze Use	Support, Auth.	Support, Advise Use	Support, Advise Use	Support, Advise Use	Support, Advise Use	Support, Advise Use	Support, Advise Use, Integrate	Support, Advise Use, Integrate	Develop, Manage, Review, Update, Integrate Monitor, Measure, Analyze

APPENDICES (Continued)

TABLE 23: THE AM RESPONSIBILITIES (CONTINUED)

AM RESPONSIBILITY	DETAILS	AM FUNCTIONAL AREA ACTIONS											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
<p>AM Culture</p> <ul style="list-style-type: none"> Establish, communicate, reinforce, and support AM and AM culture in the organization Develop, implement, manage, review, assess, and update strategies and plans for change management 	<ul style="list-style-type: none"> Includes communications plans and competency management 	Develop, Advise, Review, Approve, Comm.	Support, Review, Update Develop, Comm.	Assist, Follow Comm.	Support, Advise, Auth., Approve, Commit, Comm., Follow	Support, Follow, Integrate	Support, Follow, Integrate	Support, Follow, Integrate	Support, Follow, Integrate	Assist, Support, Follow, Integrate	Support, Follow, Integrate	Support, Follow, Integrate	Support, Follow, Integrate
<p>Resource</p> <ul style="list-style-type: none"> Develop, implement, manage, and update strategies and plans for: <ul style="list-style-type: none"> Resourcing AM, AM projects, and AM support People management Acquiring and managing external resources (procurement and supply chain) 	<ul style="list-style-type: none"> Includes internal and external resources: people (staff, consultants, contractors), equipment, materials People Management: build teams, manage people (capabilities, capacity), manage AM Competencies, and manage organizational knowledge and skills Procurement and Supply Chain: quality control, contract administration, and vendor management 	Support, Advise Use, Manage Review, Assess, Improve (res.)	Support, Advise Use, Manage Review, Assess, Improve (res.)	Assist, Advise Monitor, Measure, Analyze Use	Support, Auth., Commit	Support, Advise Use, Manage Review, Assess, Improve (res.)	Support, Advise Use, Manage Review, Assess, Improve (res.)	Support, Advise Use, Manage Review, Assess, Improve (res.)	Support, Advise Use, Manage Monitor, Measure, Analyze	Develop, Manage, Review, Update Monitor, Measure, Analyze	Develop, Manage, Review, Update Monitor, Measure, Analyze	Support, Advise Use, Manage Review, Assess, Improve (res.)	Support, Advise Use, Manage Review, Assess, Improve (res.)
<p>Stakeholders</p> <ul style="list-style-type: none"> Develop, implement, manage, review, assess, and update strategies and plans for, and undertake: <ul style="list-style-type: none"> Internal and external stakeholder engagement and consultation Internal and external stakeholder communications 	<ul style="list-style-type: none"> Identify and engage stakeholders Build common language and shared understanding of AM 	Support, Advise, Review, Approve Perform, Manage Use, Follow	Support, Advise, Review Perform, Manage Use, Follow	Assist Perform, Manage Monitor, Assess Use, Follow	Support, Advise, Auth., Comm., Use, Follow	Support, Use, Follow	Support, Use, Follow	Develop, Review, Update Perform, Manage, Use Monitor, Assess, Update	Support, Use, Follow	Support, Use, Follow	Support, Use, Follow	Support, Use, Follow	Support, Use, Follow

APPENDICES (Continued)

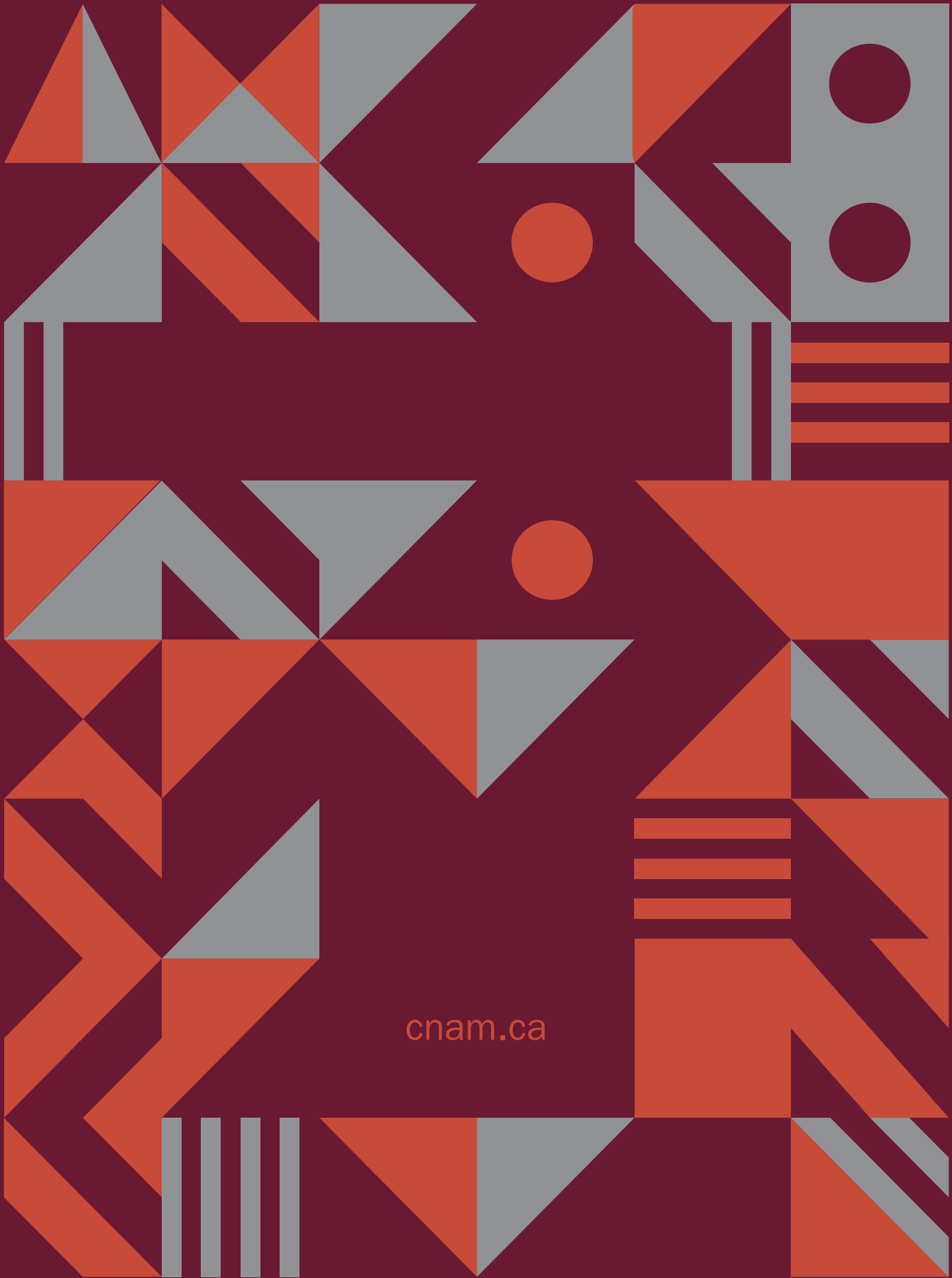
Appendix D: AM Competency Proficiency Requirements Summary Table

TABLE 24: AM COMPETENCY PROFICIENCY REQUIREMENTS SUMMARY													
AM COMPETENCY CATEGORY	AM COMPETENCY	PROFICIENCY LEVEL REQUIREMENT											
		GENERAL AM			SENIOR LEADERSHIP	ENGINEERING	O&M	PLANNING	FINANCE	HR	PROCUREMENT / SUPPLY CHAIN	INFORMATION / RECORDS	IT / IS
		MANAGER	PROJECT MANAGER / ADVISOR	COORDINATOR / ANALYST									
People & Leadership	Leading Others	Exp	Adv	Int	Exp	Int	Int	Int	Int	Adv	Basic	Int	Int
	Collaboration	Exp	Adv	Int	Exp	Int	Int	Int	Int	Int	Int	Int	Int
Policy & Governance	Contextual Analysis	Exp	Adv	Int	Exp	Int	Int	Exp	Int	Basic	Basic	Int	Basic
	Holistic Thinking	Exp	Adv	Int	Exp	Adv	Int	Adv	Int	Basic	Basic	Int	Int
Planning & Decision-Making	Decision-Making	Exp	Adv	Int	Exp	Adv	Adv	Adv	Adv	Basic	Int	Adv	Adv
	Risk Analysis	Adv	Adv	Int	Exp	Adv	Adv	Int	Adv	Basic	Basic	Basic	Int
Data & Information	Information Management	Adv	Int	Int	Adv	Int	Int	Int	Int	Basic	Basic	Exp	Adv
	Financial Analysis	Exp	Adv	Int	Exp	Int	Int	Int	Exp	Basic	Basic	Basic	Basic
AM Practice	AM Expertise	Exp	Adv	Adv	Int	Int	Int	Int	Int	Basic	Basic	Basic	Basic
	Service Focus	Exp	Adv	Adv	Adv	Int	Int	Int	Basic	Basic	Basic	Basic	Basic
Life Cycle Delivery	Infrastructure Management	Adv	Int	Int	Basic	Exp	Exp	Basic	-	-	Int	Int	Basic
	Continuous Improvement	Exp	Adv	Int	Adv	Int	Int	Int	Int	Int	Int	Adv	Int

Note: Exp = Expert, Adv = Advanced, Int = Intermediate



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