Inter-organizational networks

A critical review of the literature to inform practice

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Abstract

The use of inter-organizational networks as a strategy for public sector management, and the study of these networks by a diversity of scholars, has grown rapidly in the past fifteen to twenty years. Network practice has often had to move ahead without the benefit of a well understood or easily available evidence base, and while doing so advancing practical knowledge in the field. This critical review of the literature on the conceptualization, implementation and evaluation of inter-organizational networks is primarily meant to be a resource document for network practitioners – leaders, managers, participants and facilitators.

A systematic approach was taken to reviewing the published literature. A search strategy was developed with the support of a research librarian, and a search conducted of appropriate research databases. The authors used a rigorous process to screen titles, abstracts and then full text articles for relevance and quality. Authors and advisory committee members also identified key articles from both the academic peer-reviewed literature and unpublished reports or ‘grey’ literature for potential inclusion in this review. In the end 142 articles are included in this review.

The key findings from this literature review fall under six thematic headings: key concepts and characteristics; network types and functions; network governance, leadership and structure; network life cycle or evolution; network effectiveness; and evaluating networks. In each of these areas key findings from recent research and key grey literature that are likely to be most relevant to practice are highlighted and discussed. Given that network practice has been ahead of research in some respects, experiential knowledge gained from leading and working in networks is used to illustrate and expand on particular points. An evolving model of action to guide network evaluation is presented based on what is known from research and practice about the factors contributing to network effectiveness. The review concludes with some suggestions for future research and practice, and some final reflections from the authors.
Key findings and messages

The literature review process

- There is an extensive body of literature on inter-organizational networks, published across a variety of academic disciplines, which use a variety of terms to describe the same phenomenon. This means that, as with inter-organizational networks themselves, the literature base and practice experience are wide ranging, diverse and sometimes difficult to find.
- This is a critical review of the literature conducted to bring forward evidence of practical value to people working in inter-organizational networks. As such, it contains some collective and reflective commentary on the state of the evidence base. The comments are meant to provoke readers to think beyond the published literature and current knowledge, and to encourage additional wisdom from both practice experience and research to find its way into the future evidence base concerning the development, management and evaluation of networks.

Key concepts and characteristics

- There are many definitions of inter-organizational networks in the literature; at the foundation of virtually all is the concept of networks consisting of the structure of relationships between actors (individuals and organizations) and the meaning of those relationships. Trust is described as the lubricant that makes cooperation possible between these actors, and higher levels of trust are believed to lead to increasing network effectiveness.
- Some argue that inter-organizational networks exist because of a moral imperative. That is, the important issues facing society (e.g., poverty, crime, health promotion, economic development, the environment, natural disasters, education, healthcare reform) must be addressed, yet clearly cannot be tackled by single organizations working on their own.

Benefits and limitations of networks

- Many of the benefits described in the literature (e.g., shared risk, advocacy, positive deviance, innovation, flexibility and responsiveness) suggest that the creation of inter-organizational networks can be a strategy for developing an organizational structure that is more nimble and able to create change and/or be more responsive to change.
- There are known challenges to working in inter-organizational networks (e.g., achieving consensus on the network purpose and goals, culture clashes, loss of autonomy, coordination fatigue, the development of trusting relationships, power imbalances) that practitioners need to seriously consider and work diligently to mitigate.
- Two important questions for consideration by practitioners and researchers alike are:
  - Do the added benefits of networks outweigh their challenges or limitations, and in what circumstances?
  - When is an inter-organizational network the right organizational form?
Emergent vs. formal networks

- There appear to be both pros and cons to emergent and mandated networks. An obvious pro of a mandated network is that it can provide a powerful incentive for organizations to work together. An emergent network, on the other hand, may start with higher levels of trust due to its voluntary nature. Allowing sufficient time for trust and genuine commitment to be built is critical to the longer-term effectiveness of all networks.

Network types and functions

- Under the umbrella of collaborative inter-organizational networks, there are a variety of network and function types described in the literature.
- The types and functions of networks described commonly in the literature are briefly outlined, with three functions described in a little more depth given their centrality to many networks: information diffusion and knowledge exchange; network learning; and innovation.
- Although a network may be viewed as a particular type of network based on its primary function, it will generally have multiple functions. For example, a service delivery network, with the main function being the delivery of coordinated services to a particular client group, will likely have a number of other important functions such as information diffusion, knowledge exchange, learning and capacity building.

Network governance, leadership and management, and structure

- Three key interlocking themes, related to effective network development and growth, are network governance, management and leadership of and in networks, and network structures. The exploration of these themes begins to answer the question, “Is there a way of working unique to networks?”
- A typology of network governance proposed by Provan and Kenis (2008) is widely referred to in the public administration literature on networks, and identifies three distinct types of governance structures within networks: shared governance; lead organization; and network administration organization. An important initial task for network managers is to determine which governance structure is a good fit for this network at this time, and to ensure that the network structure evolves to meet the needs of the network over time.
- The management and leadership of and in networks are widely described as being challenging, and yet are essential to maintaining the flexibility and resiliency needed to accomplish network level tasks, and ultimately to address the network’s vision.
- Leadership in a network is not viewed as the purview of a single leader in a formal leadership position, but rather seen as something more organic in nature that is supported and grown across the network. This way of conceptualizing leadership aligns with the literature on complexity leadership, where leadership processes can be shared, distributed, collective, relational, dynamic, emergent and adaptive. The role of a network manager as leader is to nurture this kind of leadership. Some terms used to describe network leadership include host, servant leader, helper, network weaver and network orchestrator.
Network managers must have a good understanding of the purpose and functions of a network in order to manage it effectively. Some essential network management, and potentially leadership, tasks and behaviours identified in the literature are described, and include management of design, commitment, conflict, accountability and legitimacy. There are a number of tensions and paradoxes inherent in networks that need to be managed, one of which is the balancing of the needs of the organization with the needs of the network.

An understanding of network structure can help in the design of effective networks. Network structure consists of the nodes that comprise the network; the ties that connect the nodes; and the patterns, structures and relationships that result from these connections. Each node represents an actor in a network, and in an inter-organizational network these actors are organizations. Social network analysis is often used to study the structure of inter-organizational networks, or the connections between these nodes. Both strong ties and weak ties are of value in a network, and serve different purposes.

Understanding the relationships and processes occurring through the network structure is as important as understanding the structure itself.

**Network evolution**

Despite the recognition of the cyclical nature of networks by many people working in this field, to date there is very little published research on how networks evolve over time. Four stages of evolution are identified and briefly discussed.

1) Formation - There are multiple early decisions, activities and processes required when establishing a network. Consideration must be given to precursors and context, balancing development of network structures and processes, and setting the tone for ongoing collaboration and consensus building, sustainability and resilience.

2) Development and growth – The development and growth of a network requires conscious facilitation, paying attention to what is going on with respect to network structure, carrying out essential management tasks, and encouraging distributed leadership. Four issues that require attention over time if the network is to continue to develop and grow are discussed in more detail: trust; power; positive deviance; and outcome attribution and accountability.

3) Maturity, sustainability and resilience – As a network matures, engaging in and supporting the following activities would seem to be important for network leaders: scanning of the context within which the network exists; revisiting of the network’s vision in order to respond to changes in the context; ongoing development of internal and external legitimacy; and monitoring and evaluation of the network’s processes and outcomes.

4) Death and transformation – Given the dearth of research on the natural life cycle of inter-organizational networks, we have very little understanding of their death and/or transformation. Future evaluation and research is needed to contribute to our knowledge about how to distinguish between a natural and an untimely death of a network, including how to prepare for the former and prevent the latter. Exploration of an eco-cycle model of network evolution may be equally useful.
Network effectiveness and evaluating networks

- An understanding of what the research to date says about factors contributing to network effectiveness is critical to the evaluation of networks. In general terms, network effectiveness can be defined as the achievement of positive network level outcomes that cannot be attained by individual organizational participants acting alone. Examining both a network’s processes and outcomes is important, as is multi-level analysis.
- Building on what has been learned through practice and research about network effectiveness, we propose an evolving model of action that might be helpful to guide the evaluation of network processes and outcomes, with a goal of maximizing our learning about what works, what does not, in what contexts, and why.
- Social network analysis as a method of evaluating networks remains highly useful. However, there is still much to learn about how to adequately capture the value of inter-organizational networks, particularly in ways that support the value of the network without diminishing the roles and contributions of the member organizations.

Some next steps in research and practice

- Given the value of stimulating and supporting networks as vehicles for achieving societal goals, it is important that we continue to generate knowledge about the circumstances under which inter-organizational networks are best formed; what type of network might work best depending on the purpose and the context; and how best to support the evolution of a network throughout its life cycle. Longitudinal, comparative practice based research and evaluation is needed.
- Notwithstanding the contribution of social network analysis methods for evaluating networks, some new and emerging research and evaluation approaches may help broaden our understanding of networks, including developmental evaluation and the use of narrative approaches.
- While the bodies of research relevant to inter-organizational networks are growing and developing in maturity, more is needed. Given the very nature of networks, much of the wisdom and learning is embedded in and with those who lead, manage and participate within these networks.
- Just as we need to continue our practice, research and evaluation efforts concerning the value of networks – we also need to study and reflect on when they are not such a good idea.

Authors’ reflections

At the end of this report the authors sound off about the pet peeves, dilemmas, differences of opinion, irresolvable arguments, and even the occasional 'violent agreement' that arose during the writing of this review. In Section 8.2 we invite you into our lively discourse and encourage your participation in the ongoing conversation.
1.0 Introduction: Purpose and background

1.1 Introduction and purpose

The purpose of this literature review is to deliberately bring forward evidence of practical value, identifying and synthesizing what is known about inter-organizational networks. The review builds on a network literature review conducted in 2002, with similar practical goals, under the auspices of the Southern Alberta Child and Youth Health Network (Hill, 2002). It can be considered ‘Volume 2’ in what we hope will be an ongoing series capturing and interpreting for practical use the published literature on inter-organizational networks.

This is a critical review. As such it contains some collective and reflective commentary on the state of the knowledge base contained within current literature. The additional perspectives woven into the text and found within the authors’ reflections’ section at the end are purposeful, and we hope useful. The comments are meant to provoke readers to think beyond the published literature and current knowledge, and to encourage additional wisdom from both practice experience and research to find its way into the future evidence base concerning the development, management and evaluation of networks.

Intended primarily as a resource for network practitioners – leaders, managers, participants and facilitators – this review can be characterized as part of a developing ‘network toolkit’; that is, one of a number of activities or products that could be helpful to practitioners engaged in developing or managing inter-organizational networks. The hope is that the review will both enhance network practice and encourage network practitioners to actively conduct and participate in applied research and publish in this area.

The more specific focus, with respect to the expected audience for this review, is on people and organizations either already involved in health and other human service networks or considering forming a network to address complex social issues. Having said that, the literature reviewed here spans a broad array of disciplines and settings so the findings may inform practitioners working in a variety of collaborative non-profit and/or public sector networks and they may also provide some useful comparative ideas and evidence for some private sector network initiatives. The findings may also stimulate academics and students interested in inter-organizational networks to expand the knowledge base through empirical studies in this field, particularly in the areas that are not yet well understood as identified in a number of places throughout this report.

1.2 Background

The use of inter-organizational networks as a strategy for public sector management and the study of these networks by a diversity of scholars have grown rapidly in the past fifteen to twenty years. Berry,
Brower, Choi, Goa, Jang, Kwon, & Word (2004) identify the explosion in the use of networks as a framework in both the popular and academic literature and suggest, in particular, that the “cross-fertilization” of research across multiple disciplines (i.e.; sociological, political and public management traditions) can contribute to clarifying the thinking and knowledge about networks, particularly those in the public management arena. They provide an excellent synthesis of network research in the three traditions, including the underlying assumptions, common research methods and the principal questions of interest to each (Berry et al., 2004).

"Networks have assumed a place of prominence in the literature on public and private governing structures, gradually nudging hierarchies and markets as the foremost means to organize to address complex problems, share scarce resources, and achieve collective goals" (Weber & Khademian, 2008, p. 334). Networks can be viewed as an alternative when both markets and bureaucracies fail or as entities that augment them (Gilchrist, 2006; Isett, Mergel, Leroux, Mischen, & Rethemeyer, 2011; Kenis & Provan, 2009; Milward & Provan, 2006a).

A number of authors describe the revolution in public management that has contributed to the increase in inter-organizational networks in the public sector with a variety of terms used for this phenomenon, including: the hollow state; third-party government; and the market state (Isett et al., 2011; Milward & Provan, 2006a). Contributing factors to this public management revolution have been “the search for greater productivity; more public reliance on private markets; a stronger orientation toward service; more decentralization from national to subnational governments; increased capacity to devise and track public policy; and tactics to enhance accountability for results” (Kettl, 2005 as cited in Milward & Provan, 2006a, p. 8).

The de-institutionalization movement across many human services (e.g., mental health, care of the elderly, care of children) is a strong contributing factor to an increase in the development of human and health services networks. The shift away from institutionally based care was accompanied by an increased need for a more coordinated and collaborative approach to the provision of community-based services to ensure that those requiring services received them and did not fall through the cracks between organizations delivering services (Isett et al., 2011).

Due to this immediate practical need to increase the coordination of community-based health and human services, and the use of inter-organizational networks as one vehicle for doing so, network practice has often had to move ahead without the benefit of a well understood or easily available evidence base, at times advancing the knowledge beyond the published research. While there has been recent rapid growth in the networks’ literature in the Public Administration field as academic research tries to catch up, networks as an area of study is still in its early stages. As Isett et al. (2011) note, “scholars remain faced with fundamental questions and challenges that make network studies a variegated undertaking where a variety of phenomena are described in multiple ways” (p. i159).

Mindful of the challenges and elucidating ongoing, perhaps unanswerable, questions, this review captures and collates much of what is known about inter-organizational networks. The intent is to extend practical knowledge of what we collectively understand about the value and the challenges of
designing, developing, managing, sustaining and evaluating inter-organizational networks. It also critically reviews the limits of the evidence base and suggests areas and issues where new research and practice efforts are required.

2.0 Literature review strategy

2.1 Framing the review
A series of key questions were developed by the authors, in consultation with an advisory committee, to guide the development of the search strategy and literature review. These questions were grouped under three broad areas:

1) key concepts and characteristics of inter-organizational networks in the public or non-profit sector;
2) implementation, sustainability and resilience of inter-organizational networks; and
3) evaluation of inter-organizational networks.

There was also an interest in ensuring that anything new or emerging about inter-organizational networks identified through the review was acknowledged, even if it was beyond the scope of the original questions. Together, these four areas and the more specific questions under each of them (see Appendix 1) guided the development of the search strategy.

2.2 Refining the scope
Isett et al. (2011), in their review of research on public administration networks, identified three major streams of research that are related to three broad types of inter-organizational networks:

1. Policy networks (i.e., with a common “interest in public decisions within a particular area of policy because they are interdependent and have a shared fate” and often focused on “decision making about public resource allocation”, p. i158)
2. Collaborative networks (i.e., that “work together to provide a public good, service or ‘value’ when a single public agency is unable to create the good or service on its own”, p. i158)
3. Governance networks (i.e., that “fuse collaborative public goods and services provision with collective policy-making...and focus on the coordination of agencies toward a common goal rather than the policies or products that the networks actually produce”, p. i158).

While these types are useful analytically, in the real world of networks parts of all three may be present in any one network. We are most interested in collaborative networks because, as practitioners in the public service arena, understanding how to collaborate and implement in relation to improving services is what we view as most important to the clients we serve. Thus, the majority of the literature included in this review falls under the second type, collaborative networks, as they are the most common in the public and non-profit sector and in particular the human services sector, including healthcare.
Given this focus, a number of topics had to be excluded although they are closely related and often overlap with inter-organizational networks. These topics are: social networks and social network analysis (except in the context of evaluating inter-organizational networks); social capital; intra-organizational networks (e.g., clinical networks that reside within a single organization in healthcare); communities of practice; and complex adaptive systems. While published research on these topics does contain knowledge that is potentially useful to people working in collaborative inter-organizational networks, the respective bodies of literature are too large and disparate to include substantively in a single literature review. Accordingly, we acknowledge their importance and reference them occasionally. We also provide a brief overview of these topics in Appendix 2, and include some suggestions for further reading.

2.3 Search strategy
A limited systematic approach was taken to this targeted and critical review of relevant published and unpublished literature on inter-organizational networks in the public and non-profit sectors. Intended to build on the review completed in 2002, the literature reviewed is primarily from 2002 to 2012. Some foundational articles and books published prior to 2002 are included if they continue to guide research and practice. Given the amount of literature published on inter-organizational networks across a range of academic disciplines, this could not be an exhaustive review of every article. Rather, the goal was to identify the key articles and documents that addressed the questions guiding this review. Readers are encouraged to use this review as a means to extend the depth and breadth of their own reading and learning.

A combination of search strategies was used to identify articles to include in the review. A research librarian developed an initial literature search strategy (see Appendix 3) guided by the literature review questions and additional input from members of the advisory committee. This initial search of research databases yielded 533 citations. A second search conducted, that included additional keywords and expanded the fields searched, yielded an additional 1928 citations. Review of these citations resulted in 117 articles identified from the initial search, and 97 from the second search for possible inclusion in the review.

Authors and advisory committee members also identified key articles from both the academic peer-reviewed literature and unpublished reports or ‘grey’ literature for potential inclusion in this review. A search by author was also conducted, with key authors identified both from the first stage of this literature review and the 2002 literature review. Nineteen more articles were identified for possible inclusion in the review using this search strategy. Finally, a number of additional articles were identified through references cited in key articles.

2.4. Review and synthesis
The authors of this report were collectively involved in the review process to determine which articles would be read for possible inclusion in the review. The literature was sorted into major groupings.
corresponding with questions guiding the review, such as network functions, implementation, evolution and evaluation. As well, a deliberate decision was made to rely quite heavily on a few major review articles (Borgatti & Foster, 2003; Bryson, Crosby, & Stone, 2006; Isett et al., 2011; McGuire, 2006; Provan, Fish, & Sydow, 2007; Provan & Lemaire, 2012a), a book (Huxham & Vangen, 2005) and a report (Milward & Provan, 2006a) that provide a good synthesis of large bodies of literature. These are also viewed as being good resources should readers wish to delve further into particular areas of the literature. The inclusion and exclusion criteria used to guide the review process can be found in Appendix 4. An important criterion was that it be of value to a practitioner audience. This means that articles that are heavily theoretical in nature, where the primary goal is to contribute to the research knowledge base and theory development rather than draw out implications for practice, are excluded from this review.

The goal of the literature synthesis process was to identify key themes in relation to the questions that guided the review, and briefly summarize the findings from the literature organized around these key themes. Mind mapping software was used to aid in the data management, theme identification and synthesis process.

2.5 Strengths and limitations

Strengths of this review include the systematic approaches used. A systematic and replicable approach was taken to searching a large and often messy body of literature crossing multiple fields. The team approaches used to screen for relevance and quality were also systematic and confirmable. The primary benefit achieved through this combination of search and review activities is the critical assessment and synthesis of a large number of articles with the goal of describing the current state of the science on collaborative inter-organizational networks in a way that would be useful for people leading and working in networks.

Limitations of this review are primarily related to the complexity of the literature in conjunction with the finite resources available to conduct the review. Research on inter-organizational networks is conducted by many disciplines (e.g., management, public administration, sociology, anthropology, health and human services, psychology) using a wide variety of terms. This creates a complicated and dynamic landscape of literature to identify, review and synthesize. Our efforts, while systematic, informed and targeted, were not exhaustive and surely leave some relevant work undiscovered.

3.0 Key concepts and characteristics

3.1 What do we mean by a ‘network’?

Throughout this report, when the term network is used we are referring to collaborative inter-organizational networks where three or more organizations are working together toward a common purpose. Since common purpose is integral to this definition, these networks consist mostly of public and non-profit organizations rather than competitive, for-profit organizations. This working definition is derived from the work of many authors who contribute to a growing number of ways to describe inter-organizational networks of various kinds in varying contexts. While essential to settle on a definition of
networks for our purposes, it is neither possible nor necessarily desirable to capture a complex human phenomenon with one definition. The discussion that follows, then, is intended to illustrate the range and complexity of the language and definitions used within the literature.

"In very broad terms, networks are defined by the enduring exchange relations established between organizations, individuals, and groups" (Weber & Khademian, 2008, p. 334). In inter-organizational networks, the focus is on inter-organizational relations. Provan, Fish, & Sydow (2007) note that:

...although inter-organizational networks are by now a commonly understood phenomenon of organizational life, it is not always clear exactly what organizational scholars [or people in practice] are talking about when they use the term. Even the term network is not always used. Many who study business, community, and other organizational networks prefer to talk about partnerships, strategic alliances, inter-organizational relationships, coalitions, cooperative arrangements, or collaborative agreements. (p. 480)

In addition to the list outlined in the quote above, the terms collaboration and collaborative alliance are also sometimes used to refer to inter-organizational networks. Gray and Wood (1991) define collaboration as occurring “when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain” (p. 146). Bryson et al. (2006) define “cross-sectoral collaboration as the linking or sharing of information, resources, activities and capabilities by organizations in two or more sectors to achieve an outcome that could not be achieved by organizations in one sector separately” (p. 44). Huerta, Casebeer, & VanderPlaat (2006), with their interest in using networks to enhance service delivery, define networks as “a group of three or more autonomous organizations working together across structural, temporal and geographic boundaries to implement a shared population health or health services strategy” (p. 13).

Recently the term “whole network” has been introduced to refer to “a group of three or more organizations connected in ways that facilitate achievement of a common goal. That is, the networks...are often formally established and governed and goal directed rather than occurring serendipitously" (Provan et al., 2007, p. 482). Whole networks (i.e., consciously formed, organized, goal-directed networks):

are especially relevant in health, where the collective action of multiple organizations is often required to provide effective care. They differ from serendipitous networks (Kilduff & Tsai, 2003), which form and evolve spontaneously, focus on dyadic connections between social actors, and generally have no common theme or goal shared by network members. (Provan, Beagles, & Leishow, 2011, p. 316)
Still, it could well be that emergent networks may not have a common goal to start with, but develop one as they work together and it is subsequently that common goal that keeps the network together over the longer term. Thus, serendipitous networks can sometimes evolve into whole networks.

The examples above are only a small sample of the definitional variation in the literature. That said, we also know from the literature that: “Despite differences, nearly all definitions have a few common elements including social interaction (of individuals acting on behalf of their organizations), relationships, connectedness, collaboration, collective action, trust, and cooperation” (Provan et al., 2007, p. 480). At their base, networks consist of the structure of relationships between actors (individuals and organizations) and the meaning of those relationships. Trust is the lubricant that makes cooperation between these actors possible, and higher levels of trust are believed to lead to more effective collaboration.

3.2 Why do inter-organizational networks exist?
Inter-organizational networks can be viewed as a way to address complex social and population health problems by taking advantage of a broader set of resources and increased capacity (Bryson et al., 2006; Gilchrist, 2006; Hoberecht, Joseph, Spencer, & Southern, 2011; Keast, Mandell, Brown, & Woolcock, 2004; Riley & Best, in press; Weber & Khademian, 2008). Often these inter-organizational networks will also be intersectoral, in that many of society’s most difficult public challenges require collaboration amongst government, business, non-profits, communities and/or the public as a whole (Bryson et al., 2006; Gilchrist, 2006).

Organizations join or form networks for a variety of reasons, including the need to gain legitimacy, serve clients more effectively, attract more resources, and address complex problems. But regardless of the specific reason, in a general sense, all network organizations are seeking to achieve some end that they could not have achieved independently. (Provan & Kenis, 2008, p. 240)

Human service organizations often have goals that go beyond specific client outcomes. For example, while an organization may have a specific mandate to assist individuals living in poverty, it may also have the broader goal of poverty reduction at a population level. Keast et al. (2004) state that a variety of collaborative arrangements, including networks, have emerged as a result of the failure of traditional, bureaucratic hierarchical organizations to address these broader issues. These complex or ‘wicked’ problems or issues (e.g., poverty, homelessness, chronic health problems - including mental health and addictions) present a unique challenge to governments at all levels (federal, provincial, local), mostly because they defy precise definition and cut across disciplines, sectors, geographical and authority jurisdictions, policy and service delivery areas. To date, neither the single agency or silo approach, nor
the complexity of the market model, have been effective in addressing these kinds of problems (Keast et al., 2004).

Some would argue that collaborative inter-organizational networks exist because of a moral imperative. That is, the important issues facing society (e.g., poverty, crime, health promotion, economic development, the environment, natural disasters, education, healthcare reform) must be addressed, yet clearly cannot be tackled by single organizations working on their own (Bryson et al., 2006; Hoberecht et al., 2011; Huxham & Vangen, 2005; Keast et al., 2004).

Huxham and Vangen (2005) use the term “collaborative advantage” to refer to collaborative alliances and inter-organizational partnerships that are effective in tackling complex social issues that would otherwise fall through the gaps between hierarchies and markets. They make the case for networks by arguing that: “Almost anything is, in principle, possible through collaboration because you are not limited by your own resources and expertise” (p. 3). While that is very inspiring, a more measured set of potential benefits of networks come from a number of studies of inter-organizational networks. These are summarized in Table 1 along with a sample list of authors, from the articles reviewed, writing about these benefits.

Table 1: Potential benefits of inter-organizational networks

<table>
<thead>
<tr>
<th>Potential benefit</th>
<th>Description</th>
<th>Author(s) – some examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to and leverage of resources</td>
<td>- stretch, build on or strengthen limited resources</td>
<td>Bryson et al., 2006; Gulati, Lavie, &amp; Madhavan, 2011; Huxham &amp; Vangen, 2005; Milward &amp; Provan, 2006a; Provan &amp; Lemaire, 2012a; Scott &amp; Hofmeyer, 2007; Weber &amp; Khademian, 2008</td>
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<tr>
<td></td>
<td>- access to resources not held within a particular organization</td>
<td></td>
</tr>
<tr>
<td>Shared risk</td>
<td>- the ability to distribute or share risks fosters creativity and innovation by reducing risk to any one organization</td>
<td>Casebeer, Popp, &amp; Scott, 2009; Hoberecht et al., 2011; Huxham &amp; Vangen, 2005; Kapucu &amp; Demiroz, 2011; Weber &amp; Khademian, 2008</td>
</tr>
<tr>
<td>Efficiency</td>
<td>- more efficient use of resources</td>
<td>Huxham &amp; Vangen, 2005; Provan &amp; Kenis, 2008; Provan &amp; Lemaire, 2012a</td>
</tr>
<tr>
<td></td>
<td>- ability to achieve economies of scale (e.g., purchasing, being more competitive in grant competitions)</td>
<td></td>
</tr>
<tr>
<td>Service quality, coordination, seamlessness</td>
<td>- ability to provide coordinated, higher quality services and a full continuum of care</td>
<td>Hoberecht et al., 2011; Huxham &amp; Vangen, 2005; Kenis &amp; Provan, 2009; Popp, Douglas-England, Casebeer, &amp; Tough, 2005a; Provan &amp; Lemaire, 2012a</td>
</tr>
<tr>
<td>Advocacy</td>
<td>- able to exert more pressure due to greater political clout and community reach resulting from greater numbers and diversity of network members</td>
<td>Provan &amp; Lemaire, 2012a</td>
</tr>
<tr>
<td>Learning, capacity building</td>
<td>- knowledge exchange can enable learning and capacity building at a network level and in the broader community</td>
<td>Brass, Galaskiewicz, Greve, &amp; Tsai, 2004; Bryson et al., 2006; Huxham &amp; Vangen, 2005; Isett et al., 2011; Keast et al., 2004; Kenis &amp; Provan, 2009; Klijn, Edelenbos, &amp; Steijn, 2010; Knight, 2002; Knight &amp; Pye, 2005; Provan &amp; Lemaire, 2012a; Weber &amp; Khademian, 2008</td>
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</table>
As one can see, there are many potential benefits of networks. Those benefits most likely to be realized through a particular network will be aligned with its purpose. For example, a network developed to create opportunities for universities to collaborate with health service delivery organizations could have learning, capacity building and positive deviance as benefits. It can be challenging for university-based researchers to engage in the kind of ‘just in time’ research that matters to health professionals trying to solve real time problems. Creating formalized network structures can enable researchers and health practitioners to come together to think and act beyond the norms of both cultures. In other words, opportunities are created to work together in positive deviant ways. Researchers learn about issues that matter to health practitioners and the kinds of research that has the potential to be useful, and health practitioners learn how to generate knowledge through research.

Many of the benefits outlined in Table 1 (e.g., shared risk, advocacy, positive deviance, advanced innovation, flexibility and responsiveness) suggest that the creation of inter-organizational networks can be a strategy for developing an organizational structure that is more nimble and able to create change and/or be more responsive to change.

3.3 What are the limitations of inter-organizational networks?
Huxham and Vangen (2005) are frank about the challenges of making collaboration work in practice, mirroring a key theme that emerged through the literature reviewed here. Many authors comment that

<table>
<thead>
<tr>
<th>Potential benefit</th>
<th>Description</th>
<th>Author(s) – some examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive deviance</td>
<td>- networks provide a forum to think and act beyond the organizational norm, structure or mandate; to work deliberately in deviation from the standard organizational processes, overtly or covertly, to influence change in systems</td>
<td>Casebeer et al., 2009</td>
</tr>
<tr>
<td>Innovation</td>
<td>- networks are enabling structures that create opportunities for innovation, which a number of authors describe as closely connected to learning</td>
<td>Brass et al., 2004; Hoberecht et al., 2011; Klijn et al., 2010; Provan &amp; Lemaire, 2012a</td>
</tr>
<tr>
<td>Shared accountability</td>
<td>- opportunity to work collaboratively to address, and share responsibility for, a quadruple bottom line (e.g., financial, social, environmental and cultural) - developing a sense of accountability to one's network colleagues</td>
<td>Hoberecht et al, 2011; Romzek, LeRoux, &amp; Blackmar, 2012</td>
</tr>
<tr>
<td>Flexibility and responsiveness</td>
<td>- capacity to be more flexible and responsive in order to deal with unforeseen problems (e.g., disasters)</td>
<td>Isett et al., 2011; Provan &amp; Lemaire, 2012a</td>
</tr>
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networks should not be seen as a panacea, and describe the difficulty inherent in network management and leadership in a context often characterized as complex and ever changing (Bryson et al., 2006; Huerta et al., 2006; Huxham & Vangen, 2005; McGuire, 2006; McGuire & Agranoff, 2011; Provan & Lemaire, 2012a). Bryson et al. (2006) note that cross-sector collaborations do not solve all the problems they tackle, and can create more problems. They go on to explain that negative unanticipated consequences can occur because of how highly interconnected things are, meaning that any change can result in unexpected ripples across the system or sectors. Huerta et al. (2006) speculate that there may be a class of problems for which networks are inappropriate and call for research identifying the types of problems that networks should or should not address. Cross-sector collaborations, then, although a promising mechanism for addressing issues that are complex and interconnecting, are no panacea. McGuire and Agranoff (2011) describe the importance of seeing networks as only one of the emergent management entities, noting that they are “neither the be all and end all of governing nor some replacement for government” (p. 280).

Many of these same points, however, could be made about markets and hierarchies. While acknowledging the challenges of working in an inter-organizational network, these challenges must be set against the limits and constraints that other organizational forms encapsulate. The question for practitioners and researchers alike, then, is whether the added benefits of networks outweigh their challenges or limitations, and in what circumstances. The degree to which the challenges can be anticipated, managed or offset is an important consideration when establishing an inter-organizational network. Thinking through the potential challenges may, in fact, help drive the composition, governance and leadership of a network, or indeed the decision to use a different organizational form. As well, given the highly interconnected nature of networks, building in strong ongoing monitoring and evaluation mechanisms from the earliest stages of a network’s development is an important strategy for identifying and addressing any unintended negative consequences early on.

A number of particular challenges, which bear forethought, to working in an inter-organizational network are described in the literature (Bryson et al., 2006; Hoberecht et al., 2011; Huerta et al., 2006; Huxham & Vangen, 2005; McGuire, 2006; Provan & Lemaire, 2012a). While one may argue that these challenges are not necessarily unique to networks, they are frequently described in the literature reviewed here. Some of these identified challenges are listed in Table 2 below and we have further attempted to articulate why they are challenges and provide some suggestions about how they might be mitigated. Again, the authors’ list is not exhaustive, but reflective of the literature reviewed.
<table>
<thead>
<tr>
<th>Challenge</th>
<th>Why it is a challenge</th>
<th>How it might be mitigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieving consensus on and varied commitment to network purpose and goals</td>
<td>Member organizations come to the table with diverging perspectives and priorities, varying levels of trust in the process, and differing tolerance for subjugating individual needs in favour of the common goal.</td>
<td>- Use a highly participatory, collaborative process for establishing initial goals, making sure to involve key stakeholders and implementers. - Develop specific terms of reference.</td>
</tr>
<tr>
<td>Culture clash, or competing “institutional logics”</td>
<td>Member organizations have different ways of doing things (cultures) and/or institutional logics (e.g., approach to decision making, ways of providing services, transparency with partners), which can make it challenging to agree on essential structures, processes and outcomes.</td>
<td>- Identify and openly discuss the underlying cultures and logics of member organizations. - Develop structures and processes for the network that reflect a diversity of those found within member organizations.</td>
</tr>
<tr>
<td>Loss of autonomy</td>
<td>Legally autonomous organizations may resist coordinated decision-making, particularly when the decisions are not perceived as being in the best interests of their organization.</td>
<td>- Ensure that planning and decision-making is participatory and open. - Pay attention to how a potential decision could affect organizational members differently; highlight the potential gains.</td>
</tr>
<tr>
<td>Coordination fatigue and costs, including being pulled in multiple directions</td>
<td>Working collaboratively and coordinating decisions and activities take time and effort away from the day-to-day work of an organization. As well, it is not uncommon for a single organization to belong to multiple networks, which exacerbates the time and effort required.</td>
<td>- Adoption of an appropriate governance form and sufficient resourcing of the network can help ensure that the time individual member organizations commit to network activities is optimized. - Creating a network culture that allows members to engage at varying intensities on particular activities can also provide relief.</td>
</tr>
<tr>
<td>Challenge</td>
<td>Why it is a challenge</td>
<td>How it might be mitigated</td>
</tr>
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| Developing trusting relationships | Trusting relationships take time to build, and must continue to be attended to if trust is to be maintained over time because reciprocity emerges from repeated interactions.                                                                                                                                                                                                                                                                                                                                                                                                 | - Build trust initially by sharing non-threatening information or knowledge and engaging in low-risk activities, thus demonstrating competency, good intentions and follow-through.  
- Regular check-ins on the ‘health’ of network relationships may help identify and mitigate trouble spots.  
- Use the strategy of tit for tat; if someone cooperates with you in the first round, you cooperate with them in the next.                                                                                                                                                                                                                   |
| Obstacles to performance and accountability | Accountability can be a particularly complex issue, as it is often not clear to whom the network is accountable and for what. This diffusion of accountability can lead to “free-riders”, where some organizations participate minimally and let others pick up the slack.                                                                                                  | - Establish an early expectation that all network members will contribute in some fashion over time, setting the stage for network members to hold each other accountable.  
- Tracking inputs and creating transparency within the network can also make individual member contributions and corresponding outcomes more visible and provide evidence for tough conversations with free riders.                                                                                       |
| Management complexity            | Management within a network context requires managing across organizations as well as within the traditional hierarchical structures of member organizations. Tensions that arise between the two are typically difficult to resolve but still require confronting.                                                                                                                                                                                                                           | - Acquire and share knowledge within the network about how networks operate.  
- Identify how each organization fits into the network and predict the tensions that may arise.  
- Ensure good conflict resolution mechanisms are in place to address issues in an open and transparent way.  
- Foreshadow the fact that some tensions may be irresolvable and that this is acceptable within the network culture.                                                                                                                                                                                                                   |
| Power imbalance and resulting conflict | As in life, organizational members come into the network with differing levels of status within the community, making power imbalances a reality.                                                                                                                                                                                                                                                                                                                                                             | - Use language that reinforces equality among members.  
- Provide early and ongoing assurance that the interests of all members are being considered.  
- Use resources to equalize power and manage conflict effectively.                                                                                                                                                                                                                                                                         |
<table>
<thead>
<tr>
<th>Challenge</th>
<th>Why it is a challenge</th>
<th>How it might be mitigated</th>
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| Lack of organizational capacity to work collaboratively | Organizational members may lack experience working collaboratively because of traditional organizational ways of working. | - Develop the network culture or ‘network way of working’.  
- Provide education on collaboration to network members.  
- Choose an early activity to work together on that has good potential for a quick win.  
- Model a collaborative leadership style. |
| Sustainability | Sustaining a network can be challenging for a number of reasons, many of which have been discussed throughout this table. An additional challenge to network sustainability is change in the context within which a network operates and the evolutionary nature of development. | - Be aware of the common challenges experienced by networks, mitigating them where possible.  
- Ensure the network remains nimble by trying to anticipate and respond/adapt to changes in context. |

### 3.4 When is a network the right organizational form?

Although inter-organizational networks can be a powerful mechanism for addressing complex problems, they should be entered into only when there is a potential for real collaborative advantage. The literature suggests that this is when there is an issue to be tackled that has not been effectively addressed through more traditional organizational structures and ways of working (Hoberecht et al., 2011; Huxham & Vangen, 2005; Isett et al., 2011; Keast et al., 2004). This is an interesting perspective because it presupposes that the genesis of a network is always embedded in failure, to some degree forced. It disregards the possibility that organizations might come together, not as a result of their own failed attempts at problem solving, but in advance recognition of the complexity of the issue at hand and with a realistic view of the benefits to be gained through an inter-organizational network approach. Holley (2012) suggests using networks when changes to existing systems or a high degree of experimentation or innovation are desirable (p. 10). In practice we see both pathways for establishing inter-organizational networks and suggest that further analysis of the precursors to the decision to form a network might provide insights into later successes or challenges encountered.

In the public management literature there is discussion about a variety of kinds of collaborative management structures that work for different purposes (McGuire, 2006; Provan & Lemaire, 2012a). Provan and Lemaire (2012a) describe choosing networks based not necessarily on “the complexity of the problem being addressed, but rather, how routine and predictable the problem is and whether the problem can be addressed sufficiently by a single organization” (p. 11). For example, they describe
bureaucracy (i.e., the classic hierarchy form) as being appropriate when a task is stable and routine, but not appropriate for most non-routine tasks (Provan & Lemaire, 2012a). Keast et al. (2004) note that the literature suggests that a common trigger for the development of inter-organizational networks is a crisis, which is an indicator that the stakes are high and can increase the likelihood that resources will be provided to support network development. Thus, there are multiple reasons for establishing an inter-organizational network, and these reasons influence how a particular inter-organizational network is formed and how it functions (Hoberecht et al., 2011).

It is important to acknowledge that “seeking collaborative advantage is a seriously resource-consuming activity, so is only to be considered when the stakes are really worth pursuing” (Huxhum & Vangen, 2005, p. 13). The researchers who are raising these cautionary flags are doing so not because they do not believe that networks are worthwhile; indeed, many of these authors have invested considerable intellectual capital in studying networks and strongly believe they are needed in our society. They are trying to ensure, however, that people considering establishing a network are doing so for the right reasons and are proceeding in a way and in a context that will increase the probability of developing an effective network.

So when is a network the right organizational form? Some questions that may be helpful in determining whether the establishment of an inter-organizational network is a good option are summarized in the box below.
Box 1. When might a network be the right organizational form? Some questions to consider

1. Is the identified problem to be dealt with beyond the capacity of any one organization in the field?
2. Is this a problem or issue where the stakes are high with respect to impact on people and/or the planet?
3. Is the issue a complex or non-routine one, meaning there is a need to be highly adaptive, and the resources and ways of addressing the issue are spread across many entities?
4. Have other traditional methods already been tried, including cooperation and coordination?
5. Is it likely that a common aim could be readily identified and agreed to?
6. Do the organizations that you would be collaborating with have somewhat similar cultures and values?
7. Is there enough diversity among the organizations to tackle the problem from multiple perspectives?
8. Do you have a history of (trusting) relationships with the organizations you would be working collaboratively with in a network?
9. Will you have the necessary resources (e.g., time, funding) to support the development and ongoing implementation of a network?
10. Is the issue one that will require a long-term inter-organization collaboration effort?

Adapted from: Bryson et al., 2006; Holley, 2012; Huxham & Vangen, 2005; Keast et al., 2004; McGuire, 2006; Provan & Lemaire, 2012a; Raab & Milward, 2003

A negative response to any of these questions does not necessarily mean that forming an inter-organizational network is a bad idea. Rather, they are outlined here to support careful consideration about when a network might be an appropriate organization form.

3.5 Is there a difference between emergent vs. mandated networks, and formal vs. informal networks?

In the 2002 literature review conducted by the Southern Alberta Child and Youth Health Network it was stated that collaboration cannot be mandated, with Chisholm (1998) suggesting that the term 'network' implies emergent. However, as evidenced in practice, this is arguable (McPherson et al., 2006).

Some authors use the terms formal and mandated, and informal and emergent interchangeably. Isett et al. (2011) define informal and formal networks as follows: "Formal networks are consciously created with some sort of binding agreement for participation, whereas informal networks are more organically derived—an outgrowth of organizational contingencies that multiple actors come together to address" (p. 1162). Equating formal and mandated, and informal and emergent networks in this fashion can be somewhat problematic from a practice perspective. For example, in the last decade in Canada there have been a number of inter-organizational child health networks that have been consciously created and with recognized,
although perhaps not legally binding, agreements for participation (McPherson et al., 2006). Some of these networks have been mandated by government, whereas in other cases governments have simply directly or indirectly encouraged networks, but not required participation. These networks would align best with the descriptor ‘formal’ but not with the term mandated. Likewise, emergent networks may not always be informal. Once again the language surrounding the defining and/or differing characteristics of networks is neither consistent nor necessarily helpful.

There appear to be pros and cons to emergent and mandated (i.e., usually by government) networks. An obvious pro of a mandated network is that it can provide a powerful incentive for organizations to work together. In practice these networks are often provided with additional resources and timelines to encourage the collaboration in the short term. However, allowing time for trust and genuine commitment to be built is critical to the longer-term effectiveness of a mandated network (Provan & Lemaire, 2012a).

Heffren, McDonald, Casebeer, & Wallsten (2003), in their evaluation of a mandated intersectoral collaboration involving education, social services and health, found that the effect of being mandated depended to a large degree on the pre-existing relationships among the organizational participants. When these were good and trusting, being mandated helped because it provided additional resources and permission. Where relationships were less optimal, one of two things happened: either the resources accompanying being mandated created new impetus to try to work better together or being mandated further highlighted the lack of any genuine interest to collaborate.

Rodriguez, Langley, Béland, & Denis (2007), in their comparative study of collaborative initiatives mandated by government as part of healthcare service delivery reform in Quebec, identify the challenge of moving organizations beyond the appearance of cooperation to genuine collaboration. They begin by indicating that, when not mandated, collaborative processes among organizations generally have two main features: 1) exchanges are voluntary; and 2) “the mode of regulation of exchanges between actors is the clan, which is a hybrid governance mode between the hierarchy and the market, which calls for the development of shared meaning between actors” (Rodriguez et al., 2007, p. 152). They questioned whether, when organizations may feel forced into relationships, regulation based only on clan-based mechanisms that rely on shared understanding would suffice. They indicate that when collaboration is mandated, organizations may behave as if they are collaborating but, in fact, be working to maintain their privileged positions behind the scenes meaning that a mandated network can spend enormous amounts of time on wasted efforts. They conclude “that clan-based mechanisms alone are limited in their capacity to stimulate effective mandated collaboration in inter-organizational networks where actors have little prior experience of collaboration, different sources of power, and divergent values and interests” (Rodriguez et al., 2007, p. 153). Instead they suggest the use of multiple mechanisms, including some more traditionally used in markets and hierarchies, such as incentives from markets and authoritative strategies (i.e., formalized rules and performance monitoring).
from hierarchies, to foster interdependency and change the interest of participants (Rodriguez et al., 2007).

A number of factors contributing to the development of strong network ties between individual organizations in non-mandated or emergent networks have been identified, and summarized recently by Provan and Lemaire (2012a). These include:

- homophily (i.e., similarity based on size, reputation, service orientation, etc.); proximity (i.e., those physically close to each other form a tie); heterophily (i.e., being dissimilar in ways that might benefit from working together); the need to reduce dependence on others; having prior relationship experience; and, the need to gain both legitimacy and access to key information and/or resources. (Provan & Lemaire, 2012a, p. 641)

The knowledge of these factors, gained from emergent network research, has rarely been incorporated into the research on public networks, many of which are mandated. Provan and Lemaire (2012a) go on to suggest that if a network is not performing as intended it may be due to a lack of understanding of how emergent relationships form and are strengthened and sustained over time.

Isett et al. (2011) argue that much of the public administration literature focuses on formal or mandated networks, leaving an important class of networks (i.e., emergent and informal networks) underexplored. Despite the preponderance of informal networks...the gap between research and practice is wider for informal networks than formal networks. There is no distinct body of literature on informal networks. Consequently, there has been very little advancement of our understanding of this pervasive mechanism of governance. (Isett et al., 2011, p. i165)

Informal networks often emerge for the purpose of information sharing, and indeed all networks must engage in some information sharing to accomplish their joint goal/shared purpose, but informal networks can also be useful mechanisms for other things such as problem solving, capacity building and service delivery (Isett et al., 2011).

There appears to be increasing support in the literature for formalization of networks because this has the potential to increase the capacity of the network, move it beyond personal relationships and increase accountability (Isett et al., 2011). It also seems to be a common evolutionary trend in networks to see them emerge informally and then over time become more formal. It may be that in cases where a network begins informally and then becomes more formal or even mandated, there is little difference between the two.
Understandably, by their very nature emergent and informal networks are more difficult to identify and thus to study. However, given the variety of their uses and their potential to increase our knowledge and understanding of formal inter-organizational networks, it is even more important to look across bodies of literature and begin to close the research practice gap about the value and effectiveness of informal networks.

In any case, a critical issue to the longer-term effectiveness of a network, whether emergent or mandated, formal or informal, appears to be allowing time for trust and commitment to be built.

4.0 Network types and functions

As described previously, the overarching purpose of non-profit or public sector networks is collaboration with a goal of addressing a complex problem that no single agency or organization can address on its own. Under the umbrella of collaborative networks, there are a variety of network types identified in the literature and described in more detail in Table 3 below. Milward and Provan, in their 2006a publication “A Manager’s Guide to Choosing and Using Collaborative Networks”, outline four main network types: service implementation; information diffusion; problem solving; and community capacity building.

These are closely aligned with the four main types of networks described by McGuire (2006): informational; developmental; outreach; and action, who states that these four types of networks are delineated by the scope of activities undertaken within the network.

Huerta et al. (2006) suggest that networks can be classified in terms of both their activities (processes) and outcomes (goals). “Classifying networks in terms of their processes suggests that network activities lie on a continuum between pure exploration and pure exploitation...Networks can also be classified in terms of their goals, with some focusing on conception and others on implementation” (pp. 12-13).

The delineation of network type by function highlights an issue in the literature on networks; that is, the significant overlap between the descriptions of network type and function. In the literature reviewed here, the term type and function were at times used interchangeably, causing confusion in the classification of networks. This overlap between network type and function resonates with what we know generally about the relationship between form and function. What is important is function, with the network type or form following function. We acknowledge that many networks have multiple functions and do not fall neatly into one type. Additionally, that which is viewed as a type of network in one context may be seen as a network function in another context. While this may seem overly academic, the purpose of classification is to clarify what functions a given type of network performs.

A good example of the above classification/typology issue is depicted in an additional network type called collaborative governance (Ansell & Gash, 2008), which is described as “a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets” (p. 544). This may include oversight of
government contracts that provide funding to a network of organizations to deliver public programs (Provan & Lemaire, 2012a). Collaborative governance, a network type due to a singular focus in some contexts, may in other contexts be one of a number of functions or activities of another type of network (i.e., to govern collaboratively).

Ultimately, classifying networks into different types is only useful in that it helps us distinguish among networks based on their primary function(s). There are a variety of additional network types and functions, also summarized in Table 3, described by other authors including: knowledge exchange and generation; policy development; individual, organization and network learning; and innovation.

**Table 3: Examples of network types and functions**

<table>
<thead>
<tr>
<th>Network type</th>
<th>Function</th>
<th>Author(s) – some examples</th>
</tr>
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<tbody>
<tr>
<td>Information sharing, informational, information diffusion</td>
<td>Primary focus is on sharing information across organizational boundaries. A number of authors make a distinction between information sharing and knowledge exchange.</td>
<td>Isett et al., 2011; Mays &amp; Scutchfield, 2010; McGuire, 2006; Milward &amp; Provan, 2006a</td>
</tr>
<tr>
<td>Knowledge generation and exchange, knowledge management</td>
<td>Primary focus is the generation of new knowledge, as well as the spread of new ideas and practices between organizations.</td>
<td>Bell &amp; Zaheer, 2007; Carlsson, 2003; Hartley &amp; Benington, 2006; Huerta et al., 2006; McGuire, 2006; Phelps, Heidl, &amp; Wadhwa, 2012</td>
</tr>
<tr>
<td>Developmental</td>
<td>Primary focus is information exchange combined with education that enhances the abilities of member organizations to implement solutions.</td>
<td>McGuire, 2006</td>
</tr>
<tr>
<td>Capacity building, social capital, outreach</td>
<td>Primary focus is on building social capital in community settings, and on improving the administrative capacity of the network members.</td>
<td>Isett et al., 2011; McGuire, 2006; Milward &amp; Provan, 2006a</td>
</tr>
<tr>
<td>Individual, organizational, network and community learning</td>
<td>Primary focus here is learning, which overlaps both with knowledge exchange and capacity building. Knight and Pye (2005) describe network level learning.</td>
<td>Borgatti &amp; Foster, 2003; Klijn et al, 2010; Knight, 2002; Knight &amp; Pye, 2005; Schulz &amp; Geithner, 2010</td>
</tr>
<tr>
<td>Problem solving, complex issue management</td>
<td>Primary focus is on improving response to complex issues, and/or solving complex problems (where a solution is possible). Often emerges from an information diffusion or knowledge exchange network.</td>
<td>Isett et al., 2011; McGuire, 2006; Milward &amp; Provan, 2006a</td>
</tr>
<tr>
<td>Effective service delivery, service implementation, service coordination, action Innovation</td>
<td>Primary focus is service delivery, where services are jointly produced by more than two organizations. Collaboration is often between programs in larger organizations.</td>
<td>Graddy &amp; Chen, 2006; Isett et al., 2011; Mays &amp; Scutchfield, 2010; McGuire, 2006; Milward &amp; Provan, 2006a</td>
</tr>
<tr>
<td></td>
<td>Primary focus is on creating an environment where diversity, collaboration and openness are promoted with the goal of enabling and diffusing innovation.</td>
<td>Borgatti &amp; Foster, 2003; Hartley &amp; Benington, 2006; Hoberecht et al., 2011; Keast et al., 2004; Klijn et al., 2010; Munoz &amp; Lu, 2011; Thorgren, Wincent, &amp; Örtqvist, 2009</td>
</tr>
</tbody>
</table>
A more recent broad classification of network type is to distinguish between bright or overt networks and dark or covert networks. Dark networks are a type of collaborative network but for purposes that are illegal (Milward & Raab, 2006b; Raab & Milward, 2003). As with bright or legal networks, which we tend to view as positive (Raab & Milward, 2003) and which are the primary focus in our table above, dark networks may also vary in type or function; for example, criminal networks operating for profit and terrorist networks for ideology (Hejnova, 2010). Additionally, while we often think of a dark network being a terrorist network such as Al Qaeda, it could also be a network such as the African National Congress fighting to rid South Africa of Apartheid. Hejnova (2010), who explores networks across a variety of academic fields, underscores the issue of perspective and the value judgments inherent in classifying networks as light or dark, as do Raab and Milward (2003). In an attempt to alleviate some of the issues related to terminology, Hejnova (2010) proposes yet another typology based on a network’s goals (political or apolitical) and the environment in which the network resides (tolerant or hostile). While beyond our ability to examine in detail in this review, it seems likely, as suggested initially by Raab and Milward (2003) and supported by Berry et al. (2004) and Hejnova (2010), that the study of dark networks can lead to a better overall understanding of networks and lessons can be learned about network success and failure that may be applicable to bright networks. As well, studying both dark and bright networks might lead to a more cohesive classification and definition of networks.

As indicated above, it is not uncommon for a network, regardless of type, to have a number of functions, though it may have a primary and then some secondary functions. These functions may evolve over time to meet the changing needs of the network. The functions of a network are also often intimately connected. For example, information sharing, knowledge creation and knowledge exchange all contribute to better problem solving, more effective service delivery and innovation. Thus, it makes sense that many of these functions are also described as desired outcomes of networks. However, this increases the potentially problematic overlap in terminology in the network literature. For example, when is ‘information sharing’ a type of network, a function of a network, or an outcome of a network?

Three of the functions of networks – information diffusion and knowledge exchange; network learning; and innovation – are explored here briefly because they are concepts that are frequently described in the literature as being important functions of networks, and because they are intricately connected.
Information diffusion and knowledge exchange

Information diffusion and knowledge exchange are critically important functions of virtually all collaborative networks and, indeed, of other organizational forms as well. The interest in and literature on knowledge exchange has grown rapidly in the past ten years, cutting across many disciplines. This reflects the increasingly prevalent view that a major economic resource in the new economy is knowledge (Carlsson, 2003). As Hartley and Benington (2006) state:

...the relentless pressures from government to increase productivity and performance in public services means that there is an increased premium on the discovery, development and use of innovative services...and an emphasis on new knowledge and new technologies as the route to innovation and improvement. (p. 101)

Inter-organizational networks have been promoted as one mechanism for improving this spread of new ideas and practices between public service organizations and professional groups (Hartley & Benington, 2006).

Knowledge management is conceptualized as encompassing both the creation of new knowledge, as well as its exchange and use (Carlsson, 2003; Hartley & Benington, 2006). Despite the importance of knowledge management in networks, Hartley and Benington (2006) argue that there has been little analysis of what kinds of knowledge can be identified and shared, under what conditions, and how learning can be adapted among organizations in networks. They also state that effective knowledge exchange and use:

within public service networks depends crucially on how the network is formed and sustained, how differences of perspective and conflicts of interest within the network are tackled, how knowledge is shared and applied, under what circumstances, and with what advantages and disadvantages for whom. (Hartley & Benington, 2006, p. 102)

They indicate that simply sharing data and success stories does not mean that others will be able to emulate the behaviours that led to "best practice" (Hartley & Benington, 2006).

In their research on knowledge sharing through inter-organizational networks, Hartley and Benington (2006) illustrate that the concept of knowledge being “transferred” from one context to another is misleading; rather knowledge is continuously reviewed as it is taken into different settings or is rediscovered in relation to new purposes or alongside existing ‘old’ knowledge. This suggests that adaptation is central to knowledge exchange, with innovation continuing in response to what is going on in the context. They describe four sets of features that can either facilitate or create barriers to knowledge generation and exchange in inter-organizational networks:

- features of the originating organization that enable it to recognize, articulate and communicate knowledge;
- features of the knowledge exchange process (i.e., the enabling process);
• features of the recipient organization which enable it to recognize, explain, adapt and use knowledge to advance practice; and
• features of the policy context, which has an impact on how much is shared, with whom and for what gains and costs (Hartley & Benington, 2006).

We would add that features related to power and politics within a network, as in other organizational configurations, can also impact knowledge exchange. How power is wielded via roles, interests and professions can affect the ways in which knowledge is shared (or not) across inter-organizational networks.

A number of researchers studying knowledge management in the context of inter-organizational networks distinguish between information and knowledge, as well as between different types of knowledge and approaches to knowledge exchange (Carlsson, 2003; Hartley & Benington, 2006; Phelps et al., 2012; Van de Ven & Johnson, 2006; Weber & Khademian, 2008). Weber and Khademian (2008) describe knowledge as socially mediated information: "Societies, communities, groups, professions, and neighborhoods develop forms of discourse that frame and give meaning to the information that is brought in. Knowledge, in this view, cannot be separated from the application, use, and development of information" (p. 338). Information and knowledge in networks, then, is socially mediated by the membership of the network. From a practical standpoint, developing a common understanding of how information or knowledge is framed (i.e., how its meaning is understood within the network) can become a factor in the collective use or mobilization of that knowledge toward a mutual network goal. In a sense, the common understanding or meaning of the information and/or language used is often unique to a particular network and can help build the network culture.

Hartley and Benington (2006) distinguish between abstract versus situated knowledge and explicit versus tacit knowledge, focusing primarily on the latter. They note that: "Tacit knowledge is harder to share, because it consists both of mental models and metaphors, intuitions and ‘know-how’” (p. 103). It is the exchange of this tacit knowledge, however, which is required for the diffusion of innovation among organizations. It can also act as a catalyst for accelerating existing plans for change, in that it can help confirm that an organization is heading in a good direction, generate enthusiasm and facilitate management buy-in. While there is often an emphasis on explicit knowledge, research "shows that practitioners also value opportunities to gain tacit knowledge through site visits, close working and sharing, and active dialogue with their counterparts" (Hartley & Benington, 2006, p. 104). Inter-organizational networks, then, through their focus on the development of trusting relationships and joint problem solving, can make tacit knowledge a more tangible commodity and therefore more accessible and valuable to network members.

Given the importance of knowledge creation and exchange to network performance, an ultimate challenge for networks and network managers, then, has to do with both collectively generating new knowledge tailored to address the common problem, and ensuring that this new knowledge is actually used. Knowledge creation requires active leadership, facilitation and management if the barriers between competing interests are to be overcome (Hartley & Benington, 2006; Weber & Khademian,
Overall, knowledge sharing and inter-organizational learning depend on the establishment of trusting relationships, a culture of curiosity, conscious interest in gaining different perspectives and respect for diversity of views among organizations, along with the painstaking creation of the conditions necessary to fertilize new thinking and practice (Hartley & Benington, 2006). This goes far beyond most current approaches that “depend too heavily on simplistic notions of dissemination of knowledge as a commodity, and the transfer of knowledge via a mechanistic model of drag and drop” (Hartley & Benington, 2006, p. 107).

Whether a network is using, generating or sharing knowledge, either to proactively develop new opportunities or to address existing complex issues, understanding how knowledge is exchanged between stakeholders and addressing known barriers is important to the effective functioning of networks. For an additional discussion on knowledge exchange, see Appendix 5.

**Network learning**
A key process in networks is learning, which is closely linked to knowledge creation and exchange. Learning is inherent in networks by the very fact that networks are established in order to operate differently than traditional organizational forms, and to consider problems that cannot be addressed by a single organization. The concepts of individual, group and organizational learning are well established, but a fourth level of learning has also been identified — inter-organizational network learning (Engeström & Kerosuo, 2007; Knight, 2002; Knight & Pye, 2005). Knight and Pye (2005) review and recognize seminal bodies of work on organizational learning and suggest that much of what we know about individual, organizational and inter-organizational learning is relevant to networks. Organizational learning, for example, has been described as more than the sum of learning done by individuals; as being about people within an organization learning together to achieve a common goal (Stoyko, 2001) and as a process that links the gaining of knowledge with improved performance (Montgomery, 1996; Nelson, Raskind-Hood, Galvin, Essien, & Levine, 1999).

Knight (2002) defines network learning as "learning by a group of organizations as a group" (p. 427). Network learning, then, is described as a kind of system level learning, which is distinct from learning by individuals or organizations in a network context. Learning in the network context can be viewed as the opportunity for individuals or organizations to learn, at their own pace and based on their prior knowledge, from their experiences in and exposure to the network and its work. Learning in a network context, then, is learning unique to the individual or organization.

Knight and Pye (2005) see network learning, on the other hand, as closely related to social (i.e., as opposed to cognitive) views of organizational learning. They describe each learning episode as containing multiple, complex and often iterative links between contextual factors and the various learning outcomes and processes. Learning outcomes are envisioned as changes to three types of network level properties – network practices; network interpretations; and network structures. Their model thus provides a network-centred view of network learning (Knight & Pye, 2005).

Both types of learning (i.e., network member learning in the network context and network level learning) are acknowledged as important; both advance the collective knowledge of the network and
both have the potential to contribute to a shared understanding of the network and its aims. Much of the research to date, however, has focused on the network as a context for learning, rather than on the whole network as learner.

Using different terminology, Schulz and Geithner (2010) describe organizational learning through an inter-organizational network as operating at two levels: 1) the platform level, where network members collectively discuss problems, develop ideas and arrive at a shared understanding; and 2) the operational practice/individual organizational level, where the platform level learning is incorporated into practice. The platform level of learning resonates with what Knight and Pye (2005) describe as network learning. Schulz and Geithner (2010) note that the transfer of ideas and concepts from the platform level into daily operational work is often neglected in network research. They conclude that learning and development depend on some key factors, including the composition and number of platform participants and sufficiency of resources at the operational level to be able to develop new ways of working. The authors note that learning at the operational practice level is primarily triggered through the outcomes of the platform level learning, describing it as an appropriation of the platform ideas and concepts into organizational practice. Network level learning, then, may be seen as a necessary pre-requisite for organizational level learning and change. It is important to note that in practice the learning is often multi-directional and difficult to attribute to a particular set of actors or a singular level within an inter-organizational network.

Inter-organizational networks focused on learning as a critical function may well consider the value of developing internal ‘dynamic capability’ (Eisenhardt & Martin, 2000) and/or external ‘absorptive capacity’ (Lane, Koka, & Pathak, 2006) for the network and its constituent member organizations. Essentially learning can be considered to be one of a number of dynamic capabilities of a network; in other words, one of the resources internal to a network that it can use to advance its goals. Dynamic capabilities, such as learning, are developed inside the organizational or network context. The more internal capacity the network has to learn, the more likely it is to create new information and knowledge that will allow it to innovate, “to make ongoing adjustments in resource allocation in order to effectively build new thinking” (Eisenhardt & Martin, 2000 cited in Casebeer, Reay, Dewald, & Pablo, 2010). On the other hand, absorptive capacity is the network’s ability to draw knowledge and learn from outside the organizational or network boundaries; to “acquire, assimilate, transform and exploit knowledge” (Zahra & George, 2002, p. 186). Again, the new learning or knowledge garnered contributes to the network’s ability to address complex issues.

**Innovation**

The Conference Board of Canada defines innovation as, “A process through which economic or social value is extracted from knowledge through the creation, diffusion and transformation of ideas to produce new or improved products, services, or processes” (Conference Board of Canada, 2013). There are many definitions of innovation. Most include the notions of innovation as both

Innovation is a somewhat illusive concept “…which remains a contentious and highly debated term” (Casebeer et al, 2010, p. 251).
products and/or processes and of being either radical and/or incremental in nature. And, as Kuhn (1985) identified, innovation can be derived from existing knowledge or generated through new creative action – what the Conference Board refers to as “adoption versus origination”.

Innovation is an important function of networks because it is critical to addressing complex problems (Keast et al., 2004; Provan & Huang, 2012b). As noted earlier the functions of knowledge exchange, learning and innovation are intricately connected, in that learning and knowledge exchange contribute to innovation, with tacit knowledge exchange being particularly valuable. Carlisle and McMillan (2006) explain that in stable conditions, learning tends to be a narrowing and converging process of testing, whereas in chaotic conditions it is a process of expansion, divergence and discovery thus setting the stage for innovation. Given that the genesis of inter-organizational networks is in complex problems and challenging environments rather than stable conditions, networks are well suited to encourage, capture and share innovations.

There are many kinds of innovation and many approaches to innovating. In the context of networks, Provan and Lemaire (2012a) describe how innovation within a network can lead to improved service delivery within and across organizational members. Provan and Kenis (2008) provide some insights into how this innovation is supported with networks, indicating that consensus in goals and “domain similarity” generally stimulates better performance than conflict, but having some conflict can facilitate innovation. This makes intuitive sense in that a network comprised of organizations that bring different perspectives and ideas is more likely to come up with innovative solutions to previously intractable problems than a network comprised of only like-minded organizations. Indeed, network success is dependent on balancing and capitalizing on similar and diverse views in order to promote innovation. Ensuring that an environment is created where network members are comfortable with openly discussing differing perspectives and providing opportunity to work through disagreements, then, becomes critically important (Reay, Goodrick, Casebeer, & Hinings, 2012).

Thorgren et al. (2009) studied the influence of several network characteristics on the innovative performance of both small and medium size enterprise/business networks. They “found that a network can achieve greater innovative performance when there are many network members, when the network is formed on member initiative (i.e., a bottom-up formation process), and when there is a large administrative function (e.g., network board)” (Thorgren et al., 2009, p. 162). The authors indicate that a larger network can encourage innovation by providing more opportunities, resources and complex products (Thorgren et al.). Bottom-up formation processes are critical to innovation because they bring strengthened member commitment, motivation and social capital, thus influencing the pace at which networks develop innovative performance. They go on to say that a larger administrative function contributes to innovation by fostering cooperation, communication and transparency among network members; coordinating activities; analyzing network strengths and weaknesses; and motivating prospective network members to be engaged so that they can be active in setting the agenda for the network (Thorgren et al.). Because these enterprise networks are working together as independent firms, but with shared objectives, there may be some transferability of these findings to strategic human services networks that have innovation as one of their goals.
More research and practice experience with networks are required to capture innovation pathways leading to improved network performance and value. The same is true for enhancing our understanding of the roles that knowledge creation, exchange and mobilization play within network contexts and just how and what kinds of approaches are best suited to supporting network learning.

5.0 Network governance, leadership and management, and structure

Although not without challenges, working in networks can also be very rewarding and is often necessary. As noted previously, many would argue that networks exist because there is a moral imperative in that the important issues facing society need to be addressed yet cannot be tackled by single organizations working on their own. Given this, what factors do people interested in moving ahead with developing and sustaining a network need to pay attention to if they want to maximize the rewards and mitigate the challenges? Is there a way of working unique to networks and, if so, what does it entail? Three key interlocking themes related to effective network implementation discussed in the literature that begin to answer these questions are network governance, management and leadership of, and in networks, and network structures. Findings from the literature on these three themes are described and discussed in this section.

5.1 Network governance

As discussed earlier, networks are often described as a response to the failure of other kinds of governance structures (e.g., markets, hierarchies). We may have some understanding of why networks can be a better mode of governance, but little of how networks themselves are governed (Provan et al., 2007). Provan and Kenis (2008) describe network governance as “the use of institutions and structures of authority and collaboration to allocate resources and to coordinate and control joint action across the network as a whole” (p. 230).

Often networks are not legal entities, so the legal imperative for governance is not present as it is for organizations. For collaborative organizational networks that have identified a collective aim, however, Provan and Kenis (2008) argue that governance of some kind is necessary “to ensure that participants engage in collective and mutually supportive action, that conflict is addressed, and that network resources are acquired and utilized efficiently and effectively” (p. 230). The network governance structure that is decided upon contributes to and overlaps with network management and leadership.

A typology of network governance proposed by Provan and Kenis (2008) is widely referred to in the public administration literature on networks, and is described as an important contributing factor to network effectiveness (Milward & Provan, 2006a; Milward, Provan, Fish, Isett, & Huang, 2010; Provan & Kenis, 2008; Provan & Lemaire, 2012a). The original typology proposed by Provan and Kenis (2008) identifies three distinct types of governance structures within networks: shared governance; lead organization; and network administration organization (Milward & Provan, 2006a; Milward et al., 2010; Provan & Kenis, 2008). Recently there has been recognition that sometimes the governance model used
in practice is a hybrid of more than one of these three “pure” types (Lemaire, Provan, & Milward, 2010; Provan & Lemaire, 2012a), which are described below in Table 4.

Table 4: Network governance

<table>
<thead>
<tr>
<th>Governance type</th>
<th>Description</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared governance, consensual</td>
<td>All participants contribute to the management of and leadership in the network. There is no formal administrative entity.</td>
<td>Milward &amp; Provan, 2006a; Provan &amp; Kenis, 2008</td>
</tr>
<tr>
<td>Lead agency</td>
<td>The network manager and administrative entity is one of the key network members.</td>
<td>Milward &amp; Provan, 2006a; Provan &amp; Kenis, 2008</td>
</tr>
<tr>
<td>Network administrative organization (NAO)</td>
<td>A separate administrative entity is established to manage the network, and a manager hired.</td>
<td>Milward &amp; Provan, 2006a; Provan &amp; Kenis, 2008</td>
</tr>
</tbody>
</table>

Empirical research on network governance is in its infancy, but research done to date suggests the following.

- Networks in the private sector are more likely to have a shared governance model than networks in the health and human services, which are more likely to have either a lead organization or, more often, a network administrative organization model (Provan et al., 2007).
- A fundamental challenge with governance of any network is that the needs and activities of multiple organizations often require accommodation and coordination (Provan & Kenis, 2008).
- Factors such as network size and the degrees of trust among members influence which form is going to be most appropriate, and ensuring that managers make a conscious choice is critical for matching the best governance form to the context (Bryson et al.; Milward & Provan, 2006a; Provan & Kenis, 2008).
- The governance model selected needs to be able to balance power and authority and, given the importance of informal power, also be able to support new modes of leadership that rely on the role of the facilitator or broker (Hoberecht et al., 2011; Keast et al., 2004).
- Shared governance is generally acknowledged to be challenging, if not impossible, when there are a larger number of organizations involved in a network (i.e., generally more than five or six) (Provan & Lemaire, 2012a).
- Formal governance mechanisms (e.g., contracts) can be complementary to inter-organizational trust, which appears to be critical in public networks (Provan & Lemaire, 2012a).
- A benefit of designing more formal networks is that a diversity of representation can be built into the design. In more informal networks, high degrees of homophily (birds of a
feather) tend to be exhibited (i.e., formalizing networks may provide an opportunity to give voice to more perspectives) (Isett et al., 2011).

- The role of management is critical for effective network governance, especially regarding the handling of tensions inherent in each governance form. For a network administrative organization to be effective, network level staff must develop the skills needed for network level action; this is often a challenge due to significant resource constraints (Provan & Kenis, 2008).

- The form of network governance adopted, and the management of tensions related to that form are critical for explaining network effectiveness (Provan & Kenis, 2008).

Clearly it is important to have a good fit between a particular network and the governance type chosen in order to optimize network effectiveness. Features of the network, then, to take into consideration when planning the governance structure include the: distribution of trust; number of participants; existence of goal consensus; and need for network level competencies. In general, Provan and Kenis (2008) argue that:

as trust becomes less densely distributed throughout the network, as the number of participants gets larger, as network goal consensus declines, and as the need for network-level competencies increases, brokered forms of network governance, like lead organization and NAO, are likely to become more effective than shared-governance networks. (p. 237)

See Table 5 below.

**Table 5: Key predictors of a good fit between a network and a governance structure**

<table>
<thead>
<tr>
<th>Governance structure</th>
<th>Distribution of trust</th>
<th># of participants</th>
<th>Goal consensus</th>
<th>Need for network level competencies*</th>
<th>Decision making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared governance</td>
<td>Widely distributed</td>
<td>Few (i.e., &lt; 6-8)</td>
<td>High</td>
<td>Low</td>
<td>Decentralized</td>
</tr>
<tr>
<td>Lead organization</td>
<td>Narrowly distributed, occurring differentially within individual dyads or cliques</td>
<td>Moderate #</td>
<td>Moderately low</td>
<td>Moderate</td>
<td>Centralized</td>
</tr>
<tr>
<td>Network administrative organization (NAO)</td>
<td>Moderately distributed, NAO monitored by members</td>
<td>Moderate to many</td>
<td>Moderately high</td>
<td>High</td>
<td>Mixed</td>
</tr>
</tbody>
</table>

Adapted from: Milward & Provan, 2006a; Provan & Kenis, 2008

* Examples of network level competencies could include: quality monitoring; building legitimacy; bridging; negotiation; advocating

To conclude, often the governance structure evolves over time, and particularly so in emergent networks where it is common to begin with a shared governance structure and then, as the network
grows, move to a more formalized governance structure. An important initial task for network leaders and managers is to determine which governance structure is a good fit for this network at this time, with the aim of optimizing network success (Milward & Provan, 2006a). If it is determined that a more formalized governance structure is what is needed for a particular network, then it is important that it be adequately resourced if its effectiveness is to be maximized.

5.2 Leadership and management of and in networks
The management and leadership of and in networks is widely described as being challenging (Huxham & Vangen, 2005; Keast et al., 2004; Klijn et al., 2010; McGuire, 2006; Milward & Provan, 2006a; Provan & Lemaire, 2012a; Saz-Carranza & Ospina, 2011; Weber & Khademian, 2008). The nature of collaborative networks means that there cannot be heavy, centrally directed control. This does not mean there should be no direction or control, but that there needs to be a balance between providing direction and letting things emerge.

Network structures and processes interact in collaborations (Bryson et al., 2006), with the aim being the creation of an environment that allows for the innovations needed to deal with complex problems (Keast et al., 2004; Uhl-Bien & Marion, 2009; Wheatley & Frieze, 2011). The literature suggests that there is a key role for network managers and leaders to establish a foundation upon which network participants can operate, maintaining the flexibility and resiliency needed to accomplish network level tasks (Keast et al., 2004; Provan & Huang, 2012b).

Management and leadership often overlap, and the literature reviewed here is often unclear in its use of both terms. While acknowledging this we attempt to help elucidate both, discussing leadership first, and then management.

Leadership in networks
Keast et al. (2004) depict network structures as different from most traditional organizational structures in that there is no chain of command. Although some members of a network, as in other organizational forms, may have more formal power due to position, professional education and training, resources or political clout, this power cannot be wielded unilaterally the way it can be in a traditional hierarchy. "In addition, informal power based on interpersonal relations can be more important than formal power. This means that new modes of leadership that rely on the role of the facilitator or broker are needed" (Keast et al., 2004, p. 365).

In their research focused on public sector leaders, Silvia and McGuire (2010) attempt to tackle the assumption that network leadership, or leadership in multi-actor settings, is different than leadership in single agency contexts. They argue that, while conceptually it makes sense that multi-actor, or what they term as "integrative leadership" (Silvia & McGuire, 2010, p. 265) would be different, the supporting evidence is scarce. Consequently, Silvia and McGuire attempted to identify and define the behaviours that public managers displayed in their roles as network leaders, and then subsequently compare these

“The research question that is the 800 lb. gorilla in the room remains largely unaddressed: What is leadership in multi-actor settings?” (Silvia & McGuire, 2010, p. 264)
behaviours to those displayed by the same public managers in their home organizations to see if there were differences. They found the following behaviours, in order of frequency displayed, to be hallmarks of effective network leadership: “treating all network members as equal”, “freely sharing information amongst network members” as opposed to withholding or stifling information flow, “creating trust amongst network members”, and “encouraging support from and keeping the network in good standing” with external stakeholders (Silvia & McGuire, 2010, pp. 270-271). Furthermore, significant differences in leadership behaviours were found by the same managers when leading in their home agency. Overall, when leading in the network context, managers displayed a higher proportion of people oriented behaviours while, when leading in a single agency context, they displayed more task oriented behaviours (Silvia & McGuire, 2010). These results tend to make the case for a new kind of integrative leadership in networks.

This way of conceptualizing leadership aligns with the literature on complexity leadership, where leadership processes can be shared, distributed, collective, relational, dynamic, emergent and adaptive (Uhl-Bien & Marion, 2009) and where leadership is viewed as “multi-level, processual, contextual, and interactive” (p. 631). Other terms used to describe the kind of leadership proposed for network managers include host, servant leader, helper and network weaver (Holley, 2012; Keast et al., 2004, Weber & Khademian, 2008; Wheatley & Frieze, 2011).

Wheatley and Frieze (2011) propose that to be effective leaders in a collaborative network, managers need to view their role as “leader as host” rather than “leader as hero”, and go on to describe the following characteristics of leaders as hosts:

- They realize problems are complex, and in order to understand the full complexity of any issue all parts of the network need to be invited to participate and contribute;
- They trust in other people’s creativity and commitment to get the work done;
- They know that people support those things they have played a part in creating;
- They extend sincere invitations, ask good questions, and have the courage to support risk-taking; and
- They invest in meaningful conversations among people from across the network, realizing this is the most productive way to engender new insights and possibilities for action.

This concept of leader as host very much resonates with the concepts of servant leadership and stewardship, which are discussed in the context of both complex adaptive systems and community development. The Greenleaf Centre for Servant Leadership (n.d.) describes the servant leader as follows:

The servant-leader is servant first… It begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because of the need to assuage an unusual power drive or to acquire material possessions…The leader-first and the servant-first are two extreme types.
Between them there are shadings and blends that are part of the infinite variety of human nature.

The basic premise inherent in servant leadership is that leaders put the needs of their followers ahead of their own needs, trying to make sure that other people’s highest priority needs are being served. Servant leadership and the concept of stewardship described are closely related. Stewardship is defined as “the choice to preside over the orderly distribution of power” (Block, 1993, pxx). This means giving all people in an organization choice over how to contribute to the well being of the larger organization; it is about accountability without control or compliance. It means moving from a boss-subordinate relationship to a peer-to-peer relationship.

Mays and Scutchfield (2010) describe the importance of leadership in their overview of partnerships in population health:

Beyond incentives, successful partnerships are likely to require changes in organizational culture, values, and strategy that can be achieved only through strong organizational leadership. Partnerships require leaders who can elucidate the participation incentives and constraints faced by individual organizations and identify shared objectives and compatible interests. Collaborative leadership can reveal the potential gains from partnerships and help organizations commit to difficult but beneficial public health actions that cannot be accomplished through independent endeavors. (p. 6)

Metzger, Alexander, & Weiner (2005) indicate that:

the ability to lead through vision is a key competency of coalition leadership. Effective leaders are able both to successfully guide creation of a vision and to use the resulting vision strategically...Collaborative, open, and explicit decision making processes serve to allow broad input into vision creation and adoption...Results suggest that vision consensus critically influences how people view the value of what they are putting into and getting out of the coalition. (p. 469)

An empowering, participatory leadership style along with collaborative decision making processes, then, foster a sense of shared purpose and network member participation.

Holley (2012) describes network leadership as drawing on “…the natural leadership capacity that exists in all of us”, and goes on to say that, “Network leadership is something we do and learn together” (p. 28). She depicts leadership in networks as network weaving and encourages all those involved in a network to view themselves as network weavers and thus as network leaders. Four leadership roles are identified for network weavers including: connector catalyst (connecting people and helping to get the network started); project coordinator (helping network members with their self-organized projects of interest); network facilitator (helping with ongoing development of network structures, activities and relationships); and network guardian (putting in place systems such as communications, training and resources to help the network as a whole function effectively) (Holley, 2012).
From a practice perspective, it is important to realize that leading networks through any of the paradigms described is not an easy task. Influence, use of process and consensus building, rather than authority, become the main agents of change and this means that leadership in networks can be considerably more nuanced and subtle than in traditional hierarchies. While such shared leadership may sound like less work, it may in fact be more work, or frequently different work, than in traditional leadership roles. For example, Wheatley and Frieze (2011) explain that leaders as hosts do not just benevolently let go and trust that people will do good work entirely on their own, in part because people are often used to being told what to do. Consequently, Wheatley and Frieze indicate there is a great deal of work for hosting leaders to do, including:

- Providing good conditions and group processes for people to work collaboratively;
- Creating opportunities for people and the network to learn from experience;
- Keeping the bureaucracy(s) at bay by creating enclaves where people are less encumbered by bureaucratic requirements;
- Playing defense with network participants who may be used to playing a more traditional leadership role, and who want to take control;
- Reflecting back to network participants on a regular basis what they are accomplishing and how far they have come;
- Working with people to develop relevant measures of progress in order to make achievements visible; and
- Valuing true esprit de corps, the spirit that arises in any group that accomplishes challenging work together.

Finally, another issue in network leadership, based on our practice experience, is that many of the individuals involved in inter-organizational networks on behalf of their respective organizations are recognized as leaders in their home organizations. Part of being a good leader in a collaborative network is to ensure that leaders within specific organizations also have leadership for the network and view themselves as network leaders. Aside from recognizing the skills and day-to-day roles of network members and providing an opportunity for them to play a lead role in the various initiatives that a network may decide to undertake, this also mean helping organizational leaders understand the differences between leading in hierarchies versus networks and develop the corresponding new competencies if need be. As such, it is important to model a more collaborative leadership style with the aim of diffusing some of the command and control behaviours endemic in many organizations. Additionally, in networks where organizational representation may come from varied levels and where client groups may be included, being a good leader means making all participants feel welcomed and valued regardless of their relative organizational position or stature.
Management of networks

There are varied definitions of network management in the literature. Hibbert, Huxham and Ring (2008) describe network management as:

a series of processes undertaken by a team of individuals, with various skills and capabilities, that are focused on defining both the direction to be taken by an inter-organizational entity and the allocation and implementation of resources towards those ends. (p. 391)

Network management is also defined as “the use of social ‘tools’ to steer social processes toward some set of goals or away from stagnation and ‘blockage’ through joint problem solving” (Rethemeyer & Hatmaker, 2008, p. 630), and “the deliberate attempt to govern processes in networks” (Klijn et al., 2010, p. 1065).

In choosing the term network orchestration, Paquin and Howard-Grenville (2013) attempt to capture both the activities and processes involved in assembling and managing a network through its varying developmental phases. The activities required of the network orchestrator shift in response to the need to create and demonstrate the added value of the network to various stakeholders over time; for example, from enabling serendipity early on to more deliberately directing ties. All of these definitions include a focus on the intentional use of processes toward particular ends and depict network management as a highly conscious activity. This is to be expected in that networks are still, as has been noted, a relatively new organizational form without the depth of management history held by traditional organizations where, irrespective of their effectiveness, many management functions may seem to be second nature.

In an important article entitled “Big Questions in Public Network Management Research”, Agranoff and McGuire (2001) argue that network management is in need of a knowledge base that is equivalent to that which exists for the paradigm of hierarchical, bureaucratic management. More specifically, based on their review of the network management literature, they propose four essential network management tasks (i.e., activating, framing, mobilizing and synthesizing).

One might argue that the attempt to establish a prescribed set of tasks for management of networks may be antithetical to the very nature of networks as less structured entities than organizations, particularly those networks that are more informal or emergent. Berry et al. (2004), for example, raise the question of whether networks can be managed at all. However, Milward and Provan (2006a) also identified key tasks for network managers. They first describe the overarching role of a network manager as being to increase the stock of trust and reciprocity in the network. Within that context they identify a number of key management [of network] tasks and behaviours (i.e., management of accountability, legitimacy, conflict, design and commitment) and argue that it is important for managers to have a good understanding of the purpose and functions
of a network before they can manage it effectively (Milward & Provan, 2006a). McGuire (2006) also describes the importance of matching management behaviours with the environment, noting that effective managers are those most able to be responsive to the changing context. The tasks that are of most importance will flow from the network purpose and functions.

Some essential network management, and potentially leadership, tasks and behaviours identified through the literature are summarized below in Table 6 building on the work of Agranoff and McGuire (2001) and Milward and Provan (2006a). A number of these tasks have already been noted in previous sections of this report, most notably in the section on leadership, and others are discussed following the table. While there is some overlap in the descriptions, it is still useful from a practice perspective to begin to delineate the tasks.

Table 6: Management tasks and behaviours in collaborative non-profit, public networks

<table>
<thead>
<tr>
<th>Network management task or behaviour</th>
<th>Description</th>
<th>Author(s)</th>
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<tbody>
<tr>
<td>Framing</td>
<td>Facilitating agreement on the operating rules of the network, including its prevailing values and norms; developing a shared vision; helping establish an identity and culture for the network; helping establish a working structure for the network.</td>
<td>Agranoff &amp; McGuire, 2001; Bryson et al., 2006; Hoberecht et al., 2011; Klijn et al., 2010; McGuire, 2002; McGuire, 2006; Saz-Carranza &amp; Ospina, 2011</td>
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<tr>
<td>Activation; construction of the right community</td>
<td>The identification and incorporation of the right mix of people or organizations to achieve program goals, as well as ongoing building of member capacity.</td>
<td>Agranoff &amp; McGuire, 2001; McGuire, 2002; McGuire, 2006; Saz-Carranza &amp; Ospina, 2011</td>
</tr>
<tr>
<td>Management of design/governance structure</td>
<td>Selecting a governance structure that is likely to work most effectively for the network, and then ensuring that the structure evolves appropriately with the network.</td>
<td>McPherson et al., 2006; Milward &amp; Provan, 2006a; Provan &amp; Lemaire, 2012a</td>
</tr>
<tr>
<td>Creating and supporting participatory leadership</td>
<td>Building leadership for collaborative advantage; providing opportunities for distributed or shared leadership; developing consensus on vision; using influence; creating a welcoming culture; etc.</td>
<td>Bryson et al., 2006; Huxham &amp; Vangen, 2005; Keast et al., 2004; Uhl-Bien &amp; Marion, 2009; Wheatley &amp; Frieze, 2011</td>
</tr>
<tr>
<td>Synthesizing, facilitating, involving, arranging, connecting</td>
<td>Creating the environment for productive interaction among network participants. Organizing interactions; facilitating relationships in order to build trust.</td>
<td>Agranoff &amp; McGuire, 2001; Bryson et al., 2006; Hoberecht et al., 2011; Huxham &amp; Vangen, 2005; Klijn et al., 2010; McGuire, 2002; McGuire, 2006; Paquin &amp; Howard-Grenville, 2013; Saz-Carranza &amp; Ospina, 2011</td>
</tr>
<tr>
<td>Development and flow of resources</td>
<td>Includes the development of both material (e.g., funding, human resources) and tacit resources (e.g., knowledge, new practices), and decentralizing the flow of these resources.</td>
<td>Provan &amp; Huang, 2012b; Reay et al., 2012</td>
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</table>

1 In the context of networks, many of these management tasks are also leadership responsibilities.
<table>
<thead>
<tr>
<th>Network management task or behaviour</th>
<th>Description</th>
<th>Author(s)</th>
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<tbody>
<tr>
<td>Management of commitment; mobilizing</td>
<td>Building commitment for the joint undertaking, sometimes also referred to as mobilizing. Dealing promptly with the perception or reality of unequal distribution of resources in the network or unequal commitment to the network, as well as training and joint problem solving exercises can help in building commitment.</td>
<td>McGuire, 2002; McGuire, 2006; Milward &amp; Provan, 2006a</td>
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<tr>
<td>Facilitating knowledge exchange; collaborative dialogue</td>
<td>Aim is to establish a knowledge base that can be used by the network to address complex problems, so a key role for managers is to build this capacity across the network. Involves actively exploring the different views of participants and connecting these ideas.</td>
<td>Huxham &amp; Vangen, 2005; Klijn et al., 2010; Gray, 2004; Weber &amp; Khademian, 2008</td>
</tr>
<tr>
<td>Management of conflict</td>
<td>Listening to the various voices of members and providing mechanisms for conflict resolution; bridging differences through mediation; providing opportunities for open dialogue and structured disagreement.</td>
<td>Bryson et al., 2006; McGuire, 2006; Milward &amp; Provan, 2006a; Reay et al., 2012; Saz-Carranza &amp; Ospina, 2011</td>
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<tr>
<td>Management of accountability</td>
<td>Key issues include who is responsible for what; how to respond to free riders; how to measure joint success and attribution of value.</td>
<td>Agranoff &amp; McGuire, 2001; Hoberecht et al., 2011; Milward &amp; Provan, 2006a; Provan &amp; Huang, 2012b; Weber &amp; Khademian, 2008</td>
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<tr>
<td>Management of legitimacy</td>
<td>Working to convince stakeholders, both internal and external to the network, that working with other organizations in broader network is worthwhile. This involves building support both internally and externally. This is closely related to management of commitment and mobilizing.</td>
<td>Agranoff &amp; McGuire, 2001; Bryson et al., 2006; McGuire, 2002; McGuire, 2006; Milward &amp; Provan, 2006a; Paquin &amp; Howard-Grenville, 2013; Provan &amp; Lemaire, 2012a</td>
</tr>
<tr>
<td>Management of tensions; paradoxes</td>
<td>The management of tensions, including tensions that arise related to the governance structure selected, is critical for explaining network effectiveness.</td>
<td>Huerta et al., 2006; Provan &amp; Kenis, 2008; Provan &amp; Lemaire, 2012a; Saz-Carranza &amp; Ospina, 2011</td>
</tr>
<tr>
<td>Promoting network level learning</td>
<td>Shared learning by individuals from the group of organizations in the network. The collective learning advances the network culture, collective knowledge and understanding of the network. This is distinct from the network as a context for learning.</td>
<td>Knight, 2002; Knight &amp; Pye, 2005</td>
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</table>
Management of tensions and paradoxes

The tensions and paradoxes inherent in networks and network management emerged as a strong theme in the inter-organizational network literature (Gray, 2004; Huerta et al., 2006; Paquin & Howard-Grenville, 2013; Provan & Lemaire, 2012a; Saz-Carranza & Ospina, 2011,). Key tensions and paradoxes that emerged through this review of the literature are described below.

Milward and Provan (2006a), as mentioned earlier, argue that the five essential management tasks they identify (i.e., management of accountability, legitimacy, conflict, design and commitment) are essential for both the management of networks and managing in networks. They define managers in networks as “those individuals who represent their organization within the network” (Milward & Provan, 2006a, p. 18). The primary loyalty of these managers is to their home organization, but they also have a responsibility to work within the network context and toward both organization and network level goals (Milward & Provan). A fundamental tension then is balancing the needs of the organization with the needs of the network, and this is particularly challenging when organizations are participating in more than one network as is often the case. The only exception is for the very small cadre of people who are “network managers”, those with responsibility for managing the network as a whole, like those in a network administrative organization or a network facilitator. These positions could be likened to leadership roles with management functions also attached, complicating the delineation of leadership versus management roles and functions in networks.

Provan and Huang (2012b) describe the importance of encouraging network members to develop both tacit and material resources and they speak to how those resources should be managed. They suggest that:

by discouraging lead organizations from efforts to centralize the flow of all resources, the network is likely to be flexible and resilient, enhancing the capacity of members to deliver needed services to clients while strengthening the performance of the network as a whole. (Provan & Huang, 2012b, p. 373)

And yet earlier research (Provan & Milward, 1995) found that centralization was consistent with effectiveness in inter-organizational service implementation networks, illustrating another tension for network managers to consider.

The management of accountability is particularly challenging in networks. Provan and Huang (2012b) state:

Though the emphasis on results is welcomed by practicing managers and scholars, important cautions have been issued to attend to accountability - how we arrive at results can be as crucial
As the results that are achieved, particularly when the desired goal or result is not clear or under contentious dispute. This is, of course, particularly the case when working to address wicked problems. (p. 370)

As well, because networks are viewed as having more capacity to respond to complex issues than traditional organizations, the expectations for results can be unrealistically high (Riley & Best, in press). Managing these potentially conflicting expectations in regard to accountability is an important task for network practitioners.

Aligned with the management of accountability is the concept of network control. Milward et al. (2006b) argue that control is an essential aspect of networks, even though the defining characteristic of networks is that they do not have a hierarchy of authority. This could be described as another tension that needs to be managed. Control is defined as: “...a process of monitoring something, comparing it with some standard, and then providing selective rewards and adjustments” (Milward et al., 2006b, p. 204). Thus, control is about paying attention to whether network development is proceeding as intended and producing desired outcomes, and, if not, then making some informed correction. Control does not need to be done only through a hierarchy of authority, but is something that can be done collaboratively.

Fundamental questions for management of a network include issues of design and governance (Provan & Lemaire, 2012a). “Basically, public managers and policy officials need to know how the network can be set up and run to be effective in accomplishing network goals, while minimizing the emergence of tensions” (Provan & Lemaire, 2012a, p. 17). Provan and Kenis (2008) outlined three key tensions, and how the selection of governance structure can affect these tensions (see Table 7).
Table 7: Three common tensions faced by network managers and how these are affected by governance structures

<table>
<thead>
<tr>
<th>Tension</th>
<th>Description</th>
<th>How tensions can be affected by choice of governance structure(s)</th>
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<tr>
<td>Efficiency vs. inclusiveness</td>
<td>Networks face a tension between the need for administrative efficiency and inclusive decision-making. Collaboration is described in the literature as essential in building trusting relationships, but involvement in network planning and decision making processes can be incredibly time-consuming, leading to member burn-out.</td>
<td>“In shared-governance networks, the tension will favor inclusion; in lead organization–governed networks, the tension will favor efficiency; and in NAO-governed networks, the tension will be more balanced but favor efficiency” (Provan &amp; Kenis, 2008, p. 245).</td>
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<tr>
<td>Internal vs. external legitimacy</td>
<td>Networks face a tension between the need for internal (i.e., network members) and external legitimacy (i.e., external stakeholders, including funders). Both are of value to networks, and the role of network governance is critical for building and sustaining both.</td>
<td>“In shared-governance networks, the tension will favor internal legitimacy; in lead organization–governed networks, the tension will favor external legitimacy; and in NAO-governed networks, both sides of the tension will be addressed but in a sequential fashion” (Provan &amp; Kenis, 2008, p. 245).</td>
</tr>
<tr>
<td>Flexibility vs. stability</td>
<td>Networks face a tension between the need for flexibility and the need for stability. Networks are usually seen as flexible organizational forms, but research conducted to date indicates that they need to be relatively stable at their core while maintaining flexibility particularly at their periphery.</td>
<td>“In shared-governance networks, the tension will favor flexibility; in NAO and lead organization–governed networks, the tension will favor stability” (Provan &amp; Kenis, 2008, p. 245).</td>
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</table>

Adapted from: Provan & Kenis (2008)

Legitimacy clearly has an impact on network effectiveness, and the challenges that managers experience in building legitimacy are often related to whether the network is mandated or emergent, with networks often displaying characteristics of both. Public sector networks are frequently mandated by government, with a government agency charged with building, funding, overseeing and maintaining the network. A risk here is that external legitimacy for the network will be established, but that internal legitimacy could be ignored or under-valued, meaning that network participants could be weakly committed to working closely with others in the network (Provan & Lemaire, 2012a).

Mandated networks can still be effective, but building internal legitimacy may be a priority for the network, particularly if pre-existing relationships are not robust. This requires the building of trust-based relationships, as would typically occur in an emergent network. In an emergent network, more focus is generally required on establishing external legitimacy in comparison with internal legitimacy, although both are clearly important with ongoing monitoring required to ensure that there is a balance between both over time (Provan & Lemaire, 2012a).

Paquin and Howard-Grenville (2013) identify two main dilemmas or tensions for deliberately constructed or orchestrated networks. Firstly, also addressing the issue of legitimacy, they describe the tension for network managers between spending time developing “broad” or moral legitimacy with...
external audiences versus “pragmatic” legitimacy based on the practical usefulness of an activity to a particular set of network constituents (Paquin & Howard-Grenville). Secondly, they address the tension between allowing, or enabling, relationships to develop serendipitously (“blind dates”) versus deliberately orchestrating them by directing ties (“arranged marriages”) (Paquin & Howard-Grenville). Each brings a differing value to the network with serendipitous relationships potentially bringing with them unanticipated outcomes, and deliberately orchestrated relationships more expected outcomes.

Saz-Carranza and Ospina (2011), based on their research on immigrant networks in the United States, identified a tension related to unity versus diversity. They found that Network Administrative Organization staff spend considerable time managing the tension generated by the simultaneous demands to nurture unity (i.e., bringing the organizations together to function in accord) and diversity (i.e., drawing out unique contributions, based on their differences, from each organization) (Saz-Carranza & Ospina). Furthermore, they suggest that the need for both unity and diversity in a network is underscored by a central debate in the literature about how closed networks generate trust, and how structural holes offer diversity in knowledge but weaken network identity (Saz-Carranza & Ospina).

Understanding the unity-diversity tension experienced in networks implies three premises: diversity of the network is necessary for effectiveness, unity of the network is necessary for effectiveness, and diversity and unity may easily undermine each other if diversity turns into disunity or if unity turns into similarity. (Saz-Carranza & Ospina, 2011, p. 356)

This unity versus diversity tension resonates with Gray’s work (2004) on framing and reframing. She suggests that when there is too much diversity among network members on how they view or “frame” issues, processes of interaction and each other, collaborating to find a mutually agreeable way forward becomes exceedingly difficult (Gray). Although bringing together network members with diverse perspectives can facilitate arriving at innovative solutions to complex problems, the more diverse the perspectives the more challenging it will be to achieve agreement or unity.

Huerta et al. (2006) also address tensions, in this case described as six paradoxes, which must be managed by inter-organizational networks. They are briefly described below:

1. Structure – within a network organizations founded on a hierarchy need to interact with others in a non-hierarchical manner.
2. Synergy – networks exist to create a whole greater than the sum of their parts, but bringing organizations together with different values and assumptions can make it difficult to reach agreement on even the issue or problem to be tackled.
3. Evolution – as networks mature their member organizations become increasingly competent or able to deal with issues themselves, meaning that at some point the network may no longer be needed.
4. Resourcing - networks provide a mechanism for member organizations to address issues through resource sharing, but they also require resources to operate.
5. Defragmentation – networks are often formed to contribute to the development of a seamless service delivery network, yet this can create internal stress due to contextual factors that support fragmentation.

6. Evaluation – networks develop around complex issues and require information derived through evaluation to develop and be sustained, and yet they often lack metrics for assessing their impact.

As one can see from the discussion above, there is considerable discourse in the literature about the management of, and to a lesser extent management in, a network. Until recently, however, there is little empirical research exploring how network activities are managed and coordinated (Provan et al., 2007; Retthemeyer & Hatmaker, 2008; Saz-Carranza & Ospina, 2011). Saz-Carranza and Ospina (2011) also note that the research to date has focused more on the structural dimensions of network governance, rather than on the management behaviours necessary for network success. Retthemeyer and Hatmaker (2008) argue that “the foundations of network management as an area of inquiry are somewhat shaky because the phenomenon being managed is still poorly understood” (p. 630). They contend that more attention needs to be paid to understanding network management in the context of a system of networks (Retthemeyer & Hatmaker). Similar to Milward and Provan (2006a), they identify that network managers must be able to function across policy, collaborative and fiscal networks within their home system as well as in adjacent systems if they are to be effective (Retthemeyer & Hatmaker, 2008).

Effective management is linked to network effectiveness by a number of authors (Klijn et al., 2010; Mandell & Keast, 2007; Milward & Provan, 2006a; O’Toole & Meier, 2006). Klijn et al. (2010), through their research on environmental networks, even suggest that how a network is managed matters more than how it is organized. Yet network management is described as an elusive target to properly measure, in part because the allocation and utilization of management resources expended is necessarily fluid across time within a given network (McGuire, 2006), and because more research is required on identifying those particular management processes that contribute to network effectiveness in what way and under what circumstances.

From our exploration of the literature, it is evident that the language used to describe the leadership and managerial roles, behaviours and tasks involved in networks is overlapping and confusing. However, to at least one renowned author in the management field, Mintzberg (2009), this does not seem to matter. So, while addressing leadership and management each in turn, this literature review does not try to conceptually distinguish these terms. We have used them largely interchangeably, as found in much of the literature reviewed. Hoberecht et al. (2011), for example, suggest that network management competencies include: developing a shared vision; building trusting relationships; balancing power and authority; creating a network culture that enables shared participatory leadership; identifying collaborative learning and action plans; clearly defining roles within the network; and measuring joint success. As these competencies illustrate, it is important to remember

“Sure, we can separate leading and managing conceptually. But can we separate them in practice? Or, more to the point, should we even try?” (Mintzberg, 2009, p. 8).
that leadership of successful, sustainable inter-organizational networks needs to be distributed and shared among the network members.

5.3 Network structure
The study of inter-organizational network structure borrows heavily from what has been learned about the structure of social networks (i.e., where the actors are individuals). Ahuja, Soda, and Zaheer (2012) define network structure or architecture, as they call it, as:

the nodes that comprise the network, the ties that connect the nodes and the patterns or structures that result from these connections. Network architectures can therefore be associated with the number, identity, and characteristics of nodes; the location, content, or strength of ties; and the pattern of interconnections or ties among nodes. (p. 435)

Each node represents an actor in a network, and in an inter-organizational network these actors are organizations.

Social network analysis is often used to study the structure of inter-organizational networks, or the connections between these nodes. While this is not a review of the literature on social network analysis as a research methodology, we do highlight some of the key things this type of analysis can tell us about network structure and network effectiveness.

Provan et al. (2007) state that general network structure, and the positioning of each organization within the network, influences information sharing through a network. Given that knowledge and information exchange is a key function for many inter-organizational networks, paying attention to network structure as an enabler is critically important. These authors go on to explain that cliques, sub-networks, or clusters within networks are prevalent and can play important roles in the creation of positive outcomes (Provan et al., 2007). Provan and Lemaire (2012a) also discuss the importance of drawing on the rich body of knowledge on network structure to inform the design of more effective networks. They arrive at some key conclusions as follows.

1) It is not possible to determine the correct amount of integration in a particular network, as this depends on a number of factors including the purpose, functions and size of the network. Rather, they describe the importance of selective integration. “Selective integration means that network links must be targeted and appropriate, so that those organizations that need to work closely together do so, while others do not” (Provan & Lemaire, 2012a, p. 644).

2) Both strong ties and weak ties are of value in a network, and serve different purposes. Provan and Lemaire (2012a) explain that there are distinct advantages to both maintaining network closure (i.e., where people are connected to one another) and structural holes (i.e., gaps in connectedness in a network that may otherwise include clusters of strongly connected individuals). Closure is good for maintaining and building trust and for sharing information that is already reasonably well known, whereas structural holes are useful for generating new ideas and approaches (Provan & Lemaire).
Provan and Lemaire (2012a) conclude their discussion on network design by stating that:

...effective public networks should be designed with two goals in mind. First, effort should not be made to integrate all organizations into one dense set of relationships. Rather, emphasis should be placed on selective integration based on a mix of close, dense ties (closure) among some organizations, perhaps focused on particular sub-tasks or geographical regions, and with structural holes that are effectively brokered so that new information can be passed efficiently from one network cluster to another. Second, consistent with ideas of closure, while strong intensive ties may be needed for some network relationships, weaker ties based on low to moderate levels of interaction are likely to be quite appropriate for most relationships. (pp. 22-23)

In practice, a combination of strong and weak ties helps to sustain a network in that it allows for members to maximize their participation in, and benefit from, the network by choosing areas of high relevance for strong connectivity, thus potentially enhancing commitment and avoiding the member exhaustion that may arise if strong ties are required on all dimensions or activities. It also legitimizes peripherally involved members who may at a later time be able to engage more significantly, bringing with them new ideas and resources. This makes tie strength an important measure when using social network analysis to evaluate network effectiveness.

With respect to future research on the use of social network analysis as a tool for increasing our understanding of network structure, and how this structure in turn influences network effectiveness, a number of researchers have described the need for more work in this area as it applies to inter-organizational networks (Galaskiewicz, 2007; Gulati et al., 2011; Isett et al., 2011; Munoz & Lu, 2011; Provan et al., 2007; Provan & Lemaire, 2012a). Some researchers note that one way forward may be to study the structure of well performing emergent networks in order to provide insights about how to purposefully design more formal networks (Isett et al., 2011). Others have noted that "...a more in-depth analysis of the outcomes [and we would argue value] of ties, rather than a focus purely on the durability of ties, may be more useful for understanding the evolution of a network" (Provan et al., 2007, p. 503). The practical use of social network analysis as an analytical tool in the evaluation of networks is discussed in Section 7.5.

In summary, the issues surrounding network governance, leadership and management, and network structure begin to paint a picture of the complexities of inter-organizational networks; the similarities and differences between networks and other organizational forms; and the need for further conceptual and empirical definition regarding a ‘network way of working’.
6.0 Network evolution

Recognition of the cyclical nature of networks has led many people working in this field to continue to call for more research on how networks evolve over time (Birdsell, Matthias & colleagues, 2003; Berry et al., 2004; Huerta et al., 2006; Isett et al., 2011; Provan et al., 2007; Provan, Beagles, & Leishow, 2011). Comparative case study research where a number of networks are followed over a longer period of time, using a mix of qualitative and quantitative methods, would help increase understanding of network evolution. This kind of research tends to be costly and time consuming, however, which is likely why there have not been many such studies conducted to date.

Provan et al., (2011) indicate that the evolutionary path that a particular network takes depends both on key external events that occur as the network evolves and on the influence, incentives and pressures of the organizations that are involved in the network. Context, then, is a key factor in understanding evolution.

Summarized in this section are key points pulled from the literature with respect to the main issues or activities to focus on at different stages of network evolution, as well as how the same activity (e.g., leadership) might vary according to stage. Four stages of evolution are identified and briefly discussed here: 1) formation; 2) development and growth; 3) maturity, sustainability and resilience; and 4) death and transformation. For the most part, we are focusing on inter-organizational networks that are being deliberately formed, although a number of the main issues or activities may also apply to emergent networks as they evolve.

6.1 Formation

In determining whether to establish a network a good initial question to consider is whether an inter-organizational network is likely to be the best structure to achieve the desired outcome(s). As noted previously, a typical reason for forming a network is to address a complex issue or problem that no one organization can address well on its own. For example, a commonly desired outcome for human services networks is to improve the coordination and integration of services for clients. Some questions to consider when making this decision were outlined earlier in Section 3.4.

"Unless the idea or the purpose of the network meets a critical mass of stakeholder needs it cannot flourish even if you agree it is the right thing to do. Shared vision has longevity" (Network Leadership Summit IV, 2009, p. 8).

Much of the literature focuses on either the dimensions of the problem or the failure of traditional organizational forms as precursors to network development. We have heard that collaborations are more likely to form in turbulent environments, and that formation and sustainability are affected by both driving and constraining forces in the competitive and institutional environments. Formation
appears to be particularly influenced by the extent to which single efforts to solve the problem have failed (i.e., "sector failure") (Bryson et al., 2006).

Contextual factors are important to consider when determining whether the timing is right for forming a network. Rose (2004), in research on the early evolution of a child health network, suggests that having supportive pre-conditions or “fertile ground” at conception is a factor in whether a network will evolve successfully. Supportive pre-conditions might include, for example: technological capacity to support more organizational interdependence; public support for and consensus on the issue to be tackled; alternative funding plans for physicians (in the case of health networks); cross-ministry policy frameworks; and government encouragement for collaboration (Popp et al., 2005a; Rose, 2004). The degree to which there are forces that drive or constrain network development – based on problem size and complexity, organizational failure, crises, opportunity, or supportive pre-conditions – must be taken into account in the decision to form an inter-organizational network.

Once the decision has been made to form a network, or where a network has begun to emerge, an early focus needs to be on the design of the network and on determining what activities or tasks must be done in order for the network to develop effectively. A balance needs to be struck from the beginning between developing the structure of a network and providing time for network processes to evolve. In the very early phase of network formation, “there is usually someone or some group that assumes the role of ‘entrepreneurial orchestrating’ – getting the people together, mobilizing them and framing the issue” (Network Leadership Summit IV, 2009, p. 8).

As mentioned previously, Paquin and Howard-Grenville (2013) also use the term network orchestration, which they describe as the process of assembling and developing an inter-organizational network. Much like the conductor of an orchestra, a network orchestrator plays a facilitator role. In the early assembly of a network the orchestrator focuses on enabling a network culture where relationships can develop serendipitously, essentially to see what of value might arise. The orchestrator also spends time on “engagement” and in “sense-making” exposing potential new audiences to the developing network and helping them to understand the value of a new set of activities or network processes (Paquin & Howard-Grenville, 2013).

Additional network management tasks and behaviours were described earlier in Table 6 in Section 5.2: “management in and of networks”. Which of these is going to be most important early on will vary depending on the context within which the network is developed and the overall purpose or function of the network. Experience has also shown that, particularly in the early stages, "resource availability also strongly influences the ability to gain legitimacy and facilitate network development“ (Provan et al., 2007, p. 503).
Provan et al. (2011), in their study of the North American Quitline Consortium (NAQC), describe the balance of structure and process required in establishing a network. They saw a progression from focusing initially on creating a shared identity, to establishing governance arrangements, and then to building legitimacy (Provan et al., 2011). Hoberecht et al. (2011) also provide some practical examples of activities that can be used initially to get a network started. They describe leveraging conferences or other pre-planned events to kick-start an inter-organizational network, as this quote illustrates:

“The members of the group acknowledged that participants varied widely in their levels of background knowledge regarding systems thinking principles, and they responded by organizing an impromptu “systems thinking 101” workshop as a way of generating common understandings regarding the principles and concepts guiding their work. (Hoberecht et al., 2011, p. 26)

Keast et al. (2004), in their Australia-based Service Integration Project (SIP) case study, developed a mechanism to facilitate knowledge exchange and relationship building that appears to have been quite successful, although resource intensive. They offered a graduate certificate in social sciences, which provided an opportunity for the network participants to spend 16 full days over two semesters developing inter-professional leadership competencies (Keast et al.). They intertwined the learning of new theories, the unlearning of old behaviours and developing shared language and skills with progressing the design and delivery of the SIP (Keast et al.).

These examples highlight the importance of spending time in the early development of a network on building the foundational relationships and common understanding of the network and its way of working. Rose (2004) suggests that, given the significant time it takes to develop relationships, “the extent to which participating in the network can be credited to individuals’ local and regional daily workloads, the more accountable they may be to it” (p. 20). Paquin and Howard-Grenville (2013) describe the importance of face-to-face interactions in the development and deepening of connections with network members. They also warn network orchestrators to be alert to a possibility of over-engineering, which they describe as overly directing a network towards delivering on a particular collective goal, which may result in overly narrow membership and/or particularly strong ties with a relatively small group of members (Paquin & Howard-Grenville, 2013). This can lead to a network losing the benefit of a broad and diverse membership (Paquin & Howard-Grenville, 2013).
Mays and Scutchfield (2010), in their review of public health partnerships, suggest the success of large-scale implementation partnerships (i.e., partnerships where the purpose is to collaborate in the actual delivery of public health interventions) may depend on whether the partnership has first succeeded at “prerequisite forms of collaboration” such as information-exchange and planning. Choosing low risk activities in the early stages of a network allows network members to build trusting relationships that can then be capitalized on, and that can withstand the testing that will be necessary, when the network attempts later to take on other activities that might require more commitment, resources or practice change.

McPherson et al. (2006) talk about their experience with child health networks and the tendency for them to gravitate to structure and formalization of processes in the early phases because this is what network members are familiar with in their home organizations. As such, network managers need to resist the temptation to overly formalize things at the beginning in order to avoid network created structural impediments later on. An early task, then, is to look for ways to help network members become comfortable with the ambiguity and horizontal nature of the network. This phenomenon was described as the “nebulosity” of a network in an evaluation of a child and youth health network just after its third birthday (Popp et al., L’Heureux, Dolinski, Adair, Tough, Casebeer, Douglas-England, Morrison, 2005b).

In summary, there are multiple early decisions, activities and processes required when establishing a network. Consideration must be given to precursors and context, balancing development of network structures and processes, and setting the tone for ongoing collaboration and consensus building. The care in orchestrating, planning, designing and selecting the initial activities of a network will ultimately influence its ongoing development.

### 6.2 Development and growth

With respect to the development of governance structures, a trend described in the literature is the tendency for informal networks that begin with a shared governance structure to become more formalized over time (Isett et al., 2011). The development and growth of a network once again requires conscious facilitation; paying attention to what is going on with respect to network structure, carrying out essential management tasks and encouraging distributed leadership. For managers of organizations that are participants in the network, attention to balancing that fundamental tension between the needs of the organization and the needs of the network(s) is important.
There are a number of issues that require attention over time if a network is to successfully develop and grow; highlighted here are a few that emerged through this review that may be of particular interest.

**Trust**

Trust has long been described as critical to successful collaboration (Berardo, 2009; Chen, 2008; Gulati et al., 2011; Huxham & Vangen, 2005; Isett et al., 2011; Keast et al., 2004; McGuire & Silvia, 2009; Milward et al., 2010; Munoz & Lu, 2011; Provan et al, 2007; Provan & Kenis, 2008; Romzek et al., 2012), and leaders and managers play an important role in building trust within a network (McGuire & Silvia, 2009; Milward & Provan, 2006a). Trust is viewed as decreasing the costs of collective action in collaboration, and thus enhancing the likelihood of positive collaborative outcomes (Chen, 2008). Trust may be based on prior experience, but it also may be entirely based on subjective perceptions of trustworthiness, at least until proven otherwise. Trust in a network is also based on an expectation of reciprocity. The quality of relationships has been generally accepted as an indicator of trust, in that if an agency states that the quality of its relationship with an organization is moderate to high, then it would follow that they would trust that agency (Milward et al., 2010).

Much of the research on development of trust in collaborative relationships has focused on the development of trust between individuals. Provan et al. (2007) note that there has been considerable work done on trust in networks, but it too has focused on dyadic relationships (i.e., relationships between two actors). For instance, in their study of the evolution of chronic disease prevention networks, Provan et al. (2003) found that despite the increase in density of ties as the network evolved, measures of trust across the network showed a slight decline during their evaluation period. They noted that this decline in trust could be an unintended consequence of network members working together more closely and getting to know each other better (Provan et al, 2003). This finding has implications for network stability, as efforts to build collaborative relationships may lead to some short term testing of relationships. They state that, “trust is not something that inevitably and immediately follows the establishment of relationships” (Provan et al., 2003, p. 655). Rather, relationships between individuals may change frequently as network members try to find network members in other organizations with whom they can work effectively. As the organizational theory literature would suggest, organizations may need to work together for a number of years to develop true trusting relationships. So, although organizations are willing to connect to new partners, these new relationships will initially be untested and not deep; trust takes longer to develop (Provan et al, 2007).

Isett et al. (2011) state that “trust among public and nonprofit organizations is a function of personal (propensity to trust), dyadic (perceived trustworthiness of another), and third-party (trust transferability) influences” (p. 166). Gulati et al. (2011) talk about trust in relation to receptivity, indicating that “inter-organizational trust defines the extent to which an organization and its partners can rely on each other to fulfill obligations, behave predictably, and negotiate and act in good faith. Interpersonal trust complements inter-organizational trust but is distinct from it” (p. 216). The presence of trust, for example, will influence how receptive a network member is to exchanging resources or
knowledge. Romzek et al. (2012) have found that reciprocal relationships based on trust are a necessary component of informal accountability in networks.

If trust between organizations is needed in collaborative inter-organizational networks, network structures must rely on exchanges that are based on interpersonal relations. Keast et al. (2004) argue, although the reality is that trust may not be easy to build, two factors can temper these constraints.

First, the development of an inter-organizational network means there is recognition that their purposes cannot be achieved independently, that all action is mutually interdependent. Second, many of the participants may already know each other and may have formed pockets of trust before the network structure was formed. These pockets of trust can be capitalized on through the use of effective management strategies. (Keast et al., 2004, p. 365)

Because building relations forms the basis for the development of trust, the ability to facilitate and nurture relationships is a critical leadership and management capability through the start-up and growth of a network.

The outcome of the establishment of these relationships is that perceptions of each other begin to change. Members begin to recognize and appreciate each other as resources. In effect, the pool of expertise is expanded based on these new ways of relating to each other. (Keast et al., 2004, p. 369)

Huxham and Vangen (2005) suggest that “there is a gap between the common wisdom that trust is necessary for collaboration to be successful and common practice, which suggests that trust is frequently weak (if not lacking all together) and suspicion is rife” (p. 153). If this gap is to be addressed, it is necessary to look at how trust can be built and maintained in any collaboration. They argue that trust is built through a cyclical loop, meaning that trust takes time to develop and grows as the collaboration has some success (Huxham & Vangen, 2005). The trust building process is critically important but also resource intensive, as “it requires paying continuous attention to the interaction between changes in structure and membership, changes in aims and agendas and changes in power with respect to who can enact or sabotage those agendas” (Huxham & Vangen, 2005, p. 172). They outline a series of pragmatic trust building and management considerations related to what they see as five key challenges involved in initiating and sustaining this trust building loop: 1) forming expectations; 2) managing risk; 3) managing dynamics; 4) managing power imbalances; and 5) nurturing the collaborative relationship (Huxham & Vangen). Of these, issues related to power can be particularly challenging as discussed in the next section.

**Power**

People are sometimes reluctant to talk about power, particularly in the context of collaborative networks; yet it is critically important in the development of collaborative relationships and trust. Huxham and Beech (2008) define power as “the ability to influence, control, or resist the activities of others” (p. 555). They go on to say that because power is a relational concept (i.e., it has to involve at least two parties), it is no surprise that it is seen as a central issue in inter-organizational settings.
(Huxham & Beech, 2008). Berry et al. (2004) identify power as a dependent variable in networks and indicate that “examining whose interests are represented and who has power over decisions is critical” to understanding the ultimate impact of power on public service delivery.

In Huxham and Vangen’s (2005) book, “Managing to Collaborate”, the terms power differences, power games, power plays and power struggles all appear in their chapter on trust building. Both people working in collaborative networks and the research literature on trust in collaborations link trust to issues of power, and dealing with power differences in a network is often described as a key challenge for network managers (Addicott, McGivern, & Ferlie, 2007; Bryson et al., 2006; Hartley & Benington, 2006; Hoberecht et al., 2011; Huxham & Vangen, 2005; Huxham & Beech, 2008; Keast et al., 2004; McGuire, 2006; Provan & Lemaire, 2012a). Through experience managing networks, one comes to realize that power can be viewed as personal (i.e., the individual’s experience of their own influence) or positional (i.e., the attribution of power to another based on their organizational role). The degree to which individuals choose to exercise or relinquish their personal or positional power to either facilitate or inhibit trust can significantly impact network development.

A power imbalance, because it can be a source of distrust, is one of Bryson et al.’s (2006) three key factors that can negatively influence a cross-sectoral collaboration’s process, structure and governance. Their proposition is that “cross-sector collaborations are more likely to succeed when they build in resources and tactics for dealing with power imbalances” (Bryson et al., 2006, p. 50).

Chen (2008) believes that although a completely equal distribution of power in inter-organizational settings is unrealistic, a more shared, equitable power allocation among partners may be one of the desirable outcomes of collaboration. This builds on the work of Gray (2004), who says that the power dynamics generally shift in true collaborative relationships from the kind of unequal distribution of power often associated with elitist decision making to more participative, equally shared access to decision making processes.

So, what do managers of and in networks do when faced with an imbalance of power and influence among participants? While this is one aspect of inter-organizational networks that requires further research (McGuire, 2006; Huxham & Beech, 2008), Huxham and Beech (2008) do provide some insights, based on their review and understanding of research on power in inter-organizational settings. They see the identification of both the sources of power and uses of power as a precursor to understanding how to manage it and argue that there is a need to be particularly mindful of where power might be unwillingly or unintentionally exerted (Huxham & Beech). They suggest exploring how power can be shared, even temporarily, or used collectively to facilitate the work of the network (Huxham & Beech).

Power may also be intentionally and overtly exerted to resist or circumvent network goals. In some circumstances this may be more readily addressed because it is an obvious phenomenon and can therefore be openly discussed. On the other hand, the relative size of the organizational players involved may determine whether the intentional use of power can be openly or effectively addressed. In
general, it is likely that the subtle, unintended or covert uses of power will be more problematic because they are less apparent and thus more easily denied.

**Positive deviance**

Casebeer et al. (2009) argue that for many networks, “a key component of success relates to pulling and pushing at the edges of multiple connections and boundaries in ‘positively deviant’ ways” (p. 611). They deliberately use this apparent oxymoron arguing that, when attempting to enable and sustain change in complex organizational and system environments, different and deviant capacities can actually be positive forces (Casebeer et al., 2009).

Casebeer et al. (2009) suggest that there is need for networks to regularly work in “positively deviant” ways; deliberately acting and maneuvering in ways that are aberrant (from normal or even exceptional practice) within more traditional bureaucratic and hierarchical structures. Positive deviance, then, is a way of describing how networks work around “the standard organizational processes to influence change in systems that are often fixed in their ways and bound up in traditional organizational hierarchy” (Casebeer et al., 2009, p. 612).

From the three cases highlighted in this article, four groups of characteristics of positively deviant networks are identified: 1) collaborative and democratic; 2) deliberative and risk-taking; 3) generative and inquiring; and 4) divergent from the prevailing culture (Casebeer et al., 2009). One “positively deviant” case described involved the development of a collaborative learning network in the health sector that started in the mid 1990’s. This network engaged health professionals and their organizations in a two-year cohort-based learning program. The content was on evidence use and applied research in the health system, but what was emphasized was learning over time as part of an ongoing learning community. This was quite a departure, at the time, from both university degree programs and the time-limited professional development conferences and workshops that were the norm in healthcare. In this case, all characteristics of positive deviance were present; with the brief description provided here emphasizing the fourth characteristic, divergence from the prevailing culture.

**Outcome attribution and accountability**

As a network develops and grows, the issue of outcome attribution and accountability often arises. Attributing outcomes to networks is challenging due to what Provan and Milward (2001) articulate as the “joint production problem”, where multiple agencies are responsible for one or more components of a single service creating blurred or indistinct organizational boundaries. This unified delivery of services may satisfy clients, but presents difficulties for networks as they try to determine what the legitimate outcomes of the network are versus those of organizational members.

As well, while some outcomes of a network might be quite obvious, such as improvements or changes in service delivery as a result of increased collaboration or collective action, others may be subtler or even invisible. Linking improvements in client experiences or health outcomes directly to the work of the network, for example, may or may not be possible. Additionally, participating in a network may alter how an organization views its mandate and work, enhance the knowledge of organizational staff, or
change internal organizational practices. However, the organization may not, itself, view these outcomes as related to the network.

Our experience tells us that when a network is still in its infancy, challenges with outcome attribution are compounded because of the importance of providing opportunities for individual member organizations to lay claim to the successes of the network in order to cement their involvement and commitment. Similarly, network managers must be careful not to claim, on behalf of the network, outcomes achieved by member organizations within their normal operational scope as this may risk alienation. And yet, there are often expectations for networks to display early results to demonstrate their value, so there is a need to somehow tie outcomes to the network as a whole. This is a tension that network managers must pay attention to as the network evolves, always gauging the balance between, and member tolerance for, tying outcomes to individual member organizations or to the network as a whole.

Attributing outcomes to the network is also important because this is a way of demonstrating accountability as well as highlighting the added value of the network both to participating organizations and funders. Bryson et al. (2006), in their framework for understanding cross-sectoral collaborations, include a category titled outcomes and accountabilities. They note that "accountability is a particularly complex issue for collaborations because it is often not clear whom the collaboration is accountable to and for what" (Bryson et al., 2006, p. 51).

Recognizing the importance of accountability in inter-organizational networks, as well as the inherent challenges in demonstrating accountability, Romzek et al. (2012) developed a preliminary theory of informal accountability among network organization actors that emphasizes the inter-organizational and interpersonal behaviours that reflect informal accountability. They "examine the informal norms, expectations, and behaviors that facilitate collective action and promote informal accountability among nonprofit network actors" (Romzek et al., 2012, p. 442).

Another challenge for network managers and leaders is how to maintain the unique ‘networky’ nature, or culture, of a network while also being accountable to an organizational structure or board (Network Leadership Summit IV, 2009, p. 11). Network leaders often see the vision of the network as more important than the network form. They have argued that, although you may want your network members to attribute outcomes back to the network, if you do need to evolve the network because circumstances have changed it is more important that the network members identify with the network’s vision, as opposed to its form or structure which may shift over time. In this way network members may continue to work together toward this vision, even in the absence of any formal network structure (Network Leadership Summit IV, 2009).
To conclude, because of the increasing emphasis in government and non-profit organizations on using outcome measurement to demonstrate accountability for public funds, the challenge in attributing outcomes to a network can threaten its growth, development and very existence. How to capture the value of networks and their often-invisible contributions is discussed further in the section on evaluation.

6.3 Maturity, sustainability and resilience
A key factor affecting the sustainability of a network is the development and maintenance of both internal and external legitimacy throughout the evolution of the network. Internal legitimacy, or how the members of a network view the network’s value, has been shown to be more important early in the network’s development as a way of sustaining the network through times of crisis. Too much focus on the development of external legitimacy, or how other stakeholders view the value of the network, at the expense of internal legitimacy early on has been linked to network failure (Provan & Lemaire, 2012a). This reminds us that paying attention to relationship development within the network, an important aspect of creating internal legitimacy, is critically important to sustaining a network. It is particularly important for those networks that are mandated and not emerging out of prior relationships, which research has shown are more likely to fail (Provan et al., 2007). It also speaks to the need to ‘institutionalize’ the participation of member organizations within a network so that, as individuals come and go within an organization, the organization itself remains involved in the network thereby contributing to its sustainability.

Network maturity, sustainability and resilience are strongly linked to network learning, which is in turn linked to network effectiveness (Provan et al., 2007). Trusting relationships are a precursor for network learning, once again reinforcing the need to not only develop but nurture the relationships within the network as it evolves. In turn, this again highlights the important role of network managers in ensuring that the optimal conditions are in place on an ongoing basis for relationships to develop and learning to occur.

Experience suggests that even as networks mature there may still be difficulties with attributing direct outcomes to the work of the network. However, if internal legitimacy has been well established the added value of the network is likely to be more apparent to organizational members, as demonstrated in the evaluation of the Southern Alberta Child and Youth Health Network (Lemaire et al., 2010). As such, it may be easier to have network members rally around allowing the network as a whole to lay claim to outcomes, thereby reinforcing a collaborative, trusting and sustainable network culture.

Typically, at a mature stage of network development, there is some institutionalization of structure and processes. Network routines may be established. Research has shown that some stability is a necessary condition if network performance is to improve (Milward et al, 2010; O’Toole & Meier, 2004; Provan & Milward, 1995). O’Toole and Meier (2004), for example, found that school districts in the United States operating in more fiscally interdependent and complex settings benefited from some managerial and personnel stability, which translated to more effective performance. They wondered whether stability could perhaps be a platform for risk-taking, entrepreneurial action in networks. On the other hand, the
limited research that has been conducted on whole network stability indicates a stability-flexibility paradox; that is, “networks need to be relatively stable at their core, while maintaining flexibility, especially at the periphery” (Provan & Lemaire, 2012a, p. 27).

As a network matures, it is valuable to encourage a decentralized flow of resources (e.g., information, knowledge) among network members (Provan & Huang, 2012b). Trust should be high enough in a mature network that, even if there is a lead organization or network administrative organization, resources can be shared more broadly. Spreading knowledge and resources among network members enables the network to remain flexible and resilient, which is connected to positive network performance over time (Bakker, Raab, & Milward, 2012; Bryson et al., 2006; Provan & Lemaire, 2012a; Provan & Huang, 2012b).

Powell, Koput, White, & Owen-Smith (2005) argue that networks, because of their very nature, should be resilient. They state that “a cohesive network, with plural pathways, means participants are connected through different linkages” (Powell et al., 2005, p. 1139). Many nodes would need to be removed to weaken such a structure, meaning that networks tend to be highly resilient. Network structure may be less stable, however, when there are significant external shocks to the network (Lemaire et al., 2010; Provan & Huang, 2012b) such as funding cuts, significant restructuring within member organizations, a change in the lead or network administrative organization governing the network that is imposed externally, or changes within the political context. An optimal blend of stability and flexibility can increase resistance to shocks and enable the network to be responsive to important changes in context. Ability to withstand shocks is frequently described as an important contributing factor to network resilience (Bakker et al, 2012).

What does this all mean for network managers and/or leaders with respect to engaging in activities that help to sustain a network over time? Activities undertaken during the initial formation of the network, as well as during the network’s growth and development, will affect how the network matures, and how it will evolve and be sustained over time. As has been described earlier, a key early role for network managers is to provide a foundation for network members to develop trusting relationships, to operate and to maintain the required flexibility for network members to interact, learn and work together on accomplishing network level tasks. Notwithstanding what has been described as the natural tendency to resilience of the network structure, a key issue for a network administrative or lead organization is to resist imposing too much central control and to instead strengthen network resilience by encouraging the spread of information and resources. As well, in yet another paradox for network managers, Paquin and Howard-Grenville

In other words, the very skills and activities that will grow a network successfully at the beginning can ultimately restrict the network if not properly tempered later on.
(2013) caution that network managers, as they get better at orchestrating activities, processes and relationships, need to take care not to orchestrate things to such a degree that there is no longer any opportunity for new members or new input, thereby resulting in network inertia.

In general, as a network matures, engaging in and supporting the following activities would seem to be important for network managers and leaders: scanning of the context within which the network exists; revisiting of the network’s vision in order to respond to changes in the context; ongoing development of internal and external legitimacy; and monitoring and evaluation of the network’s processes and outcomes.

### 6.4 Death and transformation

Since there is a dearth of research on the natural life cycle of inter-organizational networks, we have very little understanding of their death and/or transformation. Little was found on this topic in this review of the literature. Given that networks generally emerge in response to contextually embedded, complex issues that require a collaborative response, it may be that there is a natural lifespan for a network. That is, there may be a natural evolution or progression to death or transformation that can be expected as the context changes. Perhaps a network is not meant to have the same lifespan or longevity as a traditional organization? The following questions, then, may be useful to consider as the network evolves and matures:

- Has the network reached a point where what it can offer has been maximized?
- Is the reason for which the network was formed still at issue?
- Does the network need to reinvent itself?
- Is the network still able to demonstrate its added value?
- Is the network susceptible to external shocks?
- Is the network’s vision still valid?
- Do we still need the network to advance this vision? (Network Leadership Summit IV, 2009)

Some network leaders would argue that if the network administrative organization (NAO) that coordinates and facilitates the network development is successful, as the network matures the NAO may no longer be necessary to the viability of the network (Network Leadership Summit IV, 2009). In this context, Royce (2011), describing the Canadian National Centres of Excellence research networks, identified some factors common to successful transition, including:

- Proactive, visionary, resilient leadership and vision;
- High commitment to network participants, partners and the development of strong relationships;
- Strategic planning processes developed to underpin next steps (e.g., legacy initiatives);
- Extensive stakeholder engagement in the transition process;
- Effective and broad communication of transition plans;
- Successful leveraging of partnerships and expertise;
- Ability to develop new partnerships and engage new stakeholders; and
Some continuation of administrative support from the network ‘host’ organization through the transition.

In the research literature reviewed here, there was virtually nothing to be found about what happens if a network experiences sudden and unexpected death before its natural lifespan has been reached. This is not surprising since the question of whether there even is a natural lifespan for networks remains outstanding. However, practice experience suggests it is common for network participants, and particularly those who are most intimately involved in leading a network, to experience grief if a network is disbanded unexpectedly, and this grief can delay or even prevent any further transitional process from occurring (Royce, 2011). If network managers and leaders believe that networks do have a natural lifespan, it seems worthwhile for them to incorporate some element of ongoing planning for transition, with a goal of maximizing the legacy of the network and ensuring that network participants can continue to strive toward realizing the vision of the network. The most likely enduring legacy for networks, the relationships developed among network participants, may then be leveraged to embark upon new collaborations and initiatives (Royce, 2011).

The legacy of interpersonal and inter-organizational relationships would tend to be supported in the experience of a child and youth health network in Alberta. This network, in which the authors were involved, was eight years old when it was abruptly disbanded in 2009 in spite of achieving positive outcomes (Lemaire et al., 2010) in a major overhaul of the health system. Four years later, the relationships nurtured during the tenure of the network by and large remain and the references to the network, its accomplishments and its way of working continue. Perhaps, when a formal network structure is dissolved, an informal network remains and awaits reactivation as the context changes yet again.

Others argue that it might be helpful to begin to move away from thinking about networks as having a typical life cycle that involves a birth and then a period of growth until it reaches a stage of maturity at which it is sustained. The argument is that networks and other collaborative efforts are much more of an organic life form and have eco-cycles, rather than life cycles, where there is a solid renewal loop (Hurst & Zimmerman, 1994) or reinvigoration process (Paquin & Howard-Grenville, 2013). In an eco-cycle model the focus is on continually adapting and reinventing the network rather than sustaining it. There is a leadership paradox here, as network leaders and managers must be both deeply committed to success but also be ready to let go of the current network form, particularly if it is unable to make further progress toward its vision (Cabaj, 2011). Indeed, Hurst and Zimmerman (1994) argue that renewal may require the destruction of an existing organizational form. They suggest that once this organizational form no longer formally exists, however, the knowledge created through the endeavor and the connections developed live on. They remain:

as patterns of interaction in an immense, weakly connected network...but through this network, the patterns have the potential to be reincarnated in new, formally connected organizations at any time. In the long run perhaps this is the only sense in which any human organization survives. (Hurst & Zimmerman, 1994, p. 353)
As Zimmerman, Lindberg, & Plsek (1998) observe in the context of organizations as complex adaptive systems, the life cycle model helps in our understanding of the growth and maturity phases of organizations. However, the model does not incorporate two critically important phases - "destruction and renewal...The eco-cycle extends the life cycle concept to incorporate these dimensions....The paradox is that renewal and long-term viability require destruction." (Zimmerman et al., 1998, p. 172).

An eco-cycle model, when applied to inter-organizational networks, tends to reinforce the notion of networks as complex adaptive systems described more fully in Appendix 2.

Future research embedded in network practice should help improve our understanding about whether there is a natural lifespan for inter-organizational networks, and what happens when a formal network governance structure ceases to exist. For example, is there a sustained impact on how these organizations work together? Are some new and different ways of working developed as a result of participation in the network? Does knowledge accrued through the network remain with participants after a network’s demise? Are there some ways of preparing for transition that will maximize the use of knowledge generated by the network and its participants after its death?

Future evaluation and research may also contribute to our knowledge about how to distinguish between a natural death and an untimely death, including how to prepare for the former and prevent the latter. Or perhaps using the eco-cycle model is a good fit for networks, meaning that the focus is on a renewal loop where there is ongoing cycling through development, exploration, maturity and creative destruction, rather than a birth, growth, maturity and death/transformation model.

7.0 Evaluating networks

The nebulous nature of networks, differences in perceptions of connectedness, potential role confusion, divergence in defining criteria for success, and the difficulty in identifying and attributing measurable outcomes have been identified as factors making network evaluation challenging (Dolinski, 2005; Popp et al., 2005b; Provan, Veazie, Staten, & Teufel-Shone, 2005; Rose, 2004) . As well, some would argue that there are no specific outcomes that are unique to networks, and thus the only outcomes of interest to be measured or described are the substantive ones associated with the desired purpose of the network. Add to this, networks as growing, evolving and changing entities combined with difficulties identifying and understanding network effectiveness, and one can begin to appreciate the complexity of network evaluation.

Consequently, the definitions, approaches, methods and case examples described here can be viewed as a ‘work in progress’ representing what is known about evaluating networks at this time. While some promising approaches and evaluation processes emerge, the conclusion is that much more work needs to be done both at a conceptual, methodological level and certainly at an empirical, evaluative one.

One significant opportunity for progress may reside in designing and connecting evaluation efforts and methods to align with the stages of network evolution, using all the evaluation tools currently available.
and likely adapting and designing new ones. With this in mind, there are some useful guidelines and experience to bring to bear on network evaluation.

We know from the broader evaluation literature that ideally evaluation planning should begin at the same time as the initial planning and design of the network, and evaluation should commence as soon as the network is up and running. This is critical given the importance of using early process evaluation results to inform ongoing network development. In addition, since the substantive outcomes of interest are as wide ranging as the purposes of the various networks (Birdsell, Matthias, & colleagues, 2003), it may well be important early on to identify and agree on how effectiveness is defined for a particular network, as well as on what shorter term outcomes can be identified to help track progress. In other words, what are you trying to achieve through the development of the network, and how will you be able to tell if you are progressing toward achieving this?

7.1 Understanding network effectiveness

Network effectiveness can be defined “as the attainment of positive network level outcomes that could not normally be achieved by individual organizational participants acting independently” (Provan & Kenis 2008, p. 230). Although it is common to evaluate the impact of an inter-organizational network on at least two levels (i.e., the impact on the member organizations and the impact on the whole network), Provan and Kenis (2008) contend that more emphasis needs to be put on whole network effectiveness. That is, has the network as a whole been able to move forward in addressing the issue on which they came together to work? In order to justify investing in networks, there is a need to measure the overall impact of the network and demonstrate the added value of the network in terms of achieving new outcomes or improving efficiency or effectiveness.

Networks in health and human services are often formed to improve service delivery systems or broad population health, but held accountable for improved direct client outcomes, which may not necessarily follow, at least in the short term. Showing causal relationships between work done at the network level and individual client outcomes is not easily accomplished. In part, this is because there are often multiple contributing factors to client level outcomes, making it difficult to attribute changes to network activities alone. As was described earlier in previous sections, it is the member organizations of the network that are providing the direct client service, making it difficult for networks to determine what the legitimate outcomes of the network are versus those of their organizational members, and depending on the phase of network development, there may be reasons to emphasize tying outcomes to organizational members over the network as a whole. Evaluating effectiveness primarily at the network level then, although important, may not satisfy decision-makers and funders (whose support is required for network sustainability) if it cannot be directly tied to organizational and client outcomes.

Ultimately, the outcomes used to define effectiveness will be somewhat unique to each network, and to each sector in which a network exists, depending on the purpose of a particular network (Provan et al., 2007). For example, if the main purpose of a health or human service delivery network is to improve coordination of services, including reducing both gaps in and duplication of services, then the ultimate outcome of interest will be more coordinated service delivery. If the main purpose of a university-
practice research network is to increase the use of research in practice, then this will be the ultimate outcome of interest.

Regardless of the purpose of a network, however, there are a number of known factors, based on the literature reviewed and the discussion thus far, that suggest when a network is effective. Activities undertaken during the initial formation of the network, as well as during the network’s growth and development will all affect how the network matures, and how it will evolve and be sustained over time. Thus, using what we know about effective network governance, leadership/management and structure (Section 5.0), as well as how networks develop and grow through their life cycle (Section 6.0), will enhance the robustness and practicality of a network evaluation. A network’s effectiveness is also affected by the level of its resourcing, the load it is asked to carry within those resources and the quality of the services it is delivering (Milward & Provan, 1998). If required to do more than its resources can bear, a network is unlikely to be effective. As well, a network that is well resourced and coordinated may still not be effective if the quality of services it is providing is mediocre.

It is important to design evaluations that purposely build in ways to assess the factors that are known to contribute to overall network effectiveness. Some possible evaluation questions to consider, drawing from the literature with respect to known factors that contribute to the overall effectiveness of a network, are presented in Box 2 below.

**Box 2. Possible network evaluation questions**

- Does the network have a clear vision and goals that are understood and supported by all members?
- Is the governance structure a good fit for this network?
- Is the network appropriately resourced to do its work?
- Does the leadership style fit with what we know about effective network leadership?
- Are important management tasks being attended to, and is the management focus evolving appropriately over time?
- Is attention being paid to both the management of the network, and management in the network?
- Does the network have both the internal and the external legitimacy it requires?
- Is the network/relationship structure evolving as expected and contributing positively to the work of the network?
- Is there an optimal mix of strong and weak ties among network members?
- Are the linkages targeted and appropriate?
- Is there trust among network members?
- Are power differentials being recognized and addressed as appropriate?
- Are there multiple levels of involvement?
- Is there a balance of stability and flexibility?
7.2 Processes and outcomes are both important

Recent literature on the evaluation of inter-organizational networks stresses that, to date, there has been more emphasis on the evaluation of network structure than processes. Both are necessary, but it is important to design evaluations that are able to capture what we know about the kinds of processes that lead to desired outcomes. Evaluating ‘how’ results are achieved may be just as important (if not more important in the longer term) as looking at ‘what’ results are achieved. Exploring how results are achieved provides the network with important information on the health of the network itself, including an assessment of the relationships and whether the desired culture of the network is being implemented and maintained. Gilchrist (2006) explains that a focus on processes as well as the impact of networks has the potential to make them more fit for purpose. Networks rely on trust and empathy, and thrive through the “quality and reach of their relationships” (Gilchrist, 2006, p. 29). Ensuring that evaluation of networks can generate knowledge about the status of these relationships, so they can be nurtured, repaired and shaped, is critical to continuing network effectiveness (Gilchrist, 2006).

In other words, the evaluation of both the structures and processes used to facilitate the achievement of outcomes is critically important in that it can provide the network with much needed information about the state of the network as a whole. In turn, the network can address membership, governance or structural issues and correct its course if need be to sustain the network and its work.

In addition, given what we know about the evolution of networks, and especially the challenges of attributing outcomes to networks in the early phases, “evaluating networks appropriately requires some knowledge of the path of evolution and the particular life stage of the network being evaluated” (Birdsell et al., 2003, p. 30). Indicators and milestones need to be developed against which to assess whether the network is being developed as planned, as well as leaving the flexibility for capturing unintended consequences and new directions resulting from the evolution of the network (Birdsell et al., 2003) and changes in the context in which the network is operating. Network managers and leaders have identified potential indicators, many of which are linked to the level of trust in a network, that relate to whether a network is evolving in maturity, such as:

- Members being able to discuss money seriously;
- Achieving agreement about key issues (e.g., governing structure, criteria for success);
- Resolving a conflict successfully;
- Members voluntarily subjugating their own interests to those of the collective in the short term;
- Acknowledging that sustainability is about more than funding;
- Referral among members;
- Showing respect for various perspectives; and
- Using the network as a problem solving mechanism (Birdsell et al., 2003).

Traditional organizational performance measures (i.e., measuring tasks and activities or clinical health outcomes) may fall short of being able to judge the effectiveness of an inter-organizational network (Kapucu & Demiroz, 2011; Mandell & Keast, 2007; McGuire & Agranoff, 2011; Popp et al., 2005b). When
traditional performance measures are emphasized, other aspects of performance are often ignored such as: relationship development; changing values and attitudes; trust-building; and longer term and system level impact (Mandell & Keast, 2007).

7.3 Multi-level analysis is required

A key topic of discussion in much of the evaluation literature is the importance of analyzing network effectiveness at multiple levels. As alluded to previously, networks are complex entities that because of their very nature will have an impact at a number of levels. Also, given the many different stakeholders, with potentially differing ideas about a ‘good’ outcome, who are involved in networks (e.g., network members, service recipients, funders and decision-makers), it is important to be able to show the impact of networks in areas that matter to varying groups. Levels of analysis to consider in the evaluation of inter-organizational network effectiveness were described in some depth in the original Southern Alberta Child and Youth Health Network literature review (Hill, 2002), building on the work of Provan and Milward (2001). Provan and Milward (2001) identified three levels of analysis in their framework for evaluating public sector networks: community; network; and organization/participant. Hill (2002) broke this third level down into two levels, the organization and the individual. A brief description of four levels of analysis, along with outcomes measures seen in the evaluation literature related to each of these levels is included in Table 8.

Table 8: Levels of analysis in Inter-organizational network evaluation

<table>
<thead>
<tr>
<th>Level of analysis</th>
<th>Description</th>
<th>Sample outcomes</th>
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| Individual        | Assessment of the impact that the network has on the individuals who interact in the network on behalf of their respective organizations and on individual clients. | - Increased job satisfaction  
- Increased capacity  
- Increased client satisfaction with services  
- Improved client outcomes |
| Organization      | Assessment of the impact that network has on the member organizations, as the success of network members is critical to overall network effectiveness. | - Agency/organization survival  
- Enhanced legitimacy  
- Resource acquisition  
- Improvement in referrals |
| Network           | Assessment of the network itself can have a variety of foci, many of which depend on the relative maturity of the network. The strength of relationships across the whole network is always an important focus. | - Network membership growth  
- Relationship strength  
- Member commitment to network goals |
| Community         | Assessment of the contributions that the network makes to the community it was established to serve. | - Better integration of services  
- Less duplication of and fewer gaps in services  
- Services provided at lower cost to the community  
- Positive policy change  
- Improved population-level outcomes |

Adapted from: Hill, 2002; Provan & Milward, 2001
7.4 Toward a model of action to guide network evaluation

Evaluations are often conceptualized as somewhat linear and fixed processes, where inputs lead to particular outputs, and these outputs in turn lead to the development of short, interim and long-term outcomes. This may well be a point of departure for network evaluation given the fluidity of network work and evolution. For example, this way of thinking is well illustrated by the growing popularity of the use of logic models in program evaluation. Although logic models may be helpful to guide some network evaluations, they may not be suitable for all depending on the purpose of the network. Networks that have as their purpose some type of social innovation, where desired changes are likely to occur at multiple levels and across multiple contexts, may not be able to develop a linear logic model. In these cases, considering different approaches to evaluation and ways of depicting the desired achievements of the network is worthwhile. As network leaders have noted, caution is advised regarding assessing or measuring only what networks are doing now or are expected to do. Rather, there is a need for flexibility in order to be able to capture the unintended consequences of networks. This requires the development of evaluation strategies that actively incorporate looking for unintended consequences, including social consequences of organizing in a less formally structured way (CHSRF, 2005-2006).

Still, the development of a high level logic model or model of action is a common strategy used by evaluators to articulate how a program or initiative being evaluated is expected to work based on what is known (i.e., from research, evaluation and other knowledge generating activities). While developing such a model for network evaluation is challenging due to the multiple levels of effectiveness that need to be considered, it may nonetheless be a useful starting point. Based on the literature reviewed here, and considering the discussion above, a model of action that network leaders could use to guide evaluation is proposed in Figure 1.

An advantage for conceptualizing the evaluation of network effectiveness in this way is that the desired longer term outcomes of a network that are aligned with its purpose (e.g., improved coordination of services, increased knowledge exchange and utilization, more cost-effective use of resources) are clearly seen as being facilitated through effectiveness at the network level. We understand that many of the relationships among the various levels, activities and evaluation processes are in fact iterative rather than linear in nature, but attempt to show a progression leading to overall network effectiveness. Developing this type of a model also addresses one of the key points made in the Hill (2002) network literature review with respect to advancing the field of network evaluation, which was that continuing to incorporate multiple levels of analysis in network evaluations is critical, but that also incorporating a systems level approach that examines the relationships between these levels would be an important next step.
Figure 1: Toward a model of action to guide the evaluation of inter-organizational networks

**Network processes and structures**
- Preliminary vision is established
- Organization member identification and recruitment
- Selection of appropriate governance structure
- Attending to important management of network tasks
- Attending to important management in network tasks
- Creating a culture of shared leadership
- Guiding development and monitoring of the network structure (i.e., structure of relationships)
- Appropriate resourcing of the network

**Network level outcomes**
- Vision is understood and supported by all members
- Effective governance structure
- Core stability
- Effective network leadership
- Existence of trusting relationships
- Strong internal legitimacy
- Strong external legitimacy

**Outcomes at other levels (examples)**

- **Community level**
  - Coordinated, cost-effective, high quality services being delivered
  - Improved population level outcomes

- **Organizational level**
  - Agency survival
  - Enhanced legitimacy
  - Resource acquisition
  - Enhanced capacity

- **Individual level**
  - Enhanced capacity
  - Increased job satisfaction
  - Increased satisfaction of individual clients
7.5 The critical role of social network analysis and mapping
Perhaps the single most valuable conceptual tool available to network evaluators is social network analysis (SNA). Despite its complexity and the costs in time and other resources, SNA exposes the intricacies of network structure that cannot be captured through other methods. As Provan and Lemaire (2012a) note, it is important to consider the dyadic relationships that collectively make up the whole network in order to understand how public networks operate. While a typical SNA demonstrates the state of the network structure at a given point in time, it can also depict the connections within the network on multiple dimensions or activities (e.g., strategic planning, service delivery, educational activities, etc.) or parse out a single one. For purely illustrative purposes, two sample network maps or plots are provided below, the first showing connections within a network on one activity (see Figure 2), and the second on several with each colour representing a separate dimension (see Figure 3).

Summarized in Box 3 below is a snapshot of some key considerations regarding data collection and measurement in inter-organizational network evaluation planning, as well as some key attributes that can be captured through SNA. When combined with other evaluative information, particularly concerning the quality of underlying relationships and processes supported by the network structure, SNA becomes an invaluable component of network evaluation practice.
### Box 3: Key considerations and attributes of social network analysis in inter-organizational network evaluations

#### Key considerations regarding data collection and measurement

*Network bounding:* Which organizations should be included in the network when collecting data?

*Link content:* What types of links or relationships should be assessed (such as shared resources, clients, shared information, funding and contracts, or joint programs)?

*Frequency of links:* Do the links measured occur with regularity or only occasionally?

*Level of interaction:* Administrative (top management, board) versus operational (service delivery level).

*Trust:* What is the quality of the relationship among partners (that is, based solely on formal agreements, rules and procedures, or on trust and informal norms of reciprocity)?

*Data collection:* Primary data from structured questionnaires and interviews and secondary data from agency records, where available (such as contracts).

*Respondents:* Executive director, program heads, or operational personnel. Confirmation: Are the relationships reported by an organization confirmed by its link partner?

*Cross sectional vs. longitudinal:* Are network data collected once or at several points in time, thereby allowing examination of network evolution?

#### Key social data analysis attributes

*Density:* What is the overall level of connectedness among organizations in the network (can be calculated using data for specific types of links or for all links of any type)?

*Centrality:* Which organizations are most central or most involved in the network (the number of direct and indirect links maintained by each agency)?

*Multiplexity:* What is the strength of the relationship between individual network partners, based on the number of types of different links (joint programs, referrals, etc.) they maintain?

*Strong versus weak ties:* Are relationships confirmed or multiplex (strong) or are they unconfirmed or based only on one type of link (weak)?

*Fragmentation:* Are all or most network members connected, either directly or indirectly (that is, through another organization), or is the network broken up into fragments of unconnected organizations?

*Dyads:* Links or relationships between two organizations. Dyads are the building blocks of networks.

*Cliques:* The existence of subgroups of three or more fully interconnected organizations.

*Network plots:* A visual representation of all organizations in the network and the links/relationships among them.

Although social networks analysis methods are widely used to evaluate the structure of inter-organizational networks, like any kind of data the findings need to be interpreted in context and with caution. This is particularly salient because the majority of the rich volume of research on SNA has been conducted on relationships between individuals (Gulati et al., 2011); that is, the node or actor has been an individual rather than an organization. As indicated above, like many kinds of data analysis, a cross sectional SNA does not capture temporal factors, meaning that many evaluations are based on data that reflect the network at one point in time. Employing SNA at multiple intervals does have the ability to track changes and show the evolution of the network’s relationships over time. Networks, as we know, are dynamic and ever-changing (Institute for Healthcare Improvement [IHI], 2011), meaning that repeated measures over time would be ideal. SNA is resource-intensive, however, making it challenging for many networks to undertake repeated measures. While full of promise, the limitations of a single, point in time, social network analysis reinforces the need for using multiple methods, and in particular qualitative research methods, to develop a more complete picture of the processes and impact of a network.

On a positive note, a new tool called PARTNER (Program to Analyze, Record, and Track Networks to Enhance Relationships), developed by Danielle Varda at the University of Colorado in Denver, is being made available to network practitioners and may offset some of the high intensity SNA resource requirements:

PARTNER is a social network analysis tool designed to measure and monitor collaboration among people/organizations. The tool is free (sponsored by the Robert Wood Johnson Foundation) and designed for use by collaboratives/coalitions to demonstrate how members are connected, how resources are leveraged and exchanged, the levels of trust, and to link outcomes to the process of collaboration. (PARTNER, n.d.)

7.6 Some examples of network evaluations
There are a number of network evaluations published in the academic literature and available in the grey literature, as well as a number of articles discussing important issues related to how to assess the performance or effectiveness of networks. Included in Table 9 are some examples of network evaluations that include a variety of different kinds of networks, as well as a range of levels and kinds of items ‘measured’.
<table>
<thead>
<tr>
<th>Evaluation project</th>
<th>Level(s) of analysis</th>
<th>Processes and outcomes measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-organizational partnerships between child and adult mental health services in Clark County, Washington Davis, Koroloff, &amp; Johnsen, 2012</td>
<td>Network</td>
<td>Density and centrality of relationships for 4 activities: - participation in client-related meetings - participating in meetings on issues of mutual interest - sending referrals - receiving referrals</td>
</tr>
<tr>
<td>Service delivery network for LA family and children’s services (USA) - lead agency governance model mandated network Chen, 2008</td>
<td>Network</td>
<td>Collaborative processes - joint decision making - joint operation - reduced autonomy - resource sharing - building trust Collaborative outcomes - goal achievement - quality of working relationships - broadened views - increased interactions - equitable influence</td>
</tr>
<tr>
<td>Federal Response Plan network, Hurricane Katrina response network</td>
<td>Network</td>
<td>Governance structure - information diffusion - risk sharing - goal commitment - service integration - multiplexity</td>
</tr>
<tr>
<td>Human service delivery network in Goodna (Australia) Keast et al., 2004 Mandell &amp; Keast, 2007</td>
<td>Network Community Organization, Individual Organization, Individual</td>
<td>Improved relationships among members - increased trust - shared power and decision making - commitment to the whole - sustained relations - seamless service delivery - involvement of community - aggregate service outcome measures - cost-benefit - improved infra-structure and facilities - improved capacity</td>
</tr>
<tr>
<td>Evaluation project</td>
<td>Level(s) of analysis</td>
<td>Processes and outcomes measured</td>
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</table>
| Voluntary Collegial Clinical networks in New South Wales, Australia - consumer involvement | Network             | Conditions for effective clinical networks  
- Relationship building  
- Effective leadership  
- Strategic evidence-based work plans  
- Adequate resources  
- Ability to implement and evaluate network initiatives  
Desirable outcomes of successful clinical networks  
- Interdisciplinary and consumer collaboration  
- Better relations between clinicians and government agencies  
- Improved services, care and patient outcomes  
- Increased evidence-based practice |
| McInnes, Middleton, Gardner, Haines, Haertsch, Paul, & Castaldi, 2012              | Community           |                                                                                                                                                                |
| Alberta Healthy Living Network - mission is to provide leadership for integrated, collaborative action to promote health and prevent chronic disease | Network             | - Organization centrality, using a Freeman degree measure  
- Network ties (i.e., percentage tie homophily)  
- Financial support for organization’s programs and activities |
| Moore, Smith, Simpson, & Minke, 2006                                              | Organization        |                                                                                                                                                                |
| Southern Alberta Child & Youth Health Network - lead agency governance model - mission is to advance high quality, coordinated programs and services for children, youth and families | Network             | - Strong relationships (i.e., cross-sectoral, inter-regional, trusting, multiplex)  
- Leadership at steering committee, secretariat and regional levels  
- Parent involvement  
- Role of network facilitators  
- Improved services  
- Increased capacity and professional development  
- Improved integration of care  
- Improved service delivery at a system level |
| Lemaire et al., 2010                                                               | Organization        |                                                                                                                                                                |
|                                                                                    | Community           |                                                                                                                                                                |
| Network of teacher training colleges in the Netherlands (Focus was on relations between all network members, rather than dyadic relationships) | Network             | - Network embeddedness (i.e., organizational membership in a cohesive subgroup)  
- Individual student satisfaction |
<p>| Schalk, Torenvlied, &amp; Allen, 2010                                                 | Organization        |                                                                                                                                                                |</p>
<table>
<thead>
<tr>
<th>Evaluation project</th>
<th>Level(s) of analysis</th>
<th>Processes and outcomes measured</th>
</tr>
</thead>
</table>
| Inter-university research project teams from eleven leading hospitality management programs in the US Susskind, Odom-Reed, & Viccari, 2011 | Network, Individual | - Communication relationships  
- Team performance (i.e., team project rankings)  
- Individual team member performance  
- Team leader performance |
| Brazos Valley Health Partnership  
- *mission is to improve coordination of service delivery* Wendel, Prochaska, Clark, Sackett, & Perkins, 2010 | Network, Community | - Extent to which organizations in the network collaborated  
- Type of collaborative activities underway (e.g., share information, plan joint efforts, share tangible resources)  
- Emergence of new leaders  
- Development of new knowledge and skills  
- Long term sustainability of new health-related activities |

Reviewing the variety of processes and outcomes measured across this sample of network evaluations is a good way to illustrate how closely tied outcomes are to the purpose of the network. This is particularly apparent at the community level of outcomes. There are some trends to note however, and they include:

- Conducting analysis at a variety of levels;
- Assessing or measuring both processes and outcomes;
- Considering the development of collaborative processes and strong relationships at the network level as important outcomes in their own right;
- Using a mix of data collection and analysis methods within a single evaluation (e.g., surveys, interviews, focus groups, document review, qualitative data analysis, social network analysis); and
- When measuring network level relationships, examining relationships at the whole network level in addition to looking at dyadic relationships.

Finally, in order to increase our understanding of the role and importance of networks, and why some networks are more effective than others over time, a broad range of evaluation approaches need to be integrated (Casebeer, Huerta, & VanderPlaat, 2006). There is a need then for comparative, longitudinal evaluations that rely on multiple methods. The recent evaluation of the Southern Alberta Child and Youth Health Network by Lemaire et al. (2010) is one example of an evaluation that relied on multiple methods to increase understanding of the processes that were important in developing the network, as well as the outcomes or impacts of the network. Although the evaluation of this network was not initially designed as longitudinal, this was the third evaluation activity undertaken by the network in eight years. The data collection methods used were:
- A document review, in order to enhance understanding of the context;
- A questionnaire, using social network analysis, designed to assess overall network structure, the strength and quality of cross-sectoral and inter-region relationships, and the impact of the network at multiple levels;
- Parent focus groups, to obtain parent perspectives on their participation in the network, as well as the impact of the network on the child and youth system;
- Interviews with key stakeholders to obtain more in-depth perspectives on many of the issues addressed in the questionnaire, as well as other issues that the interview participants raised as being critical to the success and sustainability of the network; and
- Digital stories that captured perspectives of participants at varying levels in the network. Digital storytelling is one type of narrative approach that has been used to relay how involvement in a network has changed an individual, their thinking and the way they now work in the system.

As is true for attempting to research and evaluate any complex phenomena, it is increasingly clear that a multiple, mixed method approach to the evaluation of networks is likely to yield much more useful and robust information than could any single method on its own. Additionally, given the evolutionary nature of networks, a longitudinal and comparative approach is better suited to understanding networks across time and through stages of development than a single cross-sectional design. Keast et al. (2004) make a strong case for moving away from traditional approaches of evaluation and in addition to longer timeframes for evaluation, recommend the following: “a new emphasis on integration rather than simply delivery of services, changed perceptions about each other’s contribution to the whole, and recognition of the value of relationship building are a promising start” (p. 370).

8.0 Concluding remarks

As was stated in the introduction, this literature review was conducted to build on a previous review done in 2002 under the auspices of the Southern Alberta Child and Youth Health Network. This review, along with the 2002 review, is presented as part of a toolkit for network leaders. The idea of a toolkit germinated through discussions among network researchers, leaders and managers at a series of Network Leadership Summit meetings that began in 2003. These meetings have been held across Canada, but the participants have come from both Canada and the United States, and on occasion from other countries as well. The Network Leadership Summit series was created to provide a forum for people to share their experiences researching and working in networks, with the goal of increasing understanding of the nature, value and effective use of networks.

At the fourth Network Leadership Summit held in Banff, Canada in January 2009, based on the cumulative learning through all the summits, a consensus statement on the value of stimulating and supporting networks as vehicles for achieving societal goals was developed. We feel it is worth including a section from this consensus statement here (see Box 4), as the points made very much resonate with some of the key messages that emerged through this review of the literature. The complete consensus statement can be found in Appendix 7.
Given the value of stimulating and supporting networks as vehicles for achieving societal goals, it is imperative that we continue to generate knowledge about the circumstances under which inter-organizational networks are best formed, what type of network might work best depending on the purpose and the context, and how best to support the evolution of a network. While the body of research relevant to inter-organizational networks is growing and developing in maturity, more is needed. The nature of networks means that this is an area of study that lends itself to a co-production model, or a collaborative effort between researchers and those who lead, manage or participate in networks. It is those who are working in networks every day who can often most readily identify meaningful research and evaluation questions, the answers to which will contribute significantly to advancing the field. Network researchers, who bring the latest theory of networks, and practitioners, who bring the latest experience of networks, can together address the critical questions about networks.

8.1 Gaps in knowledge and future research and evaluation

Through this review of the literature there emerged a number of areas on which to focus future research and evaluation efforts in an effort to take the next big step in advancing knowledge about networks that can inform practice. Those areas being given increasing attention in the literature we reviewed, and/or identified as particularly critical to practice, are briefly described here.

There is a growing body of research on inter-organizational networks that has extended the study of interpersonal networks to an organizational level. That is, scholars are proposing that organizations can be "viewed as actors embedded in webs of social relations" (Gulati et al., 2011, p. 208). In investigating the antecedents and consequences of inter-organizational networks, researchers have tended to use one of three lenses: structural properties of networks; attributes or relational properties of inter-organizational ties; or organizational ties as conduits of network resources. To date, "the networks literature has suffered from an unduly narrow focus, to the virtual exclusion of other aspects of
networks, on the structural properties of actors as the sole determinants of performance" (Gulati et al., 2011, p. 208).

Gulati et al. (2011) argue that using only the structural lens may result in the "misapplication of theory across levels of analysis" (p. 208). By this they mean that inter-organizational relationships are not the same as interpersonal relationships in that the mechanisms that drive them are different. They propose that three mechanisms drive the performance effects of inter-organizational networks: reach, richness and receptivity (Gulati et al., 2011). Based on our own experiences working in networks we would add a fourth: responsiveness. Findings about social relations at the individual level, then, may not necessarily translate to inter-organizational relationships. To avoid this pitfall and to develop evidence unique to inter-organizational relationships, future network research needs to include a focus much broader than only a structural lens.

The emphasis in the recent inter-organizational network literature on whole networks and a network level of analysis is a response to this gap. To date, there has been considerably more emphasis on social network analysis, which looks at the bilateral dyadic ties between individual organizations, than on exploring the multi-lateral relations that define a whole network (Gulati et al., 2011; Provan et al., 2007; Provan & Kenis, 2008; Provan & Lemaire, 2012a). Looking at the whole network has the potential to increase our understanding of how networks evolve, how they are managed and governed, and ultimately how community level outcomes might be generated (Berry et al., 2004; Provan et al., 2007).

As Provan and Lemaire (2012a) explain:

rather than examining only the ego-centric ties of individual organizations, the whole network approach examines where ties are both present and absent among a defined set of organizations, indicating the extent to which the organizations are working with one another to achieve a common goal. (pp. 5-6)

Bryson et al. (2006) identify the intellectual challenge of studying cross-sectoral collaborations, because of the need to "blend multiple theoretical and research perspectives" (p. 52). They also discuss the limitations of viewing cross-sectoral collaborations as "networks" and using network theory to ground research questions. They too argue that this approach results in a focus on structural variables, and tends to disregard what they describe as three critical components of cross-sectoral collaboration:

- “An appreciation of the differences between sectors, including their strengths and weaknesses;
- Ongoing process dimensions, including a broad definition of leadership; and,
- The dynamic nature of collaborative development” (Bryson et al., 2006, p. 52).

Future research and evaluation must bridge these perspectives if it is to capture the complexity inherent in cross-sectoral collaborations.

Along with research focused at the network level and on whole networks, rounding out the understanding of networks by exploring the characteristics and functioning of both bright and dark
networks and the assumptions embedded in them (Berry et al., 2004; Hejnova, 2010; Raab & Milward, 2003) would be a significant contribution to the knowledge base.

In the literature reviewed here, there was a dearth of research on network leadership and its similarities or differences from leading in other organizational forms. However, there is a large body of literature on leadership, including leading in complex adaptive systems, that is not well integrated into the research conducted to date on inter-organizational networks. Given this, it may be useful for future research to explore in more depth the concepts of network leadership and network management, their relationship to each other, and the differences between leading and managing in networks versus in traditional hierarchical organizations. Furthermore, exploring the role of network managers, how network managers go about developing good relationships, and how decisions are made within a network would be useful (Berry et al., 2004).

A number of functions of networks were identified in this review of the literature, and once again there is considerable research done on these functions outside of a network context that may be helpful to build into future network research. We identified three functions where more network research is required, with a focus on building on the knowledge generated in other disciplines: information diffusion and knowledge exchange; network learning; and innovation.

With respect to network learning, research done in organizational studies has suggested that organizations have different and varying levels of ‘dynamic capabilities’ and ‘absorptive capacity’ (Eisenhardt & Martin, 2000; Lane et al., 2006). In Section 5, we suggested that these conceptual approaches might be particularly relevant to understanding different ways that networks and their constituent organizational members learn and develop. As well as creating new value through absorbing external resources, organizations (and the networks they belong to) can develop dynamic capabilities through their own internal learning processes. How the development of internal resources in the context of an inter-organizational network might dovetail with absorptive capacity warrants additional practice focus and research efforts. Research designed to measure changes in both dynamic capability and absorptive capacity of organizations as a result of network participation, along with assessing the impact on the quality and quantity of available resources across the network, may contribute to better understanding of network value and effectiveness.

Information diffusion and knowledge exchange is an important function of most non-profit or public sector inter-organizational networks, as is the bringing together of different kinds of knowledge and/or generating new knowledge, because these potentially enable a network to tackle the important issue that brought the network together. Hartley & Benington (2006) state that future research needs to develop theories that take into account the political and more explicitly contested nature of knowledge in the public service sector. They argue that there is a need to conduct research that helps to capture the processes of the co-creation of knowledge, and to explain why knowledge takes root and flowers (i.e., transplants) in some contexts and not others. Innovation is intricately linked to knowledge generation and exchange, and is an important function of networks because it is critical to addressing
complex problems. More research and practice experience with networks are required to capture innovation pathways leading to improved network performance and value.

The anthropological, ethnographic kind of research called for by Hartley & Benington (2006) is similar to the research being called for by others in relation to the need to go beyond network structure to understand behaviours. Overall, there is a call for research that is more longitudinal and comparative in nature, research that uses a combination of qualitative and quantitative methods, and is more cross disciplinary (Berry et al., 2004; Isett et al., 2011; Keast et al., 2004; Plastrik & Taylor, 2006). Isett et al. (2011) describe the importance of conducting more meta-analysis types of research, using data sets developed through in-depth individual network case studies, to help augment the theory on networks. They note the current challenge in determining which of the factors that contribute to a particular network's effectiveness are transferable to other inter-organizational networks. Comparisons and reviews of multiple case studies have the potential to tease out common success factors that cut across networks, as well as increase our understanding of the evolution of networks.

The lack of research on the evolution of networks has been described by a number of inter-organizational networks researchers (Berry et al., 2004; Huerta, et al., 2006; Isett et al., 2011; Provan et al., 2007; Provan et al., 2011) as being a critical gap in our knowledge base, because of the recognition of the cyclical nature of networks. This is where comparative case study research following a number of networks over a longer period of time, using a mix of qualitative and quantitative methods, would help increase understanding of the natural life cycle or eco-cycle of inter-organizational networks. Research such as this would contribute to our knowledge about how to distinguish between a natural death and an untimely death, including how to prepare for the former and prevent the latter. Alternately, research could explore the fit of an eco-cycle model with networks.

For the most part, we found that inter-organizational network researchers do recognize the importance of joining research efforts across disciplines to address some of the gaps in knowledge described here, with some identifying this as the crux of the challenge in developing network theory that can inform practice. As Watts (2004) puts it: “Any deep understanding of the structure of real networks can come only through a genuine marriage of ideas and data that have lain dispersed across the intellectual spectrum” (Plastrik & Taylor, p. 17). Examples of areas of study that can be drawn upon to inform future network research include: collaboration; social capital; complex adaptive systems; multi-organizational learning and change; leadership; developmental evaluation; and community development.

We conclude this section by describing some emerging and promising approaches to evaluation, which may be useful in informing the evaluation of networks. We believe that well-designed evaluations are a mechanism by which practice based knowledge can be co-created by network practitioners and researchers, and then shared. Some recent advances in the discipline of evaluation show particular promise in increasing our ability to understand the development, and ultimately the impact, of complex entities such as inter-organizational networks. Most specifically we are referring to recent work by Michael Quinn Patton (2011) on a new approach to evaluation, called developmental evaluation.
Developmental evaluation is about helping people to learn to think and act as evaluators with a goal of ensuring that evaluations have a lasting impact (Patton, 2006; Patton, 2011). Patton (2006 or 2011 or both?) describes developmental evaluations as learning evaluations, where the aim is to encourage people involved in social innovation initiatives to be constantly assessing what is working as intended, what is not, and using what they learn to make necessary adjustments to the initiative. This is critically important in social innovation, as precisely what activities and approaches are going to work best in a particular context is often unclear. This makes ongoing evaluation and learning necessary.

Also, as has been discussed in this review, a number of network researchers are suggesting that evaluations that take a traditional approach to performance measurement are unlikely to be helpful, and may even be harmful in that there is a missed opportunity to gather information that would be useful in informing the future directions for a network. This may make developmental evaluation a particularly good fit for networks that have some element of social innovation in their vision. See Appendix 6 for a table summarizing the main distinction between more traditional approaches to evaluation and developmental evaluation.

The use of narrative, such as digital stories, as a promising approach to extend and present evaluation findings, was discussed at a Network Leadership Summit held in Vancouver, B.C., Canada (Network Leadership Summit IV, 2009). Stories were identified as an often-powerful mechanism for demonstrating value, particularly of initiatives that are deeply embedded in context. A government minister might not read or understand a statistical report, but a compelling story may get them to change policy. In other words, stories can be effective in engaging both the hearts and the minds of key stakeholders. They can relay how involvement in a network has changed an individual, their thinking and the way they now work in the system, and can be a powerful transformational tool at a policy level.

In summary, there is a call for leveraging the knowledge and various research and evaluation methodologies used across academic disciplines to explore networks more fully, including the assumptions behind networks; their development and evolution; leadership, management and ways of working; and their ultimate value and impact.

8.2 Authors’ final reflections

In 2006, Huerta and colleagues stated that, “Network has become such a ubiquitous term that it is of little practical use in the context of a search on most literature data bases” (p. 12). Six years on, our search for literature relevant to inter-organizational networks remained problematic and messy. Just like inter-organizational networks themselves, the literature base and practice experience are wide ranging, diverse and sometimes difficult to find.

Definitional issues and inconsistent terminology were difficult enough, but bounding the literature search was even more trying especially as the authors had varying levels of tolerance for crossing academic disciplines or bodies of knowledge. At every point along the way, any one of us was bemoaning a decision that limited our reach or excluded our favourite concepts or bodies of literature.
Tensions arose regarding the inclusion of unpublished literature, much of which gave voice to the practitioner perspective. Some of us would argue strongly that virtually all practice based network experience and knowledge is legitimate evidence, and others that “there are just as many nitwit network practitioners out there as bad network scholars.” Discussions and decisions regarding the quality of unpublished literature were sometimes heated, although to be fair some of the same heated discussions occurred in relation to the quality of the published academic literature or empirical evidence.

The inclusion of literature from domains other than strictly the field of network studies, such as organizational learning, complex adaptive systems, knowledge exchange, leadership and evaluation was contentious. Some would argue that these bodies of literature, on face value, are relevant and transferrable to networks and that, indeed, the studies of networks have not yet generated evidence in many important areas, so we are required to draw from other fields. Others would say this is “reasoning by analogy” and extreme caution should be used in making these leaps due to lack of empirical evidence even if they seem useful to practitioners. Sometimes we found ourselves jumping from one side of the fence to the other depending on the topic. When we did agree to refer to some of these other bodies of knowledge, it was evident that we simply could not go into the depth we would like to without essentially undertaking another complete literature review. Instead we tried to provide a sample in the body of the review, making the link as we saw it to inter-organizational networks; ergo our liberal use of appendices and encouragement for readers to use this as a springboard for more learning and inquiry of their own.

A principle of ‘equalized unhappiness’ prevailed. Ironically, the process of bounding the literature search parallels that which researchers ask network practitioners to go through routinely, namely creating a potentially artificial boundary around a network in order to make research or evaluation feasible.

That said, we have been able to identify a significant body of work we hope will be of considerable value to those working inside inter-organizational networks. We also suggest that the messiness of the boundaries of literature potentially of use may be seen as an opportunity as well as a challenge, as it allows us to learn from multiple disciplines and diverse perspectives.

We had great and irresolvable debates about network types and functions (when is it which?); network leadership versus management (are they different from each other and are they different in networks than in other organizational forms?); and the question of a network life cycle or eco-cycle (do networks have either one?), mirroring what we found or did not find in the literature on networks and reinforcing the need for more practice based research. We felt stymied on conceptual and theoretical fronts more than once, and frustrated by the lack of clarity in the literature on elements of fundamental importance to networks and their functioning.

Thankfully, we had some “violent agreements” as well. There was never any question about our agreement that inter-organizational networks can be pivotal mechanisms to address big societal issues, despite the difficulties of capturing their value and often invisible contributions or tying outcomes directly back to their work. Similarly, we collectively embrace the concept of ‘the network way of
working’. We believe there are some important distinctions to be made about ways of working in networks, some of which this critical review of the literature has begun to elucidate. Finally, there was also never a question about our ongoing commitment to studying networks in order to demonstrate their value and contribute to the practical and conceptual knowledge base on networks.
References


Cambridge, UK: Cambridge University Press.

Cambridge, UK: Cambridge University Press.


Greenleaf Center for Servant Leadership. (n.d.) Retrieved January 5, 2013 from:
http://www.greenleaf.org/whatissl/


Kilduff, M., & Brass, D. J. (2010). Organizational social network research: Core ideas and key debates. *The Academy of Management Annals, 4*(1), 317-357.


PARTNER: Program to analyze, record, and track networks to enhance relationships. (n.d.) Retrieved February 23, 2013 from: www.partnertool.net


Appendices

1. Literature review questions
2. Expanded discussion on scope of this review
3. Literature search strategy
4. Inclusion and exclusion criteria for literature review
5. Additional discussion on knowledge exchange
6. Traditional versus developmental evaluation
7. Consensus Statement of the Fourth Networks Leadership Summit (NLS IV)
Appendix 1: Literature review questions

1. What are the key concepts and characteristics of inter-organizational (IO) networks in the public or not-for-profit sector? Building on the conceptualization section of the 2002 literature review:
   - What is an IO network; and what is not an IO network?
   - Why do IO networks exist (i.e., rationale)?
   - What do IO networks do (i.e., functions - e.g., knowledge exchange; coordination of services; addressing meta-problems; etc.)?
   - How do IO networks evolve (i.e., eco and life cycle models)?

2. With respect to the successful implementation (i.e., planning and design, development, growth), sustainability and resilience of inter-organizational networks, considering the 4 network levels identified in the 2002 review (i.e., vision, structure, processes, action [called service delivery in the 2002 review]):
   - What are the enablers of successful implementation, sustainability and resilience? (e.g., management strategies; kinds of leadership; “network way of working”; positive deviance)
   - What are the barriers or challenges to successful implementation, sustainability and resilience?
   - What do we know about the evolution or life cycle of networks?
   - What do we know about promising practices, with an emphasis on what works and what doesn’t in which contexts and why?
   - What are the limitations of networks? When should and when shouldn’t you use networks?
   - How do emergent networks differ from mandated networks (i.e., relative to all these questions)?
   - Are there some exemplars out there?

3. With respect to the evaluation of inter-organizational networks:
   - What levels of analysis are identified in network evaluations (i.e., individual, organization, network, community, other)

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2 Realizing that conceptualization is not the primary focus of this literature review, it might still be good to pick up any recent key articles that can contribute to our initial description of inter-organizational networks (building on what was described in the 2002 review).
- How is success defined? What are desired outcomes and impacts? How is value attributed to a network?

- What approaches to evaluation show the most promise in helping us to understand how to better implement inter-organizational networks, and using what is learned to make needed changes to our network structures and/or processes? ³

- What approaches to conducting evaluations and sharing evaluation findings show promise with respect to showing the impact of inter-organizational networks?

- Do evaluations contribute to sustainability of networks? If yes, how?

- Are there some exemplar evaluations out there?

4. Is there anything new emerging from the most recent literature that is important to include in this review (i.e., it will be important to keep our eyes open for surprises, aha’s, frontiers)?

³ Note that there is overlap here with quality improvement.
Appendix 2: Expanded discussion on scope of this review

Social networks and social network analysis

Inter-organizational networks, rather than interpersonal or social networks, are the focus of this review. However, much of what has been learned about the structure of social networks through social network analysis research has informed the analysis of the structure of, and relationships within, inter-organizational networks. This is not surprising since the development and maintenance of interpersonal relationships is a key component of inter-organizational networks, and given that it is people who are doing the interacting. Thus, social network analysis methods, as discussed in the section on evaluation, are widely used to evaluate the structures in inter-organizational networks.

Because of the relevance of both interpersonal relationships and social network analysis to inter-organizational networks, we include a brief description here of some key concepts and provide a short list of further readings for readers who are interested in learning more (Borgatti & Foster, 2003; Borgatti, Mehra, Brass, & Labianca, 2009; Galaskiewicz, 2007; Gulati et al., 2011; Kilduff & Brass, 2010; Monge & Contractor, 2003).

There are many kinds of networks in the world. Each individual is part of a social network that links one to others in a variety of ways—friends, relatives, work colleagues, and so on. Each person is called a “node” in network terminology. Relationships, or linkages, among a group of individuals are commonly referred to as a social network, and the network as a whole is the pattern of linkages among the individuals. (Milward & Provan, 2006a, p. 9)

While widely adopted, Gulati et al. (2011) advise scholars to be careful how they apply the rich body of research on social networks to the level of the organization, stating: "we recognize that scholars may continue to draw inspiration from the voluminous research on interpersonal networks, but we encourage consideration of alternative conceptual schemes more fully grounded in the study of inter-organizational networks" (p. 221).

Suggestions for further reading:

- Borgatti and Foster (2003). “The network paradigm in organizational research: A review and typology”. This article reviews and analyses the emerging network paradigm in organizational research.
- Borgatti and Halpin (2011). “On network theory”. This article analyzes two well-known network theories: Granovetter’s strength of weak ties theory and Burt’s structural holes theory, both of which are frequently discussed in research on the structure of inter-organizational networks.
- Borgatti, Mehra, Brass, & Labianca (2009). "Network analysis in the social sciences". This article includes a useful typology of the kinds of ties studied in the social sciences.
• Galaskiewicz (2007). “Has a network theory of organizational behaviour lived up to its promises?” This article provides a brief summary of the state of the science on the theory of social network analysis as it applies to understanding organizational behaviour.

• Institute for Healthcare Improvement (2011). Summary Report: 90-day R & D Project. “Network Theory”. This report provides an overview of the main orienting concepts in social network theory (i.e., centrality, density, embeddedness, strength of connections, cliques, social capital, structural holes, structural equivalence, and structural cohesion), and a brief description of social network analysis.

• Kilduff and Brass (2010). “Organizational social network research: Core ideas and key debates”. This article provides an overview of the state of the science on social network research.

Social capital

A fundamental concept underlying research on inter-organizational networks is social capital (Borgatti & Foster, 2003; Casebeer et al., 2009; Gulati et al., 2011; Provan & Lemaire, 2012a; Scott & Hofmeyer, 2007). Borgatti and Foster (2003) state that “in the most general terms, the concept is about the value of connections” (p. 993). Provan and Lemaire (2012a) note that social capital is based on attributes of the relationship between individuals, unlike economic capital (resources) or human capital (knowledge and training) which are based on attributes of the actor/individual. “A person who has high social capital is someone who has a rich set of social connections that provide access to information, resources, support and so on” (Provan & Lemaire, 2012a, p. 639).

Scott and Hofmeyer (2007) also describe social capital as the nature and extent of the impact of social relationships. They state that “social capital refers to resources such as information, support and social control that flows through networks, rather than the network structure itself” (Scott & Hofmeyer, 2007, p. 3). They make a distinction between bonding (i.e., close, often friendship or family ties), bridging (i.e., ties that connect people who are somewhat distant) and linking social capital networks (i.e., vertical ties with people unlike ourselves) (Scott & Hofmeyer). They go on to talk about three key network concepts in the context of social capital:

1) The strength of weak ties – The flow of information is likely to come through weak ties. Strong ties can be a form of social control, with ostracism limiting access to support, information or other essential resources.

2) Cross-cutting ties – “Weaker connections between groups represent holes in the social structure” (Scott & Hofmeyer, 2007, p. 3). These structural holes insulate social networks from each other, enabling people to remain focused on their specialized tasks. There is a need to maximize the value of structural holes by both developing cohesiveness within the group (i.e., to generate trust and support), but also providing opportunities for individuals to build formal, unique ties beyond the group (e.g., to gather new ideas). It is not just the existence of these bridging ties that is important, but the quality of these ties.
3) **Structural equivalence/status** – This reflects the degree to which two people have similar relations with others in a network (e.g., physicians are more likely to adopt an innovation if it has been adopted by other physicians) (Scott & Hofmeyer, 2007).

Suggestions for further reading:

- **Adler, Paul, & Kwon (2002).** “Social capital: Prospects for a new concept”. This article synthesizes the research on social capital that has been undertaken by a variety of disciplines, and develops a conceptual framework that outlines the sources, benefits, risks and contingencies of social capital.
- **Kawachi, Subramanian, & Kim (Eds.) (2007).** “Social capital and health”. This book describes the theoretical origins of social capital, the strengths and limitations of current methods of measuring it, and examples of how social capital concepts can inform public health policy and practice.
- **Scott and Hofmeyer (2007).** “Networks and social capital: A relational approach to primary healthcare reform”. This article provides an overview of key concepts related to social capital in the context of networks, arguing that network theory and social capital can provide the foundation for a multi-focal approach to primary healthcare reform.

**Intra-organizational networks**

We recognize that there may be lessons learned about the success of intra-organizational networks, networks that consist of nodes all within a single organization, which could be transferable to inter-organizational networks and vice versa. Once again, however, there is another body of literature on this topic that could not be fully included in this review.

In healthcare in particular, there is increasing attention being paid to the development of clinical networks with a goal of strengthening care pathways and improving the coordination and quality of care provided to patients. Many of these clinical networks are contained within a single organization, and it is this literature that is not included here.

On the other hand, some clinical networks do cross-organizational boundaries, such as primary care networks where a number of clinics or agencies form a network with the goal of improving the quality of care, including access, for patients. Another example is specialty clinical networks, such as stroke or cardiology networks, where health professionals working in different organizations form a network often with multiple purposes, including knowledge exchange and service coordination. The literature on inter-organizational networks is relevant to these clinical networks.

Much of what is learned from the literature on inter-organizational networks will still be of value in informing the development and maintenance of intra-organizational networks, including clinical networks in healthcare. Many organizations in healthcare are large, and include a number of hospitals and other healthcare facilities, meaning that there are also often many sub-cultures. In addition, there is considerable professional autonomy in healthcare, meaning that command and control management
strategies are often not a good fit. The ways of leading and managing of and in inter-organizational networks described in this review, then, may be helpful reading for practitioners engaged in intra-organizational networks.

Suggestions for further reading:

- Addicott, McGivern, & Ferlie (2007). “The Distortion of a managerial technique? The case of clinical networks in UK health care”. This article explores how stakeholders involved in the delivery of cancer services in the UK have adopted or adapted managed clinical networks as a novel managerial technique for sharing best practice and knowledge.
- McInnes, Middleton, Gardner, Haines, Haertsch, Paul, & Castaldi (2012). “A qualitative study of stakeholder views of the conditions and outcomes of successful clinical networks”. This article provides new knowledge on the conditions needed to establish successful clinical networks and on the outcomes of network initiatives considered valuable by those working in or associated with clinical networks.

Communities of practice

Communities of practice are formed by people who engage in a process of collective learning around a concern or a passion for something they do, and they learn how to do it better as they interact regularly. This definition allows for, but does not assume, intentionality; learning can be the reason the community comes together or an incidental outcome of members’ interactions. Etienne Wenger (n.d.) contends that it is the combination of three elements that constitutes a community of practice. By developing these three elements in parallel one cultivates a community:

1. A domain – a shared field of interest to which members are committed and around which they develop a shared competence.
2. A community – people build relationships that enable them to learn from each other (i.e., members engage in join activities and discussions, help each other, and share knowledge).
3. The practice – members develop a shared practice (i.e., a repertoire of experiences, stories, tools and ways of addressing recurring problems) (Wenger, n.d.).

Communities of practice are often described as complementing other organizational structures, as they can galvanize knowledge sharing, learning and change. Some inter-organizational networks may also be considered to be communities of practice if they have a singular focus, or a large network encompassing many different kinds of practices or issues may develop or support a number of communities of practice in the service of the overarching network goal. As Wenger & Snyder (2000) note, a community of practice can thrive with members from different organizations. Like many networks, communities of practice are described as fundamentally informal and self-organizing, yet benefiting from cultivation (Wenger & Snyder, 2000).
Suggestions for further reading:


- Wenger (n.d.). Retrieved August 19, 2012 from: http://www.ewenger.com/theory/index.htm. This is a basic description of communities of practice, and its underlying theory, as articulated by Etienne Wenger in 2006 and posted on this website. There is also a link on this website to Wenger and his partner’s new website on social learning and communities of practice: http://wenger-trayner.com.

- Wenger and Snyder (2000). “Communities of practice: The organizational frontier”. This article describes the hallmarks of communities of practice as a “new organizational form” and gives a number of examples of how they have helped companies by galvanizing knowledge sharing, learning and change.

Complex adaptive systems

Networks are often correlated with or viewed as similar to complex adaptive systems. A complex adaptive system is described by Plsek and Greenhalgh (2001) as a “collection of individual agents with freedom to act in ways that are not totally predictable, and whose actions are interconnected so that one agent’s actions change the context for other agents” (p. 625), requiring them to be fluid enough to adapt to the new circumstances. They go on to explain that complex adaptive systems can be characterized as having fuzzy boundaries where membership can change, and where agents can simultaneously be members of several systems (Plsek & Greenhalgh), much like inter-organizational networks. As a result, the literature on complex adaptive systems may be useful to network practitioners, even if not always directly transferrable to networks.

Suggestions for further reading:

- Carlisle and McMillan (2006). “Innovation in organization from a complex adaptive system perspective”. This article describes the importance of innovation in organizations, and discusses how the notion of organizations as complex adaptive systems can offer new insights into our understanding of learning and innovation.

- Plsek and Greenhalgh (2001). “The challenge of complexity in health care”. This is an introductory article in a series of articles on complexity published in the British Medical Journal (BMJ). It outlines some basic principles for understanding complex adaptive systems, and discusses how conceptualizing 21st century healthcare as such a system can point to new approaches for clinical practice, organizational leadership and education.

- The Plexus Institute (n.d.). This is a US-based non-profit organization that works to apply complex system approaches to the healthcare context. There are a number of useful

- Uhl-Bien and Marion (2009). “Complexity leadership in bureaucratic forms of organizing”. This article briefly describes the concept of complexity leadership, and how the interactive process between adaptive leadership and complexity dynamics generates outcomes such as innovation, learning and adaptability in the organization.
Appendix 3: Literature search strategy

Objective

To locate evidence-based published and grey literature on Inter-organizational Networks, focusing on their:

a. Key concepts, functions, characteristics
b. Implementation and life cycle (including planning and design, sustainability, promising practices, limitation, etc.).
c. Evaluation – outcome and impact

Search concepts

The conceptual building blocks for the search are outlined below. The actual search terms entered into search engines and databases will include their variants (e.g. singular, plural, British / American spelling, truncation, etc.) and be selected according to the characteristics and functionalities of the specific database.

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Question 1

(characteristics OR concept OR features OR foundation OR evidence-based OR framework OR function OR (knowledge exchange) OR (knowledge transfer) OR mission OR policy OR primer OR rationale OR strategy)

Question 2

(barrier* OR enabler* OR (best practice*) OR (promising practice*) OR context OR (planning AND design) OR develop* OR evol* OR facilitate* OR growth OR guidelines OR guidance OR handbook OR implement* OR mature OR model OR process OR processes OR sustainab* OR resilien* OR roadmap OR structure OR toolbox OR toolkit OR (life cycle) OR life-cycle OR lifecycle OR eco-cycle OR ecocycle OR eco-cycle OR trajectory OR vision OR management OR leadership OR limitations)
### Generic search strategy

| Inter-organizational Network search terms | AND | Q1 OR Q2 OR Q3 search terms (when applicable) |

### Literature search parameters

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</tr>
<tr>
<td>Subject Categories</td>
<td>Include literature from business, health, public administration sectors</td>
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### Literature search strategy

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| Canadian Evaluation Society Grey Literature Database | http://www.evaluationcanada.ca/site.cgi?s=6&ss=8&_lang=en  
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| PAIS International [Public Affairs Information Service] Sociological Abstracts | CSA  
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| Google          | www.google.com      | Interorganizational network(s)  
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|                 |                     | and networks organization websites as discovered |
Appendix 4: Inclusion and exclusion criteria for literature review

Screening for relevance (or importance and applicability) to the literature review questions

Inclusion criteria

- Focus is on inter-organizational networks
- Focus is on cooperative or collective action networks, rather than competitive networks (i.e., these are usually non-profit, or public sector networks)
- Informs our questions on the:
  - Conceptualization of networks
    - note that we’re looking for new knowledge here (e.g., life cycle/eco-cycle models; attribution of value)
  - Implementation of networks (i.e., planning & design, development & growth)
  - Evolution of networks
  - Sustainability & resilience of networks
  - Evaluation of networks
- Anything new or emerging from the recent literature
- Western context

Exclusion criteria

- Primary focus is social networks (i.e., rather than inter-organizational networks; this is about relationships between organizations rather than individuals)
- Focus is on competitive (usually for-profit) networks
- Does not address our questions (see above)
- Not likely to be of value to practitioners
- Government networks [unless key review articles]
- Collaborative governance networks
- PhD theses [unless exceptional in some way]
Appendix 5: Additional discussion on knowledge exchange

There has long been recognition that research and practice generate distinct forms of knowledge (Van de Ven and Johnson, 2006; Van de Ven, 2007). This distinction dates back to Aristotle who, in terms of three intellectual virtues, described episteme (basic knowledge, knowing why, universal truths), techne (applied knowledge, knowing how), and phronesis (collaborative practical knowledge in a particular context, prudent and ethical) (Flyvbjerg, 2001; Flyvbjerg, Landman, & Schram, 2012; Greenwood & Levin, 2005; Van de Ven, 2007). Phronesis, although a now arcane and somewhat lost concept, is being revived and is only briefly acknowledged here with the hope that readers interested in learning more will seek out the growing literature in this area. The concept is relevant to the principles underpinning inter-organizational networks because of its attention to collective knowledge and action.

Collective knowledge and action emanate from the combined multiple stakeholder experience and familiarity with the uncertainties and unpredictability of their local contexts. This is tacit, emergent knowledge that is beyond the grasp of others who do not have the same intimate familiarity in that context (Flyvbjerg, 2001; Schram, 2012). Phronesis, in the context of social science and participatory action (including research) “privileges producing knowledge that improves the ability of...people to make informed decisions about critical issues confronting them” (Schram, 2012, p. 20). According to Greenwood and Levin (2005), “phronesis is best understood as the design of action through collaborative knowledge construction with the legitimate stakeholders in a problematic situation” (p. 51). In that inter-organizational networks fundamentally are about working collectively to co-construct knowledge and act on things beyond the capabilities of any one organization, they embody the concept of phronesis in principle and practice whether undertaken consciously, or not. However, the legitimate stakeholders involved in any given problematic situation typically hold different roles and positions of authority in their respective organizations, thus leading to potential problems in terms of the varying perspectives and knowledge they bring, and the power and power imbalances that can be, and often are, brought into play – key aspects of phronesis.

Weber and Khademian (2008) argue that, in the context of networks built around “wicked problems”, understanding knowledge as practice and identity poses challenges for sending and receiving knowledge across network participants. Each participant in a network will bring their own practice based knowledge of the problem or issue; “such hard-won knowledge is difficult to share or send and difficult to receive" (Weber & Khademian, 2008, p. 339). This sending and receiving is critical and the problems can be better understood, and therefore addressed, by examining how knowledge is transferred (syntactic level), translated (semantic level) and transformed (pragmatic level) between stakeholders in the face of increasing novelty and consequently, uncertainty, presented by the situation (Carlisle & McMillan, 2006).

Approaches that get beyond a mere syntactic (knowledge transfer) level are needed. A semantic approach recognizes the limitations of clear transmission of even the simplest kind of information based on the unique way that each player interprets the message from others. A variety of factors inhibit the flow of information, including: different worldviews; different values and beliefs; different
epistemologies; different experiences; different cultures; different approaches to language; and different relationships among the players. It becomes important, then, to be able to identify these points of difference, to understand them through different interpretations, and, then, work through them toward collective action.

A pragmatic approach to knowledge exchange takes a practice approach to knowledge. That is, it is assumed that there is an intricate connection between the knowledge that people and organizations have, and their practices or activities, or both (Weber & Khademian, 2008). In addition, aligned with the concept of phronesis described earlier, an empirically derived fourth level has been proposed – phronetic (Lindstrom, 2006). At this level, knowledge exchange is not only practical, but occurs collectively in real time and involves continual iterations of knowing and acting in a variety of practice settings. Earlier work by Pfeffer and Sutton (2000) identified the value of framing “knowing as doing” describing knowing as a process inherently linked to actually doing something. Later work by a number of authors interpreting this cycle of connecting knowledge and performance within public sector organizations and systems underlines the importance of linking knowledge sharing intrinsically to action (Walshe, Harvey & Jas, 2010). This real time and iterative approach to knowledge exchange is particularly important in the context of multiple stakeholder interaction and learning in inter-organizational networks.
### Appendix 6: Traditional versus developmental evaluation

<table>
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<th>Traditional evaluations...</th>
<th>Complexity-based, developmental evaluation...</th>
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<tbody>
<tr>
<td>Render definitive judgments of success or failure</td>
<td>Provide feedback, generate learning, support direction or affirm changes in direction</td>
</tr>
<tr>
<td>Measure success against predetermined goals</td>
<td>Develop new measures and monitoring mechanisms as goals emerge and evolve</td>
</tr>
<tr>
<td>Position the evaluator outside to assure independence and objectivity</td>
<td>Position evaluation as an internal, team function integrated into action and ongoing interpretive processes</td>
</tr>
<tr>
<td>Designs the evaluation based on linear cause-effect logic models</td>
<td>Design the evaluation to capture system dynamics, interdependencies, and emergent interconnections</td>
</tr>
<tr>
<td>Aims to produce generalizable findings across time and space</td>
<td>Aim to produce context-specific understandings that inform ongoing innovation</td>
</tr>
<tr>
<td>Accountability focused on and directed to external authorities and funders</td>
<td>Accountability centered on the innovators’ deep sense of fundamental values and commitments</td>
</tr>
<tr>
<td>Accountability to control and locate blame for failures</td>
<td>Learning to respond to lack of control and stay in touch with what’s unfolding and thereby respond strategically</td>
</tr>
<tr>
<td>Evaluator controls the evaluation and determines the design based on the evaluator’s perspective in what is important</td>
<td>Evaluator collaborates in the change effort to design a process that matches philosophically and organizationally</td>
</tr>
<tr>
<td>Evaluation engenders fear of failure</td>
<td>Evaluation supports hunger for learning</td>
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*From: Patton, 2006*
Appendix 7: Consensus statement of the fourth networks leadership summit

Innovation and Progress: The Role of Networks
Consensus Statement of the Fourth Networks Leadership Summit (NLS IV)
Banff, Canada, January 14, 2009

Since 2003, international groups of leading network researchers and managers have come together in a series of meetings to share experience and increase understanding of the nature, value and effective use of networks. This statement summarizes the consensus reached at the 2009 Banff Summit on the value of stimulating and supporting networks for achieving societal goals.

Collaborative networks have been chosen by governments and businesses around the world to deal with many of the most complex problems in uncertain environments like health and wellness, social services, global warming, disaster response, and terrorism. Canada is viewed as a world leader in using networks of organizations to integrate services, create and transfer knowledge, and build community capacity.

Networks have been established in the public and nonprofit sectors to create collective solutions to complex problems through cross-boundary action, whether those boundaries are jurisdictional, organizational, programmatic, geographic, professional, or sectoral. Those looking to maximize results on complex social issues will find investment in networks to be particularly useful in a comprehensive strategy, as networks have been demonstrated to facilitate progress by:

- Leveraging scarce resources and achieving economies;
- Strengthening integration, collaboration and coordination across and within programs, funders, organizations and sectors, while maintaining the benefits of diversity;
- Leveraging change by increasing shared learning, creativity, and innovation among individuals and organizations;
- Addressing needs in a more comprehensive way and improving responsiveness by enhancing the flow of information; and
- Empowering communities to respond to change and problems with greater capacity and resilience.

Networks are collaborative structures that rely on trust and reciprocity for exchange and accountability, rather than price systems (markets) or chain of command (hierarchies). Networks create new patterns of relationships that go beyond members' primary affiliations and are thus effective mechanisms to integrate otherwise isolated capacities for a common purpose. They establish the infrastructure of processes, information, people, and relationships needed to create synergies across multiple organizations, and across wide geographic areas.

Different types of networks are available for different strategy aims. Networks may be designed to improve service delivery, knowledge exchange, research collaboration, or community capacity. They may use a variety of different types of connections, such as knowledge or resource sharing, client referrals, or informal exchange. They may be emergent or mandated. However, effective networks which remain flexible and vibrant all require committed resources and appropriate competencies for network action, communication, leadership, management, participation, and evaluation.

Continued improvement in the health and wellbeing of Canadians, especially in tough economic times, will demand networks that create working connections across silos and stand alone organizations. Canadian public and nonprofit sector networks built up over the last decade have established an essential infrastructure for collaborative action, providing efficient, adaptable approaches to complex issues in rapidly changing environments.
In times of resource constraint, existing and new networks can be effective tools for achieving sustainable change, providing a platform from which innovative responses to changing challenges emerge.

**The Networks Leadership Summit Series**
The fourth in a series of invitational conversations on networks, NLS IV was designed to explore and broaden our understanding of networks with the intent of making them more effective. This Summit built on previous conversations to talk about sustaining networks in times of change and using networks to navigate successfully and take advantage of opportunities presented by a changing environment.

**Dates and Places**
*Canmore 2003: Networks Workshop; NLS I (Halifax 2004); NLS II (Toronto 2005); NLS III (Banff 2007); NLS IV (Banff 2009).*

**Reports**
- Networks and their Role in Enhancing Research Impact in Alberta, On Management Ltd., Birdsell, J. & Matthias, S.
- NLS III, Using Networks to Enable Change: Developing, Sustaining and Evaluating Networks

**Partners in NLS IV**
Summit IV was sponsored by: the Alberta Heritage Foundation for Medical Research (Research Transfer Network of Alberta); Alberta Health Services - Calgary Health Region; the Centre for Health and Policy Studies (University of Calgary), the Child and Youth Health Networks of Canada, Department of Social Work (University of Calgary), National Collaborating Centre for Methods and Tools, Population Health Intervention Research Centre (Canadian Institutes of Health Research), SEARCH Canada, and the Southern Alberta Child and Youth Health Network.

**Participants in NLS IV**
- Ms. Donna Angus, Manager of Knowledge Transfer Initiatives, Alberta Heritage Foundation for Medical Research
- Ms. Linda Barrett-Smith, Manager of Ethics Initiatives, Alberta Heritage Foundation for Medical Research
- Dr. Judy Birdsell, On Management Health Group
- Dr. Ann Casebeer, Associate Professor, University of Calgary, and Academic Co-Director, SEARCH Canada
- Dr. Larry Chambers, President and Chief Scientist, Élisabeth-Bruyère Research Institute, a Bruyère Continuing Care and University of Ottawa Partnership
- Dr. Christina Chociolko, Network Coordinator, National Collaborating Centre for Environmental Health
- Dr. George Eisler, Chief Executive Officer, British Columbia Academic Health Council (BCAHC)
- Ms. Pamela Forsyth, Knowledge Broker, National Collaborating Centre for Methods and Tools
- Ms. Cindy Gerdes, Director of Programs, SEARCH Canada
- Ms. Sarah Hayward, Chief Executive Officer, SEARCH Canada
- Dr. Ronald Lindstrom, Consultant, BCAHC and RCCbc
- Ms. Sharon Matthias, Faculty, SEARCH Canada, Matthias Inc: Designing the Future
- Dr. Brint Milward, Providence Service Corporation Chair; Associate Dean & Director, School of Public Administration & Policy, Eller College of Management
- Dr. John Parboosingh, Professor Emeritus, University of Calgary
- Ms. Janice Popp, Director, Southern Alberta Child and Youth Health Network
- Dr. Keith Provan, McClelland Professor, School of Public Administration & Policy, Eller College of Management
- Ms. Nancy Reynolds, President and Chief Executive Officer, Alberta Centre for Child, Family & Community Research
- Ms. Paula Robeson, Knowledge Broker, health-evidence.ca, McMaster University

**Key References**
- *Healthcare Papers, Vol 7, No 2*, 2006 Using Networks to Enhance Care