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A Model of Effective IT Governance for Collaborative Networked Organizations

By:

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In the Name of God, Most Gracious, Most Merciful

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List of Abbreviations

BSC: Balanced ScoreCard
CEO: Chief Executive Officer
CN: Collaborative Network
CNE: Chief Nursing Executive
CNO: Collaborative-Networked Organization
COBIT: Control Objectives for Information and related Technology
COS: Collaborative Organizational Structures
COSO: Committee of Sponsoring Organizations of the Tradeway Commission
CSF: Critical Success Factor
DS: Design Science
DSRM: Design Science Research Methods
ECOLEAD: European Collaborative networked Organizations LEADership initiative.
EE: Extended Enterprise
ICT: Information and Communications Technologies
IS: Information System
IT: Information Technology
ITIL: Information Technology Infrastructure Library
KPI: Key Performance Indicator
NAO: Network Administrative Organization
PI: Performance Indicator
PMS: Performance Measurement System
RFP: Request For Proposal
SLA: Service Level Agreement
SMEs: Small and Medium Enterprises
VO: Virtual Organization
VP: Vice President
VG: Virtual Government
VE: Virtual Enterprise
VT: Virtual Team
VBE: VO Breeding Environment
VL: Virtual Laboratory

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ABSTRACT

Inter-organizational collaboration based on the use of IT systems is now essential for organizations working as Collaborative Networked Organizations (CNOs). However, little research has been done to examine the critical success factors involved in shared IT governance among members of a CNO. Accordingly, this research develops a model of inter-organizational IT-governance composed of critical success factors (CSFs) and key performance indicators. The study defines fourteen CSFs that are classified under the main four categories of IT governance, which include strategic alignment, resource management, value delivery and risk management, and performance measurement. In addition, the study identifies key performance indicators that measure the CSFs and evaluate the effectiveness of how partners work together in joint processes for a common goal. The main dimensions of the KPIs include consensus, alignment, accountability, trust, involvement and transparency. The model was validated by gathering feedback from participants in a healthcare on the importance of the CSFs and performance indicators. The findings confirm the importance of the CSFs but suggest that they could be ranked in order of criticality. In addition, certain CSFs were re-defined based on the experience of CNO participants and questions were raised related to the context of the CNO, which influences participant perceptions, as well as the degree of formalization noted in the CNO.

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Chapter 1: Introduction

A vast number of organizations, specifically small and medium enterprises “SMEs”, are adopting different forms of alliances or corporate structures to manage their processes, gain a competitive advantage, and collaborate efficiently with inter-organizational entities (Prasad, Green, & Heales, 2012). Several corporate structures are operating in different geographical locations, which increase the number of virtual organizations or collaborative organizational structures “COSs”. These structures adopt and use different IT resources in order to maintain a successful level of collaboration. Moreover, the emergence of dynamic IT technologies, specifically web 2.0 tools, has a significant effect on the formation of alliance structures that depend on the creation of IT governance models (Prasad, Green, & Heales, 2012). Thus, collaborative-networked organizations “CNOs” should not only try to exploit the shared IT resources effectively but also maintain and adopt effective governance models to achieve a sustainable competitive advantage. In order to realize an effective IT governance of the collaborative network, the CNO must choose the most effective form of governance for the nature of their collaboration (Provan & Kenis, 2007).

1.1 Major Concepts

This section provides readers with a definition of the concepts needed to understand the research context.

- ***Collaborative Networks (CN)***: a network that constitutes a wide variety of entities such as enterprises or individual teams that could be different from each other in their geographical locations, social and cultural values, operational environments and business

objectives, but work together toward a specific goal (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009).

- ***Collaborative Networked Organization (CNO)***: A type of collaborative network that can be classified according to two main purposes; long term strategic network “cooperation” and goal oriented network “towards common goal” (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009).
- ***IT Governance***: The controlling and monitoring the behavior of management, who are appointed to supervise the daily activities of running the organization’s IT assets (Provan & Kenis, 2007). It is an important subset of corporate governance that necessitates a great involvement by senior management (Ko & Fink, 2010).
- ***IT Governance Framework***: An accountability framework whereby formal IT decision-making authority has been delegated to a focal organization, which will structure the distribution of IT decision making rights and responsibilities among different stakeholders. It enables the alignment of the network’s defined goals with the deployment of IT in an effective and efficient manner. Furthermore, the inter-organizational IT governance framework has to incorporate relational mechanisms, which play an important role in fostering an effective collaborative partnership (Chong & Tan, 2012).
- ***IT Steering Committee***: A high-level group of representatives from multiple divisions, which is accountable for linking IT strategy with business and IT executives, as well as senior management representation (Nolan, 1982).
- ***IT Governance Structure***: This structure can be viewed as how the IT function is carried out; for example, through designating responsibility to an IT executive and relevant IT committees (van Grembergen and de Haes, 2005). The IT governance structure is the

single most important predictor of whether an organization will derive value from IT (Weill & Ross, 2004a).

1.2 Research Problem Statement and Objectives

With the introduction of so many communication technologies, organizations are seizing the opportunity to “work together apart” (Ferreira, 2011), and, the number of IT projects undertaken by organizations has grown exponentially in recent years. Unfortunately, there is also a large number of IT investment failure cases that have emerged, either within or between organizations (Weill & Woodham, 2002). These failures could be related to incomplete or poorly executed IT projects, the complexity of the nature of IT technologies and tools (Ko & Fink, 2010), or **ineffective governance** or use of IT systems (Weill & Woodham, 2002).

Typically, the mainstream research on IT governance tends to emphasize the single organization as the unit of analysis (Ali and Green, 2009; Huang et al., 2010; Willson and Pollard, 2009). To date, little research has investigated IT governance in practice within a collaborative network that involves more than two organizations (Croteau and Bergeron, 2009; Hekkala et al., 2010). This is an important aspect to study, as many organizations are now collaborating due to a competitive and turbulent business environment (Chong & Tan, 2012).

To achieve successful collaboration among collaborative-networked organizations, there must be efficient governance mechanisms or practices for all the technical resources and information being shared (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009). As proposed by Rusu & Nufuka (2011), there are critical success factors that influence the

effectiveness of an IT governance performance. These factors are categorized according to the four main areas of IT governance, which are: the strategic alignment of the business and IT strategy, resource management, value delivery and risk management, and performance measurement (Rusu & Nufuka, 2011). The proposed success factors are concerned with intra-organizational governance. **Despite the growing importance of CNOs, there is little research examining effective IT governance models for inter-organizational collaboration.**

In the area of IT governance, and considering CSFs as essential elements for its effective implementation, **few CSF studies have been undertaken**, while IT governance has become critical to most organizations today (Rusu & Nufuka, 2011). The success factors proposed in Rusu and Nufuka (2011) and other studies (Guldentops, 2004; A.T. Kearney, 2008; Weill & Woodham, 2002; Ferguson , Green, Vaswani, & Wu, 2013) of traditional organizations with effective IT governance may not be as critical to the success of the collaborative network as to the case of intra-organizational collaboration. In this context, there is always a conflict of knowing who is responsible for handling the IT governance practices for the CNO and how is the CNO going to assess and test the effectiveness of adopting such a form of network governance (Provan & Kenis, 2007). All these issues are vital to the success of inter-organizational collaboration.

Accordingly, this research aims to identify critical success factors for IT governance in CNOs: “inter-organizational” processes that are significant to maintaining successful collaboration. As IT governance becomes a shared responsibility among CNOs (Prasad, Green, & Heales, 2012), these success factors will help CNOs to better assess their IT governance

models in terms of evaluating and adopting the right IT tools and governance structure to govern the collaborative network and analyzing the impacts and outcomes of such adoption.

Specifically, this research intends to investigate and test the intra-organizational IT governance CSFs model presented by Rusu & Nufuka (2011) and expand it by applying it to the case of inter-organizational collaboration. In addition, the research will determine how organizations assess the effectiveness of their IT governance.

1.3 Research Questions

In order to find a solution for the research problem, we state the following questions:

- 1- Are the intra-organizational critical success factors for effective IT governance applicable to inter-organizational IT governance?
- 2- What combination of CSFs forms a useful framework for assessing inter-organizational IT governance?
- 3- How can a CNO measure the effectiveness of IT governance?

1.4 Methodology

1.4.1 Design Science Research Methodology for Information Systems

The Design-Science paradigm seeks to extend the boundaries of human and organizational capabilities by creating new and innovative artifacts (Hervner, March, & Park, 2004). It creates and evaluates IT artifacts, which may include constructs, models, methods and instantiations, intended to solve identified organizational problems. “It involves a rigorous process to design

artifacts to solve observed problems, to make research contributions, to evaluate the designs, and to communicate the results to appropriate audiences” (Peffer, Tuunanen, Rothenberger, & Chatterjee, 2007-8).

There are guidelines for the DS research which were presented by Hevner et al. (2004) to help researchers understand the Design Science Research in IS and determine when, where and how to apply the guidelines in a research as shown below in Table 1.

Table 1: Design Science Research Guidelines (Hervner, March, & Park, 2004)

Guideline	Description
Guideline 1: Design as an Artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

The DSRM consists of 6 activities in a nominal process sequence (Peffer, Tuunanen, Rothenberger, & Chatterjee, 2007-8). As shown in Figure 1, these 6 activities are:

1. **Problem identification and motivation.** Researchers identify the specific research problem and identify the value of the proposed solution. The resources needed for this

activity include the knowledge of the state of the problem and the importance of its solution.

2. **Definition of the objectives for a solution.** Researchers explain how the new artifacts are expected to support and provide a solution for the problem. The objectives can be quantitative or qualitative, where the description of how a new artifact is expected to support solutions to problems that have not yet been addressed in literature. The resources needed for this activity include the “knowledge of the state of problems and current solutions, if any, and their efficacy”.
3. **Design and development.** Researchers start creating the artifacts, which involves determining the artifacts’ desired functionality and architecture and then developing the actual artifacts. The resources required to move from objectives to design and development include the knowledge of the theory that can be used to develop a solution.
4. **Demonstration.** Researchers use the developed artifacts to solve the problem. This could involve its use in experimentation, simulation, case study, proof, or other appropriate activities. The resources required for the demonstration include effective knowledge of how to use the artifact to solve the problem.
5. **Evaluation.** Researchers observe and measure how the artifacts support a solution to the problem. This activity includes comparing the objectives of the solution to actual observed results from the demonstration phase. Once they are done evaluating the results, researchers can decide whether to iterate back to the development of the artifact (activity 3) to try and improve the effectiveness of the artifact, or to continue on to communication and leave further improvement to following projects.
6. **Communication.** Researchers communicate and share the problem and the proposed

solution with other researchers and audiences such as practicing professionals, when appropriate, by publishing.

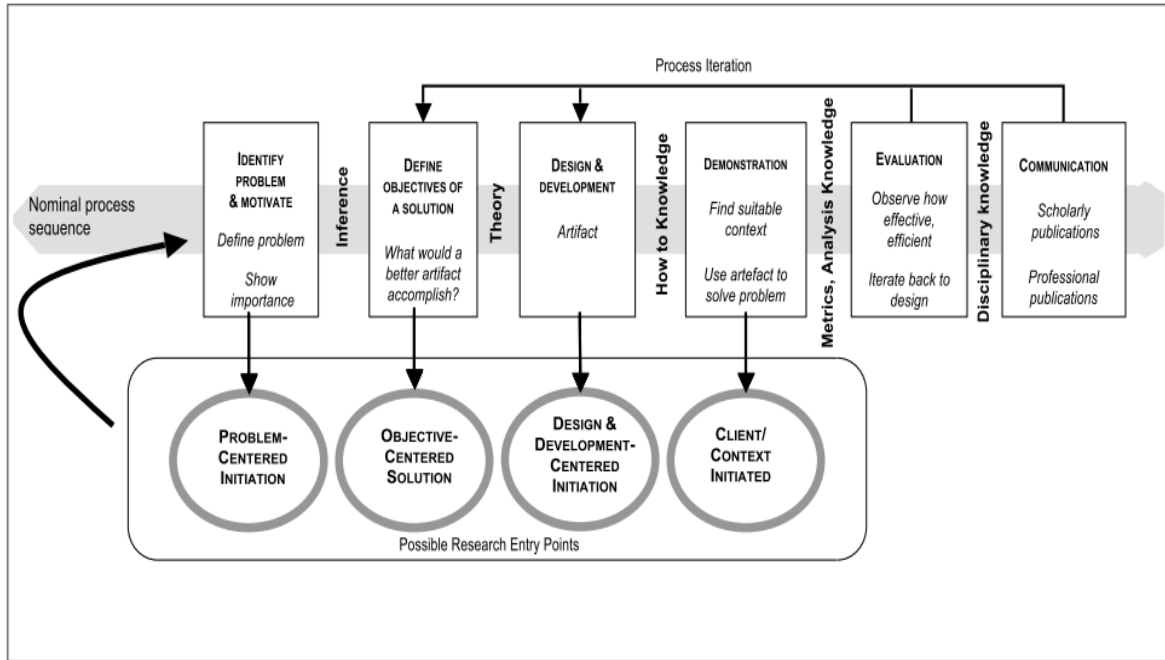


Figure 1: Design Science Research Methodology (Peppers, Tuunanen, Rothenberger, & Chatterjee, 2007-8)

1.4.2 Research Method and Activities

For the development of a new model of effective IT governance for CNOs, we have applied the problem-centered approach of the Design Science Research Methodology (DSRM) for information systems, presented by Peppers, Tuunanen, Rothenberger, & Chatterjee (2007-8), and have aligned our method with the seven guidelines of design science presented by Hevner et al (2004). The research specific method map is shown in Figure 2. The six activities we follow through our research are:

1. **Problem identification and motivation.** We target the domain of IT governance for collaborative networked organizations and have identified the specific research problem,

which is the lack of effective IT governance models for collaborative networks. We state our motivation to conduct the research and to find a solution to the problem.

2. **Definition of the objectives for a solution.** We state how the new artifact is expected to support and provide a solution to the problem. The objectives are qualitative, in which a description of how a new model is expected to support solutions to problems that have not yet been addressed in the literature of CNO IT governance. We look for existing models, frameworks, success factors and best practices for effective IT governance for both inter-organizational and intra-organizational collaboration. The analysis for these models and studies is used to build the new artifact.
3. **Design and development.** We design the new artifact, which is a model for CNO effective IT governance and includes critical success factors, related dimensions, and key performance indicators to measure the dimensions.
4. **Demonstration.** In DSRM evaluation follows demonstration of the artifact. For a physical artifact such as an IT system or software, simulation or rapid prototyping might be appropriate. For a model such as proposed, demonstration was done through presentation and discussion of the model with the case study participants and evaluation was done through gathering of feedback from the participants. In other words, DS research assumes that evaluation follows demonstration. In this research, the steps were more or less combined.
5. **Evaluation.** We use a case study method to validate and evaluate the new model. We investigate the case organization on their practices around governing the shared IT assets. Then, we analyse how the new proposed model supports a solution to the problem. We compare the results gathered from the case study “demonstration phase” with the actual

proposed model “design and development phase”, to see whether the new model is effective or not. A qualitative analysis, which includes analyzing expert interviews, field observations, and statistical data, is used for the evaluation with the aid of a coding-software to help us locate the keywords needed for the solution.

6. **Communication.** We communicate the results of this research with our peers in the form of conference and journal publications.

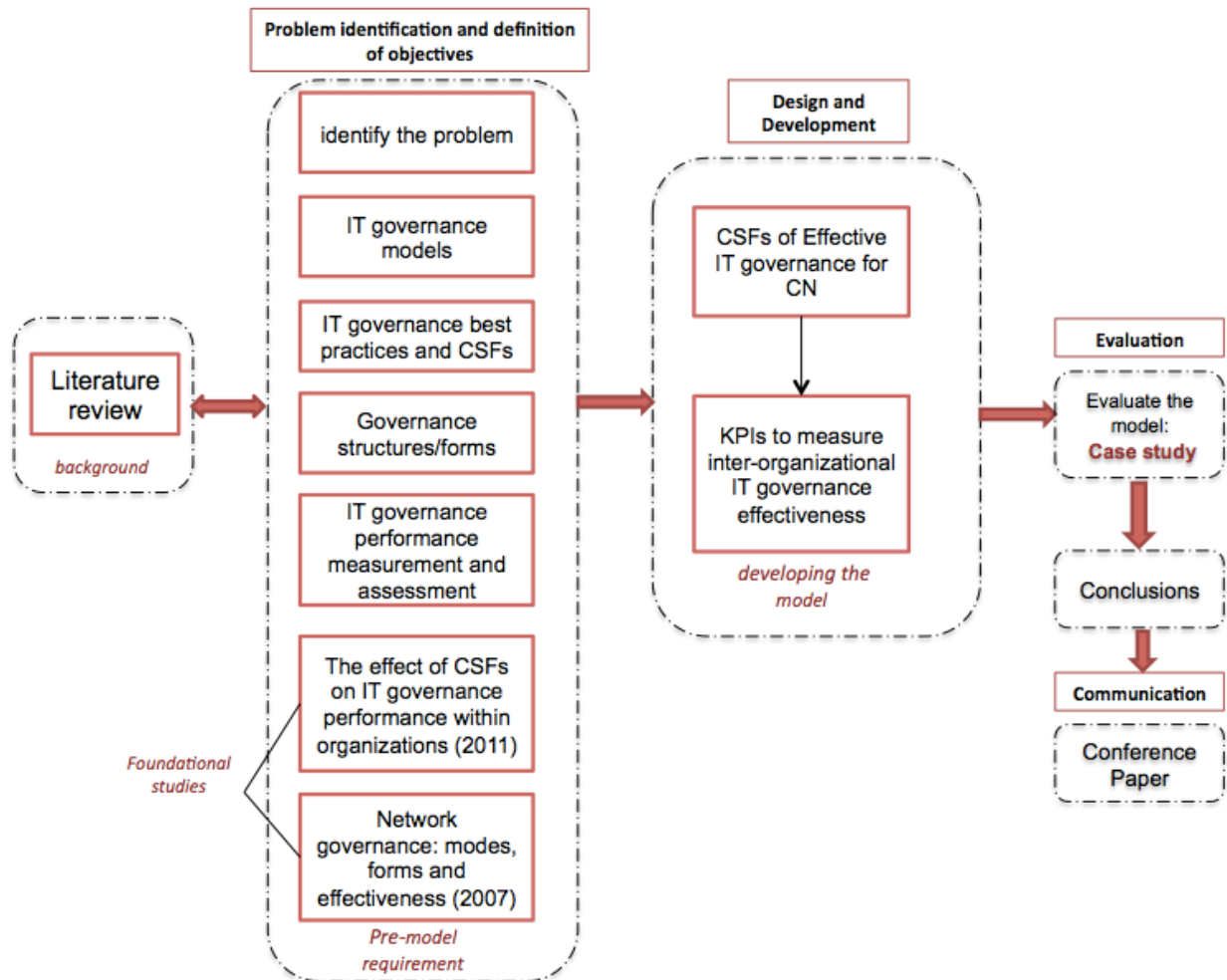


Figure 2: Research specific method “applied DSRM”

A case study method was adopted because this research sought to understand a real-world phenomenon within its context (Yin, 2013). Specifically, the study sought to identify *what* CSFs

determine effective IT governance for CNO and *how* a CNO measures its IT governance effectiveness. A case study method helps to examine the proposed CNO IT governance model to gain an in-depth description of how a CNO operates at the strategic level and how it governs shared IT resources. Hence, based on the framework proposed by Yin (2013), which suggests that case studies are most appropriate when context is important, when the research focuses on contemporary issues, and when theory in the area is not well developed (Yin, 2013). The research strategy undertaken is confirmatory which is based on theory testing since the model was already developed by the researcher and then the case study is conducted to test the usability of the proposed model (Gerring, 2004).

Yin (2013) suggests that selecting a single case study is justifiable under certain conditions: where the case represents a critical test of existing theory, an extreme or unusual circumstance, or a common case, or where the case serves a revelatory or longitudinal purpose. The rationale of selecting a single case study in this research is that it serves as a revelatory case since there is lack of empirical studies that define CSFs or a model for CNO effective IT governance. Conducting a single case study with in this situation provides access to a situation previously inaccessible to empirical study helping to explore the degree to which the theoretical model is represented in the CNO. This particular CNO also represents an exemplar case because in the course of this research, few formalized CNOs were found in which formal IT/communication systems are used to support the collaboration processes.

The data were collected through conducting two key informant interviews, distributing questionnaires, observation of a steering committee meeting and gathering related documents.

Since this study targets the strategic level of a CNO, the case study focuses on two main groups as a unit of analysis; the steering committee as it consists of senior managers and chief executives of partner organizations and the project management office as it deals with the IT-related activities/decisions and the service-level management group. Those members have the most knowledge about the collaboration project including its processes, decisions and challenges. The questionnaires include both closed and open questions. They were distributed to sixteen members from both the steering committee and the project management office and nine responses were received. Quantitative and statistical analysis was done on the questionnaires responses to evaluate the importance and usefulness of the proposed CSFs and KPIs. Responses were categorized to understand the core tendencies emerging from the questionnaire.

To have an in-depth knowledge of how this CNO operates and is managed, two interviews were conducted, one each with the service provider vice president and the project management office director. The service provider vice president was chosen since his organization acts as the leading organization of the CNO and he is part of other five collaboration projects with other organizations, thus he has good knowledge about inter-organizational collaboration. The second interviewee who is the regional director of the collaboration project was selected since he runs the whole project and has enough understanding about everything concerning the collaborative and its IT related actions. Both interviews were audio recorded to have accurate analysis and an audio-to-text converter software was used to generate written transcripts of the interviews in order to locate key words used for the qualitative analysis of the case results. The verbatim interview comments were reviewed and also categorized to discover common themes emerging from both respondents. During analysis, we address and compare rival explanations for the study

findings regarding concepts in inter-organizational IT governance as a way of interpreting the case study results.

1.5 Thesis Contribution

This thesis focuses on providing a model for collaborative-networked organizations to help them effectively control the shared IT assets or systems that support collaboration with their constituent partners. We assist CNOs to help them successfully collaborate by ensuring alignment between the IT strategy and the individual organizations' business strategies, measuring the collaboration performance of the collaborative partners, mitigating the risk and delivering value from the shared IT assets, and acquiring and managing the IT recourses in the CNO. All these factors result in better collaboration, reduced conflicts between partners, and enhanced governance of the collaborative network. We also list key performance indicators to measure the effectiveness of the proposed IT governance CSFs.

In addition we define the concept of trust in CNOs, which is simpler and more dynamic than what the current literature suggests, and is continually formed and adjusted according to the behaviors of the partners versus their commitment. Finally, we describe CNOs from the healthcare perspective and explain how collaboration is different in that context in terms of demonstration of values and behavior of senior managers.

1.6 Thesis Organization

This thesis is organized in five chapters. In Chapter 2, we provide a literature review from different perspectives, where we present the current state-of-the art collaborative-networked

organization and IT governance in both traditional organizations and CNOs. We present the taxonomy of collaborative networks and define each of the different types of collaborative-networked organizations. We also discuss the importance of IT to CNOs and how IT delivers value to organizations. We introduce prior models such as the integrative model for IT business value by Melville et al. (2004) and the conceptual model for effective IT governance for collaborative organization structures by Prasad et al. (2012). Then, we introduce the concept of IT governance and, more specifically, inter-organizational IT governance. We discuss the five main objectives of IT governance, which are strategic alignment, resource management, value delivery, risk management, and performance measurement. Next, we present the concept of effective IT governance and IT governance frameworks and models in general, such as the COBIT, ISO/IEC 38500:2008 and the COSO frameworks. Moreover, we discuss the classification of network governance, whether it is brokered or non-brokered, and provide an explanation for each type. Finally, we clarify the main differences between traditional organization and CNO IT governance.

In Chapter 3, we introduce our proposed effective IT governance model for CNO inter-organizational collaboration. The model consists of critical success factors under each objective of IT governance: strategic alignment, resource management, value delivery, risk management, and performance measurement, and we present related dimensions to each objective. In addition, the model consists of key performance indicators that measure the proposed dimensions.

In Chapter 4, we present the case study to demonstrate the proposed model of CNO IT governance. We discuss the results of the case study and provide a qualitative analysis of the

case results. Moreover, we compare the case results with the suggested model and we present our observations regarding the current solution.

Finally, in chapter 5, we conclude our research by providing a summary of the research, research conclusions, contributions, resulting publications, and discuss the research implications, limitations and future work.

Chapter 2: Literature Survey

In this chapter, the relevant literature is reviewed covering research in the field of IT/ICT governance, network governance and collaborative networks. The review addresses the following questions: definitions and typologies of collaborative organizations, the importance of IT for CNOs, frameworks for IT Business Value, the importance of IT governance for realizing business value, and

1. What is a collaborative network?
2. What is collaborative-networked organization “CNO”?
3. How important is IT in collaboration?
4. What is the value of IT/ICT to CNO?
5. What is IT governance?
6. What are the models or frameworks for effective IT governance?
7. What are the different forms of network and IT governance?
8. What are the main differences between traditional organization and collaborative-networked organization in reviewing IT governance?

2.1 Collaborative Networked Organization “CNO”

Collaborative networks can be referred to as strategic alliances, collaborative organization structures “COS” (Prasad, Green, & Heales, 2012) or corporate alliances. A Collaborative network “CN” is a network that constitutes a wide variety of entities such as enterprises or individual teams that could be different from each other in their geographical locations, social and cultural values, operational environments and business objectives (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009). These networks are developed with IT resources as

their backbone. Organizations, especially small and medium enterprises “SMEs”, initiate and form different kinds and structures of networks to collaborate and share IT resources and knowledge in order to gain competitive advantage and exploit others capabilities and resources (Prasad, Green, & Heales, 2012).

Most forms of collaborative networks suggest some kind of organization over the activities of their constituents; they also identify roles for the participants and establish governance rules. Hence, these can be called manifestations of collaborative-networked organizations (CNOs). A collaborative-networked organization is defined as any “mix-and-match” network of profit-and-loss-responsible organizational units, or of independent organizations, connected by IT, that work together to jointly accomplish tasks, reach common goals and serve customers over a period of time (Santana Tapia, 2006).

These networks can be found in different sectors and the era of web 2.0 and the emergence of collaborative tools such as the Internet encourage the formation of new organizational and collaborative networks. All of them have common characteristics including:

- Networks that consist of organizations and people who are located in dispersed geographical locations with different cultural and social goals.
- Participants who collaborate to (better) achieve common or compatible goals.
- Computer networks that maintain the interaction and communication between members.

Hence, the term CNO is generally used to refer to a collaborative network that acquires such characteristics (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009).

According to Camarinha-Matos, Afsarmanesh, Galeano, & Molina (2009), CNOs can be classified according to two main purposes; long term strategic network “cooperation across different types of activities” and goal oriented networks that are focused on achieving a common goal. From these two perspectives, there are many manifestations of CNOs that can be classified into further categories (Figure 3) such as supply chain, virtual government VG, virtual organization VO, virtual enterprise VE, extended enterprise EE, virtual team VT, VO breeding environment VBE, virtual laboratory VL networks, disaster rescue networks and professional virtual communities. These categories are briefly defined in Table 2. The term virtual means that different organizations are collaborating representing a single entity. In this research, the focus is on IT governance of collaborative-networked organizations “CNO” in general regardless of the CNOs purpose.

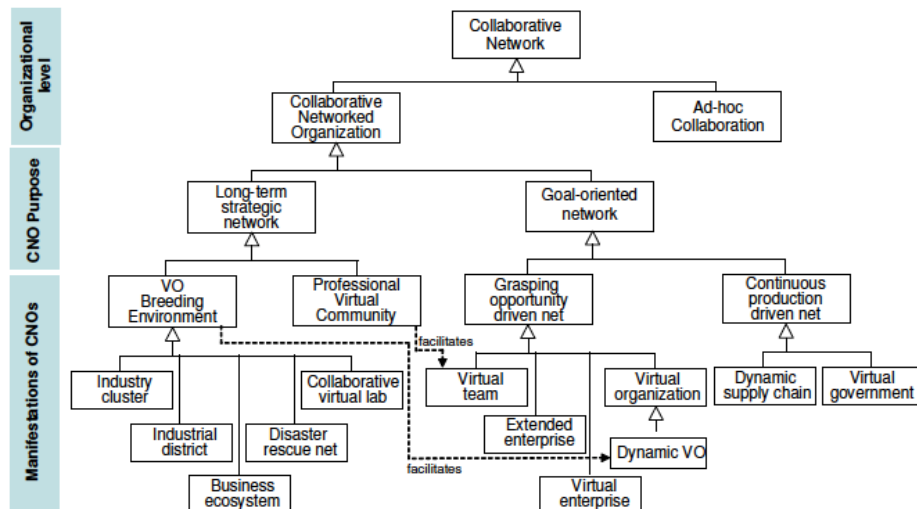


Figure 3: Examples of collaborative network (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009)

Table 2: CNO's main categories

CNO's Purpose	Category	Definition
Long term strategic network	Virtual breeding environment	Represents an association of organizations and their related supporting institutions adhering to a base long-term cooperation agreement and adoption of common operating principles and infrastructures, with the main goal of increasing their preparedness towards rapid configuration of temporary alliances for collaboration in potential virtual organizations. Namely, when a business opportunity is identified by one member (acting as a broker), a subset of VBE organizations can be selected to form a VE/VO.
	Virtual laboratory VL	Represents the alliance of autonomous research organizations, each having its own resources (equipment, tools, data and information related to their past experiments, etc.), enabling their researchers, located in different geographically- spread centers to be recognized and considered for taking part in potential opportunity-based problem-solving collaborations (forming then a kind of hybrid VO/VT for each problem-solving).
	Disaster rescue networks	It is a strategic alliance of governmental and non-governmental organizations specialized in rescue operations in case of disasters. It is another recent form of VBE aimed at facilitating a rapid and well-coordinated response in case of a disaster. This VBE could have local/regional coverage or a global geographic span.
	Professional community virtual	It is a group of professionals that delivers an environment to simplify the agile and smooth formation of virtual teams.
Goal oriented network	Supply chain	It is a network of businesses with several distinct roles that serve to deliver a specific product to the end consumer including procurement, producing and manufacturing, shipping and handling and warehousing.
	Virtual government	It is a network of governmental organizations in which their services are integrated to produce a unified source of services to citizens through the use of computer networks.
	Virtual enterprise VE	Is a short-term alliance of organizations that share several capabilities and resources to better react to business opportunities.
	Virtual organization VO	A concept that is similar to VE but can also be referred to a network of non-profit organizations.
	Extended enterprise EE	It is a subcase of a virtual enterprise that represents a concept typically applied to an organization in which a dominant enterprise 'extends' its boundaries to all or some of its suppliers.
	Virtual team VT	It is an alliance of humans or individuals that collaborate toward a certain goal such as providing consultancy which is also based on using computer networks.

2.2 The Importance of IT to CNO

Rabelo and Gusmeroli (2006) argue that for the CNO, it is not just a matter of wishing to act as a collaborative organization. Instead, organizations must demonstrate preparedness in various aspects in order to collaborate. One such aspect is related to supporting ICT (Information and Communication Technology) infrastructure (or middleware) (Rabelo & Gusmeroli, 2006). IT preparation includes compliance with a common interoperable infrastructure, adoption of common operating rules and a common collaboration agreement among others (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009). Broadly speaking, the fundamental role of IT in corporate business processes results in organizational dependency on IT (Ferguson, Green, Vaswani, & Wu, 2013), this extends to CNOs since IT is the base of collaboration. The IT system allows CNO members to link with each other in such way that collaboration and process execution through the network can be expanded and reinforced (Rabelo & Gusmeroli, 2006). In order to ensure successful collaboration, however, each organization within the CNO must be ready in advance with the needed and integrated IT systems and resources.

A common governance model can greatly enable IT preparedness of the partners. A study by A.T. Kearney (2008) recommends the following seven IT-related habits for organizations to achieve IT governance effectiveness:

- IT is viewed as strategic business asset and managed as portfolio.
- Technology ignorance is not accepted and IT should participate in technology investment decisions.
- IT has board of director-level oversight and clear executive leadership.
- There is no “one-size-fits-all” IT governance model.

- IT is an essential part of corporate planning and strategy.
- IT plays an active leadership role in transformation and innovation.
- IT's impact on the business is measured and monitored.

Because IT has become an increasingly critical function in organizations, the need for effective governance of decisions, rules, and investments made regarding IT is also critical (Ferguson , Green, Vaswani, & Wu, 2013).

2.3 IT Business Value Models

As discussed above, IT is a powerful resource used by enterprises to achieve their most important objectives. For example, IT can be a main driver of cost savings for large transactions such as mergers, acquisitions and divestitures; it can support automation of key business processes such as the supply chain management; and it can be the cornerstone of new business strategies or models (Oyemade, 2012).

The effective use of IT is critical to the success of enterprise strategy, as illustrated by the following quote (IT Governance Institute and the Office of Government Commerce, 2005, p. 9):

The use of IT has the potential to be the major driver of economic wealth in the 21st century. While IT is already critical to enterprise success, provides opportunities to obtain a competitive advantage and offers a means for increasing productivity, it will do all this even more so in the future.

IT also carries risks. It is clear that in these days of doing business on a global scale around the clock, system and network downtime has become far too costly

for any enterprise to afford. In some industries, IT is a necessary competitive resource to differentiate and provide a competitive advantage, while in many others it determines survival, not just prosperity.

2.3.1 An Integrative Model for IT business Value by Melville et al. (2004)

Melville et al. (2004) propose an integrative model of IT business value that is considered a generic model for creating value and leveraging an organization's internal and external IT resources. This model is used to explain how IT influences an organization's overall performance and is based on the resource-based view theory as shown in Figure 1 (Melville, Kraemer, & Gurbaxani, 2004). Dyer and Singh (1998) argue that Inter-organizational processes and relationships may help in achieving competitive advantage for the CNOs and thus enhance business value.

The model comprises of three main areas, including the organization that adopts and invests in IT resources to manage its processes, the competitive environment that includes competitors and trading partners and macro environment country characteristics. Melville et al. (2004) argue that organizations must not only deploy and manage their IT resources and tools but also maintain good management of their non-IT resources (complementary organizational resources) that together generate greater value than do the IT systems alone. The IT business value model is a comprehensive model that covers all the characteristics associated with the organization whether internally or externally with the collaborative environment (Figure 4). This model can be used as an aid to build a framework for collaborative networks effective IT governance through ensuring value generation from the IT systems being shared in the network.

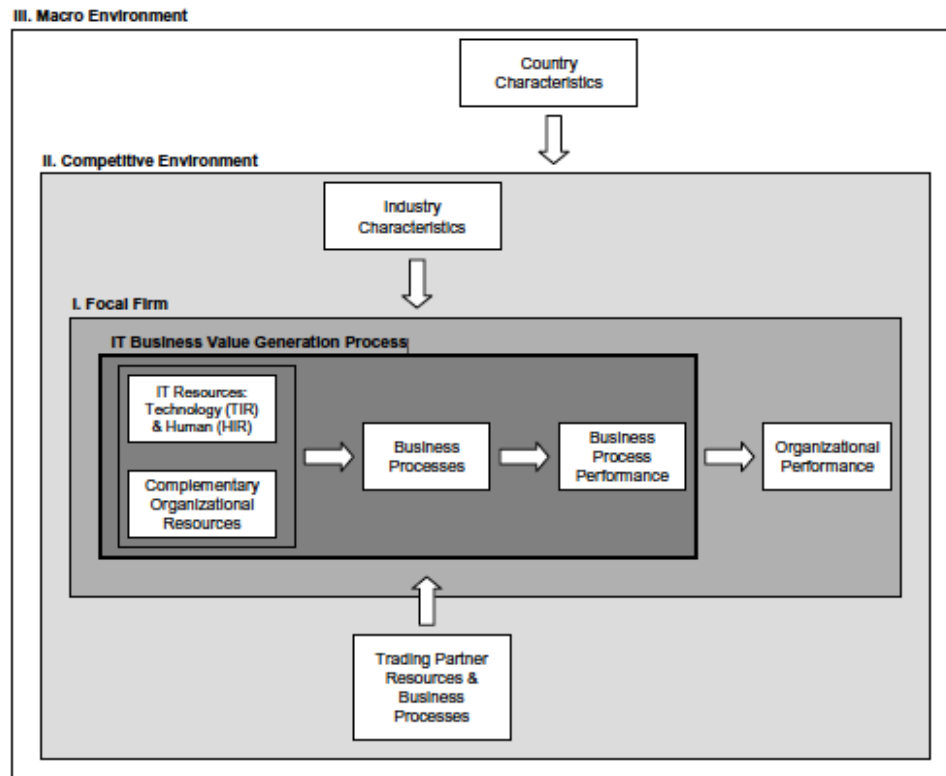


Figure 4: An integrative model for IT business value (Melville, Kraemer, & Gurbaxani, 2004)

2.3.2 A Conceptual Model of Effective IT governance for COS by Prasad et al. (2012)

Being more specific to collaborative networks or inter-organizational IT governance, a study by Prasad, Green, & Heales (2012) suggests a conceptual model for effective IT governance for Collaborative organization structures that allows for evaluation of imperative relationships between IT governance structures, sustainable IT-related capabilities, internal process-level performance, improvement in customer service, and firm-level performance in participating organizations (Figure 5).

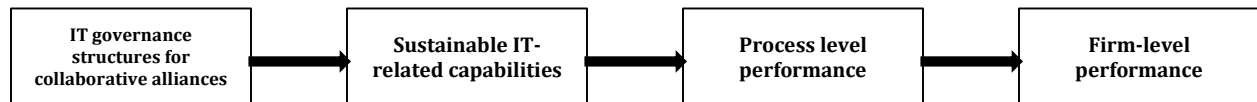


Figure 5: A Conceptual model of effective IT governance for COS (Prasad, Green, & Heales, 2012)

One distinguishing aspect of a CNO (relative to a single organization) is that partners are constantly renewing their collaborative proficiencies as they deal with each other. They also construct different alliances and hence they need to adapt and change their IT and non-IT related capabilities in order to collaborate efficiently. This constant change entails dynamic IT governance structures; therefore, there must be great understanding of the nature of the collaborative organization structures and the correlated IT governance structures to effectively manage the IT resources within COS (Prasad, Green, & Heales, 2012).

The study by Prasad, Green, and Heales (2012) shows that the suggested IT governance structures for COS lead to sustainable IT-related capabilities, which in turn improve the internal processes of the alliances. The improved internal processes assist organizations manage their external processes. The internal-external process coordination then contributes to firm-level business value. Generally, the model indicates that the suggested effective IT governance structures for COS will lead to better business value for the COS partners.

2.4 The Importance of IT Governance and an Overall Framework

2.4.1 IT governance

The models discussed in the previous section imply that effective governance of IT is important if value is to be realized. IT governance is therefore an important subset of corporate

governance that necessitates involvement of senior management (Ko & Fink, 2010). From a broad perspective, IT governance can be applied to either inter-organizational or intra-organizational IT management (Eisenhardt 1989; Fama and Jensen 1983). A very important role of governance across different sectors is controlling and monitoring the behavior of management, who are appointed to supervise the daily activities of running the organization (Provan & Kenis, 2007).

Some studies view IT governance models as a means of ensuring the alignment between IT strategy and business goals and objectives. In that context, IT governance is defined in a study by Webb, Pollard, and Ridley (2006, p. 7) as:

“The strategic alignment of IT with business such that maximum business value is achieved through the development and maintenance of effective IT control and accountability, performance management and risk management” (cited in Anant Jodhi, 2013, p.117).

IT-business alignment will guarantee that organizations continue to achieve their strategies and goals and implement ways to assess their performance. One special characteristic of IT governance is that it reflects interests of all stakeholders and guarantees that processes provide measurable outcomes and this situation is possible with lateral IT governance structures, with involvement from managers at all levels (Prasad et al., 2010).

Other researchers view IT governance as a way of specifying who is authorized to be involved in IT-related decisions. Weill & Woodham (2002) define IT governance as identifying

the decision rights and accountability framework to encourage appropriate behavior in the use of IT. The main role of network governance, whether in the private or public sector; is to monitor, direct and control the management functions that are responsible for supervising day-to-day activities of running the organization (Provan & Kenis, 2007).

From the perspective of implementing IT governance, Kooiman (2003) defines three approaches: the hierarchical approach, the self-governance approach and the co-governance approach. The hierarchical approach can be considered as the ‘classical approach’ that is traditionally based on steering and control. Self-governance refers to the capacity of social entities to govern them autonomously such as the case of Internet communities. The co-governance approach is identified when the interacting parties have something in common to pursue together, that in some way independence and identity are at stake. A good example of co-governance is the governance of networks in collaborative-networked organizations (Kooiman, 2003).

In an **inter-organizational** context IT governance is defined as an accountability framework that appoints a focal organization to structure the distribution of decision making rights among the stakeholders (Chong & Tan, 2012). Accordingly, the approach fits most closely with the co-governance model discussed above. It is possible however, that a dominant organization might emerge (for example, one that provides most of the resources) and therefore even co-governance models might take on some characteristics of a hierarchy. The point here is that a continuum likely exists among the governance approaches particularly in CNOs where membership continually evolves.

Regardless of the approach used, IT governance in general has four main objectives: strategic alignment, resource management, value delivery and risk management; and performance measurement (Rusu & Nufuka, 2011) .

Strategic alignment

The ultimate goal of IT governance is achieving strategic alignment between the business and IT to make sure that money spent on IT delivers business value (De Haes & Van Grembergen, 2005). In general, strategic alignment is the process of bringing the actions of an organization's business divisions and staff members into line with the organization's planned objectives (business dictionary).

In the case of collaboration, the shared project and the IT strategy must be well-aligned with multiple CNOs partner strategies to ensure the success of the project (Rusu & Nufuka, 2011). It is well accepted that IT and business strategies should be aligned and inter-dependent (Henderson & Venkatraman, 1989).

According to Rusu & Nufuka (2011), the following six key factors related to strategic alignment have a positive influence on organizational performance:

- IT leadership to understand the business goals and IT contribution and bring it to the management attention;
- Involvement and support of senior management
- IT/Business communication and partnership
- Engagement of key stakeholders

- Definition and alignment of IT strategies to corporate strategies and cascading of these throughout the organization
- Consolidation of IT structures to ensure responsiveness and accountability

An important element in this overall process is the role of the steering committee, which is a high-level group of representatives from multiple divisions, including senior management representation, accountable for linking IT strategy with business objectives (Nolan, 1982). It reports to senior management and holds regular meetings. In the case of CNOs, this committee is co-created. Co-creation relates to the concept of sharing the management of IT resources within the CNO structure. Weber (1999) states that the IT steering committee should have fundamental responsibility for IS planning. However, organizations need to establish new forms of cultures and structures to manage the IT resources that facilitate collaboration (Prasad, Green, & Heales, 2012). A lateral cross-organization decision-making structure is critical to ensure that IT resources provide adequate business value to all parties in IT-related alliances (Prasad, Green, & Heales, 2012).

Many studies through the literature support and provide evidence that the existence of IT steering committees positively affects the quality of IS planning (Gupta & Raghunathan, 1989), planning processes (Doll & Torkzadeh, 1987; Earl, 1989), planning effectiveness (Premkumar & King, 1992), and alignment of business and IT strategy (McKeen & Guimaraes, 1985; De Haes & Van Grembergen, 2008). One of the crucial roles of IT steering committees is that of creating policies, measures and actions associated with IT control. By undertaking this role, the IT steering committee in effect provides organization-wide policies for the implementation of

controls and procedures relating to the use of IT (Ferguson , Green, Vaswani, & Wu, 2013).

Designing effective IT governance is the responsibility of senior management and IT governance must mesh with the other governance structures in the firm (Weill & Woodham, 2002). The participation of senior management in IT related activities and decision-making provides management with a greater understanding of the IT domain and as such allows management to better recognize and address any possible weaknesses. Jackson (1986) advocates that one of the reasons for top management involvement is that such involvement makes easier the implementation of organization-wide controls and policies. In addition, the increased awareness of senior management in IT also allows for management to identify more possibilities for utilizing IT in line with business objectives, as well as to support projects and policies that contribute to better IT governance (Ali & Green, 2007; Bowen et al., 2007). Accordingly the involvement and support of senior management in IT is expected to improve the overall level of effective IT governance within the organization (Ferguson , Green, Vaswani, & Wu, 2013).

Resource management

Resources in the context of collaboration are basically IT resources. To attain best results at minimum costs, an organization must manage these IT resources effectively and efficiently (Brisebois, Boyd, & Shadid, 2007). Ensuring that there are enough resources including technical, hardware, software and most importantly human resources available to deliver IT services is key to generating value from IT investments (Brisebois, Boyd, & Shadid, 2007). IT resource management has been identified as the stepping-stone to effective IT governance within the CNO (Rusu & Nufuka, 2011). As recommended by Rusu and Nufuka (2011), the following are key factors related to effective resource management:

- Consolidate, standardize and manage IT infrastructure to optimize costs and information flow across the organization; and
- Provide IT governance awareness and training for optimal IT use.

Given that IT-driven communication and collaboration are the backbone of CNOs, effective management of IT resources is a critical factor in the CNOs overall success (Prasad, Green, & Heales, 2012).

Value delivery and risk management

Value delivery ensures that investment in IT tools is generating value for the organization including appropriate quality delivered on time and within budget. It includes wise selection and management of investments from the inception stage to the final retirement (System integrity).

Risk management is also critical to effective IT governance. It involves safeguarding the IT assets, disaster recovery and continuity of operations including security and information integrity (System integrity). One of the critical factors for effective governance is consolidating, communicating and enforcing policies and guidelines for cost-effective acquisition and use of IT across the organization (Rusu & Nufuka, 2011). These practices are important for effective IT governance since it ensures efficient processes and informs all participants about the procedures to be followed (ITGI, 2003; Guldentops, 2004; Weill, 2004; ITGI and PwC, 2006; Tan et al. , 2009; de Haes and van Grembergen, 2008).

Performance measurement

Neely et al. (2005) define performance measurement as the quantification of the outcomes of organizational activities. IT governance performance can therefore be considered as the quantification of IT governance effectiveness, i.e. how well the governance process encourages desired behaviours and eventual performance goal attainment in the CNO (Weill and Ross, 2004; Huang et al., 2010).

From a business point of view, measuring IT governance performance can be accomplished through measuring the value of several services that are provided by the IT organization (Rusu & Nufuka, 2011). One of the simplest ways to measure performance, which is being acknowledged and widely used by many researchers and practitioners (Simonsson et al., 2010), defined as “the effectiveness of IT governance in delivering four outcomes weighted by their importance to the organization: the cost-effective use of IT, the effective use of IT for asset utilization, the effective use of IT for growth and the effective use of IT for business flexibility” (Weill, 2004, p. 15). Rusu & Nufuka (2011) state that in order for an organization to track and demonstrate success, it has to consolidate its performance measures and benchmarks, which is a way to achieve effective governance.

Performance measurement systems

Hardy (2002) posits that an essential part in implementing effective IT governance is through the use of a performance management systems combining a set of metrics and measures to provide management with an accurate view and evaluation of how IT is performing for current tasks and new projects. Recent studies in IS literature has supported the use of a balanced IT

scorecards to evaluate the performance of IT usage (CobiT 4.1, 2007; Van Grembergen & Van Bruggen, 1997; Van der Zee & De Jong, 1999). These studies suggest the benefits of this approach cover both financial and non-financial evaluation methods including measures related to customer satisfaction, internal processes and innovation abilities. In doing so, the balanced IT scorecard aids to push the organization towards optimum use of IT (ISACF, 2003).

Performance measurement systems have to be updated whenever business strategies are altered. It is essential to consider that strategies usually change over time and when a strategy changes, some performance measures must change too. Tangen (2004a) suggests that flexibility is an important factor to ensure the quality and efficiency of a Performance Measurement System and to ensure that the PMS is coherent with the objectives of the company.

There are five suggested typologies of performance measurement systems. According to Toni and Tonchia (2001), the main models of PMS can be referred to under one of five typologies:

- PMSs that are strictly **hierarchical (or strictly vertical)**, characterized by cost and non-cost performance on different levels of aggregation, until they ultimately become economic financial.
- PMSs that are **balanced scorecard**, where several separate performance measures, which correspond to diverse perspectives (financial, customer, etc.), are considered independently.
- PMSs that can be called **frustum**, where there is a synthesis of low-level measures into more aggregated indicators, but without the scope of translating non-cost performance

into financial performance.

- PMSs that distinguish between **internal/external performances**.
- PMSs that are related to the **value chain**.

Tangen (2004a) defines that a PMS should support and be derived from organizations' strategic objectives; else, it may support actions that have the contrary effect of those implied in the strategy.

In summary, performance measurement systems can take hierarchical or balanced forms, given the complexity of CNO IT relationships, a more balanced approach seems appropriate. A CNO must choose the most applicable PMS related to its objectives, and update its performance measures as the business strategy changes over time.

2.4.2 Effective IT governance

The study of IT governance effectiveness has been challenging at both organizational (Goodman and Pennings 1977) and network levels, especially when answering the key question, “effectiveness for whom?”. Provan & Kenis (2007) define network effectiveness as the realization of positive network level outcomes that could not usually be attained by individual organizational participants acting independently.

Effective IT governance models have been widely discussed through the literature from intra-organizational perspectives (Ferguson et al., 2013; Rusu and Nufuka, 2011). There are numerous success factors, which are widely suggested by many researchers (Joshi, Bollen, & Hassinl, 2013; Weill & Woodham, 2002; Grembergen & Haes, 2005; Rusu & Nufuka, 2011),

considered to be critical to IT governance effectiveness within organizations. These factors involve transparency and disclosure of IT-related information (Joshi, Bollen & Hassinl, 2013; Weill & Woodham, 2002), risk mitigation, handling and management (Joshi, Bollen, & Hassinl, 2011; Rusu & Nufuka, 2011) and raising governance awareness among employees and managers (Weill & Woodham, 2002; Rusu & Nufuka, 2011; Grembergen & Haes, 2005). Moreover, three key determinants were identified by Ferguson, Green, Vaswani, and Wu (2013) that positively influence the level of effective IT governance within an organization. These include the existence of an IT steering committee, the implementation of a corporate performance measurement system and the involvement of senior management in IT. Rusu and Nufuka (2011) have also considered those determinants as the most significant critical success factors for achieving effective IT governance. In addition, collaboration requires a base level of trust among the organizations (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009). Having a high level of trust between the CNOs constituents has been recognized in many studies as a very important factor for successful collaboration. Besides, adopting the right network governance form contributes to achieving effective IT governance (Patrick & Keith G., 2007).

2.4.3 IT governance Frameworks/Models

Organizations can follow a few associate mechanisms and tools to guide their implementation of IT governance. Some of the frameworks associated with IT governance include the Control Objectives for Information and related Technology “COBIT”, ISO/IEC 38500:2008 and the COSO framework. The Control Objectives for Information and related Technology (**COBIT**) is an approach to standardize good information technology security and control practices. COBIT provides tools to assess and measure the performance of 34 IT

processes of an organization (IT Governance Institute, 2007).

The **ISO/IEC 38500:2008**, corporate governance of information technology, provides a framework for effective governance of IT to assist those at the highest level of organizations (International Organization for Standardization, 2008). The standard assists top management to understand and fulfill their legal, regulatory, and ethical obligations in respect of their organizations' use of IT.

The **COSO** framework, developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides guidance to organizations on critical aspects of organizational governance, business ethics, internal control, enterprise risk management, fraud, and financial reporting (COSO, 2009).

Regarding IT governance models, a study by Rusu & Nufuka (2011) suggests critical success factors for effective IT governance within an organization in the public sector. Because one of the major worries about IT is in fact related to governance and not technology (Guldentops et al., 2002), IT-governance-related success factors should be highly followed and embedded to eliminate negative consequences of ineffective governance. However, the CSFs proposed by this study is concerned about intra-organizational IT governance. The study has identified the most significant correlated effect on IT governance performance; which is the involvement and support of senior management, and the least significant; which is consolidating, standardizing and managing IT infrastructure and application to optimize costs and information flow across the organization. The CSFs suggested in this study (Figure 6) affect IT governance

performance through delivering four outcomes weighted by their importance to the organization (Weill & Ross, 2004): the cost-effective use of IT, the effective use of IT for asset utilization, the effective use of IT for growth and the effective use of IT for business flexibility (Rusu & Nufuka, 2011).

In this research, some of the CSFs are going to be used for measuring effective inter-organizational IT governance.

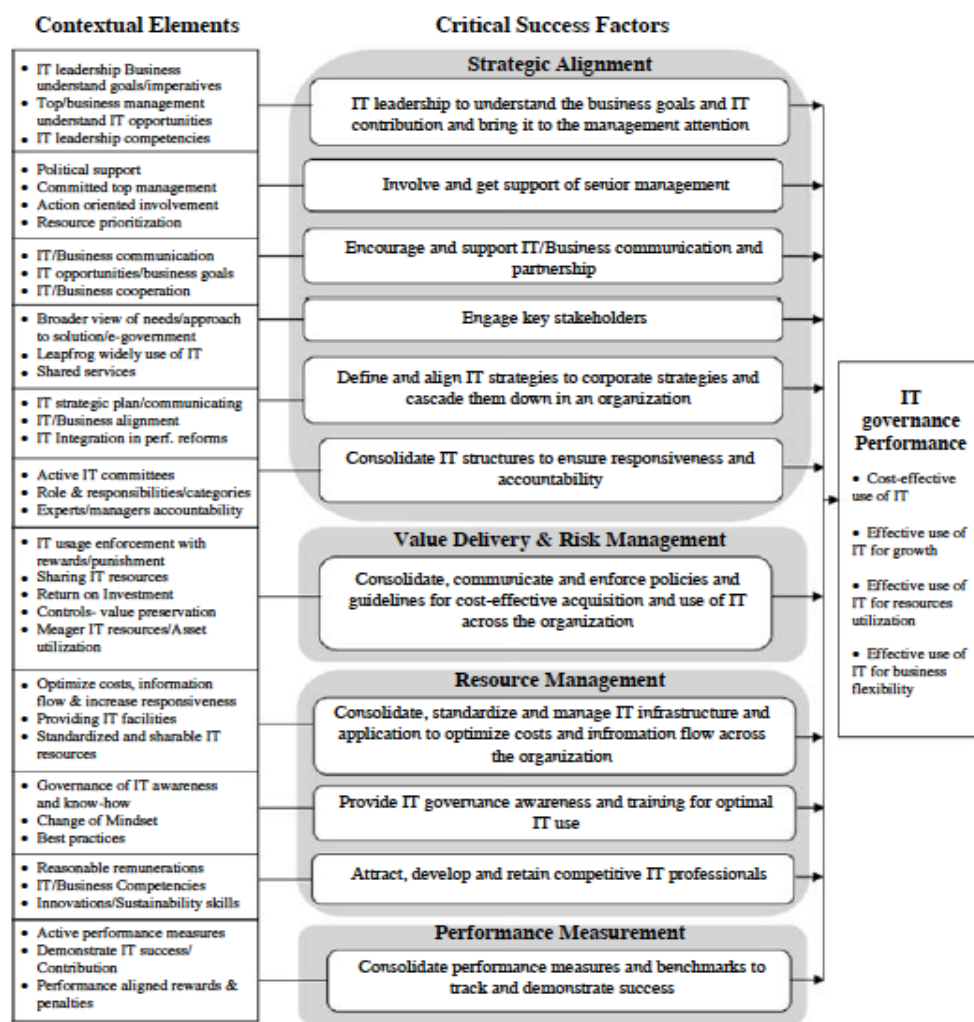


Figure 6: CSFs model for effective IT governance in public sector organizations from a developing country (Rusu & Nufuka, 2011).

In summary, IT governance addresses both human and technical aspects. A CNO has to adopt an IT governance model/framework that incorporates aspects related to IT security, ethics and standards, IT-business alignment, and performance measurement.

2.4.4 Network Governance Forms

Collaboration is a key difference between intra and inter-organizational governance; which is absent in the former case. Inter-organizational collaborations necessitate efficient management and governance of the data and IT resources being exchanged and shared. In order to maintain successful collaboration within a network, the CNO must make sure to choose the most suitable governance form or structure (Provan & Kenis, 2007).

Network governance forms can be categorized according to two distinctions; whether the form is brokered or not, and whether the brokered network is participant or externally governed (Provan & Kenis, 2007).

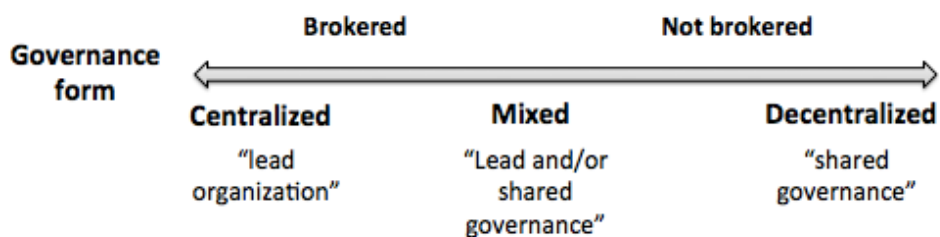


Figure 7: classification of network governance forms

First, network governance may or may not be brokered. As shown in Figure 7, at one extreme, networks may be governed completely by the organizations that comprise the network (Provan & Kenis, 2007). Each CNO would communicate and interact with every other

organization to govern the network, resulting in a dense and highly decentralized form called shared governance. At the other extreme, the network may be highly brokered, with limited direct organization-to-organization communications, except regarding operational concerns such as the transfer of business, clients, information on services, and the like (Provan & Kenis, 2007). Thus, a single organization would control and govern the network acting as a centralized broker or lead organization who is responsible for handling the issues that are critical for the success of the CN and its survival.

Between the two extremes, the governance might be a mix of both; having a single organization that might take on some important governance activities while leaving others to other partners. Alternatively, network members may allocate governance responsibilities among various subgroups, or sets of network members, with no single organization taking on major governance tasks (Provan & Kenis, 2007).

Regarding the second distinction, a brokered network can be either participant governed or externally governed. As shown in Figure 8 participant-governed networks are, at one extreme, governed either cooperatively by the members CNOs themselves (i.e., shared), or at the other extreme, by a single network participant (i.e., lead organization). Externally governed networks are administered by a distinctive network administrative organization (NAO), which may be either voluntarily established by the CNOs or mandated as part of the network formation process. Each of the mentioned forms has significant structural characteristics. Each form is applied in practice for different reasons, and no one model is generally effective. Instead, each form has its own strengths and weaknesses, leading to outcomes that are likely to depend on the form chosen

(Provan & Kenis, 2007).

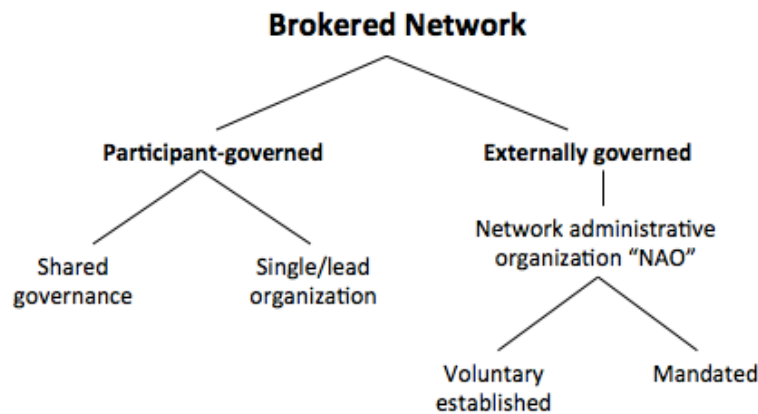


Figure 8: classification of brokered networks governance forms

2.4.5 IT Governance Forms/Structures:

The governance mechanisms of the IT backbone of IT-enabled business structures have not received enough attention (Prasad, Green, & Heales, 2012). The success and growth of the emerging forms of collaboration will be depending upon applicable and effective IT governance structures and processes, just as the case of governance within organizations (Weill and Ross, 2004). While many studies in the literature suggest various IT governance structures to manage the IT resources in organizations (for example, Sambamurthy and Zmud, 1999; Weill and Ross, 2004; Bowen et al., 2007; Prasad et al., 2010), these IT governance structures are relevant for the use of IT within organizations. The fundamental use of IT in COS requires a rethink on the possible forms of IT governance structures suitable for shared IT resources (Prasad, Green, & Heales, 2012).

Various types of CNs have temporary purposes and tend to re-create their structures as their collaboration goals are met (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009). CNOs need to respond quickly by adapting and reconfiguring their internal and external organizational skills, resources, and functional competencies. Dynamic and flexible IT governance structures are vital to achieve this outcome and to effectively manage the shared IT-resources.

The study by Prasad et al. (2012) reveals four forms of IT governance structures for the collaborative alliances. These structures include co-created lateral IT steering committees, co-created operational committees, and inter-organizational performance management and communication systems (Figure 9).

Broad conceptions	Key themes
Co-Created IT Steering Committee	Shared IT Governance, Shared Resource Ownership, Lateral Decision Making, Broader Adaptation of the IT Resource
Inter-Organizational Lateral Communication System	Extensive Partner Communication, Alliance-Based Communication, Leveraging the Web 2.0 Communication and Collaboration Tools,
Inter-Organizational Performance Management System	Broader Metrics for Evaluating Performance, Shared Alliance Responsibilities, IT-Based Alliance Evaluation
Co-Created Operational Systems Committee	Operational Coordination, Operational Alignment, Operational Consistency

Figure 9: Conceptions of IT governance structures (Prasad, Green, & Heales, 2012)

2.5 The Challenges of IT Governance in CNOs

Collaboration is a key distinction between traditional organizations and CNOs (Kamali, 2013). The adoption of the CNO approach by organizations forces deep changes in the way they operate, both at intra and inter-enterprise levels. According to what several authors have presented recently (e.g. Camarinha-Matos et al., 2005; Rabelo, 2008), it is assumed that these changes are related to three crucial pre-conditions necessary to support the recognition of the

CNO concept. “The first one is that working as a CNO requires **collaboration** among partners at a level far beyond sending e-mail messages. The second one is **trust**, considering that partners shall rely on each other. The third one is that all the transactions within the CNO should be **digital**, made via computer networks” (Rabelo, 2008, p. 337).

Collaboration involves sharing risks, resources, responsibilities, losses and rewards among partners, who seem to act as one organization with a joint identity. It also involves mutual engagement of participants to solve a problem together, which implies mutual trust and thus takes time, effort, and dedication. Overall, collaboration involves trust between collaborative partners (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009; Provan & Kenis, 2007), goal consensus (Provan & Kenis, 2007), flexibility of partners (Ferreira, 2012) and communication mechanisms among partners, factors that differentiate CNOs from traditional organizations as far as IT governance is concerned.

The issue of trust has been widely discussed in the Information Systems literature (Hoehle et al., 2012; Gefen et al., 2003; McKnight et al., 2002). Hoehle et al. (2012) reviews the role of trust in business relationships as being continuous and that develops over time as a result of continuing and repetitive customer-vendor interactions. The study suggests that as a user of Internet applications moves beyond initial use, he or she will continuously re-evaluate the e-commerce portal in terms of whether their expectations continue to be confirmed, whether the application continues to be perceived to be useful, and in terms of their overall satisfaction. McKnight et al. (2002) review trust in E-commerce as being more critical and complex in nature. Their study indicates measures for a multidisciplinary, multidimensional model of trust in e-

commerce. It includes four high-level constructs—disposition to trust, institution-based trust, trusting beliefs, and trusting intentions—which are further delineated into 16 measurable, literature-grounded sub-constructs. Trusting beliefs included in the model means the confident truster perception that the trustee has attributes that are beneficial to the truster. Those beliefs include competence (ability of the trustee to do what the truster needs), benevolence (trustee caring and motivation to act in the truster's interests), and integrity (trustee honesty and promise keeping).

In the case of the digitization of interactions and subsequent intra-organizational IT governance, it is the responsibility of the auditors of the organization to assess and measure the effectiveness of IT controls as part of their audit assessments of the organization's internal control systems (Ferguson , Green, Vaswani, & Wu, 2013). When it comes to CNO IT governance, it is the responsibility of the governance structure or entity which is co-created from the organizations involved in the collaboration project to govern the IT assets within the collaborative network (Patrick & Keith G., 2007). Hence, the issue of multiplicity; which involves more than one organization engaged in governing the IT resources, makes CNO IT governance different from traditional organization.

According to the current state of literature on the subject of effective CNO IT governance, there is lack of research that focuses on CSFs for inter-organizational IT governance. Although there are studies on best practices and success factors of IT governance, they target a single organization (Ferguson et al., 2013; Ko & Fink, 2010; Rusu & Nufuka, 2011; Weill & Ross, 2004; Weill & Woodham, 2002). There are also studies that prove the importance of

collaborative network IT governance and the business value of IT to the network (Camarinha-Matos et al., 2009; Rabelo & Gusmeroli, 2006; Prasad, Green, & Heales, 2012; Haes & Grembergen, 2005; Melville, Kraemer, & Gurbaxani, 2004), but these do not define CSFs or KPIs to measure its effectiveness. Accordingly, this research focuses on providing a model for effective IT governance for CNO that includes CSFs and assigned KPIs to help the collaborative achieve success in collaboration and in controlling the shared IT assets.

Chapter 3: The Proposed CNO Effective IT Governance Model

In this chapter, we propose a model of effective IT governance for collaborative-networked organizations (CNOs). The model consists of critical success factors for each objective of IT governance: strategic alignment, resource management, value delivery, risk management, and performance measurement, and we present dimensions related to each objective. In addition, the model consists of key performance indicators that measure the proposed dimensions.

3.1 Collaborative-Networked Organizations' IT Governance

In an **inter-organizational** context (Chong & Tan, 2012, p.34), **IT governance** is defined as:

“An accountability framework whereby formal IT decision- making authority has been delegated to a focal organization which will structure the distribution of IT decision making rights and responsibilities among different stakeholders”.

Inter-organizational IT governance framework supports the alignment of the network's defined goals with the utilization of IT in an effective and efficient way. Moreover, the framework has to involve relational mechanisms, which play an important role in promoting an effective collaborative partnership.

The effectiveness of IT governance for a collaborative network can be influenced by two aspects: how and by whom IT related decision making rights and accountabilities are distributed, and what relational mechanisms are essential to control various stakeholder behaviors so as to ensure alignment between business objectives and IT (Chong & Tan, 2012).

Therefore, IT governance for inter-organizational collaboration has to be reinforced by socio-technical factors that are associated with both technological factors (i.e. ICT infrastructures and communication processes), and social factors (i.e. culture, commitment, strong collaborative relationships, trust). The technical system is concerned with the technology that is required to carry out the organizational tasks, while the social system is comprised of the people who are responsible for executing those organizational tasks. Both factors need to be covered when discussing CNO IT governance.

In addition, there are three main characteristics of a CNO that affect the effectiveness of IT governance: the structural perspective of IT governance, the processes that emphasize control and risk related to IT governance, and the relational characteristics of IT governance (Chong & Tan, 2012). Those characteristics, along with the socio-technical factors, have to be recognized in the proposed model of CNO IT governance.

3.2 Collaboration Among Health Care Organizations

Since the governance model is tested within the context of a health care CNO, it is important to understand the factors that influence creation of these types of CNOs. It has been suggested that collaboration is more effective in achieving health and health system goals than efforts carried out by single agents (Lazker, Weiss, & Miller, 2001). Private and public organizations in healthcare tend to collaborate with each other to better allocate resources, share health records (Mitchell & Shortell, 2000) and deliver accessible, continuous, and comprehensive services (D'Amour et al., 2008). The new forms of healthcare organizations, such as integrated care, health networks, and program management, necessitate the development of new clinical

practices that are grounded in collaboration. Despite recent advances in research on the subject of collaboration, there is still a need for a greater understanding of collaborative processes and conceptual tools to help healthcare professionals develop collaboration amongst themselves in complex systems (D'Amour et al., 2008).

Increasingly, partnerships in health care involve cross-sector collaboration and the term partnership includes coalitions, alliances, consortia, and related forms of inter-organizational relations formed to improve a population's health. Although these alliances are growing in popularity, evidence from pilot projects and case study evaluations of certain health partnerships (Knoke and Wood, 1981; Wandersman, Goodman, and Butterfoss, 1993; Cheadle, Berry, Wagner, et al., 1997) indicate a frequent failure to achieve measurable results. These failures occur as a result of problems associated with the governance and management of the partnerships, which lead to the inability of partnered organizations to demonstrate significant, measurable outcomes and to sustain successful realtions with diverse partners (Duhl, 1995).

D'Amour et al. (2008) suggest the use of a four-dimensional model to achieve successful collaboration in health care (Figure 10). The study classified the dimensions into relational and organizational dimensions. Relational dimensions include shared goals and visions, and internalization, and organizational dimensions include formalization and governance. Governance is important in collaborative health care organizations as it gives direction to and supports health care professionals as they implement innovations related to inter-professional and inter-organizational collaborative practices. In addition, Mitchell & Shortell (2000) recommend four vital tasks of health care partnership governance, which include setting

priorities for strategic goals, choosing the membership composition, obtaining the needed financial resources, and providing measures of accountability.

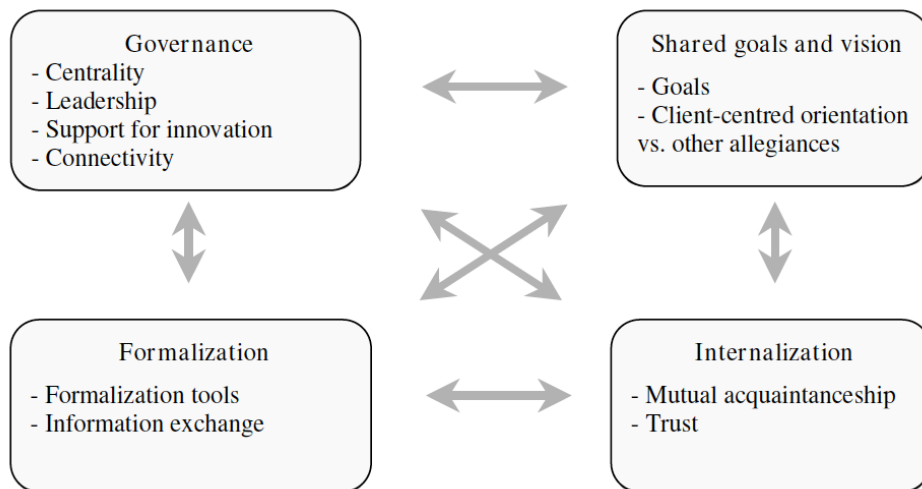


Figure 10: The four-dimensional model of collaboration between health care organizations (D'Amour et al., 2008).

3.3 Critical Success Factors for CNO Effective IT Governance

Critical success factors define the most important management-oriented implementation guidelines to achieve control over and within its IT processes (ITGI and OGC, 2005). Focusing on the CSFs will identify the most vital processes that directly influence the organization's performance (Shivashankarappa, Dharmalingam, Smalov, & Anbazhagan, 2012).

The proposed model of effective CNO IT governance is depicted in Figure 11.

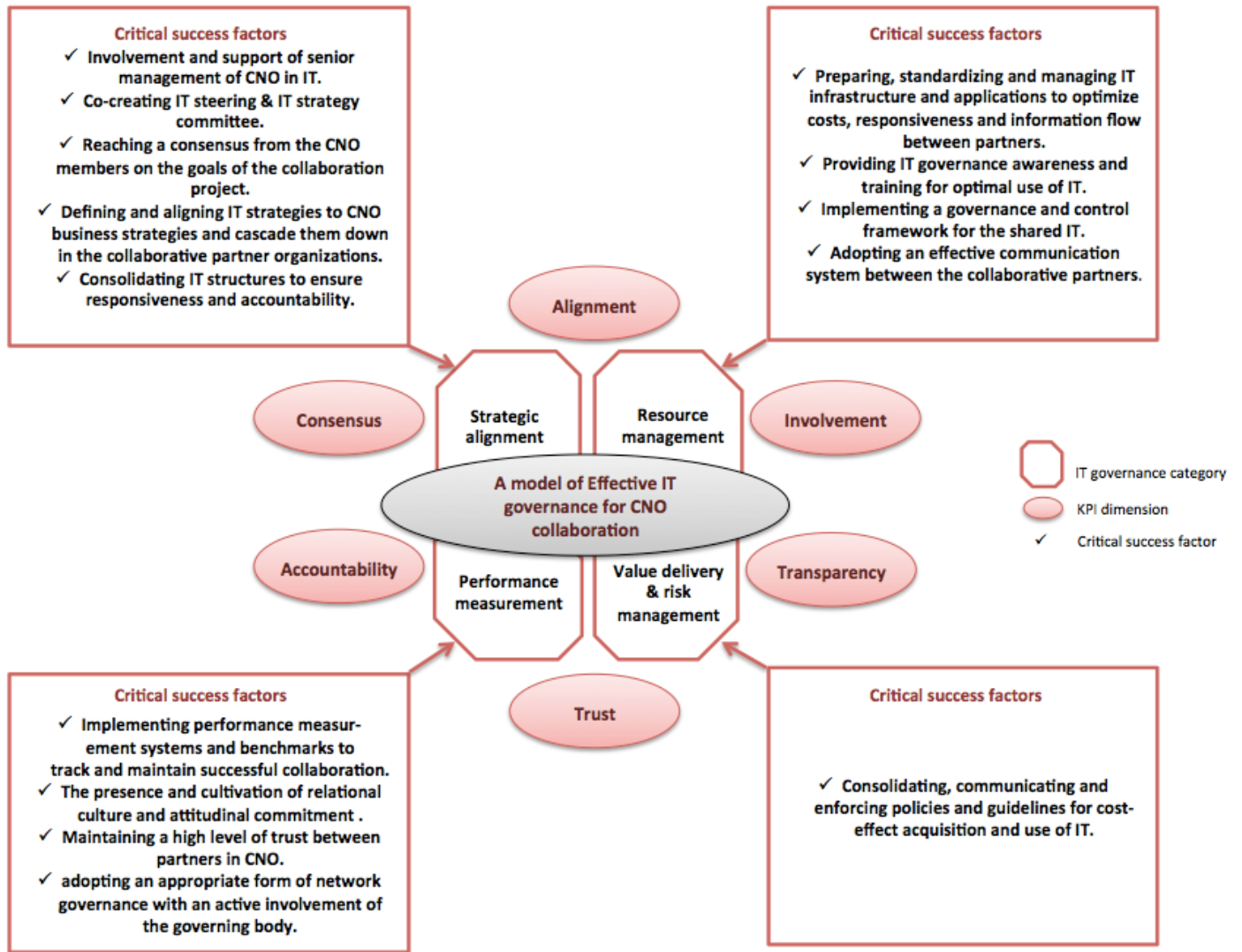


Figure 11: A model of effective IT governance for CNOs

The proposed model targets the strategic level of the collaborative-networked organization. The model consists of critical success factors represented in the squares in Figure 11, and key performance indicators dimensions that measure the CSFs represented in shaded circles. The model is designed based on the four main categories of IT governance represented in the rectangles at the edges of Figure 11: strategic alignment, resource management, performance measurement, and value delivery and risk management. Each category of IT governance has its

critical success factors assigned to it. The key performance indicators dimensions, which are alignment, consensus, accountability, trust, transparency and involvement, have random positions in the model and they assess the effectiveness of the CSFs and how partners collaborate and govern the shared IT resources at the strategic level of the network.

The KPIs dimensions of CNO effective IT governance and their assigned critical success factors are discussed in more detail in the following section.

Consensus

1. Reaching a consensus from the CNO on the goals of the collaboration project.

Consensus in goals and “domain similarity” allows organizational participants to collaborate better than when there is conflict, although conflict can also be a stimulant for innovation. Van de Ven (1976) argued that when there is general consensus on broad network-level goals, both regarding goal content and process, and in the absence of hierarchy, network members are more likely to be involved and devoted to the network and more likely to work together (cited in Provan & Kenis, (2007)). Goal consensus has important implications for network governance and thus specifically for IT governance. There may be significant differences across networks and network members regarding agreement on network-level goals and the extent to which organizational goals can be achieved through network involvement. Although high goal consensus is, apparently, an advantage in building network-level commitment, networks can still be somewhat effective with only moderate levels of goal consensus (Provan & Kenis, 2007), since the goal of the shared project is not necessarily the goal of all participants (Tapia, Daneva, Eck, & Wieringa, 2008).

Alignment

2. Defining and aligning IT strategies to CNO business strategies and cascading them down in the collaborative partner organizations.

Building a strong relationship between senior IT managers and senior business managers to support both their strategies and day-to-day operations is fundamental for organizations to achieve effective IT governance. Managers need to identify key goals across IT to help support business strategies (Richards, 2006; Zmud, 1988; Chan, 2002; Kearns & Sabherwal, 2007). A very influential tactic to build and then strengthen such informal relationships is by collaboratively involving the targeted individuals in formal decision processes related to IT governance (cited in (Huang, Zmud, & Price, 2010)). Ferguson et al. (2013) state “more effective IT governance performance outcomes were associated with a shared understanding of business and IT objectives; active involvement of IT steering committees; a balance of business and IT representatives in IT decisions; and comprehensive and well-communicated IT strategies and policies”.

It is the responsibility of each collaborative organization representative in the IT steering committee to cascade both strategies and IT governance practices to the operational level of their individual organizations. In a network of organizations, IT governance is required at several levels. Organizations with different IT needs in divisions, business units, or geographies require a separate but connected layer of IT governance for each entity. Connecting the governance arrangement matrices for the multiple levels in an organization makes explicit the connections, common mechanisms, and pressure points (Weill, 2004).

3. Adopting an appropriate form of network governance with the active involvement of the governing body.

To attain successful collaboration within a network, a CNO must make sure to choose the most suitable governance form or structure (Provan & Kenis, 2007), and more effective collaborative IT governance is associated with the active involvement of a governing body (Chong & Tan, 2012). Chong and Tan (2012) state that it is imperative to assign a governing body to regulate and monitor the committees such as IT strategy and IT steering committees. Network governance forms can be categorized according to two distinctions; whether the form is brokered or not, and whether the brokered network is a participant or is externally governed.

Each form has certain basic structural characteristics and is applied in practice for a variety of reasons; accordingly, no one model is inherently superior or effective. Rather, each form has its own specific strengths and weaknesses leading to outcomes that are likely to depend on the form chosen (Provan & Kenis, 2007).

Effective governance mechanisms must carefully balance the pent-up pressures toward centralization and decentralization that regularly play out within organizations (Sambamurthy & Zmud, 1999).

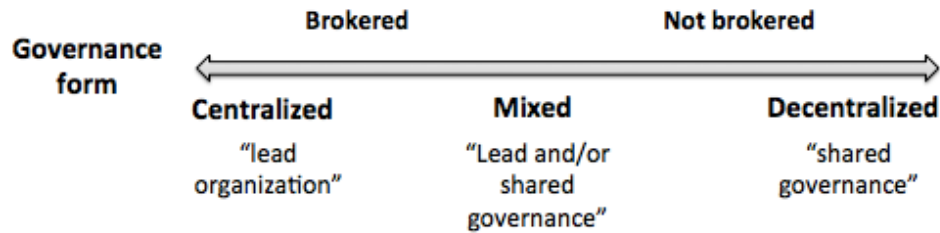


Figure 12: Classification of network governance forms

Involvement

4. Involvement and support of CNO senior management in IT.

Senior management support for IT is considered to be the most important enabler of business and IT alignment (Ferguson , Green, Vaswani, & Wu, 2013), and crucial to effective IT governance (Huang, Zmud, & Price, 2010). This practice refers to an organization's senior executives' personal engagement and support in IT-related decision making such as investments and monitoring processes. This involvement finds participating senior managers and executives interacting with one another to outline and discuss IT-related issues; it occurs through formal and informal pathways. Formally, the senior managers of each partner organization cooperate and interact through their participation on established IT governance bodies, such as IT steering committees, that shape and direct IT-related strategies, policies and actions. Informally, these senior managers interact while carrying out their day-to-day work responsibilities (Chan, 2002). Huang et al. (2010) found that the performance of IT tends to be better with both the formal (through steering committees) and informal (through personal interactions) involvement of IT and business senior managers in IT-related decision making processes than with informal involvement alone.

Accountability

5. Co-creating IT steering & IT strategy committees.

A governance practice considered fundamental for effective IT governance and the alignment of IT-related decisions and actions with an organization's strategic and operational priorities is the IT steering committee, which is a body comprised of senior executives/managers convened to administer and coordinate IT-related activities. The IT steering committee is a formal body that includes representation from both business and IT executives who regularly meet to address specific IT-related issues, and whose interaction during these deliberations ensure that the various represented interests and perspectives are heard (Huang, Zmud, & Price, 2010; Ferguson, Green, Vaswani, & Wu, 2013).

An IT steering committee in the case of a collaborative-networked organization is co-created and involves representatives from each of the CNO constituents. The co-created IT steering committee functions as a 'board of directors', which involves IT/business executives, managers, and professionals holding differing vested interests and perspectives for specific domains of IT-related activities in setting CNO-wide policies and procedures, allocating resources, and monitoring the performance of the shared IT resources.

The design of an IT steering committee includes the specifications of intent, the specific activities to be undertaken, who participates in these activities, and how these activities are to be carried out (Huang, Zmud, & Price, 2010). It is suggested that intent be forged early (Reich & Benbasat, 2000). Also, it has been observed that steering committees largely comprised of enterprise-level participants promote enterprise standardization and efficiency in utilizing IT

assets and capabilities, while steering committees largely comprised of operating area participants focus on how best to allocate IT assets and capabilities in order to improve operational performance (Weill & Ross, 2005).

6. Consolidating IT structures to ensure responsiveness and accountability.

The IT governance structure deals with the decision-making structures and the responsible committees/functions adopted for IT-related decisions (Brown & Grant, 2005). This practice is vital to ensure responsiveness and accountability, and positively enhances IT governance performance (Rusu & Nufuka, 2011).

The three most prevalent governance structures are centralized, decentralized, and hybrid “federal” structures (Brown & Grant, 2005). With centralized governance structures, IT decisions follow a top-down, enterprise-wide perspective, while with decentralized governance structures, IT decisions reflect a bottom-up, local work unit perspective. Although the centralized and decentralized governance structures by definition are mutually exclusive, an organization’s important IT decisions can also be orchestrated through a third sort of governance structure, which is the hybrid structure or the federal mode. Hybrid governance structures may indicate a variety of alternative structures, most typically: collaboratively engaging participants holding enterprise-wide perspectives with participants holding local perspectives, simultaneously using centralized governance structures for some IT decisions and decentralized governance structures for other IT decisions, or applying both of these designs. For each type of governance structure there are distinct advantages and disadvantages.

7. Implementing a governance and control framework for the shared IT.

Applying a governance framework to control the shared IT assets is considered essential to successful IT governance. One of the most commonly used governance reference frameworks, which is the choice of many regulators and commentaries, is the Control Objectives for Information and related Technology (COBIT). COBIT is well accepted by many enterprises; it is mainly introduced by the audit function as the auditors' framework for judging control over IT, and IT groups have picked it up, often because it provides for performance measurement. COBIT offers the foundation and the tool set to analyze, based on the enterprise value and risk drivers, where the enterprise is relative to IT governance, and where it needs to be (Guldentops, CISA, & CISM, 2004).

8. Implementing performance measurement systems and benchmarks to track and maintain successful collaboration.

Measuring the performance of the partners' collaboration is essential to managing collaborative networks in general (Camarinha-Matos et al., 2008) and to achieve effective IT governance (Rusu & Nufuka, 2011). In collaborative environments, inter-organizational Performance Indicators (PIs) must be addressed, as well as intra-organizational ones, in order to fully cover the performance of the alliance (Kamali, 2013).

The use of a performance measurement system incorporating a set of metrics provides management with an accurate view of IT operations performance and assists them with a means to help improve governance and accountability for many stakeholders (Ferguson , Green, Vaswani, & Wu, 2013).

The most widespread performance management system, since the mid-1990s, is the balanced scorecard (BSC). It allows organizations to follow-up with and assess their strategies. The use of the BSC as a performance measurement system for IT operations is reinforced by agency theory as a mechanism to reduce agency losses by more efficiently monitoring the IT operations. Advocates of the balanced IT scorecard recommend that the benefits of such a system go beyond the traditional financial assessment methods and extend them to include measures relating to customer satisfaction, internal processes, expertise of IT staff, and the ability to innovate; these measures may be compared with benchmarking figures (Ferguson , Green, Vaswani, & Wu, 2013).

Trust

9. Maintaining a high level of trust between the CNOs.

Trust has been identified as key to IT governance (Richards, 2006). In the general network literature, it has frequently been considered as critical for network performance and sustainability (Provan & Kenis, 2007). Trust in collaborative networks has been defined as “the willingness to accept vulnerability based on positive expectations about another’s intentions or behaviors” (McEvily, Perrone, & Zaheer, 2003, p. 92). Provan and Kenis (2007) argue that to understand network-level collaboration the dissemination of trust is critical, as is the degree to which trust is reciprocated among network members. In addition, it is not only that trust is considered a network-level concept but also that network governance must be consistent with the general level of trust density that occurs across the network as a whole.

10.The presence and cultivation of relational culture and attitudinal commitment.

Chong and Tan (2012) indicate that more effective collaborative IT governance is associated with a coordinated communication process and the presence of relational culture and attitudinal commitment. As a collaborative network consists of several organizations, a relational organizational culture is crucial to managing the interactions required for IT governance implementation and to deliver a shared understanding between IT and business people. Organizational culture plays a significant role in influencing collaborative behavior, and a strong organizational culture can enhance the co-ordination processes, support consistent decision-making processes, and increase the level of attitudinal commitment.

The extent to which the organizational cultures differ in a collaborative network is known as cultural distance; a wider cultural distance will result in lower levels of integration and cohesion (Shachaf, 2008). Accordingly, it will lead to inefficient flows of information and a constrained communication process within the network, which in turn will affect the collaborative relationships. Hence, it is critical for a collaborative network to promote and cultivate a relational organizational culture that unifies subculture beliefs and practices within the network.

The attitudinal commitment refers to an emotional or affective component that is driven by the feelings and attitudes of the participants to the specific relation. It is more appropriate for the committee members to possess attitudinal commitment, as they would allocate most of their time to controlling and managing their functional roles (Chen, 2001).

Transparency

11. Adopting an effective communication system between collaborative partners.

One of the practices of effective IT governance is ensuring that the deliberations of the governance bodies and IT steering committees are well disseminated, communicated, and accessed by all appropriate members (Huang, Zmud, & Price, 2010). Making each IT governance mechanism transparent to all managers is considered a critical success factor of IT governance. The more IT decisions are made secretly and outside of the governance framework, the less confidence people will have in the structure and the less willing they will be to play by the rules, which are designed to increase enterprise wide performance (Weill, 2004). Achieving transparency involves the adoption of a suitable communication system between the partner organizations and the members, facilitating the collaboration process. The type of communication system adopted depends on the size of the organization and its number of partners. In some situations, it could be very simple, for example with the use of emails, or very complex with the establishment of a shared platform. Information accessibility and transparency are essential for individuals across an organization to be aware of the policies, guidelines, and procedures associated with the IT system, as well as the actions taken by IT governance bodies (Huang, Zmud, & Price, 2010).

The communication system is essential for disseminating rules and policies across the CNO. “IT-related policies, guidelines and procedures can be communicated to an organization’s members through a variety of communication channels, each of which is characterized by distinctive attributes (Daft & Lengel, 1986; Carlson & Zmud, 1999)” (cited in (Huang, Zmud, & Price, 2010)). The nature

of the communication channels being used has an influence on the success of an organization's IT deployments. A larger number of communication channels results in a more efficient use of IT and a greater breadth of IT use. Having Intranet as the only organizational communication channel would not necessarily enable better communication of IT governance processes and decisions. Rather, it requires more communication channels to integrate and disseminate information, enabling a wider degree of IT governance transparency, and a shared understanding between business and IT can be established (Weill and Ross, 2004). Coordinated synchronous and asynchronous communication channels would play an important role in facilitating the collaborative network's processes (Chong & Tan, 2012).

12.Preparing, standardizing, and managing IT infrastructure and applications to optimize costs, responsiveness, and information flow between partners.

Organizations in the collaborative network must be ready and prepared in advance with the needed IT applications to successfully communicate with partners and commence the collaboration project (Rabelo & Gusmeroli, 2006). The IT preparation includes compliance with a common interoperable infrastructure, the adoption of common operating rules, and a common collaboration agreement, among others. Peterson (2004) also suggested that the practice of preparing, standardizing and managing IT infrastructure would help produce reliable and cost-effective infrastructure and IT applications.

13.Providing IT governance awareness and training for optimal use of IT.

Ensuring that knowledge about IT and its governance are available to the collaborative

organizations is crucial and acts as a stepping-stone to achieving effective IT governance. This practice is important for innovation and to optimize IT capabilities and governance (Rusu & Nufuka, 2011). Education to help managers understand and use IT governance mechanisms is critical. Educated users of governance mechanisms suggest that committee members are more likely to be accountable for the decisions they make and less likely to second-guess other decisions (Weill, 2004).

14. Consolidating, communicating, and enforcing policies and guidelines for the cost-effective acquisition and use of IT.

This practice is fundamental to effective IT governance as it introduces and enforces best practices and clearly informs the organization as a whole about the processes, methods, and framework to which it needs to adhere, hence encouraging desirable behaviors and optimal IT value creation and preservation (Rusu & Nufuka, 2011). Besides, Huang et al. (2010) state that the manner by which IT-related policies, guidelines, and procedures are clearly communicated to employees and disseminated across an organization is considered significant to efficient IT deployment and effective IT governance.

In order to have a common understanding of applicable IT-related actions to frame the interactions of individuals involved in IT-related activities, it is essential that these policies, guidelines, and procedures regarding sanctioned IT behaviors be widely disseminated through an effective communication system (Uzzi, 1996; Walker et al., 1997).

Compliance with operating policies, rules, and policies are essential to achieve successful IT governance. For example, the enterprise's security program must be continuously monitored and

evaluated, through internal auditing, for compliance. In order to effectively implement security policies to ensure compliance, one must develop applicable change management strategies since people are often resistant to change (Shivashankarappa, Dharmalingam, Smalov, & Anbazhagan, 2012).

3.4 Key Performance Indicators of Effective CNO IT Governance

Key Performance Indicators (KPIs) are the measurements that represent the enterprise's critical success factors for which a balanced scorecard can be used (Shivashankarappa, Dharmalingam, Smalov, & Anbazhagan, 2012). Key performance indicators are lead indicators that define measures of how well the IT process is performing in enabling the goal to be reached (ITGI and OGC, 2005).

Meeting the targets of collaboration performance indicators enables merging collaborative partners' processes to complete a common task in a non-hierarchical way. These indicators are essential to evaluate the effectiveness and efficiency of how partners work together, in joint processes, toward a common goal (Kamali, 2013).

The key performance indicator dimensions related to effective IT governance for collaborative-networked organizations are:

- **Consensus:** an agreement between the customer-facing organization and its direct partners in a CNO to formulate clear common goals for the collaborative project (Tapia, Daneva, Eck, & Wieringa, 2008).
- **Alignment:** ensuring that IT services support the requirements of the business, whether

such services are individually or collaboratively offered (Tapia, Daneva, Eck, & Wieringa, 2008), and ensuring that goals and policies from both IT and business are supported and aligned.

- **Trust:** the willingness to accept vulnerability based on reputation and past interaction experience (Provan & Kenis, 2007).
- **Transparency:** the effective dissemination and accessibility of all information to assigned individuals in CNOs.
- **Involvement:** the engagement of firms' senior executives in decision-making processes regarding IT-related issues (Huang, Zmud, & Price, 2010).
- **Accountability:** having clear functional roles and responsibilities assigned to individuals who are part of the CNO IT steering and IT strategy committees, or IT structures.

Table 3: Key Performance Indicators for Assessing Inter-Organizational IT Governance.

Dimension	Code	Indicator	Description	Interpretation
Consensus	CO1	Goal Consensus	The level of the partners' agreement on the CNO stated goals and objectives "collaborative project goals".	It can be high, moderately high, or moderately low (Provan & Kenis, 2007).
Alignment	AL1	Understanding of business by IT	The level of awareness and understanding of the business strategies, policies and goals by the IT staff.	It can be one of the following: 1- IT management not aware 2- Limited IT awareness 3- Senior and mid-management 4- Pushed down through organization 5- Pervasive
	AL2	Understanding of IT by business	The level of awareness and understanding of the IT strategies, policies and goals by the business people.	It can be one of the following: 1- Business management not aware 2- Limited business awareness 3- Emerging business awareness

				4- Business aware of potential 5- Pervasive
	AL3	Business perception of IT value	The level of IT value perceived by business people.	It can be one of the following: 1- IT perceived as a cost of business 2- IT emerging as an asset 3- IT is seen as an asset 4- IT is part of the business strategy 5- IT-business co-adaptive
	AL4	Role of IT in strategic business planning	The degree to which IT is involved in business planning.	It can be one of the following: 1- No seat at the business table 2- Business process enabler 3- Business process driver 4- Business strategy enabler/driver 5- IT-business co-adaptive
	AL5	Shared goals, risks, and risks/penalties	The degree to which IT is accountable for shared risks and rewards.	It can be one of the following: 1- IT takes risk with little reward 2- IT takes most of risk with little reward 3- Risk tolerant; IT some reward 4- Risk acceptance & reward shared 5- Risk & rewards shared
	AL6	Business strategic planning	The degree to which business strategic planning is managed and integrated across the CNO.	It can be one of the following: 1- Ad-hoc 2- Basic planning at the functional level 3- Some inter-organizational planning 4- Managed across the CNO 5- Integrated across & outside the CNO
	AL7	IT strategic planning	The degree to which IT strategic planning is managed and integrated across the CNO.	It can be one of the following: 1- Ad-hoc 2- Functional tactical planning 3- Focused planning, some inter-organizational 4- Managed across the CNO 5- Integrated across & outside the CNO (Van

				Grembergen, 2004)
Trust	TR1	Partners trust	The density level of trust relations among collaborative partners.	The density level of trust relations can be low, high, or moderate (Provan & Kenis, 2007).
Transparency	TN1	ICT usefulness “media channels”	The effectiveness of each of the communication channels in the shared system e.g. ICT tools.	A communication channel can be effective, moderately effective or ineffective.
	TN2	Information accessibility & availability	The degree to which CNO members can find and access certain information using the IT system.	Information can be easily accessible, hardly accessible, or not available.
Involvement	IN1	Senior management involvement	The degree to which the senior managers of a CNO are involved in IT-related decisions (Huang, Zmud, & Price, 2010).	Senior managers can be highly involved, somewhat involved, not involved in decision-making.
Accountability	AC1	Task clarity	The clarity level of role definition and responsibility allocation for CNO members (De Haes & Van Grembergen, 2004).	Task clarity can be highly clear, somewhat clear, or ambiguous.

Chapter 4: A Case Study of Inter-Organizational IT Governance

In order to validate our proposed framework of effective IT governance in CNOs, we adopt a case study approach. The case study is the preferred method since inter-organizational effective IT governance is not well-developed in the current literature and there is a need to understand the complex situation of inter-organizational collaboration and explore whether existing research on intra-organizational IT governance can be applied to the inter-organizational context. A case study method therefore allows for the exploration and detailed examination of the model, in order to gain in-depth knowledge of how a collaborative-networked organization operates at the strategic level, and how it governs shared IT resources.

4.1 Case Organization Background: The Champlain Association of MEDITECH Partners “CHAMP”

CHAMP is the first MEDITECH “patient care and technology” collaboration in the province of Ontario, in Canada. It is a voluntary-based partnership between six hospitals, which work together and share information services to improve the delivery of patient care and services to clients in the region. These hospitals, which are Bruyère Continuing Care, Queensway Carleton Hospital, Arnprior District Memorial Hospital, Carleton Place and District Memorial Hospital, Royal Ottawa Health Care Group, and Montfort, have implemented an electronic patient record system project entitled CHAMP, or Champlain Association of MEDITECH Partners, together.

MEDITECH is the information system that integrates and connects the six hospitals in order to provide health services including registration functions, lab reporting, patient results reporting, and charting order entries, as well as everything else that health providers need to do for their

job. The objective of CHAMP is to provide end-to-end care delivery. Representatives from each partner hospital are part of the various planning teams, which have been created to ensure that there is a true collaboration of standards for the operation of the MEDITECH system.

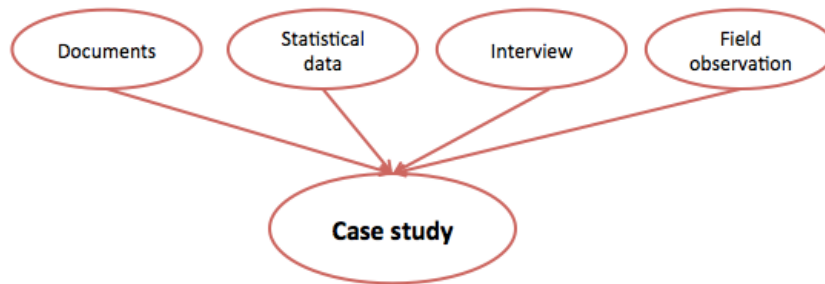


Figure 13: CHAMP case study components

The CHAMP case study is conducted based on four main components (Figure 13), which are:

- 1- An analysis of the documents provided by CHAMP, including the CHAMP terms of reference (see Appendix 5) and the steering committee's monthly meeting package (see Appendix 6) .
- 2- An observation of the CHAMP steering committee's monthly meeting: one full meeting of two hours was attended.
- 3- Two interviews were conducted with the CHAMP project director and the CHAMP service provider vice president (see Appendix 2 and 3 for the interviews transcripts).
- 4- Statistical data: questionnaires were distributed to CHAMP steering committee members and to the project management office members, to obtain their insights into the proposed model (see Appendix 1 for an example of the questionnaire). With the questionnaires, we sought feedback from nine members.

4.2 Analyzing the Case Organization Based on the Proposed Framework

Based on the interviews, the documents associated to CHAMP, and the observation of the CHAMP steering committee's monthly meeting, we can summarize how the case organization is performing related to the proposed IT governance framework, as follows.

1. Reaching a consensus from the CNO constituents on the goals of the collaboration project.

The goals of the shared project are defined collaboratively as a group and are based on a shared vision of an efficient and cost effective shared electronic record system. Since it is a voluntary partnership, all hospitals agree to come together for a common goal, which is to lower costs, improve patient care, and share information seamlessly.

The process of seeking consensus from partners on decisions is more formal. Most of the decisions that come to the committee are structured. If any partner wants to propose a change, they have to fill in a form, outline all of the proposed options, and create a decision document that can be found in Appendix 6. The document then has to be vetted by the project management office, which receives feedback from all partner organizations, until they reach a consensus. Only then is the suggestion presented to the steering committee. The idea is therefore pre-circulated, which increases productivity, since certain decisions could have operational or financial impacts, or a partner could want to change a date or start a new project. Thus, the vetting process ensures that all those issues are scoped out at a high level and that there are no disclosures when the steering committee makes its decision.

2. Defining and aligning IT strategies to CNO business strategies and cascading them down to the collaborative partner organizations.

The service provider hospital of the collaboration project, which is the Queensway Carleton hospital “QCH”, was built based on the model of collaboration and it is sort of a naturally collaborative organization. The goals, objectives, and values of QCH and of the shared project were very similar and transparent. On the other hand, there are issues with other participating hospitals that need to align themselves to the shared philosophy. Aligning strategies within individual hospitals takes time, as they need to cascade the project’s goals and objectives to the operational level of the organization to reduce internal complications. As stated by the Vice President of QCH:

“We have issues all the time, it is because people are not aligned enough... we have issues sometimes with partners where they say, well, we agree with a high level work plan that we are going to do these projects. But then, we thought about it and we do not want to do that, we want to do this instead. Having one person do something individually or independently is counterproductive and somewhat not in line with the values of the organization”.

Within CHAMP, it is essential that all partners do things together and that the shared goals are also aligned with the goals of the individual organizations, because it is more efficient and cost effective, and results in a more robust patient tool.

To align IT and business strategies, CHAMP ensures that the IT staff and the business side are strongly aligned and that they have a mutual understanding to reduce confusion and ensure

success in IT projects. Whenever a new system is deployed, a project team consisting of business owners and IT staff is created. Depending on the new project, the team members can be either from one individual organization or from all of the participating hospitals, coming together to build the system.

Business and IT people must meet regularly to outline and align both goals. It is important to integrate IT and business individuals into planning activities and get direct feedback from both sides. Each organization creates positions for physicians and nurses in every IT project, to ensure that there are dedicated resources to provide input concerning the design, the build, the roll out and the strategy of all the projects; this must take place at each individual hospital to maintain successful collaboration.

3. Involvement and support of CNO senior management in IT.

Each member in CHAMP has to be involved starting with the CEOs through senior vice presidents to the clinical directors to create assured health records. Whenever a new change is implemented within the project, the team across most of the hospitals including administrators, directors and front line staff are involved. People from both strategic and operational levels have to be engaged. The VP of QCH commented on senior managers support as follows:

“Obviously, all the CEOs have to support it because it's voluntary collaborative, so we have agreement at a very high level by all the CEOs to participate and we have standard documentation, legal agreements that bind everybody to this collaborative, so within that we also have agreement with our boards, with our finance and audit committee”.

4. Co-creating IT steering & IT strategy committees.

The CHAMP Steering Committee is the governing body and final authority for all decision-making related to the overall strategy and direction of the Champlain Association of MEDITECH Partners. The committee is comprised of executives from each participant organization. It consists of twelve members in total, including voting and non-voting members. Appendix 5 clarifies the steering committee composition including voting and non voting members. As stated by the VP of QCH “the committee is key in the success of the collaboration, and making sure that they are aligned and engaged is also critical”. In the case of the small hospitals, the member is typically the hospital’s CEO, and in the larger institutions the members are typically two senior VPs; a Vice President of Operations who is responsible for IT or finance, and a clinical VP who is a CNE “Chief Nursing Executive”. The steering committee has monthly meetings in which they discuss the current situation of the project and the changes and new developments needed to improve the shared services and to obtain better collaboration. During the meeting, one vote per hospital is required to approve a new project. The voting process was observed during the steering committee monthly meeting and it is more described in Appendix 6)

The steering committee provides oversight and approval in order to advance new projects and evaluate existing services through the service-level management group. If a hospital or group of hospitals wants to start a new project they have to prepare a project scope document and send it to the steering committee. Appendix 6 has more details on the project change request document. The committee has to approve the project before the project team begins developing a project plan and budget, and finding people to participate in the project.

Another important group of people that are involved is the project management office, which is responsible for managing all project work related to communications. Each hospital has a project management lead, and these individuals come together in weekly project management meetings. Whenever a change in the collaborative project needs to be applied, the project management office discusses it and obtains feedback regarding the change, from the individual hospitals. When a decision is made, it goes to the steering committee and is then communicated back to the individual organizations through the project management office. Serious communication issues have occurred with partners where the responsible individual fails to take information back to their organization, or where staff does not communicate properly.

5. Consolidating IT structures to ensure responsiveness and accountability

And

6. Adopting an appropriate form of network governance with an active involvement of the governing body.

The collaborative adopts a centralized hybrid model to manage and control the IT tools. The central core of the system can only be managed and affected by the service provider hospital, which directly manages all of the collaborative infrastructures, but other parts of the system can be managed independently. There is a formal change management process in place, where changes have to be vetted and approved first. There is also a certain core part of the system that can only be touched by QCH, as they are the leading organization, in order to avoid accidents that could possibly affect multiple hospitals.

7. Implementing a governance and control framework for the shared IT.

For the service portion of the shared project, the collaborative uses some of the ITIL framework; however, for the governance portion, they do not use any sort of industry standard framework. They use a model that they developed themselves, as well as portions of COBIT and some of its methodologies. Therefore, it is essentially a combination of COBIT and ITIL. The project management office is the group responsible for managing the information and communication tools.

There is also a service-level management group that functions under ITIL and typically consists of IT directors or IT managers. This group has more of an oversight and advisory type of role, and is responsible for monitoring and assessing the compliance levels of the service being provided by the project team, and of ensuring that the commitments established by the SLA and signed by each hospital are met. The commitments include service responsiveness, information accessibility, and delivery times. Whenever a new hospital or partner wants to implement the software system required for collaboration “MEDITECH”, the service-level management group is responsible for connecting the hospital to the hardware vendor in order to install the technology, recommend a design that fits that hospital, and load the software.

8. Implementing performance measurement systems and benchmarks to track and maintain successful collaborations.

There is no formal tool used to measure the partners’ performances, as the collaborative is still at the implementation phase and the SLAs have only recently been signed off. However, performance measures are needed and considered important to the committee, since challenges

exist when making sure that each member is doing what he is supposed to be doing under the signed SLA. As stated by the VP of QCH:

“Having something like a balance scorecard or key performance matrix is something important that we'll look at going into the future, but it is not something that we've looked at historically, because we haven't had an SLA, so we've got nothing to measure.”

9. Maintaining a high level of trust between partners in CNOs.

Trust is perceived by a committee member as something that a partner shows by doing what he says he is going to do. It is based on the actual behavior of the collaborating partners. As stated by the VP of QCH;

“I tell you that I'm going to behave in a certain way or I'm going to deliver something in a certain fashion or I'm going to do certain things in a certain way and the way that you show trust is by doing those things... you are trustworthy until you are not.”

In CHAMP, trust issues arise when there are differences between the behavior and the commitment. When partners are committed to doing certain things a certain way, and they do them differently, they are perceived as less trustworthy. On the other hand, if they behave in the same fashion as what they committed to, they tend to increase their trustworthiness.

10. The presence and cultivation of relational culture and attitudinal commitment.

The biggest challenges facing the collaborative are related to cultural differences. As mentioned by a committee member:

“Most of the conflict that we have around is related to people; people wanting to continue to be independent in a system that's not an independent system”

The flexibility of partners has been recognized by CHAMP committee members as very important to the success of the collaboration. As the collaborative members were busy implementing new things, they as a group didn't spend enough time dealing with the cultural aspects and ensuring that various partners understood what the requirements were. Thus, cultural issues are among the most serious challenges faced by the committee members, and dealing with those issues takes a lot of time, communication, and trust from partners. The Vice President of Queensway Carleton hospital comments on some of the cultural issues:

“... so we've got partners on the table, do they understand what the requirements are? Do they understand how to bring new projects forward? Do we understand what their needs are in regards to their independence? And is there a way we can be flexible, or do we need to be rigid?... you have to be open, responsive and flexible, and also clear”

11. Adopting an effective communication system between the collaborative partners.

The collaborative adopts a shared software platform called MEDITECH, which is a whole hospital information system with approximately 24 different applications, and connects all participating hospitals together. Most of the project documentation is done through SharePoint, which is a LIN “local interconnect network” based software that provides team collaboration software tools that everyone can access. This document management software helps partners access and share information more effectively. Moreover, this tool is considered effective and useful because it provides a version control with consistent access, therefore showing who has

accessed certain information, and at what time. These functionalities are very important when there is a large number of people going live at the same time to access large files and complete a task list.

Communication between partners is considered a very important aspect to take care of in CHAMP. The VP of QCH commented on communication and information dissemination as follows:

“We need to make sure and take extra care and not take communication for granted because when we do sometimes we have failures at those points at each local hospital and things don’t get communicated properly, and that leads to confusion and frustration for everybody”.

12. Preparing, standardizing, and managing IT infrastructure and applications to optimize costs, responsiveness, and information flow between the CNOs.

Any new hospital that wants to participate needs to implement the shared software system needed for collaboration, which is MEDITECH. The new hospital needs to do a publicly tendered RFP “Request For Proposal” and select the collaborative system provider as their vendor in order to be able to do the assessment needed to be a partner. To be prepared for collaboration and to be able to perform the assigned tasks, the hospital needs to have certain capabilities in terms of its ability to connect at a certain speed, and the presence of firewalls on both ends of the connection.

13. Providing IT governance awareness and training for optimal use of IT.

Training is usually handled independently by each individual hospital. In CHAMP, either the service provider “QCH” holds the license for the software, or they co-hold it with other partner organizations. Whenever a new module needs to be implemented, people from the IT department of the host hospital are sent to the head office of the software vendor and get the training needed. Then, the actual frontline training takes place at the individual hospitals. Thus, training is a hospital-based responsibility. The VP of QCH comments on the importance of training:

“Even in a really well officiated and executed project, training and ongoing training are the number one challenges that you have and that is absolutely critical for the project’s success”

14. Consolidating, communicating, and enforcing policies and guidelines for the cost-effective acquisition and use of IT.

There are no formal guidelines or policies for the use of IT in CHAMP since the collaborative was in its project implementation phase until recently. The shared project is at the stage of broader policies, procedures, operational standards, and the formation of several management groups. As stated by the head of the project management office:

“If we have more material, lets say like 5 years down the road then we are talking about procuring and sharing other tools within the collaborative, then we would likely be in a position to have more specific operational documentation policies, procedures and guideline, but we are not there yet.”

Key performance indicators for assessing inter-organizational IT governance

CHAMP does not have any performance measurement systems or metrics to assess the performance of partners, although these types of measures will be considered by the collaborative once the shared project is totally implemented. Based on the questionnaires distributed to the members of the steering committee and the project management office, it is agreed upon that the proposed key performance indicators are useful as measurement tools for the various dimensions of effective IT governance (Table 4). They believe that selecting KPIs for the collaborative highly depends on the nature of the CNO and its goals and objectives. Accordingly, some indicators may be helpful but not essential for the CNO. The value for the business perception of IT was considered somewhat efficient for assessing business-IT alignment and was ranked as the least useful KPI. There needs to be both a direct and an indirect value of IT, some aspects of which can be quantified and others not.

Table 4: CHAMP evaluation of inter-organizational IT governance KPIs

Dimension	Indicator	Description	Useful	Somewhat Useful	Not Useful
Consensus	Goal Consensus	The level of partners' agreement on the CNO stated goals and objectives "collaborative project goals".	77%	11%	
Alignment	Understanding of business by IT	The level of awareness and understanding of the business strategies, policies and goals by the IT staff.	66%	33%	
	Understanding of IT by business	The level of awareness and understanding of the IT strategies, policies and goals by the business people.	66%	11%	22%
	Business perception of IT value	The level of IT value perceived by the business people.	44%	55%	
	Role of IT in strategic business planning	The degree to which IT is involved in business planning.	66%	22%	
	Shared goals, risks, and risks/penalties	The degree to which IT is accountable for shared risks and rewards.	77%		11%

	Business strategic planning	The degree to which business strategic planning is managed and integrated across the CNO.	77%		
	IT strategic planning	The degree to which IT strategic planning is managed and integrated across the CNO.	55%	44%	
Trust	Partners trust	The density level of the trust relations among collaborative partners.	88%	11%	
Transparency	ICT usefulness “media channels”	The effectiveness of each of the communication channels in the shared system (e.g. ICT tools).	55%	22%	11%
	Information accessibility & availability	The degree to which CNO members can find and access certain information using the IT system.	66%	11%	
Involvement	Senior management involvement	The degree to which senior managers of a CNO are involved in IT-related decisions.	55%	44%	
Accountability	Task clarity	The clarity level of role definitions and responsibility allocation of CNO members.	88%	11%	

4.3 Discussion

Based on the data collected from participants in the CNO, it appears that all the critical success factors proposed in this research are perceived to be important for the collaboration to succeed. Some, however, were deemed to be more important than others. Figure 14 outlines the model, and Table 5 highlights the relative importance of the CSFs. Based on the views of the vice presidents and CEOs of CHAMP partner hospitals, some factors were rated as more critical than others.

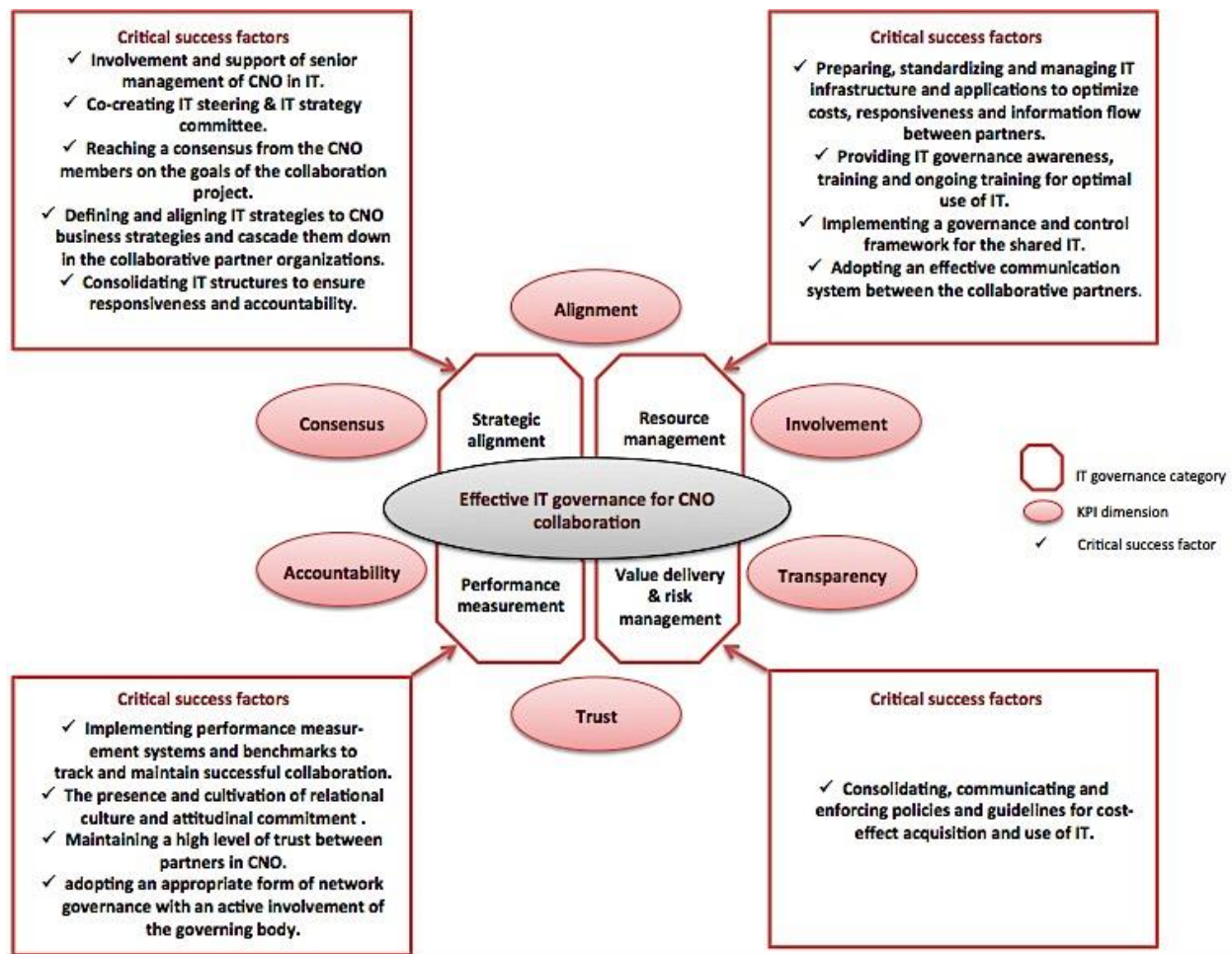


Figure 14: A model of effective IT governance in CNOs.

Table 5: A classification of inter-organizational IT governance CSFs based on their importance level.

Highly Important CSFs	Less Important CSFs
• Senior management involvement • Co-creation of IT steering committee • Reaching a consensus on the shared project goals • Ensuring an alignment between IT and business • Implementing an IT governance framework • Adopting an effective communication system • Cultivating relational cultures • Maintaining a high level of trust between partners	• Consolidating IT structures • Preparing and managing the IT infrastructure • Providing IT governance awareness and training • Implementing a performance measurement system • Adopting an appropriate form of network governance • Communicating and enforcing policies and guidelines for use of IT

Senior management involvement, the co-creation of the steering committee, reaching a consensus on the shared project goals, ensuring an alignment between IT and business, implementing an IT governance framework, adopting an effective communication system, cultivating relational cultures, and maintaining a high level of trust between partners are all considered very critical and highly important in order to achieve successful collaboration. Whereas consolidating IT structures, preparing and managing the IT infrastructure, providing IT governance awareness and training, implementing a performance measurement system, adopting an appropriate form of network governance, and communicating and enforcing policies and guidelines for use of IT are considered somewhat important for the collaborative-networked organization to succeed. These factors were considered helpful but not essential for the CNO to success. The importance of the CSFs may depend on the nature of the partnership and its goals and objectives.

Some IT governance practices have been observed to be vital at specific stages of the implementation of the shared project. CHAMP is still at the implementation phase of the shared information system, and the collaborative considers some of the factors to be important but only at a later time, once the system is fully implemented and operating. Based on the insights of the CHAMP steering committee members into IT governance, the proposed CSFs could be classified according to three main phases of execution for a shared project; these phases are the formation of the CNO, the implementation of the shared project, and the project operation, as seen in Figure 15. Accordingly, some factors such as providing ongoing training and awareness for use of IT, implementing a performance measurement system, and enforcing policies and guidelines for use of IT would only be deliberated once the shared system is fully implemented.

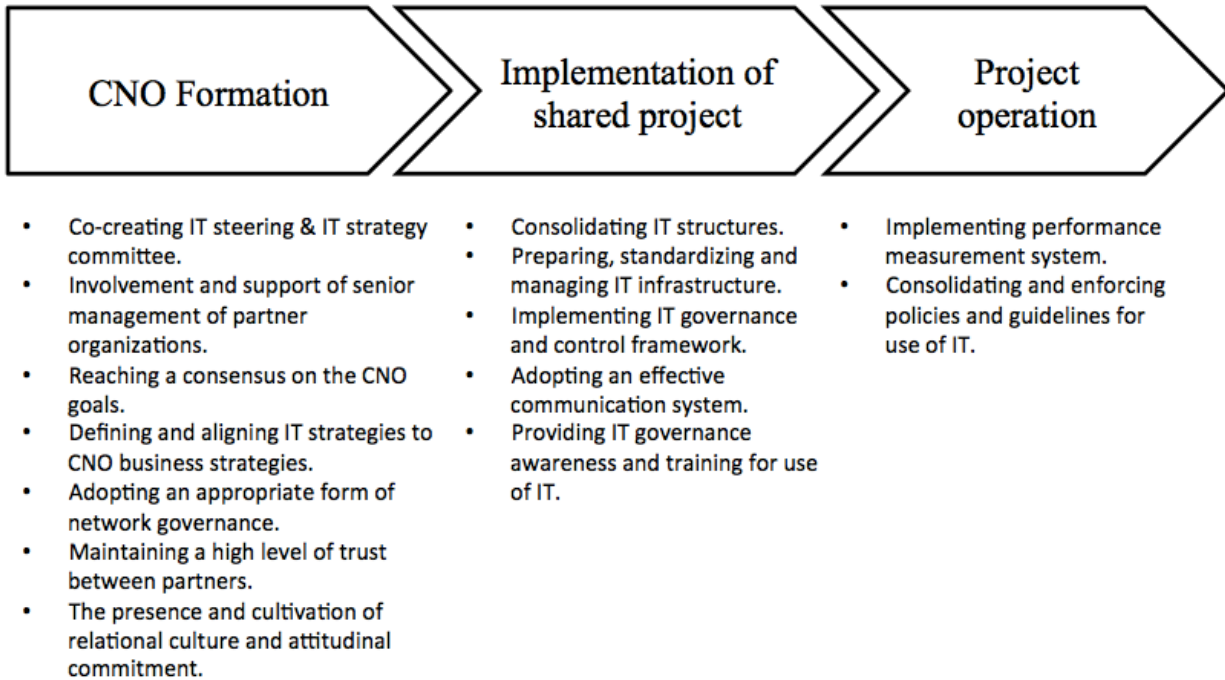


Figure 15: CNO phases and assigned CSFs of IT governance.

4.3.1 Communication and Culture: Most Critical Success Factors

The most noticed challenges and the most important factors in a CNO are related to communication and cultural differences. Those two factors are continuous challenges, even when a new member joins the CNO. Due to the high intensity of interactions among CNO members, miscommunication always occurs, whether between the collaborative's various members and groups, or internally at individual organization sites. In the CHAMP steering committee, there are usually two vice presidents representing large institutions: one in nursing and the other in operations. These two VPs alternate to attend the monthly meetings of the steering committee and communication issues arise when there is no debrief between these two members as of what was discussed during the meeting. Besides, there are serious communication issues at the partners' individual organizations, where the responsible individual fails to take the feedback and

information back to their organization, as they do not communicate properly. Thus, inadequate internal processes at each individual hospital sometimes get in the way of effective communication and therefore affect the overall performance of the collaborative.

For cultural differences, because the CNO consists of independent organizations with different needs and different expectations and capabilities, members continuously have to be flexible and responsive in order to effectively manage these complex differences. It is not only important to unify subculture beliefs and practices within a network, but rather to be flexible in decision making and responsive to the unique needs of the individual organizations.

4.3.2 Training

Rusu & Nufuka (2011) suggest the importance of training and IT governance awareness for the optimal use of IT. It is not only training programs on how to use IT tools that are important for CNO success, but also ongoing training. Ongoing training is a very serious challenge for CNO senior management. Since the collaborative may consist of large organizations that have hundreds of workers, training on new change projects necessitates considerable preparation and much management from individual organizations and their collaborative members, just for all of them to be at the same stage in the execution of the project. Ongoing training is as important as the initial training. Operationally, organizations have to constantly assess people's ability to adapt to change because it was noticed in the case that if they are uncomfortable with the change, people tend to hesitate and only do the minimum required. Thus, it is essential for the CNO to constantly train their staff on the new IT tools and to make them aware of their benefit.

4.3.3 Trust

According to Morgan and Hunt (1994, p. 23), trust is defined in the context of relationship marketing as “when one party has confidence in the exchange partner’s reliability and integrity”. In addition, Moorman et al. (1993, p. 82) defined trust as “a willingness to rely on an exchange partner in whom one has confidence”. Moreover, Rotter (1967, p. 651) defined trust as “a generalized expectancy held by an individual that the word of another... can be relied on”. All previous definitions of trust in the literature highly value confidence according to their field of study. The definitions demonstrate that confidence is dependent on the reliability and integrity of partners. Thus, a partner is trustworthy when he possesses qualities such as being honest, reliable, and consistent.

Furthermore, in the literature, trust depends on a partner’s reputation and history. According to Provan and Kenis (2007), trust is defined as the willingness to accept vulnerability based on reputation and past interaction experiences. In addition to viewing trust in that context, Meyerson et al. (1996) described trust in terms of long-term relationships as being history-dependent. According to both definitions, trust builds incrementally, accumulates over time, and is affected by the history of partners.

In the context of trust in collaboration, Vangen et al. (2003) state that in order to sustain sufficient levels of trust between partners, a continuous effort is required due to the dynamic nature of collaboration. Vangen et al.’s description of trust comes close to the notion of dynamism. While the literature points to trust as something that needs to be "managed", in the CNO, it is more of an emergent construct that varies continuously based on the actions of the

partners. In this context, it does not need to be managed per se but rather emerges as a consequence of what the partners do relative to what they said they would do.

Although trust appears to be, at least in the literature, a complex concept, it is much simpler in a CNO since it is based directly on the actions of partners. According to the interviews conducted for this study (see Appendix 2), trust is based on the present interaction experience and the actual behavior of the partners. Within a CNO, especially in a health care context, the foundation of trust is continually being re-forged based on the immediate actions of the partners. A partner who does the things he or she promised to do is considered trustworthy. If a partner commits to doing something and does it, trust increases. However, if the commitment is not delivered, then trust goes down.

Therefore, trust in a CNO is developed through the **constant evaluation of a partner's behavior versus his/her commitment**. In the current literature, trust in collaboration is conceptualized as one party having confidence in the exchange partner's reliability and integrity. While, as the literature suggests, a reputation for being trustworthy based on past experience can help create initial trust, the point emerging from this study is that trust is continually updated as partners demonstrate through their actions their willingness to do the things they said they would do to help the collaborative.

4.3.4 The Health Care Aspect

There are likely contextual elements to this notion of trust as an emergent feature of CNOs. The health care context calls for high reliability, as errors can have serious consequences. Health

care facilities therefore have to conduct relatively error free operations and make consistently good decisions resulting in high quality and reliability (Roberts, Madsen, Van Stralen, & Desai, 2005). Health care organizations are exposed to a higher level of risk since they deal with people's lives. Thus, they need to ensure they provide optimal services to patients, with the least amount of errors.

In addition, the high complexity and often times diminishing resource base of a typical health care institution means that one of the ways for the hospital to maintain high quality and reliability of services is to collaborate with other health care facilities. Therefore, the motivation to collaborate might be more pronounced in this environment than in a private sector context.

Since CHAMP brings a specific value to its partners, which is to deliver end-to-end patient care, organizations are encouraged to participate in order to improve their operations. Essentially, CHAMP provides an electronic infrastructure "MEDITECH" that allows collaboration and communication between hospitals to take place effectively and efficiently. It also allows organizations to develop innovative and collaborative solutions that improve the quality of the services provided, reduce operational costs, and gain a competitive advantage. Moreover, since hospitals operations and patient care are time sensitive, collaboration facilitates the provision of services in a timely manner. All the mentioned benefits of collaboration are considered strong motivators of participation and they help increase the reliability of the services provided by the health care facility. Consequently, senior managers of that facility would have more interest in being part of the shared project. This situation suggests that a partner who does not deliver on a stated commitment could create serious issues for the collaborative and for

partner institutions. Accordingly, it follows that little margin for error exists and therefore a partner's behaviors relative to their stated commitments are continually evaluated.

Chapter 5: Conclusions

5.1 Research Summary

Organizations tend to engage in collaborative projects to reduce cost, increase value, and gain a competitive advantage. The emergence of IT tools and web-based technologies is significantly impacting the formation and functioning of CNOs, and organizations tend to rely on information technology as the backbone for collaboration. As a result, it is vital to effectively manage the shared IT assets to ensure the success of the CNO, which is why the governance of these assets is an important issue.

The mainstream research on effective IT governance tends to emphasize the single organization as the unit for analysis. Despite the importance of CNOs, there is lack of research in the area of effective IT governance for inter-organizational collaboration. In this thesis, we sought to develop and validate a model of inter-organizational IT governance. We also proposed a measurement model of effective IT governance for CNOs.

The proposed model consists of a number of critical success factors (CSF) that define the most important management-oriented guidelines and practices to achieve control over the shared IT tools in CNOs. The factors are classified according to the four main categories of IT governance, which are *strategic alignment*, *resource management*, *value delivery and risk management*, and *performance measurement*. The proposed CSFs are concerned with the strategic level of the network and would help the CNO succeed and enhance the overall collaboration.

Moreover, the proposed key performance indicators measure the critical success factors. These KPIs are essential to evaluate the effectiveness of partners working together, in joint processes, toward a common goal. The KPI dimensions for CNO IT governance are *consensus, alignment, trust, transparency, involvement, and accountability*.

The proposed model was evaluated and validated using a case study in the healthcare sector. The CSF part of the model was validated based on the insights of ten experts in collaborative projects. The proposed CSFs were all considered relevant, although the findings suggest that some are more important than others. The proposed KPIs were evaluated by the same experts, and were all considered useful for measuring the effectiveness of inter-organizational IT governance. As a result of the case study, we now have information and observations concerning the most and least important CSFs, issues and interpretations related to training, communication, cultural differences and trust between partners, and the distinctive nature of collaboration in health care.

5.2 Research Contributions

This thesis focuses on providing a model for CNOs, to help them effectively control the shared IT assets or systems that support collaboration among the constituent partners. We contributed to the literature by modifying an intra-organizational IT governance model (Rusu and Nufuka, 2011) for CNOs. These modifications include the addition of IT-governance-related success factors concerned with the challenges of the CNO nature, which include collaboration, trust, and cultural differences. In addition, we validated the proposed inter-organizational model with a CNO in the healthcare sector. Based on the results we refined our

definitions for some of the CSFs such as trust in CNO and prioritized the CSFs according to their importance level. Finally, we identified KPIs that can be used to measure IT governance effectiveness in an inter-organizational context.

5.3 Research Conclusion

Based on the findings of this research and of the case study, we arrived at three main conclusions. First, very few formalized CNOs seem to exist. The healthcare environment case study used for this research suggests that certain conditions likely encourage the formalization of the CNO. For example, organizations operating in high risk, complex environments where resources are limited tend to focus more on formalizing their IT processes and communication, since they require low error rates, safety, and a high reliability of processes and services.

Second, the sector's characteristics might influence the perception of the CSFs. For example, the concept of trust between partners in CNOs is simpler and more dynamic than what the current literature suggests: it is continually formed and adjusted according to the behaviors of the partners versus their commitment. In addition, the distinctive characteristics of the CNO in the healthcare context influence the demonstration of values and the behavior of senior managers. When partner organizations tend to voluntarily participate in the shared project, they would naturally be very supportive, committed, and more trusting. Thus, performance measurement systems and benchmarks are not considered to be very important to the success of the collaboration.

Third, the goals and objectives of a single CNO can influence the IT-related success factors and their assigned KPIs. For example, policies and guidelines related to IT, IT structures, and standardizing IT infrastructures don't have to be consolidated in situations where the CNO organizations need to maintain their autonomy. There may not need to be a consolidation. In fact, perhaps the infrastructure should be owned by a third party. To illustrate, the case study CNO adopts a central hybrid model/structure to manage and control the IT tools. One partner plays the role of the leading organization and the service provider that directly manages any of the collaborative IT infrastructures, while the other partners make use of IT in a collaborative way. This form of IT governance structures, in which IT is centrally controlled, was preferred among other structures to avoid accidents that could possibly affect multiple hospitals.

5.4 Implications

5.4.1 Implications for Theory

The development of governance models for intra-organizational IT is fairly advanced theoretically, for inter-organizational governance, particularly in collaborative environments where more than one organization is involved, issues of trust, communication, and collaborative models need to be further integrated into theoretical models. Also, the use of performance indicators for CNO governance is a relatively immature area that requires further empirical development.

5.4.2 Implications for Practice

While models might be more or less informal in for some collaborative environments, organizations operating in high risk situations, where high reliability and safety of operations are required, more formal structures are likely needed. In addition, measurement of impact is is a challenge but will likely help CNOs better structure their IT systems. Again, some might be more formal than others depending on the context of collaboration. Therefore, the study suggests that CNOs consider the context of the collaboration in determining the degree of formalization needed as well as measurement strategies to monitor performance.

5.4 Limitations

This study has contributed to a better understanding of IT governance in CNOs, but the conclusions must be interpreted in light of the limitations of the study. The proposed CNO IT governance model was evaluated through a single case study, which makes it difficult to generalize the findings. Another limitation is that, as discussed earlier, CNOs in the healthcare sector might be different from those in other sectors, which again limits our ability to generalize the proposed solution. In addition, the key performance indicators portion of the model was evaluated based on the insights of ten participants, but since the case CNO had no measurement model or any sort of metrics in place, their insights are not based on actual experience with the use of these measures. Still, given that few research projects have sought to test IT governance models within CNOs, this research provides a starting point for further research into the governance of IT systems used within networks of organizations.

5.5 Future Works

Effective IT governance for inter-organizational collaboration is an area for continuous research. The nature of the collaboration in our healthcare case study might be different than other sectors in terms of their values, goals, and needs. Thus, evaluating the model by conducting case studies in different sectors would be useful to explore the most critical management-oriented practices needed for network success in those sectors. Also, further work can be done on the formation and validation of the key performance indicators for assessing inter-organizational IT governance to include more of a variety of IT-related indicators. Research on effective IT governance for other models of collaborative networks such as Ad-hoc collaboration would also be of interest, in order to see how this form of collaboration varies from more formalized CNOs.

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Appendices

Appendix 1: Questionnaire

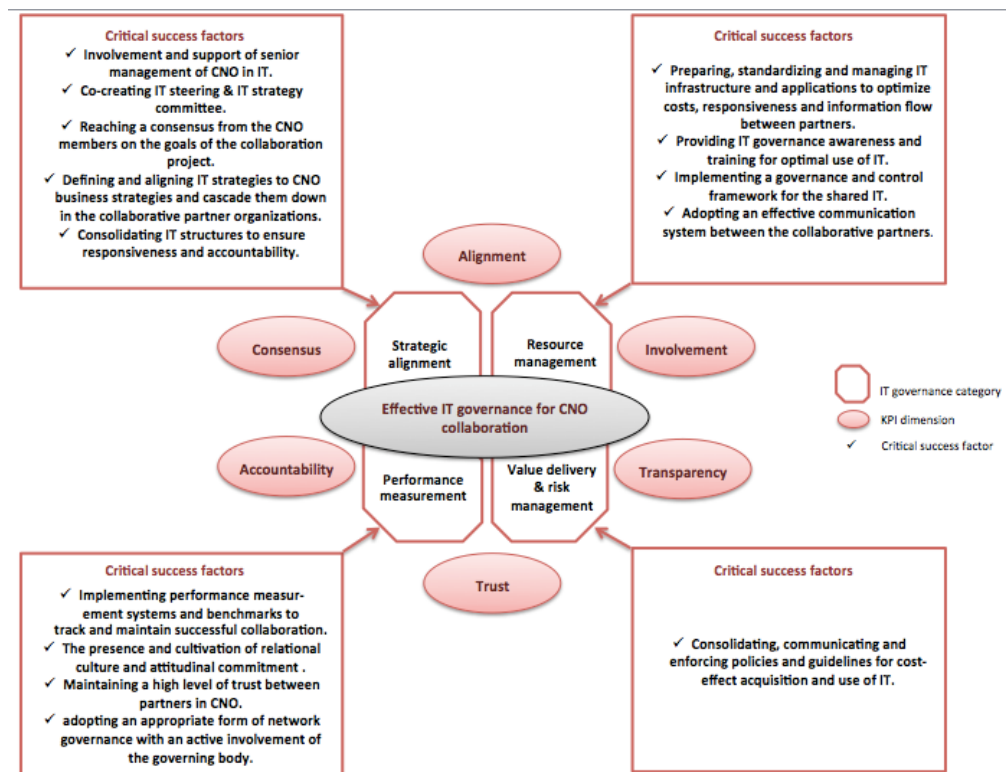
Your role in the CHAMP collaboration project:
Your contact number or email:

BACKGROUND

Organizations of all sizes and in a variety of different sectors, including health care, are forming alliances and other forms of collaborative structures to reduce costs and improve quality. Many of these alliances can be seen as *collaborative-networked organizations* (CNOs), which use different IT resources and tools in order to communicate and maintain successful collaboration. At this point in time, despite the importance of inter-organizational collaboration, little research has been done to examine the critical success factors involved in shared IT governance among members of the CNO.

Accordingly, the purpose of this research project is to identify these critical success factors and key performance indicators for IT governance in CNOs. The research thus far has developed a framework for shared IT governance as depicted in Figure 1. We are seeking to validate this framework by gathering your opinions on the importance of each of the critical success factors.

Figure 1: inter-organizational IT governance framework.



Rating of Critical Success Factors for Inter-organizational IT Governance

Kindly rate the criticality of the following success factors of IT governance for collaborative-networked organizations and comment about the factor if needed:

Success Factor	Important	Somewhat Important	Not Important	Comment
1- Involvement and support of senior management of each CNO in IT.				
2- Co-creating IT steering & IT strategy committee.				
3- Reaching a consensus from the CNO on the goals of the collaboration project.				
4- Defining and aligning IT strategies to CNO business strategies and cascade them down in the collaborative partner organizations.				
5- Consolidating IT structures to ensure responsiveness and accountability				
6- Preparing, standardizing and managing IT infrastructure and applications to optimize costs, responsiveness and information flow between partners.				
7- Providing IT governance awareness and training for optimal use of IT.				
8- Implementing a governance and control framework for the shared IT.				
9- Ensuring transparency and adopting an effective communication system between the collaborative partners.				
10- Implementing performance measurement systems and benchmarks to track and maintain successful collaboration.				
11- The presence and cultivation of relational culture and attitudinal commitment.				
12- Maintaining a high level of trust between partner organizations.				
13- Adopting an appropriate form of network governance with an active involvement of the governing body.				
14- Consolidating, communicating and enforcing policies and guidelines for cost-effective acquisition and use of IT.				

Other critical success factors of CNO IT governance from your point of view (please list):

Performance Indicators for Assessing Inter-Organizational Governance

To what degree do you agree that the proposed key performance indicators identified in the following table would be useful in assessing governance effectiveness? Please provide comments on the indicator as needed.

Dimension	Indicator	Description	Useful	Somewhat useful	Not useful	Comment
Consensus	Goal Consensus	The level of partners' agreement on the CNO stated goals and objectives "collaborative project goals".				
Alignment	Understanding of business by IT	The level of awareness and understanding of the business strategies, policies and goals by the IT staff.				
	Understanding IT by business	The level of awareness and understanding of the IT strategies, policies and goals by the business people.				
	Business perception of IT value	The level of IT value perceived by business people.				
	Role of IT in strategic business planning.	The degree to which IT is involved in business planning.				
	Shared goals, risks, and risks/penalties.	The degree to which IT is accountable for shared risks and rewards.				
	Business strategic planning	The degree to which business strategic planning is managed and integrated across the CNO.				
	IT strategic planning	The degree to which IT strategic planning is managed and integrated across the CNO.				
Trust	Partners trust	The density level of trust relations among collaborative partners.				
Transparency	ICT usefulness "media channels".	The effectiveness of each of the communication channels in the shared system e.g. ICT tools.				
	Information accessibility & availability.	The degree to which CNO members can find and access certain information using the IT system.				
Involvement	Senior management involvement.	The degree to which senior managers of a CNO are involved in IT-related decisions.				
Accountability	Task clarity	The clarity level of roles definitions and responsibilities allocation of CNO members.				

Additional performance indicators from your point of view (please list):

Comments on the framework:

Appendix 2: Interview transcript with the Vice President of Queensway

Carleton Hospital

1- Please describe the ways in which you collaborate with partner organizations?

It is a voluntary partnership where we have essentially six hospitals that share information services, so that the information system called “MEDITECH” which is health information provider is very common in Canada and US, and we run what’s called a single instance of that software here at Queensway Carleton hospital and we have five other institutions that connect to it and use it for their own purposes, so there's an integrated system that provides health services from registration functions to lab reporting through to patient results reporting and charting order entry and everything that health providers need to do their job. so it is a voluntary collaborative, that's basically a membership driven group that is centralized here at Queensway Carleton Hospital “the service provider”. We have a steering committee that were accountable to ensure that the service levels that we agreed to are met and we run in approved group projects through the steering committee that you attended a few weeks ago.

2- How many organizations do you partner with to deliver services to clients? Can you describe these organizations?

The network composed of basically 6 hospitals. They are Bruyère Continuing Care, Queensway Carleton Hospital, Arnprior District Memorial Hospital, Carleton Place and District Memorial Hospital, Royal Ottawa Health Care Group and Montfort Hospital

3- Who are being engaged in the collaboration project from your organization?

From the Queensway hospital: Quite a broad group because the systems that were talking about are clinical applications. We have involvement from everyone, starting with the CEOs through the senior VPs to the clinical directors that are working with other clinical directors at other hospitals to create assured health record. So right now the latest project that we completed in June was to develop and share a system of nursing and allied health documentation. so rather than having nurses write on paper now they document online so to do that we need to have a process to share ideas on what the chart should look like on the electronic system and then implemented , and that was done with the team across most of the hospitals and involved administrators, directors, and front line staff. So we people from both strategic and operational levels of the hospitals who work together.

a. Do senior managers of your organization engage in or support the collaborative project? If yes, how do they support it? What are their roles?

Obviously, all the CEOs have to support it because it's voluntary collaborative, so we have agreement at a very high level by all the CEOs to participate and we have standard documentation, legal agreements that bind everybody to this collaborative, so within that we also

have agreement with our boards, with our finance and audit committee to provide the funding needed to participate in the projects, so its one thing to collaborate but at the same time if you cant come to the table and participate in a project; to do lets say the next big project that we are working on is the emergency department information system, so its one thing to be a partner but if you don't have the budget and resources to participate in the project, you cant be part of that module, so that requires the support of the hospital executives at each of the hospitals as well as their boards to free up the capital dollars needed to support and implement a project.

- a. To what degree do you think their involvement is critical for the success of the collaboration?

It is critical at all levels, if there is not binding and support for the project, then people don't participate. it is a voluntary participation, so if the senior team, and boards of directors of each of the hospitals are not supportive, they don't join, so its very simple.

- a. Is there a committee that is responsible for IT-related decisions such IT investment or purchase?

Because it is a voluntary participation we require voluntary commitment of resources, so if you have a hospital that doesn't want to implement something, then they don't have to do it. so we do have a service-level management group that looks whether the operational side of CHAMP actually is delivering what we promise, but at the level of the investment, new projects are still under the control of each individual hospital but there is an operational fee that they paid to be part of CHAMP to make CHAMP work. But there is specific IT steering or strategic committee for CHAMP.

So basically the steering committee provides oversight and approval to advance new projects and to evaluate the existing services through the service-level management group, so if a hospital or group of hospitals want to start a new project, they would have to do a project scope document and send it to the steering committee, and the steering committee have to approve it before CHAMP would take that on and then develop a project plan, project budget and have people participate in the project.

At a high level, we have also mapped out a kind of a strategic plan to get to the fully electronic health record, we are about three quarters the way through. and there's a bit of a road map that says; so first we going to do project A, then B, C, D and then we are done, we are in operations. So the steering committee will provide oversight on the new members and right now we have lots of work in front of us. so we are not looking for new people to join, but at a certain point we want to bring on new customers because every new person you get to participate, it lowers the overall cost of all partners. so it is like a critical mass, the more people we have using the system, the less the overall operating expenses go up, but the overall cost to each individual organization goes down. So, they would look at those types of decisions; is now a good time to bring on a new partner, what would the effort be, how would this impact other projects, so they will provide oversight on those types of matters.

- a. If yes, describe this committee; how it was created? Who are its members? What are their roles? To what degree would you think that this committee is important for the success of the collaboration?

Representatives from each organization form the committee. The committee is key in the success of the collaboration, and making sure that they are aligned and engaged is also critical because we elicited to have a committee of senior executives, so in the case of the small hospitals its typically the CEOs, and in the larger institutions it's typically two senior VPs, VP of operations usually responsible for IT or finance and then a clinical VP usually a CNE "chief nursing executives", and that's good because it gives you the feeling that you have someone who's in a decision-making position at the table, so when they say when we let's say doing a new project and every body votes to participate in the project, you know you are dealing with the senior VP or CEO. it is not like when some body says yes I'd like to do the project and then they go back to their institutions and someone says: oh we don't have the budget or whatever. So it should help with confusion on that point. the downside though is most of those people are pretty busy, for some of them its hard to get full engaged in just because of their schedules, so we have a couple of hospitals that will alternate, and send instead of like two; the VP of operations and the VP of nursing , they will alternate and we have seen instances where there is issues or communication problems where we don't necessarily have alignment between those two people and they are not at the same time here at the same story, and we end up with issues, so it can be good and bad, in either case you have to manage it.

So the members of the committee are usually 2 VPs from each of big hospitals; one on the nursing site and the other on the operational site, and for small hospitals it is CEOs, but its one vote per site. So just because we have to people from Queensway, if we are voting to approve new project we don't get two votes, we have to make sure we agree between the two of us before, because we don't want one person to say yes and the other one say no, so its one vote per facility.

This committee is not a technical committee. So the service level management group that is responsible for assessing compliance against these service level agreement has typically that's where you see technical people, typically the directors of IT or managers of IT that work at that level. It is a little bit different, its hard if you're familiar with software or IT world, it is a little bit different because these systems are typically prepackaged "12;20" , they're primarily proprietary and they're implemented in a very formulaic way and even the hardware requirements are dictated by, so if you go to MEDITECH and you want to implement the system, they will connect you with the hardware vendor that will help you set up the technology and then recommend a design of that system that the technology firm will build for you or with you and then once that is done then you load software. so there is less technological impact when you look just at the system itself then you would normally have it in a free-form development context. So if you and I form a company and want to develop a piece of software, there would be a little bit different because we have to create the technology, create the application, create the business case, the use case and then bring those things together and you know and then deliver the package, whereas they are already done that with MEDITECH and they sort give you; you know, if you gonna implement the system of this hospital for these modules you need these many servers connected in the following ways with the storage capability, this network ability and then they say work with these vendors to make that happen. So the IT component of it is less rigorous because of

that approach.

So the SLA management group role is not so much on the hardware side, its really just saying here is that we committed to doing in terms of service responsiveness, delivery times, access to things that the service providers accountable for under the SLA; such as : did you meet it? did you comply with the turnaround times for the requests. Because the job of being proactive on the technology side is really with the service provider to make sure that we are growing the infrastructure with the pace of change with our partners and then making sure we are communicating so that people can fund it.

- When you want to communicate with your partners when talking about IT decisions, do you just talk about it with committee?

there is also a project management office so that each of the institutions have a project management lead of their organizations and then they come together in weekly project management meetings. so there another very important group of people because that really where the rubber is in terms of project work in communications. And we had some pretty serious communication issues at some of our partners where that resource fails to take information back to their institution. so a small example would be, when you need to take the system down for maintenance, so that's something that typically be discussed at the project management group to get feedback and then when its decided, it goes to our steering committee but then the communication has to go from somewhere to those organizations that is usually through the project managers group, but that doesn't always happens. We actually have issues where staff doesn't communicate properly, or with another example of, we are trying to lunch a new project, we have a project charter that's proposed, we send it to the partners for feedback, and then just like as one of the VPs at the meeting said " I have never seen it!". Its been circulated, its been with the project manager since three months , how is possible that you didn't seen it. Not because you have a good structure means that people follow it. On that particular issue I don't know what happened because Corey, who is the regional project director went to the project manager at Montfort and said like we talked about this three months ago and he actually got upset, and he said: ya I had a meeting with the director with this clinical informatics with all those people we got all these feedback, so I cant explain why the VPs have no ideas about it, right. So its not only at one site, there can be also some internal processes at each individual hospital that sometimes get in the way of effective communication. It is the responsibility of each hospital. And because CHAMP is new people sometimes are unclear about what the role is of CHAMP versus their own institution and you heard a little bit about, they are probably the committee, if you want to do this and you just go directly to this person in my hospital, I don't have to take anything back, but like you are the representative from your organization, this is decision making we decided that we are going to make this decision, you approved it take it back to your institution. So we are still working through some of those issues, because on some issues its not its very clear that the project charter is very clear the project managers will work through the details that to the organizations and bring it back to the steering committee for decision, but other things like what you heard at the meeting when we talked about the privacy management software, that one is little bit different because it's a capital purchase, the privacy people have to be engaged so you know I think the point of that VP was like I don't know about that, the sure idea the privacy officers agreed and then great work with them but I don't want to get involved. So sometimes it can be fuzzy, but anyway, I think the way we would like it to work is that when

you're at original meeting, you are there because part of your role is still to be able to take things back, and you know your organization better than we do, so if there is some thing that it is related to Emergency Department, then you should know who the ED people who are in your hospital to be able to show to them, get the feedback and bring it back. We don't know who those people are.

- so is that a problem in information dissemination?

That's not really a problem, that's complicated, because CHAMP is new so we are doing the job that normally will be done by the IT people in individual organization. So things that you take for granted in an organization where you have proximity two VP, so If I know we are doing something that gona impact Carolyn Brennan is a CFO and she is responsible for corporate services, if I am doing something that I think is gona impact her, I will see her walk pass by door and say "hey Carolyn and I want to make sure that you are doing XYZ, carolyn: oh ok thanks". But we don't have that, they don't bump into people in glengarry every day. So as a takeaway for us I think as much as the membership of the different committees in CHAMP whether its clinical group, service-level management or the project management office, we need to make sure and take extra care and not take communication for granted because when we do sometimes we have failures at those points at each local hospital and things don't get communicated properly, and that leads to confusion and frustration for everybody.

- What are he different authority groups?

The key authority group is the steering committee. if the steering committee ever runs into a dead log or an issue that they can't solve, then we bring the CEOs of the member hospitals together and that doesn't happen yet.

Clinically, there is a clinical group as well as the physicians group and their decision-making authority is different. they would help with design issues around the patient chart, so they would have Authority to very simple...umm so in the chart you might have in the old days a form that a nurse would fill in like checklist of things such as blood pressure etc.. so the clinical decisions would be okay in the electronic health record not the paper, so what this should look like, what best practice needs to be there so that check , maybe the best way to do that its not just to do blood pressure, is to do ten other things. So They would assess those clinical literature and they make sure that those things are inside the chart. So they have decision-making authority to design clinical things in the record or how things work but the authority around timing, budgets and scope is solely with the steering committee, and thats why they have final say on what projects go for first, second, third or ...

- Are the goals of the collaboration developed jointly or does each organization define it's own goals?

I think the goals are defined collaboratively as a group, sometimes I wonder if other institutions had different views of what the goals are, but I think as a voluntary partnership, its all based on a shared vision of efficient cost-effective shared electronic record. so the reason we only did this is because its more expensive to do it individually and then at the end of the day we share information seamlessly. So if you come to our emergency department this weekend and you tell

us that you still have very bad headache because last week you fell in the East End and you went to Montfort and you had an MRI to your head, we register you, we can see that stuff... in old days we have the phone; send me the information in, put in the fax, get a CD, put in the carrier... now, its just right there. so that's a very effective clinical tool. So those are the fundamental goals of CHAMP and I think that the goals that are shared, And that the evidence by the participation we have in the collaborative.

- How do you make sure that your organization goals are aligned with collaboration goals?

That is an easy question, because we are the people who stood up and created CHAMP and with our partners, so QCH was built on the model of collaboration back in 76 and at that time one of the reasons this hospital was built is that laboratory costs were increasing at a disproportionate rate and you had small hospitals in the west "Arnprior, Carlton place, elmont" that were experiencing issues with their laboratory cost and recruiting issues with laboratory staff. So, that one of the things that we did is we built and created Queensway, we created a centralized laboratory here at Queensway to service the needs of the valued "24:52" hospitals. So, I mean, QCH and through things like bylab program to other shared centralized services that Carolyn our CFO helps officiate like; laundry linen, food services and then there is couple of... you know QCH is a sort of a naturally collaborative organization, so doing something like CHAMP with sort of a natural thing for us. Also there was no need to sort of look at our goals and objectives and our values, and then trying to line them up with CHAMP, they were basically the same. Typically, when we have issues with CHAMP because there is other hospitals that are in the process of aligning to that philosophy.

- How would a consensus on the collaboration goals from the partners be obtained?

Well, I think, you know, because it's voluntary, I think you, you have to, when you come to the table, you have to agree that this is what you want to do, right? When we have issues like we have issues all the time, it's because people don't, aren't aligned enough, right? So, you know, you have issues sometimes with partners where they say, well, yeah, we agree with a, with a high-level work plan that we're going to do these projects.

But then, you know, we thought about it, we don't want to to do that we want to do this. Right? It's like, okay, we can do that, but we agreed, we were going to do this in a certain way and having one person do something individually or independently is counterproductive, and somewhat not in line with the values of, of the organization, right? Doing things together, again it creates, it's more efficient, it's more cost effective and it, and it results in a more robust patient Tool. Like for patients, it's better for patients so having people doing stuff independently limits the utility of those three goals.

- So when you have like if you have to talk about certain decision, a new project or whatever, a new idea so you, You seek the consensus during the meeting of the committee. Like, so, you for example, you say your idea and then other people they say yes or no.

Well, the, it's more formal, in most cases that, in most cases when things need an actual decision,

like other than something simple, like you know.

Like a, someone puts a motion on the table that's you, it's unusual. Most of the decisions that come to the committee are structured. So we have decision documents that are quietly, quite thorough. That, that, that must be felt like it's, it sounds bureaucratic, but it's basically a form that you fill in that outlines.

You know simple, here's the problem, here's the discussion of what the issues are, and then here are a list of options. And then here's the recommended option. And typically that decision document will be, excuse me, will be created by the decision owner. So someone who's proposing a change, let's say. They'll fill that in, look at the options, and then it will be vetted through the project management office. And then typically what they'll do is they'll get feedback into all the options, and then they'll try and arrive at a consensus at the project management office, so that it's the, the decisions that have already been vetted.

And then it gets presented at the Steering committee, so It's pre-circulated so people can read it and that way everybody comes, in theory, to the table ready to discuss it if there's an issue, and vote on. So you don't get a lot of stuff coming from the floor, as in where like someone just says hey, I have an idea. And it's like, right? Which is counter productive in most cases because, you've got a fairly high level group of individuals on the steering committee, right? So somebody's says, kinda like the decision around the emergency department, right? Well, I, I don't know that my director of emergency has seen this, so I can't I don't want to say anything, right? And now it turned out that he had, and there was a communication issue between the two, what I perceived to be a communication issue Internally at that institution. But you know it gives each of the VPs or CEOs, a chance to have their people talk about the issue. To have their people bring the results of that discussion to them, so that they can discuss it. And then the whole document goes in a transparent way, to the steering committee in advance. And then you discussed it and go on. So it's a, sort of a formal structure for decision making. That's based on, on pretty solid vetting of information. Discussing of options and approval.”decision making structure”.

- Okay, so any change goes first to the project management group?

Yeah.

- And then they study the change?

Yeah. And then they make recommendations. Agree on the recommendation or the option to be selected, and then that gets up through the steering committee. And that way, you know, some of the decisions could have operational impacts. Some of the decisions could have financial impacts, right? Somebody wants to change a date. Somebody wants to push a date forward. Somebody wants to start a new project. So, that vetting process ensures that all those things are at least scoped out at a high level, so that there are no surprises when you actually make the decision.

- I want to talk about how you cascade the collaboration goals into the operational level into like the QCH? So how, how do you cascade the collaboration goals down to the operational level of your organization? Like to bring IT and business people onto the same page.

Well, I think, I mean, so there's some simple things. I mean, the other thing to it's kind of a tough

question because you know, the, for front line staff or for managers, I mean, we're not really doing anything differently. I mean, we might be doing, there's branding.

So people will see CHAMP, right? So before you used to see, if we were doing a presentation on something, we were doing an IT, it would just be a presentation, right? But now you see CHAMP, right? And you say, okay we're doing this. And we're you know, we're now sensitive that other hospitals are involved, right?

And we have in certain cases regional groups that are QCH people to participate in to develop certain things. But in terms of cascading the goals and objectives, I mean there because there's an alignment between CHAMP and what QCH is doing. It's not really, it's kind of transparent, if I could put it that way and it's also, like it's not a separate corporate entity either right. Like QCH has, runs the data center for CHAMP, but it's not a separate corporate entity right. There's no CEO of CHAMP or. A separate office where CHAMP exists downtown, where there's different like, everybody that works for CHAMP either has a QCH badge, or a badge from Bruyère or a badge from Montfort.

Like it's a, you know what I mean?

So, so it isn't really, and it, and the other thing is it's a service, right? The way that we. Like the IT is a service to support clinical operations, so it's just, you know, it sounds silly maybe to you to hear that we don't really cascade the, the goals of the organization to QCH, because they're, they're just, they're transparent.

It's not a separate corporate entity. It's a member owned, Member-driven organization and so it reflects the corporate goals and priorities of the organizations that, that created it.

Where as you know, as a comparison the food services organization that provisions the food. Like we have a cafeteria, but all the food is prepared and set up at a separate location and shipped to each of the hospitals here that we help run. It's got it's own CEO. It's got it's own building. It's got it's own board of directors. It's got it's own governance structure, right?

It's got it's own revenues. And you know, like it's, you can go, you can drive down there. Park and walk in the building and see it, right? CHAMP doesn't have that, right? CHAMP. You know, before we had CHAMP, we had a data center QCH, right? We still have a data center QCH, just got a lot more stuff in it now, but it's not really.

Whereas the food services, right? You'd go there. They have their own mission statement, their own values, their own corporate development, their own everything, right?

Where as us it's just either QCH, it's QCH?

- Do IT and business staff have mutual understanding of each other goals and roles?

I think so, but that's I think that's where that there in any IT project there always can be confusion, and you need a good alignment between the IT folks and the business side. Yeah. So we try and I think do, do, we really, with a successful, and a successful IT project in a hospital requires that you have a very strong alignment. Having said that, hospitals are, are unusually complicated organizations, right? Where you have you know, the key business drivers in the organization are independent contractors.

Independent contractors, right?

So the physicians don't work for, generally don't work for the hospital. And so making sure that they're engaged, and that they have input that's productive into what we're trying to do is, is critical. As well as it is for nurses and allied health and, and other workers in the hospital. But, physicians in particular pose a unique challenge.

Because, they're not accountable to the organization.

-So do business and IT like do they meet regularly to outline collaboration goals with IT goals?

Yep, yep. So I know internally, and this is where there may be differences between hospitals within CHAMP, but within QCH we recognized the importance of integrating those individuals directly into planning activities. And with physicians in particular, voluntary participation in key projects like this at least from our perspective doesn't work. So we've, that's not to say the we can't engage people voluntarily, but if you want dedicated feedback like what I was explaining about the chart. Where you can get nurses that are on your payroll, so you can say you need to go to this meeting and talk to us about What needs to be in this chart? Physicians is different, right? You can have a meeting with them once a month, but if you need direct feedback you have to pay them. You have to create positions. So we've, we've actually embedded going forward we've embedded positions physician leads into each of our EHR projects to ensure that we have dedicated resources to input into the design, the roll out, and the strategy for any of our projects. And we've also recommend that our partner hospitals do that as well.

So that's how, that's how we would, one of the ways that we ensure That there's a limit between the business owners and the IT staff. The other thing is typically when we do a project like the emergency department information system, we will have a physician lead that's paid usually one day a week and on average right?

During you know, three four weeks before go live it's probably five days a week.

But you know, 18 month projects about a day a week. And then for what we call the build team, we would have IT people partnered with staff that are seconded from the department, in this case the emergency department. We would take nurses ward aides, clerical resources, put them on the team that works on the build and the design, right? To actually make everything aligned. you don't want just the IT guys standing there programming, right? You want, you want them to have some knowledge from the emergency department, and they work along side the IT people to do the to do the work.

- Okay, so this happened whenever change happens?

Whenever, usually when we're deploying, when we deploy a new system, that's the project team. We create a project team it will be a combination of the business owners and IT staff working together. So you have an experienced IT person that's implemented a number of, I'll call them modules, in the past. So they understand the system, they understand key decision points, they understand how the system behaves, they can speak the language, right? Because it's MEDITECH all like when you're building it has it's own lingo.

But then they can sit with the person who works in the ED to say: Here's how things work when patients come in. So here's what I think we need to do to build, right?

And then, but they're just the people that do the actual work. We have a committee that's regional that has participation from each of the hospitals to design the high-level design like we were talking about. What that, what should it look like? What should the workflow be? And then they translate that and they do the build.

So that's how we try and align the business unit.

And then as a last comment, when we're, when we sit down and do training. We will typically use if possible, as many people on the core team to train super users that do the training for the front line staff. So, yeah, someone who knows the system that saw the design, took it, built it,

and then can teach somebody how to use it by having a direct connection, and then those people go and train front line staff. "training"

- This happens in every hospital?

It should. How it actually happens, it might be slightly different in each hospital. The general process is the same. But, but the important generally speaking, if we do it right the Team they do the building that I was talking about is not just from the QCH hospital. So with the last with the nursing documentation that we just did in June, the team was, you know, we had IT people and we had nursing, but we had an IT person from Montfort, Queensway, a nurse from Arnprior, a nurse from, two nurses from Queensway a physiotherapist from Bruyere, and they came together as one team here, and did the build.

- Do the Queensway hospital have another collaboration other than, than CHAMP?

Yeah there is quite a few of them. I can send you a list. The, the big ones would be food service and linen, laundry linen. And I can get Carolyn to send you information about that.

- What kind of preparations did you take in order to start collaboration and the communication between partners?

This is a trick question. I mean CHAMP, CHAMP actually started about ten years ago. Where.

-That's 2004?

Maybe not ten years, about eight years ago when Carlton Place was in the position where they were looking at getting a new system and they asked if they could buddy up with us.

I'll use that, and we said sure. And it was just as easy as just saying, yep, sure, easy. Right? And then, Arnprior joined. And then, we started thinking about, and that was on an old version of MEDITECH. And, we knew we had to get more current. And so, when we talked about going more current, we then heard from another hospital that was thinking about doing the same thing and then, another hospital that was doing the same thing and so they did helped do a, like a feasibility study, that showed that we'd save millions of dollars if we did it together. And, and they said, the only thing you need is you need someone to volunteer to be the service provider. Then I stuck up my hand, and I said, I'll do it. Right. so that's, that's kinda how CHAMP started.

- I mean, if any now for, for the meantime, if another hospital wants to Join? Like what kind of preparations do they have in order to start, collaborating? Or start to be part of CHAMP?

Well the first thing is, that we would have to agree to take them. Right. And like I said, right now, we're very busy with a number of projects, so we probably don't have the capacity to take on anybody. But I think,. If we were ready, the first thing that the hospital would need to do is do a, an RFP; A publicly tendered RFP because it's I can't, I can't see anybody doing it for less than \$100,000 so you'd have to tender it, you'd have to select MEDITECH as your vendor. And then you have to agree to, you have to approach us to partner, to, to be part of it. And you need to be able to, do the assessment that, you know, indepen, because it's voluntary. You know, we would maybe approach someone in advance, but we'd say, if you want to join CHAMP this is what

you'd have to do, right?

- Are there any technical tools that, must be adopted to collaborate successfully?

You have to want to implement MEDITECH.

- Only MEDITECH. This is only we're talking about IT.

I mean, there's certain network, like you'd need to do certain, you need to have certain capabilities at your hospital, In terms of your, ability to connect at a certain speed. To be able to get performance, on your network between QCH and wherever you are. But other than that you know, some firewalls to make sure that you have security on both ends of the connection. Other than that, not much. Everything's here at QCH right?

- Do you provide any training for the use of the collaboration, for the MEDITECH?

Training's usually handled independently, by each individual hospital. So, the way it normally works is that we are, we either hold the license for the software or we co Hold it, with the other, with the partner institution. And training is usually. So the way that training works with MEDITECH is that typically when you're implementing a new module, you'll send people to Boston where they're headed. It's typically more the IT people or the people that are doing the bill that get the training and then, the actual frontline training is typically done by the hospital itself, right?

So, Glengarry, for example, is going to be handling the training for their frontline staff. Now, we will help, train the trainers for them, but when it comes to delivering the actual training, it's usually like the host hospital that's responsible for that.

Now if they're stuck and we've already done it, we might work out an arrangement and send one of our staff to do the training there, if they don't have that expertise or we, we've done that in the past. But generally it's a hospital based responsibility. Yeah.

- What are the benefits of the training you provided for the staff? like when you have like a training programs, or do you think these programs are like critical?

oh absolute yeah, absolutely. I mean you can't do enough. It's always the number one even in a, really well officiated and executed project. Training and ongoing training, is the number one challenge that you have, right? Like the last project that we had we had to train like 1200 people to do documentation. You know, we only have 2000 people in the organization, so, we had to train pretty good, you know, 60% of the people, in the hospital on a new, totally new.

Right, we're going from paper one day, to, computers the next day, right? And so because of the mass of people, you know, you can't just do training, like, two days before, go live. Right, so we had an eight week training program, so. And that was about as, compressed as we can make it. So, the first people that got on week one, by the time we went live, it was already two months old. Right, so we had refresher courses, we had people on the units with big, bright yellow shirts to, as helpers. We stopped, above what we normally stopped to be able to support the clinical care, because we knew, you know, it takes more time when people are learning and even now, we find operationally that you have to constantly assess people's ability because they tend to pull back, right, particularly if they don't like it. If they're not, they don't, if they're uncomfortable with computers, they'll, they'll just do the minimum required and they start to lose function, quickly.

- So, do you, do you use any form of information systems to help with the collaborative? its MEDITECH?

Yeah.

- Can you describe, how the tools are managed and controlled? Is it the steering committee?

Yeah, the two, but there's a, there's a complicated control framework because not, like there's a. The model that we use is, we call a centralized hybrid model. That means that, there's a central core in the system that can only be managed and, and affected by QCH as the service provider, and then there's, there's rings of, of, of the system that can be managed, independently.

So, we have a very formal change management process that we follow. Where changes have to be vetted, and approved before they're done. And then a certain core part of the system can only be, touched by QCH, because it has the ability to impact all the partners.

So, if somebody doesn't, makes a change, and they don't know what they're doing, you could like shut down all the pharmacy orders in six hospitals. I need to order this drug. How come I can't order this drug? While somebody, may not approve a change and now it wiped out the drug formulary you know? Oops. Sorry. So, that's why, that's why anything, the, the theory is that anything that could possibly affect multiple Institutions, is intended to be centrally controlled to avoid those types of accidents.

- So do you use any framework in place for IT?

Yeah. COBIT Yeah, sorry. That's one of the things that we modeled on. We, I mean, we're, it's not to the letter but that's, that's kind of the framework that we use for, you know, the high level like change control, governance, things like that.

- also is the governing body for the network also the steering committee?

Yeah.

- So what kind of technical tools used to communicate with partners, like, such as emails. IS IT also within MEDITECH?

No, no. So, I mean, we just email using regular email. And most of the, but most of the documentation for the projects is done through SharePoint, so we have a shared System that runs charedpoint, it's a Lin based software that everybody has access to, which is useful cause then, you know, you don't have one institution that just has all the project documentation, it's shared. And you have version control. So. It's not so much a communication tool, but it is a way to help share her information more effectively.

- Okay, so you have an application and it's a shared point?

Yep.

- So this is the way you, disseminate information.

Yeah, it's basically document management software, right? So it gives you version control It gives you consistent access, shows you who's been accessing it. And it give you the version control so you don't have. Like you can imagine seven hos, six, seven hospitals all completing like a task list, right?

So things like charters, are easy because it's only usually only one, or two, people, three people in it but if you're going, if you're in a go live, where you have six hospitals all going live on the same time. And then you have a issues list which is an Excel spreadsheet with 300 items on it. And everybody's in it, you need that version control to be able to know who's accessed it, when has it been updated, what's the most recent version. How do you change control, on it so that you don't mess it up, right? So that's all done I think through sharedpoint.

- And do you think this tool is effective, in terms of the down times, fast response?

I think so, I've never heard any issues. I don't, personally I don't use it. But, I think it's, it's been, reported to me that it's useful, it's better than not having it is what I've been told, so.

- How do you monitor the performance of partners in the collaboration?

With a, a lot of effort. So it, because it's, it's fairly new, like the SLAs are just si,, have just recently been signed off, like, part of the thing that we did with CHAMP.

Is that we had an opportunity, that was time limited. We had two organizations, Queensway and Bruyere. Well, Queensway, Arnprior, Carlton place, and Bruyere that were pursuing a new version of MEDITECH more or less at the same time. So, we needed to bring those together quickly to create CHAMP.

Otherwise, we, there was a risk that you could start delaying, The project, right? So it took us a year and a half, to get our hosting agreement and our SLAs together, and in the period of time that it did that, we got Bruyere, Glengarry, Montfort live. And we did that all without having a formal SLA or hosting agreement. So it was a bit of a risk that we took, to be able to do it. And as a result, now that everything's in place. You're starting to see some change management issues because people, oh we went live with MEDITECH. It's no big deal, it's no problem. I can just do, whatever I want, right? No, you can't. You have to, you have to play nice. You have to work as a group, it's a shared service. You can't just do, whatever you want. So we're, we're starting to hit those, we're starting to deal with those types of issues now. That everything's formalized and we're trying to, close the system down to create a secure environment under a signed SLA and hosting agreement so making sure that everybody does what they're supposed to do is one of our big challenges right now.

- Do you have any like tools or something that assess the performance of partners? Like, to ensure that maybe they are.

I'd have to say, I'd have to say no formal tools, no. Not right now, no.

- You don't have like any benchmarks, used, or?

What like you mean exactly. Like financial targets? Or performance targets? Or.

- Yeah, like the balanced scorecard?

Like right now, we're just, like our SLA has just signed off so we're actually just in the process now of saying, okay, here are the services that we provide, and here are the timelines associated with, and the performance associated with each of those criteria. So, we're down at the, we haven't explored the, how do you present that information to the steering committee yet, because

we haven't collected any of that data.

I think, you know, having something like a balance scorecard or key performance matrix is, is something important that we'll look at going into the future, but it's not something that we've looked at historically, because we haven't had an SLA. Okay. Okay. Okay.

So we've got nothing to measure. Right?

>> Yeah, yeah, yeah.

Just get the project done, get people live, get going, save money, you know, but, it's informal, right? And that's why we created this service level management group to be able to define what those key metrics are, and bring them back to the steering committee.

- So, do you partner with organization that has different culture or attitude?

Yep. We do.

- Okay. Is there any conflict happens due to the cultural differences?

Yep, yep.

- And so how do you manage that?

I think we try and, we, I think we try and deal with it in a way that's, like in most of that, most of that cultural challenge comes with organizations that partner, and then realize that they're now partnered with a shared service, right?

So, most of the conflict that we have around that, is related to people's, people wanting to be, continue to be independent in a system, that's not an independent system. Right? And you can hear, you probably heard some of that at our meeting. Well, we can just do whatever we want, right? We can just, we don't have to do that. We can just, if we want to do this, we'll just do this, right? And it's like, no, you can't. You can't. You, and I'm sorry that you can't, but you agreed that, like, Montfort wanted to get they, they wanted to get price protection, they wanted, they bought a module. They just wanted to get the price sealed up, right? I have to sign off, on their purchase, right? They can't buy anything from MEDITECH unless I sign it because, I own, we're co-owners of their license. Right. So, that's good, because we know it's centrally managed and we can work with them, but at the same time you can't just do whatever you want, right. And we'll be flexible, like we did a whole strategic planning day where we say, what's our desired implementation time frames for each of the modules.

And, but then you know, you, like we had a big issue this summer where you know, we got, MEDITECH let us know they said oh, they're Montfort wants to send wants to send a bunch of people to training in Boston. And we're like well, steering committee hasn't approved any project around that so what are they doing?

Right? Oh, I just, we just wanted to go and do it, right? So, you're like you can do that but you have to bring it through, there's a process to vet it right? So part of it is just dealing with the, the, we've been so busy implementing new things, and I don't think as a group we spent enough time dealing with those cultural aspects and working on okay, so we've got partners on the table, do they understand what the requirements are?

Do they understand how to bring new projects forward? Do we understand what their needs are in regards to their independence? Right? And is there a way we can be flexible, or is, or do we need to be rigid? And, you know, those are the things we're starting to address now that we have a little bit of time to, to reflect on what we've done, and have an SLA and hosting agreement that bind us to a specific structure.

- so, if we want to, like, I have like a simple answer for how to manage the cultural

differences.

There is no simple answer. You just have to, I think you have to be open. You have to be Responsive, Flexible. And you have to be flexible.

But you also have to be clear about, like, there's, not everything is open ended. We can't be, CHAMP can't be everything to everybody, right? And we can't, we can't we can't just do, we can't do the same thing seven different ways right, that's, that defeats the purpose of what CHAMP is suppose to be doing. so we need to be able to be sensitive to people's independence, to their unique needs as an institution. But at the same time we've, we've all agreed, QCH included, to participate in a shared service. That means that we do certain things together and we do certain things together in a certain way.

And those are the things that I think we're still working on. And it takes a lot of time, takes a lot of communication and trust. And I think, so that's, we're constantly working on those, those two things.

So even with that the, the issue with the emergency department charter, you know, after three months I got an email back from this, from the VP saying, you know, our feedback on the charter is that we're not going to participate in any, this project.

So, there's your feedback. And I said okay, well, but we all approve and, and review projects as a steering committee so do you approve, are you, whether you participate in the project is a separate issue, right? Like even Bruyere that doesn't have an emergency department reviewed the charter, gave us feedback and approved it, gave their blessing.

Right? And so are you saying you approve it? You're not going to participate but do you approve what's in the charter? Because at some point in two years you might decide to implement some aspects of it and then which case you're going to be following the high level structure that we've applied, right?

And it's, we understand it and if we approve it does it mean we're participating? We don't have a budget, I don't know what it means. And you're kind of like okay, I'll call you on Monday, we'll chat. So it's that, that's the kind of thing I think that takes. It's just, you can't under communicate the intent and the philosophy so that it's understood, right?

- in terms of trust, How would you know your partner is trustworthy like, to have, what criteria could determine a trusted partner?

I think, you know, generally trust is something that, that you show, right, and it's, you show it by doing what you say you're going to do, right. If I'm trustworthy that, that's one of the key indicators of trust, right? So, you, I tell you that I'm going to behave in a certain way or I'm going to deliver something in a certain fashion or I'm going to, I'm going to do certain things in a certain way and the way that you show trust is by doing those things.

- Mm-hm. But do you, but is that something that is based on his, his, history or reputation, or?

I think trust is, trust is shown and it's, and it's something that you look at. You do look at prior behavior. But it's also it's, it's something that's, that, that's I think only really clear in the moment. Do you know what I mean? Like, You're trustworthy until you're not.

Yeah, that's I mean my philosophy is to be able to, I think, in, in a voluntary partnership if someone approaches you and they want to work with you then you, you begin with the premise that we're all in this for mutual benefit. We're all, and that's, again goes back to the values, right?

We're not doing this because we're forcing you to do it. You come to us because you want to do it. And wanting to do it means that you want to participate and be a partner. And that means that

out of the gates we trust you, right? And where, where changes in trust occurs is when you see differences in behavior versus the commitment. Right? So if we commit to doing certain things and we do something differently then trust goes down.

Right? If you commit to doing something and you behave in that same fashion then trust goes up. So it's a constant, it, it's a constant evaluation of behavior versus commitment.

But it's not something that you, you can measure statistically either, right?

- So is there any guidelines, policies for using or acquiring the, the collaboration tools such as MEDITECH?

Ask cory about that.

- Okay, so do you have like a, but you say before that you didn't have any benchmarks or metrics to measure some things right? Like if I want to measure the alignment of IT and business, if I want to..?

We haven't, no, I don't think we've done that.

- Transparency and collaboration, or even, trust.

If you find a way to measure trust, let me know.

- so this is like the last question. What are the major problems encountered during collaboration, like if you want to spot like the major problems?

Culture, it's all about culture. I think it's just the, the differences in the cultures at different organizations is probably the biggest challenge.

Because it's voluntary, and as much as you ex, try and explain and, and talk about what the benefits and, are you're still dealing with independent organizations that have different needs, different expectations and capabilities of doing what it is that they need to do. Right? And so it's a constant assessment of where we're at relative to the changes at each of the organizations. Like even simple, like I said, if you reflect on some of the things I said about communication. Like, you would think, at, at least I would think that, you know, when you outline all the different structures, the different regional groups where every hospital has a member, formal decision making, formal change management, formal documentation shared across all hospitals. You know, how could you ever have miscommunication, right? And it happens all the time.

Right? All the time, right? Even something as simple as a network outage creates chaos, right? Even though it gets discussed at, at, discussed clinically, discussed at the project management, vetted by the steering committee, communicated out through the organizations, and you still have clinicians, or, or people at other hospitals, even here at Queens, that, that don't know about it, right?

You know, you could sit and present it at a leadership meeting, send it out email, post it on the wall, and guarantee in, you know, most times you'll have, a physician in the ED going, how come I can't access MEDITECH, right? So, so culture and communication are the two big ones for us. And as long as we bring new membership, those two will be the main issues.

- What are the good things that ensure the success of the collaboration?

It's the same thing, culture and communication. The flip side is that you have a pool of talent that's cut across 6 or 7 partners. And so, each with their own experiences and that they should bring with them their own skills, abilities and benefits so we can draw on those talents to help

improve the success of the project carefully.

Appendix 3: Interview transcript with the head of CHAMP project management office.

1. What's your main role in CHAMP project?

I am running the whole project, I am the regional project director for the CHAMP group, and I run the project management office.

2. Can you describe the SLA group main functions?

The Service-level management group typically functions under ITIL. The group is responsible to monitor and assess the service levels that are being provided by the CHAMP team under me and to make sure we are meeting the commitments lay out within the service level agreement that we signed with each hospital.

3. If a new hospital wants to join the project, what kind of technical preparations do they have to take in order to start collaborating and communicating with their partners?

There is a couple of thing they would have to do, they might be an independent hospital that they would like to join our collaborative, so first they have to choose the MEDITECH software product. Currently, the only way to do that is through a full public tender, so they would likely go through our RFP process, they would speak with us probably on board, but they have to go through our RFP process to select MEDITECH as a vendor and then choose to be implemented through our group in order to become a partner if they have gone through the process and they tend to buy the MEDITECH product, then we would have to bring that to our steering committee as a request to add a new partner to the agreement, then our steering committee would have to review assess and vote on that to accept them as a partner into the group. We just can't add a new hospital to the group without the agreement from the committee. So MEDITECH is the only requirement to join CHAMP project.

4. Do you use any framework in place for IT governance?

We use some of the ITIL framework for the service portion of CHAMP, but for the governance portion we don't use any sort of industry standard framework, it's a model that we developed here. We also use portions of COBIT, so between COBIT and ITIL. We use some of the methodologies of that framework "COBIT" but we don't use it strictly. "for the services"

5. Who is being responsible for managing the information and communication tools ?

It's the project management office "probably myself".

6. What are the main roles of the service level management group in controlling and managing the IT infrastructure?

They have more of an oversight and advisory type of role, the actual formal service level management group; they don't directly manage any of the infrastructures for CHAMP. That is the responsibility of QCH as a service provider. So their role is more of oversight and advisory, so they are monitoring the service provision. We have metrics that we are now going to be measured against to make sure that we are meeting the responsibilities outlined in our SLA, and if we are not or if they can be approved or required to be adjusted and the service-level management group and the members on that group will be responsible to provide those recommendations back if changes are required or services are not being met. So "7:05" our member is playing that role, but has a representative from their hospital.

7. Is there any problem encountered with the service-level management group?

We only had one formal meeting of the group. Now we are transitioning into operations because we just finished on boarding our last hospital and going live with our system update in December, so we have actually only had one formal meeting of this group, and now we are transitioning into operations, so we haven't really encountered any issues or even "7:40" my current group they only met once, we just get the group off early December. The group is going to meet on quarterly basis.

8. Do you have any tools to assess partner performance such as benchmarks and BSC?

No not really. We are not measuring their performance, but now they are starting to measure our performance as a service provider, and the tools we are using are outlined in our SLA. So we have metrics we have to meet as far as service targets and that what we will be measuring us against but we don't really have a tool at this point that we are using to measure the partnership.

9. Is there any guideline/policies for using and acquiring the collaboration tools?

No we are not there yet. Although the CHAMP project has been running for almost 3 years, but we have been in a project implementation until this past December so just like 4 weeks ago. So we are only now transitioning into a more formal operations mode. We only signed the service level agreements just before christmas, and some of these groups are forming now, so some of the broader policies, procedures, operational standards, the formation of the service-level management group that's all just initiating now as we speak.

This group is only concerned with the MEDITECH software platform and its not a single tool, it is a whole hospital information system that is about 24 different applications we use, so the hospitals had already procured that software license, there is nothing else we had really purchased other than hardware related to implement that and that all was guided by a project charter and project documentation because as I said it was on a project mode until last month. So if we have more material, lets say like 5 years down the road then we are talking about procuring and sharing other tools within the collaborative, then we would likely be in a position to have more specific operational documentation policies, procedures and guideline, but we are not there yet.

Appendix 4: Ethics approval notice

File Number: 03-14-04

Date (mm/dd/yyyy): 05/21/2014



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice **Social Science and Humanities REB**

Principal Investigator / Supervisor / Co-Investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Bijan	Raahemi	School of Management	Supervisor
Gregory	Richards	School of Management	Co-Supervisor
Moroj	Safdar	School of Management	Student Researcher

File Number: 03-14-04

Type of Project: Master's Thesis

Title: A Model of Effective IT Governance in Collaborative Networked Organization

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
05/21/2014	05/20/2015	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

N/A



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement (2010) and other applicable laws and regulations in Ontario, has examined and approved the ethics application for the above named research project. Ethics approval is valid for the period indicated above and subject to the conditions listed in the section entitled "Special Conditions / Comments".

During the course of the project, the protocol may not be modified without prior written approval from the REB except when necessary to remove participants from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the project (e.g., change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, including consent and recruitment documentation, should be submitted to the Ethics Office for approval using the "Modification to research project" form available at: <http://www.research.uottawa.ca/ethics/forms.html>.

Please submit an annual report to the Ethics Office four weeks before the above-referenced expiry date to request a renewal of this ethics approval. To close the file, a final report must be submitted. These documents can be found at: <http://www.research.uottawa.ca/ethics/forms.html>.

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at: ethics@uOttawa.ca.

Signature:

Kim Thompson
Protocol Officer for Ethics in Research
For Barbara Graves, Chair of the Social Sciences and Humanities REB

Appendix 5: CHAMP terms of reference

CHAMP Steering Committee Terms of Reference

Definition :	The CHAMP Steering Committee is the governing body and final authority for decision-making relative the overall strategy and direction for the Champlain Association of Meditech Partners. The committee is comprised of executives from each participant organization.
Mandate :	The mandate of the CHAMP steering committee is to govern the operations and related projects for the partnership. As such, its primary functions are to: ✓ Define and approve the overall strategy for the partnership ✓ Make decisions on matters related to operations and projects budget, resources, schedule, and scope ✓ Act as a visible and vocal champion of the partnership ✓ Approve project and operations strategy and tactics ✓ Resolve project and operational issues and makes policy decisions
Functions:	In accordance with its mandate, the CHAMP steering committee shall: Provides strategic oversight and direction: ✓ Establishes the strategic plan for CHAMP ✓ Approves capital plans ✓ Approves the admission of new members Provide project governance: ✓ To approve individual project requests ✓ To approve project deliverables such a project charter including: scope, resources, time lines ✓ To approve project change requests and decision requests ✓ To provide guidance on project issues and risks ✓ To approve project close out and transition to operations Provide operations governance: ✓ Establish hosting and service level agreements ✓ Monitoring the provision of service ✓ Approves changes to service levels and resourcing ✓ Receives operations reports ✓ Ensures that procedures are established and maintained ✓ Governs the establishment and reinforcement of standardization

	within the shared MEDITECH HIS
Reports to:	Participant organization Chief Executive Officers
Direct Reports:	The CHAMP Project Management Office (PMO) reports to the CHAMP Steering Committee
Advisory bodies:	✓ Governance sub-committee ✓ Service Level Management group ✓ Chief Financial Officer working group ✓ Clinical Advisory Group? ✓ Physician Advisory Committee?

Committee Composition:

Leadership	The steering committee chair will be appointed by committee vote. The chair will be appointed on an annual basis.	
Membership:	Voting Members ✓ 1 administrative executive (VP or higher) from each participant organization ✓ 1 clinical executive (VP or higher) from each participant organization	Non-voting Members ✓ CHAMP project director ✓ Champlain LHIN CIO ✓ Chair of Clinical Advisory Group? ✓ Chair of Physician Advisory Committee?
Member Responsibilities:	Each member shall be responsible for: ✓ Disseminating information and communicate back to their home organizations ✓ Representing their organizations in making decisions ✓ Regularly attending meetings in order to maintain continuity, which will promote efficiency to the committee's functioning. No delegates are permitted.	

Decisions

Decision making:	Each participant organization shall have one (1) vote, which shall be made by the representative or representatives of it present at the Steering Committee meeting. Quorum will be achieved when at least one representative from a Majority of the Members are present (in person, by teleconference or video-conference) at a duly constituted meeting, provided that the
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	representative of the Service Provider must be in attendance at such meeting unless the Service Provider has failed to attend the most recently called meeting dealing with the same or similar matters and has been provided notice of both meetings. All decisions from the steering committee shall be in the form of the CHAMP decision document (see Appendix D) outlining the: ✓ Decision made by the committee with record of vote ✓ Background and rationale for decision ✓ Options and impact of decision
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Meetings:

Frequency	Monthly and as required (discretion of the co-chairs)
Duration:	2 hours
Location:	To be determined; teleconference and WebEx shall be made available
Quorum:	A majority vote (50+1) will represent the steering committee position; exceptions and abstentions will be noted and documented in the minutes

Appendix A – Current Membership

Voting Members

Organization	Representative #1	Representative #2
Arnprior Regional Health	Eric Hanna, CEO	Leah Levesque, VP Patient Care
Bruyère Continuing Care	Daniel Levac, CFO	Debbie Gravelle, VP Patient Care
Carleton Place & District Memorial Hospital	Toni Surko, CEO	
Hôpital Glengarry Memorial Hospital	Linda Morrow, CEO	
Hôpital Montfort	Kathy O'Neil, VP Planning	Lucille Perrault, VP Patient Care
Queensway Carleton Hospital	Michael Cohen, VP Clinical Support, CIO, CPO	Kent Woodhall, VP Patient Care

* Committee Chair

Non-Voting Members

Organization	Representative	Alternate
CHAMP	Cory Bell, Project Director	
Champlain LHIN	Glenn Alexander, CIO	

Administrative support:

Primary: Ms. Miranda Donohue
 CHAMP Project Coordinator
 Phone: (613) 721-2000
 mdonohue@qch.on.ca

Appendix B – CHAMP Code of Conduct

Objective:

The purpose of the code of conduct for the CHAMP Committees is to provide a framework of positive and supportive conduct within which the work of the committees can be undertaken. All committee members agree to norms below prior to the onset of committee work and all members are responsible for enforcing these norms and adhering to the principles of behavior as outlined. The Committee will refer back to the Code of Conduct as needed.

Norms:

1. We start meetings on time and do not re-start if people arrive late. Meetings will also end on time in respect to other members who also have competing commitments.
2. We come to the meeting prepared: by reviewing the agenda and materials including any work requested for that meeting
3. We check our titles at the door. The committee's chair manages the agenda but we are equal members and partners in the committee work. We discourage anyone from dominating the meeting and all members of the committee pay attention to visual cues indicating disengagement and actively attempt to engage the other members
4. We respect the opinions of each member and recognize everyone has the right to present his/her point of view and have their opinion heard. Thus we do not interrupt other members speaking, and there is no "bad" opinion
5. Each member will be an active listener, and provide a quiet environment where the opinion of other members is heard and acknowledged, even if you do not agree
6. All members will strive to ensure that each team member's voice is heard before a decision is made
7. Language used within the committees will be professional and in a constructive context
8. We contain networking and social time to before or after the meeting, not during
9. We do not engage in side conversations during the meeting.
10. We will work toward consensus in an active and positive manner to the better result of the committee as a whole.

Chairperson – Code of Conduct

1. The chair has the opportunity to appoint a time keeper and /or note taker if deemed necessary.
2. The chair will summarize at the end of each topic / area to ensure understanding and consensus
3. The chair ensures action items are identified and assigned to people with a due date.

Appendix C – Commitment to Team Norms

I _____ have read and understand the CHAMP Steering Committee Terms of Reference. I understand that I am participating on behalf of my organization and that I am appointed to ensure my organizations business and operations needs are addressed in the advancement of the shared MEDITECH HIS for the partnership. I hereby commit to adhere to and uphold the team principles and code of conduct outlined in this document.

Signature

Date

Organization

Appendix D – CHAMP Decision Document

A. DECISION DESCRIPTION (completed by the submitting party or Subject Matter Expert)			
Issue/Opportunity	[executive brief of decision that must be made]		
Background	[provide background information relevant to the decision.]		
Options List all relevant options under consideration	Benefits For each option, highlight the positives	Risks For each option, highlight the impact, costs, resources, time requirements	
1.	•	•	
2.	•	•	
3.	•	•	
4.	•	•	
Recommendation	[select one of the options described above]		
Required Approvers	[list decision makers whose formal approval is required – to be added to Section C below]		
Author	[who prepared this section]	Date yyyy/mm/dd	

B. FINAL DECISION (completed by Project Office)			
Final Decision Statement	[clearly summarize the Recommendation from above]		Decision #
Author	[who prepared this section]	Date yyyy/mm/dd	

C. AUTHORIZATION (completed by Required Approvers)			
Name	Title	Approve? (Y/N)	Initials

Appendix 6: CHAMP steering committee monthly meeting agenda.

AGENDA
CHAMP Steering Committee
Wednesday October 22, 2014
ADR Meeting Room QCH
14:00 – 16:00
Chair: G. Alexander

Conference Information Dial-in Numbers: Local: 613-787-5142, Meeting ID: 4921726

Item #	Topic	Presenter	Action	Time
1.	Approval of Agenda	G. Alexander	Decision	5 Min
2.	Approval of Minutes	G. Alexander	Decision	5 Min
3.	Status Report	C. Bell	Information	10 Min
3.1	6.07 Project Update	C. Bell	Information	5 Min
4.	Steering Committee Terms of Reference Review	C. Bell	Decision	15 Min
5.	CAG Terms of Reference Review	C. Bell	Information	10 Min
6.	SLA Execution	M. Cohen	Information	5 Min
7.	2015/2016 Capital Planning	M. Cohen	Information	10 Min
8.	EDM Project Initiation			
8.1	Draft EDM Charter Review	C. Bell	Information	10 Min
8.2	Selection of Project Manager	C. Bell	Decision	10 Min
9.	Other Business	All	Information	10 Min

Next Meeting: November 26, 2014
QCH Discovery Room
Regrets to Miranda Donohue
mdonohue@qch.on.ca

Minutes of the Meeting
STEERING COMMITTEE
Wednesday September 24 from 1400-1600
QCH – Teleconference

INVITEES: P=PRESENT T = T-CON R= REGRETS

T	Cory Bell	R	Bev Holmes	R	Cal Crocker
R	Kent Woodhall	T	Michael Cohen	R	Daniel Levac
R	Debbie Gravelle	R	Eric Hanna	T	Glenn Alexander
T	Kathy O'Neil	R	Linda Morrow	R	Lucille Perreault
R	Shelley Coleman	T	Toni Surko	T	Rebecca Morris – Delegate for Daniel Levac
T	Leah Levesque				

#	Item	MRP
	Meeting was changed from an in person meeting to a teleconference due to several last minute regrets.	
1.0	Approval of Agenda Cory would like to add patient order sets to the agenda. Michael would like to add the TOR. Kathy agrees.	Chair
2.0	Approval of Minutes Minutes approved. Rebecca clarified the documented action regarding Bruyère potentially providing communications assistance that Andrea McLean will not be available to fill the communications role that was discussed at the previous meeting.	Chair
3.0	Status Report Cory updated that committee that there was some well-deserved vacation time for the teams over the summer period, therefore there were difficulties finding quorum at several levels including steering committee during July and August. The focus of the team has been completing the post-live support for the PCS go-lives in June and the initiation of the 6.07 update. The milestones coming in October will be the formal kick off of EDM project which will include a demo from MEDITECH in early October, and the completion of the 6.07 DTS testing phase by October 24th.	C. Bell

Cory updates the group that there have been several challenges earlier in the summer with Meditech for the initiation of the 6.07 update project. Delays were encountered with the environment configuration and validation that resulted in a delay of a month in the schedule before the teams were able to start testing. Michael updated the group that the delay is a result of the issues encountered with Meditech and that a meeting had taken place with the Meditech VP of the update group to review the issue and request remediation due to the impact they delay will have on the CHAMP partnership. Further discussions will follow with Meditech if schedule impacts are realized due to the delay. It was also noted the issues with the Meditech work on 6.07 may have caused the recurring problems with the lab module. These have been flagged and ticketed with Meditech. Sites are encouraged to log issues immediately with the CHAMP helpdesk to ensure they are addressed in a timely fashion as well as escalated with Meditech.

Cory noted that the PMO has reviewed the schedule, assessed the delay and the remaining effort, which has resulted in a proposed a schedule change. Other mitigation steps have also been taken that include categorization of all DTS that apply to CHAMP according to risk as High, Medium, or Low risk changes. Only High and Medium risk changes will be tested for the update. All changes are also categorized as corrections and enhancements. Corrections will be tested, and only non-optional enhancements will be tested. This should help further streamline the remaining testing. Additional resources have also been added from the partner sites to assist with the remaining testing. These resources are not dedicated FTEs and have been provided as availability allows, which has resulted in more progress in testing.

The new proposed go-live date for the 6.07 update is Monday December 1st. This date will need to be confirmed with Meditech and will be requested as an “outside business hours” update to provide the least impact to sites.

MOTION: Does the committee approve the new proposed schedule with

	a shift of the go-live date to December 1, 2014 pending final confirmation from Meditech? All Approved. ACTION: Cory will confirm with Meditech the new go-live date of December 1, and will request an update time outside of normal business hours e.g. 2 AM. ACTION: Cory requested to provide regular updates to the SC members on the progress of the update. Cory will provide the weekly status report used with the PMO and testing team.	
4.0	Clinical Advisory Group Terms of Reference Review A draft of the last revision for the CAG terms of reference was included in the meeting package. Cory refreshed the group that in the winter period the Steering Committee had requested revisions to the CAG terms of reference related to membership, chairmanship, and guest policy. The CAG has since appointed new co-chairs who used the period over the summer to revise the full terms of reference for CAG. This draft was presented to the CAG on September 9th. It is being presented to the Steering Committee for review and feedback to be incorporated in the final version that will be distributed for final draft at the CAG level then brought forward to Steering Committee for final approval. Cory asked the committee to review and provide feedback electronically to Miranda Donohue. Cory highlighted that some key changes to review are to the mandate and function sections to ensure they reflect the expected function of CAG from the Steering Committee perspective. The reporting relationships to other CHAMP structures has also changed and there is a question about the relationship of the PMO and CAG. The revision outlines that the CAG feels that the chair/co-chairs should sit on the Steering Committee.	C. Bell

Glenn opened the discussion regarding the function of CAG and ensuring that the mandate is not competing with the Steering Committee who is the final authority on all matters and specifically related to strategy, scope, budget, and schedule. Glenn is comfortable with the CAG co-chairs being invited to Steering Committee as non-voting members for clinical agenda items. This will strengthen the relationship with CAG and ensure they are informed of Steering Committee direction.

Kathy asked if the mandate is clear for CAG now that implementations are focused on clinical applications. Cory highlighted the first two points under the function and mandate section on the revised terms of reference speak to this question clarifying CAG makes clinical decisions, provides recommendations to steering committee of clinical matters, guides clinical design, and validates the technical build of clinical applications.

Rebecca asked how physicians are included moving forward as the previous terms outlined physician members which are not reflected in this draft. Cory provided an update that there is a physician group being formed with CHAMP led by Dr, Wiebe from Bruyère and Dr, Cochen from QCH. A physician lead from each site has been identified and invited to an initial meeting of this group. This group should evolve and transform into a CHAMP physician advisory group with a formal terms of reference and mandate.

Leah added that the clinical informatics group/leads play a role with CAG to ensure linkages are present for the sites. Timeline issues and patient safety were highlighted concerns during the implementation of PCS. She feels it is important that a member of CAG sit on the Steering Committee as CAG would like to be more involved in strategy.

A question was raised about the non-clinical applications and representation. Cory stated that had fallen under the PMO as we have been in constant project mode, but that it will transition to the Service Level Management Group that will be formed according to the Hosting Agreement and SLA. Kathy asked if there is anything preventing this

	group from forming now. Cory replied that the function of the group will be to monitor and review service level provision according to the SLAs. As these have not been signed yet, the group has not formed and does not have a formal agreement to manage towards. Michael added that there is urgency to this and that we need to move forward with the SLAs and the formation of this group for the centralized portion of the system. ACTION ITEM: Cory to reach out to the sites to get a list of personnel that will participate in the Service level management group. ACTION ITEM: SC members to send CAG TOR feedback to Miranda and copy Cory.	
5.0	SLA Execution Update Michael stated that there was a focus over the late spring early summer on ensuring that the hosting agreement was executed. All partners have now signed off on the hosting agreement document. The final documents for the SLA were sent out in June. The SLA defines the core services which is the primary component of the SLA. It also defines what the additional tiered service levels are. (E.g.; EDM – Bruyere does not have and ED so they will not participate.) Michael would like to state that if there are any other issues with the SLA's they should be brought forward and addressed by the SC now as the agreements need to be executed. He has signed all agreements and would like to send out the executed documents from the Service Provider to each partner for counter signature and execution within the next week. No further concerns were tabled.	M. Cohen
6.0	CHAMP Strategic Planning Update The high level GANNT developed by the PMO and approved at the June Steering Committee meeting was included in the meeting package for reference.	C. Bell
6.1	Confirm Implementation Sequence The GANTT was reviewed with the committee members and an overview was provided of the process and approval given in June. Acknowledging that detailed planning is required to shorten the overall	C. Bell

schedule as requested at the June meeting, the committee was asked to reconfirm the implementation sequence of the remaining applications. This confirmation will allow the effort of detailed planning to be directed to the applications approved to proceed next.

Kathy stated that we are moving into an organizational readiness phase with the remaining applications and while it is good we have a plan, asked how this should proceed with all sites and their readiness to move forward. Glenn asked to clarify that if what Kathy is stating is that should the order of implementations be different than what was previously agreed to by the committee. Kathy expressed concern that not all sites may be ready to move forward at the same time. Glenn reminded that group that the PMO involved the project managers from all sites. The Steering Committee needs to provide the PMO ground rules on how to move forward and it is the responsibility of the Steering Committee to lock down the sequence of applications moving forward. It is the PMO's responsibility on how to make it happen once the Steering Committee provides this direction.

Michael stated that it is up to the Steering Committee to hold true to their decision around sequencing. The role of the steering committee will be to regularly review the sequencing of projects to ensure that the group progresses towards the fully electronic health record in a manner consistent with the groups priorities.

Cory added to clarify any potential misunderstanding that the GANTT provided was developed by the PMO with involvement of all site PMs in full agreement prior to presentation to the Steering Committee.

A question was raised about the site specific non-Meditech projects included in the GANNT and where they fit into the plan. Cory stated that although these were identified by each site, there has been no information provided as far as local approval or target dates. The site PMs have been asked to provide this information for each local projects added to the GANTT.

	Once the Steering Committee reconfirms the sequence of the applications remaining, the PMO will proceed with detailed planning according to the approved sequence and assess the impact of the local site projects listed that may have competing timelines. Glenn raised a motion to approve the sequence, and asked all committee members to communicate the decision of the committee to their internal teams. MOTION: Approval of the sequencing of the remaining modules as proposed at the May strategy meeting and confirmed at the June steering committee. All Approved ACTION: Cory will communicate the decision to the PMO and commence detailed planning activities for the next approved application. ACTION: Each committee member will ensure the approved sequence of application implementations is communicated internally at their organizations and to their internal teams.	
6.2	EDM Implementation Update Cory provided an update to the group that the Emergency Department Manager (EDM) application was approved to proceed at the June Steering Committee as the next application. As per the GANTT the system/technical implementation would start in January 2015, but it was approved that work on the initiation of the project, project document, and clinical design and standards work were activities that could occur prior to January if sites could accommodate it. These activities are in progress. Development of a draft project charter is in progress and will be reviewed by the PMO to ensure input from all sites. As per the hosting agreement it will be brought to SC for final approval. There will be a formal project kick off scheduled with stakeholders from the participating sites. A full product demo has been requested from Meditech for October 8th, all sites have been invited to participate.	C. Bell

6.3	PCM 1 Implementation Update (ARH, CPDMH, HGMH) Cory provided an update to the group that the implementation of PCM1 which is the physician desktop and access was approved to proceed at the June Steering Committee for ARH, CPDMH, and HGMH. PCM1 desktop is already deployed in production at all other sites. As per the GANTT the system/technical implementation of PCM1 would start in January 2015, but it was approved that work on the initiation of the project including all local internal engagement and activities could proceed before January if ARH, CPDMH, and HGMH could accommodate it. A kick-off call with the three sites was held in July to communicate the approval and activities required. A demo of PCM1 was provided the week of September 22nd by the CHAMP PCM lead Katherine Sicotte with the three sites. A task list will be provided for the internal work and the technical development is scheduled to kick off in January.	C. Bell
7.0	2015/2016 Capital Planning Michael suggested to the group that planning for new capital requirements for fiscal 15/16 should be conducted in October. An items that has been identified from the privacy group that would fall under capital and there are likely others that need to be assessed. A privacy audit tool will be presented to the committee in October as one of these capital items. Michael will go into more detail at the October meeting regarding this project and its estimated costs. Directors and chief financial officers will need to be brought into these discussions. Cory would like to add in that he has been informed by Meditech that sites that are wishing to move forward with the regulatory reporting functions such as CCRS or MH RAI, will be required to purchase licensing. The initial quote is \$15,000 per regulatory report, which falls into the capital threshold. Bruyère is already licensed for NRRS and CCRS as it was included in their 2009 contract. Montfort is licensed for MH RAI. No other licensing exists within CHAMP for the regulatory reporting	M. Cohen

	functions. ACTION: Members were asked to identify and bring forward any capital planning items for CHAMP to the October Steering Committee meeting.	
8.0	Other Business Patient Order sets Cory stated that one of the items that was identified at the May strategy session was the purchase and/or implementation of Patient Order Sets at the CASH group of hospitals that includes ARH, CPDMH, and HGMH. Cory has been engaged by Christine Boisvert on some issues and is concerned about scope and requirements for CHAMP. Patient Order Sets the vendor has been asking for integration in the form of a server within CHAMP and an ADT interface. This is greater scope than was expected and it raised the question of the CHAMP regional strategy for order set development and integration to Meditech. There are parallel discussions and investigation occurring by the members with Zynx which is a competitor to POS, and Zynx is currently the only certified vendor to work with Meditech. There needs to be a discussion around which sites are planning to go forward with Patient Order Sets and if this is a work that may be undone if the regional direction for CHAMP is to go with another vendor. Cory, Christine and the three sites will organize a discussion around this concern. Steering Committee – TOR Glenn states that Cory and Glenn have committed to working on the TOR and will bring this back to the Steering Committee. Michael requested that a draft go out a few weeks prior the Steering Committee meeting to there is time for review. ACTION ITEM: A draft ToR to be sent out prior to next SC meeting.	All
Adjournment:	Meeting adjourned at 15:35	

Next Meeting: October 22, 2014 QCH – ADR.
Regrets to Miranda Donohue
mbottomley@qch.on.ca

Project Name:		CHAMP Regional Meditech 6.0 Project										For the PERIOD From		24-Sep-14		To	22-Oct-14				
Project Manager		Cory Bell										Exec. Sponsors		M. Cohen		G. Alexander					
Summary Project Status:		The primary focus of the CHAMP team over the last period has been the 6.07 update. All resources have been dedicated to completing the testing of the 6.07 update and all other workload has been deferred unless assessed as operationally critical. All changes both at local or regional level are being reviewed through the change control process to ensure the system freeze is monitored and enforced during this period.																			
		The EDM implementation has been initiated with the PMO developing a draft project charter. A full system demo of EDM was conducted with Meditech on Oct. 8th with all sites invited to participate to gain an understanding of the system capabilities to inform further planning activities. A subsequent demo of all remaining advanced clinical modules will be held on Oct 23rd.																			
Project Indicators																					
Current Key Indicators		Expected Next Period	22-Oct-14	24-Sep-14	25-Jun-14	28-May-14	23-Apr-14	26-Mar-14	19-Feb-14	22-Jan-14	18-Dec-13	27-Nov-13	31-Oct-13	25-Sep-13	28-Aug-13	26-Jun-13	24-Apr-13	27-Mar-13	27-Feb-13		
		Overall	Y	Y	Y	Y	R	R	R	R	R	R	R	R	R	Y	Y	Y	Y	Y	
		Schedule	Y	R	R	Y	R	R	R	R	R	R	R	R	R	R	Y	Y	Y	Y	Y
		Scope	Y	Y	Y	Y	R	R	R	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y
		Issues	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R
		Change	G	Y	G	G	G	G	G	G	Y	Y	Y	Y	Y	Y	Y	G	G	G	G
		Risk	G	Y	Y	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
		Resources	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Change (New plus any other Critical)																					
Priority		#																Target Resolution Date			
M		010	Implementation of home medication BPHM process at Bruyere															31-Oct-14			
Key Deliverables							Due Date		Status		Comments										
CHAMP Governance Definition & SLA EDM project kick-off							01-Dec-12		Y		The hosting agreement has been signed by all partners. The service level agreements are being distributed for sign-off to each partner. The SLA agreements were signed by the Service Provider and distributed for execution on Oct 9th. To date 3 of the 5 SLAs have been executed.										
							08-Oct-14		G		A demo of EDM and a formal kick-off of the EDM project will be scheduled with all partners to initiate the EDM project.										
6.07 DTS testing							24-Oct-14		Y		The testing and validation of the DTSs is progressing with a target completion of October 24th. Completion rate is expected to be greater than 80% of all applicable DTS. The focus after the 24th will transition to thorough regression testing at each facility to complete the validation process.										
Key Milestones planned for next reporting period																					
6.07 Update Regression Testing Cycle							03-Nov-14		G		All partner facilities will initiate full system regression testing during a 3 week test period from Oct 27th to Nov 14th.										
Advanced clinical systems demo							23-Oct-14		G		A demo will be conducted with Meditech on the remaining advanced clinical systems to be implemented in CHAMP. The purpose of the demo is to assist the PMO as well as the partner stakeholders in understanding the capabilities of the modules which will inform further planning activities.										
Selection of EDM project manager and development of resource plan							30-Nov-14		G		An EDM project manager will be assigned and the development of a resource plan will be completed, which will lead to the selection of the CHAMP EDM implementation team. These activities must occur prior to December so a full team can be in place to begin in January 2015.										
G		Positive state - no intervention necessary.																			
Y		Concern identified - monitor closely.																			
R		Significant problem - action required.																			

Project Change Request

Project Name PCS - Bruyère Implementation of Home Medication Meditech feature	Project ID.	
Project Sponsor Michael Cohen	Target Project Completion Date 2015/04 20	
Program Director Cory Bell	Version No. 1.0	Version Date 2014/09 /22

Change Request Identification

Change Request Name	Meditech Home Medication usage to improve Medication Reconciliation process		Change Request ID #	010
Date Change Request Submitted	2014/10/01	Priority (Low/Moderate/High/Critical)		[M]
Date Last Updated		Impact (Low/Moderate/High)		[M]

Change Request Description (completed by the submitting party)

Change Request Submitted By	Katherine Sicotte on behalf of Medication Reconciliation Committee
Change Request Description	Home medication functionality is located in the OM/EMR module. Users can edit it from the Ambulatory Orders panel within OM and an overall view is available from the summary panel of the EMR. At the current time QCH is using this functionality through their pharmacy technician role and the information is viewable by all their clinicians. Montfort nursing is also using this for some of their outpatient clinics. The requested change is to enable it for Bruyère pharmacy department to fill in the home medication (a portion of the Best Possible Medication History (BPMH) on admission and to make it viewable for all clinicians, particularly those that already have access to the Active Medications. In addition, Bruyere's Pharmacy team would like the ability to capture additional comments that may be provided by the patient, but not be related to a specific medication. This functionality will require a custom build for Bruyère. <i>Please note: This scope change request does not include the Medication Reconciliation process on admission, transfer or discharge functionality. All actual medication reconciliation functionality within MEDITECH will be incorporated into the CPOE scope. This change simply facilitates the initial gathering of BPMH on admission and is used as an aid in completing the manual medication reconciliation.</i>

Change Request Description (completed by the submitting party)

Business Justification	Medication documentation for BPMH is a requirement and will either be completed in PCS or within the OM/EMR module. The delivered functionality within MEDITECH is as requested within this change request. Rather than build workaround functionality in PCS, the team is recommending using delivered functionality. This change in process will also facilitate the gathering and documentation of BPMH within 24 hours in order to comply with Bruyère policy and aid in the completion of the Med Rec process on admission within a week as per the Medication Reconciliation policy. Some of the effort to develop this build is a trade off from PCS to the Rx and OM teams. Please see the details within the Stakeholders affected section below. Improved capture of Home Medications (BPMH) is also a requirement of Accreditation Canada. This process will provide a standardized method of capturing BPMH as well as an ability to report BPMH in a standardized manner with no requirement to have to rebuild with the implementation of CPOE.
Change Request Category	Scope and process/methodology

Change Request Impact & Proposed Response (from submitting party's perspective)

Areas Impacted (if change is implemented as requested)	Only Pharmacists or Pharmacy Technicians at Bruyère will be provided access to update the BPMH within the Rx module. The information will then be viewable from the Summary Panel (same area that allergies are currently viewable as well as the Active Medication List) within the EMR for physicians, nurses and other care providers defined within the circle of care.
Impact Description (if change is implemented as requested)	While this change will slightly reduce workload for the PCS build team, it will increase the effort for the Rx Lead and slightly for the OM CTL. It will also require a small customization by MEDITECH to enable two site specific screens within the OM/EMR module for Ambulatory Orders. A custom query will also be required by the OM CTL (minimal effort as only a text box) and IS will be required to add the additional functionality to existing roles (minimal effort - estimate maximum of 8 hours).
Impact of not Making the Change	Continue to use existing paper documentation – See Appendix C, which does not currently facilitate the ability to meet Bruyère Policy timelines for capturing BPMH and Admission Medication Reconciliation.
Timeline of Impact Occurrence	The anticipated go live date is with the PCS activation – April 20, 2015
Recommended Strategy	The recommended action plan to implement this change: 1. Obtain approval for this change from EPR Steering and CHAMP Steering

Change Request Impact & Proposed Response (from submitting party's perspective)

(to implement the requested change)	Committee 2. Modify Project plans to incorporate approved Change Request. 3. Meet with stakeholders to validate requirements and design ○ review current paper documentation as part of this process ○ review the level of clean up required to use Ambulatory Order dictionary (home med entry lookup) from the First Databank Ambulatory dictionary. Some clean up was previously completed for the QCH go live so not anticipated to be significant. 4. Add the 2 site specific custom screens in test to accommodate current documentation for Pharmacy to Order Dictionary in OM (will facilitate the data entry and display on EMR) – See Appendix A for details. 5. Complete any build of custom queries and complete any modifications required to the First Databank Dictionary and change security access to edit and view home medications. 6. A standard report for Home Medication currently exists – See Appendix B. If modifications are required for this report to capture the custom text field, the entire report may need to be redeveloped. <i>Rebuild effort, if required, is unknown at this time.</i> 7. Complete testing 8. Train Pharmacists on the use of the new functionality and ensure all users are familiar with how to read the information. 9. Go live with Bruyère's PCS1 implementation in April 20, 2015. 10. Post live support and changes to teaching material (paper and e-learning). Support will be provided as part of the scope of PCS.
Cost/Resource/Time Requirements (to implement the requested change)	No additional costs anticipated for this effort: • PCM / Rx resource will be required to lead the build components and coordinate with MEDITECH. This is an offset to the PCS build team and no additional cost is anticipated to the project. • A pharmacist and pharmacy techs will be required to assist to validate the requirements, design and build, as well as the functional / end user testing. No additional costs anticipated for the project as these resources are part of the Medication Reconciliation team • IT time will be required to develop the custom reports. No additional cost anticipated to the project.
Expected Outcome (of implementing the requested change)	It is anticipated that this change will greatly facilitate meeting the current policy standards for Home med gathering within 48 hours and Complete Med Rec process on admission within a week. In addition, this will greatly improve Bruyère's Medication Reconciliation process and aid in improving compliance with Accreditation Canada Standards.

Detailed Change Request Assessment (completed by Project Manager or appointed representative)

Project Change Request

Detailed Change Request Assessment (completed by Project Manager or appointed representative)

Provide a detailed assessment of the requested change below. Involve the submitting party and any individuals, groups or organizations identified as being impacted by this change in your analysis. Be as thorough as possible considering all various project areas that might be affected.

Change Request Assessment Assigned To

Cheryl Goudreau

Tasks Affected

List the project tasks that will be affected by the change, the resulting benefit, as well as the resource requirements for implementing the change. Also, describe how this will impact the schedule. Duplicate the number of rows below to match the results of your assessment.

Affected Project Tasks	Benefits/Impacts	Resource Requirements	Schedule Impact
- Requirements Gathering: - Meet with stakeholders to validate requirements and design - review current paper documentation as part of this process - review the level of clean up required to use Ambulatory Order dictionary (home med entry lookup) from the First Databank Ambulatory dictionary. Some clean up was previously completed for the QCH go live so not anticipated to be significant. - Confirm user access required - Any Custom Report Requirements will need to be reviewed and confirmed		Anticipate 4 to 8 hours of meetings to finalize requirements. - PHA Lead - OM Core Team Lead - Clinical Informaticist - Physician Champion - Medication Reconciliation Committee - Inpatient Nursing - Information Services	None Anticipated
- Build in TEST - Add the 2 site specific custom screens for Ambulatory Orders in the OM Order Dictionary to	Facilitates the ease of entry of home meds and accessibility to	- Coordination and validation required by PHA lead (approx. 4 hour) - Approximately 1 hour	None Anticipated

Project Change Request

Tasks Affected

accommodate current documentation for Pharmacy (will facilitate the data entry and display on EMR) Complete modifications required for custom query (text box), and changes to security access to edit and view home medications)	all active and home medications as well as allergies from one standard area within MEDITECH.	of effort by Meditech. - OM Core Team Lead – Effort – Minimal (less than 4 hours) - IS – security Access (maximum of 8 hours)	
May need to develop custom report if standard report is not suitable (<i>unknown at this time</i>)		- PHA Lead - Medication Reconciliation Committee - Information Services	None Anticipated
Complete Testing	Testing timeline to be coordinated with existing scheduled integrated testing currently scheduled to start on January 5, 2015	Anticipate 8 to 12 hours of testing - PHA Lead - OM CTL - Clinical Informaticist - Physician Champion - Medication Reconciliation Committee Members - Information Services	- None Anticipated - It is important that this functionality be ready to test with the scheduled PCS Integrated and parallel testing timelines – January 5, 2015.
Train Pharmacists on the use of the new functionality and ensure all users are familiar with how to read the information.	- Training will be incorporated with all other PCS Training - Super Users will be required to train and support this functionality at go live	- Clinical Informaticists (minimal additional Training material to be incorporated into training) - Super Users - Pharmacists - All users that currently have access to view Home Medications - Physician Champion – Awareness - PCM CTL	None Anticipated
Go live with Bruyère's PCS1 implementation in April 20, 2015.			None Anticipated

Tasks Affected

- Post live support and changes to teaching material (paper and e-learning). Support will be provided as part of the scope of PCS.

- Super Users will be required to train and support this functionality at go live. A very small addition to the overall support

- Clinical Informaticists
- Super Users

-

Stakeholders Affected

List the stakeholder(s) (including project team members and partners) that will be affected by the proposed change. Explain how this will benefit/impact the stakeholder(s), as well as any actions that are required to manage stakeholder needs. Also, mention if this impacts the schedule in any way. Duplicate the number of rows below to match the results of your assessment.

Affected Stakeholder(s)	Benefits/Impacts	Action Required	Schedule Impact
• Pharmacists	• Streamlined approach to capturing BPMH	• Training of Pharmacy Staff to enter home meds into MEDITECH	• None Anticipated • Training will be incorporated with PCS training
• Pharmacy Techs	• Streamlined approach to capturing BPMH	• Training of Pharmacy Staff to enter home meds into MEDITECH	• None Anticipated • Training will be incorporated with PCS training
• Physicians	• Home medications available online and no change to current practice for admission reconciliation	• Training for Physicians to view Home Meds	• None Anticipated
• Nurses	• Home medications available online. No change to current practice	• Training for Nurses to view Home Meds	• None Anticipated
• Bruyere PHA Analyst	•	• Coordinator of Scope Change Request effort	• Anticipate approximately 20 hours
•	•	•	•

Project Change Request

Stakeholders Affected

OM CTL		Create custom Query for gathering additional comments not specific to any one home medication	- None Anticipated - Less than 4 hours
Med Reconciliation Working Group	Multiple policies and procedures are being adjusted as part of the overall Medication Transformation and PCS project. The modifications required as a result of this scope change will be incorporated simultaneously	Policy and Procedure development	Minimal Impact
Health Records	Legal record will be modified for BPMH		
Information Services		Change of access	- None Anticipated - Less than 8 hours
Information Services	Report will provide ability to facilitate admission medication reconciliation as well as discharge reconciliation	- Standard Report may require customization - Katherine to follow up with Phil from MEDITECH	Any effort will need to be validated and confirmed
Clinical Informaticists		- Awareness – Training - Slight additions to training curriculum for viewing and for Super Users as well as Pharmacy	None Anticipated

Options Considered

Describe the options that have been considered. Explain pros and cons of various implementation strategies.

1. Stay on Paper. Does not facilitate the ability to meet Bruyère's existing policy or enhance compliance with Accreditation Canada Standards.
2. PCS Intervention – additional workaround effort for PCS required and rebuild would be required in the future.

Project Change Request

Recommended Action(s)

The following are details of the recommended strategy for implementing the requested change.

Action Plan & Associated Timelines

- Approval Scope Change Request at EPR Steering –Approved Sept 2014
- Approve Change Request at CHAMP

Impact on Scope/Quality/Performance

Positive outcome anticipated with respect to quality and performance of EPR.

Impact on Schedule

The v6.07 upgrade go live is delayed until December 1, 2014. If the development of this application is not started until the middle of December there is a good possibility that it will not be ready in time for Integrated Testing in January.

Additional Resources Required

Confirm additional resources available from Pharmacy (Pharmacist and 2 pharmacy technicians – part of the Medication Reconciliation Team) to define the requirements and confirm design as well as participation in testing.

Additional Cost:

No additional cost anticipated.

Recommended Change Implementation Start Date	2014/12/08	Person(s) Responsible for Leading the Implementation of this Project Change	Katherine Sicotte
Recommended Change Implementation Completion Date	2015/04/20		

Bruyere Approvals

Status

☒ Approved as Requested
 ☐ Approved with Changes
 ☐ Rejected

Authorization(s)

Name(s)	EPR Steering – Daniel Levac	Date(s)	2014-10-01
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List details if “Approved with Changes” or state reason(s) if “Rejected”

Change Request Implementation Tracking

Responsible	C Bell	Target Completion Date for Implementing this Change Request	
Change Request Implementation Actions Taken & Results Achieved	- Oct 1, 2014 – Approved at Bruyere EPR steering committee - Oct 22, 2014 – Distributed to CHAMP steering committee for approval		
Status	Pending		

Appendix A – MEDITECH Design Proposal for Custom CDS

OM Parameters - HIM Dept: BAA (CHMP/CHMP.TEST60F/CHMP.TEST60F) - (TEST 6.06) - Sicotte,Katherine [EDT]

Last Edit: 20/05/14 14:14

Orders - All Users Orders - Non Pin Users Query Maps Clinical Data Dietary
Reports Pharmacy Amb Orders e-Prescribing

Default Interaction/Conflict Group
Interaction Auto-Override Comment

Home Medication Label

Category Group Sort Order

Facility	Active
Arnprior & Dist Memorial Hosp	Yes
Bruyere Continuing Care	Yes
Carleton Place & Dist Mem Hosp	Yes

Home Med Patient CDS
CDS Label
Pt History Custom Screen
Rx Custom Screen
Default Pt History Queries on Renew/Resume

Rx Forms

Default Rx Form
Location Rx Form

History

Cancel Save

Home Medications

New Edit Audit Snapshot

Home Medication	Instructions	Last Taken	Last Dose	Last Confirmed	Status
Name No Home Medication					

Medications by Name

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	0	-	=	[	]	\	/	.	,	'	;						

Medication Del Clear Shift Starts With Any Word

My Notices
Patient Lists
Next Patient
Select Visits
Summary
Review Visit
Notices
New Results
Clinical Panels
Vital Signs
I & O
Medications

Home Medications

✓ Home Medication	Instructions	Last Taken	Last Dose	Last Confirmed ▲	Status
☐ Ezetimibe [Ezetrol]	10 mg PO DAILY	Unknown		20/05/14	New

Medication: Ezetimibe [Ezetrol]

Strength: 10 MG

Dispense Form: Tab

Dose: 10

Units: mg

Route: PO

Freq: DAILY

PRN: N

PRN Reason:

Last Confirmed

Date: 20/05/14 15:58

User: Sicotte, Katherine

Source:

Father:

Discontinue:

Cancel:

*Last Taken: ☐ Known ☒ Unknown

Date/Time:

Dose:

Patient Comments:

Provider:

Recorded By: Sicotte, Katherine

*Recorded Date: 20/05/14

Category: Pt History

Grundy, Philip (MEDITECH) - Feb 19, 2014 - 1019 EST:

Hi Katherine,

We can add two custom screens in the Amb Orders Tab of the OM Parameters. The Home Med Patient CDS option will add a new tab to the home med routine with exclusively custom queries. The Pt History Custom Screen will add additional information to the Edit tab of this routine. Any additional information captured may need to be added to the Med Rec reports.

Thanks,
Phil

Task EMRT 79203962

Appendix B – Standard MEDITECH Home Medications Report

Champlain MEDITECH Partners		Patient Home Medications		Page: 1
				Date: 24/09/14 13:43
				User: Sicotte, Katherine
BTEST, OCTOBER		Medical Record: OB00001146		
Home Medications as of 24/09/14				
Allergy/AdvReac: No Known Allergies				
Home Medications				
Drug	Instructions	Last Taken	Comments	
Advair 250 Diskus [Fluticasone 250 Mcg/Salmeterol 50 Mcg]	1 inh inhalation bid 1 inh Diskus	Unknown		
Domperidone [Motilium]	10 mg oral tid before meals 10 mg Tab	Unknown		
Furosemide [Lasix]	40 mg oral daily 40 mg Tablet	Unknown		
Lactulose Liq [Cephulac, Chronulac]	30 ml oral bedtime 1 ml Btl	Unknown		
Sertraline [Zoloft]	50 mg oral daily 50 mg Cap	Unknown		
Warfarin [Coumadin]	2.5 mg oral bedtime 2.5 mg Tab	Unknown		

Appendix C – Existing Paper Documentation



Home Medication List (Pre-Hospitalization)

☐ Completion of HOME MEDICATION LIST not applicable. Reason:

COMMUNITY PHARMACY				PHONE	FAX
HOME MEDICATION SYSTEM/MEDICATION MANAGEMENT:				SOURCE OF HOME MEDICATION LIST:	
☐ Vials ☐ Blisterpack ☐ Dosette (Patient fills) ☐ Dosette (Pharmacy fills) ☐ Other				☐ Medication vials or community pharmacy records	
☐ Self ☐ Family Support ☐ Facility Staff Administer				☐ Patient/family recall	
HOME MEDICATION LIST RECORDED BY:				☐ Ontario Drug Benefit Drug Profile Viewer	
				☐ MAR from another facility	
Print Name	Signature & Designation	Pager/Phone	Date (DD MM YY)	☐ BPMH (home med list don't at another facility)	
				☐ Other	
HOME MEDICATION (PRE-ACUTE CARE) LIST (prescription medications, over the counter products, herbals)					
MEDICATION NAME		DOSE	ROUTE	FREQUENCY	

H440062-201402_Trial

CHAMP Steering Committee Terms of Reference

Definition :	The CHAMP Steering Committee is the governing body and final authority for decision-making relative the overall strategy and direction for the Champlain Association of Meditech Partners. The committee is comprised of executives from each participant organization.
Mandate :	The mandate of the CHAMP steering committee is to govern the operations and related projects for the partnership. As such, its primary functions are to: ✓ Define and approve the overall strategy for the partnership ✓ Make decisions on matters related to operations and projects budget, resources, schedule, and scope ✓ Act as a visible and vocal champion of the partnership ✓ Approve project and operations strategy and tactics ✓ Resolve project and operational issues and makes policy decisions
Functions:	In accordance with its mandate, the CHAMP steering committee shall: Provides strategic oversight and direction: ✓ Establishes the strategic plan for CHAMP ✓ Approves capital plans ✓ Approves the admission of new members Provide project governance: ✓ To approve individual project requests ✓ To approve project deliverables such a project charter including: scope, resources, time lines ✓ To approve project change requests and decision requests ✓ To provide guidance on project issues and risks ✓ To approve project close out and transition to operations Provide operations governance: ✓ Establish hosting and service level agreements ✓ Monitoring the provision of service ✓ Approves changes to service levels and resourcing ✓ Receives operations reports ✓ Ensures that procedures are established and maintained

	✓ Governs the establishment and reinforcement of standardization within the shared MEDITECH HIS
Reports to:	Participant organization Chief Executive Officers
Direct Reports:	The CHAMP Project Management Office (PMO) reports to the CHAMP Steering Committee
Advisory bodies:	✓ Governance sub-committee ✓ Service Level Management group ✓ Chief Financial Officer working group ✓ Clinical Advisory Group? ✓ Physician Advisory Committee?

Committee Composition:

Leadership	The steering committee chair will be appointed by committee vote. The chair will be appointed on an annual basis.	
Membership:	Voting Members ✓ 1 administrative executive (VP or higher) from each participant organization ✓ 1 clinical executive (VP or higher) from each participant organization	Non-voting Members ✓ CHAMP project director ✓ Champlain LHIN CIO ✓ Chair of Clinical Advisory Group? ✓ Chair of Physician Advisory Committee?
Member Responsibilities:	Each member shall be responsible for: ✓ Disseminating information and communicate back to their home organizations ✓ Representing their organizations in making decisions ✓ Regularly attending meetings in order to maintain continuity, which will promote efficiency to the committee's functioning. No delegates are permitted.	

Decisions

Decision making:

Each participant organization shall have one (1) vote, which shall be made by the representative or representatives of it present at the Steering Committee meeting.

Quorum will be achieved when at least one representative from a Majority of the Members are present (in person, by teleconference or video-conference) at a duly

constituted meeting, provided that the representative of the Service Provider must be in attendance at such meeting unless the Service Provider has failed to attend the most recently called meeting dealing with the same or similar matters and has been provided notice of both meetings.

All decisions from the steering committee shall be in the form of the CHAMP decision document (see Appendix D) outlining the:

- ✓ Decision made by the committee with record of vote
- ✓ Background and rationale for decision
- ✓ Options and impact of decision

Meetings:

Frequency	Monthly and as required (discretion of the co-chairs)
Duration:	2 hours
Location:	To be determined; teleconference and WebEx shall be made available
Quorum:	A majority vote (50+1) will represent the steering committee position; exceptions and abstentions will be noted and documented in the minutes

Appendix A – Current Membership

Voting Members

Organization	Representative #1	Representative #2
Arnprior Regional Health	Eric Hanna, CEO	Leah Levesque, VP Patient Care
Bruyère Continuing Care	Daniel Levac, CFO	Debbie Gravelle, VP Patient Care
Carleton Place & District Memorial Hospital	Toni Surko, CEO	
Hôpital Glengarry Memorial Hospital	Linda Morrow, CEO	
Hôpital Montfort	Kathy O'Neil, VP Planning	Lucille Perrault, VP Patient Care
Queensway Carleton Hospital	Michael Cohen, VP Clinical Support, CIO, CPO	Kent Woodhall, VP Patient Care

* Committee Chair

Non-Voting Members

Organization	Representative	Alternate
CHAMP	Cory Bell, Project Director	
Champlain LHIN	Glenn Alexander, CIO	

Administrative support:

Primary: Ms. Miranda Donohue
CHAMP Project Coordinator
Phone: (613) 721-2000
mdonohue@qch.on.ca

Appendix B – CHAMP Code of Conduct

Objective:

The purpose of the code of conduct for the CHAMP Committees is to provide a framework of positive and supportive conduct within which the work of the committees can be undertaken. All committee members agree to norms below prior to the onset of committee work and all members are responsible for enforcing these norms and adhering to the principles of behavior as outlined. The Committee will refer back to the Code of Conduct as needed.

Norms:

1. We start meetings on time and do not re-start if people arrive late. Meetings will also end on time in respect to other members who also have competing commitments.
2. We come to the meeting prepared: by reviewing the agenda and materials including any work requested for that meeting
3. We check our titles at the door. The committee's chair manages the agenda but we are equal members and partners in the committee work. We discourage anyone from dominating the meeting and all members of the committee pay attention to visual cues indicating disengagement and actively attempt to engage the other members
4. We respect the opinions of each member and recognize everyone has the right to present his/her point of view and have their opinion heard. Thus we do not interrupt other members speaking, and there is no "bad" opinion
5. Each member will be an active listener, and provide a quiet environment where the opinion of other members is heard and acknowledged, even if you do not agree
6. All members will strive to ensure that each team member's voice is heard before a decision is made
7. Language used within the committees will be professional and in a constructive context
8. We contain networking and social time to before or after the meeting, not during
9. We do not engage in side conversations during the meeting.
10. We will work toward consensus in an active and positive manner to the better result of the committee as a whole.

Chairperson – Code of Conduct

1. The chair has the opportunity to appoint a time keeper and /or note taker if deemed necessary.
2. The chair will summarize at the end of each topic / area to ensure understanding and consensus
3. The chair ensures action items are identified and assigned to people with a due date.

Appendix C – Commitment to Team Norms

I _____ have read and understand the CHAMP Steering Committee Terms of Reference. I understand that I am participating on behalf of my organization and that I am appointed to ensure my organizations business and operations needs are addressed in the advancement of the shared MEDITECH HIS for the partnership. I hereby commit to adhere to and uphold the team principles and code of conduct outlined in this document.

Signature

Date

Organization

DRAFT

Appendix D – CHAMP Decision Document

A. DECISION DESCRIPTION (completed by the submitting party or Subject Matter Expert)			
Issue/Opportunity	[executive brief of decision that must be made]		
Background	[provide background information relevant to the decision.]		
Options List all relevant options under consideration	Benefits For each option, highlight the positives	Risks For each option, highlight the impact, costs, resources, time requirements	
1.	•	•	
2.	•	•	
3.	•	•	
4.	•	•	
Recommendation	[select one of the options described above]		
Required Approvers	[list decision makers whose formal approval is required – to be added to Section C below]		
Author	[who prepared this section]	Date yyyy/mm/dd	
B. FINAL DECISION (completed by Project Office)			
Final Decision Statement	[clearly summarize the Recommendation from above]		Decision #
Author	[who prepared this section]	Date yyyy/mm/dd	
C. AUTHORIZATION (completed by Required Approvers)			
Name	Title	Approve? (Y/N)	Initials

CAG Terms of Reference Review - Feedback

Section	Original	Comments / Suggested change
Mandate	Determine and approve clinical practice decisions to optimize patient care and professional practice, while maximizing the utility of advanced clinical documentation regionally	CAG is not responsible for mandating practice at hospitals. It is to Determine and approve standardized clinical tools
	Make recommendations to the CHAMP Steering Committee on matters related to budget, project planning, and scope;	The CHAMP PMO is responsible for making recommendations to the CHAMP Steering regarding scope, budget and project planning.
Functions	Validate the build of advanced clinical modules to ensure congruence with the design as well as maximizing quality and patient safety components	Is this the role of the CI Managers or CAG? Perhaps monitor / oversight?
	Participate in strategic planning exercises to establish priorities and the schedule for continued deployment of advanced clinical modules within the electronic patient record;	This is a CHAMP Steering function with input from CHAMP PMO and site steering committees
	Review and adjudicate escalated issues which impact documentation design decisions and related clinical processes	Pertains to chart auditing. This is required within each individual organization. How would this be coordinated and handled regionally?
Reports to	CHAMP Steering Committee (via co-chairs)	CAG chair attends CHAMP steering, but to ensure clinical representation regarding issues. non-voting participant.

Section	Original	Comments / Suggested change
Liaises with	Comment:	Add Physician Advisory Group (in the process of being formalized)
Sub Committee's	Build and design teams (CI-led)	Liaison with the build team is via the CHAMP PMO. Liaison with the CI team is via the CI Managers. Both of which report to the CHAMP PMO (CI Managers and Build Team members)
Leadership	The CAG shall be co-chaired by two members, at the director level.	Two "clinical" members
Membership	Clinical informaticists from member organizations (where applicable)	Clinical Informaticists should be capitalized
	2 representatives per hospital (one being at the director level or higher with the authority to make decisions on behalf of their organization)	Would like to see a maximum of two people per organization at the meeting. If one is a clinical informatics that is fine but then only one at the Director level. This allows for a more even number of people as the smaller organizations do not have these roles and it is difficult to keep the focus on all organizations with too many reps.
Member Responsibilities	Disseminating information and communicate back to their home organizations	Information "to" and
Decision Making	One vote per each hospital by Operation Lead or designate	Clinical lead rather than Operation lead
	All decisions made by the CAG	If the physician advisory group

Section	Original	Comments / Suggested change
	are final and will be communicated in writing to the design and build teams (via the CI group) and the PMO.	does not agree and an agreement cannot be obtained between both groups, then CHAMP Steering makes the final decision. Also needs to be room for a revision process as new information obtained, processes change, etc.
Voting Members	For Bruyère – Dionne Sinclair	Change to: Andrea Jewell Director of Nursing Professional Practice ajewell@bruyere.org
Administrative Support	Primary – Miranda Bottomley	Change to: Ms. Miranda Donohue 613-721-2000 x4657 mdonohue@qch.on.ca

Project Charter: CHAMP Emergency Department Management (EDM)

Project Name:	CHAMP EDM Implementation	Date, Version, Status:	October 15, 2014 v3.0 DRAFT
Executive Sponsor:	CHAMP Steering Committee	Contact:	n/a
Project Sponsor(s):		Contact:	
Project Director:	Cory Bell	Contact:	613-721-2000 x4693
Project Manager:	TBD	Contact:	TBD

Project Overview:

1) Project Definition & Background

Briefly, what is the project expected to do? How will it happen (e.g. buy or build)? What is the target date for completion?

Definition: This project is the phased implementation of the Meditech EDM application in version 6.07 at the following partner hospitals: Arnprior Regional Health (ARH), Carleton Place & District Memorial Hospital (CPDMH), Hôpital Glengarry Memorial Hospital (HGMH), Hôpital Montfort (Montfort), and Queensway Carleton Hospital (QCH).

The phased approach includes the rollout of a fully integrated system for the Emergency Department (ED) including a patient tracker, triage documentation, order management, physician order entry (CPOE), interprofessional and physician documentation. This implementation will encompass all staff and clinicians working with the ED (physicians, nursing, other health professions, registration, clerks, laboratory, pharmacy, diagnostic services, etc.).

Background: Meditech EDM is a fully integrated product for the ED and incorporates many components already in use throughout the hospitals to varying degrees (e.g. registration, order entry, results, documentation, etc.). A preliminary version of EDM triage documentation and patient tracker was implemented by Montfort in February 2014 as part of their big-bang Meditech 6.06 implementation; however, agreement at CHAMP Steering Committee is that the CHAMP EDM Implementation project be initiated as a new regional implementation beginning with system design and standardization.

High level target dates include:

- **Regional System Design & Dictionary Standardization**
 - Patient Tracker & Triage Documentation: Start Fall 2014
 - Interprofessional Order Management & Documentation: Start Winter 2015
 - CPOE & Physician Documentation: Start Summer 2015
- **Regional System Build Complete** ***individual sites will select their desired go-live/implementation timelines***
 - Patient Tracker & Triage Documentation: Spring 2015
 - Interprofessional Order Management & Documentation: Fall 2015
 - CPOE & Physician Documentation: Winter 2016

Rationale: The implementation of a fully integrated ED electronic record will provide opportunities for optimization of ED workflows, clinical decision support, and provide a useful tool to allow for efficient, safe, quality patient care.

2) Project Goals & Objectives

What is the business objective driving the project? What are the expected business benefits? What will the project do to meet the business objective?

	Patient Tracker & Triage Documentation	Interprofessional IOM & Documentation	CPOE & Physician Documentation
- Improve patient satisfaction (by improving wait times, workflow, quality and safety of care received) - Improve ED wait times by: - providing timely access to ED patient information in a management tool for monitoring and intervention - Streamline ED departmental workflows by: - providing analytics to identify utilization and/or workflow issues - capturing and collecting more accurate data in real-time with a goal of eliminating manual reporting - providing real-time access by multiple providers to a single patient chart - Improve the quality of patient care by: - collecting and documenting consistently in fully integrated EMR (ED to inpatient) and improving timely access to clinical documentation across CHAMP partners - improving communication between providers - reducing the risk of illegible documentation - implementing and/or automating patient discharge instructions - enabling electronic discharge summaries to integrate to multiple 3rd party systems (e.g. provincial databases and family physician offices) - Improve patient safety by: - providing the ability to electronically track, locate (by location) and monitor patients throughout the hospital during their ED care - using the EMR as a tool to trigger that patients get the right treatment based on diagnosis using best practice clinical guidelines and pathways	√ √ √ √ (ltd) √ (triage) √ √ (triage) √ (ltd)	√√ √ √√ √√ √√ √√ √√ √√ √√	√√√ √ √√√ √√√ √√√ √√√ √√√ √√√ √√√

3) Guiding Principles

- The EDM application will be regionally designed and standardized to function for all CHAMP partner organizations
- Leverage the CHAMP system standardization and build already implemented in other areas to guide the EDM build (e.g. registration, order entry, inpatient care documentation, etc.) and align EDM system design and standardization with CPOE and physician documentation (PCM2)
- Reduce manual data entry and avoid duplication within the EDM application – ensure that proper and efficient system use by end users drives the population of patient tracker information
- EDM implementation should ease workflow for all clinicians and staff in the ED and should be flexible to accommodate the needs of these busy departments with urgent/critical patient care events on a regular basis

- The ED record will reflect a patient's plan of care and will support interprofessional communication at transition points in care
- Ensure that system build requirements are based on recognized best practices and evidence wherever possible, and where possible, make use of MEDITECH standard content
- Implement EDM in a continuous phased approach to realize "quick wins" in the departments and to build on momentum and acceptance with each phase of implementation building off the previous ones

4) Scope

Scope Statement:

This project is the phased implementation of the Meditech EDM application in version 6.07 at all partner hospitals. The phased approach includes a patient tracker, triage documentation, order management, physician order entry (CPOE), nursing & interprofessional documentation, and physician documentation.

Inclusions:

Refer to [Appendix A](#) for a detailed summary of the scope inclusions and site-specific requirements.

Exclusions:

eMAR and BMV – while these functions will eventually be implemented in the ED, these will be planned as a separate CHAMP project across all departments and all sites and is not considered within scope for EDM

RFID tracking – this is a desired project for multiple partner sites, however, integration of RFID technology with Meditech EDM is not possible until an upgrade to Meditech 6.08 is completed.

Site Specific Considerations

- **Device Strategy:** each site is responsible for strategy development and device deployment for their sites – CHAMP partners may decide to leverage existing CHAMP contracts or group purchases for economies of scale
- **Integration requirements:** as part of the ED workflow analysis, each site will be responsible for identifying integration requirements for devices used in their departments including budget impacts. Once integration requirements are defined, CHAMP vs. site-level responsibilities for build and testing must be determined.
- **Testing Plans:** the CHAMP team will perform regional system testing; however, sites are responsible for planning internal system testing in order to sign off on the appropriateness of the system build prior to training.
- **Training Strategy:** the CHAMP team will provide train-the-trainer trainings to identified trainers at each site. Sites are responsible for developing and delivering their site-specific training curriculums.
- **Super User & Go-Live Support:** CHAMP system and technical support will be available for all sites during their go-live periods via a centralized command centre; however, sites are responsible for appropriately staffing super users within their departments to provide go-live support for all system use, process, workflow, and policy-related issues.
- Sites are responsible for internal change management strategies including workflow redesign, policies and procedures, and communication.

5) Assumptions

What assumptions are significant to the project's plan?

CHAMP Project Structure & Staffing

- An EDM Project Manager will be selected by CHAMP to manage the implementation of EDM regionally
- The CHAMP EDM Project Implementation Team will be set up by the CHAMP Project Management Office and appropriately staffed with resources from the participating organizations including an EDM Core Team Lead and fully resourced Build Team
- The project will be appropriately funded via the approved capital budget process at each partner organization

Clinical Requirements & System Standardization

- The ED patient record will meet all HIROC and clinical professional college standards
- Current ED workflows and documentation will not necessarily be relevant for migration to an electronic system – workflow and documentation redesign will be a necessary component of this project
- Regional Clinical Group will assist with system design requirements, comprised of designated clinical leads from each participating site
- Similar to the approach for PCS, content for system design and build will be established by Regional Clinical Group to achieve standardization, this group will be responsible for developing and documenting regional dictionary standards and system design requirements
- Clinical Group will require some form of EDM application training prior to effectively initiating or completing the EDM system design and requirements documentation
- To optimize tracker functionality and avoid manual data entry wherever possible, some components of order entry and/or documentation may need to be implemented in advance
- Clinical Advisory Group (CAG) and Physician Advisory Group (PAG) will be required to sign-off on system requirements and design prior to build and will also be responsible for validating system build prior to implementation

Technical System Requirements

- CHAMP EDM Project Implementation Team will attend Meditech application and dictionary training prior to commencing the regional system build
- The CHAMP EDM Project Implementation Team will be responsible for system building, testing, and providing system train-the-trainer training to the site level teams
- Where specific data elements are required for mandated reporting purposes, these will be built into the system (e.g. WTIS, Pay for Results, NACRS, etc.)
- Information must either be entered by staff or captured automatically by the system at some point along the patient's journey in order to be available for future display or analysis

Site-Level Requirements

- Each site will develop an internal local EDM project structure consisting of: clinical staff, physicians, super users/educators, project management, IT support, etc. that will work in concert with the CHAMP project office
- Each site will be responsible for their local end user and super user training, process/workflow redesign, communications, and organizational change management, and device strategy
- Changes are expected to be extensive so full training of all staff working in ED will be required including designation

of super users, educators, etc. by all sites

6) Critical Success Factors

Critical Success Factors (CSF's) are factors that must exist for something to be successful. What are the CSF's for the objectives to be met?

- Clearly defined roles for accountability, decision making, and responsibility for project deliverables both at local and regional levels (refer to [Project Organization](#) section)
- Clinical engagement and adoption across all disciplines from start to finish including well developed requirements, practice and change management plans at a local level
- Executive engagement with partner site identified project sponsors

7) Constraints

What parameters pose limits on the project?

Limited resource availability:

- Multiple competing projects will require access to the same resources required for the EDM implementation
- CHAMP core team resources required for operational support must also be aligned to assist with the EDM implementation
- Multiple improvement projects in the ED may create resource constraints and change overload
- New Meditech version updates or powerpack updates may need to be assessed on a more regular basis going forward and could impact the agreed to implementation timelines for EDM

Montfort has already implemented a version of EDM tracker and triage:

- Changes as a result of this regional EDM implementation will need to be agreed to and implemented along with communication/training at Montfort.
- There may be system set up that is not modifiable since EDM has already been implemented within the CHAMP domain – will need to investigate any limitations to modifying existing system setup/parameters with Meditech.

Complexity of a regional approach to EDM implementation:

- Decision making mechanisms and structures both regionally and at site-specific levels may impede the ability of the project team to gain timely decisions to meet committed timelines.
- Site-specific requirements may have an impact on timelines
- State of readiness at partner hospitals will vary and will impact the ability of sites to meet target timelines – define project timelines with this in mind and each site must consider their own realistic implementation timelines
- EDM provides the full functionality of an electronic patient record within the ED, however, many of the components such as CPOE HOWEVER MANY OF THE components such as CPOE and documentation are shared functionality within the Meditech EHR and need to be designed in parallel (e.g. CPOE and physician documentation within PCM2)
- Two partner sites continue to work on PCS implementation by June 2015 – activation of design and standardization sessions in advance of those dates may limit ability of those sites to participate

IT infrastructure:

- Appropriate technology and IT infrastructure must be in place, tested, and approved in advance of the EDM deployment in order to efficiently support the changes to administrative and clinical workflows
- v6.07 upgrade will be complete by December 3, 2014 in order for the EDM build to commence by January 2014

8) Risks

What risks have been identified as unique and significant to this project? How will they be managed? In the table, Probability = the chances of the Risk occurring, Severity = how severe would it be to the business, Risk Avoidance = Steps to be taken to minimize the chances of the Risk occurring, Risk Management = Steps to be taken to minimize the Risk if it occurs despite the Risk Avoidance steps.

RISK	PROBABILITY (L/M/H)	SEVERITY (L/M/H)	RISK AVOIDANCE STRATEGY	RISK MANAGEMENT STRATEGY
Decision making structures, mechanisms, and individuals may impede the ability of the project teams to gain regional decisions in a timely manner to meet committed timelines as compared to a single organization implementation	M	H	EDM Project Manager appointed Reconfirm CAG TOR Reconfirm CI Regional Group processes with build team Confirm PAG TOR	Decision at CHAMP Steering Committee that CAG would be the decision making group for all clinical content
Change fatigue in the ED with pay for results, continuous performance improvement, nursing model of care, patient flow initiative, etc., may compromise acceptance of EDM as a positive	L	H	Develop clear communication plan Carefully consider go-live timelines in the context of other organizational commitments	Ensure that EDM project is aligned with strategic directions
CHAMP will be engaged in multiple projects over the course of the EDM implementation as a requirements to meet agreed to operation services levels, perhaps limiting resources available to support this project	M	H	Clearly define project requirements in planning documents Ensure organizational budgets are aligned with scope and resources	
EDM implementation will impact and require expertise from various applications (e.g. ADM, OM, EMR, PCS, PCM, etc.). Resource availability for these applications and clear communications between CHAMP project and operations may impede EDM progress if not planned appropriately	M	H	Ensure timely signing of CHAMP SLAs to facilitate appropriate CHAMP support staffing Clarify and refine change control and decision processes in context of SLA and governance agreements	
Competing CHAMP Go-Lives involving many of the same/related staff may hinder the progress on "less urgent" projects. (e.g. PCS Go-Lives in Spring 2015 may require involvement of the Regional CI Group if issues are reported that have regional impacts for evaluation and solution development).	H	M	Budget and staffing plan for EDM implementation must not rely on existing resources without additional time consideration	
Clinical decision groups are in place (Regional CI Group, CAG, PAG) and may not be aligned with non-clinical requirements and/or workflow impacts. As an example, there is not strong link between the Regional	M	M	Clarify expectations of staff involved on regional committees to ensure all affected departments are	

Review HIM Managers TOR to identify opportunities to align with clinical groups

A detailed EDM project plan will be developed once the project charter and scope are signed off by the CHAMP Steering Committee and a project manager assigned. Each site will be responsible for defining their specific implementation timelines that align with the regional approach to EDM design and standardization.

The EDM implementation project has been prioritized as the next priority project by the CHAMP Steering Committee. As defined in the CHAMP Governance and Service Level Agreements, a regional project structure (outlined below) will be put in place to oversee the successful implementation of EDM at all applicable partner sites.

Project structure, including Implementation Project Manager, Implementation Team, and Local Project Teams as outlined in the governance and SLAs

Contacts:

A link to a SharePoint contact list for EDM will be included once the teams are identified and staffed.

CHAMP Steering Committee Site Sign Off:

Organization	Name & Title	Signature	Date
ARH	Eric Hanna Chief Executive Officer		
Bruyère	Daniel Levac VP Corporate Services & Chief Financial Officer		
CPDMH	Toni Surko Chief Executive Officer		
HGMH	Linda Morrow Chief Executive Officer		
Montfort	Kathy O'Neil VP Planning & Support Services		
QCH	Michael Cohen VP Clinical Support, Information Management & Chief Privacy Officer Kent Woodhall VP Patient Care & Chief Nursing Officer		
The Royal	Cal Crocker Executive VP and Chief Financial Officer		

Revision	Date	Status	Author	Reviewed By	Summary of Changes
1.0	September 12, 2014	Draft	Nadia Prescott	Cory Bell	First draft for regional review and input
2.0	September 29, 2014	Draft	Nadia Prescott	CHAMP PMO QCH ED Project Team CPDMH PM & CNO	Initial draft provided to all partner sites for their feedback, modification including charter and scope matrix.
3.0	October 15, 2014	Draft	Nadia Prescott	CHAMP Project Office Cory Bell, Valerie Sherrard, Andrea McClymont, Andre Fournier, Claire Robertson, Nadia Prescott, Rebecca Morris, Cheryl Goudreau	Addition of scope requirements for all sites and high-level implementation plans, review of charter content. For approval by CHAMP Steering Committee.

Appendix A: EDM Scope Matrix

	Arnprior	Bruyère	Carleton Place	Glengarry	Montfort	Queensway
Triage & Tracker						
Short Form Triage Reception	R-1	NR	R-1	R-1	C	R-1
Triage Documentation	R-1	NR	R-1	R-1	C	R-1
Long Form Registration	C	NR	C	C	C	C
RFID Tracker	D	NR	D	D	D	D
Public Tracker - Clinical areas	D	NR	NR	NR	C	R-1
Private Tracker - Status Boards	R-1	NR	R-1	R-1	C	R-1
Management/TL Tracker	R-1	NR	R-1	R-1	C	R-1
Health Card Validation	R-1	NR	R-1	R	C	C-1
Patient Care Documentation						
Nursing & Other Health Prof.	R-2	NR	R-1	R	R-2	R-2
Physicians	R-2	NR	R-1	R	R-3	R-3
Physician Clinical Panel	R	NR	D	R	R-2	D/ R-2/3
Order Entry						
Labs	C	NR	C	C	C	C
Physician Entry CT & US	NR	NR	NR	NR	C	NR
Diagnostic Services	R	NR	R-1	R	C	R-1
Consults	R-2/3	NR	R-1	R	C	R- 1/2/3
CPOE						
Diagnostic Services	R-2/3	NR	R-1/2	R-2	R-3	R-3
Labs	R-2/3	NR	R-1/2	R-2	R-3	R-3
Consults	R-2/3	NR	R-1/2	R-2	R-3	R-3
Order Sets	R-2/3	NR	R-1/2	R-2	R-3	R-3
Medications						
Best Possible Medication History	R-2	NR	R-1	R	R-2	R-2
Medication Order Entry	R-2	NR	R-1	R	R-3	R-2/3 D4?
Discharge Prescriptions	R-2	NR	R-1	R	R-3	R-3
Medication Reconciliation	R-2	NR	R-1	R	R-3	R-3
Reporting Requirements						
ERNI (NACRS)	NR	NR	C	R-1	C	C
DART - ED Performance Mgmt	NR	NR	NR	NR	NR	C
CDU Times Reporting	NR	NR	NR	NR	NR	C

Grading Scale

R equire functionality
D esire functionality
C omplete already
NR Not Required

Number denotes
which phase
requirements will
be rolled out at
individual sites

MT webex - mentioned n/a until 6.08?

Q - build into public/private tracker if possible but need a tool to manager flow in ED

Q - Autopopulate patient info at reg for nurse/clerk to validate vs. data entry M - need to test in 6.097 update

Q - get this group familiar with documentation then roll out to physicians. M - allied health is documenting in EDM using PCS documentation developed

Q - considering PCS experience, 2-3 month delay after nursing ONLY

Q - per Dr.K - revisit with R-2/3? D if some benefit shown to ED physician group

M - ER physicians enter CT and US orders using OM

Q - need to focus on workflow and reducing delays/errors for patient flow and tracking. Consider MT or other process to get time from order written to entered to MT, req for serv? Appropriateness key.

Q - determine reqm'ts through workflows for each phase (e.g tracker PIA, CCAC, consult times and defer rest to R-2/3. M - docs write order, nurse enter via OM

Q - consider whether makes sense to implement diff OM process if this is <1yr away, appropriateness of orders is key here

Q - will investigate a select set to implement

Q - currently on paper, consider moving to electronic with nursing documentation?

Q - need more information and workflow reqmt's from pharm, ED nur & MD

Q - currently on paper, consider moving to electronic with CPOE & physician doc.

QOQ specific reporting

Appendix A: EDM Scope Matrix

	Amprior	Bruyère	Carleton Place	Glengarry	Montfort	Queensway
Devices						
Main Tracker Screens	R-1	NR	R-1	R	C	R-1
Stationary workstations	R-1	NR	R-1	R	TBD	TBD
Workstations on wheels	R-1	NR	R-1	R	TBD	TBD
Mobile devices	D	NR	R-1	R	TBD	TBD
Integration						
Glucometers (lab)	TBD	NR	TBD	TBD	R	TBD
Blood pressure monitors	TBD	NR	TBD	TBD	D	TBD
Patient monitors (vital signs)	TBD	NR	TBD	TBD	D	TBD
CADD Pumps	TBD	NR	TBD	TBD	NR	TBD
Ventilators	TBD	NR	TBD	TBD	NR	TBD
Telemetry	TBD	NR	TBD	TBD	R	TBD
Cardiac Monitors	TBD	NR	TBD	TBD	R	TBD
ECG	TBD	NR	TBD	TBD	C	R-1/2
Portable Ultrasound	TBD	NR	TBD	TBD	NR	TBD
Bladder Scanner	TBD	NR	TBD	TBD	NR	TBD
Capnometers	NR	NR	TBD	TBD	NR	TBD
Patient Discharge Instructions	D-2/3	NR	R-1	R-2	D-3	D-3
RFID software	TBD	NR	TBD	TBD	D	D
Point of Care Testing	TBD	NR	TBD	TBD	R	D
Fetal Monitors	NR	NR	NR	NR	NR	D
Electronic discharge summaries	D	NR	D	D	R	D
Wish List						
Physician Scheduler (MT or VIP?)	D	NR	TBD	D	NR	D
Team Message Board	D	NR	D	D	R	D-?
Other?						

Grading Scale

R require functionality
D esire functionality
C omplete already
NR Not Required

Number denotes
 which phase
 requirements will
 be rolled out at
 individual sites



Champlain : Association
des Partenaires MEDITECH

Will need to determine specific device requirements for each phase

CHAMP
Champlain Association
of MEDITECH Partners

*Integration
requirements/decisions must
be informed by clinical
workflow. Involve MIS to
determine whether required
devices/systems integrate
directly to MT or to a 3rd
party system. Cost
implications for each site
depending on their
requirements should be
considered in the
project/capital budget*

*Q - capital request in 14/15 for ED
Q - much developed in-house
already, investigate linking to
MT to print. Also options for
integrating purchased software
to MT directly MT webex -
mentioned n/a until 6.08?*

*e.g. Clinical Data Repository
(Ontario MD report provider
to family doc offices)*

*M - uses Petal MD online services for on-
call coverage*

*e.g. notice to all ED staff at
log in dept using precautions,
drug not available, etc.*