COLLABORATION IN INFORMATION TECHNOLOGY WITHIN THE COMMITTEE ON INSTITUTIONAL COOPERATION

A Dissertation in
Higher Education
By
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ABSTRACT

This study is motivated by the increased scholarly interest in collaboration within higher education, as well as the specific rise of Information Technology (IT) collaboration as an organizational strategy. Existing research on IT collaborations has left several openings for additional work, namely, an investigation of the factors that IT leaders consider when deciding to pursue a collaboration, the relative weight that is placed on costs and benefits, and whether these calculations have changed based on the altered nature of higher education since the economic crisis of 2008.

This dissertation is a case study focused on Information Technology collaboration within an existing academic consortium: the Committee on Institutional Cooperation (CIC). Specifically, this study explores attitudes and practices related to institutional collaboration among Chief Information Officers (CIOs) and other IT leaders within the consortium to determine why collaboration is—or is not—pursued, what happens when a collaboration begins, and how collaboration is viewed by CIOs. Using semi-structured interviews and participant questionnaires, this study sought to answer three primary research questions:

1. How do IT leaders view the idea of collaboration?
2. To what extent and with whom have institutions pursued inter- or intra-institutional collaborations?
3. How and why do IT leaders make decisions about whether or not to engage in collaborative activities?

Overall, it does not appear that any one factor determines whether and how IT leaders collaborate on either an intra- or inter-institutional basis. Rather, there is a complex decision making process occurring that is not fully clear. The level of interest in collaboration, the perceived benefits of it, and the actual instances discussed differed widely amongst participants. This study presents a conceptual framework for understanding the primary factors IT leaders identified as influencing their decision making about collaboration. The Information Technology Collaboration Framework (ITCF) is a visual representation of the potential influence of factors IT leaders consider when making decisions about engagement in an intra- or inter-institutional collaboration. Additionally, rather than supporting a rational model conception of collaboration leveraged in past work, the findings indicate that decision making for IT leaders in the study is a matter of individual context and perspective more appropriate to a situated decision making approach.
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Chapter 1: Introduction

Institutions of higher education face severe financial challenges in the current economic environment. The recent economic recession of 2008-2009 was the deepest since the Great Depression, and has resulted in a severe financial burden for higher education (Zumeta, 2010; Wiseman, 2011). States have slashed public funding to higher education, in some cases by over 10% (Zumeta, 2010), while many institutions also suffered major investment losses (National Association of College and University Business Officers [NACUBO] & the Association of Governing Boards of Colleges and Universities [AGB], n.d.). Additionally, students are requesting more financial support due to the impact of the recession (NACUBO & AGB, n.d.). Overall, this has created an environment in which colleges and universities are struggling to develop new sources of revenue while holding down costs (Wiseman, 2011).

Information Technology (IT) departments in particular appear to have been heavily affected by the ongoing financial crunch. Indeed, IT leaders identified funding their organizations as the top issue of concern in 2011 (Ingerman & Yang, 2011). IT departments in higher education have always faced unique challenges as they try to reconcile a host of competing priorities and expectations, including meeting user expectations while holding down operating expenses. This is even truer today, as rapid technological advances, increasing interconnectivity, the current economic environment, and other factors present IT administrators and their departments with new challenges and opportunities. The need to implement technological solutions while holding down expenses can be particularly difficult because it often requires the implementation of systems and practices that increase central control and administrative oversight—an unpopular prospect in what has traditionally been the decentralized environment of higher education (Vouloudakis, 2010).
Statement of the Problem

Previous research has indicated that IT leaders see collaboration as a particularly appealing option to generate cost savings (Goldstein, 2007). Additionally, collaboration is a topic that is increasing in importance within higher education, yet receives little attention from researchers (Kezar, 2005). IT within higher education is also generally under-researched, but one study has empirically examined interest in IT collaboration. The Goldstein (2007) study was done on behalf of the EDUCAUSE Center for Applied Research (ECAR) and included a survey of 586 institutions, follow-up surveys of 157 institutions currently collaborating in some area of IT, follow-up surveys of 113 institutions that were not pursuing any collaborations, qualitative interviews with 30 institutions, consultation with a panel of CIOs, and two detailed case studies. The study focused on four forms of IT collaboration: “partnerships to develop an IT resource; shared service collaborations in which multiple organizations band together to jointly operate an IT resource; collaborations in which one institution elects to operate IT services on behalf of others; and collaborations in which an institution is a recipient of services provided by another institution” (p. 10). Goldstein examined five key areas using the commonly adopted lens of transaction cost economics in his analysis (p. 10):

- Types of institutions that collaborate,
- Technology areas that are conducive to collaboration,
- Goals and barriers that drive or limit enthusiasm for collaboration,
- Steps that institutions take to evaluate collaboration opportunities, and
- Approaches that institutions take to manage and sustain collaborations

The findings from this study suggest institutions are strongly influenced by their environment when making the decision to collaborate. For example, public doctoral or master’s institutions
were more likely to collaborate than smaller, private institutions. The study also found that while shared services—jointly operating an IT service or resource—is the most common form of collaboration, no area was devoid of collaborative activity. Furthermore, findings suggested that collaborators engage in partnerships primarily based on the belief that they will reduce costs or increase benefits, which is consistent with Goldstein’s approach of transaction cost economics; that collaboration is driven by personal relationships; and that formal structures and frequent communication guiding the collaboration tend to produce more successful collaborations.

While this research adds a great deal to understanding of collaborations in IT, Goldstein’s (2007) study did not identify clear reasons for why organizations would not choose to pursue collaboration or how organizations weight the various costs and benefits of collaboration in decision making, suggesting there may be something additional besides transaction cost economics in play in IT decision making about collaboration. Additionally, the study was conducted prior to the 2008 financial crisis that has moved American higher education into a time of severe fiscal constraint (Zumeta, 2010). Given that Goldstein found that one of the main drivers for engaging in collaboration was cost reduction, it is reasonable to hypothesize that interest in, and perhaps instances of, collaboration will have increased. Developing a deeper understanding of these decision points contributes to the general literature on collaboration, as well as to the specific developing interest in IT collaboration as an organizational strategy within higher education.

**Purpose Statement**

This dissertation is a case study that focuses on IT collaboration within the Committee on Institutional Cooperation (CIC). Specifically, this study explores attitudes and practices related to institutional collaboration among Chief Information Officers (CIOs) and other IT leaders
within the consortium to determine why collaboration is—or is not—pursued, what happens when a collaboration begins, and how collaboration is viewed by CIOs. Using a brief participant questionnaire and semi-structured interviews, this study seeks to answer three primary research questions:

1. How do IT leaders view the idea of collaboration?
2. To what extent and with whom have institutions pursued inter- or intra-institutional collaborations?
3. How and why do IT leaders make decisions about engaging in collaborative activities?

Significance

This study adds to the scholarly literature in three areas. First, it contributes to the relatively limited scholarly literature on higher education IT. Much of the research conducted in this area is done by professional organizations, not academics, and an in-depth case study on IT collaboration adds to the limited scholarly understanding of the topic. This is particularly important because IT is now a central function of universities that supports and enables university missions of teaching, research, and service. Additionally, the study helps to fill gaps in Goldstein’s (2007) study, such as the reasons IT leaders choose not to pursue collaboration and the way IT leaders make their cost benefit assessments about engaging in collaboration.

Second, the study contributes to the literature on inter-organizational collaboration, which is a topic frequently examined through the use of in-depth case studies (Gray, 2000). The case study on the CIC presented in this dissertation adds to the scholarly understanding of decision making about collaboration within a specific, understudied context. Additionally, the study contributes to understanding how the economic turmoil post-2008 impacts interest in
collaboration within IT in the CIC. The study also contributes to the scholarly understanding that IT has a broad impact upon the mission of colleges and universities because it influences pedagogy, faculty research, competitiveness, and institutional effectiveness. IT has become a core service of colleges and universities, and it has a strong tie to the ability of institutions to fulfill their missions (Workman, 2009).

This project has additional implications for practice by presenting a framework that IT leaders and other institutional leaders can use to help understand the benefits and drawbacks of collaborative organizational structures. The framework provides a new perspective for institutions considering the development of these partnerships. This is especially important because the widespread adoption of this organizational strategy would have major implications for the future of IT within higher education. The new types of collaboration being pursued by IT organizations, their reasons for doing so, and their general interest in increased collaboration could also have important implications for the way that institutions of higher education, especially administrative departments like IT, seek to manage environmental and fiscal uncertainty. The study further suggests that moving away from a rational decision making model such as transaction cost economics may help to develop a more real-world understanding of decision making in context. This study will help administrators and policymakers at institutions understand the topic of IT collaboration in more depth.

Having better information about collaboration is particularly relevant for IT because higher education IT organizations have identified IT financing as one of the most important ongoing challenges and asserted that their organizational structures are already in transition (Green, 2010). Although conversations about working together may be complicated, at a fundamental level, institutions of higher education are dedicated to similar aims. Each
institution’s IT structure and services vary, but there are undeniable commonalities, especially among peer institutions, that create opportunities for cooperation and consolidation of IT support. Institutions that evince interest in collaboration will have to think about their own institutional policies and traditions when it comes to relinquishing some internal control in favor of the benefits of collaboration, and discussing these issues in depth via a case study will provide additional information to leaders considering these options.

**Dissertation Overview**

This chapter introduces the topic of the study and discusses the contributions of this study. IT departments have been faced with budgetary challenges as a result of the ongoing financial crunch, and have identified funding their units as their top challenge in 2011 (Ingerman & Yang, 2011). One strategy that appeared to be gaining popularity before the 2008 crisis, in part due to its ability to save costs, was collaboration with other institutions (Goldstein, 2007). This study investigates CIO perceptions of, and action taken with regards to, collaboration with other schools via the lens of the CIC. The case study aims to contribute to research in the fields of IT, collaboration, and higher education specifically, as well as to serve as a useful guide for administrators and other practitioners considering IT collaboration.

Chapter 2 presents a conceptual model that describes what appears to be occurring when IT departments consider engaging in a collaboration based on a review of the extant literature. Chapter 3 discusses the methods that are used in the case study, offers a detailed list of research questions, and discusses validity and limitations of the study. Chapter 4 provides additional context for the study by discussing the findings of the pilot version of the current study, delving into more depth on the context of the CIC and its IT collaborations, and analyzing the results of the questionnaires provided to participants. Chapter 5 discusses the results of interview analysis
via three major themes that emerged from the data. Finally, Chapter 6 offers a new conceptual framework and discusses the conclusions and implications of the study in more detail.
Chapter 2: Conceptual Framework and Literature Review

This chapter presents a historical overview of IT in higher education to establish context and uses this context to develop the conceptual framework that guides this study. Accordingly, this chapter is divided into sections that present the historical background and context, followed by an explanation of the conceptual framework developed based on this context and a review of relevant literature.

Historical Background and Context

Traditionally, IT leaders have had to decide whether to engage in centralized or decentralized IT support. A centralized support environment “refers to support that is provided from the central…organization, and is believed to provide economies of scale, reduction of redundancies and improved management efficiencies. Decentralized support allows individual units to make autonomous decisions to bring it closer to the point of service or action” (EDUCAUSE, 2011, para 1). These definitions offer a succinct, high-level overview of what these support structures in higher education might look like, as well as a picture of the commonly understood benefits attached to each.

IT structures have necessarily evolved and changed over time in level of centralization or decentralization. Boynton and Zmud (1987) note that IT management was relatively stable from 1965 to 1975, describing a department only just coming into existence as IT was added to the core business function of organizations. As central IT units were created, most IT functions were delegated to them, and organizations worked to develop strategies to provide enough centralized IT resources and support to meet growing organizational demands. From 1975 to 1985, organizational needs began to diversify to a greater extent, and decentralization of IT
increased as a practice, though a great deal of centralization remained in place (Boynton and Zmud, 1987).

These broader trends are not dissimilar to what was happening more generally within higher education. In the 1960s, computers were expensive, sophisticated equipment that had to be centrally managed because they were limited in number and required a great deal of oversight (Kettinger, 1990). Indeed, it was not until the 1950’s that higher education institutions really begin exploring the use of computers, and it was only within the years between 1965 and 1975 that faculty and administrators became exposed on a large-scale basis to the field of computer science (Robbins, Dorn, & Skelton, 1975). As computing technology evolved and interactive time-sharing became an option, remote terminal labs evolved which allowed a degree of decentralization (Kettinger, 1990). However, as professionals were hired and/or evolved to use computers, the debate over who should control computing only escalated (Robbins et al, 1975).

The 1970s through the mid-1980s saw an increase in distributed computing frameworks, where minicomputers were placed in remote locations, but managed centrally. The greater availability of computing technology made its use in the classroom possible, and faculty and students began to make use of computers and their software within courses. The rise of the personal computer only furthered this trend, and institutions moved further towards decentralization. Indeed, as Kettinger (1990) notes, “during the early 1980s, discontent began to surface concerning central academic support personnel's general lack of discipline knowledge” (para 10). As a result of this discontent, various disciplines and departments began setting up their own independent support centers, tipping the balance in favor of decentralization. While Kettinger observes that this development and transition to decentralized support was more
evolutionary than planned, and that these structures and degree of centralization can vary wildly, 

decentralization was often seen as the wave of the ‘90s for institutions of higher education.

Some scholars used their own institutions to analyze this move towards decentralization in the 90s. For example, Conrad, Rome, and Wasileski (1992) discussed Arizona State University’s (ASU) move towards distributed academic computing and staff as a means of improving their customers’ experiences and sense of empowerment. ASU’s philosophy in making this move was that support should be as decentralized as possible, with centralization only where required—such as having some central management for coordination and supplemental support. This philosophy is indicative of the shift Kettinger (1990) noted in his research—higher education institutions had a real use for decentralized support. Similarly, Rice University moved towards implementing its own distributed support framework in 1995, moving IT support to the various academic divisions (Martin & Dean, 1995). While the researchers in both the ASU and Rice examples were aware that decentralized support did not come without limitations, both sets of authors ultimately believed decentralized support was the way to best meet the needs of their respective institutions.

Other researchers who turned their thoughts to IT within higher education in the 1990’s saw the rise of decentralized support as a bandwagon onto which institutions were jumping without sufficient thought. Mulhollan (1988) argued centralization was the ideal format for institutions of higher education because of its ability to induce cost savings and efficiency. Similarly, Solomon (1994) argued that institutions had been able to move to the decentralized framework due to a glut in public funding for higher education. As tough financial times set in, institutions would be forced to turn back towards centralization. Solomon felt that the duplication of services and redundancy built into the decentralized framework had the potential
to be highly problematic, especially given the rising importance of enterprise-wide hardware and software compatibility and planning.

Once decentralization became an option, IT support structures proliferated. Higher education is seen as preferring a primarily decentralized framework (Vouloudakis, 2010) with distributed, department-focused support and a central organization responsible for oversight of campus-wide initiatives such as email and networks (Workman, 2009) but there is still a great deal of diversity in structures. This diversity has not changed, although the tenor of recent conversations about centralization and decentralization does appear to have undergone a shift, with other frameworks gaining support. For example, Morooney (2010) argues for collaboration, suggesting that institutions focus more on opportunities to develop alignment and cooperation within, and even across multiple, institutions. Davis (2008) more forcefully argued this point, stating that: “institutional and departmental IT units can no longer compartmentalize their services and are forced to wrestle with their respective roles, turf, and accountability about services that are inherently integrated” (p. 118). In other words, no one mode appears to be gaining complete traction over others, but new ideas and organizational frameworks are taking over some of the airspace that was dedicated to centralized and decentralized support frameworks. Additionally, these quotes point out that IT leaders consider working within institutional boundaries to improve coordination between distributed and central IT as a form of collaboration.

There is at least one clear reason for this diversity—the structure of IT is related to competitive strategy. Conservative organizations, for example, tend to have more centralized structures as compared to those firms with more aggressive and competitive business strategies (Tavakolian, 1989), which indicates that IT structures may be influenced by the nature of their
overall organization. This is no less true within the realm of higher education, which is known for having many different kinds of structures and strategies when it comes to IT support (Krueger, 2009). Scott (1988) focused specifically on challenges related to running and structuring IT within academia and noted that many different factors play into IT’s role and structure, including the multiple sources of authority within universities, the discipline-based nature of academic organizations, and differences in size among colleges and universities. Krueger (2009) argued in his analysis of decentralized IT within higher education that the focus should not be on determining which side is “right”. Rather, professionals should recognize that there is not a standard governance framework for IT. Krueger asserts that each institution should seek a structure that is best suited to its “vision, mission, and goals, as well as culture and current organizational framework” (p. 4).

Krueger’s (2009) live and let live philosophy can be contrasted with a trend of questioning the value of the decentralization in light of recent financial concerns (Voloudakis, 2010). The debate over centralization and decentralization has focused on an evolving institutional understanding of the costs and benefits of those frameworks. Centralized support, at least in theory, results in economies of scale, fewer redundant services, and more efficient management (EDUCAUSE, 2011). Decentralized support allows for individual unit decision-making related to specific service needs (EDUCAUSE, 2011). Many of these benefits and drawbacks are necessarily intertwined because some advantages come at the cost of others. Furthermore, it is important to bear in mind that conversations about centralization vs. decentralization within higher education are largely about degree— institutions must at least have some form of central IT to deal with enterprise-wide system needs (Voloudakis, 2010), such as the campus network. With that caveat in mind, one might ask what balance institutions have
attempted to strike in structuring their IT departments—in other words, why would an institution lean one way or the other in a historical sense?

While there are nuances, the balance ultimately seems to boil down to one of cost efficiency versus user experience. More centralized systems are, at least in theory, able to offer greater cost efficiencies because they do things like reduce redundancies, which occur when duplicate IT services are provided by both central IT and distributed units (Vouloudakis, 2010). For example, redundancies can occur if both departmental IT groups and central IT run email servers. Economies of scale also enter into the picture with centralized support—coordinating with local services (to the extent that they exist) to provide appropriate and coordinated levels of support opens the door to this (Vouloudakis, 2010). Tied into this idea is the need for institutional standardization of some hardware and software. Standardization cannot be achieved in a decentralized way and is an important means of cost control (Solomon, 1994). The need for an integrated security and privacy strategy to protect the institution’s resources (Ingerman & Yang, 2011) is one example of how standardization can be an important component of an institution’s IT environment.

Centralized systems can also save costs by quickly and efficiently dealing with issues when they arise (Solomon, 1994). There can be widely ranging quality in a decentralized environment, with some departments having highly capable staff and others having less qualified workers. In a centralized environment where more human capital is concentrated in the main office, issues can be resolved more readily and effectively—a decentralized office with poor support staff could suffer long outages, costing a great deal of money and time in the process (Solomon, 1994).
While there are certainly financial advantages of more centralized systems, decentralized systems have their advantages as well. Decentralized systems tend to have a more user-oriented focus (Vouloudakis, 2010) and are seen as particularly appropriate for universities because “the physical university is engaged in a wide variety of academic, research, administrative, and support activities, many of which require very focused knowledge that would be extremely difficult to support through a centralized organization” (Voloudakis, 2010, p. 4). In other words, decentralized IT support is often seen as the best way to meet the extremely diverse IT needs of universities, especially within and among the various disciplines. Krueger (2009) specifically notes that decentralized systems are able to accommodate cultural differences and discipline-specific IT needs, as well as keep abreast of unique issues of concern. As Solomon (1994) explains, decentralized computing makes it much easier to eliminate bureaucracy because the IT function is much closer to the department it supports—decisions are made at the local level and can therefore be implemented more quickly than those coming out of a central office down to the various departments. Thus, users in departmental IT units receive more personalized support, get quicker turnaround times on issues and technology needs, and do not encounter as many bureaucratic structures when seeking support from IT representatives. Discipline-specific needs have been a major driver of decentralization of computing (Kettinger, 1990), because central systems “cannot know many of the little details…which have large effects locally” (Conrad, Rome, & Wasileski 1992, para 5). So, while decentralized systems may not be able to ensure the standardization of centralized systems, they are still better equipped to adapt to new needs and technological changes. Another point in favor of decentralization is that because it is better able to assist faculty with their research and instructional needs it is also better aligned to universities’ educational missions (Kettinger, 1990).
In sum, there are tradeoffs between the two systems—centralized support can offer standardization and efficiency, but can also sacrifice user services (Vouloudakis, 2010). Decentralization can champion unit-level needs, but can also overemphasize a narrow-minded vision that obscures the needs of the entire organization (Vouloudakis, 2010). Table 1 below summarizes the benefits of centralization and decentralization.

Table 1: Benefits of Centralization and Decentralization

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<th>Centralization</th>
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<td>Economies of scale</td>
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<td>Reduction of redundant services</td>
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<td>Streamlined management</td>
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<td>Caters to individual needs</td>
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<td>User-oriented focus</td>
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<tr>
<td>Standardization</td>
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<tr>
<td>Faster overall resolution of issues</td>
<td>X</td>
<td></td>
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<tr>
<td>Reduced bureaucracy</td>
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<td>X</td>
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<tr>
<td>Fast turnaround time on user-specific issues</td>
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<td>X</td>
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<tr>
<td>Attends to discipline-specific needs</td>
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<td>X</td>
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<tr>
<td>Quicker adaptation to new needs and/or technological challenges</td>
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<td>X</td>
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<td>Alignment with institutional mission</td>
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<td>X</td>
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<tr>
<td>Addresses needs of entire organization</td>
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<td>Efficiency</td>
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<td>Tailored support</td>
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These tradeoff considerations are particularly relevant when considering collaboration because collaboration is in many ways a more extreme version of centralization. Control is taken away not only from the decentralized IT units across the institution but often from central IT as well. As Goldstein (2007) explains of inter-institutional collaboration, it involves surrendering institutional control, often to a separate entity charged with overseeing the venture—an entity that often becomes its own organization with a separate culture from the participating
institutions. Otley (1994) furthers this point, noting that, “the scope of the activity of management control is enlarged and it no longer confines within the legal boundaries of the organization” (p. 293). The organization, in this case a college or university, relinquishes some management and legal control to parties outside the institution. Additionally, benefits such as cost efficiencies and economies of scale that arise in conversations about the benefits of centralization are similarly emphasized in discussion of collaboration (Goldstein, 2007).

**Development of collaborative interest.** The driving question here is what would make a school with a natural preference for decentralization select an organizational strategy like collaboration on either an intra- or inter-institutional basis, which takes absolute control away from one entity and disperses it amongst participants. With respect to IT, collaboration can be understood with some additional specificity. Goldstein (2007) articulated a more IT-specific and definitive characterization of collaboration, focusing on four forms of IT collaboration (p.10):

1. Partnerships to develop an IT resource
2. Shared service collaborations in which multiple organizations band together to jointly operate an IT resource
3. Collaborations in which one institution elects to operate IT services on behalf of others, and
4. Collaborations in which an institution is a recipient of services provided by another institution.

Due to scope considerations, Goldstein’s (2007) study did not include an analysis of intra-institutional collaboration, but the four types of collaboration cited by Goldstein provide a picture on what those who study higher education IT think of when they discuss or consider collaboration in certain areas. However, while it may be possible to point to a conception of what
collaboration is, it is harder to develop an understanding of why organizations choose to actually make a collaboration happen.

Goldstein’s (2007) study on IT collaboration indicates that there is a cost vs. benefits assessment that occurs when IT leaders make these decisions about engaging in collaboration, and that there are certain factors that generally play into these decisions. Goldstein leveraged the theory of transaction cost economics to explain this calculation. Decision makers in organizations choose the organizational form that provides the most benefits with the fewest costs in comparison to other methods of service provision. Goldstein hypothesized that institutions will select collaboration in an area when they feel it will offer the best balance between costs and benefits when contrasted with all other options. This was supported in several findings—collaborators selected their ventures with other institutions based on promises of reduced costs or improved benefits, the top two drivers of collaboration across each institution type in the study. Conversely, non-collaborators cited unclear benefits, high start-up costs, or a lack of alignment with their own priorities. Both results follow the transaction cost propositions.

In discussing the results, Goldstein (2007) explains that “the study results affirm the collegial impulse of the higher education IT community while making clear that collaboration is to be pursued if and only if it is perceived to benefit the collaborator’s institution. While most of those engaged in this research are aware of collaboration’s numerous benefits, many are also wary of the hidden ‘friction costs’ of working across locations, cultures, skill sets, and so forth” (p. 7). This finding is also supported by other research on collaboration—one facet of the collaboration literature strongly asserts that a base need for successful collaboration is some kind of self-interest: organizations must believe that involvement in collaboration will benefit them by furthering their own goals (e.g., Huxham, 1996; Bardach, 1998).
Certain facets of the cost/benefit decision making process are evident—for example, it appears IT leaders will only pursue collaboration if they see a benefit and that IT leaders are able to articulate some of the costs of engaging in collaboration. However, it is unclear how leaders weight the various costs and benefits in conducting the evaluation (Goldstein, 2007). Additionally, it is possible that the calculus of IT leaders may have changed since the dramatic changes stemming from the 2008 financial crisis. For example, it is possible that because the Goldstein study was conducted in 2007, viewpoints on collaboration will have shifted much more strongly in favor of the idea because the bar for return on investment is lowered due to need. Certainly what schools cite as a priority indicates increased interest may be the case. In 2011, IT leaders identified funding IT as the number one issue they were focused on for the future for the second year in a row (Ingerman & Yang, 2011). Perhaps more importantly, leaders in that study indicated that they intended to use budget constraints as a way to drive institutional motivation for change and to strategically determine the technology direction of their campuses. Additionally, 74% of the respondents to Goldstein (2007) felt that funding difficulties would be a driver of collaborative relationship creation.

It is also possible that institutions may be less interested in collaboration because the startup costs and associated inability to guarantee positive outcomes (Goldstein, 2007) could be a deterrent to risk-taking in an uncertain economic environment. Thus, there is potential for new research both because of changes that may have occurred post-2008 and because the way that leaders were weighting these decisions before 2008 remains unclear. Notably, although IT leaders clearly consider working across units within their school as a form of collaboration (see Morooney, 2010; Davis, 2008; Hays, 2011; Workman, Holloway, & Schau, 2011), Goldstein’s (2007) major study on IT collaboration was, as noted above for scope reasons, focused on inter-
institutional collaboration. The following section provides additional context on research findings related to inter-institutional collaboration.

**Inter-institutional collaboration.** Institutions in general are becoming more collaborative with inter-organizational degree programs, interdisciplinary work, and mixed media course offerings (Goldstein, 2007). Technology is a key player in these scholarly endeavors, and continuing to provide students and faculty with the ability to work across institutions also seems to require collaboration on the part of IT departments (Goldstein, 2007). Individual institution IT budgets are shrinking in conjunction with the general decrease in higher education funding and the backlash against rising tuition costs, and organizational strategies that provide a new way to accomplish strategic goals are key (Goldstein, 2007). Furthermore, collaboration is becoming a more popular strategy in IT (Balestri, 2000; Goldstein, 2007) and actual instances of collaboration are increasing (Goldstein, 2007). That being said, the concept itself is at a watershed moment—collaboration could remain in its current state as a niche solution for addressing certain needs, or it could transition to a widely utilized means of providing IT services (Goldstein, 2007). Collaboration is particularly interesting because, although there are barriers to administrative cooperation at colleges and universities, the potential benefits are significant. Participants in IT collaborations have evinced high levels of satisfaction with its outcomes and believe that the costs of greater complexity are far outweighed by the benefits (Goldstein, 2007).

Inter-institutional collaboration involves institutions working with different colleges, universities, and partners on the provision of IT services. A straightforward start to understanding collaboration as a relationship where “organizations and institutions work together to achieve a benefit for the greater good of the community. Multi-institutional collaborations
have produced cost savings and led to the creation of regional consortia” (EDUCAUSE, 2012, para 1). Additionally, inter-institutional collaborations often have visions and goals distinct from the individual institutions from which they are composed (Goldstein, 2007). In other words, there is a distinct organizational structure, they are ongoing, they have official structures for management and governance, there is authority within the collaboration, structure and resources are shared, and collaborations are more complex and involve greater risk with the promise of greater benefit (Goldstein, 2007, citing Mattessich, Murray-Close, & Monsey, 2001).

Both the literature on collaboration and the Goldstein (2007) study indicate that there is a strong tendency for “birds of a feather to flock together” when it comes to the development of collaborative relationships. In other words, collaborations are most common between organizations that are the most similar. The three most cited reasons for engaging in IT collaboration in the Goldstein study were having “shared objectives, common mission, and prior personal relationship” (p. 14). In fact, almost 75% of respondents to Goldstein’s study indicated that they were more likely to collaborate with other IT leaders if they had a long-term personal relationship with them. Such an idea is borne out by the literature on collaboration—scholars focused on collaboration note the importance of finding commonalities among organizations like “similarity of mission, commitment to similar target populations, or professional orientation and culture” (Thomson & Perry, 2006, p. 27).

The vast majority of surveyed institutions in Goldstein’s (2007) study that were currently engaged in collaborative relationships expected that the future will involve a stronger focus on developing collaborations with other schools. This was also an expectation of schools that were not currently engaging in much inter-institutional collaboration. However, it has also been shown that talk about new organizational strategies does not necessarily play out as action at many
schools (Grajek & Arroway, 2012). This has been demonstrated with the way in which schools discuss interest in outsourcing. Outsourcing is a strategy that involves moving IT services outside of the home institution, and one study found that although schools talk a lot about using it as a cost-saving strategy, few have taken action to implement extensive outsourcing (Grajek & Arroway, 2012). Thus, it appears that the general perception that collaboration is inevitable may be a factor that IT leaders consider in their cost benefit assessment, or it may not. This is one area that the current study will be able to illuminate.

The structure of Goldstein’s (2007) study offers room for scholarly expansion. As noted above, Goldstein (2007) was not able to include intra-institutional collaboration in his study due to scope considerations. Yet, IT leaders clearly view working across units within their institutions as a form of collaboration (see Morooney, 2010; Davis, 2008; Hays, 2011; Workman, Holloway, & Schau, 2011), and this perspective merits further exploration to determine whether this perspective still exists amongst IT leaders and the extent to which they are interested in intra- versus inter-institutional collaboration.

From a sample standpoint, Goldstein’s (2007) study was divided into collaborators and non-collaborators, with the qualitative component centered around 30 individuals at both types of schools. There were also two in-depth studies of organizations currently pursuing a collaboration, as well as a panel of CIOs. Findings suggest collaborating schools tend to be public schools with Carnegie classifications at the doctoral or master’s level, while non-collaborators were typically smaller and private. The qualitative component included institutions of different types that had different belief systems about collaboration (e.g., research universities, master’s institutions, community colleges). Thus, there is potential for expanding or illuminating these results by focusing on schools that are more clearly similar in terms of institutional type.
since similarity to other institutions has emerged as a factor that IT leaders use in deciding whether to pursue collaboration (Goldstein, 2007).

Most importantly, in the context of the IT environment and its consideration of collaboration, it appears traditional IT organizational structures at institutions of higher education—especially decentralization—are being challenged due to the convergence of a variety of factors that exert pressure on the IT environment. Goldstein (2007) was not able to clearly posit how IT leaders make the decision to collaborate, noting “the basis upon which respondents have made this assessment is unclear from our qualitative and quantitative research” (p. 78). This is a major focal point of the current study.

Conceptual Framework

Yin (2009) suggests that theory development is vital to successful case studies, and should occur prior to the collection of data as part of the design phase of the study. Maxwell (2005) suggests that the creation of a conceptual framework that explains a tentative theory of what is happening and why within the context of a qualitative study is an important guide for moving a study from the ether to reality. Similarly, Yin (2009) notes the importance of having a research proposition that motivates the search for evidence and highlights theoretical issues within the case. Yin, quoting Sutton and Staw (1995) observes that such theoretical propositions generally appear as hypothetical stories “about why acts, events, structure, and thoughts occur” (p. 378).

In line with this suggestion, the conceptual framework guiding this study was developed based on the context provided above in addition to a review of literature, and explains the “system of concepts, assumptions, expectations, beliefs, and theories that supports and informs” (Maxwell, 2005, p. 25) this research. Shown below in Figure 1, the Information Technology
Collaboration Framework (ITCF), details how institutions of higher education appear to make the decision to collaborate (or not) with other schools based on the extant literatures in: organizational theory, with a sub-focus on higher education organizational theory; collaboration; and drawing upon the scholarly and professional literature on higher education IT and IT history.

This portion of the chapter is divided into sections that elucidate each segment of the framework. The first section draws on Resource Dependency Theory to suggest that IT organizations within higher education may consider collaboration when forces external to the institution exert pressure on the institution and the IT environment to change. The second section builds upon the potential impact of Resource Dependency theory and also brings in the influence the people and culture of an institution can have in creating forces from within the institution that exert pressure on the IT environment to change. The third section translates how these external and internal pressures can lead to an interest in collaboration by moving into the IT environment specifically, examining the cost vs. benefit analysis proposed by Goldstein (2007) about whether to pursue a collaboration. The framework ends with a decision to either collaborate and develop the collaboration, or not to collaborate and have the process end.
Figure 1. The Information Technology Collaboration Framework (ITCF). Based on a review of extant literature, this framework shows what may occur to prompt IT departments to consider, and implement, collaboration as an organizational structure.

External forces. The framework begins in the upper left hand corner with external forces that can exert themselves upon the institution (internal forces) and upon the IT environment at an institution. Resource Dependency Theory (RDT) suggests organizations are open systems that must interact with the environment in order to obtain resources (Pfeffer & Salancik, 1978). Organizations cannot survive without responding to changes in, or demands from, their surrounding environment, sometimes resulting in interdependencies with other organizations (Pfeffer & Salancik, 1978). In other words, environmental pressure pushes institutions to develop inter-organizational relationships or engage in joint ventures in order to cut back on uncertainty caused by the external environment (Guler, 2007).

In the case of higher education IT, two primary forces from the external environment appear to be exerting pressure on the institutional and IT environments such that collaborations
might form: the economic downturn since 2008 and the pace of technological change. The more serious of these two external pressures is the ongoing nationwide economic downturn. Institutions are dependent on a complex funding system derived from multiple external sources (Johnstone, 2011), and the nationwide economic downturn has had a severe impact, leaving schools struggling to find sources of funding and causing ongoing budget constraints (Wiseman, 2011).

The Great Recession of 2008-09 was the deepest economic downturn seen in the United States since the Great Depression (Zumeta, 2010). States were heavily impacted by the downturn, facing at least $178 billion in budget shortfalls at the end of fiscal year 2010 even after two years of difficult budget cuts (Zumeta, 2010). Of major state functions, higher education is disproportionately impacted by economic downturns because during tough financial times the demands on other state functions like public assistance and local government aid tend to increase. While higher education is generally the third largest spending category for states, they are not obligated to fund it proportional to enrollment or cost increases, and, unlike in other major state functions like K-12 education, college students can be asked to pay more out of pocket for their education, which frees up money for other state funding demands. Even with federal stimulus funds, 22 of 39 reporting states in one study indicated that they had experienced cuts to their higher education budgets, some over 10% (Zumeta, 2010). On top of state funding cutbacks and ongoing struggle to obtain support, many institutions suffered blows to their liquidity as both long-term holdings such as hedge funds and short-term investments fell below budget expectations (National Association of College and University Business Officers [NACUBO] & the Association of Governing Boards of Colleges and Universities [AGB], n.d.). Student demand for institutional financial aid increased (NACUBO & AGB, n.d.), which left
colleges and universities in the difficult position of needing to not only increase aid but also hold down costs and tuition as budgets decreased. Indeed, colleges are still struggling to find new sources of revenue and budgets remain constrained at many institutions (Wiseman, 2011).

In 2010, most institutional endowments remained below their value in 2007, and long-term earnings on endowments were not able to keep pace with institutional spending and rising inflation (Brainard, 2011). Meanwhile, private giving to colleges and universities saw a dramatic drop in 2009, and institutions in total raised the same amount in 2010 as they had in 2006 (Masterson, 2011). The budget cuts from state funding, decreasing donations from the private sector, and decimated endowments have placed schools in troubling financial straights that have led to increased tuition, frozen salaries, and cost cutting (Wiseman, 2011). The need for cutbacks has led to uncomfortable changes at some institutions (Wiseman, 2011).

The result of this economic pressure is seen in the arrow in Figure 1 that pushes downward from external forces to internal forces. Reduced budgets lead, as is discussed in the section on internal forces, to less available funding for IT needs and/or drastic budget cuts. IT may feel the pressure of the external fiscal environment, even if it is mediated through pressure from the institution itself. Thus, a connection directly between the external environment and IT is present as well.

The rapid pace of technological development and change in the external environment also places pressure upon institutions generally, and IT departments in particular. The growth of new technologies like high-speed digital networks enable IT departments to think differently about capabilities and delivery approaches (Wheeler & Waggener, 2009). Indeed, these networking developments may be a harbinger of major change because they allow essential IT services to have a point of origin that is outside the institution (Wheeler & Waggener, 2009). Cloud
computing, which involves “delivery of scalable IT resources over the Internet, as opposed to hosting and operating those resources locally, such as on a college or university network” (EDUCAUSE, 2009, p. 1) is a typical example of this.

Some think this rate of technological change will necessitate working together across institutions because it will no longer be affordable, or even possible, to deliver services on a campus-by-campus basis. This leads to above-campus computing, which “means that for a particular IT service, a sufficient level of aggregation for efficiency cannot be achieved within one campus but, rather, must be achieved at a higher level of aggregation, beyond a single institution” (Wheeler & Waggener, 2009, p.54). The specific services that can benefit from aggregation with other institutions will evolve in a linked fashion with advances in technology (Wheeler & Waggener, 2009), but the implications for the rate of technological development upon collaboration are clear. Institutions will feel pressured to collaborate because it will become too expensive to provide services on a campus-by-campus basis, and collaboration will be easier to stomach as an organizational option due to technology improvements that facilitate working together.

**Internal forces.** Within the institution itself, pressures arise from institutional mechanisms that impinge on the IT environment. Based on a review of the literature, three factors seem to specifically be at play: institutional budgeting, the demands and expectations of current employees, and institutional culture.

Institutional budget allocations to IT departments have been inconsistent. Institutional spending on IT “varies by institutional type and size, within types of institutions, and even within each institution over the years, because IT-related initiatives require heavy investments some years” (Grajek & Arroway, 2012, p. 22). IT costs are sufficiently large that the unit is prime
hunting ground for budget cuts during financial exigency. In 2009, half of the institutions that responded to a nationwide Campus Computing Survey conducted by EDUCAUSE had experienced budget cuts (Green, 2010). The situation had improved somewhat by 2010, with only 41.6% of responding schools receiving cuts, but the ongoing financial crisis is not resolved. Additionally, institutions had only just begun to recover from budget cuts earlier in the decade (Green, 2010). Thus, the economic crisis that places external pressure on institutions also causes institutions to place pressure—via budget reductions or scaled back investments—on the IT function. As a result of this environment, higher education IT organizations have identified IT financing as one of the most important ongoing challenges and asserted that their organizational structures are already in transition (Green, 2010).

The financial pressure placed upon IT departments by their institutions—as well as by the external environment—is made more complicated by user pressure to keep up with emerging technologies. As explained with relation to external pressures, the pace of technological development outside universities means that institutions are expected to keep up with what is happening technologically. Within the institution, this manifests as pressure on the IT unit from current students, faculty, and staff who expect to be able to use modern technologies (Ingerman & Yang, 2011). Users expect IT to keep pace with changing conditions. In a survey documenting the top 10 IT issues universities believed they would face, number six was agility, adaptability, and responsiveness (Ingerman & Yang, 2011). Practically speaking, what this means is that “institutions of higher education, along with their IT organizations, need to be able to react quickly with effective solutions for changing conditions in today’s environment of reduced funding and growing demand by students, administrators, faculty, and community users”, which includes ideas like supporting tablet computing, smartphones, and e-readers.
This puts pressure on IT organizations because they need to be able and willing to react to the expectations of the people they serve, or may be serving.

To further characterize the level of this demand, the authors of the survey note, “more than ever before, students are expecting campus IT operations to accept and adopt the new and emerging technologies that have already made services and applications convenient for them” (Ingerman & Yang, 2011, p. 34). Isomorphism dictates that organizations attempt to maintain stability and survive by imitating others in their field (Meyer & Rowan, 1977). Institutions are competing with other schools; if other schools support emerging technologies there will be organizational pressure to do the same. Technology both enables and pushes collaboration because institutions need to meet demand and keep pace with other schools as well as the demands of their users.

Finally, institutional culture plays a role in the ability of IT departments to change. Padilla (2005) explained that universities are ancient and complicated organizations with longstanding traditions that stretch over centuries. As a result of their evolution and history, institutions of higher learning place a great deal of value on consensus building and the creation of understanding prior to taking action. Additionally, universities have a tendency to evaluate and monitor trends while waiting for conventional wisdom to develop around the best course of action (Agee, Yang, et al, 2009). The rapidly changing nature of technology can turn this tendency into a negative because “closely monitoring trends and waiting for the conventional wisdom to form before we take action will often leave [universities] behind the curve” (Floyd, 2008, p. 8).

Crisis can sometimes motivate change. Richardson (1994) observed that crises provide opportunities for leaders to implement significant institutional and cultural changes. The recent
economic crisis certainly appears to present a unique opportunity for colleges and universities to make major reforms to their IT departments. Indeed, while IT departments typically suffer in economic downturns, the most recent collapse has been particularly hard on higher education IT (Goldstein, 2009). Based on Richardson’s theory, it appears that while funding IT has become a critical problem (Ingerman & Yang, 2011), the deep impact of the crisis also may make changes seem more attainable as previous political and cultural barriers are weakened or removed. Thus, this study will examine whether the external environmental crisis, and the subsequent pressure it places upon institutions and IT departments, will lower barriers to change in a higher education context.

The growing interest in collaboration within IT parallels a generally increasing belief within higher education that collaboration is crucial to success (Kezar & Lester, 2009). Thus, there may be synergies between what an IT department and the home institution view as beneficial. Additionally, it is an empirically logical path for organizations to pursue during times of environmental turbulence—in such conditions, organizations face indirect but significant interdependence with one another (Emery & Trist, 1965, Trist, 1977). As Gray (1989) explains, “under these circumstances it is difficult for individual organizations to act unilaterally to solve problems without creating unwanted consequences for other parties and without encountering constraints imposed by others” (p. 1). One of the aims of this study is to determine whether IT leaders feel this is true for their organizations.

**IT environment.** The IT environment in this framework exists as a separate entity that is influenced by the institution and the external environment. In the context of this dissertation, the IT environment constitutes the entire range of services, systems, infrastructure and personnel which could range from “providing enterprise administrative systems or institution-wide
networking…desktop support, servicer operations, and academic computing” (Vouloudakis, 2010, p. 2). This portion of the conceptual framework shows a decision-point diamond within the context of the IT environment where IT leaders can either to choose to engage in a collaborative venture or decide not to engage in a collaboration and keep the organization as-is. Goldstein (2007) posited that IT leaders engage in a rational cost vs. benefits assessment when deciding to engage in a collaboration. While Goldstein was not able to put forward an exact calculus of how decision making occurs for some IT leaders, there are indications of what may be included in the cost/benefit assessment within the literature.

Within the IT environment, existing organizational structures may be an influencer of decisions. IT can contribute to organizational performance depending upon the way in which it is structured (Melville, Kraemer, & Gurbaxani, 2004). In the context of this framework, existing organizational patterns within the IT environment are important to factor in because forces external to the institution, as well as the institution itself, are exerting pressure upon IT to change the status quo and select new organizational structures. Yet, existing structures have an impact on the feasibility of transitioning to collaborative arrangements. As noted in the historical overview of IT and IT structures above, there are differences in the level of institutional coordination and efficiency between centralized and decentralized IT environments. Given that higher education has a natural preference for decentralized IT (Vouloudakis, 2010), it is reasonable to suspect that existing organizational structures may act as an impediment to collaboration, which involves loss of control (Goldstein, 2007). Additionally, the expense of transitioning from existing structures to a collaboration is a known impediment to collaboration in IT (Goldstein, 2007).
Another factor that any cost/benefit analysis is going to have to overcome for either intra- or inter-institutional collaboration is the intangible weight of institutional tradition and culture specifically for IT. The trouble with these new IT organizational options is that IT, while not uncomplicated, was a less complicated and confusing environment in the past. As Goldstein (2007) asserts:

It used to be simpler. Technology decisions were more about how to do it than with whom…institutions were largely on their own for implementing and operating information technology services. Some built their own IT solutions, but these were primarily designed and developed by single institutions. Today, the choices are more complex. Institutions can select from both vended and collaboratively developed software. IT services can be self-operated, outsourced to a corporation, or delivered through a shared service collaboration of multiple institutions. Institutions can even share technology organizations. (p. 17)

As with any organizational framework, each of the approaches Goldstein mentions has its advantages and disadvantages. However, some are more clearly revolutionary than others because they challenge or fundamentally alter the traditional centralized/decentralized environment options.

Many institutions have said that they expect to move towards collaboration because of the need for cost savings (Goldstein, 2007). This willingness may be influenced by previous institutional organizational forms and culture, as well as by the institution’s or IT department’s general level of risk aversion. Goldstein (2007) found that collaborators tend to “operate in environments that are more conducive to risk taking and experimentation. Non-collaborator institutions are less motivated and accustomed to experimenting with less traditional methods of
management” (p. 11). The study also found more generally that non-collaborators may be looking for much more extensive evidence about the value of collaboration prior to engaging in it. Additionally, in line with the hypotheses about transaction costs, the report found that doctoral institutions tend to have a much more distributed IT environment—having to reorganize a highly distributed (and thus not centrally controlled) set of services into a collaborative relationship may have costs that are too high for many institutions to countenance.

Additionally, the type of collaboration under consideration would be a logical component of any cost vs. benefit analysis. In IT, there are a number of specific domains in which collaboration is an option. In addition to the four general areas Goldstein (2007) included, which were mentioned earlier—developing an IT resource, shared services, providing IT to others, receiving IT from others—Goldstein’s study also notes ten areas in which collaboration may be feasible, including:

- Network infrastructure
- Enterprise information
- Learning management systems
- Enterprise directory/identity management
- Disaster recover/business continuity
- Data center
- Instructional technology
- Help desk/user support
- IT security
- Research computing

In his study, Goldstein found non-collaborators were differentially interested in the 10 areas for future collaboration, and that current collaborators were differentially participating in the four general areas of collaboration. The perceived value of certain areas or types of collaboration is another probable influencer of decision making.

These are among the cost/benefits factors that appear to be at play as institutions make decisions about centralization and collaboration. It appears that institutions do generally view
collaboration as a way to achieve cost efficiencies (Goldstein, 2007). However, the idea of cost efficiencies, which is also strongly present in conversations about centralization vs. decentralization, runs up against the concern that high quality services are at risk and that this new structure challenges the traditional frameworks. Thus, change may be difficult due to the strong culture and tradition-oriented mentality of institutions (e.g., Padilla, 2005; Agee, Yang, et al 2009). However, the ongoing financial crisis may fit Richardson’s (1994) conception of an institutional crisis that can lower barriers to change enough that culture can effectively be shifted. The decision to collaborate or not to collaborate could play out differently at different institutions based on the weight that is given to these various, sometimes inconsistent, factors. There are forces that could serve to encourage collaboration—the crisis—and forces that could stymie collaboration—slow-moving institutional culture, for one.

The context for collaboration. If the cost/benefit analysis results in the decision to pursue collaboration, then an arrangement must be developed. In more formal terms, stakeholders who are associated with the problem solving endeavor work to resolve a problem domain (Gray, 1989). Problem domain is simply a term for the way stakeholders conceptualize the problem they are working to solve (Trist, 1983; Gray, 1989). If the decision is not to pursue a collaboration, the process as such ends. The entirety of this framework presented in Figure 1 takes place within, and also constitutes, the context for collaboration. The conceptual framework presented in this chapter is based on a review of extant literature and posits that certain external factors influence the institution, as well as the IT environment specifically, in ways that prompt a consideration of new organizational forms. In turn, internal influences at the institution pressure the IT environment at the institution, as well. The pressure to change leads to a cost/benefit assessment by IT leaders, who decide whether or not a collaborative relationship has enough
potential benefit that it is worth pursuing. If a collaboration develops, it reflects back into the organization via integration into the IT environment and an assessment of whether the new relationship has sufficiently resolved the problems that generated its existence.

**Conclusion**

While it appears that the framework outlines the general scenario occurring when IT leaders consider developing a collaborative partnership with another institution, there is a lack of clarity around calculations noted by Goldstein (2007) that indicates that other factors may be in play. Other areas of organizational theory tell us that people are not purely rational actors (Gormley & Balla, 2008), and operate in a state of bounded rationality (Simon, 1957). Therefore, although these pressures may exert themselves on the IT environment, and although IT leaders may engage in a cost/benefit analysis, they are also individuals with bounded rationality. This means that individuals are rational, but they are only rational to a point—they do not comprehensively assess all, or even most, of the benefits and costs associated with possible alternatives (Gormley & Balla, 2008). This is borne out by Goldstein’s (2007) findings, which indicated that IT leaders had a hard time explaining exactly why they would choose not to pursue a collaboration—decision makers may be satisficing, choosing outcomes that are satisfactory rather than ideal (Gormley & Balla, 2008), rather than engaging in a rational, systematic assessment of costs and benefits.

As noted previously, Goldstein (2007) was primarily focused on a rational model (MacRae & Wilde, 1979; Simon, 1957; McLendon, 2003) based around transaction cost economics in the setup and analysis of his study—if the costs outweigh the benefits, collaboration occurs. The rational model:
Emphasizes the systematic collection and analysis of information as part of a linear set of processes designed to “maximize” the solution of public problems. At the heart of the model reside a series of rigorous analytical procedures that decision makers employ to calculate the costs and benefits of considering certain problems and pursuing alternative solutions, allowing them ultimately to select the one alternative that produces the greatest benefit for the problem they have chosen to consider. (McLendon, 2003, pp. 484-485)

This idea that decision makers engage in a rigorous cost/benefit analysis and select the best alternative is consistent with the analytical model Goldstein (2007) put forward.

However, the rational model is not completely supported by Goldstein’s (2007) findings. In addition to the fact that IT leaders had a hard time articulating why they selected collaborative options, Goldstein also found that increasing uncertainty about funding was prompting interest in collaboration, and that collaboration with similar types of institutions, or with known IT leaders, was preferred. This is consistent with Podolny’s (1994) findings about the impact of market uncertainty on decision making. Podolny found that as market uncertainty increases, organizations are more likely to work with those with whom they have worked in the past because of bounded rationality—leaders were satisficing by using information they acquired in earlier interactions. Podolny also found that the greater the level of uncertainty, the more likely organizations were to transact with organizations of a similar status because status functions as a proxy for quality to the decision maker. In the context of policymaking Lindblom (1980) proposes that individuals satisfice—opting for satisfactory rather than optimal results—as a result of “pressures of time, incomplete information, and competing demands of organized interests” (McLendon, 2003).
Thus, even though it appears based on the review of the literature that these assessments are taking place, and that they are based at least in part upon the factors discussed, the actual decision making process is unclear. Based on Goldstein (2007), they appear to perform calculations on the topic, but it was unclear how well institutions were able to factor in indirect costs of collaborations (such as time spent managing the inter-organizational relationships) or how equally benefits were considered in comparison to costs. Furthermore, it was not clear how institutions decide to not participate in collaboration. Incorporating an understanding of bounded rationality into this case is an opportunity to expand upon Goldstein’s (2007) findings with the incorporation of a new lens. This study will contribute to understandings of how institutions calculate the potential costs and benefits of collaboration in 2012.
Chapter 3: Methods

This study is motivated by the increased scholarly interest in collaboration within higher education, as well as the specific rise of IT collaboration as an organizational strategy. Existing research on IT collaborations has left several openings for additional investigation—namely, an elucidation of the factors that IT leaders consider when deciding to engage in a collaboration and whether these calculations have changed based on the altered nature of higher education since 2008. The specific research questions that emerged from these gaps and guide this study are:

1. How do IT leaders view the idea of collaboration?
   a. Are inter- and intra-institutional collaborations perceived differently?

2. To what extent and with whom have institutions pursued inter- or intra-institutional collaborations?
   a. What was the process for how the collaboration was developed?

3. How and why do IT leaders make decisions about engaging in collaborative activities?
   a. How is institutional similarity related to decision making about collaboration?
   b. To what extent does organizational structure (e.g., centralization or decentralization) impact interest in collaboration?
   c. What role do personal relationships with other IT leaders play in deciding whether to engage in collaborative activities?
   d. How do financial pressures influence decision making?
   e. Are some types of collaboration more desirable than others?
A case study format was used to answer the research questions. Case study is appropriate given its usefulness in answering how and why questions in research (Yin, 1994). Per Yin (2009), this was primarily an explanatory study with exploratory components, intended to test and expand upon the conceptual model presented in Chapter 2 and suggest opportunities for future research.

Yin (2009) stipulates that “how” and “why” questions are typically more explanatory in nature, which characterizes two of my three research questions. Explanatory case studies depict the facts, consider other potential explanations, and draw conclusions that are consistent with the facts of a given case (Harder, 2012). As this study did with the conceptual framework, explanatory cases should be guided by a logic model that depicts the patterns to be researched in advance (Harder, 2012). Although such logic models help the case to stay on track, in explanatory case studies the researcher must pay attention to new findings during the study—the research process is iterative and should not solely be restricted to pre-defined models, but evolve based on the data (Harder, 2012).

The study also contained “what” questions that relate to the desire to generate a hypothesis—such as sub-question 2a (what was the process for how the collaboration was developed). Thus, it contained exploratory components as well. What distinguishes a purely exploratory study from explanatory or other types of cases is “the absence of preliminary propositions and hypotheses” (Streb, 2012, para 6) based on theory, the identification of which is often the goal of the study. While there was an overarching logic model based on a review of literature and relevant theory—per explanatory case requirements—certain components of that logic model are more clearly articulated than others. In particular, what occurs within the IT environment when a cost vs. benefit assessment takes place as part of deciding whether to engage in a collaboration, and what happens after a collaboration has been formed in IT, as well
as some of the external and internal pressures that exert influence on the IT environment are likely not as complete as they could be due to lack of academic research specifically on this topic. The single-case, explanatory-exploratory method is consistent with previous research focused on information technology (e.g., Tellis, 1997; Levy, 1988; Neubauer, 2007).

Because this study is in an area about which there is little existing research, the orientation of analysis was interpretive—the case was used to obtain “as much information about the problem as possible with the intent of analyzing, interpreting, or theorizing about the phenomenon” (Merriam, 1998, p. 38). While this case study is strongly based on Goldstein’s (2007) work, there are two major focus differences between this study and the Goldstein study on collaboration. First, this study considered internal collaboration between central IT organizations and distributed units or college IT functions as a form of valid collaboration to be studied. For scope purposes, Goldstein (2007) was not able to include these types of internal collaborations in his study. However, because the review of literature indicated that IT organizational structures are changing from distributed, non-collaborative structures to more internally collaborative models (e.g., Vouloudakis, 2010; Moroney2010; Davis, 2008), and because organizational structures within the institution appear to be a factor in willingness or ability to pursue external collaboration, this study included internal collaboration as a specific focus.

Second, a logical boundary on the topic was needed so that a delimited case could be constructed. Goldstein (2007) found that his respondents “are looking for familiarity and commonality among the partners in a collaboration” (p. 45), which is the “birds of a feather” idea. However, although it appears that IT collaborations tend to occur amongst similar institutions and where there are existing relationships, this has not been the specific subject of a
study. Merriam (1998) notes that the uniqueness of a case is one possible reason for site selection, as such cases can offer “knowledge we would not otherwise have access to” (p. 33). This lack of research presents exactly the kind of opportunity for an examination of a unique case that Merriam suggests—one that brings together IT collaboration, existing relationships, and similar institutions. Goldstein’s (2007) study was not bounded by these factors, but rather included a large sample of collaborators and non-collaborators alike from various institutional types.

**Participant and Site Selection**

In this case IT collaboration was examined through the lens of the Committee on Institutional Cooperation (CIC), an existing academic consortium that has a specific working group for CIOs. Chapter 4 provides a detailed history of the CIC CIOs and contextualizes this consortium via the use of an oral history interview and CIC CIO historical documents.

This study used a purposive sampling strategy (Merriam, 1998) for interview selection within the CIC. Sites were selected based on their compatibility with selection criteria that were determined in advance. The purposive sampling strategy took place at two levels: participants had to be top level IT leaders (CIOs, Deputy CIOs, or College/School level IT Leaders) and had to work at a CIC institution. Item one was fundamental to the site selection, since IT leaders are responsible for the strategic direction of their organizations. Item two was needed as a base to ensure that the schools selected were at least somewhat comparable to their peers within the CIC, all of whom are included in the case.

Table 2 below provides demographic information on the 27 individuals who participated in the study.

**Table 2: Demographic information on study participants**
<table>
<thead>
<tr>
<th>School</th>
<th>Person</th>
<th>Position</th>
<th>Time in Position</th>
<th>Time at Institution</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>Paul Hixson</td>
<td>Interim CIO</td>
<td>1 year</td>
<td>43 years</td>
<td>Male</td>
</tr>
<tr>
<td>Illinois</td>
<td>John Rossi</td>
<td>Executive Assistant Dean of the College of Law</td>
<td>10 years</td>
<td>16</td>
<td>Male</td>
</tr>
<tr>
<td>Indiana</td>
<td>Brad Wheeler</td>
<td>Vice President and CIO</td>
<td>5 years</td>
<td>15 years</td>
<td>Male</td>
</tr>
<tr>
<td>Indiana</td>
<td>Jim Anderson</td>
<td>Director of Technology Operations and Services</td>
<td>21 years</td>
<td>21 years</td>
<td>Male</td>
</tr>
<tr>
<td>Iowa</td>
<td>Steve Fleagle</td>
<td>Vice President and CIO</td>
<td>Interim for 1 year, permanent 7 years</td>
<td>28 years</td>
<td>Male</td>
</tr>
<tr>
<td>Iowa</td>
<td>Rex Pruess</td>
<td>Senior IT Director</td>
<td>10 years</td>
<td>38 years</td>
<td>Male</td>
</tr>
<tr>
<td>Michigan</td>
<td>Laura Patterson</td>
<td>Associate Vice President and CIO</td>
<td>3 years</td>
<td>19 years</td>
<td>Female</td>
</tr>
<tr>
<td>Michigan</td>
<td>John Gohsman</td>
<td>Executive Director for the NextGen Michigan Program Office and Teaching and Learning Applications</td>
<td>2.5 years</td>
<td>29 years</td>
<td>Male</td>
</tr>
<tr>
<td>Michigan State</td>
<td>David Gift</td>
<td>Vice Provost, Libraries and IT Services, and CIO</td>
<td>10.5 years</td>
<td>36 years</td>
<td>Male</td>
</tr>
<tr>
<td>Michigan State</td>
<td>Tom Davis</td>
<td>Deputy CIO</td>
<td>3 months</td>
<td>30 years</td>
<td>Male</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Scott Studham</td>
<td>Vice President for Information Technology (CIO)</td>
<td>5 months</td>
<td>5 months</td>
<td>Male</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Bernard Gulachek</td>
<td>Associate Vice-President for Information Technology</td>
<td>3 months</td>
<td>26 years</td>
<td>Male</td>
</tr>
<tr>
<td>Nebraska</td>
<td>Mark Askren**</td>
<td>CIO</td>
<td>3 years</td>
<td>3 years</td>
<td>Male</td>
</tr>
<tr>
<td>Nebraska</td>
<td>Kathy Notter</td>
<td>Director, Shared Computing Services, Business and Finance</td>
<td>3.5 years</td>
<td>12 years</td>
<td>Female</td>
</tr>
<tr>
<td>Northwestern</td>
<td>Sean Reynolds</td>
<td>Vice President Information Technology and CIO</td>
<td>14 months</td>
<td>15 months</td>
<td>Male</td>
</tr>
<tr>
<td>Northwestern</td>
<td>David Keown</td>
<td>Planning Director/Advisor to the Chief Information Officer</td>
<td>8 months</td>
<td>7 years</td>
<td>Male</td>
</tr>
<tr>
<td>Ohio State</td>
<td>Kathleen Starkoff**</td>
<td>CIO</td>
<td>4 years</td>
<td>4 years</td>
<td>Female</td>
</tr>
<tr>
<td>Ohio State</td>
<td>David Kieffer</td>
<td>Senior Director, Enterprise Applications</td>
<td>1 year</td>
<td>24 years</td>
<td>Male</td>
</tr>
<tr>
<td>Penn State</td>
<td>Joel Weidner**</td>
<td>Director, Information Systems, Auxiliary &amp; Business Services</td>
<td>Unknown</td>
<td>29 years</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>Institution</td>
<td>Name</td>
<td>Title</td>
<td>Years</td>
<td>Total</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>---------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>20</td>
<td>Penn State</td>
<td>Neal Vines</td>
<td>Director, Information Technologies, College of Agricultural Sciences</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>21</td>
<td>Penn State</td>
<td>Kevin Morooney</td>
<td>Vice Provost for Information Technology and CIO</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>22</td>
<td>Purdue</td>
<td>Gerry McCartney</td>
<td>Vice President for Information Technology (CIO)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>23</td>
<td>Purdue</td>
<td>Doug Foster</td>
<td>Executive Director, IT Enterprise Applications</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>University of Chicago</td>
<td>Klara Jelinkova**</td>
<td>Associate Vice President and Chief Information Technology Officer (CITO)</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>25</td>
<td>University of Chicago</td>
<td>Tom Barton</td>
<td>Senior Director for Architecture, Integration, and Security &amp; CISO</td>
<td>9 years as director, 2 years as CISO</td>
<td>9</td>
</tr>
<tr>
<td>26</td>
<td>Wisconsin</td>
<td>Bruce Maas**</td>
<td>Vice Provost for Information Technology, and CIO</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>27</td>
<td>Wisconsin</td>
<td>John Krogman</td>
<td>Chief Operating Officer, Division of Information Technology</td>
<td>3.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Additional demographic information was gathered for these individuals (UChicago News, 2010; Lucas, 2011; ADMIN, 2008; Office of University Communications University of Nebraska–Lincoln, 2009; Penn State News, 2009)**

**Participant recruitment.** The study consisted of half hour semi-structured interviews with 27 IT leaders at the 13 institutions within the CIC. The CIO at each institution agreed to participate, which filled in the first 13 slots. The study was made more robust through the inclusion of an interview with one other IT leader at the institution. Additionally, to generate a clear understanding of the context of the study, a one hour interview with the CIC liaison for the CIC CIOs, Karen Partlow, was incorporated into the study. Partlow provided insight into the history of the CIC CIO organization and detailed how schools function within the consortium. This informed subsequent conversations with IT leaders at the 13 schools.
To solicit interview participation from the CIC CIO’s, the Office of the Vice Provost for Information Technology at The Pennsylvania State University facilitated contacts and connections. Kevin Morooney, the CIO of Penn State, reached out via email to the CIOs at each of the 13 CIC institutions and requested their participation. The researcher then followed up with individual emails to the CIOs to arrange interviews.

For the second level of interviews, CIO participants were asked for a referral for an additional IT leader at their school. In two instances John Harwood, Deputy CIO in the Office of the Vice Provost for Information Technology at Penn State, reached out to second level IT leaders. For the second-level interviews at Penn State, two interviews with IT leaders that took place as part of the pilot study (discussed in Chapter 4) were used.

In total, this resulted in 27 IT leader interviews to be coded for analysis. Speaking to the CIO in addition to an IT leader in another area of the institution offered deeper insight into IT structures, culture, and attitudes at the institutions. In the pilot interviews at the Pennsylvania State University, speaking with other IT personnel besides the CIO was suggested explicitly by one participant, who felt that the CIO might not be the appropriate decision maker for external collaborations precisely because of Penn State’s relatively decentralized structure where college and campus IT leaders have a great deal of strength within the overall IT context at the institution. Including at least one other non-central IT perspective helped prevent the viewpoints at each institution from being one-sided.

Interviewees were informed at the time of the interview that their participation was voluntary. A verbal consent form (Appendix D) was shared with them via email prior to the interview, which they read and orally responded to with their consent to participate once the interview began. The research plan, and intent to disclose identity, was approved as an exempt
study through Penn State’s IRB, which was also used to conduct the pilot study over the course of Spring Semester 2012. Anonymity was not necessary because there was no risk to participants in participating in the study—questions related to the everyday duties of their jobs and did not request personal or troubling information from the participants. However, subsequent member checking resulted in a request for anonymity. To protect the identity of this respondent, all participants were given a randomly generated ancient name from Campbell’s (2013) random name generator, Behind the Name, from Classical Greek, Classical Roman, Ancient Celtic, or Ancient Germanic origin. Due to the strong majority of male respondents, to protect anonymity as much as possible, male-oriented names were selected and the study findings largely avoid gender terminology to avoid singling out female participants. The switch to anonymous responses was fine in the context of this study because identity had no bearing on the findings, which were not institution-dependent.

Data Collection

Interviews took place in two parts, and in total lasted approximately 30 minutes. In part one, participants completed a brief questionnaire (shown in Appendix B) that solicited information on job title, background, and areas in which participants may be interested in collaborating, either within their institution or with other schools. Participants were allowed to complete this at their leisure, or were offered time during the interview to complete and return the survey. In the second part, semi-structured interviews (Bogdan & Biklen, 2007) of approximately 30 minutes were conducted typically over the phone, although one participant requested the use of an internet-based video calling service.

To accommodate the previously discussed variability in IT structures and organizational philosophies, the interview protocol (Appendix C) was comprised of broad points of discussion,

1 Three individuals did not complete the questionnaire.
with potential specific questions to be used as guides. The semi-structured interview protocol was developed specifically for this research, and a version of it was tested with three IT leaders within Penn State during the pilot phase of this study. As the study progressed, minor modifications were made to the protocol and participant questionnaire based on previous interviews. For example, after completing several interviews it appeared modifying inquiries about level of centralization would save time. Rather than asking participants about their level of centralization or decentralization in the interview protocol, a question was added about level of centralization to the questionnaire and that open-ended question was removed from the semi-structured interview protocol. Interviews were recorded and verbatim transcribed by the researcher and imported into ATLAS.ti for coding.

**Data Analysis and Interpretation**

The questionnaires collected from participants resulted in high-level descriptive data that are summarized in Chapter 4. They provide a broad perspective on the degree to which IT leaders were interested in various types of internal and external collaboration but were not qualitative in nature and therefore did not necessitate their own coding scheme.

For interview data, the common practice of simultaneous data collection and analysis (Merriam & Associates, 2002) was used, meaning that coding interview data began once a group of interviews was transcribed rather than waiting until all interviews were completed. All coding was done using ATLAS.ti coding software. In addition to interview analysis, memos were kept during the research process detailing reactions to interviews and any ideas that arose during interviews. These memos were a way to capture thoughts about the data and potential emerging themes, which could be referenced during coding. Engaging in memoing and doing some data analysis during ongoing data collection helped to tailor the interview protocol, participant
questionnaire, and interviewing style to ensure that the questions were able to answer the research questions in the most effective way possible.

Yin (2009) recommends outlining a robust analytic strategy for developing a “diverse set of evidence” (Kindle Location 2626). As Yin notes, there is little consensus around the actual procedures to be followed in conducting data analysis of case study research, and, as Evers and van Staa (2009) remark, Yin himself is “remarkably vague” (p. 751) when discussing the methods for analyzing data. The analytic plan consisted of five strategies occurring in four steps, which is explained in more depth in the following paragraphs. Because some data analysis occurred while data collection was ongoing, this was an iterative coding process. So, while there were discrete steps followed, coding and analysis moved back and forth among the steps as analysis continued and new data were added.

1) Step 1: Code and analyze by research questions
2) Step 2:
   a. Code and analyze by theory/literature
   b. Code and analyze by creating descriptions
3) Step 3: Code and analyze by rival explanations
4) Step 4: Build an explanation for the case

Step 1, per Yin (2009), began by coding collected data based on this study’s research questions. This includes the three driving research questions and sub-questions, which were previously mapped to the semi-structured interview protocol to ensure that the protocol related to the research questions. This initial coding strategy ensured that research questions were addressed and also allowed the drawing of preliminary conclusions based on the evidence across interviews and institutions. To begin this process, three initial coding families were created in
ATLAS.ti: Research Question 1, Research Question 2, and Research Question 3. Sub-codes for each family were then created based on the three major research questions, and each sub-question within the primary research questions. An initial round of coding on each of the verbatim interview transcripts was then completed.

Step 2 involved simultaneously leveraging two analytic strategies named by Yin (2009). The first of these strategies made use of the conceptual model laid out in the literature review by coding according to theoretical propositions. Yin (2009) cites relying on theory for analysis as “the first and most preferred strategy” (p. 130) in case study data analysis. Not only did this strategy help show where the data supported existing theory on collaboration and IT in higher education, it also helped identify potential alternative accounts that should be considered by seeing where the data aligned with the varying accounts of collaboration found in the literature. For example, some researchers consider collaboration to occur based on a rational model, whereas others argue that decision makers satisfice. Yin is vague on the actual mechanics of analyzing by theoretical propositions, but the method for doing so used in this study was to take the conceptual framework and break it down into four code families based on the theoretically supported components (e.g., less hypothetical) portions of the model. The four major theoretical proposition families are:

1) **External Forces** outside the institution that influence the context for collaboration via the institution and the IT environment

2) **Internal Forces** within an institution that exert pressure on the IT environment

3) **Organizational Structures** within the IT environment that impact decision making

4) **Cost/Benefit Assessments** that IT leaders engage in when making decisions about engaging in a collaboration
A number of *a priori* sub-codes within these families were created based on the findings on collaboration and IT that were discussed in the review of literature. These codes, and the families into which they fall, are detailed in Table 3 below.

**Table 3: *A priori* sub-codes from Step 2**

<table>
<thead>
<tr>
<th>Sub-codes</th>
<th>External Forces</th>
<th>Internal Forces</th>
<th>Organizational Structures</th>
<th>Cost/Benefit Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic crisis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pace of change</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technological developments</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of providing services</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User expectations</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isomorphism/keeping up with other schools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional budget cuts/financial pressure</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>User expectations</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Institutional culture</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Pressure to build consensus and take time</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Crisis as a change motivator</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Belief in the importance of collaboration</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Belief in collaboration as a savior</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Centralization</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Economies of scale</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Reduction of redundancy or service duplication</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Improved efficiency</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Standardization</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Concentrated human capital for issue resolution</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Decentralization</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Autonomy</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>User focus</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Discipline or tailored knowledge</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Culturally accommodating</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Agile for local needs</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>New models</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Anticipated changes and changing</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>roles</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborative arrangements/structures</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnerships to develop an IT resource</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared service collaborations in which multiple organizations band together to jointly operate an IT resource</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborations in which one institution elects to operate IT services on behalf of others, and</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborations in which an institution is a recipient of services provided by another institution.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transaction cost economics – most benefits fewest costs or best balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unclear benefits</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High start up costs</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost savings</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of alignment</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collegial impulse</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friction costs of working across locations, cultures, skills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for self-interest</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact of culture and tradition</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding crisis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of service</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comfort/discomfort with risk or experimentation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for evidence</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crisis resolution</td>
<td>X</td>
<td></td>
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<tr>
<td>Institutional type</td>
<td>X</td>
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<tr>
<td>Personal relationship</td>
<td>X</td>
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<tr>
<td>Common mission</td>
<td>X</td>
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<tr>
<td>Inevitability of collaboration</td>
<td>X</td>
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<td>Loss of control</td>
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<tr>
<td>Talk vs walk</td>
<td>X</td>
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<td></td>
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<tr>
<td>Type of collaboration</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Once the theoretical codes were created, the second analytic strategy used in Step 2 began. This involved coding by developing a case description (Yin 2009). This technique helped deal with the more ambiguous facets of the study. There are some areas of the conceptual framework outlined in Chapter 2 that are less researched than others. For example, the exact components of IT cost/benefit analyses when collaborations are considered—some of the areas that appeared to go into this decision making process were clear, but it was also evident that there would probably be others given how complex the IT environment is acknowledged to be, and given Goldstein’s (2007) finding that IT leaders sometimes had difficulty articulating exactly how they made decisions about collaborations. Coding by the descriptive strategy simultaneously with the theoretical propositions strategy helped show where there were holes in the existing theoretical analysis and allowed descriptive codes to emerge from the data. Going back to the cost/benefit analysis example, there were existing theoretical codes for items like cost savings/cost efficiencies, academic culture, and institutional type, but other factors that were not previously incorporated into the theoretical model, like potential to be innovative, emerged from interviews. Strictly focusing on existing theoretical codes would have caused an omission of an additional factor that several IT leaders identified as one of their decision making considerations. Coding by theoretical propositions and creating new, emergent codes that were descriptive of other things not found in the conceptual framework ensured that important points in the data were not ignored. Indeed, Yin (2009) specifically cites this descriptive strategy as desirable in situations where many complex decisions are taking place because the descriptive strategy can help find units of analysis and provide insight into complex patterns that can explain what is happening in such situations.
To complete the coding for Step 2, the *a priori* theoretical codes were entered into ATLAS.ti. Another pass was then made through each of the 27 interviews coded in Step 1 and theoretical codes were applied to the data as appropriate. During this process, explanations in the data that were not present in the theoretical codes were also incorporated. As new concepts emerged, descriptive codes were created and assigned to the data. These emergent codes carried forward throughout the rest of the interview coding process. Thus, Step 2 involved assigning *a priori* codes that arose from the literature review prior to data analysis to the interview data and creating and assigning emergent codes that were suggested by the data.

Both coding by theoretical propositions and the descriptive strategy naturally coincide with the analytic technique used in Step 3, which was coding for rival explanations. Prior to beginning data collection, competing explanations in the literature for various components of the study were apparent. The data also offered different perspectives from what is readily found in the literature. As discussed in the findings, the data elucidated contrasting explanations from participants about what is occurring with inter- and intra-institutional collaboration. Some explanations constituted fundamentally different hypotheses or frameworks that would be difficult to consider part of the same worldview on collaboration.

While in some ways rival explanations were also sought by engaging in the previous two techniques, Yin (2009) suggests that it is also important to make coding for rival explanations an explicit component of an analytic strategy. More specifically, Yin asserts researchers should not only define, but also delve into and test alternative interpretations of what is happening in research data. Per Yin, this approach is explicitly compatible with both of the techniques from Step 2. Rival explanations are those conceptions of a topic, cause, or issue that constitute substantively different hypotheses from one another (Yin, 2009). Rival explanations emerged
from the coded data, although the likelihood of their presence was anticipated based on the review of literature. To accomplish this coding, the coded data from Steps 1 and 2 were used to identify rival explanations by creating an output of coded data by each individual code in ATLAS.ti to review each code for intra-code rival explanations. Using a table in Excel, major arguments or explanations that arose from each code were summarized. Codes that emerged as rivals were highlighted.

Once an assessment of intra-code conflicts was completed, the table was searched for intra-code conflicts. This resulted in a master matrix of highlighted conflicts. The intra-code conflicts were compared to one another and a higher-level list of super rivals that rose above the level of a code-specific conflict was generated. For example, some participants asserted that collaboration was inevitable and vital to continued survival whereas others felt that it was a “nice to have” but not mandatory. Others felt that the boat had been missed entirely on major swaths of collaboration genres and could not be brought back to shore. This process of noting explicitly where there were rival theories organized and clarified the research question findings and theoretical and descriptive codes. This step also organized the data for Step 4.

To summarize, the first three coding steps ensured that analysis was rigorous and thorough. Additionally, these steps overtly recognized that different levels of understanding were present across the framework—some areas are better researched than others and are easier to code and analyze based on theory, others are more ambiguous or less well understood and lend themselves to a descriptive approach. The first strategy outlined—coding by research and protocol questions—helped ensure the research questions were addressed.

The code base and initial conclusions drawn from these three steps funneled directly into the fourth, and last, analytical step, knitting these other techniques together by engaging in a
form of pattern-matching called explanation building. Yin (2009) argues that pattern-matching is “one of the most desirable techniques” (Kindle Location 2765) in case study analysis because it allows researchers to compare an empirical pattern that emerges from data with a predicted pattern, or patterns, based on theory. In this particular case, explanation building made the most sense because the aim was to do exactly what the term suggests—build an explanation about what is happening in the case. The technique is appropriate to use with explanatory studies that ask how or why, and can also be used with exploratory studies.

Explanation building leads to a proposed set of causal links that suggest answers to the questions of how and why something occurs (Yin, 2009). While operational specifications for explanation building are not well fleshed out, it is an iterative process where, per Yin, the researcher makes an initial proposition about the topic—in this study, the conceptual framework outlined in Chapter 2—and then compares case findings against that proposition and revises it as appropriate. This approach fit the current study because the nature of the final framework was not pre-determined from the start. Explanation building is unlike traditional pattern matching approaches, which focus more on ascertaining whether a proposed model is correct by comparing the model to the findings and accepting or rejecting the model. Again, Yin cites the importance of considering, explaining, and rejecting rival explanations in explanation building, which was included as an important part of the analytic strategy from the beginning.

To build the overarching case explanation, the specifics of which are explained in Chapter 5, the summary table and rivals table created in Step 3 were used to develop a narrative. This was done around the major rival perspectives that emerged from analysis in Step 3. The cross-code conflict markers and code summaries were reviewed and rivals compared to what was posited in the conceptual framework. In this step the literature base was expanded to incorporate
literature that related to codes and concepts that emerged from the data to test whether emergent codes from the descriptive coding in Step 2 were consistent with previous research. The explanation building narrative was structured around three major themes that emerged from the process of coding. Step 4 led to broader conclusions about collaboration in higher education IT that are presented in Chapter 6.

**Researcher Identity and Perspective**

It is important to explicitly acknowledge that the author’s research identity and background will have an impact on understanding of the data, just as they influenced the author’s interest in conducting the study in the first place. This section provides background information on my experience with IT and makes my perspective explicit so that readers may draw their own conclusions about the impact of these factors upon analysis and understanding of the present study.

**Researcher identity.** My interest in higher education IT stems from the four years I spent working as a helpdesk consultant and manager during my undergraduate years at Northwestern University. Working there my freshman year learning the ropes of a helpdesk, and then becoming a student manager who was intimately involved in the running of the helpdesk department in my sophomore through senior years, helped me understand not only how integral the IT unit is to higher education institutions, but also how little attention it is given by researchers and practitioners alike. IT is a unit that often runs in the background, unnoticed unless something goes awry, yet higher education could not function without it, and it is increasingly vital to fulfilling institutional strategy.

My interest in IT’s impact on organizations continued in my consulting career. I worked in human capital consulting, specifically focused on the technology aspects of human resources
departments. My job was centered on setting up the equivalent of IT helpdesks for human resources departments, and I encountered many of the same issues as I had in my undergraduate work. Additionally, since May 2011, I have served as the graduate research assistant to the CIO and Deputy CIO at Penn State, both of whom have been heavily involved in the IT community and helped me gain access to my study participants. This has strongly renewed my interest in the challenges facing higher education IT.

From an assumptions perspective, these experiences made me believe in the inherent importance of IT, and its ability to strategically contribute to (and help the bottom line of) an organization. My experiences also led me to believe that IT is a confusing or nebulous area to many people. These beliefs have led to my goal of helping IT to be seen as a strategic asset to institutions of higher education. As a result, my dissertation topic is centered on a developing IT concept—collaboration—because I think it is a potential key to improving the bottom line for organizations while enabling them to fulfill their mission as institutions of higher education. This means that I am approaching my topic with something of a vested interest—I want to find ways for this to be possible.

The advantage this brings is that I have an intimate, working knowledge of the higher education IT environment, both from my previous experiences and the past year and half working within the Penn State IT department. My beliefs make me passionate about the topic, and willing to disseminate and advertise my results, as well as go the distance on collecting high quality, detailed information. The disadvantage is that I know I want to find useful solutions for IT and contribute to the scholarship in the area, which could function as a potential bias if I am not careful to let the data speak for themselves, and even more so if I am not careful about creating a pressure-free environment for interviewees.
Researcher perspective. As may be apparent from my use of theory, past findings from different settings, and depiction of events, I approach this study from a critical realist perspective as understood by Maxwell (2012). While Maxwell acknowledges ongoing conversations about the nature of realism in philosophy, his take on critical realism is an amalgamation of many different realist terms. This includes the existing use of “critical realism”, but also “subtle realism”, “natural realism”, and “emergent realism”, among others (p. 4). There are several facets of this perspective that are particularly relevant not only to the way in which I have chosen to approach my topic but the way in which I will conduct my analysis and interpret my results.

First, critical realism rejects the idea of objective knowledge (Maxwell 2012). Critical realists accept that there may be multiple valid explanations for the topic under consideration because theories are grounded in particular perspectives. Additionally, critical realists hold that “all knowledge is partial, incomplete, and fallible” (Maxwell, 2012 p. 5). This is unlike objectivism, which asserts that only one correct explanation of reality exists (Maxwell, 2012). As Maxwell explains, this boils down to “ontological realism” (p. 5)—critical realists believe there is a reality independent of individual “perceptions, theories, and constructions” (p. 5)—leavened by “a form of epistemological constructivism and relativism” (p. 5) that acknowledges that there may be multiple ways to understand that independent reality shaped by individual perspective and position.

From a study creation perspective, what this means is that I accept the idea that theory can refer to the actual world rather than serve only as a logical model based on data, and I am comfortable with causality as a concept that can explain topics under consideration. If this seems incommensurate with also believing that there can be multiple valid understandings of an area in question, allow me to clarify that while I do not claim the idea of multiple, incomparable,
independent worlds made out of our own social constructions, I do accept that there can be multiple perspectives about reality that are valid (Maxwell, 2012). For example, the impact of a collaborative venture could be very different from the perspective of a faculty member, an IT staff member, and a CIO—each experience is real and valid, yet they do not exist in different, incomparable worlds. There is a whole picture that can be created out of their different experiences. Thus, we have Maxwell’s definition of critical realism as “ontological realism plus epistemological constructivism” (p. 11).

As Maxwell (2012) notes, some theorists argue that this is a logically contradictory stance because accepting multiple interpretations and rejecting the idea of one, objective truth about reality seems inconsistent with accepting ontological realism—that there is an independent reality that can be studied. This is true if ontology and epistemology are collapsed together, which critical realists do not do, in part because it allows ontological questions on a topic of study to be pursued (Maxwell, 2012). Maxwell explains “if our concepts refer to real phenomena, rather than being abstractions from sense data or purely our own constructions, it is important to ask, to what phenomena or domains of phenomena do particular concepts refer, and what is the nature of these phenomena?” (p. 13). In my study, this focus on ontology requires me to question what the bounds of my claims are—can I say something about consortia generally? Just the CIC? Can I extrapolate, and if so, how much? Any analytical decisions I make on this front must be clearly justified and supported by my data. Focusing on ontology is, in a sense, one way to ensure validity, which is the concern of the next section. Ultimately, the aim of clearly addressing researcher identity and perspective is to allow readers to both understand the personal and philosophical approach of the study and form their own assessment of how these factors impact analysis and interpretation of data.
Validity

I attempted to mitigate the potential impact of my bias and the way it could play out in interviews—the reactivity issue (Maxwell, 2005)—in several ways. First, I collected rich data, which Maxwell (2005) describes as analysis based on intensive interviews with verbatim transcripts rather than simply analyzing research notes taken during the interviews. Working from verbatim transcripts, and also having the original audio recordings available helped to prevent me from using only an impression of a conversation, rather than the actual statements made in the conversation.

Second, I utilized member checks (Merriam & associates, 2002) during my interviews when I was unsure of an interpretation, or to verify my understandings and analyses with respondents to make sure that I interpreted their statements properly and that they did not wish to alter their previous statements. I incorporated member checks within the interviews by restating what I understood interviewees to have said and verifying that my interpretation was accurate. Additionally, all participants were given the opportunity to review their individual transcripts. Utilizing member checks was another way to ensure that my bias in favor of collaboration was not coloring my interpretation of respondent answers.

Third, because I interviewed individuals at similar institutions and occupying similar positions at each institution, I was able to use comparison (Maxwell, 2005) as a validity check. I have a relatively homogenous group of participants who were all at least somewhat familiar with the other institutions and IT leaders in the study due to their institution’s participation in the CIC. Because explanatory case studies have been criticized for sometimes only presenting data that supports the researcher’s interpretation (Harder, 2012), having this baseline of similarity served as one check on data interpretation and fit well with the use of rival explanations as a coding
strategy. In cases where there was stark divergence of opinions across these similar schools it was important to note and analyze the rivalry clearly rather than favoring one perspective over the other based on researcher bias. Leveraging a similar group of schools and deliberately looking for divergent viewpoints helped to ensure validity of interpretation. Yin’s (2009) explicitly recommends looking for alternate explanations as its own validity measure.

Finally, I used debriefing sessions with my dissertation chair and peer scrutiny (Shenton, 2004) to test my developing ideas and analyses on an experienced researcher as well as my colleagues. Obtaining multiple perspectives on the progress of the study helped to prevent analysis from becoming unbalanced or untrue to the data. The use of debriefing sessions was particularly important because I used explanation building as my analytic strategy. Yin (2009) notes that investigators using this strategy are prone to moving gradually away from the study’s purpose, and that avoiding this pitfall requires “constant reference to the original purpose of the inquiry” (Yin, 2009, Kindle Location 2921). Working with my chair and peers to ensure my analytic progress connected consistently with my research questions and study purpose was one way to achieve this.

Limitations

Unlike Goldstein’s (2007) study, this study did not have the resources to mount a multi-method, several hundred-institution study. Therefore, although results that offer depth and insight into the subject of IT collaboration were sought, this study does not have the level of generalizability achieved by Goldstein. Additionally, because only two individuals at each institution were interviewed, the understanding of each institution generated in the study was more limited than it would have been if more participants had been included. This was somewhat compensated for by interviewing one subordinate IT leader at each institution in addition to the
CIO, which gave deeper perspective on the organization, but the tradeoff in studying the CIC as a consortium rather than conducting multiple studies at each school was the sacrifice of a complete understanding of one institution for a greater sense of the entire consortium.
Chapter 4: Context

The methods outlined in the previous chapter evolved from a pilot version of the current study, and the findings from that pilot influenced the direction of this research. The interviews conducted in the pilot explored one school within the CIC; the expanded scope of the current study takes place within a different context, examining IT collaborations amongst CIC institutions more generally. This chapter offers an overview of the pilot study and shows how it influenced the current research. Given that the current study is nested within a specific context, the history and practices of the consortium itself also provide a foundation for understanding. This chapter also provides context by offering specific information and historical background on the CIC. Finally, institutions within the CIC also have specific histories and preferences, and this chapter provides some insight into this through the results from the questionnaires distributed to participants as part of data collection. The information presented in this chapter provides a foundation for interpreting and understanding the findings presented in Chapter 5.

Pilot Study

Over the course of spring semester 2012, I completed a pilot study to develop initial understandings of IT collaboration in the CIC and determine the feasibility of the current project. The three research questions and sub-questions used in the current study are an evolved version of the three used in the pilot study. The questions guiding the pilot study were:

1. How do IT leaders view the idea of collaboration?
2. To what extent and with whom have institutions pursued inter- or intra-institutional collaborations?
3. How and why do IT leaders make decisions about engaging in collaborative activities?
The pilot study consisted of five semi-structured interviews with IT leaders using an earlier version of the current study’s final protocol, and document analysis on the topic of IT collaboration. Two of the five interviews were with Kathy Krendl, president of Otterbein University, while the other three were with IT leaders at Penn State: Neal Vines, Director, Information Technologies, College of Agricultural Sciences; Joel Weidner, Director, Information Systems, Auxiliary & Business Services; and Joshua Fritsch, Director, Information Technology for the Eberly College of Science.

In the pilot, document analysis helped to validate the intended course of research and provided useful information to bring into subsequent interviews. Two documents were used for analysis in the pilot—the CIC CIO website on Technology Collaboration (Committee on Institutional Cooperation, 2011a) and a viewpoint on collaboration (Oblinger, 2011) published in the EDUCAUSE Review in 2011. The CIC CIO Technology Collaboration site was intended to provide an overview of current CIC CIO discussion of collaboration. EDUCAUSE is the primary professional organization for higher education IT, and the document from the EDUCAUSE Review served as an indicator of the continued relevance of collaboration for IT in higher education.

Part of the pilot also involved conducting a review of literature and constructing the conceptual framework in Chapter 2. The framework was drafted as a way to map ideas and themes emerging in the literature, and was completed after the first two interviews with Krendl and before the three Penn State interviews. Subsequent to developing the conceptual framework

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2 Document analysis did not carry into the current study because its primary purpose in the pilot was to ensure that the research questions and topic were still relevant in 2012 after Goldstein’s (2007) study was conducted. While one could certainly conduct a comprehensive document analysis using the frame of the current study, that was outside of the scope of the present project, which is focused upon the active opinions of current IT leaders rather than statements made about collaboration in documents.
and completing the pilot interviews, interview data were analyzed to determine whether they spoke to the research questions and were consistent with the conceptual framework.

Analysis consisted of open coding and limited categorical coding in Atlas TI. Codes that emerged from the review of literature were used in open coding where appropriate, and new codes also emerged from the data. Each research question was also represented by an a priori code to ensure that the data were aligned with them. In categorical coding, second-tier codes for the research questions were created to see whether the other open codes were also aligned with the research questions.

Many of the themes that emerged from the review of the literature were present in both the interviews and document analysis. The CIC website content provided an overview of the CIO’s understanding of collaboration, listed ongoing collaborations, and provided some insight into how CIOs make decisions about engaging in collaboration. The extent to which collaborations have been developed was particularly evident—the website contained several examples of existing collaborations. Knowing that collaborations were actively occurring amongst the CIC CIOs confirmed that expanding the study from Penn State to the entire CIC was feasible. The EDUCAUSE document verified that ongoing professional discussion of collaboration was occurring and being discussed in a manner relevant to the pilot research questions. Additionally, including a document from EDUCAUSE showed, to an extent, that some of the same themes arose between the CIC discussion of collaboration and the professional association that serves as a thought leader on IT in higher education. There was definite crossover, especially around the idea that collaboration is increasingly inevitable for colleges and universities.
Five interviews took place in the pilot study. The first pilot interview with Kathy Krendl was a helpful way to test the semi-structured protocol’s ability to solicit data that answered the research questions. The interviews with Krendl were primarily intended to validate the semi-structured protocol prior to engaging with IT leaders. Krendl is an executive-level leader at her institution and thus could serve as an analog to a CIO. In the first interview with Krendl, the protocol was too narrow. The pilot study was initially focused only on collaboration in providing help desk support, but Krendl was not thinking about help desk support as a potential collaborative option. As a result, she spoke more on other collaborative initiatives she had been considering as well as issues she had encountered. The interview was extremely helpful because it resulted in an expansion of the pilot study’s scope—collaboration in IT covers much more than the help desk. Additionally, given that IT collaborations are generally understudied, it made more sense to restructure the study and protocol to include all IT collaborations. After making adjustments, Krendl participated in a second interview. The second round resulted in more detailed, rich information on her attempts at collaboration with other schools, as well as her reasons for being so interested in collaboration. For Krendl, interest in collaboration was related to two factors: to save money; and to bring in new ideas. This perspective had not come out in the first interview.

After testing the new protocol, three IT leaders at Penn State participated in the study. These interviews were with college and administrative unit IT leaders. The debate over central control discussed in Chapter 2 suggests that distributed IT leaders would not strongly favor collaboration and would be more interested in maintaining control within their units, but this was not the case. All three felt that collaboration was inevitable because of cost constraints and the pace of technological development. Notably, these IT leaders considered collaboration to be
working with anyone outside their unit or college. Outsourcing to a for-profit vendor would count as “collaboration” in this context, even though it was described to them as working with other schools or units within the institution. This was not a type of collaboration examined in the Goldstein (2007) study on IT collaboration, where the topic was discussed primarily in the context of using collaboration to decrease reliance on vendors, and is a different perspective on what collaboration “is”. If paying a vendor to provide or develop services qualifies as collaboration to local IT leaders, then it is possible that the idea of collaboration held by IT leaders is broader than previously understood.

Another major finding from the pilot study was that participants supported the idea of bounded rationality instead of a pure cost/benefit assessment when considering engaging in collaboration. The three Penn State IT leaders could not articulate the exact ways they measure potential costs and benefits, especially when those benefits and costs may be intangible (such as freeing up personnel to do other work but not saving money by laying someone off). This indicated that incorporating bounded rationality and/or satisficing—picking a solution that is “good enough” (Gormley & Balla, 2008)—was potentially more appropriate when considering the decision making process than transaction cost economics, which focused on rational assessments of costs and benefits. This translated into an updated literature review, revised to address the conflict in perceptions about collaborative decision making in more depth.

The pilot was a useful step in testing, expanding, validating, and otherwise examining dimensions of the larger study presented in this dissertation. Overall, the pilot study helped hone the semi-structured interview protocol and expand the project’s consideration of collaboration to match what IT leaders want to talk about. A variety of unit level and categorical codes were developed to analyze the data that fit into the three broad research questions that guide the
current study. Data generated from the interview protocol with local IT leaders provided a foundation for speaking with CIOs responsible for directing the vision of the entire institution. The pilot study also confirmed that IT collaboration is a topic of interest to IT leaders. Additionally, because several interviews took place at Penn State and the research questions in the current study are very similar, two of the interviews are included in the current study.

The CIC

Additional data gathering on the CIC was required to proceed effectively from the pilot to the current study. While the pilot study indicated that the research questions were answerable and the topic was relevant, more detail on the context of the consortium was needed. Chapter 3 explained that one factor differentiating this study from Goldstein’s (2007) work is that it is bounded within the context of the CIC. This boundedness is both practical—a delimited case is necessary to establish scope and scale—and serves to advance research. Goldstein (2007) found that institutions prefer to work with schools that are similar to them, and focusing specifically on the CIC makes this an explicit trait of the institutions in the present study. This section provides background information and historical context on the CIC, explaining its selection as the case site for the study and offering insight into the CIC as a specific context of study. The case description is based upon an interview conducted with a key resource for the CIC CIOs—Karen Partlow, the CIC Associate Director for Technology Collaboration who has been in the position for 11.5 years. Further, documents provided by Partlow and from independent research into the consortium also inform this description of the CIC.

History and structure of the CIC. Institutions in the CIC are listed in Table 4, and include the 12 Big Ten athletic conference institutions along with the University of Chicago (CIC, 2011b, para 1). All but two of the institutions are public, and all but the two private
campuses enroll over 20,000 students (U.S. Department of Education, 2010). The CIC was founded in 1958 by the presidents of its member institutions (Partlow, 2012). The CIC is guided by the provosts of each participating institution (Partlow, 2012), and presents itself as a group of institutions that share the same fundamental traits. These schools are “world-class academic institutions who share a common mission of research, graduate, professional and undergraduate teaching and public service” (Big Ten Conference, 2011, para 1). The CIC is driven by research—in total, the institutions receive more than $6 billion in research funding (Partlow, 2012).

Table 4: CIC Institution traits

<table>
<thead>
<tr>
<th>Institution Name</th>
<th>Carnegie Classification 2010</th>
<th>Institutional control or affiliation</th>
<th>Estimated enrollment full time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana University-Bloomington</td>
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<td>(1) Public</td>
<td>37,436</td>
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<td>(1) Public</td>
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<tr>
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<td>16,757</td>
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<tr>
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<td>(1) Public</td>
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<td>(1) Public</td>
<td>36,258</td>
</tr>
<tr>
<td>University of Chicago</td>
<td>(15) Research Universities</td>
<td>(3) Private not-for-profit</td>
<td>12,672</td>
</tr>
<tr>
<td>University of Illinois at Urbana-Champaign</td>
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<td>(1) Public</td>
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<td>24,167</td>
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<td>(1) Public</td>
<td>39,466</td>
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<td>University of Wisconsin-Madison</td>
<td>(15) Research Universities</td>
<td>(1) Public</td>
<td>37,485</td>
</tr>
</tbody>
</table>


Unlike many academic consortia, the CIC has dedicated staff. Eighteen individuals are employed by the CIC headquarters at University of Illinois, who are responsible for coordinating
and providing support for work across seven areas: academic collaborations, international studies, libraries, recruitment of under-represented minorities, technology, purchasing and licensing, and leadership development (Partlow, 2012). Partlow cited the presence of dedicated staff to shepherd projects, ensure that participants are kept informed, and that to-dos are taken care of as a vital component of effective collaboration. Not every CIC group has dedicated staff, and many academic consortia do not have support staff for working groups at all. However, the CIC CIOs have three of the 18 total CIC staff who are responsible for assisting with technology collaboration (Partlow, 2012).

From Partlow’s perspective, these structural traits of the CIC lead to three clear advantages for collaboration. First, because the provosts sponsor the CIC and its working groups, participants know that collaboration is supported by an executive at each institution. Second, the breadth of scope provides a common ground for leaders at various parts of each institution to work together. Rather than being restricted to work in only one area, as is the case in some themed consortia, CIC institutions can choose from a wide array of collaborative areas. Third, the presence of dedicated staff means that the CIC as a whole has forward momentum on projects. The CIO group in particular enjoys more effectiveness because of the presence of three support staff that keep projects going.

**CIC emphasis on technology and CIO collaboration.** In addition to the broad, institution-wide scope of the CIC, its specific sub-group and staff dedication to technology are important in the context of this study. The Technology Collaborations site of the CIC (CIC, 2011a) explains that: “Information Technology (IT) has never been so important to the future of higher education. In fact, virtually every academic function depends to some degree on IT. For that reason, the Chief Information Officers (CIOs) of the CIC universities have made it their
priority to build IT capacity while managing costs” (para. 1). This shared interest in IT collaboration is key, as is the direct involvement of the CIOs.

The working group of CIOs was established relatively recently in the history of the CIC as a whole and has been meeting since 1988. That year, the CIO working group began as part of the Board of Directors of CICnet Inc., which was a broadband network initiative created to provide CIC members with high-speed telecommunications connectivity. In 1995, the CIOs began meeting together outside of the CICnet context because they saw value in communicating and working together beyond the scope of that project. As part of this evolution, the CIOs “identified collaborative strategic initiatives, created and charged Working Groups and Task Forces, and created a review structure to coordinate their activities” (Partlow, 2012, p. 2). This collaborative, inter-institutional focus remained until 2002, when the CIOs explicitly shifted their focus away from inter-institutional projects. The shift was intended to move the group’s work towards a focus on information sharing and discussion of best practices on IT strategy at research institutions (Partlow, 2012).

By 2003, this change was abandoned and the CIOs returned to their previous focus on collaborative projects (Partlow, 2012). According to Partlow, an irresistible opportunity arose that encouraged the return to interest in collaborative activity. The National LambdaRail, a new fiber optic network created for education research, was accepting new members but was charging $5 million to join. The CIC CIOs were interested in participating, but could not afford to do so individually. This led to the decision to join as a group. In order for the 13 institutions to join, they had to pay the $5 million and also connect to the network, which required cooperatively laying fiber optic cables to link each institution all the way to the LambdaRail network in Chicago. The result of this joint effort was millions of dollars in savings and the development of
OmniPoP, “a framework that promotes regional network connectivity and shared services among and between its member universities” (Partlow, 2012, p. 3). These initiatives are seen as one of the great success stories of the CIC. As Partlow explained, the National LambdaRail project was both successful in accomplishing the goal of obtaining network access for the CIC schools and in furthering the collaborative aspirations and practices of the CIC CIOs. From Partlow’s perspective, the LambdaRail project led to a significant shift for the CIOs by helping them see what a successful collaboration could enable. They became more interested in future collaborative work based on this success.

Today, the CIOs meet on a quarterly basis. Each CIO takes a rotating turn to host the group’s meeting and provide meals (Partlow, 2012). In addition to these meetings, the CIOs “endorse and support inter-institutional peer groups comprised of their senior staff members responsible for the broad technology areas under the auspices of most CIOs” (Partlow, 2012, p. 1). The work of these collaborative project teams is one common focus of the quarterly CIO meetings, as are high-level strategic IT issues. The work of the project teams and the “sharing of information and best practices within and among these sub-groups, in turn, serves to help inform the CIC CIOs about strategic issues of importance on their campuses” (Partlow, 2012, p. 1). In addition, the group appoints one CIO as the lead on each project to be responsible for setting objectives, monitoring progress, interacting with the project team, and generally taking an active role within the collaboration. The CIC CIOs have an annual budget approved each June that is divided equally amongst the 13 schools and administered by the CIC staff (Partlow, 2012).

Partlow explained that one important part of developing cultural and context understanding for new members is the onboarding process because there is a fair amount of turnover amongst the CIC CIOs. New members are sent an onboarding packet and have a
meeting with Partlow to update them on current and previous CIC CIO initiatives. The aim behind the process is to help prepare and orient new CIC CIOs prior to their first group meeting, as well as to help Partlow familiarize herself with the kinds of activities on which they are interested in working. This helps new CIOs make immediate contributions to the group and positions them to assist on projects that are most interesting to them.

**Collaboration Priorities and Existing Projects.** While Partlow noted that the involvement of the provosts as the heads of the CIC is acknowledged as philosophically valuable and important, she added that the CIC CIOs also place a strategic and practical emphasis on doing actual work with the provosts rather than having a symbolic relationship. For example, in December 2009, the CIC provosts requested that the CIOs meet with them to discuss opportunities for further technology collaborations. One area was of notable interest to the provosts: High Performance Computing and Cyberinfrastructure³. This request resulted in a paper produced for the provosts by the CIOs on Cyberinfrastructure advice and strategy, and led to the identification of three areas of collaborative priority (Partlow, 2012, p. 2):

- Furthering the adoption of federated identity and access
- Exploring shared data storage opportunities, and
- Working with the CIC University Librarians, address the capture and access of the scholarly record

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³ This is defined in the report presented by the CIOs to the Provosts: “cyberinfrastructure includes data networks, computational facilities and computing resources, large data sets and tools for managing them, and specialized software applications including middleware” (Jackson, S., Jelinkova, K., Kassem, A., Wheeler, B., Fleagle, S., Patterson, L.,...,Kraemer, R., 2010, p. 5).
The CIOs drafted action plans for these areas of collaboration that have been updated twice since their initial release in October 2010. The provosts placed particular emphasis on federated access and storage collaboration as part of their evaluation of the action plans (Partlow, 2012). In addition to the areas and activities identified by the CIOs and provosts, Partlow noted that the CIOs have a streamlined visioning process that typically occurs every three years. The CIOs came together in 2009 to develop a set of desired outcomes that would help achieve the goal of “advancing CIC members’ academic excellence through collaborative technology” (Partlow, 2012, p. 2). Due to an influx of new CIOs, the process recurred in late 2011, allowing the new CIOs to identify projects that were important to them. While the articulated outcomes are still in draft form, the priorities identified by the CIOs include (p. 3):

- Advance innovative collaborative solutions of high impact and importance to individual members
- Optimize collaborative opportunities
- Increase leadership impact & influence locally and nationally through recognition of collaborative innovative campus solutions and actions

The key initiatives advanced to meet these outcomes fall into five categories:

- Fiber Network-related
- Shared storage and services
- Federated identity management
- Purchasing
- Leadership development

Projects are underway within each of the five initiative areas (Partlow, 2012). For example, the CIC has invested in Federated Identity technology. Through this, scholars at CIC institutions can
use their individual campus identities and log-on credentials to access a wide range of shared academic resources and scientific networks (CIC, 2011c). The CIC has also created an IT Licensing Task Force (CIC, 2011d) dedicated to investigating and working out collaborative license agreements for software to lower costs and negotiate better contract terms through multi-institution bargaining power. To date, the task force has obtained collaborative licenses for Symantec Anti-Virus for virus protection and the Statistical Package for Social Sciences (SPSS) for data analysis (CIC, 2011d). As noted above, one of the most successful collaborations is the CIC’s OmniPoP network. It provides high-quality networking connectivity amongst the participating members of the CIC and was estimated to have provided a $3.2 million in aggregated return on investment in 2011 (Partlow, 2012).

These arrangements and ongoing projects demonstrate collaboration on multiple fronts within the consortium. However, the number of projects and overall scale are not consistent across each of the five initiative areas. From Partlow’s perspective, the area of fiber networking is the most developed. This has been an ongoing, high-priority focus for the CIOs since 2004. Partlow saw purchasing collaboration as an area with a great deal of potential for growth, and noted that the area of shared resources and services had not yet developed many projects.

**Structure of collaborations within the CIC.** One significant trait of the collaborations within the CIC is that collaborative projects take place on a “coalition of the willing” basis. Unlike some consortia where participants are required to join initiatives and can be resentful or deliberately undermine the success of the initiative as a result, the CIC is structured so that institutions only come to the table for projects that are of true interest. Additionally, while schools may choose not to participate at the outset, they are allowed to join collaborative projects at a later time without penalty. As Partlow observed, “the people that are collaborating want to
be there, and they want to have success. I think that makes for much higher changes for success when you’re collaborating.” CIO participation in projects, based on Partlow’s experience, appeared to largely be based around whether the initiative was perceived to further the academic mission of their home institution.

Pre-identification of overarching and specific impact goals is also an important part of the collaborative process in the CIC. Partlow noted that this often occurs as part of the visioning process every three years, when CIOs consider whether activities within the group have been successful, how to measure that value, and what the continued importance of the CIC is to the group. Interest in articulating impact goals also translates to specific projects. CIOs consider how initiatives relate to the academic mission and encouragement of academic excellence at their home institutions, as well as specific outcomes desired from projects. Metrics tracking has increased in importance for the group. For example, a robust qualitative and quantitative return on investment assessment mechanism was developed for OmniPoP. This tool allows the institutions to determine much value derive from the service and offers an assessment of the probable dollar savings for each service, among other components (OmniPoP Value to CIC Members FY10-11, 2011). While Partlow noted that assessing return on investment is a challenging activity, it is one that the CIC staff attempt to do for each project. This helps CIOs see how the value of what is achieved can be compared to the investment put into it. Qualitative feedback on the importance or merit of these projects is also seen as important. IT leaders feel that the value add from some services goes far beyond cost savings, especially when the project results in something that leaders could not have done alone.

**Barriers to collaboration identified at the CIC.** While the CIC has produced successful collaborations, Partlow acknowledged that the future is not without challenges. She explained
that for collaborations, “if it was just as simple as, ‘yes, I want to do this’, then we’d do all sorts of things. It’s way more complicated.” She identified four major challenges that she has observed in working with the CIC CIOs over the last eleven and a half years: funding, time constraints, risk, and timing of projects.

First, lack of funding to invest in new projects can be a challenge. CIOs are often limited in what they can accomplish with their available dollars. This risk may be less severe; Partlow pointed out that when budgets are tight, interest in making collaboration work at the CIC sometimes increases. This is consistent with Goldstein’s (2007) finding that cost constraints appear to increase interest collaboration.

Time constraints were another major barrier seen by Partlow in her work with the CIOs. Because CIOs have so many projects and responsibilities at their home institutions it becomes challenging for them to make time to do inter-institutional work. As a result, Partlow suggested that the payoff from inter-institutional collaboration has to be particularly high for them to be willing to overcome the “hassle factor”.

Risk in the form of loss of control was a third barrier identified by Partlow. Although collaborating with other schools spreads out the risk of taking on a new solution, collaborating with other schools also takes total ownership out of the hands of each institution. Partlow found that the most successful collaborations were based around strong degrees of trust and having people at the table who sincerely wanted to be there.

Finally, timing of projects was the biggest and most significant barrier observed by Partlow. As a group, the CIOs recognized timing misalignment as a significant barrier to further, large scale collaboration and participated in a survey to determine what major issues were upcoming on each campus to ameliorate this issue in the summer of 2012. The survey resulted in
a grid where each institution noted whether they had already dealt with the issue, a decision was upcoming in the next year, or the decision was a few years out. CIOs can look across all 13 schools to find pockets of institutions that are facing the same problem, at the same time without having to individually poll other CIOs. Partlow noted that the ultimate impact of the chart is still unclear because it is a new initiative; however, from her perspective, it points to the level of sophistication of the CIOs as collaborators. She explained that “they’ve recognized that they’ve done the easy things together and now if they want to do they hard things they’re going to have to look more deeply and start to sync up their calendars so that they can find willing partners and actually engage”.

**Participant Questionnaire Results**

The context of IT collaboration within the CIC is further elucidated by the results of the questionnaires that IT leaders completed as part of the current study. Aggregation of these questionnaires both provides support for and complicates Partlow’s perspective on IT collaboration in the CIC. The participant questionnaire (see Appendix B) requested information on the background of individual respondents, the current institutional state with respect to IT and collaboration, and gauged IT leader interest in specific types of collaboration. As noted in Chapter 3, 24 out of the 27 interviewees responded to the questionnaire\(^4\). This section presents and analyzes the aggregated responses for current institutional states and interest in specific types of collaboration.

**Current institutional state.** A major component of the questionnaire was determining how IT leaders perceive their current institutional state on organizational structures and collaborative practices. Based on the review of literature, degree of centralization might impact

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\(^4\) Three individuals did not complete the questionnaire.
the amount of internal and external collaboration in which institutions engage. Because this study focuses not only on collaboration with other institutions, but also within each individual school, obtaining information on the degree of centralization perceived by IT leaders was important. This information also helped to generally contextualize the IT environment.

Table 5 shows the question asked:

Table 5: *Would you describe your institution’s IT structures as:*

<table>
<thead>
<tr>
<th>Highly centralized</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Somewhat centralized</td>
<td></td>
</tr>
<tr>
<td>Somewhat decentralized</td>
<td></td>
</tr>
<tr>
<td>Highly decentralized</td>
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</table>

As Figure 2 below shows, no responding IT leaders considered their organization to be highly centralized. The majority of IT leaders identified their institutions as decentralized: nine IT leaders categorized their institutions as somewhat decentralized, and another nine as highly decentralized. Four considered their organizations to be somewhat centralized. The high-level picture emerging from these self-categorizations is consistent with the literature—IT at these research institutions remains more decentralized than centralized.

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5 Originally, IT leaders were asked a question about the level of centralization within their IT organization as part of the semi-structured interview. However, after two interviews in the current study, it seemed more efficient and more likely to generate consistent answers to ask participants about the degree of centralization present in IT at their institution up front.
The state of general decentralization did not mean that IT leaders saw themselves as un-collaborative within their IT organizations, however. Respondents were asked to rate their institutional level of collaboration both within the institution and with another school based on the question shown in Table 6:

<table>
<thead>
<tr>
<th>Would you describe your institution as:</th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly collaborative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat collaborative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not very collaborative</td>
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<td></td>
</tr>
<tr>
<td>Not at all collaborative</td>
<td></td>
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</tr>
</tbody>
</table>

Figure 3 shows that all but one respondent felt their IT organizations were either highly collaborative or somewhat collaborative within their institution. Although the categorization of IT was decentralized, this did not connect to a reported lack of intra-institutional collaboration.

Figure 3 also shows that IT leaders perceived less existing collaboration when it came to
inter-institutional collaborative ratings. Three IT leaders felt their institution was highly collaborative, while five IT leaders categorized their schools as not very collaborative with other schools. No IT leaders characterized their schools as not at all collaborative, but the majority of IT leaders—16 respondents out of 24 —fell into the somewhat collaborative category. This is different from IT leader responses to internal collaboration, where 10 respondents felt they were highly collaborative and one selected not very collaborative. It appears IT leaders perceive less collaboration happening between institutions than within them.

Figure 3: Rating of extant intra- and inter-institutional collaboration. Figure shows how IT leaders rate their schools’ collaboration on an intra- and inter-institutional basis.

Furthermore, nearly early every IT leader was focused on improving the connection between central IT and the distributed units in the future. Figure 4 below shows the outcome of the following portion of the questionnaire in Table 7:

Table 7: How interested are you in collaboration:

<table>
<thead>
<tr>
<th></th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly collaborative</td>
<td></td>
<td></td>
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<tr>
<td>Somewhat collaborative</td>
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<tr>
<td>Not very collaborative</td>
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<tr>
<td>Not at all collaborative</td>
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</tbody>
</table>
Twenty-three out of the 24 IT leaders stated that they were very interested in collaboration within their institutions. The one remaining IT leader selected somewhat interested. These answers suggested that the stated desire to increase the amount of collaboration with distributed units was nearly universal for respondents.

Interest in inter-institutional collaboration was differentiated on this question, as above. Seventeen IT leaders still fell into the very interested category, while five IT leaders were somewhat interested in collaboration with other institutions, and two IT leaders were not very interested in inter-institutional collaboration. The indication given by this comparatively lessened interest in collaboration is a potential ambivalence towards inter-institutional collaboration.
Figure 4: Rating of interest in future intra- and inter-institutional collaboration. Figure shows how IT leaders rate their interest in collaboration on an intra- and inter-institutional basis in the future.

Summary of current organizational findings. Two major points stand out from IT leader responses to current organizational structures and broad collaborative interests. First, IT organizations within the CIC were largely rated on the decentralized end of the spectrum. Second, there were differences between perceptions of intra- and inter-institutional collaboration. Institutions were rated as less collaborative with other schools and less interested in future collaboration with other schools than in working within institutional boundaries. For existing internal collaboration, despite the decentralized nature of IT at most of these institutions, the majority of IT leaders felt that their organizations were already either somewhat or highly collaborative. IT leaders also expressed nearly unanimous interest in future intra-institutional collaboration.
In contrast, although the majority of IT leaders still felt that their institutions were at least somewhat collaborative with other schools, fewer individuals identified their schools as highly collaborative inter-institutionally. More IT leaders felt that they were not very collaborative with other schools. This difference carried into future interest in inter-institutional collaboration as well—a majority of IT leaders were only somewhat interested in working with other schools. This is unlike the breakdown for intra-institutional collaboration, which was more evenly distributed between very interested and somewhat interested. Overall, it appears that IT leaders in the CIC tend to be interested in both intra- and inter-institutional collaboration, but are less interested in working with other schools than within institutional boundaries.

These findings both support and complicate Partlow’s portrayal of IT collaboration in the CIC. Partlow believed that IT collaboration amongst schools in the CIC was profoundly successful and popular, and that instances of collaboration would only increase with time. The data support her claims in that the majority of institutions rated themselves as at least somewhat collaborative with other schools and were very interested in future inter-institutional work. The data complicate this picture because IT leaders’ experience with and interest in inter-institutional collaboration was lower than for intra-institutional collaboration.

**Interest in specific types of collaboration.** In addition to current organizational structures and general interest in intra- and inter-institutional collaboration, the questionnaire also requested that IT leaders provide insight into their interest in specific areas and types of collaboration. For both intra- and inter-institutional collaboration, IT leaders were asked to rate their interest in each of the four types of collaboration identified by Goldstein (2007) via the following question in Table 8:

*Table 8: Check the box below if you WOULD be interested in the following types of collaboration:*
Within your institution | With another school
---|---
Partnerships to develop an IT resource |  
Shared service collaborations in which multiple organizations band together to jointly operate an IT resource |  
Collaborations in which one institution elects to operate IT services on behalf of others, and |  
Collaborations in which an institution is a recipient of services provided by another institution. |  

In addition to their interest across these four categories, IT leaders were asked to rate their interest in collaborating on 10 specific IT areas also used in Goldstein’s study (2007). The question shown in Table 9 asked:

**Table 9: Check the box below if you WOULD be interested in collaboration in the following areas:**

<table>
<thead>
<tr>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network infrastructure</td>
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<tr>
<td>Enterprise information</td>
<td></td>
</tr>
<tr>
<td>Learning management systems</td>
<td></td>
</tr>
<tr>
<td>Enterprise directory/identity management</td>
<td></td>
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<tr>
<td>Disaster recover/business continuity</td>
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<tr>
<td>Data center</td>
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<tr>
<td>Instructional technology</td>
<td></td>
</tr>
<tr>
<td>Help desk/user support</td>
<td></td>
</tr>
<tr>
<td>IT security</td>
<td></td>
</tr>
<tr>
<td>Research computing</td>
<td></td>
</tr>
</tbody>
</table>

IT leader rankings of the four types of collaboration were fairly consistent between intra- and inter-institutional collaboration. Figure 5 shows the results of the question. As the chart demonstrates, IT leaders were particularly interested in two kinds of collaborations: those that involve developing IT resources—20 of 24 respondents selected this option for both intra- and inter-institutional collaboration—and shared services, with 21 IT leaders expressing interest in
this for intra-institutional collaboration and 19 selecting it for inter-institutional collaboration. IT leaders were slightly less interested in operating IT for others—18 selected it for intra-institutional work and 16 for inter-institutional collaboration. In comparison, receiving IT services or solutions was less popular for intra-institutional collaboration, with 15 respondents selecting it. Receiving IT from others was tied with operating IT for others on inter-institutional respondents, with 16 IT leaders expressing interest in this type of collaboration, as well. Operating IT for others and receiving IT from others were less selected by IT leaders than developing an IT resource or shared services; however, the majority of respondents still expressed interest in all four types of collaboration.

Figure 5: Rating of interest in broad areas of collaboration. Figure shows how IT leaders rate their interest in four areas of collaboration on an intra- and inter-institutional basis.

Results from IT leader responses to interest in the 10 specific areas of IT collaboration were consistent with the variation in interest in the four types of collaboration demonstrated above. Figure 6 below shows the number of IT leaders who expressed interest in each of the 10
areas. For both intra- and inter-institutional collaboration, the majority of IT leaders were interested in all 10 options. However, as with the four types of collaboration, some areas were more interesting to IT leaders than others. Working collaboratively on data centers was the most selected option when considering responses for both types of collaboration, with 22 IT leaders choosing it for intra-institutional work and 21 for inter-institutional work.

Figure 6: Rating of interest in 10 specific areas of collaboration. Figure shows how IT leaders rate their interest in 10 types of collaboration on an intra- and inter-institutional basis.

Intra-institutionally, IT leaders were as interested in collaborating on help desk and user support—22 responses—as they were on data centers. Two options received fewer than 19 indications of interest—enterprise information garnered 18 responses and learning management systems was the least selected option with 16. Inter-institutionally, collaboration on data centers
at 21 responses surpassed other IT collaborations, with disaster recovery and business continuity coming in second at 18 responses. Enterprise information and enterprise directory/identity were the least popular with 14 selections apiece.

As with their responses to several other questions, IT leaders were not equally interested in intra- and inter-institutional work across the 10 IT areas. Unlike their responses above to the four collaboration types, where IT leaders expressed relatively similar levels of interest between intra- and inter-institutional work, IT leaders were generally less interested in working with other schools than they were with working within their own institution. Furthermore, learning management systems had only one additional respondent express interest in inter-institutional collaboration—for a total of 17—than in intra-institutional collaboration, which had 16 expressions of interest.

**Summary of interest in specific types of collaboration.** IT leaders expressed comparable preferences for intra- and inter-institutional collaboration across the four types of collaboration. IT leaders were not equally interested in the four areas—developing an IT resource and shared services were the most popular selection in both categories. Divergent interests were also apparent in the 10 IT collaboration area responses. IT leaders expressed differential interest across these areas, and there was clearly more enthusiasm for working within institutional boundaries than outside of them.

As with the findings from the previous section, Partlow’s perspective on IT collaboration in the CIC was confirmed and complicated by the data. The majority of IT leaders were interested in working with other schools on each of the collaborative topics, which supports Partlow’s belief that IT leaders are interested in working together. Partlow also argued that IT leaders found certain areas more ripe for collaboration than others, and that some might not
develop as much for inter-institutional work. This was also supported by the data. IT leaders were more interested in some forms of inter-institutional collaboration than others. However, as with the data from the previous section, the difference between Partlow’s description and IT leader responses lies in the disparity between interest in intra-institutional collaboration and inter-institutional collaboration. While IT leaders were relatively equal in their expressed interest for intra- and inter-institutional collaboration on the four major types of collaboration, there was clearly less of an interest in inter-institutional collaboration on the 10 IT-specific collaboration options. This suggests the picture of collaboration in the CIC is potentially more complex and nuanced than the hypothesis of general enthusiasm for all collaboration post-2008 recession discussed in Chapter 2.

**Context Conclusions**

The three segments of this chapter—the pilot study findings, history and context of the CIC, and the results of the questionnaires—create a detailed picture about the context in which the current study is situated. The current study evolved from the experiences and findings of the pilot, which demonstrated that IT leaders were interested in collaboration as a result of cost constraints and the pace of technological development. Collaboration meant more things to the IT leaders in the pilot than were included in Goldstein’s (2007) scope, including working with for-profit vendors. Additionally, the pilot showed that the decision to engage in collaboration articulated by the four participants was more supportive of the bounded rationality model than the idea of transaction cost economics.

After completion of the pilot study, speaking with Partlow helped frame the topic within the specific lens of the CIC. Collaboration amongst the schools in this consortium does not occur in a vacuum—most of the schools in the CIC have been members for decades. Additionally, the
existence of an active CIO working group has led to a history of large scale, effective collaborations that incentivize future cooperation. Thus, the 13 schools in the CIC work within a unique environment when it comes to inter-institutional collaboration. Although these institutions may collaborate outside of the consortium, the existing structures and collaborative projects coming from the CIC form a historical base. Partlow asserted this influences inter-institutional collaborative behavior. To her, CIOs were strongly interested in collaboration, but they were more interested in some types of collaboration than others.

Partlow’s perspective was elucidated by the results of the questionnaires, which provided additional information based on the opinions of IT leaders themselves. Organizationally, it appears that institutions in the CIC tend to be more decentralized than centralized, and are more collaborative internally than externally. For the future, most IT leaders ranged between being very interested and somewhat interested in both intra- and inter-institutional collaboration. However, intra-institutional collaboration was more popular than its counterpart. These findings support Partlow’s belief in IT leader enthusiasm for inter-institutional collaboration, but add the caveat that IT leaders appear somewhat more vested in working within their institutions.

For the portion of the questionnaire that asked about specific types of collaboration, there were two key findings: first, that IT leaders are not equally interested in all forms of collaboration—some types and areas are more popular than others; and second, that while the majority were interested in each type and area, IT leaders were more interested in intra-institutional collaboration on nine of the 10 IT-specific collaboration areas. These findings add the same caveat. Partlow saw that IT leaders are interested in working inter-institutionally, and they are more interested in some collaborative projects than others. However, IT leader responses diverge from Partlow with respect to intra- and inter-institutional work because the
questionnaire results indicate that IT leaders still are more interested in working within their own schools than in looking outside their boundaries.

The ultimate suggestion from the three components of this chapter is that collaboration on both an intra- and inter-institutional basis is a complex and inconsistent process. IT leaders in the pilot made decisions differently, and although the enthusiasm for collaboration Partlow saw was present in the questionnaire results, it was also clear from the consistent differences in intra-versus inter-institutional collaboration that the story that emerged from the interviews was not likely to be a cut and dry kowtowing to the virtues of all types of collaboration. Indeed, the findings presented in Chapter 5 show an even more complicated situation than Chapter 4 would suggest.
Chapter 5: Findings

This chapter presents the findings of the study. The data presented in Chapter 4 suggest that IT leaders were more interested in intra- than inter-institutional collaboration, and that IT leaders were, on average, more interested in some kinds of collaboration than others. The findings from the four phases of coding and analysis used in this study confirm and extend this narrative. Ultimately, the data suggest that IT leaders have very different ideas about what constitutes a worthwhile collaboration, the value of collaboration, who they want to work with, and how they make decisions about engaging in collaboration.

Although these differences resulted in a plethora of rival explanations and a large table of super rival codes, these varying and often contradictory viewpoints are not true rivals in Yin’s (2009) sense of the word. The critical realist approach allows multiple valid interpretations or beliefs about a topic (Maxwell, 2012) that need to be resolved before one “final” explanation is decided upon. Rather, these multiple viewpoints, and the analytical strategy that forced them to be considered and analyzed explicitly, helped in the generation of overarching themes. These themes eventually developed into a different and more nuanced framework for understanding collaboration in IT, which is presented in Chapter 6.

The three major themes that emerged from the data to construct a diverse narrative of IT collaboration in the CIC were: human factors, institutional factors, and collaboration type factors. Human factors are those sub-themes that relate to personal perspectives, expressed beliefs, and interpersonal relationships. Institutional factors are those sub-themes that IT leaders identified as an influence in their interest in collaboration from within individual institutional boundaries. Collaboration type factors are sub-themes that IT leaders noted had an impact on collaboration based on the specific circumstances of a proposed project.
Human Factors

Human factors constitute the first major theme that emerged from the interview data. These comprise the impact of personal philosophies, expressed beliefs, and previous collaborative experiences that can influence IT leader interest in collaboration. There are three major sub-themes within this category: the influence of leadership, assessment of other individuals, and assessment of other institutions.

Leadership influences. Individuals within an institution, both in the form of IT leaders and other institutional leaders outside of IT, appear to impact IT collaboration in two primary ways: first, through their own willingness to collaborate or their perspective on collaboration—in short, their internal beliefs—and second, through the way they engage on the topic with other individuals—their expressed philosophy.

Internal beliefs about collaboration. Similar to patterns emerging from the analyses of the questionnaire, The majority of IT leaders shared that they were interested in intra- and inter-institutional collaboration, as well as in each type of collaboration, during interviews. Yet, on average, IT leaders were less interested in inter-institutional collaboration than in intra-institutional work. Additionally, IT leaders were more interested in some types of collaboration than others. These findings broadly suggest that individual perspectives and values about collaboration were not consistent. These differences indicated in Chapter 4 developed into a robust sub-theme based on round three of coding. Individual perspectives on collaboration\(^6\) contained by far the most rival explanations of any code, which further signifies that there are many different perspectives about collaboration held by IT leaders within the CIC.

General perspectives. Several IT leaders saw collaboration as extremely important, or even vital. One IT leader, Widald, forcefully made this point. Widald asserted: “Collaborations

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\(^6\) Based on coding by research question 1: “How do IT leaders view the idea of collaboration?”
are not a luxury, they’re a necessity. The point really needs to be made that participation in collaboration is essential.” Prokopios was equally convinced. Prokopios felt that for both intra- and inter-institutional collaborations:

I think you’re obligated to collaborate….If I’m not going to work with central IT, well, central IT is not going to want to work with me. Central IT is going to provide me with minimal services and ostracize me because they don’t want to deal with me. The same is true among universities. If you get the reputation that you don’t want to collaborate and you’re closed, and some have that reputation…well, effectively you blackball yourself among the others. Then, if and when you are in dire straights and you do need to…make some major changes…well. Good luck getting anybody to open their doors and show you what they are doing.

Prokopios saw avoiding collaboration almost as a form of professional suicide, and was comfortable acknowledging an “obligation” for IT leaders to collaborate, as a result. Widald and Prokopios, among others, held an unmitigated view of collaboration’s importance. Their perspective was clear—collaboration needs to happen within and amongst schools.

*Inter-institutional caveats perspective.* Other groups of IT leaders agreed that collaboration was important, but felt that the value of inter-institutional collaboration fell into very specific areas rather than being of general use. This was especially true when it came to inter-institutional collaboration. For example, Thales had a sense that collaboration amongst schools no longer made sense in some areas. This did not mean that Thales did not see inter-institutional work as valuable; rather, that it would take place only in certain contexts. Thales clarified:
While I don’t have a defeatist sort of perception about [collaboration], I do honestly believe that…we’ll be coming together to negotiate contracts rather than to build services because I just don’t know that that’s realistic. Although when it comes to networking…and identity management…and only we know who our people are and whether they should be authorized or authenticated to certain systems…and so I believe that on a technical level we’ll be working in that space and not necessarily on applications and/or storage infrastructure…because I honestly believe that we’ve missed that opportunity.

Thales felt that the nature of inter-institutional collaboration was changing and that only certain forms of work would be useful in the future. Whereas in the past other options such as storage or application development would have been desirable for collaboration, the fact that it had not occurred and the technology dynamic had shifted meant that the door was closed to some types of collaboration.

Heliodoros had a similarly contextual desire for collaboration. Heliodoros was very enthusiastic about the merits of inter-institutional collaboration, but thought it was going to occur largely on joint negotiations with vendors. Heliodoros argued that today’s collaborations were going to take a different form:

Now you start to look, and you say “well, gee, can we skip the step of universities collaborating and just take services from the cloud”?...How do we then try to realize economies related to negotiating contracts…How do we put pressure on [companies]…to develop their products more fully?...So, collaboration is still essential although it changes. We may not be delivering all the services. Now we’re delivering services around getting access to those services.
In Heliodoros’ model, schools in the future work not on jointly developing services but on negotiating with vendors for cost efficiencies from economies of scale and for vendor-provided solutions that are more customized to higher education. However, Heliodoros was completely in favor of idea sharing amongst CIOs as a form of collaboration. Heliodoros maintained that collaboration was essential for CIOs despite thinking that certain areas of collaboration would be irrelevant due to the rise of cloud computing. Heliodoros stated: “A CIO could not survive if he or she didn’t have other CIOs to consult with in a regular way. They just couldn’t survive.”

Regardless of what happened with technological developments, in Heliodoros’ perspective, CIOs would always need one another to compare ideas, provide emotional support, and try to get to the enabling “wins” that come from major, successful collaborations. Heliodoros and Thales had a contingent view of collaboration—it was important, there were useful areas, but collaboration’s usefulness fell into a delimited set of issues.

Conversely, some IT leaders were jaded about collaboration, or felt that the general tendency was towards a great deal more talk than walk when it came to projects—everyone says they want to collaborate, but the actual instances of collaboration are nowhere near what would be expected based on this rhetoric. Rocco agreed that collaboration was important, but noted that higher education has done much more talking than walking on collaboration:

I’m not sure where the right places to cooperate are or [what] the right modes of cooperation are. . . . Institutions were hit with these financial crises and yet they also had administrative systems that were aging and needed to be replaced. There was the idea that we could do it cooperatively and solve two birds with one stone. I don’t think that that kind of the track record of all of those systems necessarily says that’s a winning model. We’ve had some successes but it certainly hasn’t been to where we would’ve hoped 10 or
15 years ago. And I just I know that in…my peer group…we often talked about collaborating together but rarely did it. It was always great to go to meetings and talk about what was happening so that you would understand that you weren’t crazy and you could get ideas about how to do things differently, but there was little shared work that went on.

Rocco articulated a sense that everyone believed collaboration was going to be the solution to the financial crunch over the past decade, and yet this anticipated savior did not materialize much beyond idea sharing and commiserating. Rocco’s perspective was more skeptical than Heliodoros and Thales, who still saw definite value in types of collaborative ventures. Yet, their perspectives are consistent with Rocco in the sense that much of the work they focused on as interesting did not involve direct school-to-school development of resources. Rocco felt that more talk than action occurred with collaboration in the form of idea sharing, and idea sharing was one area that Heliodoros in particular identified as valuable.

Aghi agreed that more talk than action occurs with inter-institutional work. From Aghi’s perspective, it was related to a desire to look good as a person or an institution rather than achieve efficiencies. Aghi explained:

I think there’s a lot more talk…than people actually doing it, and you know when I watch people standing up and saying, “for the good of higher education you all ought to get on board and use our services”—and we do it too, [my institution] does the exact same thing—what is really happening there is they are trying to get a competitive advantage for their university…The motivating factor is that will look good for [institution]: “Look! Everybody comes to us for this, we must be really good at it. And it will look really good for me as a CIO because I’ll be on the front page...” And that’s sort of an epiphany that
I’ve had probably within the last six months…it dawned on me that it’s because it doesn’t look good for us if we have to go to another university and use their service. So there’s this dynamic out there that is there’s more of a conversation than real collaboration happening.

This statement came after Aghi explained that collaboration was vital. The experiences Aghi details in this explanation show that it may appear logical to collaborate on the surface, but practically speaking, everyone is still in it for themselves. More talk than action occurs, to Aghi, because everyone wants to look good by offering solutions, but no one gets on board because it would make their own institution look bad. Aghi’s perspective is unlike the previously articulated, delimited perspectives on collaboration that focused on a sense that only certain areas were ripe for collaboration, or that idea sharing was the only real way collaboration plays out. This is more than a personal preference for certain types of collaboration— Aghi’s perspective is a philosophy about why inter-institutional collaboration will only work in very limited areas due to human and institutional nature rather than technological or organizational barriers.

Hunfrid was also skeptical about the future of collaboration, albeit for different reasons. Hunfrid felt that IT leaders were overburdened with projects, and that the idea of focusing on collaboration with other schools was off the radar screen because “it’s hard to drain the swamp when you’re up to your ass in alligators. They just don’t have the time to think about going that way.” Hunfrid was cited by other IT leaders in the study as a thought and action leader on inter-institutional collaboration, yet Hunfrid’s own perspective on collaboration was nuanced. Hunfrid found that collaboration is a true challenge for organizations because so many other competing demands require attention. Hunfrid’s articulation of the burden of competing demands negating interest in collaboration for many IT leaders speaks directly to how complicated individual
perspective becomes as a theme—even as a major collaborator who acknowledges personal efforts to further collaboration on campus and with other schools, and who is known amongst a peer group for these efforts, Hunfrid saw inter-institutional collaboration as a complicated and not always feasible prospect.

Intra-institutional enthusiasm. This divergence of perspective—with some CIOs enthusing about the idea of collaboration and others evincing very qualified interest—was not apparent for intra-institutional collaboration. IT leaders saw working more collaboratively within their institutions as extremely important. Gwrtheyrn, for example, felt that in the current budget environment it simply made sense to work more with the central IT organization. Gwrtheyrn explained:

From my perspective, if it is not a service in which we can add value by doing it differently and better—when there is a need to do it different and better—then we should get out of that business. I do not have a very large IT staff, and so anything that I can do to take things off their plate—if they’re not doing it particularly better or at a cost savings relative to the central service—then I’m going to go ahead and move those things and let us focus on areas in which we can typically provide a higher level of direct customer service.

Gwrtheyrn, dealing with limited resources, was very focused on leveraging central IT capabilities as much as possible. Prochoros echoed this, saying, “here at [institution], we have been operating in a very distributed, autonomous kind of way, and we recognize that both from an efficiency and effectiveness point of view that that probably isn’t the most optimal way to operate. So we are working towards more collaboration”. Prochoros felt that more intra-
institutional collaboration was the wave of the future for the institution so that operations could be improved.

Albanus drove this appreciation and desire for more intra-institutional collaboration home in colorful rhetoric. Albanus acknowledged that like Prochoros’ university, the institution operates in a very decentralized manner, and that this isolationist behavior had to change. Albanus analogized:

Everybody has to see they are in it together. If I can be crude, if a fish farts on its side of the fish tank it smells on the other side of the fish tank. And we know that now. We had the luxury of being able to live the illusion of we’ve all got our own fish tanks, but having the metaphor that there are times when we are actually all in the same fish tank, and adding that context, has been critically important to getting people to change the way they work together.

Albanus described in this analogy the evolution of distributed IT as autonomous and almost in its own “fish tank”, which was now being thrown into stark relief by the present needs of the institution. There was only one fish tank, and distributed IT and central IT had to learn to share it more effectively.

*Overall influence of perspective.* These varying and often contradictory perspectives suggest that an IT leader’s willingness to get involved in collaborations is going to be different depending on the philosophy or attitude about collaboration held by the IT leader in question. For one who feels overburdened, has the sense that collaboration is a fruitless investment given the pace of change with vendor capabilities, or believes strongly in idea sharing but questions the value of engaging in actual projects, collaboration may be an unlikely choice. For an IT leader who feels collaboration is vital to institutional success or that CIOs and IT leaders are
“obligated” to collaborate, the general orientation towards collaboration is friendlier. To state it simply, IT leaders who believe collaboration is important are more likely to want to engage in collaborative projects than those who do not. Additionally, there was a clear difference in enthusiasm for intra- versus inter-institutional collaboration. Intra-institutional work was consistently popular amongst distributed IT leaders and CIOs alike, whereas inter-institutional work was often hedged with qualifications.

**Expressed beliefs about collaboration.** Interest, or lack thereof, on the part of IT and other institutional leaders can in turn influence the way that others in the organization feel about collaboration. Where internal beliefs may impact the individual decision making process about engaging in collaborative ventures, the expressed beliefs about collaboration espoused by IT leaders and other institutional executives can impact the willingness of other individuals at an institution to work on intra- or inter-institutional collaboration. The perspective of leadership outside of IT at the executive level plays a major role in enthusiasm for taking the risks that collaboration requires. When asked whether working with other schools factored into IT strategy, Georgius frankly stated:

Well, it should, and intellectually it does. The difficulty is the people that pay me aren’t anybody at any other Big 10 institution…no CIO ever got fired because he didn’t have a vision, they get fired because the buses don’t run. That’s the truth—you have to make your operations work, and all the people I’ve seen removed from jobs, including two or three this year in top schools, are because of operational failures in their organization, not because they don’t have a wonderful and captivating vision. The fact is that cooperating with other institutions typically comes under the rubric of fascinating vision rather than operating reliability.
In essence, although Georgius felt inter-institutional collaboration should be part of IT, leadership at the executive level was not focused on this type of work. If inter-institutional work was not a core part of what Georgius felt superiors expected, then it was not a priority.

The sense that upper level administration’s enthusiasm or support for collaboration influenced interest in collaboration down the chain was echoed by other interviewees. Titus expressed this imperative simply: “collaborators have to have pretty strong organizational support at the leadership level that working across these lines is a good thing.” Methodios was similarly concerned with generating leadership engagement in collaboration. Methodios elucidated the importance of engagement through the example of an existing project:

The provost went to the deans and made the presentation to the deans. And then the provost said we are not gonna pursue this unless the deans wanted to. If the deans want to do this then we will go forward with it, if the deans don’t want to pursue it then we’re not going to go forward. And the reason for that, of course, is the risk that you would run is that you would invest...[but] instead of saving money you would be increasing your costs. Methodios’ example showed that the provost wanted an initiative to succeed, but knew that it would not without additional support from college leaders.

Hugo explained why a lack of strong commitment to collaboration across multiple leaders at other schools was important for inter-institutional collaboration:

We have seen instances where...a key individual, typically in the context of this conversation a CIO, makes a strong personal commitment and carries resources along with it to a certain project but if they leave the institution, then the institutional commitment vaporizes. So we like projects where there is a true institutional commitment—it’s not just one person that’s excited or personally interested and that the
institution stands behind it and there’s multiple people at the institution that are dedicated to the success of the project.

In Hugo’s experience, one individual’s commitment was insufficient to justify inter-institutional collaboration. More people needed to be invested to make the collaboration feel safe to join in because persistence to success was more likely.

Hrodland explained how support or interest in IT from the provost can change intra-institutional collaboration based on a spectrum of experiences. Hrodland said:

I’ve gone through some leadership changes here…while I’ve been in my position…and every one of them has a little bit different idea about the role of the central IT unit compared to the role of the collegiate unit. And so that presents some challenges. So that certainly is one of those “it depends”, because one of the provosts that we had wanted to centralize everything. He really wanted to have a lot of control, and that just gave us a different perspective on how we approach things. The current provost is exactly the opposite. He would just as soon have the colleges really sort of lead the way and have the central IT…support them in what they’re trying to do…rather than trying to lead them.

And one provost didn’t care. I mean he just didn’t. IT was not a big thing for him. So all of those, they just give it a different perspective on how I approach the collaboration and the amount, the balance between centralized and distributed units, and the collaboration between those.

Hrodland had been through a cycle of leadership changes and saw how the priorities of executive level leaders could change the IT organization’s collaborative behavior. The provost set the direction for how much intra-institutional collaboration Hrodland would attempt to implement—provided the provost was interested in IT. The vision of executive level leaders outside of IT can
strongly impact the practices of IT leaders at an institution. Hunfrid furthered this point by observing that many schools have weakened the role of the CIO to the point where he or she cannot make, or is afraid to make, controversial decisions and engage in collaborations outside of his institution. Hunfrid felt that if a CIO is not in a role of power within the institution, direction from executive leaders outside of IT is more important than in a situation where the CIO is strong.

Within the CIC specifically, the commitment of CIOs to inter-institutional work was specifically noted as helpful in generating successful inter-institutional collaboration. Hrodland asserted, “the CIC CIOs have a pretty tight knit group. And staff in all the CIC universities understand that, and so that when we do charge people and say ‘hey we want you to find a way to do this together’, they take it pretty seriously”. Pomponius explained that within the CIC on projects:

The CIOs need to bless it, and they’ll have a sponsor or liaison or facilitator who participates and ensures the connection across all the activities sponsored by that…So that there is some transparency there. And they report up to their provosts about the activities they are engaged in, and in other areas of business likewise, so that also it’s mostly about the groups of peers doing things, but there’s also that degree of accountability…that understanding that it’s actually important and not just interesting or theoretical, that there’s real value in getting it done. That helps to motivate folks too. Pomponius had found that inter-institutional projects within the CIC were successful because IT employees at each participating institution knew their CIO was on board and that their provost was aware of and supporting the project. Because leaders were heavily invested in the projects, staff placed on them were motivated to make them succeed.
Thus, IT leaders saw leadership engagement and support for collaboration as important for both intra- and inter-institutional collaboration. Even within the specific context of the CIC, the engagement of CIOs and provosts in overseeing and keeping tabs on projects arose as an example of how this expressed interest and value for collaboration can impact the way collaboration plays out within and across institutions.

**Assessment of other individuals.** Assessment of other is similar to the internal belief sub-theme: both center on the subjective opinions of individual IT leaders. However, in this case, the opinions are not about collaboration in general, but about specific potential collaborators with whom IT leaders might work. This sub-theme focuses on perceptions that IT leaders have about the individuals involved in a potential collaboration. There were two major factors within this sub-category that had a strong influence on most IT leaders—previous experience and personal relationships.

**Previous experience.** Many IT leaders agreed that previous collaboration experiences influenced their interest in future collaborations. IT leaders used past experiences to make judgments about the merits of future interactions—whether someone was reliable, committed, would pull his or her weight, and so on. Albanus explained that:

> People need to be able to visualize success. And then they can begin to embrace change, and when you have a win, or a community-perceived win, around anything…it completely changes…Until that…happened it was all speculative, and now that we’ve done that, or now that many people have observed that, because they know it’s possible, they add it to their visualization of how the dynamic is gonna be tested…I’m going to engage you, I’m going to test you, but I’m going to test you for the purpose of doing something better as opposed to either just testing it or just getting my way.
So, to Albanus, a past successful experience working with another individual could help an IT leader see how future work could be worthwhile. Widald agreed that a past track record of successful collaboration could be used to demonstrate success and spur future work. Widald also looked for specific types of collaborators based on experience:

I always look for people with integrity, and those are the only people I want to work with. I’ve been in higher education for 34 years, and I just don’t have patience any more for working with people who play games and who are disingenuous or opaque. I look for people with integrity, people who have similar world views to my own about the importance of higher education—frankly, that it’s a calling, and that we’re in it to help the missions of our universities….I use a great deal of candor in my conversations with partners, and I look for people who are comfortable with that, but I have a particular focus on civility in all interactions. I really won’t tolerate incivility. So that’s who I look for partnering with. I look for smart, innovative, partners who share values with me and my institution. And we end up finding each other. There are some who I don’t do business with just because I’m not comfortable with them.

Widald wanted to know a potential collaborator is appropriately aligned based on previous work. Previous experience with collaborating had taught Widald to look for partners who had similar values and interests, who represented themselves honestly and candidly, and who shared a similar vision of higher education. Thus, past experience with collaboration not only helped Widald identify future partners, but over time revealed certain traits Widald found fundamentally necessary for a potential partner to have.

Tied into the idea that past experience could prompt future interest, Hrodland explained how working with other individuals within the CIC could prompt future collaboration:
Within the CIC, the OmniPop is a great collaboration. One that, if you knew the personalities of the people involved in getting that going, you would say that had a 0.0% chance of succeeding, and yet it did. And it’s been a great thing for everybody involved. It saved millions and millions of dollars, it’s enabled all kinds of new science, it’s just a wonderful thing…So, some of these very technical people who really like to take control and just do things by themselves put that aside because they could see the benefits of working together, and they did…There’s a lot of new people that have turned over in that six years, but the collaborative environment was really impressive…The new people sort of get indoctrinated… They come in there pretty skeptical sometimes about whether it’s really going to work, and then pretty quickly the culture of the group is collaborative and so they absorb that and become collaborative themselves.

In this experience with the OmniPop group, Hrodland saw people who ordinarily would not work together be encouraged by success and pass that collaborative relationship experience down to new generations of collaborators who joined the team. As a result, the group was highly collaborative and invested in future collaboration down the chain, regardless of the introduction of new members or the departure of old ones.

Gerold qualified interest in past success with the caveat that it was not necessary to personally have had successful interactions with an individual to be willing to collaborate—rather, the person’s perceived ability based on knowledge of past successes was more important. Gerold explained:

This is a really small field, so I will collaborate with people that I know have done a good job on their campuses. Everybody knows each others’ business, so if this is a person that has a history of delivering for their campus and they’re going into a collaboration with
me, I’m feeling very good about that. It’s not necessarily that we have to have collaborated before, as long as I know that this is a person that can deliver on campus. In this case, personal experience was not necessary, but knowledge of a person’s experience was. This can be summed up as experience by proxy—Gerold wanted successful partners, but trusted that personal networks could supply sufficient information to determine whether someone was a good partner without firsthand knowledge. While personal experience was not necessarily crucial for all IT leaders—and not all IT leaders mentioned personal experience as vital—these statements make it clear that it can be a factor for some IT leaders in making decisions about collaboration.

**Personal relationships.** Tied closely to past experience was the sense that a desirable collaboration partner was someone with whom IT leaders had a personal relationship. This sub-theme was extremely important and consistently present in the data. For both intra- and inter-institutional collaborations, the majority of IT leaders were highly concerned with developing relationships with collaborative partners, in large part because these relationships generated trust. Hero, for example, stated, “collaboration is absolutely foundationally built on trust. So it doesn’t matter if it’s these IT units trying to work together on some service offering or if it’s me and my neighbor trying to agree on how we might deal with some tree trimming or something. It really comes down to a measure of trust.” Hero saw trust as the key component of successful collaboration.

Several schools were investing heavily in programs to develop personal relationships between central IT and the distributed units in order to improve trust and foster collaboration. Three institutions mentioned attempting this through hiring an external personnel development
firm to run leadership trainings that bring departmental leaders together. At Akakios’ institution, IT leaders:

Didn’t have trust, didn’t have collaboration...[So we] centrally started doing [development program] a couple times a year and we have roughly 30 people per class, so we have roughly half come from central and other half come from collegiate IT around campus...and that has really helped central and de-central people talk about issues in a non-threatening, in some cases hypothetical, sorts of things to work on. Thus, they build relationships before there is an issue that central has to change or de-central has to change. They say, “Oh yeah! I know Sally from that training, she was a pretty good person”...so you are over that hurdle of, “why are you knocking on my door?” and, “what do you want from me?” and it’s: “I know from that...training that you’re a reasonable, trustworthy person”...I think that’s worked well. So we have people wanting to do that rather than being forced.

Akakios thought a training program was a way to help IT professionals humanize and trust one another, and deconstruct barriers that had arisen from a change-leery culture. These IT leaders were interested in developing more informal meeting opportunities that would foster a sense of fellowship amongst staff to lead to more effective working relationships. Although Albanus’ institution was also participating in a training program, Albanus felt it was important to also spend time and money on picnics, breakfasts, lunches, and other less structured meeting opportunities. Other institutions were investing in new governance structures and committee models, as well as creating less formal meeting opportunities to foster relationship development.

For several CIOs, relationship development was a major appeal of working within the CIC. The CIC meets four times a year and members get to know one another; thus, there is an
established level of trust and camaraderie. Meinrad even commented that the primary benefit derived from the CIC is the relationships with other CIOs. Meinrad argued:

We know each other…So, [two CIC schools], CIOs from there have done a conference call with them about a [project]…The fact that I had dinner with them two weeks earlier at the CIC meeting, there’s a value in that because I know those two…I know what their interests are, those sorts of things…There’s some value in having a personal relationship with them, and that only comes in face to face. It costs two days once a quarter to go sit down and have a face to face.

Meinrad thought the investment of traveling to and attending CIC CIO meetings was worthwhile because it helped forge relationships with other CIOs, which could result in independent collaborative opportunities outside the structure of the CIC. Personal relationships, not the consortium, were the driving factor.

While important, personal relationships were not universally a decision making factor for IT leaders. As with Gerold’s perspective on past experience, Gerold was not concerned with having a personal relationship if the other IT leader had a reputation for effective work. Hrodland took an even stronger stance, asserting that trusting a partner was unnecessary as long as the institutions involved in the project were aligned with one another. Hrodland described a change of heart on this topic:

The funny thing is, five years ago I would have said trust is an absolutely necessity. And I found out that it isn’t, completely. You can have successful collaborations without trust. Everything else has to be right, but sometimes you say, “you know, I don’t have a lot of trust with these guys, but they are aligned exactly with what we need to do,” and so you end up doing it together…if you have the same business process, the same technological
architecture, the same timing, the same goals, if all of that lines up, even if the trust level isn’t high, you can still have a successful collaboration. That doesn’t mean that it feels real good doing it—you’re pretty uneasy about what’s going on—but you can be successful in that way.

Hrodland acknowledged that it was not comfortable to work without trust, but that it could be done if other factors were in place. Despite these intermittent assurances that trust and personal relationships were unnecessary, or at least surmountable, for many IT leaders they were clearly important. While the contradiction is important to acknowledge, the relevance of personal relationships as a sub-theme remains.

**Assessment of other institutions.** Similar to the way in which IT leaders evaluate other individual collaborators, they also appear to make judgments about collaboration based on their assessments of the other institution as a whole. Certain traits of other institutions could influence IT leader interest in collaboration. The two factors that had a consistent impact on interest in collaboration were past experience and institutional type. These two items appeared to be important to many IT leaders regardless of the inter-institutional collaboration they were considering.

**Past experience.** In addition to partially basing decisions to collaborate on past experiences with individuals, IT leaders often appeared to base decision making upon past experience with an institution. Hero explained simply that, “if you’ve tried [collaborating] before and it’s worked pretty well, you’re going to be a lot more likely to want to do something again in the future.” Eburwin articulated a specific appreciation for past experience with CIC schools:

If you’re in the CIC you actually have…a 50 year history of being together. You have the provosts that are very much in the loop leading the way—you have kind of political
coverage to work together. No university would or CIO would say, “oh no I don’t really like to work with other people”…But there are some universities and some leaders that there isn’t that interest…Whereas the CIC, the baseline is, “hey we’re gonna work together.” It’s just a matter of how do we do that, and how far do we take it. On the other hand, we’re certainly willing and interested in working with others. Probably [it] makes sense that they would be R1’s, but not necessarily. So, a lot of it is…do you trust the CIO, is the institution lined up culturally, can you sell it on your own campus, is there a risk to this as far as somebody seeing your admissions data…With the CIC, even though we’re all competitors in many ways, politically you just don’t have to fight that battle. It’s just sort of normal to want to collaborate with them, and that’s great because it is challenging to collaborate, and you don’t want to have to feel like you’re a pioneer—“Hey should we even do something with [non-CIC school]? What’s that about?”—you don’t have any of that with the CIC.

Eburwin found that there was a level of institutional trust built up for other schools in the CIC that was not present with new partners that made collaborating with CIC institutions easier than those outside the consortium.

Methodios drew the idea of trust into relation with quality for inter-institutional collaboration. Methodios said, “collaborating across the large universities isn’t always easy, and there has to be…trust and respect. You have to trust that the other university is going to deliver and you have to respect the quality…that the quality of what they do is going to meet your standards.” Methodios felt that trusting that an inter-institutional collaboration partner was going to help produce a quality outcome was vital to effective collaboration.

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7 Eburwin was referring to Research 1 institutions, which was a previous Carnegie Classification term
Alternatively, Gwrtheyrn explained that institutions that are leery of collaboration “may have the wisdom of having lived through some bad collaborations. But I think that is a very dangerous thing for institutions, and I think institutions have to get better at collaborating.” To Gwrtheyrn, negative experiences with collaboration could turn an institution away from future efforts, and this gun-shyness was a hurdle to overcome.

**Institutional type.** Institutional type also emerged as an important trait for many IT leaders. However, opinions about which type and the impact of type upon collaboration were not consistent across IT leaders. Conflicts emerged over whether public vs. private status was important, whether institutional size mattered, and whether institution type itself was even relevant. Ultimately, some IT leaders were highly motivated by working with specific types of institutions and factored it into their decision making. For example, several respondents expressed interest in working with what they perceived to be similar types of institutions—those within the CIC, or other research universities—because there was a common sense that these institutions face the same kinds of problems, have similar missions, and would be interested in resolving common problems in a similar way. Aghi described the appeal of working with similar institutions:

> Within higher education, all are not created equal. The things that [other institution in state] is solving, they’re very different problems than we’re trying to solve. So you need like organizations coming together. That’s one of the problems that we have with some of the more general higher education sorts of conferences. We go, and we’re talking with the College of the Desert, and…there’s no comparison between our two institutions, there’s virtually nothing to talk about…I don’t pretend to understand the industry in great depth, but private vs. public, large research…if you get like institutions together you’re
gonna get a lot better chance for collaboration than if you partner two very different institutions.

Aghi felt that institutions need to be similar enough to have a common ground for conversation. From Aghi’s perspective, “similar” meant of a comparable size and possibly of the same institutional type—a public with other similarly sized publics, for example. Without this base similarity, Aghi found that there was not enough common ground for productive collaboration—instiutions of different types and sizes did not face comparable issues. Nynniaw also saw the appeal of working with similar institutions:

We’re always trying to look for folks out there, campuses out there, that are most like us because obviously those comparisons are the ones that make the most sense. But at the same time, we don’t want to rule out looking at innovative things that are happening on other campuses—smaller, private, not like us—but certainly as I make comparisons and wanna benchmark, we typically are looking for like institutions as much as we can to see where they’ve had their successes and where they’ve had things that didn’t work out as well.

There was an appeal for Nynniaw to working with innovators that could be small, private, or otherwise different than the large public research institution Nynniaw worked at, but the primary aim was to find collaborators facing comparable issues. Hrodland agreed with this assessment almost verbatim: “we try to find people that are like us…sometimes just the difference in scale completely changes the solutions that make sense. And so we look for our peers”. For Hrodland, scale was a measure of similarity. What these examples show is that “similar” meant somewhat different things to different respondents. For leaders interested in similarity, even if the exact definition of “similar” was not the same, the perception was that similar institutions had common
ground to compare problems and work together. This sense of common ground was absent for institutions that fell outside of the “similar” idea, regardless of how this was defined.

Continuing the emphasis on different perspectives about “type”, Hunfrid referenced a perceived difficulty in working with private institutions. From Hunfrid’s perspective, private institutions often did not understand the needs of public partners. Hunfrid observed:

I joke about my friends at [highly ranked private school]. [They] would never spend a dollar on anything for IT when they could two or three. And the reason is they’re just used to having a lot of money and doing things that way. Big 10 schools, the big state institutions…are accustomed to trying to make every 75 cents yield a dollar and a half, and so when you put those two cultures together they’re very, very different…Private schools can be as useful and helpful, and we’ve partnered with some along the way, but we’ve learned that there’s lots of caution when cultures don’t align.

Hunfrid was focused on the difficulties of working with private institutions as a public CIO, finding that they have a much different culture when it comes to spending and efficiency.

Gero was unconvinced that large research institutions were good collaborators in general, noting:

We’re the elephant in every room…I think small institutional collaboration is a lot more promising. So, if you look at all the other institutions in [my state], they collaborate more effectively and actually share things like…installations. Because of their size they almost have to in some cases, but I think that’s where it’s more fertile than it is in R1 type institutions like ours…we’re so big and complex, we’re similar in scale to three or four small schools trying to collaborate and trying to get themselves aligned. I think just the complexity of the large institutions makes it much more difficult to focus on another
organization…because of our size we can put together marginal resources…so if I need to split off one person to try to figure out how to solve a problem, it’s a 1% change for me. [Another institution in the state] has to do that, and they have 20 people doing it, it’s a 5-10% change for them. So, I can work in the margins because of our size a little easier to solve problems than a small institution can.

Gero felt that research institutions have almost the same size and complexity of three or four small colleges, and that this size makes it easier for them to go it alone when small schools cannot. This provides a contrasting perspective from other IT leaders who felt their research institutions could be good collaborators but needed the right type of partner to work with.

Notably, Gero’s ambivalence about research institution collaboration on IT services was qualified by his belief that idea sharing amongst the CIC schools was extremely valuable. He explained:

We’re schools of similar size and culture, in a sense, and that’s the purpose behind the Big 10 forming together—is, we’re very similar types of schools. Even though there’s some private and public in there, we’re a similar size, and so the problems that we tend to face are similar. So, the idea sharing and ideas about how to solve a problem can be very similar across those schools even if we can’t share the implementations.

Gero found that collaboration in a more abstract format was helpful amongst research institution. Even though Gero was skeptical of the ability of research institutions to effectively collaborate on projects, he saw idea sharing with “similar” schools that shared the same size and culture—regardless of whether they were public or private—as possible and desirable because there was, again, common ground for learning. Gero’s somewhat skeptical view of collaboration amongst
research institutions still brought in this concept of similarity seen in other statements by IT leaders.

As these examples demonstrate, there were a plethora of opinions on the matter of institutional type. Heliodoros disagreed with the assertion that private institutions were not good collaborators, finding that privates could be far more collaborative than publics. Gerold agreed that private institutions could work well with public institutions and saw type conflict only between liberal arts colleges and research institutions. Furthermore, some IT leaders were patently unconcerned about institutional type. Eburwin explicated, “there’s about 4500 universities, about 100 or slightly less research 1’s…80% of what we do, and this is kind of a radical thing that disturbs the pot, but I’d say even community colleges or trade schools or whatever, of those 4,500 schools, we’re doing about 80% of the same stuff, period”. Eburwin did not see a significant difference amongst what all types of institutions were doing and did not feel institution type precluded ability to collaborate. Meinrad agreed, evincing more interest in finding innovative partners, regardless of other factors. Thus, while in an overarching sense institutional type was important, it mattered more to some IT leaders than others, and for different reasons.

**Institutional Factors**

This super-category was constructed from emergent themes that centered on the factors within institutional boundaries IT leaders identified as influencing their interest and engagement in collaboration. Institutional factors related to collaboration constitute the second major thematic finding of the study. It became evident that IT leaders differ strongly not only in their beliefs about collaboration, but on the relative influence institutional structures and traits can
have upon collaboration. Three main institutional factors emerged as sub-themes of this area: institutional culture, the institutional funding situation, and the structure of IT.

**Institutional culture.** Culture was repeatedly mentioned as a contributor to decision making about collaboration, although the perceived impact of culture was experienced in different ways. For example, while all IT leaders recognized in some way the importance of cultivating more work with distributed IT within the institution, several expressed frustration with the perceived, or actual, need for working with the slow-to-evolve and change culture of higher education. Maximilianus described hearing one frustrated CIO exclaim “consensus is for shit!” after years of dealing with institutions that were unwilling to move forward at the pace that technological advances and budgets demanded because of the cultural tradition of higher education that demands slow movement and consensus creation prior to taking action. Aghi articulated why bringing institutions together for collaboration is so culturally problematic:

If I was going to boil it all down…there are a lot of contributing factors, but I would say probably the most significant is the number of independent entities within higher education. What I mean by that is…each school within higher education, and then each department, and then all the way down to each faculty member—they tend to operate as almost independent contractors. And they’re loosely banded together in this thing we call “[institution].” And what that does is it drives a lot of preference. It drives a lot of “I don’t like that particular machine,” “I don’t like that particular kind of software,” “I don’t like that particular way of doing things,” and all of those differences introduce frictional costs, which is more people to support more, different things.

In Aghi’s example, the distributed nature of higher education creates cultural barriers to coming together to solve common problems. The culture is so fragmented and individualistic that
solutions proliferate and there is no common driving force. In Aghi’s view, the “independent contractor” culture was a major impediment to collaboration.

Conversely, Siward asserted that it was often culturally easier to work across institutions than within them because:

By the nature of what we do, we automatically have that bond or that trust. You know if I know someone—my counterpart at [other CIC school] or my counterpart at [another CIC school]—I already have a feeling for what they do. And when they explain to me what they’re trying to do it’s like, “Oh my gosh, I’ve been trying to do the same thing! What can we do to share information?” It’s more of an excitement that we don’t have the baggage that I think at the university within itself that we may bring along…you know we’ve got folks here if you did something to them in 1972 they have never forgotten it. So we don’t have that with the CIC, which is kind of cool.

In this example, institutional memory is the problem—there is a culture of holding grudges over time that is not present when working outside of institutional boundaries, which makes inter-institutional collaboration easier than intra-institutional collaboration from Siward’s perspective. Siward’s idea that working with other schools can be easier than working within an institution is perhaps more nuanced than the previous examples, but still falls into the general idea that culture can be an impediment to collaboration.

Gwrtheyrn was very interested in working with Central IT, but was skeptical about working with other schools because of the culture of his field. Gwrtheyrn said:

I am probably in the minority certainly of [academic field] in looking for opportunities for collaboration even within the institution…I was at a conference involving IT technology professionals just maybe two years ago, and I was shocked by the blatant
resistance to collaboration. The question very specifically was the move to campus-based email services. And IT directors at significantly highly ranked [schools in field] made quite clear that their mail servers would be pried from their cold, dead fingers. I could understand that...given the history, but I frankly thought that it was a shortsighted thing to do...So I think in a healthy collaborative environment it isn’t so much about services moving from the center to the edge, I think it really is...folks are working together to provide these services across the institution, which requires them to participate in the ongoing maintenance and management of those services.

Gwrtheyrn was operating in a context where IT services were “pried from [the] cold, dead fingers” of IT leaders within schools. So, while Gwrtheyrn was happy to collaborate within the university, Gwrtheyrn was not optimistic about the potential for inter-institutional work due to the culture within the field. This is a strong contrast to Siward’s perspective that working across institutions was easier than working within them, perhaps because the culture of Gwrtheyrn’s college was different from the culture Siward experienced.

Other IT leaders asserted that higher education institutions are by their very nature collaborative due to the academic need to share and produce knowledge, and that this culture facilitates both internal and external collaborative efforts. Pomponius explained that not only do universities themselves share common aims that create alignment, but professionals who are trained in the academy are inculcated with this collaborative culture. Pomponius said:

It’s the nature of academics. You know in some ways we say the [emphasis added] academy and that’s true...at the end of the day we are all supporting a common mission in terms of scholarship, teaching, research, and learning. And that’s fundamentally a collaborative pursuit. And we also come from cultures that are heavily influenced by
academics trained in disciplines whose allegiances and interests are with the disciplines first and institutions secondly. And many of us were steeped in that. Myself, I was faculty for a long time before becoming a bureaucrat and it rubs off. It permeates the culture in a variety of ways. So it’s something that’s natural for us to do…and something that we are highly rewarded for…addressing problems that we commonly hold.

Pomponius felt that higher education was unique in having an inherent cultural appreciation for collaboration. Unlike the IT leader responses described above, Pomponius saw the culture of higher education as a facilitator of collaboration. Rather than the “independent contractor” idea mentioned by Aghi, Pomponius saw the academy. Prochoros agreed:

[I have worked where] IT was considered a strategic advantage. And so we were quite jealous of our innovations of our operations and would not share, and it would be a strategic threat to share…[higher education is] extraordinarily different. It’s black and white…in fact it took me some time to kind of feel comfortable in sharing because IT is a…strategic advantage in business if used appropriately, and so the idea that I would come here and share “with competitors”, but…the collegiate environment is really much less competitive on that at the highest level, and certainly with my peers it’s not competitive at all.

Prochoros found that while in the private sector sharing was discouraged and IT was a closely guarded secret, in higher education sharing was common, encouraged, and—by later statements—also extremely helpful.

Although IT leaders disagreed about the impact that culture could have upon fostering or discouraging collaboration within and across institutions, it was clear from their comments that culture can often have an impact upon whether a collaboration takes shape. For some, it appeared
to facilitate collaboration. For others, culture seemed like a nearly insurmountable barrier created by hundreds of years of distributed tradition.

**Institutional funding situation.** Finances and the state of institutional funding for IT were also a concern for some IT leaders. Several noted that cost savings were a priority because the expense of IT is going up while funding structures remain flat. Gwrtheyrn identified funding as one of the major challenges facing the IT organization:

The funding questions have become very troubling for all of us in higher education, and public higher education specifically. And that will continue to be the case for the foreseeable future…And so we really do face a challenge trying to figure out just how we’re going to do all the things that we want to do—what it will mean for us at the college level when campus level funding and state level funding continues to erode? It might be the case—and it is—that the college is in fact very healthy but we can continue to face pressure from the outside as what little funding we receive from outside the institution continues to evaporate…At [institution]…there was also as a result of some of this budgetary pressure a movement to examine IT and its role in the financial difficulties, and there was a sense that IT overspent or IT spending in general was not as efficient as it could be, and that there was a need to scale back on that spending. It’s not abundantly clear whether or not that assessment was ever accurate…but nonetheless there was this conclusion that that was in fact the case and much pressure at higher levels to reign in IT spending.

Gwrtheyrn found that not only was the institution in general facing ongoing pressure due to loss of funding, but that this pressure trickled down to obligations across the college in a way that would impact spending on IT, among other things. Maximilianus and Cleitus echoed these
concerns. Maximilianus explained, “the financial pressures for higher education are gonna continue…And so I think what I’m seeing is a recognition of that within the IT leadership across the university that we do know that we’ve gotta make some changes.” Cleitus concurred, citing cost savings as the primary driver of interest in working more with central IT going forward:

That’s pretty much it. I mean times are changing around here, and you know back in the 80s and 90s…money wasn’t as tight…and there’s always that tension of “ok if we give that up are we gonna be able to provide the level of service that people are used to, that people deserve?” But then there’s the question you have to ask yourself of what level of service is good enough for the amount of resources you’re spending on it. And with budgets being tighter, in some cases maybe we say, “well, that isn’t quite the level we were providing, but it’s good enough for what we need and it helps [institution] be efficient and strong.”

Cleitus saw a change from a time of plenty two or three decades ago to a time of austerity when tough decisions have to be made about what is “good enough” rather than what schools would like to provide. As Cleitus articulated, cost savings was “pretty much it” in terms of the reason for being interested in collaboration. Cleitus particularly felt working more collaboratively on an intra-institutional basis would be a driver of cost savings and was very interested in moving his unit and institution in general away from the idea that everyone needed their own solution, which is analogous to Aghi’s “independent contractor” cultural idea mentioned earlier—like Aghi’s institution, Cleitus’ university was dealing with an overly distributed culture that was driving up costs.

Albanus agreed with these assessments by unit leaders. To Albanus, this was the biggest challenge for the institution to resolve:
We’re spending an average amount on IT institutionally, and I don’t perceive that we’re going to be getting any big sustained investments…I don’t think there’s gonna be a huge IT investment to move the percentage of expenditure in a sustainable way beyond what it currently is. So how do all of the IT organizations at [this institution] work differently together to achieve increasing non-linear demands of all sorts? That’s the biggest challenge we have.

Albanus did not see institutional commitment to IT increasing in a sustained manner and this was part of what prompted the “shared fish tank” idea from earlier—previously the institution had more money and personnel to work with and could operate under the assumption that everyone had their own space. In the present day, Albanus felt there needed to be a realization that everyone in IT across the institution was actually in a “shared fish tank” where resource sharing would become extremely important due to the need to reduce costs.

While this sub-theme of turning to collaboration to help with lowered funding was a clear decision factor for some IT leaders, other interviewees were explicitly unmotivated by cost savings. IT leaders at both public and private institutions simply asserted that their institutions were not in any particular funding crunch, and as such had different collaboration priorities. It was understood that collaborative motivation was different here than at institutions that needed to make their dollars stretch. For example, Rocco explained that:

We don’t have at [institution] the financial imperative to look to do cost cuttings that many public institutions do, partially because we’re private, partially because we have a large endowment, and partially because the university has been managed very conservatively. And so when the big fiscal crisis hit it did not hit us anywhere near as hard as it did other institutions that had been using much of their endowment for
operating funds, or that depended on state legislatures for funding. And so many people are trying to get more collaboration out of their instructions to find cost savings but we have not been under that hammer here and so we’re trying to do it in a less pressured and less bottom line driven manner.

Because Rocco’s institution was financially stable, the motivations for collaboration were, to Rocco, different. Making services “more efficient and effective” was far more important than saving money. Hunfrid agreed with the idea that private institutions generally had less to worry about when it came to financing because they were used to having more funds available than public institutions.

Georgius also explained that cost savings was no longer a major priority for the institution—though Georgius acknowledged that could change—and Meinrad argued that budget cuts and financing at the institution were “typical stuff, but nothing to whine about”. Alexius acknowledged that some IT leaders are primarily motivated to collaborate for saving money, but stated that this was not his chief motivation:

You could probably find people for whom the main benefit is in the economics. In these times I can understand and respect that. The country is in a long-term recession and financing of public education is under challenge—resources are limited. So I’m not minimizing cost savings…but other people who are more focused on discovery, innovation, being at the frontier of what academia is really good at, at its heart, would focus more on the idea sharing, the stimulation, the pull for smart people getting together to do something that none of them could do separately…I think it’s the idea sharing. And I’m not against the idea of economies of scale or the business case for it, but I think those are the more mundane reasons to do it. The bigger reason is you just don’t have the
people to do everything. Today’s problems are increasingly so complex that to get at them you need multiple points of view and you need information sharing.

Alexius found working for cost savings to be a “mundane” reason to collaborate, and was far more interested in the transformative potential of bringing people together to solve a unique question. This runs against the idea that cost savings and transaction cost economics are driving decision making for all IT leaders because Alexius was simply unmotivated by cost/benefit analyses alone. Alexius wanted meaningful ideas that would transform the institution, and cost savings and transaction costs were not the main driving part of this interest.

Indeed, the picture painted for the impact of cost savings and funding on decision making was complicated and inconsistent across—even within—individual leaders. For example, even though Gwrtheyrn believed that the institution was in a tough financial situation and that IT would face challenges, Gwrtheyrn also felt that the impact of the financial crisis upon IT would be less than for other units because IT is a “black box” to many non-IT leaders. Gwrtheyrn explained:

I think the problem is that because IT is a black box in so many institutions and we have scary things like viruses and security threats that there is a disconnect between the financial decision makers and the IT decision makers on which they rely…it allows IT to have a certain resistance perhaps to some of this budgetary pressure because when there’s talk about “well we could move this service to somewhere else”, “we could get rid of this”…we say boogeyman words like “security” and “virus”…and the people making these financial decisions of course don’t want to be the ones that put the institution in jeopardy. And as a result, we continue, perhaps on some incremental level, to overspend on IT relative to how we might reallocate those funds for more strategic deployment.
Gwrtheyrn felt that executive understanding of IT is so limited that leaders are easily swatted away from making major cuts. Additionally, where Gwrtheyrn thought IT was insulated from pain, Hunfrid and Rocco felt that the funding crisis could decrease IT leader interest in inter-institutional collaboration. Hunfrid asserted that IT leaders were “up to their ass in alligators,” trying to keep organizations afloat, and so investing in new initiatives was simply not possible. Rocco felt that while most expected the financial crisis to force institutions to collaborate, the result was far from anticipated levels, which indicated that inter-institutional collaboration might not be a go-to way to save money. These inconsistencies and disagreements about funding do not, however, negate it as a factor that some IT leaders do consider. For many IT leaders, cost savings were extremely important. The nuanced perspective that they are not important for all IT leaders in all contexts is the most important point.

**Structure of IT.** IT leaders raised a variety of ways in which the organizational structure of IT at their institution could impact their interest and ability to collaborate. IT leaders were not consistent in their perspective on which facets of IT might impact collaboration, but the diversity of responses related to the impact of IT structures at their home institutions made it clear that it was a relevant sub-theme of collaboration decision making. For example, some IT leaders argued that level of internal coordination for IT made a big difference in ability to collaborate on an inter-institutional scale. Georgius was one IT leader who felt internal coordination was the key. Georgius found that it was still difficult to collaborate internally, let alone with another institution where the difficulties are multiplied by trying to merge two entirely different organizations together. Georgius explained, “I have to say I’m not convinced since we don’t even have complete collaboration on our own campus, or frankly even close to it…we’ve just got to come a long way before we’re even ready to seriously think about [collaboration with other
schools]. From Georgius’ perspective, working with distributed units was hard enough, and because schools continue to be decentralized internally, pulling IT together to work outside the institution with someone else seemed far too difficult.

Consistent with this interest in the importance of internal collaboration, as noted above, many IT leaders were strongly focused on improving coordination or collaboration with distributed units to modify their IT structures. This was not explicitly connected for other IT leaders to a sense of fatalism about inter-institutional work, but for several institutions going through these changes the traditional distributed environment was difficult to change and had resulted in a resistance and distrust of central IT that took time and effort to correct. In addition to the examples cited previously about the need for improved internal coordination, Gerold detailed a variety of new community- and ongoing trust-building efforts at the institution that were implemented or revamped within the last two years. Gerold explained, “historically, the relationship with the departments has been really not good. So I have really paid a lot of attention to it. The relationship was very contentious and it was…just the usual ‘Death Star’ of central IT and the resistance of departmental IT”. Gerold was combatting the sense that central IT was trying to take over, or did not have distributed IT’s best interests in mind in order to foster greater levels of intra-institutional collaboration and trust. Gerold felt that having a more coordinated and connected internal IT structure would lead to better solutions all around.

Albanus further articulated this perspective on why working more with distributed IT to improve the shared “fish tank” was important through comparisons to the CIC:

Forty percent of our time [CIC CIO meetings] is spent in these informal settings when we’re getting to know one another. The productivity we get out of just those four sessions a year is extraordinary, and so the ratio of the amount of time that the IT workforce is
spending with one another getting to know one another, understanding one another as people, the ratio [at my institution] was completely off balance. If 40-60% is right, and I’m not saying it is…5-95% ain’t cutting it. And it was more like 2-98%, where all of the engagement was over problem solving or negotiation or something like that, and we weren’t getting better at just understanding one another…But if you’re not building relationships somewhere else, if you’re only ever testing the relationship, you’re not making it any better. This isn’t just about seeking comfort, this is about seeking improvement.

To Albanus, implementing initiatives that help IT leaders build trust and relationships can lead to structural change and successful collaborative projects. The perceived impact of existing IT structures at organizations may have been different among participants, but these examples illustrate the point that they nonetheless can have an impact on priorities and interests.

**Collaboration Type Factors**

Unlike human and institutional factors, which more generally influence collaborative interest and ability, the items that emerged in the super-theme of collaboration type were related to specific instances of collaboration. The influences on collaborators articulated in this sub-theme arose in the context of specific projects or potential projects. This super-theme contains two major sub-themes: perceived benefits and alignment. Both of these sub-themes are complex and include many considerations because IT leaders discussed a series of factors that influence their thinking on specific collaborative options.

**Perceived benefits.** IT leaders were influenced by the perceived benefits that certain collaborations could provide. The consistent theme across this area was that IT leaders want to derive some kind of benefit from working with others, whether this is within their school or with
another institution. Whether benefits were believed to exist appeared to be primarily based on two factors: the type of collaboration and the intra-institutional context.

**Type of collaboration.** First, the type of collaboration was important to almost all participants. As Partlow suggested, and as the questionnaires indicated, some types of collaboration were more desirable than others. However, no consistent pattern for project preferences arose. IT leader interests were varied and often inconsistent. Indeed, there was such a differential level of interest expressed in various types of collaboration that it does not make sense to consider each of the four areas or each of the ten specific collaboration types independently of one another.

There were IT leaders who were very open to a spectrum of collaborative options within and amongst schools. When asked whether Wildald saw collaboration as valuable, Widald proclaimed:

> The answer is absolutely yes. And there are just a huge number of ways...I think there just are basically an unlimited number of opportunities...The reason is we can’t do it all alone. We used to have a lot deeper pockets than we have now, and now we’ve gotta figure out how...to economize. And you do that through partnering and collaborating. Widald saw a limitless horizon of potential with collaboration. Hrodland went so far as to assert that it was not necessary to derive an immediate institutional benefit from collaboration:

> Sometimes that’s really hard to measure. And so I don’t put a lot of weight on that. Sometimes I think collaborations where...I might get almost zero benefit immediately, it’s a long-term kind of a partnership. So if I can do this one, then I think there are gonna be other ones down the road. So I’ll learn how to do the collaboration, we’ll both get
comfortable with each other, and then the real payoff will be down the road. And so it depends.

Hrodland saw benefit from collaborating even when there was no direct benefit because it could result in relationship development and additional collaboration down the line.

Hrodland and Widald’s more general interest in collaboration contrasted with IT leaders who saw very specific types of work as valuable. Idea sharing was one particularly popular type of collaboration. As noted previously, Gero felt that the primary area for research institutions to collaborate was on idea sharing. Gero explained further:

My interaction with the CIC is in the sharing of experiences to try to ramp us up in some area where we’re not as experienced…For me, that’s the biggest piece—is information.

We have not done any collaboration in my team in terms of the creation of shared assets. I think that is a much, much harder level of collaboration between institutions. I’ve not seen that be very successful, frankly.

Gero saw other kinds of collaboration as too difficult to accomplish between and among institutions, but appreciated obtaining knowledge based on others’ experiences. Alexius agreed that idea sharing was particularly valuable, although Alexius did not couch it in terms of other collaborations being unlikely to succeed. The value of collaboration was:

…The idea sharing. And I’m not against the idea of economies of scale or the business case for [collaboration], but I think those are the more mundane reasons to do it. The bigger reason is you just don’t have the people to do everything. Today’s problems are increasingly so complex that to get at them you need multiple points of view and you need information sharing. So the scientific and research world are moving us in that direction, and the CIC provides great opportunities for us to share experiences, share
discoveries, and explore the areas where we can leverage those for either just replicating it at our own institutions or in partnership...

Alexius saw idea sharing as a form of collaboration that could advance and transform higher education.

Many IT leaders expressed interest in working with other schools on vendor negotiations to drive down the cost of purchasing a solution. Interest in vendor negotiations was sometimes tied to a sense that institutions had missed the boat on other types of collaboration. Heliodoros felt that this could become the result of cloud computing:

Now you start to look and you say, “well gee, can we skip the step of universities collaborating and just take services from the cloud?” And you still have that…issue of how do we deliver appropriate trust from an identity and access management perspective? How do we then try to realize economies related to negotiating contracts?...

So collaboration is still essential, although it changes. We may not be delivering all the services. Now we’re delivering services around getting access to those services.

Heliodoros felt that some types of collaboration might become antiquated or unnecessary, but that collaboratively negotiating with vendors for services would play a definite role for inter-institutional collaboration. Georgius felt that there might not be much of a role for inter-institutional collaboration other than this type of negotiating power. Georgius explained, “I’m a fan of strategic alliances, but more as a negotiating weapon”. Georgius would be interested in working on other types of collaboration with institutions only:

If they had specific knowledge that I needed. I think if it’s based on business knowledge…or institutional experience then that’s a good idea…if I was producing course materials…in engineering, I might prefer [other CIC school’s] produced
engineering materials to [non-CIC school’s] materials because engineering is something [CIC school] is good at…It’s got to play directly into a strength.

For Georgius, inter-institutional collaboration outside of vendor negotiations was desirable only if other schools could bring something to the table that was vital.

A different take on changing or reduced opportunities was offered by Aghi, who felt that the rise of cloud computing would simply negate the need for many types of collaboration. Aghi stated: “it’s not…just cloud, but the commoditization of IT where you get to a place where things get to be commodity. It’s like it’s like a calculator. A calculator is disposable…we wouldn’t even have a discussion about that. Some of these technologies…just go buy it…it’s cheap enough, it will run, everybody does it, don’t even think about it”. To Aghi, commoditization of IT is inevitable and pushes institutions away from working with one another on many areas because the cost of providing those services via third party vendors that have massive scale in the cloud is far lower than what could be achieved through institutional cooperation.

Additionally, interest in certain collaborative projects clearly varied between intra- and inter-institutional work. For example, IT leaders noted that their institutions were moving services from decentralized units into central IT in order to free up unit-level personnel, save money, and achieve other benefits of centralization or consolidation of services. Yet this was not a common item of discussion for inter-institutional work. At one school, the definite focus was on moving functions that could be standardized completely out of the units so that IT services were operated centrally. Cleitus had a similar perspective, arguing that commodity services were logical to centralize intra-institutionally while strategic services were not:
I think it’s always easier to do the commodity pieces because they are more known entities, not as complicated because it’s a clearly defined service—you know what it is, it’s no big mystery…And that’s where when I’ve seen other institutions centralized. It’s more the support people, the infrastructure people, the network people, they move to a common group. The applications people that were writing and maintaining and dealing with department-specific applications, they tended to stay under departmental control.

Cleitus thought commodity services should move to the center and strategic services should remain distributed. Maximilianus agreed, explaining that decentralized support for modern-day commodity services had evolved because of user demands that could now be met centrally:

The reason that we run Exchange is not because I want to control email, it’s because I had no other alternative. My users were not happy with [other options]. They wanted an integrated application that had way more functionality than the old email system. So that’s why we spun off Exchange. So we as a university sort of stepped back and said, “look this is not gonna be sustainable, we can’t have 12 academic colleges, and god knows how many departments, and everything else doing their own thing, we really need to look at a full service email system that the university can use. So I think at some point we’re gonna have to recognize that while we may have the expertise to do it, is it really in the university’s best interest to host and maintain and do all of these kinds of services if those services can reliably and cost effectively be offered somewhere else.

Maximilianus was as much of an advocate as Aghi for simply outsourcing commodity services so that institutions could focus on strategic behavior.

Overall, the type of collaboration was clearly a strong concern for IT leaders and should be listed in any consideration of collaborative decision making. However, a key finding from this
sub-theme is that IT leaders think differently about different options and perceive different levels of benefit in collaborative solutions across types and within and outside institutions. This is supported by the information detailed in Chapter 4. Differential interest in types of collaboration was suggested by Partlow based on her experience with IT leaders and was observed in the questionnaire responses of participants. The questionnaire responses also hinted at a variance in interest between intra- and inter-institutional collaboration, which was also evident within this sub-theme.

**Intra-institutional context.** Whether a particular collaborative option was seen as beneficial was also strongly influenced by intra-institutional context, the second sub-theme of perceived benefits. Within this area, collaboration appeared to be influenced by a variety of factors, which could be categorized into two areas: the current state of a proposed collaborative solution or project at the home institution, and the perceived institutional changes a collaboration would engender.

**Current state.** Codes that naturally fit in this sub-theme related to whether an institution was ready for a particular collaborative project. Two important areas were mentioned by IT leaders in relation to institutional readiness: urgency, or how necessary the project was to the institution; and institutional IT strategy, or how the project fit into what IT leaders wanted to do with IT at their institution.

First, several IT leaders felt that they would be far more likely to enter and commit to a collaboration if there was an urgent need for the project under consideration. For example, OmniPoP and the other networking initiatives evolved because IT leaders had to provide their institutions with greater networking capabilities and simply were not going to be able to accomplish this on their own. The idea of having “No Plan B,” as Hunfrid put it, is that
institutions with no other option than to collaborate to solve a problem have a much greater likelihood of success than when they have a backup plan to do it themselves. Hero articulated the impact of urgency for inter-institutional collaboration:

There are some collaborations where a school literally…cannot pull it off by themselves. In order to make it work they need to have the assistance and help of others. Those are easier to pull off because if [institution] can’t do it by themselves, if we need someone else’s help, we’re really motivated to make the collaboration work. On the other hand, there’s collaborations that if we…can make something a little better, but if we don’t get together we can still pull it off in some fashion on our own, there’s not the same motivation there.

Hero was explaining that when schools absolutely need each other to accomplish something it is logically more likely to succeed than instances where a collaborative project is nice-to-have but not vital for success.

Urgency was articulated in other ways, as well. Maximilianus was particularly concerned about urgency created by insufficient staff. Maximilianus had experienced severe difficulty recruiting new talent to the institution while simultaneously dealing with major cost cuts to the college that were reducing the overall number of personnel available for projects. To Maximilianus, lacking staff to support an IT area logically produced a need for seeking assistance elsewhere.

Urgency was also categorized through the pressures that IT leaders face to provide services or cut costs. In the context of specific types of collaboration, interest could be driven by user expectations—as in the networking example—or the pace of technological change in general. Prokopios explained some of the changes the institution was pushed to make:
Our number one battleground is in the area of instructional technologies. We see higher education moving in the direction of more distance learning and...blended courses...students are really not interested in coming to classes two days out of the week and we’re looking at a model where maybe they don’t come to class one day out of the week and instead we use a teaching studio and Adobe Connect to have students attend virtually from home.

Prokopios saw student expectations for technology-enhanced or purely virtual coursework as the future. Prokopios additionally noted that transitioning to this new model was very labor intensive, and as a result was prompting more collaboration between the business school and central IT.

Not all IT leaders felt collaboration required urgency to succeed. Pomponius instead believed that the quality of a solution was more important than the need. Pomponius explained that it was, “less [about] urgency and more about value and impact. Urgency has a timeframe component to it, and that’s another discussion, perhaps. I was thinking more about just how tantalizing is the cheese rather than how long is the maze to get there?” This quote demonstrates that Pomponius thought IT leaders were more motivated by what a collaboration could enable than by the pressing need for a solution on an issue. Pomponius’ perspective was unique among IT leaders, but does indicate that not all may be motivated by urgency.

However, this idea of a need for a pressing solution was reiterated by multiple interviewees across the examples provided above, as well as in other areas. While IT leaders in general did not feel the same exact set of pressures, there was a consistent sense that pressure within the institution or from outside forces like prospective student expectations created a need
for change that would prompt intra- or inter-institutional collaborative endeavors on certain types of projects.

Urgency was joined by a second sub-theme for the impact of current state upon collaboration. Divergent findings emerged around institutional IT strategy. Most IT leaders agreed that IT is going to have to move into a more strategic role for institutions—if it is not already—in instead of just providing basic services. Alexius described this sense:

What IT can do—I think it can always do the stuff like…records, and all that stuff—and it needs to—but that’s…mundane, and you can do that efficiently. I think IT can move in the direction of higher order stuff, and that’s where the exciting stuff is. That’s doing better research, more discovery, more transmission of knowledge, and more application of knowledge.

In other words, Alexius saw IT as moving into a role of directly facilitating the mission of higher education. Alexius was also a strong proponent of inter-institutional collaboration as a means of fostering this innovation and strategic role of IT and saw these things as connected. Alexius’ previous quote explaining that “today’s problems are increasingly so complex that to get at them you need multiple points of view and you need information sharing” speaks to the importance Alexius placed on collaboration being linked to IT strategy.

Meinrad felt that IT was not yet in a strategic role but needed to get there, explaining:

There’s what we are today, what we should be doing, and what we could be doing. Where we are today is, we’re a support organization like university services—people who take out the garbage—it’s a support organization. They want email to work, network to work, some folks—five to 10 percent—want help with academic technologies, but we’re not really being strategic in higher education. And the emerging version of higher
education like the University of Phoenix people who are growing exponentially, they are leveraging technology to do that. Technology is a core component of their business, but it’s not IT like running email, it’s technology is a core comp of their business. So should IT be helping to be used as a core component? Absolutely. But that has to come as a pull from the academy not a push from IT.

Meinrad saw a need for change, especially as indicated by the rise of for-profit institutions like University of Phoenix where technology is a vital strategy to growth, but felt that the academy had to want IT to get there. Meinrad’s interest in IT as a strategic enterprise used for innovation connects to a previously cited interest in finding innovative partners. Meinrad privileged creative thinkers over any other collaborative attribute, and this ties into assertions about the need for strategic, innovative IT.

Prochoros agreed that IT was a strategic asset for higher education, but added a caveat similar to Meinrad’s:

I think it the appreciation for that varies by university as well as by leadership within the university, but once again, if you think of just even the iPad and how that’s fundamentally changed the way we’re thinking about education, I think the universities that will excel will recognize technology as a strategic lever and use it, and those who won’t, won’t.

Prochoros felt that while IT truly is a strategic asset, some institutions do not recognize this. Prochoros’ point about the connection between leadership and IT strategy connects to the earlier sub-theme of expressed views about collaboration—the way IT is viewed at an institution, just like the way collaboration is viewed, can be shaped by institutional leaders outside of IT. Yet, as Prochoros subsequently articulated, there were IT leaders who also saw IT as a strategic asset
and were still very comfortable with collaborating to share ideas and experiences to help one another.

This general consensus amongst IT leaders that IT could be a strategic asset if it was recognized by institutions was counterweighted by a strong disagreement about the concept of “competitive advantage”. If IT was strategic, and if some technologies could provide a competitive advantage to an institution, should inter-institutional collaboration occur in those areas? Several IT leaders answered firmly, “no”. Returning to Aghi’s quote from earlier:

I think there’s a lot more talk…than people actually doing it, and you know when I watch people standing up and saying, “for the good of higher education you all ought to get on board and use our services”—and we do it too, [my institution] does the exact same thing—what is really happening there is they are trying to get a competitive advantage for their university…And it dawned on me that it’s because it doesn’t look good for us if we have to go to another university and use their service. So there’s this dynamic out there that is there’s more of a conversation than real collaboration happening.

Aghi thought more talk than walk was seen with inter-institutional collaboration because IT leaders did not want to outsource an area that could make their institution look less competent than peers. Aghi additionally explained that while collaboration amongst schools was wonderful, it would only succeed if IT leaders were honest with one another about the areas in which collaboration was not possible—those that provide competitive advantage to their institutions.

Gerold echoed this belief. Gerold had found that:

I think the collaborations that are more difficult are collaborations where we are touching what…people would view as distinguishing factors of the institution…I think a good example would be Phantom, which was an early collaboration of online learning that
some private schools have done, and that was not successful because it was meant to be a for-profit type of collaboration. I think part of the reason why it wasn’t successful was because it fundamentally started to touch at key differentiators between [the schools] and people fundamentally could not agree to share a set of guiding principles.

In this example, Gerold found that when a collaboration asked schools to compromise or change an area that they saw as a competitive differentiator the collaboration collapsed. Widald acknowledged that competitive advantage was a concern, but added nuance to the argument.

When it came to inter-institutional collaboration, Widald explained:

There are barriers, and that is that our institutions do compete with each other on one level. Certainly for grants, and for students, and so on. So on the academic side of the house it’s a little more competitive. On the IT side, we take the position generally that IT isn’t really what differentiates us and attracts students and grants. It’s faculty and departments and reputations. We’re pretty egalitarian. If you come back to our campuses, though, and I brought back an opportunity to one of my deans on a potential collaboration with a CIO from one of the other CIC schools based on some IT discussions, and his response was “they’re a competitor”, and so there’s less trust I think, sometimes, on the academic side, sometimes on the business side. The CIOs tend to be the most collaborative category of professionals as university leaders, and we have that comfort level because we’re all trying to survive and do things more effectively and efficiently. They’re really not the kinds of things that differentiate us in the marketplace, per se. So that’s a challenge, is we tend to be collaborative, and we come back and there are colleagues who are a little more competitive.
In Widald’s experience, there was a desire to collaborate at both the home and peer institution, but Widald was not able to engage in the collaboration because a non-IT leader at Widald’s institution felt that the project was an area of competitive advantage. Widald saw CIOs and IT leaders as a group of inherently collaborative people who run up against colleagues at their institutions who worry about undercutting their school’s competitive advantage.

Akakios was aligned with Widald in the belief that IT leaders tend to be sharing, although Akakios was not sure whether this would carry into the future, noting:

What I’ve seen is that the higher education institutions that I deal with are all very, very open and sharing…it’s just been wide open doors and no holds barred as to what’s going on because I don’t think we see ourselves really in competition with each other…We are to some degree because there are only so many students out there that we all have to recruit, but I don’t know how that will change…especially as institutions start going with distance learning.

Akakios felt that IT was an area where people were happy to share and collaboration was possible, but acknowledged that things could change as institutions began to compete more for student market share in the online space.

Conversely, a different camp of IT leaders argued that the idea that competition would preclude collaboration was unrealistic. Hrodland asserted:

Nobody has ever told me that I shouldn’t collaborate on anything, no matter how close to the core it is…We developed a student information system and one of the things that [institution] prided itself on was that we…would usually be the first response they got. So, our folks thought that made a big difference, that the first one you get really has a big impact…when we were doing that we had a big discussion about should we give this
away because then other people could do that as well. But the end result was collaborate all you want because there are plenty of other things. That might be one little advantage we have, but go ahead and collaborate all you want because we have other things too, and we’re going to benefit from collaborating with others, we’re going to get some of their advantages, and it’s all good in the end.

Hrodland saw an area that the institution felt gave was providing an advantage and decided to collaborate anyway and share the information with other schools because they would pay back that trust in the future. Hrodland did acknowledge that some IT leaders and institutions were concerned with competitive advantage: “there’s definitely variance in there, and I think it depends on the institution and the culture and the leadership of those places. There have been some that have told me flat out, ‘sorry we’re not going to work on this because we think it’s a competitive advantage’, and they don’t want us to share it”. While it was not Hrodland’s own philosophy to avoid collaboration, Hrodland saw that others did so.

Nynniaw and Gero also felt that competitive advantage was largely a non-issue for IT leaders. Nynniaw said, “I can’t think of a single instance” when an institution was not willing to share information because of competition. These perspectives show that fear of competition was not a consideration for all IT leaders. However, it also remains true that for some IT leaders, interest in collaboration was tempered by a sense that certain areas identified as strategic should not be shared.

Institutional changes from collaboration. IT leaders also considered the potential institutional changes that collaboration would engender as part of the intra-institutional context sub-theme. Two separate, but related, items were of primary concern here: financial impacts, which constituted any financial factors IT leaders mentioned when discussing decision making
about collaboration; and service impacts, which related to any perceived changes to IT service quality that a collaborative project would engender.

First, interest in financial impacts was relatively straightforward. For those IT leaders who were at all concerned about finances, many were interested in both intra- and inter-institutional collaborations. IT leaders felt these collaborations were sometimes a way to produce cost savings, help institutions use resources more effectively, or free resources up to be used elsewhere. Methodios discussed a shared services initiative in the following way:

[Company] identified about 12 projects that we could pursue, and instead of having these services being done redundantly in every unit, build a shared service that would deliver the service out to everyone. So, consolidate all of the people who are doing these 10 things and then offer from this new shared service…they estimated we could save about $25 million per year if we moved to shared services. And so we launched a very large change effort to create the shared service, offer it out to campus, consolidate the workforce into the shared service, and then invest in the…technologies that are needed now for research at scale, teaching and learning at scale, mobility, social networking, et cetera.

The initiative had resulted in major cost savings and the ability to re-invest in technologies that furthered the institution’s IT portfolio. Thales elaborated on this desire to move certain services to the center for cost savings and service improvement:

My value proposition to the collegiate units and the administrative units has always been…let the central IT organization do those things that are common to all so that you can free up activity and spare a cycle and resources to apply to those new things that your deans want you to do that aren’t scalable and aren’t accomplishable through central IT or
the cloud…I mean, if we’re all repeating the same task over and over and over again in our own organizations it’s extremely inefficient.

Thales found that intra-institutional collaboration could do the same things cited by Methodios: save money and let unit IT groups focus on delivering specialized services.

Returning to interest in collaborative negotiating discussed earlier, Titus cited this type of inter-institutional collaboration as one where major cost savings were possible:

What we need is…to go after vendors in a single voice…to bring down the cost of the commodity IT, which you know just helps the university be more efficient, and especially for public universities…we have an obligation to the states that we’re in to keep our costs as low, and tuition as low, but also that then frees up investment in some of these other more mission critical areas.

Titus and the other IT leaders who discussed vendor negotiations were primarily interested in that as a way to drive down costs for services. Titus observed that this could free the institution to invest in other areas, as well.

In a different philosophical camp, some IT leaders asserted that they were not particularly interested in cost savings as a priority. Alexius’ earlier quote expressed this sentiment clearly.

Alexius said:

You could probably find people for whom the main benefit is in the economics. In these times I can understand and respect that…I’m not minimizing cost savings…but other people who are more focused on discovery, innovation, being at the frontier of what academia is really good at, at its heart, would focus more on the idea sharing…

Alexius understood the interest some had solely in cost savings, but was more interested in collaboration for its transformative potential.
Aghi also felt that inter-institutional collaboration was not primarily done for cost savings. Aghi’s argument, mentioned earlier, was that institutions try to get others to work with them on projects not to save money, but to make themselves look good. Albanus also had a different take on the role of finances. Albanus asserted that there might be personal interest in having another school provide a service at a slightly higher cost than it would be to provide it on campus if it totally freed up the university from having to provide the service on site. Albanus explained that this was:

Just to get rid of the burden of management. So it’s going to cost you a little bit more, but you sourced it differently, enabling you to do something else or be excellent at something because you don’t want to be excellent at desktop management any more…I know if it costs double I wouldn’t seriously consider it, but I would be willing to consider some premium for being able to just not do it myself any more.

Albanus saw an advantage in not being responsible for running some services and thought there might be a future in that type of arrangement, even if it cost slightly more.

Consistent with the findings from the section above on institutional funding situations, there was some disagreement about the relative importance or weight of finances upon collaborative decision making. For some IT leaders, the cost of a specific collaboration was less important than what the collaboration would enable. This collaboration type-specific finding lends further credence to the overarching finding that finances were not in a common state of crisis within the CIC. However, the financial impact of specific collaborative projects is still a relevant sub-theme since several IT leaders did cite it as a key factor.

Second, IT leaders were interested in the impact collaboration would have on their services. Some, like Alexius, were primarily interested in the transformative potential of
collaboration, asserting that the most interesting and valuable collaborative projects change the way institutions and their employees function in unprecedented ways. Hugo held a similar view. Hugo explained, “by collaborating you basically get more minds and more perspectives working on the outcome, and it winds up being better because of that.” Hugo saw inter-institutional collaboration as leading to better solutions from having more minds on a problem. The service impact from inter-institutional collaboration envisioned by Hugo was a higher quality and more creative service for his institution, which made inter-institutional collaboration highly desirable. OmniPoP and other networking initiatives were often used as examples of extremely transformative projects that enabled far more than better IT service, with gains coming in areas like vastly improved research and information sharing capabilities. Gerold summed up the networking benefits succinctly, “I think Internet2 is the poster child [of inter-institutional collaborations]. That’s the biggest success that higher education has. Building a national research network that has been serving the nation for 20 years, that’s pretty impressive.”

Others were looking for more efficient and effective service delivery that would improve the overall quality of IT in some area—a commonly cited explanation for moving services to the center amongst IT leaders in the study. Gwrtheyrn explained, “we’re used to delivering for our clients in an effective and efficient way. So from my perspective, it is a natural conclusion that you would collaborate with others so that you improve the quality of your services, or efficiency, or lower the cost.” Gwrtheyrn saw service improvement as a goal of collaboration, along with generally increasing efficiency.

Titus felt that collaboration on service provision centrally could improve service quality if there was some collaboration geared towards standardizing that went along with it. This was a major part of service improvement at Titus’ institution. Titus explained:
Much of the challenge of central IT delivering good service has been we can make no assumptions about what’s happening out in the units. So we are in fact having the same difficulty with that fractured infrastructure. It’s hard to actually achieve good quality service at scale if you really can’t have scale—if everything you go into is a unique situation. So by addressing things like common networking access, and understanding where all the servers, are and having a common desktop build with the right kind of security in it, and those kind of things, it provides that common technical platform that you can actually provide good quality service on.

Titus saw developing common standards and practices across the institution as key to improving service. Intra-institutional collaboration was desirable because Titus felt it would improve IT as a whole. Thus, in both the sense of the transformative potential of collaboration for institutional services and in general improvement through greater efficiency or the redistribution of resources to new projects, the idea of quality entered the picture for IT leaders considering collaboration.

**Alignment.** Institutional alignment grew into the second major sub-theme within the super-theme of collaboration type factors. Alignment in this sub-theme can be summarized as a need for institutions participating in a collaboration to be synched or at least on a similar page on specific facets of collaborative projects. As several IT leaders explained, even if perceived benefits and mutual desire are present in a potential collaboration, it still may not be actualized unless institutional alignment is achieved. As noted previously, Hrodland argued that alignment is so vital to collaboration that it can trump even the need for trusting your partner. Alignment as a thematic area involved less rivalry of perspectives than other emergent themes from the study. IT leaders felt that in at least some manner, the partnering institutions needed to be aligned with one another in order for inter-institutional collaborations to be successful. This category evolved
to include five important considerations: timing; shared goals; institutional buy-in; and institutional policies, procedures, and organizational structures; and the scale of the proposed collaboration.

**Timing.** The importance of project timing was consistently mentioned. As Partlow pointed out in her discussion of the CIC, IT leaders have increasingly noted the impact of timing for initiating collaborative projects. Namely, the institution must have bandwidth to engage in collaborative projects, and the project must fit with what the institution needs to do and for which it has organizational capacity. This assertion was consistent with IT leader responses in the interviews. For example, Prochoros explained that major projects happening at the institutional level could make collaboration on inter-institutional work challenging. Of timing and inter-institutional collaboration, Prochoros said:

> We’re all on different timetables, different things going on. If we insisted that everyone participate before we kick something off, frankly it would be a huge hindrance and it would slow down progress. I think it’s very productive that if three or four folks are ready to move forward that we trust them to take the lead, knowing we can come in later and we have our turn for the next project that we have an immediate need for.

Prochoros was explaining that because institutions are on different timing cycles for project needs, the structure of the CIC, which operates on a coalition of the willing basis, makes sense. Institutions can join in when they are ready, and projects can more forward without all 13 institutions participating. As Prochoros noted, requiring 100% participation would preclude many collaborations because institutions are not always ready for the same project at the same time.
Hrodland echoed Prochoros. Hrodland also felt that one of the biggest barriers to collaboration was timing, saying of inter-institutional challenges: “I think they’re not really business processes. But timing is one that often gets in the way of inter-institutional collaboration.” Hrodland pointed out here that if a decision had recently been made on a topic at an institution, that school was unlikely to engage in a collaborative project on the issue. Heliodoros identified timing of opportunities as the biggest barrier to inter-institutional work. These kinds of timing conflicts—when an institution might be interested but has an existing initiative or commitment —appear to be what the CIC CIOs are attempting to resolve through the tracking of project priorities that Partlow mentioned.

**Shared goals.** Shared goals on a potential project are also important. Looping in the idea of timing, Hunfrid explained that for inter-institutional collaboration, “The conditions are…you need some degree of conquering the same problem, at roughly the same time, with a commitment to solve it in a similar way.” In other words, institutions must meet two sets of goals: they must want to tackle the same problem, in a similar manner. Multiple IT leaders mentioned examples of failed collaboration attempts when institutions thought they wanted the same thing at first, but later discovered that their needs were totally different—thus not committing to solving the problem in the same way—or that they had a different initial goal in mind—thereby not actually focusing on solving the same problem. For example, Hero discussed a failed CIC collaboration on a vendor negotiation. Hero said:

One that comes to my mind immediately is a couple of years ago many of the CIC schools had agreed that they would like to provide online technology training to their campuses. There’s a vendor…that everyone pretty much agreed was best of breed. Rather than having each school develop their own…the thought was that well, if we all joined
together and go to [company] and let them work on a joint agreement, then this would get [company] a whole lot of business from the schools and also potentially save each of the institutions a chunk of cash—when you buy in volume you generally get a better price.

So most of the CIC schools participated in this conversation as far as can we work together on this, and I’m not sure what it was that finally led to its demise but we just couldn’t, it was the oddest thing, because practically everyone was willing but we were all coming at it from a slightly different angle. So one school would want to include faculty, staff, and students; another only faculty and staff; another might have had their timing on their calendar year or their fiscal year; and another on the academic year; and dog-gonnit, we just couldn’t come together.

In this example, the participating CIC schools all wanted the same result, but they all wanted it in slightly different ways. Because they could not coalesce around the same goal, their negotiations were ineffective and the collaboration fell apart. Hugo summarized the need for shared goals in the following manner:

Another factor [for successful collaboration] is a real shared sense of what the objectives are, what the outcomes are, and what the methods are going to be. If you get involved with a partner that is very open-minded, lots of good things can happen. If you get involved with a partner who is just looking for help building the exact thing that they want to build and they don’t care about anybody else’s’ interests, that won’t work very well. So there’s a certain amount of open mindedness and the desire to participate as part of a group to achieve the right outcome for the group and not just the right outcome for the individual institution.
Having a common, but not selfish or one-sided goal, was part of Hugo’s recipe for successful collaboration. Gero applied this philosophy to intra-institutional work. For successful collaborations, Gero said, a base need is:

Everyone has to understand the goal of the exercise. That typically is not coming from those college units, it’s typically coming from the center saying there’s a problem we need to solve here. Either we need to be more efficient or there’s a control issue. So, the first thing is to understand the goal. Second thing is really to understand what is happening on these units—what they’re tasked with doing every day—so that when we solve a problem you aren’t breaking something else. You have enough in it for them in terms of efficiency and change that you have those folks on board and lined up when you try to make the change. So…finding a way that the goals of those two often divergent things can be lined up to produce a win-win outcome is the most difficult thing, but the most important thing.

Gero found that working effectively between central and distributed IT required a shared goal to solve a problem and a shared understanding of what the problem is, so that the right issue was resolved.

**Institutional buy-in.** Shared goals must also be actualized through institutional buy-in. IT leaders believed that collaborations require a willingness to invest resources and strongly commit to a project. In part, this is because trying to make a collaborative project work on the margins of an organization without dedicating financial or staff resources was seen as a recipe for failure. Methodios explained:

One of the things that we haven’t been good about [in the CIC is]…most of the things that we try to do, we try to do on the margin instead of saying, “this is a really big effort,
and to achieve this effort we have to agree that we are going to assign dedicated resources that come together in a project team to deliver”. Instead, a lot of what we do, we say, “yeah, that’s a good idea. Let’s get some people together to do that. And they’re just doing it on the margin, and consequently we move too slowly. And given the demands that we are under, if we continue to work that way I don’t think we’re going to be successful.

Methodios identified a problem with resource commitment in this response. Methodios found that the CIOs have good ideas, but are unable to dedicate sufficient staff resources and time to projects to make them happen quickly enough. More buy-in was needed. However, Methodios did acknowledge that, “in the CIC we do have a CIC…staff person who’s fully devoted to the CIOs, and because of that I think we’re better than any other group in the CIC at collaborating. Because we have somebody who can set the agenda, drive the action items, do all that admin stuff to keep us moving forward.” Here, having dedicated staff is a form of institutional buy-in and commitment that furthers collaborative projects. As Partlow noted, the staff people working with the CIOs are collaboratively funded by each IT organization in the CIC.

Eburwin saw this cooperative funding as a strong indication of institutional commitment to collaboration. Eburwin said:

The CIOs, as I understand it, are one of the more organized…one of the more active and substantive collaborators even within the CIC…I think the fact that there is Karen Partlow, for example, who heads up the IT collaborative efforts for the CIC staff, and the institutions pay the bills, I mean that shows intent and evidence that when you’re willing to staff the central organization to help us, that we have skin in the game and so that makes a lot of difference. If we don’t have the skin in the game of somebody organizing
the meetings, and keeping the minutes, and helping with agendas, and helping to lead some of the collaborative efforts, at least logistically, everything is a one-off otherwise…I’ve seen collaborations come to a halt over somebody saying, “hey, my provost won’t pay that, we’re just a little school”. The CIC…that’s just not the attitude. That’s pretty healthy. Truly unusual.

Eburwin saw collaborative staffing of the CIC CIO’s office as an indication that all schools were equally invested in making the CIC a successful collaborative venture and venue. Methodios and Eburwin’s comments are analogous to Partlow’s assertion that having staff in the CIO’s office leads to better collaborations.

On campus, Pomponius felt that a lot could be inferred about an institution’s support for collaboration based on the kinds of investments they make in enabling collaborative projects for staff. To Pomponius, if no investment is made to facilitate collaboration, one can infer it is not valued. Additionally, tied into Hugo’s belief in the importance of individuals in collaboration discussed earlier, Hugo said that one of the most important factors in finding good collaboration partners was:

Commitment at the institutional level. And we have seen instances where an individual, a key individual—typically in the context of this conversation a CIO—makes a strong personal commitment and carries resources along with it to a certain project, but if they leave the institution then the institutional commitment vaporizes. So we like projects where there is a true institutional commitment. It’s not just one person that’s excited or personally interested, and that the institution stands behind it, and there’s multiple people at the institution that are dedicated to the success of the project.
Hugo had found that a broad institutional commitment was needed to make collaborations successful. That included both individuals dedicated to the project and a larger sense of institutional buy-in. Here Hunfrid’s idea of “no Plan B” plays out again. As noted above, Hunfrid asserted institutions that enter a collaboration with a backup plan are less invested in the success of a collaboration than those schools who see a collaborative project’s success as vital because they have no alternative in mind. Institutions that halfheartedly invest in collaboration and keep backup plans in place were seen as less likely to succeed in collaborative endeavors. Hunfrid elaborated, “someone who’s really good at executing but not at having the big picture, or someone who talks good but can’t lead on institutional buy-in across their campus, they’re gonna be a weak partner as well”.

Buy-in was also related to flexibility. Heliodoros argued that collaboration is “about parking the ego. It’s about accepting that you might have a way of doing things, [but] it’s not about the ideals, it’s about accepting that a solution that might be 80% of what you could do on your own is better than if you can do three things at 80% versus two things at 100%.” Essentially, working by yourself within your institution might let you do exactly what you want in exactly the way that you want, but working with others at your institution or outside of it means having to compromise on getting exactly what you want while being able to do more than you could before. Here again one can see Hunfrid’s assertion of the need to want to solve things in a “similar,” not exactly the same, way—collaboration means compromise.

Hugo also articulated the need for flexibility in committing to a collaboration. Hugo explained:

There’s a certain amount of open mindedness and the desire to participate as part of a group to achieve the right outcome for the group and not just the right outcome for the
individual institution. You want to get the right outcome for your institution but that’s a secondary concern to the success of the group…The ability to stick with commitments…they want to know [if] it’s a multi-year project they’re going to be able to sustain the commitment and their budget. If they can give people, and time, and effort, then you want to make sure they’re going to continue to be able to contribute people to the project.

Two major points stand out here—first, that commitment and buy-in are demonstrated by also being flexible, and second, that partners have to believe that a commitment is lasting and will not be revoked partway through a project.

**Institutional policies, procedures, and organizational structures.** The fourth factor for achieving institutional alignment on collaboration relates to the ways in which institutions can either preclude or facilitate both intra- and inter-institutional collaborations through policies, procedures, and organizational structures that occur outside of IT units. Several IT leaders suggest that the size and complicated nature of research universities make it hard to produce alignment to do projects that cross spheres. In other words, projects where only IT makes the decision to engage are different than projects where multiple institutional components must come together.

This concept could be seen in several examples provided by participants. For example, Gero argued that inter-institutional collaboration was particularly difficult because research universities have complicated organizational structures. Gero explained, “I think just the complexity of the large institutions makes it much more difficult to focus on another organization.” In line with this idea, sometimes projects that appeared to be highly logical for IT were prevented by arrangements made by other parts of the institution. Hugo cited an example
encountered when trying to develop an e-textbook initiative with a group of schools. One unnamed partner school could not participate because an auxiliary business unit at the institution had given their particular textbook vendor rights for a decade. An open source e-textbook program would violate that agreement. Hrodland provided additional color commentary on this problem. Hrodland explained:

I was just yesterday working with two colleges, just two...that were trying to work together, but the way that they did a specific admissions process was so different that we had a really hard time getting those two colleges to work together. So when I look for partners I have to worry about sort of what are their goals, what are their operational models, and business processes, and those things can get in the way.... Things that I can just decide to do, my counterpart can’t. He has to go through a governance process and get approval and like institute a new tax on colleges to be able to do that and those kind of things those are the things I look at now in trying to find a good partner to collaborate with.

In Hrodland’s experience working within and outside his institution, Hrodland had seen that different operating processes and policies could seriously preclude collaboration if these items were too different.

Other IT leaders had similar experience with institution-wide policies—things such as who gets to make decisions about purchasing, investing money, or legal compliance—that could also have a significant impact on collaboration. Another example provided by Hugo was that CIOs or other IT leaders sometimes lacked freedom to make decisions if purchasing policies were not created by IT. For example, Hugo offered another experience with schools that were
not allowed to join collaborative efforts because of these intra-organizational issues. Hugo explained:

We’ve also found that purchasing policies can get in the way. Some public universities are considered by their states to be part of the state government, and subject to the same procurement policies. One of the more interesting and frustrating policies we’ve observed getting in the way of collaboration are those that forbid deals with any entities that are not subject to a bid process. Since open-source software (and the collaborations that produce it) have no way of responding to a Request for Proposals, this has been cited by some universities as an impediment to their ever using open-source products or engaging in collaborative efforts to produce and maintain them.

In Hugo’s example, the institution was involved in a potential collaboration with schools that wanted to pursue the use of open-source software with the rest of the group. However, these schools could not because they were forbidden from using solutions that did not involve a bidding process.

Cleitus also had encountered difficulty with collaboration due to budget controls outside of IT. Cleitus explained, “[my institution] is very distributed…we’re all funded under different budgets. We have budget executives and VPs that are in control of that, and so you have to get them on board…that’s really complicated at [my institution] and it’s going to take a change in the way people think about things and it’s going to take a high level of commitment to be able to do that.” Cleitus felt that the distributed funding environment at the institution made working across groups extremely difficult because each division’s finance person had to give projects a green light.
Institutional structures did not always work against collaboration. Thales explained that institutions can create funding structures that encourage intra-institutional collaboration. Thales offered an example where colleges were charged for services provided by central IT regardless of whether they wanted to use them or not, and described how this could influence behavior:

If they felt strongly enough about their own local services that they wanted to pay twice for them, then that’s fine. But what happened then was when the dean went to the provost and said, “I need new money to do this initiative,” the provost was armed with information that said, “You’ve got an opportunity for savings out there, and you aren’t taking advantage of it. I suggest you do this before you come asking me for money.” So that’s an example of how an institution ought to manage itself.

Here, an executive outside of IT—the provost—could use the funding structures to incentivize IT behavior within the colleges by charging them for services regardless of use and using duplication of services as ammunition if a dean demanded more money.

Maximilianus had directly experienced how change could arise from policy. Maximilianus’ IT organization had recently undergone a total reorganization in part, “around what either was real or perceived to be university policy…we had departments where they had no backup mechanisms in place …some of it was not setting up firewalls, we had instances where IP addresses were not locked down so that anybody that could guess a series of numbers could go in and connect to the network. So it was a lot of those kinds of things.” As a result of this situation, Maximilianus’ college was in the process of a major consolidation and coordination effort so that IT was centrally managed and not susceptible to these kinds of security threats.
Others, while acknowledging the influence that institutions can have in terms of things like policies, culture, history, timing of projects, and funding structures, felt that such obstacles could and must be overcome. Nynniaw explained:

I really think that there is momentum to do this [collaborate]. I think it’s to all of our benefits to figure this out, but the devil’s in the details…I think in some cases we’re going to have to pick a couple…of projects to prove to the collective that this in fact works. Particularly as it relates to our legal friends and our procurement folks. So the box initiative that Internet2 did…we got our procurement folks involved and they seemed to be comfortable and it seemed to have verified that we’re following the proper procurement roles, etc., so I think some of it is a building a confidence…it’s legal, it’s sound, it’s fiscally the right thing to do. So part of it is getting folks comfortable with that approach, particularly as it relates to cloud services…I think the good thing is that the IT folks, we’ve kinda figured this out. What we’ll need to do now is get our leaderships and our procurement folks and our legal teams on board.

Nynniaw found that incrementally introducing non-IT units to collaboration on IT-centered projects increased their comfort level with inter-institutional work and led to more openings for future collaboration. Barriers from other units, Nynniaw thought, could be overcome with time and evidence of success.

Prochoros argued that institutional structures do not necessarily preclude or negatively influence collaboration, and that barriers are surmountable. Heliodoros agreed and explained that people:

Put barriers up because they really don’t understand that those barriers aren’t real. “We can’t do that because legal says”…there’s not a reality in that. We just need to figure out
how do we do it, and legal, and audit, and all those things are just part of the things we need to solve. So it’s all new to us because it’s about management of relationships and contracts…as opposed to management of pig iron that we used to do.

To Heliodoros, barriers might be perceived to exist but could be overcome with effort and dedication. Prochoros and Heliodoros were optimistic about the impact of organizational structures—Prochoros saw them as nearly a non-issue and Heliodoros felt that barriers related to institutional structures were more mental than actual. It was not clear from the data what specifically led some IT leaders to view institutional structures as preclusive of collaboration, some to see structures as able to facilitate changes, and still others to feel that any barriers caused by institutional structures were surmountable or exaggerated. However, it was apparent that IT leaders knew institutional factors could influence collaboration—even if they did not feel these traits were actually restrictive.

**Scale.** Scale, or how large the collaborative project was, was noted as a decision making factor by several IT leaders. As with most of these sub-themes, scale was important in different ways to different leaders. For example, Hunfrid explained how scale related to the type of service under consideration:

> We think we’ve already got a lot of scale, so we are awfully judicious of where we partner with other institutions. The question is: can we share capital to finance the development of something, and do we gain some advantage in terms of expertise, and innovation, and more things happening that we couldn’t have had…or do them in the same timeframe? The last piece of that is you subtract off…the coordination costs because…institutions vary greatly in their ability to be good partners. So that’s how we look at each of these things is, would we benefit from more scale, would we benefit from
more pace, more innovation, and what’s the coordination cost tradeoff of dealing with someone?

Hunfrid saw scale as one factor among many that could help determine the usefulness of an inter-institutional collaboration. Consistent with Hunfrid’s philosophy, Eburwin suggested that email was a service that did not benefit from being provided on an institution-by-institution basis and could be scaled up to serve multiple universities.

Scale also arose in the sense of the number of institutions involved in a project. Hero provided perspective on this type of inter-institutional scale concern. Hero explained:

Each opportunity that presents itself to collaborate is a little different. There are some collaborations that are darn near as simple as falling off a log. [Some] are really simple because they’re reciprocal agreements between two individuals or organizations. Of course, the more people you try to bring into the equation the trickier it gets.

To Hero, inter-institutional work was possible, but became more complicated as more schools entered the picture. Hrodland voiced this same challenge of scale: “It gets to be a little bit more challenging [working with other schools]. Collaboration is a tricky thing in the first place, and there’s enough complexity already that if you add more in it exponentially increases the challenges”. Hrodland shows that scale can be a turnoff for collaboration because the likelihood of success appears lower. Hrodland found that working within a school was challenging, let alone adding in others.

Furthermore, there was disagreement amongst IT leaders about whether a highly structured collaboration model that included formal agreements and super-structures was needed, or whether a looser and more freewheeling model was better. As with most of the collaboration themes that emerged within this study, IT leaders disagreed about the importance of structures.
However, most agreed that they were important for deciding to engage, whether that meant that it was important to have them, or important not to have them. The structure of collaborations relates to scale because formal policies add complexity to the work. Meinrad felt that: “there’s more value in having an ad hoc [collaboration] where organizations with similar interests can meet to talk about 20 years from now. Having formal contracts like the CIC, it’s probably too formal…I’m much less formal”. Meinrad further elaborated a sense that contracts add unnecessary overhead to collaboration. More desirable were unstructured, free-wheeling collaborations that generated creative and interesting ideas. Meinrad felt that collaborations housed within structures like the CIC were too regimented for the kinds of outcomes needed in the institution. The form of the collaboration itself needed to be lower scale for Meinrad to be interested.

However, while Meinrad was uncomfortable with structure, other IT leaders were uncomfortable without it. Some IT leaders wanted things like service level agreements (SLAs), memorandums of understanding, and other formalized expectation-setting policies for both intra- and inter-institutional collaborations. Siward explained that SLAs were extremely important, “simply because if you don’t have something written down you can always have someone come back and say, ‘I didn’t remember that we were gonna do that.’ It’s not only important for the people who are signing the SLAs to understand what they say, but it’s important for everyone who is falling under that SLA.” SLAs, to Siward, were a way of making sure everyone involved understood what was agreed upon. Positive collaboration experiences were more likely with SLAs because standards, performance, and any other expectations were agreed upon up front and could be referenced for an amicable resolution if conflict arose. Siward felt SLAs were a form of clear structure that protected the ability of collaboration to be successful.
Widald also thought these agreements were important, although Widald preferred memorandums of understanding (MOUs) to SLAs, explaining:

You need ground rules and boundaries. People need that as a structure… I’m not really big on legal agreements, I’m much more interested in, for example, a memorandum of understanding as opposed to service level agreements. SLAs tend to be too detailed and nit picky for my taste. An MOU is a little higher level, and so I look for things like MOUs and principles so that we’ve got a common roadmap. I think that really helps people understand how to navigate when you’ve got some gates there, and the gates are flexible enough that they set us up for innovation.

Widald saw MOUs or other guiding principles as a way to set a common vision for a collaboration without imposing too much rigidity or structure. Widald wanted a shared roadmap instead of the binding, highly detailed agreement of an SLA. An agreed upon, high-level vision was important, ironing out every detail in advance was not desirable for Widald.

Others, like Gerold thought that such formalized structures could be detrimental to collaboration because they imply a lack of trust and would not actually accomplish much—as Gerold put it, “if I’m going to collaborate with any institution… and the collaboration doesn’t pan out, am I going to sue…? Is [my institution] going to sue [other school] and ask for their money back? I don’t think so. So the SLAs are just kind of really meaningless.” Gerold did not see these agreements as enforceable, and therefore felt they were not worth the time invested in creating them.

In these different ways scale came in as a decision making factor for some IT leaders. This primarily took the shape of whether a project or service was seen as something that could benefit from scale, the number of entities involved in the collaboration, or the degree of
formality associated with a project. Not all IT leaders were focused on this in their discussions of collaboration, but for some it was a definite factor in determining the feasibility and desirability of specific collaborative projects.

**Connection to Research Questions**

The consistently clear finding across the three major themes is that IT leaders within the CIC hold very different beliefs about collaboration. Those different beliefs can be discretely conceptualized as themes that form a super-narrative about collaboration, but this highly differentiated narrative resulted in nuanced answers to the research questions guiding the study. While it is worth revisiting the research questions at this point to speak directly to whether and how the data answered them, the overall direction of the findings indicates that what is needed is a contextualized way to understand IT collaboration across its various areas of impact.

The first research question asked how IT leaders view the idea of collaboration, and whether that view varied based on internal and external collaborations. This first research question generated the largest number of rival explanations. It became clear from the opinions IT leaders expressed that when it comes to collaboration, individuals and their perspectives are extremely different. Some viewed both intra- and inter-institutional collaboration as vital, while others were skeptical of the value of inter-institutional collaboration and concerned even about the ability of organizations to cooperate internally. What should be clear from the discussion of themes in this chapter is that these beliefs are not mutually exclusive—IT leaders can and do believe different things, and this in turn influences the way that they make decisions about collaborations and the actual instances of collaborations in which they have engaged.

The second question focused on instances of collaboration and asked to what extent institutions had participated in intra- and inter-institutional collaboration, who they had worked
with, and how those collaborations were developed. Answers here were also highly varied. It was clear from both the participant questionnaires and interviews that most IT leaders felt their organizations were more collaborative on an intra-institutional basis than inter-institutionally. IT leaders also expressed a sense that higher education has been dropping the ball on inter-organizational collaboration. The idea that IT leaders say they want to collaborate but fail to develop many meaningful collaborations with other schools was echoed by several interviewees. These reports from IT leaders indicate that collaboration within the CIC is characterized by different levels of collaboration amongst its constituent institutions.

Similarly, the process by which extant collaborations developed appears to vary based on the individuals involved in the collaboration. Some collaborations mentioned were purely within institutional boundaries and thus primarily dependent on institutional context, some went through the CIC, others were one-offs between CIC schools, and some were completely outside of the CIC with non-CIC institutions. The specific processes for how collaborations developed were filtered into codes and the analysis of themes. IT leaders in the CIC appear to weight—either consciously or unconsciously—a plethora of factors across each area and develop a collaboration based on the result of that calculus.

Findings specific to question three can also be summarized as “it depends”. Question three and its sub-questions asked how and why IT leaders make decisions about engaging in collaborative activities. Sub-questions specifically questioned the impact of factors that were suggested by the review of literature including institutional similarity, organizational structure, personal relationships, financial pressures, and specific types of collaboration. Although the answer to how and why IT leaders in the CIC make decisions about engaging in collaborative activities appears to be that it is very person- and context-dependent, the three major themes
discussed in this chapter address the overarching areas that IT leaders discussed as factoring into their thought process.

More specifically, institutional similarity was a consideration for some IT leaders, and was discussed as part of the extra-institutional factors theme within the area of assessing other institutions. Related to this, for 3b), the impact of organizational structures played out across all three of the major themes. Within extra-institutional factors, the structure of other potential collaborators impacted the ability of collaborations to form. For collaboration type, the institution had to be organizationally ready to collaborate on the specific topic at hand and organizational structures mattered for an institution’s ability to work within itself and with others.

Personal relationships, in answer to 3c), were viewed as crucial by many IT leaders and came out as a sub-theme within institutional factors as part of the individual influences section. While personal relationships were generally—not entirely—agreed upon as important, financial pressures were felt significantly more by some than by others. Research sub-question 3d) found that some institutions had been far more impacted by financial pressures than others, and that this influenced the way that IT leaders thought about collaboration. They arose as a sub-point within both the internal factors theme as part of institutional influences and within collaboration type as part of the perceived benefits of collaboration. Even more disputed was 3e). IT leaders had different ideas, or often flat-out disagreed, about which areas were more desirable for collaboration. This was a major point within the collaboration type theme.

In sum, the three research question and sub-questions were addressed by the data via the three major themes and sub-themes that emerged from data analysis. However, as is discussed at length in chapter 6, much of what the study found is inconsistent with what was anticipated, and
suggests that the conceptual framework based on the review of literature is not an appropriate
depiction of how institutions make decisions about IT collaborations.
Chapter 6: Conclusions and Implications

Prior to presenting the conclusions and implications of the study, a brief summary of the study’s components that led to these conclusions is provided via an overview of previous chapters. Chapter 1 presented an overview of the context and need for the study. It described the environment within higher education as one where interest in collaboration is generally increasing across the board (Kezar, 2005), and noted that this is especially true within the IT function (Goldstein, 2007; Morooney, 2010, Davis, 2008), which has become a mission critical (Workman, 2009) yet under-researched part of universities. Additionally, studies specific to collaboration within higher education are rarely conducted (Kezar, 2005), and the major empirical study on collaboration in IT was conducted by Goldstein in 2007, prior to the financial crisis. Research suggests that collaboration can be furthered by interest in cost savings (Goldstein, 2007), and since the time of the financial crisis in 2008, the financial stability of higher education has been severely challenged (Zumeta, 2010). This is no less true for IT departments within colleges and universities, which have placed funding concerns at the top of their list of challenges (Ingerman & Yang, 2011). This context of little research on a mission critical function after a financial crisis that could have a strong impact on perceptions and behavior suggested the need for an in-depth case study specifically focused on collaboration within and across schools on IT.

Chapter 2 outlined an initial conceptual framework that showed what appears to happen when IT leaders consider engaging in a collaboration. Based on a review of literature, the framework hypothesized that forces both within and external to the institution exert pressure upon the IT environment to make changes. The IT environment in turn appears to contextualize and influence decision making about engaging in collaboration. If the cost/benefit analysis that
IT leaders engaged in resulted in a net gain, then the decision would be to engage in collaboration, allowing for change in the IT environment and addressing the factors internally or externally that prompted the change. The review of literature also indicated that another explanation was feasible – that IT leaders were not wholly rational actors and would choose to satisfice through a decision making process that they did not entirely understand.

Chapter 3 provided more detail on the specific research questions and sub-questions, and discussed the methods used in the study. Broadly speaking, the aim of the study was to determine how IT leaders view intra- and inter-institutional collaboration, to what extent they have pursued these collaborations and how that process occurred, and how and why they make decisions to engage in collaborative activities. To determine the answers to these questions, this study took the form of an in-depth case study focused on collaboration within an existing collaborative consortium—the CIC. Semi-structured interviews with the 13 CIOs in the CIC and 14 other IT leaders at CIC institutions were conducted, and 24 participants also completed a participant questionnaire. The interviews and questionnaires were designed to solicit information on IT leader perspectives and practices on collaboration on an intra- and inter-institutional basis. Data were analyzed through a four step coding and analysis process using a critical realist (Maxwell, 2012) perspective.

Chapter 4 provided additional context leading into a discussion of findings in Chapter 5. Chapter 4 offered an overview of the history and practices of the CIC and the CIC CIO working group, discussed the results and impact of the pilot version of the current study, and provided an analysis of the 24 questionnaires returned to the researcher. Based on an interview with Karen Partlow, the CIC Associate Director for Technology Collaboration, and documents that she provided for a historical overview, the CIC CIOs are a highly collaborative group who have
longstanding relationships and value ongoing efforts at collaboration. However, Partlow noted that the CIC CIOs were currently more collaborative in some areas than others, and the data in the questionnaires provided further evidence of this. The questionnaires suggested that IT leaders were more interested in intra- than inter-institutional collaboration and some types of collaboration were more appealing to IT leaders than others. This was the context leading into interview data analysis in Chapter 5.

Chapter 5 presented the major findings from the study across three super-themes and discussed the relation of the findings to the three original research questions. Overall, it does not appear that any one factor determines whether and how IT leaders collaborate on either an intra- or inter-institutional basis. Rather, there is a complex decision making process occurring that is not fully clear—perhaps because of the exploratory rather than explanatory nature of this work. What is particularly evident from the data is that decision making is not a matter of individual rationality, but of individual perspective. The ways in which IT leaders perceive a host of factors drives collaboration. IT leaders appear to incorporate the relative importance of those factors into an internal calculus that results in their willingness to work with others. While this study is unable to provide definitive hypotheses about what causes IT collaboration within the CIC, or more broadly within higher education, it points to some of the major factors IT leaders consider when they discuss collaboration.

Many of the factors identified prior to data collection remained present in the findings, but the actual decision making processes and beliefs about collaboration evinced by IT leaders make the original conceptual framework appear less appropriate. Rather than a model composed of discrete components that independently influence the decision making process, what appears to occur when IT leaders consider collaboration is something even more context- and person-
dependent. While the intention is not to indicate that there was no interest in collaboration, or that collaborative endeavors were not occurring, the level of interest in collaboration, the perceived benefits of it, and the actual instances discussed were often inconsistent with expectations and with what the review of literature and conceptual framework indicated would be present. This chapter proposes a new collaboration decision process framework that provides more emphasis on situated context. This framework focuses on what factors are considered as IT leaders evaluate and make individual assessments of collaborative opportunities.

**New Framework**

The new Information Technology Collaboration Framework (ITCF) is a visual representation of the thematic findings presented in Chapter 5. It categorizes and shows the potential influence of factors IT leaders consider when making decisions about engagement in an intra- or inter-institutional collaboration. As compared to the framework presented in Chapter 2 (shown in Figure 7 below), one obvious change is that rather than identifying discrete factors outside the IT environment that exert pressure upon the IT environment, this framework incorporates the pressures into the decision making process. These pressures were not always direct triggers for IT leaders in the study. Rather, if these pressures were part of the decision making process, IT leaders appeared to incorporate an assessment of their impact into their overall decision making process about collaboration.

As shown in Figure 8 below, the factors that influence decision making about collaboration constitute a process step that leads to a decision about collaborating on the part of an IT leader. Within the factors box, three major areas identified in Chapter 4 can potentially exert influence on this decision making process: human factors, institutional factors, and collaboration type factors. All three areas contain a variety of sub-factors that appear to be the
primary triggers for decision making. These are contained within dashed boxes, with dashed arrows showing reciprocal influence points between and amongst the areas.

The selection of dashed sub-boxes within the larger solid box of factors influencing decision making is significant. The dashed boxes are intended to indicate permeability and serve as a visual representation of the extent to which decision making is an ambiguous process into which some of these factors may not even play. For example, the urgency of a problem within the area of collaboration type might be the only, or most heavily weighted, factor that an IT leader considers in making a decision. A different IT leader might view multiple factors from across the three areas as important in decision making. The reciprocal dashed arrows and indeterminate nature of the dashed boxes recognize this individual-centered decision making approach. The following sections discuss each area of the framework and connect or contrast them to existing literature, identify implications for future research that come out of the new framework, and consider the broader implications of the study and the framework for policy and practice.
Figure 7. The Original ITCF. Based on a review of extant literature, this framework shows what appeared to occur in IT leader decision making about collaboration.

Figure 8. The ITCF. This framework shows the factors that go into IT leader decision making about engaging in an intra- or inter-institutional collaboration.
**Human factors.** Human factors are related to the impact of personal perspective and experience on decision making. Three major sub-themes emerged from the data that inform this section of the framework: leadership, assessment of prospective individual partners, and assessment of prospective institutional partners.

**Leadership influences.** The first major sub-category within this area is leadership influences. This sub-theme relates to two major factors. First, the framework shows the impact of IT leaders’ personal beliefs about collaboration. Second, the way those beliefs about collaboration are expressed by IT leaders and other institutional leaders to the rest of the organization can impact whether IT leaders feel they have support to collaborate. Contrary to the hypothesis articulated in Chapter 2, IT leaders often had well-defined philosophies about the merits and drawbacks of collaboration that exerted a separate influence on their willingness to collaborate within and across institutions.

While all IT leaders expressed positive feelings about working with distributed IT, many were dubious about certain types of collaboration, collaboration generally, or the kind of support they would receive for engaging in collaboration. For many, though not all, IT leaders in the study, working within institutions was seen as easier than working with other schools. Also, working on collaborations that involved only IT was easier than working with areas outside of IT. Collaborations that involved other schools *and* included more than just IT were seen as more complicated. It is important to note that there is a difference in this part of the framework between feelings and actions—beliefs about the value of intra- and inter-institutional cooperation could influence IT leader behavior, but did not mean that either form of collaboration was *de facto* absent from their institution.
This is both related to and distinct from other reasons for collaborating. For example, an IT leader with a firmly entrenched belief that working with vendors makes more sense than working with institutions is going to be less likely to seek out opportunities to engage with other schools on IT service collaborations. The impact of this perspective was not built into the original conceptual framework. From the review of literature, it appeared that the cost/benefit analysis IT leaders made in deciding whether to collaborate, or their tendency to satisfice—whichever proved to be the case—would be more strongly tied to two things. First, the institutional environment, and second, the forces that were producing the need for a collaboration. However, the data indicated that their general philosophy about collaboration was also a decision factor for some IT leaders.

From this study, it is clear that CIOs and other IT leaders generally see themselves as decision makers when vetting a collaborative project. They are institutional leaders, but also decision makers who influence the outcome of the ITCF by coming to a decision on entry into collaborative projects. However, Huxham and Vangen (2000) note that there has been little research on the impact of leadership on collaboration and question whether leadership is truly a factor. They note that there may not be a formal leader in collaborative situations where people come together from multiple groups. Further, they argue that the concept of a leader “with a hierarchical relationship to followers does not apply in collaboration” (p. 1167). However, the data from this study indicate that internal beliefs about collaboration’s merit and expressed belief in collaboration’s merit—or lack thereof—can impact how both unit level IT leaders and CIOs make decisions about collaboration. Essentially, while Huxham and Vangen question the true ability of a “leader” to impact collaboration, this study asserts that leaders have a very real
impact on collaboration. At minimum, their perspectives can determine whether a collaboration occurs, regardless of their subsequent involvement with a project.

Indeed, in spite of Huxham and Vangen’s (2000) assertions to the contrary, extant research does support—or at least does not appear to actually preclude—the suggestion that leaders can impact collaboration. Galaskiewicz and Shatin (1981) found that traits of leaders in collaborations can impact the development of collaborative relationships. Other organizational theory literature points to how the impact of leadership may be consistent with facets of existing organizational theory, even if they are unusual in literature on collaboration. Individual beliefs about collaboration could be seen as taking the form of goals serving a cognitive function for leaders. They “provide criteria for generating and selecting among alternative courses of action” (Scott & Davis, 2007, p. 184; citing Simon 1964; 1997). IT leaders develop a perception about the value of collaboration that serves as part of an internal set of criteria that help them decide whether or not to collaborate. Externally, the way that these beliefs are expressed, translates to what Scott and Davis (2007) describe as the cathetic—or motivational—side of goals, where goals “serve as a source of identification and motivation for participants” (p. 184). Goals, in this sense, move into the idea of leaders as “managers of meaning” (Bryman, 1996, p. 280) where goals serve a motivational purpose in helping followers align with a leader’s aims.

It is too simplistic to suggest that leadership influences are the primary driver of decision making about collaboration; organizational goal setting is not seen as a predominantly hierarchical or singular process (Scott & Davis, 2007). However, leadership depends upon participants allowing a leader to create meaning for them (Avolio, Sosik, Jung, & Berson, 2003). Vision setting by senior executives and IT leaders that implies collaboration is valued appears to be a form of meaning creation. Given that goals are a tricky area for organizational theory (Scott
& Davis, 2007), and that there is little extant research specifically upon the impact leaders can have on collaboration (Huxham & Vangen, 2000), this is one facet of the new framework that suggests a clear opportunity for future research. Within the CIC, it is clear that some IT leaders look for executive signals about collaboration. It is also clear that many have defined belief systems about collaboration that influence their perceptions of collaborative options. This may be unique to the CIC, or to IT leaders at large colleges and universities, but certainly merits additional, targeted investigation to determine whether this finding holds up across IT leaders at institutions of different types and sizes. More specifically, future research could explicitly focus on how IT leaders at different types of schools articulate the impact of executive leadership vision on their own decision making about collaboration. Alternately, research could examine the extent to which IT leaders rate their own opinions and vision as the driving force behind their decision making regardless of the specific project context.

Assessments of individuals and institutions. Human factors as a theme contained two additional sub-themes. The first related to the assessment of other individuals, which contained the factors of past experience working with a partner, and the impact of personal relationships. The second was assessment of other institutions, which included past experience working with an institution as a whole, as well as opinions IT leaders held about the specific type of institution as a partner. Because the two sub-themes of assessment of individuals and assessment of institutions were very similar—though they are differentiated enough to merit separate sub-themes—they are discussed in tandem within this section.

Many IT leaders found that past experience working with an individual or an institution helped inform their future decision making about collaborating. Specific to individuals, IT leaders often noted that having a personal relationship with a potential collaborator was helpful
because there was a natural feeling of trust and reliability that was important for collaboration to succeed. Specific to institutions, IT leaders had a host of opinions about the impact of institutional type. Some thought working with private institutions was difficult, some targeted liberal arts colleges, some thought type was irrelevant, and many simply asserted that they were looking for partners similar to their own institutions that could understand what they were going through.

These findings are largely consistent with what was anticipated in the proposed conceptual framework and other extant literature on collaboration. According to Goldstein (2007), similar institutions tended to prefer working with one another and 75% of respondents were more likely to work with other IT leaders if they had a long-term personal relationship. Indeed, prior personal relationships and a common mission were two of the three most cited reasons for engaging in IT collaboration in Goldstein’s study. Having a similar mission, dedication to a comparable target population, and possessing an analogous culture were found to be important by Thomson and Perry (2006), as well. Huxham and Vangen (2009) as well as Huxham (2003) note that trust is a commonly raised issue, and that common wisdom holds trust as a necessary precondition for success in collaboration (also see Das & Teng, 1998; Lane & Bachman, 1998). Lynn and Hill (2001) note that the idea of trust being important in collaboration is consistent with transaction cost economic-based theories of collaboration that assert that repeated interactions over time can lead to trust, which lowers the transaction costs—this is again an example of how past experience with success can positively impact future interest. Butterfield, Reed, and Lemak (2004) found trust was a common moderator of collaborative outcomes. Galaskiewicz and Shantin (1981) specifically argue that in times of “turbulence and uncertainty, leaders will target their networking efforts on the basis of who they
know personally or who they believe share their loyalties and personal values” (p. 435). In other words, when times are unstable or outcomes are uncertain, working with a trusted partner, or at least one who shares fundamental values, is crucial.

Yet authors also found that suspicion of prospective partners is the more common actual beginning point for most collaborations (Huxham & Vangen, 2009; Huxham, 2003) and call the importance of trust into question. Huxham (2003) argues that it is often better to begin a collaboration without full trust; trust can be developed whether or not it initially exists. This is consistent with IT leader responses from the current study, which indicated that not all IT leaders see past success or personal relationships as important, as long as other preconditions are met.

One contradiction between the findings of this study and the extant literature comes from IT leaders who were explicitly uninterested in institution type as a factor in decision making. The CIC institutions, being primarily large, public research institutions with two private, smaller research institutions, might have been expected to only espouse interest in working with schools like them—at minimum, major research universities. While the public/private and large/small dynamic was important to some IT leaders, some were simply interested in finding partners who brought other things more so than their institution type. Roberts and Bradley (1991) suggest that at least one common interest must exist amongst parties, and perhaps this precondition is met in different ways for IT leaders. The position of some IT leaders evince on de-emphasizing personal relationships, institutional type, and past experience merits further investigation to determine whether this is a common perspective amongst more than IT leaders within the CIC.

Institutional factors. As discussed in Chapter 4, institutional factors are those things within a single institution’s boundaries that exert general influence upon an IT leader’s interest in collaboration. Culture, IT structure, and funding could—but did not always—factor into IT
leader considerations vis-a-vis collaboration. Culture could either facilitate or hinder collaboration. Some felt that institutions of higher education were naturally collaborative, which would incline an institution towards working intra- and inter-institutionally. Others argued that an isolationist and independent culture was the norm, which needed to be overcome in order to achieve collaboration on an intra- or inter-institutional basis.

The perceived impact of IT structure was more diverse. Some IT leaders argued that if IT were not internally coordinated within an institution it was unlikely inter-institutional collaboration could happen, others targeting the strength of the CIO, and most focused on a perceived need to improve intra-institutional collaboration. IT structure typically appeared as a detractor from inter-institutional collaboration and a prompter of intra-institutional collaboration for those who raised structure as a factor. Lastly, some IT leaders were explicitly interested in intra- and inter-institutional collaboration as a means of saving money in a financially constrained environment, but others felt that their funding situation was stable and were not particularly motivated by cost savings or lack of institutional resources.

Unlike leadership influences, these three components—culture, IT structure, and funding—were present in the initial framework presented in Chapter 2. They subsequently emerged in the data as well and became part of the final framework shown above. Additionally, all three factors are supported, or at least suggested, by Goldstein’s (2007) study. Goldstein (2007) found that cultural comfort with risk-taking led to greater evidence of collaboration, which ties into the impact of culture. Goldstein also found that private institutions were less likely to collaborate, and noted that it was unclear whether this was because private institutions were satisfied with their IT structure or due to lack of collaborative options in their sector. This suggests that IT structures were also a potential influence in Goldstein’s study, although their
impact was not explicitly clear. Finally, Goldstein found that collaboration was viewed as a way to achieve cost savings, which points to the existence of funding as a factor in his study.

Funding in particular was hypothesized in Chapter 2 to be more influential than was indicated in the data. Chapter 2 suggested that because collaboration is a solution turned to in times of fiscal exigency (Goldstein, 2007), and because higher education is generally perceived to be in a time of financial hardship (Zumeta, 2010), there would be strong expressions of interest in collaboration amongst study participants. Indeed, the functional hypothesis entering data collection was that interest in collaboration would be very strong due to the financial climate. Yet, the indication from IT leaders was that many departments were far more insulated from the crisis than the review of literature would indicate. As a result, it became evident that while institutional funding was a factor for some IT leaders, it was not the major, consistent pressure anticipated. The differential levels of interest in funding and cost savings expressed amongst participants indicated that a pure cost/benefit analysis with primary interest in achieving the lowest costs with the most benefits—as previously discussed from Goldstein’s (2007) use of transaction cost economics—was not necessarily occurring for IT leaders in the CIC. Pure interest in cost savings was rarely cited, and some IT leaders were avowedly uninterested in this as a goal. Few IT leaders were experiencing the national financial crisis as a motivator for change, which means that the previous incorporation of Richardson’s (1994) theory that crisis can be used to prompt significant change was not necessarily in play for many participants.

While this finding challenges previous work, the de-emphasis of pure cost/benefit reasoning is consistent with previous research on collaboration in other areas. Galaskiewicz and Shatin (1981) found that, “criteria other than that related to simple resource procurement…are important in establishing interorganizational relations” (p. 445). That some IT leaders were
interested in reducing costs through collaboration is consistent with previous work on the perceived ability of collaboration to reduce transaction costs (e.g., Adams, Landsbergen, & Hecht 1996; Goldstein, 2007; Myrtle & Wilber 1994). However, other leaders in the study who acknowledged anticipated resource constraints but did not cite these as their primary decision driver were using a model more analogous to socialized choice theories. These “accommodate social motives other than economic motives and interactions other than transactions” (Lynn & Hill, 2001).

Furthermore, resource dependency theory suggests that while these leaders will react to financial constraints and potential collaborative opportunities, these may not completely drive decision making (Aldrich & Pfeffer, 1976). For those IT leaders who were uninterested in economic benefits, it is possible that their organizations are simply not under resource constraints that would prompt collaboration by either of the other theories. It may also be possible that some IT leaders are more motivated by psychological or cognitive promptings that cause behavior that differs from what normative models like transaction cost economics or resource dependency theory would predict. The need for acknowledgement of individual approaches to decision making theories is consistent with research that shows how individuals can often deviate from supposedly “rational” choices (e.g., Tversky & Kahnerman, 1986; Halpern, 1998).

It was anticipated culture would have an influence on collaboration due to the longstanding influence of traditions at colleges and universities that preference consensus building and understanding prior to taking action (Padilla, 2005). As a result, culture could potentially be problematic for collaboration because universities want to feel as though there is conventional wisdom around a course of action prior to making decisions (Agee, Yang, et al, 2009). This can be troublesome given the rapidly changing nature of IT (Floyd, 2008). These
findings from the literature are consistent with the assertions of some IT leaders who found culture to be an impediment to collaboration.

Lynn and Hill (2001) explicitly assert that culture is a relevant feature for determining why organizations might collaborate. Culture defines what is important in an organization (O’Reilly & Chatman, 1996). Lynn and Hill (2001) argue that “service providers that have a strong sense of mission and autonomy may find it difficult to coordinate or share information” (p. 19), which were some of the barriers that IT leaders identified as arising from culture—universities are loosely coordinated entities with autonomous actors who do not want to come together around a common goal. This description is also consistent with the perception of universities as loosely coupled systems (Cohen & March, 1986; Mintzberg 1979, Weick, 1976) where misalignment between groups can lead to disputes over the goal of institutions, the day-to-day running of institutions, and dealing with external demands. Huxham and Vangen (2009) also suggest culture as a potential stumbling block for collaboration. The sense among some IT leaders that the nature of higher education creates a shared cultural context for collaboration is also notable. In such cases, culture would be seen as a facilitator rather than a barrier by an IT leader and factored positively into an assessment of the likelihood of a collaborative outcome. Whether this cultural impetus plays out in more than a limited population of IT leaders in the CIC is another opportunity for future research, especially given that extant research points more to a likelihood of divergence than convergence.

Lastly, the existing structure of IT was shown to be a factor. This finding was predicted based upon IT literature, which indicated that decentralized support is often seen as the best way to meet institutional IT needs (Vouloudakis, 2010; Krueger, 2009; Solomon, 1994; Kettinger, 1990; Conrad, Rome, & Wasileski, 1992). The findings from the study are consistent with this
assessment—the vast majority of IT leaders rated their institutions on the decentralized end of the spectrum in the participant questionnaires. Additionally, IT appears to be shifting towards a more collaborative focus despite its traditionally decentralized nature (Davis, 2008; Morooney, 2010). Most respondents in the study were focused on ways to improve the level of collaboration between central IT and unit IT. So, the traditionally decentralized IT environment appears to be in play at the large research institutions in the CIC, but a desire for a shift to more collaborative structures on at least an intra-institutional basis was a factor for many IT leaders.

**Collaboration type factors.** The specific type of collaboration under consideration often prompted IT leaders to discuss additional decision making factors. Within this area, perceived benefits and alignment were the two major categories that emerged, each containing a variety of decision making factors considered by IT leaders contemplating collaboration.

**Perceived benefits.** For most participants, if an institution did not perceive a need or a use for a particular collaborative project, most IT leaders were uninterested in pursuing it. Even if the type of collaboration was interesting, perceived benefits could be mediated by the intra-institutional context. Namely, the current state of the institution with respect to the collaborative project under consideration and the perceived changes such a project would engender were major factors.

IT leaders identified the perceived urgency of generating a solution to the topic at hand as one factor—many noted that the more pressing the need for a solution to the problem the more likely a collaboration was to occur. Some asserted that the increasing level of technical expectations, pace of change, and other pressures upon IT in higher education made collaboration on an intra- and inter-institutional basis desirable due to the pressing need to make changes. Additionally, existing IT strategy at an institution was a major factor. Several IT leaders
were explicitly uninterested in inter-organizational work on certain topics because they felt it rubbed up against an area of competitive advantage for their institution. Others were focused on facilitating a more strategic—and less service delivery—oriented role for IT, which variously meant working more between central IT and distributed IT units and seeking partners inter-institutionally who could help innovate. Thus, IT strategy could serve as a prompting or negating factor for collaboration.

Additionally, IT leaders were concerned with both the potential financial impact of a specific type of collaboration and how that would impact service quality. For those IT leaders who were interested in the financial impact of collaboration, collaborations like joint negotiation with vendors to bring down the cost of software solutions seemed more feasible than other options. The interest in achieving financial benefit from specific types of collaboration complements IT leader interest in general institutional funding situations discussed previously. However, as was also noted of institutional funding above, for several IT leaders, cost savings from collaborations were not a major consideration. Thus, the entering assumption that collaboration would be perceived as valuable for cost savings based on Goldstein’s (2007) findings was further undermined within this section. While institutional funding and cost savings from collaboration were still factors for some IT leaders, the theme was far from its expected level of importance.

For those IT leaders who did not express primary concern with cost, some were more focused on the potential for collaboration to improve the quality of the services they delivered to their campuses. Some felt that intra-institutional collaboration on services could lead to more efficient and effective service delivery to the campus community, and this idea played out on an inter-institutional basis as well, particularly with respect to some of the large networking projects
like OmniPop that were capacity enablers for participating institutions. Overall, interest in perceived benefits from a collaboration is consistent with the literature on collaboration and the conceptual framework proposed in Chapter 2. Goldstein (2007) found that IT leaders are interested in collaboration based on whether the perceived benefits to a collaborative option outweigh the perceived costs.

Notably, when it comes to type of collaboration, Goldstein was focused on four types of inter-institutional collaboration and 10 specific types of IT projects. While the majority of participants in the current study were interested in these 14 areas for both intra- and inter-institutional collaborations, two unique types of collaboration emerged as particularly valuable: idea sharing and joint negotiations with vendors. Many participants felt these were legitimate types of intra- and inter-institutional collaboration, and some were more interested in these two forms than in any other type of collaboration. Discovering whether these two types of collaboration are a) considered legitimate forms of collaboration and b) are viewed as potentially valuable to IT leaders outside of the CIC at other types of institutions presents an opportunity for future research.

For perceived benefits in general, Huxham (1996) asserted that organizations need to perceive some level of self-interest as being satisfied by a collaboration so that participation is logical. Consistent with IT leader interest in financial impacts or service quality, Bardach (1998) noted that collaboration “should be valued only if it produces better organizational performance or lower costs than can be had without it” (p. 17). Kezar (2005) found that collaboration within higher education was unlikely to occur unless some kind of pressure was felt from external groups—tying into the sense that IT leaders had about the need for a feeling of urgency on a project in order for it to move forward. Kezar also found that for collaboration to be considered a
viable option, institutions needed to be convinced that there was a benefit to participation. However, not all IT leaders participating in this study felt they had to realize an immediate benefit because of future potential for payoff, which is inconsistent with these assertions and with Goldstein’s (2007) statement that “collaboration is to be pursued if and only if it is perceived to benefit the collaborator’s institution” (p. 7). Future research could examine the degree to which a subversion of immediate benefit to long term gains is consistent with the actions of other IT leaders outside of the CIC.

Alignment. Perceived benefits were coupled with the second sub-category of alignment. IT leaders generally argued that being aligned with potential collaborators on either an intra- or inter-institutional basis was important for collaboration to be a good choice. Within alignment, five factors were particularly important to most participants. First, many IT leaders asserted that the timing of a potential collaborative project had to be right for them to be interested in participating. Timing could play out in several ways, one of which was if an IT leader had too many ongoing projects happening to have bandwidth for another. Another was whether the institution was ready for a specific project—sometimes institutions had just completed a major project—for example, on data storage—and would not be interested in a collaboration until the next time they wanted to do update their capabilities. For inter-institutional collaborations, timing was especially important because the timing had to be right for all participating institutions.

Timing was rarely mentioned as an explicit factor in the literature. In their study on research and development technology collaborations amongst for-profit organizations, Katila and Mang (2003) argue that timing is important for technological collaborations because the opportunity either needs to be quickly exploited to stay ahead of competition or because
Institutional buy-in was a second factor related to alignment. On both intra- and inter-institutional collaboration, it was important for many IT leaders to have a sense that their
institution was behind collaborative efforts on specific projects. Dedicating both financial and personnel resources to a collaboration and investing in its success were some of the concepts that tied into this factor. Institutional buy-in can be seen in the literature on collaboration, and has been noted specifically with relation to institutions of higher education. Kezar (2005) notes that a key contextual condition for collaboration in higher education is a sense that collaboration is a priority. This points to the suggestion that buy-in particularly manifests through the idea of commitment. Butterfield, Reed, and Lemak (2004) suggest that the availability of funds to supply the collaboration, which IT leaders identified as a form of institutional buy-in, was important. Lynn and Hill (2001) also note that success in collaboration requires leadership that is committed to the collaboration and demonstrates support consistently.

Shared goals was the third; IT leaders stated that having a common understanding of the aim of a collaboration was important. Having a common aim was also connected to a belief that this common aim needed to be flexible—IT leaders observed that if a collaboration was a one-sided attempt by a participant to get all the benefits desired without accommodating or considering the needs of other partners, then a collaboration was unlikely to succeed. The presence of shared goals was particularly noted across studies on collaboration as important. Wood and Gray (1991) asserted that shared understanding was needed for successful collaboration. Eden, Huxham, and Vangen (1996) asserted that agreeing upon common goals is an extremely difficult process in collaboration because organizations and their individual constituents have a host of different constraints and interests that they bring to any discussion about a project. Butterfield, Reed, and Lemak (2004) found that common goals were a motivating factor as well as a potential impediment to collaboration. Thomson, Perry, and Miller (2007) specifically noted that organizations have to be willing to go beyond individual interests
to accommodate others (see also Powell, 1990). Moving beyond these individual goals to shared interests is, as Huxham (1996) notes, one of the major challenges of collaboration because organizational self-interest comes up against the best interests of the collaboration (see also Wood & Gray, 1991).

Scale is a fourth factor within the area of alignment, and relates to the size and structure of a specific collaborative project. For some IT leaders, a particular service or topic had to be able to benefit from greater scale to be worth working on an intra- or inter-institutional basis. Email was a commonly cited example of a service that benefitted from scale—adding more people into a central email system increased cost efficiencies and decreased institutional complexity arising from running multiple, redundant services. Scale could also enter the picture in terms of the number of parties in a collaboration. IT leaders generally found intra-institutional collaboration to be easier than inter-institutional collaboration, and smaller inter-institutional collaborations to be easier than ones involving many institutions. Similarly, some IT leaders preferred collaborations that were more structured, with formal agreements, operating procedures, and organizational structures—such as through the CIC. Others liked collaborations that were more loose, flexible, and less structured without contract-esque requirements or obligations. Some felt the CIC itself was too structured and expressed a preference for more ad hoc, free form collaborations that lacked ongoing organizational structures.

Scale has been cited as a factor in previous research. Thomson and Perry (2007) asserted that structured collaborations—which in the context of this study meant a greater scale than an unstructured collaboration—could be helpful for long-term alliances, where establishing common objectives is perceived to be difficult, or where the work is highly complex. Gulati and Singh (1998) advocated for hierarchy within collaboration in order to prevent free riding and
have clearly delineated responsibilities. However, Boddy, McBeth, and Wagner (2000) asserted that formal structures can create complications because they take time to create, could contain the wrong individuals, or could create inflexibility and slow processes that discourage participation. As in the literature, both a desire and a dislike of structure were present in IT leader statements in this area. Also consistent with IT leader concerns about the complexity of larger collaborations, Butterfield, Reed, and Lemak (2004) found that the size of the collaboration impacted the perceptions of stakeholders—smaller was seen as better, larger as less desirable.

Finally, institutional policies, procedures, and organizational structures constitute the fifth factor within alignment. IT leaders frequently acknowledged that the way in which these areas are structured outside of IT can promote or preclude intra- or inter-institutional collaboration. Projects where only IT was involved were generally perceived to be easier than projects that crossed boundaries within or outside of institutions because other parties became invested in decision making at that point. Purchasing policies, who controls funding, and existing institutional commitments and contracts could drive or prevent collaboration. Others argued that barriers raised by these items could be surmounted. Findings in this area were somewhat contradictory; many IT leaders were able to provide examples of collaborations that fell apart because a policy or contract prohibited it, and others offered examples of those that were pushed forward because an institution had to comply with a policy, such as security, that necessitated greater collaboration. This conflict suggests that IT leaders did not experience the impact of institutional policies, procedures, and structures in the same way—these things could be a problem or a benefit depending on the collaboration type, the institution, and the IT leader in
question. Contradictory assertions about the impact of these factors provides further support to the context-dependent nature of the ITCF.

Institutional policies, procedures, and organizational structures have been raised in facets of the literature on collaboration. Wood and Gray (1991) noted that successful collaboration is facilitated by achieving alignment with the structure and environment of the participating institutions. Butterfield, Reed, and Lemak (2004), as well as Eden and Huxham (2001), found that bureaucracy could impede successful collaboration. Specific to universities, Shaw and Holmes (2005) observed that universities are traditionally autonomous and used to self-governance. While there is an emphasis on collegiality in place at colleges and universities, this tradition of autonomy means that “that the objectives at different levels of the institutional hierarchy may be difficult to reconcile, with the potential to compound difficulties when working across organisational boundaries” (p. 481). This in particular joins up with what IT leaders expressed—it is harder to work outside of IT at institutions because different areas of institutions have competing priorities. Working across institutions is even more challenging, as a result. Kezar (2005) among others (see also Kanter, 1994; Senge, 1990) drives this point home, arguing that “institutions are, generally, not structured to support collaborative approaches to…organizational functioning. Departmental silos, bureaucratic/hierarchical administrative units, unions, and other rigid structures act as barriers to cross-divisional work and partnerships” (p. 832). Higher education, to Kezar, is not organizationally prepared for collaboration. The greater than 50% failure rate of collaborations in higher education (Doz, 1996) supports this perspective.

**Summary.** Overall, the framework that emerged from the study is largely consistent with previous research when multiple theoretical perspectives are considered. Pulling from multiple
theoretical and literature domains is common in research on collaboration, because many researchers find that no single theoretical lens or theory can provide sufficient foundation for understanding collaboration (Gray & Wood, 1991; Sowa, 2009; Galaskiewicz & Bielefeld, 1998; Guo & Acar, 2005). Although Goldstein (2007) primarily used a rational model in his study on IT collaboration, pulling multiple theoretical perspectives for this study appears to accurately reflect the diverse stories told by the data. IT leaders did not know the exact decision making calculus that they used to evaluate the costs and benefits of collaboration, and frequently cited decisions that would go against a pure cost/benefit rationale such as an evinced lack of interest in funding and cost savings, as well as a consistent inability to identify a specific decision making process.

Indeed, the purely rational model has been directly critiqued as a means of understanding decision making. Tversky and Kahneman (1986) suggest that pure rational choice is a problematic concept because “an adequate account of choice cannot ignore these effects of framing and context, even if they are normatively distasteful and mathematically intractable” (p. S273). Essentially, while accounting for non-rational factors may complicate generalizability and make replication difficult, the choice process is often not rational and maintaining a sole focus on rational behavior produces an incomplete picture. However, the picture appears equally incomplete if the ultimate argument is simply that actors satisfice in decision making about collaboration. From the assertions of some IT leaders, it does appear that some seek to find solutions that are workable rather than optimal, as is the case in satisficing (Thomson, Perry, & Miller, 2007), but labeling the decision making process as pure satisficing also does not satisfactorily suss out the influence of organizational factors and other non-individual pressures that exert themselves upon the decision making process. Certainly there is a strong extant
argument in the collaboration literature for pulling from multiple theoretical and disciplinary domains, and to find support for the factors present in participant interviews it was necessary to do so, but it is also possible to ground these statements and the ITCF within a theoretical tradition that could then be used as a deliberate lens of examination in future research.

Vaughan (1998, p.3) observes that “the choices people make tend to be rational within situational contexts”. This is an extension of Tversky and Kahneman’s (1986) discussion of individual approaches to decision making. The use of “non-rational” factors that do not relate to transaction cost economics or other rational model prescripts do not necessarily suggest that there is no coherent way to approach understanding IT leader decision making about collaboration. Busemeyer, Jessup, and Dimperio (2008) discuss forms of research on situated decision making, or situated cognition, which involves studying decision making by actors in realistic environments. Among the types of situated decision making they cover is naturalistic decision making. Zsambok and Klein (1997) describe this type of decision making as “an attempt to understand how humans actually make decisions in complex real-world settings” (p. 16) that is characterized by key features such as “dynamic and continually changing conditions, real-time reactions to these changes, ill-defined tasks, time pressure, significant personal consequences for mistakes, and experienced decision makers” (p. 16).

While naturalistic decision making (NDM) is often applied to areas such as the military, juries, medicine, and other field arenas (Klein, 2008), these characteristics of NDM have clear applicability in the IT setting as well. IT leaders in the study identified rapidly changing demands, complex cultural and organizational environments, unclear responsibilities, timing, job security, and their history with collaboration as factors in their decision making, all of which connect to the NDM factors identified by Zsambok and Klein (1997). The primary theoretical
aim in this type of research is to “specify the link between the nature of the task, person and environment, on the one hand, and the various psychological processes and strategies involved in naturalistic decisions on the other” (Cannon-Bowers, Salas, & Pruitt, 1996, p. 202). In other words, NDM incorporates, and must strive to explain, the interactions between these factors that occur and lead experienced individuals to arrive at decisions in a real world context. While testing the applicability of the NDM model to the data was not an explicit aim of the current study, subsequent research should investigate the topic of IT leader decision making by directly applying this lens or another situated decision making theoretical lens to the research design and analysis. The main benefit of using a situated rather than rational lens is that it allows for individual preferences, experiences, organizational position, and other contextual factors to speak clearly and as a valid, initial expectation of the data. Thus, this study sets the stage for future work that can engage in a more robust examination of the impact of an individual’s experiences and psyche situated within a specific context. IT leaders may decide things differently and have different explanations for arriving at those decisions, but there is an underlying situated structure that can give researchers a lens for better understanding these outcomes.

Within the ITCF itself, there are also several areas that could benefit from additional targeted research outside of the present study’s context. First, the influence of leadership perspectives—both internal and expressed—is notably controversial in the literature on collaboration. IT leaders at institutions outside of the CIC might have a different perspective on the extent to which leadership has an impact on their decision making. At other types of institutions, it is possible that leadership perspectives would not be as prominent of a decision factor. Second, future research on IT could shed light on whether the downplaying of cost
savings as a primary decision making factor is consistent across institutions. The CIC schools are all major research universities with complex organizational and funding structures, and it is possible that smaller schools would feel more pressure to economize through collaboration.

It would also be beneficial for subsequent studies to examine whether type of institution stands out as important in inter-institutional collaboration. While it was a factor in this study, several IT leaders did not feel a particular need to work with similar institutions—a finding that contradicts the “birds of a feather” mentality discussed in much of the literature on collaboration, including Goldstein’s (2007) IT-specific study. Similarly, some IT leaders did not need to realize an immediate financial or institutional benefit to collaboration in order to be interested in it, which is certainly an anomaly that merits additional exploration outside of the CIC. Lastly, timing emerged as a major factor in this study, but is notably absent from the findings and examinations of many previous studies on collaboration. The extent to which it emerges as important in future, expanded research on IT could signify a decision making factor that merits more airtime in collaboration literature. The decision making framework as a whole also has broader implications, which are discussed in the next section.

**Implications for Future Research, Practice, and Policy**

The ITCF presents a variety of opportunities for future research, use in practice, and policymaking. From a research perspective, the development of the framework advances research on collaboration within IT in higher education, on collaboration in higher education generally, and on the general topic of collaboration. Kezar (2005) noted the lack of research on the process of collaboration and the development of collaboration in higher education, which this study and its proposed framework help to ameliorate. Birnbaum (2002) noted that models in organizational theory are more successful when they are customized to their context, which this
framework also accomplishes. To the author’s knowledge, the ITCF is the first IT-centered framework for collaboration within higher education. Additionally, this study included intra-institutional collaboration as an explicit component, which Goldstein (2007) was unable to include in the scope of the study. Including intra-institutional collaboration, which IT leaders consistently identified as an important type of collaboration for their schools, provides additional perspective and insight into the thought process of IT leaders when it comes to collaboration.

As noted previously, IT has become a vital component of mission fulfillment for institutions (Workman, 2009). Viewed from this broader perspective, the challenges faced by IT departments at colleges and universities and the decisions IT leaders make to overcome them have a real impact on the way in which universities function. IT capability was often raised in this study as an influencer of pedagogy, faculty research, competitiveness, and overall institutional effectiveness. IT has become a major player in the ongoing efforts of institutions to improve and promote a host of outcomes from student learning to transformational research. This study’s examination of decision making on collaboration by IT leaders in the CIC shows that intra- and inter-institutional collaboration is one way that many IT leaders hope to meet these needs and challenges, and suggests that expanded research outside the context of the CIC would be valuable.

The ITCF itself is based upon IT leader responses in a very specific context—the CIC—and has potential for broader use in research. One area that merits additional examination is what happens after the decision to collaborate is made. If IT leaders select collaboration as an option based on the weight of factors included in the ITCF, the next logical question is what factors IT leaders consider in developing and maintaining a collaboration. This post-decision aspect of IT collaboration was initially present in the framework from Chapter 2, but was dropped from the
final version of the ITCF due to the complex decision making process that became evident from the study’s interviews. The ITCF itself requires additional vetting before additional steps can be added. Goldstein’s (2007) findings and the current study suggest that additional research on IT collaboration in higher education would be generally beneficial for the development of new concepts and further vetting of existing ones.

Most significantly, the ITCF has potential for large scale, quantitative testing. Thomson, Perry, and Miller (2007) note that there is a dearth of quantitative research on collaborative processes, and adapting the ITCF for use in quantitative analysis would help to fill this gap in the literature and serve as a means to vet the appropriateness of the framework. Tversky and Kahneman’s (1986) caution about generalizing choice processes is important, but a deliberate incorporation of NDM or another situated decision making theory as the guiding lens of analysis would ameliorate the tendency to subvert individual perspective because it acknowledges the interplay of the individual within an environment (Busemeyer, Jessup, & Dimperio, 2008). To test whether the framework is applicable outside the CIC, the next step for researchers is to convert the ITCF to a quantitative survey that can be used with IT leaders at different types of institutions. Each factor within the ITCF can become a Likert scaled question about the extent to which IT leaders consider it in their decision making about collaboration.

Future research could expand the ITCF by sector, perhaps testing the framework with a broader audience of research universities first, then moving to liberal arts colleges or community colleges. Alternately, researchers could attempt to gather a large swath of data at once. Because the sample in the current study was limited to the CIC, future research—whether quantitative, qualitative, or mixed methods—should allow for incorporation of new variables in the decision making process. It is possible that IT leaders in the study did not raise, were not aware of, or do
not experience, the total array of factors that may go into decision making on collaboration. Once the framework is vetted for broader applicability, it has the potential for expansion into a weighted decision making model.

It is at this point that the ITCF can become particularly useful for practice. In its current iteration, IT leaders can use the framework as an instrument to help them better understand and articulate their own priorities in decision making about collaboration. IT leaders, as well as other institutional leaders and personnel, can also use the framework to create a dialogue about vetting and deciding upon collaborative opportunities. A future, interactive decision making model based on the ITCF would allow practitioners to directly enter the relative importance they place upon each category and whether the factor is a promoter or preventer of collaboration to generate an estimation of whether a specific collaboration should be more or less desirable. This calculus could be used to facilitate decision making, justify outcomes, and compare interests across and within institutions. The current iteration of the ITCF provides a decision making framework that was not previously available to IT leaders, but future iterations of the model based on additional research and broader, quantitative vetting would move it into the realm of a readily usable instrument for making and justifying decisions about collaboration. Workman (2009) asserted that IT has become a crucial component for mission fulfillment at colleges and universities, and the ITCF is a tool that can currently help IT leaders understand whether they view collaborative options as part of that role of mission fulfillment and facilitate the expression of that logic to other leaders within their institutions who may believe—as higher education increasingly appears to—that collaboration is important (Kezar, 2005), but who not understand the complications inherent in moving from rhetoric to practice.
Huxham and Vangen (2009) noted that for policy makers, a key takeaway about collaboration was that it should be avoided, if possible. They assert that because collaboration is extremely demanding in terms of time and resources, it should not be pursued unless there is real advantage to be gained. However, several IT leaders in the study felt that their institutions would be prompted to move towards greater collaboration because of the expectations of policymakers that cost efficiencies would be achieved. The ITCF makes it clear that within the CIC—which out of the 13 total members has 11 public research institutions—policy makers interested in prompting collaboration will have to appeal to more than an overarching desire for cost savings. Most of the schools in the CIC did not articulate drastic budget concerns, and although many suggested that they expected lack of new institutional investment would prompt additional collaboration, this was the same rhetoric Goldstein (2007) found in his study. IT leaders expected decreasing investments would prompt collaboration at that time, as well. Yet, four years into the great recession of 2008, the talking point at many of the institutions is the same.

Future testing of the framework may show that Huxham and Vangen (2009) are articulating a general sense that collaboration is still too difficult to be worthwhile in most cases. If this is the case, policy makers interested in promoting collaboration in higher education—whether it be in IT or another area—would do well to consider the types of factors that actually go into decision making and craft incentives and opportunities that would enable collaboration to flourish. For example, letting institutions know that collaboration is expected and supported could help change the evaluation for “leadership influences” to one strongly in favor of collaboration. Alternately, providing institutions with startup funds to help defray the cost of collaborative projects could help lower perceived barriers and encourage the kinds of collaboration that advance the academy and the nation as a whole. But a realistic understanding
on the part of policy makers that collaboration is not a panacea and that many simultaneous
factors enter into decision making about whether collaboration is useful or not would go a long
ways towards the creation of a more supportive environment and the potential for creation of
targeted policies that encourage collaboration to move from talk to walk within higher education
IT.

Ultimately, this study moves understanding of IT collaboration in higher education
forward by pushing away from a rational model of understanding and encouraging a move
towards use of situated decision making. The explanations, ideas, and suggestions of the 27
study participants suggest that this type of context-dependent, individually considerate lens will
allow for a more complete and testable framework for IT leader decision making. The ITCF
described in this chapter provides a visual representation of the areas and factors that IT leaders
explained went into their collaboration decision making within the context of this study. Testing
and adding to the ITCF using additional qualitative and quantitative research within a situated
theoretical context will advance understanding and improve higher education’s ability to think
and act strategically with respect to IT as it moves into an uncertain and dynamic future.
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Retrieved from: http://www.nova.edu/ssss/QR/QR3-3/tellis2.html


Appendix A: Dissertation Timeline

May
- Begin interviews/qualitative data collection with CIOs
- Complete full drafts of Chapters 1-3

June
- Complete interviews
- Complete full drafts of Chapters 1-3

July
- Transcribing interviews
- Analyzing qualitative data

August
- Transcribing interviews
- Analyzing qualitative data
- Write qualitative analysis (Chapter 4)

September/October
- Analyzing qualitative data
- Finish qualitative analysis (Chapter 4)
- Member checks

November
- Write conclusion (Chapter 5)
- Finish first full draft
Appendix B: Final Participant Questionnaire

**Background Information**

Name:

Position:

Time in Position:

Time at Institution:

Would you describe your institution’s IT structures as:

<table>
<thead>
<tr>
<th>Highly centralized</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Somewhat centralized</td>
<td></td>
</tr>
<tr>
<td>Somewhat decentralized</td>
<td></td>
</tr>
<tr>
<td>Highly decentralized</td>
<td></td>
</tr>
</tbody>
</table>

**Collaborative Interests and Practices**

Would you describe your institution as:

<table>
<thead>
<tr>
<th>Highly collaborative</th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somewhat collaborative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not very collaborative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all collaborative</td>
<td></td>
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</tr>
</tbody>
</table>

How interested are you in collaboration:

<table>
<thead>
<tr>
<th>Very interested</th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somewhat interested</td>
<td></td>
<td></td>
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<tr>
<td>Not very interested</td>
<td></td>
<td></td>
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<tr>
<td>Not at all interested</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Check the box below if you WOULD be interested in the following types of collaboration:

<table>
<thead>
<tr>
<th>Partnerships to develop an IT resource</th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared service collaborations in which multiple organizations band together to jointly operate an IT resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborations in which one institution elects to operate IT services on behalf of others, and Collaborations in which an institution is a recipient of services provided by another institution.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Check the box below if you WOULD be interested in collaboration in the following areas:

<table>
<thead>
<tr>
<th>Network infrastructure, Enterprise information Learning management systems Enterprise directory/identity management Disaster recover/business continuity Data center Instructional technology Help desk/user support IT security Research computing</th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
</table>
Appendix C: Original Participant Questionnaire

**Background Information**

Name:

Position:

Time in Position:

Time at Institution:

**Collaborative Interests and Practices**

*Would you describe your institution as:*

<table>
<thead>
<tr>
<th></th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly collaborative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat collaborative</td>
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<td></td>
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<tr>
<td>Not very collaborative</td>
<td></td>
<td></td>
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<tr>
<td>Not at all collaborative</td>
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<td></td>
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</tbody>
</table>

*How interested are you in collaboration:*

<table>
<thead>
<tr>
<th></th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very interested</td>
<td></td>
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<tr>
<td>Somewhat interested</td>
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<tr>
<td>Not very interested</td>
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<tr>
<td>Not at all interested</td>
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</tbody>
</table>

*Check the box below if you WOULD be interested in the following types of collaboration:*

<table>
<thead>
<tr>
<th></th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnerships to develop an IT resource</td>
<td></td>
<td></td>
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<tr>
<td>Shared service collaborations in which multiple</td>
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<tr>
<td>organizations band together to jointly</td>
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</tbody>
</table>
operate an IT resource
Collaborations in which one institution elects to operate IT services on behalf of others, and
Collaborations in which an institution is a recipient of services provided by another institution.

Check the box below if you WOULD be interested in collaboration in the following areas:

<table>
<thead>
<tr>
<th>Network infrastructure,</th>
<th>Within your institution</th>
<th>With another school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning management systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise directory/identity management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disaster recover/business continuity</td>
<td></td>
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<tr>
<td>Data center</td>
<td></td>
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<tr>
<td>Instructional technology</td>
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<tr>
<td>Help desk/user support</td>
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</tr>
<tr>
<td>IT security</td>
<td></td>
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<tr>
<td>Research computing</td>
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</tbody>
</table>
Appendix D: CIC Participant Questionnaire Given to Karen Partlow

**Background Information**

**Name:**

**Position:**

**Time in Position:**

**Time at Institution:**

**Collaborative Interests and Practices**

*Would you describe your institution as:*

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<tbody>
<tr>
<td>Highly collaborative</td>
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<tr>
<td>Somewhat collaborative</td>
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<tr>
<td>Not very collaborative</td>
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<tr>
<td>Not at all collaborative</td>
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</tbody>
</table>

*Check the box below if your organization WOULD be interested in the following types of collaboration:*

<table>
<thead>
<tr>
<th></th>
<th>Interested</th>
<th>Have done so</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnerships to develop an IT resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared service collaborations in which multiple organizations band together to jointly operate an IT resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborations in which one institution elects to operate IT services on behalf of others, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborations in which an institution is a recipient of services provided by another institution.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Check the box below if your organization WOULD be interested in collaboration in the following areas:

<table>
<thead>
<tr>
<th>Area</th>
<th>Interested</th>
<th>Have done so</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network infrastructure</td>
<td></td>
<td></td>
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<tr>
<td>Enterprise information</td>
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<td></td>
</tr>
<tr>
<td>Learning management systems</td>
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<tr>
<td>Enterprise directory/identity management</td>
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<tr>
<td>Disaster recover/business continuity</td>
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<tr>
<td>Data center</td>
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<tr>
<td>Instructional technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help desk/user support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research computing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: Final Semi–structured Interview Protocol

1. Obtain informed consent and provide general introduction to the study
2. Ask participants to complete the questionnaire

3. Tell me a little about your organization. Examples:
   a. Have there been any changes in your level of centralization or decentralization recently?
   b. What are some challenges facing your IT organization?
      1. Could collaboration help you resolve any of them?
   c. What strategies have you observed either in your department or at the institutional level to cut costs?

4. Discuss whether they have pursued collaboration within their school. Examples:
   a. Can you tell me about a time when you pursued a collaboration inside the school?
   b. Why was it pursued?
   c. Was it successful? If so, what was the structure? If not, why not?
   d. Where did the savings, if any, go? Who harvested them?
   e. Are/were there formalized rules or structures as part of this collaboration?
   f. Do institutional funding structures impact the ability to collaborate?
   g. Discuss future interest in collaboration
   h. Discuss the kinds of services CIOs might be interested in collaborating on

5. Discuss whether they have pursued collaboration with other schools. Examples:
   a. Can you tell me about a time when you pursued a collaboration outside the school?
   b. Why was it pursued?
   c. Was it successful? If so, what was the structure? If not, why not?
   d. Where did the savings, if any, go? Who harvested them?
   e. Are/were there formalized rules or structures as part of this collaboration?
   f. Do institutional funding structures impact the ability to collaborate?
   g. Discuss future interest in collaboration
   h. Discuss the kinds of services CIOs might be interested in collaborating on

6. Who are you interested in collaborating with? Who would you NOT be interested in collaborating with?
   a. Does it help to know the person you work with?
   b. What kinds of schools?

7. How do you decide whether or not to engage in a collaboration? What factors do you consider?

8. Can you recommend one other person at your school with whom I should speak?
Appendix E: Original Semi–structured Interview Protocol

1. Obtain informed consent and provide general introduction to the study
2. Ask participants to complete the questionnaire

3. Tell me a little about your organization. Examples:
   a. Would you describe your unit at centralized or decentralized?
   b. Have there been any changes in your level of centralization or decentralization recently?
   c. What are some challenges facing your IT organization?
   d. What strategies have you observed either in your department or at the institutional level to cut costs?

4. Discuss whether they have pursued collaboration within their school. Examples:
   a. Why was it pursued?
   b. Was it successful? If so, what was the structure? If not, why not?
   c. Discuss future interest in collaboration
   d. Discuss the kinds of services CIOs might be interested in collaborating on

5. Discuss whether they have pursued collaboration with other schools. Examples:
   a. Why was it pursued?
   b. Was it successful? If so, what was the structure? If not, why not?
   c. Discuss future interest in collaboration
   d. Discuss the kinds of services CIOs might be interested in collaborating on

6. Who are you interested in collaborating with? Who would you NOT be interested in collaborating with?
   a. Does it help to know the person you work with?
   b. What kinds of schools?

7. How do you decide whether or not to engage in a collaboration? What factors do you consider?
Appendix F: Verbal Consent

Verbal Informed Consent Protocol for Social Science Research
The Pennsylvania State University

Title of Project: Higher Education, Information Technology, and the Modern Context

1. Researcher information: My name is Claire Gilbert and I am a researcher with Penn State University conducting a study for research purposes.

2. Purpose of the Study: The purpose of this study is to study IT collaboration and its potential for cost savings within the CIC.

3. Procedures to be followed: You will be asked to respond to a number of interview questions. An audio recording of the interview will be made and securely stored. Only project and contract personnel transcribing the recordings will have access to them. Recordings will be destroyed five years after completion of the research project.

4. Duration: The interview should take approximately 60 minutes.

5. Right to Ask Questions: Please contact Claire Gilbert at (740) 591-9120 with questions or concerns about this study.

6. Voluntary Participation: Your decision to participate in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

7. Consent: If you agree to take part in this research study, please verbally state your consent.
### Appendix G: Question Map

<table>
<thead>
<tr>
<th>How do IT leaders view the idea of collaboration?</th>
<th>Have schools pursued inter-institution collaboration to date?</th>
<th>How and why do IT leaders make decisions about whether or not to engage in collaborative activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does this differ between internal collaboration with other IT departments/units and external collaboration with other schools?</td>
<td>If so, what was the process for how the collaboration was developed?</td>
<td>Is institutional similarity a factor?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are personal relationships with other IT leaders a factor?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does financial pressure have an influence?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are certain areas more desirable for collaboration than others?</td>
</tr>
</tbody>
</table>

**Tell me a little about your organization. Examples:**

- Would you describe your unit at centralized or decentralized?
- Have there been any changes in your level of centralization or decentralization recently?
- What are some challenges facing your IT organization?
- What strategies have you observed either in your department or at the institutional level to cut costs?

| Discuss whether they have | X | X |
How do IT leaders view the idea of collaboration? | Have schools pursued inter-institution collaboration to date? | How and why do IT leaders make decisions about whether or not to engage in collaborative activities?

<table>
<thead>
<tr>
<th>pursued collaboration within their school. Examples:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Why was it pursued?</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>• Was it successful? If so, what was the structure? If not, why not?</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>• Discuss future interest in collaboration</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>• Discuss the kinds of services CIOs might be interested in collaborating on</td>
<td></td>
</tr>
</tbody>
</table>

Discuss whether they have pursued collaboration with other schools. Examples:

|  | X |
| --- | --- | --- |
|  | • Why was it pursued? | X |
|  | • Was it successful? If so, what was the structure? If not, why not? | X | X |
|  | • Discuss future interest in collaboration | X |
|  | • Discuss the kinds of services CIOs might be interested in collaborating on | | X |

Who are you interested in collaborating with? Who would you NOT be interested in collaborating with?

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Does it help to know the person you work with?</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>• What kinds of schools?</td>
<td>X</td>
</tr>
</tbody>
</table>

How do you decide whether or not to engage in a collaboration? What factors do you consider?

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
</tr>
</thead>
</table>
VITA – Claire Krendl Gilbert

Education
- Bachelor of Arts in Communication Studies and Political Science – Northwestern University, 2008.

Selected Professional Experience

Selected Publications

Teaching
- The Pennsylvania State University, Altoona, PA: December 2011-May 2012
  - Teaching assistant, guest lecturer, and course contributor
  - Introduction to American Studies - AM ST 100

Selected Professional Service & Memberships
- Higher Education in Review:
  - Consulting Editor Fall 2011-Spring 2012
  - Associate Editor of Production Fall 2010-Spring 2011
  - Technical Editor Fall 2009-Spring 2010
- IT Strategic Planning Logistics Team from Fall 2012 to present
- Commonwealth Campus IT Review Committee from Fall 2011 to Spring 2012
- Graduate student member of the College of Education Technology Committee from Fall 2009 to Spring 2012
- Treasurer of the Higher Education Student Association from Spring 2010 to Summer 2011
- Representative of the College of Education to the Graduate Student Association from Fall 2010 to Spring 2011