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Interorganizational Collaborative Capacity: Development of a Database to Refine Instrumentation and Explore Patterns

24 November 2008

by

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Abstract

Interorganizational collaborative capacity (ICC) is the capability of organizations (or a set of organizations) to enter into, develop, and sustain interorganizational systems in pursuit of collective outcomes. The objectives of the ICC research program are (1) to understand the success factors that lead to and the barriers that interfere with ICC; (2) to construct diagnostic methods and tools to assess these factors; and (3) to develop methods that contribute to the development of ICC in and among agencies and organizations.

The research literature indicates that a major barrier blocking progress in understanding ICC is the absence of reliable, valid measures for the construct. This study addresses this problem. It presents the results of ICC scale development using samples of public sector, defense and security professionals from two areas: Homeland Defense and Security and Defense Acquisition and Contracting. The research presents scales that have very good to excellent internal-consistency reliability and convergent validity. The report then applies the survey to create a profile and do a summary assessment of a major DoD Acquisition and Contracting organization's ICC. The survey factors are integrated into our ICC open systems model. The value of survey results in developing an organization's (or an organizational set's) current ICC is discussed, as are future research directions.

Keywords: Interorganizational collaboration, interagency collaboration, collaborative capacity

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Collaboration and the Acquisition Context

Interorganizational collaboration comprises a system of processes by which organizations work together to accomplish common or complementary goals and objectives or a common mission. Collaborations range from (a) close partnerships in which employees from two or more organizations must work interdependently to accomplish goals and objectives to (b) low-level cooperation in which two or more organizations share information so that each can be more efficient in accomplishing its own, relatively independent goals.[1] Collaboration is often used synonymously with partnering and is manifest when organizations form alliances. We formally define interorganizational collaborative capacity as the capability of organizations (or a set of organizations) to enter into, develop, and sustain interorganizational systems in pursuit of collective outcomes.

Federal Acquisition Reform has consistently called for improved collaboration among participating acquisition agencies as well as between the Department of Defense (DoD) and defense contractors. *DoD Directive 5000.1* (Undersecretary for Defense, Acquisition Technology & Logistics, 2003, paragraph E1.) states that teaming among warfighters, users, developers, acquirers, technologists, testers, budgeters, and sustainers is required during the capability needs definition phase of the acquisition lifecycle. Furthermore, a Defense Acquisition Performance Assessment (DAPA) recommends improved collaboration among acquisition organizations and between DoD and industry. The use of integrated product teams (IPTs), partnering relationships, and alpha contracting processes are examples of collaborative processes being used in some commands.

Collaboration among organizations has clear benefits, including reduced litigation, cost savings through the transfer of smart practices, better decision making as

[1] For those familiar with J. D. Thompson's (1967) ideas, the distinction reflects what he characterizes as low-level, "pooled interdependence" versus high level, "reciprocal interdependence."

a result of advice and shared information, enhanced capacity for dispersed units to act collectively, and innovation resulting from the cross-pollination of ideas and recombination of scarce resources (Hansen & Nohria, 2004; Mankin, Cohen & Fitzgerald, 2004). However, organizations sometimes fall short when they attempt to develop effective collaborative relationships. Documented barriers include diverse and conflicting missions, goals, and incentives; entrenched histories of distrust; leaders who do not actively support collaborative efforts; and inadequate systems and structures (US Government Accountability Office, 2005). Thus a practical as well as a theoretical need exists for understanding the factors that account for successful *versus* unsuccessful collaboration, and for understanding the capacities or capabilities of organizational collaboration.

The Interorganizational Collaborative Capacity (ICC) Research Project

Since the summer of 2002, our research has moved through various phases, including reviews of the literature, inductively based empirical research, and survey development. The focus of the research presented in this report is on instrument refinement and the exploration of data patterns in several DoD samples. We also use data from a major DoD Contracting Administration organization to briefly illustrate the use of the measurement tool for organizational assessment, which can serve as a basis for survey-guided organizational development.

Inductively Generating a Model of Interorganizational Collaborative Capacity

In 2002/2003, supported by funding from the Naval Postgraduate School's Center for Homeland Defense and Security, we conducted an educational workshop and collected additional data from mid-level and senior Homeland Security and Defense professionals to inductively derive a conceptual model of collaborative capacity. Our focus was on collaborative capacity in a planning or pre-crisis context rather than in a post-response context. This empirical research, combined with a review of the literature, allowed us to identify enablers and barriers to collaboration. This inductive study is described in a previous publication (Hocevar, Thomas, & Jansen, 2006); the major results of the thematic analysis are presented in Table 1.

Table 1. Thematic Factors that Contribute to Success or Serve as Barriers to Interorganizational Collaboration

Organization Domain	"Success" factors[1]	"Barrier" factors[1]
Purpose and Strategy	▪ **"Felt need" to collaborate** ▪ **Common goal or recognized interdependence**[1] ▪ Adaptable to interests of other organizations	▪ Divergent goals ▪ Focus on local organization over cross-agency (e.g., regional) concerns ▪ Lack of goal clarity ▪ Inadequate resources ▪ Not adaptable to interests of other organizations
Structure	▪ Sufficient authority of participants	▪ Impeding rules or policies ▪ Inadequate authority of participants ▪ Lack of accountability ▪ Lack of formal roles or procedures for managing collaboration
Lateral Processes	▪ **Social capital** (i.e., interpersonal networks) ▪ **Effective communication and information exchange** ▪ Formalized coordination committee or liaison roles ▪ Technical interoperability	▪ **Lack of familiarity with other organizations** ▪ **Inadequate communication and information sharing** (distrust)
Incentives and Reward Systems	▪ **Collaboration as a prerequisite for funding or resources** ▪ **Leadership support and commitment** ▪ Absence of competitive rivalries ▪ Acknowledged benefits of collaboration (e.g., shared resources)	▪ **Competition for resources** ▪ **Territoriality** ▪ Organization-level distrust ▪ Lack of mutual respect ▪ Apathy
People: Individual Collaborative Capacity	▪ Appreciation of others' perspectives ▪ Competencies for collaboration ▪ Trust ▪ Commitment and motivation	▪ **Lack of competency** ▪ Arrogance, hostility, animosity

[1] Items in bold were identified by at least 25% of the study participants.

(Modified from Hocevar, Thomas, & Jansen, 2006)

The Collaborative Capacity Model. The themes identified in Table 1 seemed to best fit and be mapped onto the domains of Galbraith's (2002) open systems model of organizations. The ICC model in Figure 1 (Hocevar, Thomas, & Jansen, 2006) represents an image of a simplest case of interorganizational collaboration involving only two organizations—A and B—in a shared problem space. The figure's double-sided, yellow arrows, which lead from each organization to "goals and objectives," are meant to indicate that each organization is oriented toward its own goals and objectives according to its special interests and responsibilities. Each organization's goal-directed behavior affects the common problem space and thus affects the other organization, sometimes dramatically. They operate in an interdependent relationship in which some degree of cooperation and collaboration can improve their efficiency and effectiveness.[2]

Each organization can be conceptualized as a complex adaptive system with five subsystem domains. These are strategy and purpose, organizational structure, reward systems, people, and lateral processes, which are represented by the points of the pentagon in Figure 1 (cf. Galbraith, 2002). As with other open systems models, the ICC model emphasizes that the efficiency and effectiveness of each organization depends on the congruence or fit (i.e., fitness) of its subsystems. For example, efficiency is increased when an organization's incentives and reward systems are congruent with its strategic goals, structure of authority and responsibilities. The single-sided, blue arrows indicate the self-reinforcing dynamics by which collaborative capacity is generated through the interplay of the five subsystem domains.

[2] This does not mean there are not conflicts or competitive aspects to their interactions. Ray Norda re-introduced the term "coopetition" to describe the complex dynamics in which organizations could be allies in one problem space and competitors in a different problem space (Fisher, 1992).

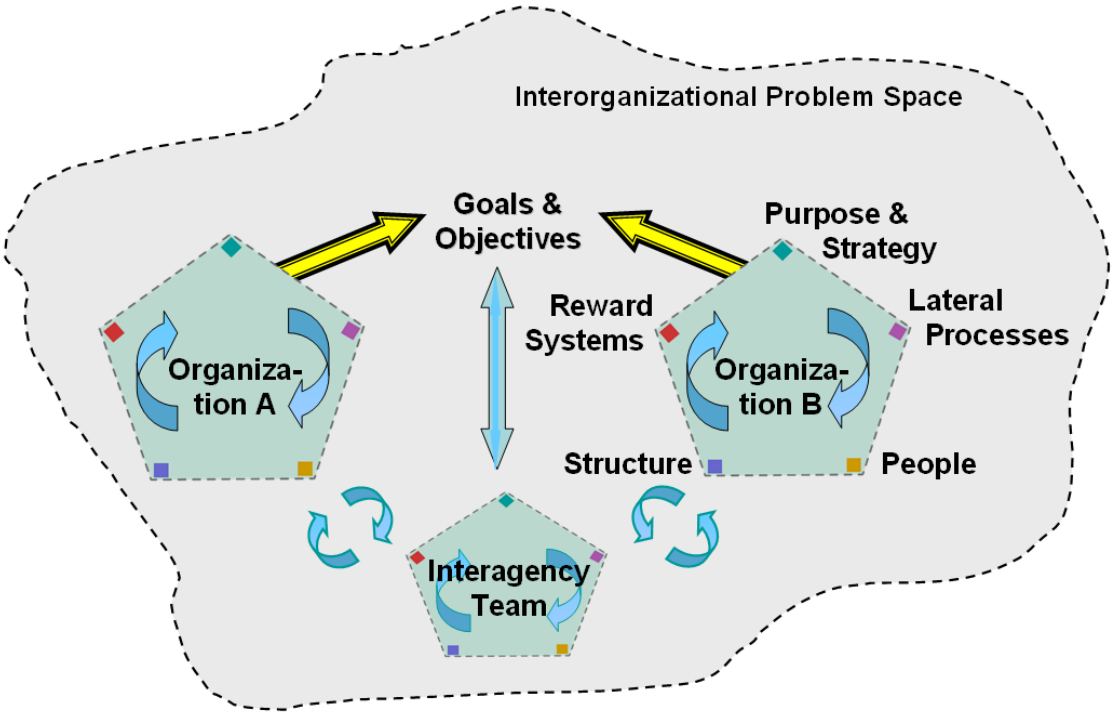


Figure 1. The Interorganizational Collaborative Capacity Model (Hocevar, Thomas, & Jansen, 2006)

The role of the interagency team is to generate collaborative capacity in both organizations. But that team must also develop its own collaborative capacity; again, the single-sided, blue arrows suggest these dynamics. Of course, as there may be more than two organizations collaborating, there also may be more than a single interagency task force. It is common to have multiple task forces, special teams, or tiger teams focusing on and aligning specific subsystem domains (e.g., policies and procedures for sharing information).

The Measurement Problem. The literature review (cf. Bardach, 1998) indicated that a major barrier blocking progress in understanding ICC is the absence of reliable, valid measures for the construct. Having developed an overarching model with identified thematic factors, we undertook the present research to confront the question, "How can we measure or assess interorganizational collaborative capacity?" We wrote:

> Collaborative capacity is an intuitively appealing construct but currently lacks clear operationalization. This deficiency is problematic for leaders and practitioners […] who want to identify the collaborative capacity of their agencies. The absence of measurement models also is problematic for the advancement of the social science of interagency collaboration. The factors in [our studies…] were inductively generated in the hope of identifying dimensions that need to be measured to operationalize the construct. Thus, the next challenge researchers must face is how to diagnose or audit the collaborative capacity of organizations that are expected to be in effective collaborative relationships. (Hocevar, Thomas, & Jansen, 2006, p. 273)

Measuring Interorganizational Collaborative Capacity

From 2006 through 2008, in research funded partly by the Acquisition Research Program (see Appendix A), we began developing a systematic means of assessing an organization's (or an organizational set's) collaborative capacity. We continued to work in the context of Homeland Security and Defense but expanded our scope to include the context of Defense Acquisition and Contracting.[3] A diagnostic process was developed that included survey and interview questions. Our primary focus was to develop a quantitative instrument—a survey—that could be administered through the Internet to assess individuals' perceptions of their organization's ICC. One criterion for generating items was their potential to suggest courses of action for leaders and managers facing the challenges of developing ICC. Another criterion was to cover important factors within each of the five major subsystem domains of the ICC model.

This resulted in the creation of an item bank of survey items, as well as interview questions that went through a process of judgment involving the research team, graduate students and subject matter experts (SMEs) to select the most promising items. Most of the survey's items assess factors identified in our research and the literature. Additional items assess organizational level demographics (e.g., years of experience with interagency partnerships, number of employees, and geographic

[3] In 2005, Professor Rene Rendon was added to our ICC research team for his expertise and experience in acquisition and contracting.

proximity of organizational partners) or respondent demographics (e.g., organizational tenure). These efforts are described in Thomas, Hocevar, Jansen, and Rendon (2008).

This brings us to the current report, in which, after nearly a dozen different administrations of the instrument, most of which involved feedback sessions with respondents, we present scales for a survey instrument to assess ICC. We then illustrate the survey's promise by creating and discussing an ICC profile for two units of a major DoD Acquisition and Contracting organization.

Instrument Refinement and Construct Validation

In this section, the focus of the research is on (a) developing scales with high reliability as operationalized by Cronbach's coefficient alpha and, simultaneously, (b) validating the construct of collaborative capacity. Items are the focus of the analysis, and respondents are combined to discern the relationships among items. The purpose here is not to use items to understand the behavior of people but to use the responses of people to understand and validate the behavior of items. In subsequent sections, the focus shifts to using the resulting scales to describe organizations and organization sets.

Samples for Instrument Validation

The survey respondents in the present study are individuals representing two communities: Homeland Defense and Security and Acquisition and Contracting. The Homeland Defense and Security sample is composed of 145 students in six classes in a master's degree program in Homeland Security at the Naval Postgraduate School. They are experienced civilians or military officers working for civilian, government or military organizations from around the United States who have on-going Homeland Security responsibilities. Illustrative organizations (and positions) include: USNORTHCOM, US Coast Guard, (mid- to senior-level officers), the Center for Disease Control, Offices of Emergency Management, the FBI, municipal police and fire departments, and utilities (Directors, Chiefs, Captains).

The Acquisition and Contracting sample includes 49 DoD managers, specifically program managers, technical/engineering managers, and contract managers. They were in three classes pursuing an MS in Program Management (MSPM) though distance learning and employed full-time as members of the DoD acquisition workforce. These students are experienced DoD acquisition managers, many of whom had already achieved Level II of the Defense Acquisition Workforce Improvement Act (DAWIA)

certification program. The students were located across the United States at some of the DoD's major acquisition and procurement centers.

The Acquisition and Contracting sample also includes 79 federal employees from a DoD Research, Development and Fielding Organization that is responsible for engineering, technology, research, development, and fielding products primarily for individual military personnel. The organization comprises three interdependent organizations from each of the military services and works with academic organizations, research hospitals, businesses, and other government agencies.

The Acquisition and Contracting sample also includes 46 employees from a major DoD Contracting Administration Organization who hold to the mission of improving integration of acquisition processes between DoD clients and contractors, improving cost efficiency, increasing process innovations, and ensuring compliance to standards and regulations in federal contracts.

Methods

In developing scales possessing internal consistency reliability and convergent validity, it is important to have (a) a sufficient number of respondents and (b) respondents who have a range of perceptions regarding their organization's ICC (i.e., variance in the scale values). The item results below reveal considerable variance among the respondents as they judge the ICC of their respective organizations.

The scales were developed in an iterative process that involved collecting data, giving respondents feedback on their results, and listening to their interpretation of the results for specific items and the resulting scales. In some cases items that appeared to be statistically useful were rejected because of feedback in the educational workshops with our students, who also were subject matter experts (SME). In other cases, items were rejected because they failed to meet statistical hurdles. Sometimes, new items were suggested or items were revised based on feedback. One result of this iterative process is the smaller sample sizes available for some items and their associated scales.

The sample sizes are not yet large enough to conduct complete multivariate analyses (e.g., exploratory or confirmatory factor analyses that include all the items). We have sufficient respondents to run a series of exploratory factor analyses (Principal Components Analysis, varimax solutions, orthogonal rotations) on subsets of items. This, along with the coefficient alpha analyses and the analyses based on content or face validity, provides the primary justification for the scales. We expect to have sufficient sample size within the 2009 academic year to conduct the multivariate analyses noted above.

Results: Survey Items and Scales

In this section, we discuss the factors that operationally define the ICC construct. This section focuses on the items that assess collaborative capacity as opposed to demographic items. Figure 2 shows an example of one item and the response scale. All items used a 6-point Likert-type scale ranging from Strongly Disagree to Strongly Agree. Thus, 3.5 is the scale midpoint. Sample means higher than 3.5 indicate agreement, and a sample mean of 6 would indicate unanimous agreement. In total, we created 12 scales. The 12 scales are Need to Collaborate, Strategic Collaboration, Resource Investment in Collaboration, Structural Flexibility, Reward Systems, Metrics for Collaboration, Information Sharing, Collaborative Learning, Social Capital, Individual Collaborative Capacity, Barriers to Collaboration, and Interagency Teams. We present each scale below with its respective component items and the mean values calculated from the total combined sample.

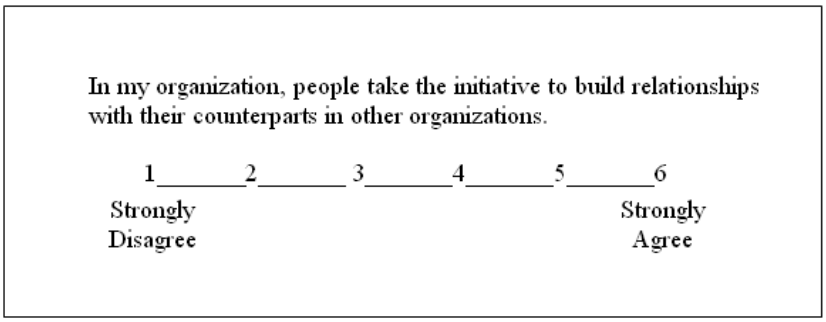


Figure 2. Sample Item with the 6-point Likert-Type Scale

Need to Collaborate. Hocevar, Thomas, and Jansen (2006) used the term "felt need" to refer to a theme that emerged in their inductive, qualitative research as well as in their literature review. "Felt need" was taken from the organizational change literature (Jick, 2002) in which the construct is used to describe the strong motivational energy and effort needed to overcome the inertia of the status quo and generate change in organizational structures, processes and behaviors. The change literature asserts that a felt need or "sense of urgency" (Kotter, 2008) is a powerful factor that motivates individuals to make commitments to learning new skills and exploring new behaviors. The Need to Collaborate scale presented in Table 2 has very good reliability. Both the scale and the item means are greater than 4.5, indicating that this factor is a high priority, with understood benefits for accomplishing the organization's mission.

Table 2. Means, Standard Deviations, and Coefficient Alpha for the Need to Collaborate Items and Scale

Need to Collaborate Items	Item Mean	Item Standard Deviation
Interorganizational collaboration is a high priority for my organization.	4.8	1.4
My organization recognizes the importance of working with other agencies to achieve its mission.	4.8	1.3
People in my organization understand the benefits of collaborating with other organizations.	4.5	1.2

Need to Collaborate Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.7	1.3	307	.81

Strategic Collaboration. Another important theme that emerged for successful collaboration in our inductive research was having "a common goal or recognized interdependence." The items in Table 3 are congruent with this factor. They emphasize establishing and addressing goals for collaboration and considering the interest of other agencies in planning. They also focus on the role of leadership in addressing interorganizational goals and conferring with the leaders of other organizations. This emphasis on goals, planning and leadership led to this factor being placed in the strategy and purpose domain. The coefficient alpha of internal consistency is very good to excellent.

Table 3. Means, Standard Deviations, and Coefficient Alpha for the *Strategic Collaboration* Items and Scale

Strategic Collaboration Items	Item Mean	Item Standard Deviation
We have clearly established goals for interorganizational collaboration.	4.1	1.4
The leaders of my organization emphasize the importance of collaboration.	4.6	1.4
My organization is willing to address interorganizational goals.	4.6	1.2
My organization's leaders meet and confer with the leaders of other organizations about mutual collaboration.	4.2	1.4
My organization considers the interests of other agencies in its planning.	3.9	1.4

Strategic Collaboration Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.3	1.4	251	.85

Resource Investment in Collaboration. Resource Investment in Collaboration emerged as a scale in this research; it also emerged as a theme in our inductive research. The items in Table 4 focus on investing, committing or assigning budget, resources and personnel to interorganizational collaboration. The commitment of such resources is viewed as best fitting in the domain of strategy and purpose since the strategic apex is where resource decisions typically are made. The reliability of the scale is very good to excellent.

Table 4. Means, Standard Deviations, and Coefficient Alpha for the *Resource Investment in Collaboration* Items and Scale

Resource Investment in Collaboration Items	Item Mean	Item Standard Deviation
My organization has committed adequate time, budget, and personnel to interorganizational collaboration.[1]	3.8	1.4
My organization is willing to invest resources to accomplish cross-agency goals.	4.1	1.4
My organization has assigned adequate personnel to the work required for effective interorganizational collaboration.	3.3	1.4

Resource Investment in Collaboration Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
3.7	1.4	227	.88

[1] This item has been revised for current usage. It now reads: "My organization has committed adequate budget and resources to interorganizational collaboration." This statement removes the overlap between the first and third items in this Table.

Structural Flexibility. In the inductive research, structural themes emerged somewhat less frequently than other themes, and, as Table 1 reveals, they were mentioned more often as barriers than success factors. Deming's (1982) approaches to quality, profound learning and continuous quality management emphasized that the importance of the larger organizational system and structure on individual behaviors is generally underestimated. Thus, we might expect that structural factors to be under-represented in the themes people generate, compared to themes involving personal motivations and skills, dysfunctional incentives, goals, and communication.

We were able to create a scale relating to the structure subsystem domain that assesses Structural Flexibility. These items measure the degree to which respondents perceive that the organization is flexible and responsive, quickly forming and modifying policies, processes, procedures, and partnerships. Table 5 presents the item and scale statistics and shows good scale reliability.

Table 5. Means, Standard Deviations, and Coefficient Alpha for the *Structural Flexibility* Items and Scale

Structural Flexibility Items	Item Mean	Item Standard Deviation
My organization invests significant time and energy to deconflict existing policies and processes that impede collaboration.	3.4	1.3
My organization is flexible in adapting its procedures to better fit with those organizations with which we work or might work.	4.2	1.3
My organization is responsive to the requirements of other organizations with which we work.	4.4	1.1
My organization can quickly form or modify partnerships as requirements change.	4.5	1.3

Structural Flexibility Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.1	1.2	135	.78

Reward Systems. The importance of Reward Systems for activities related to ICC emerges strongly in the inductive research, and the items in Table 6 written to assess this factor have very good to excellent reliability. These items assess the individuals' perceptions of the consequences of their behavior in terms of their own personal payoffs. The items assess the degree to which collaborative work and activities and collaborative talents result in rewards, career advancement, and promotion.

Table 6. Means, Standard Deviations, and Coefficient Alpha for the *Reward Systems* Items and Scale

Reward Systems Items	Item Mean	Item Standard Deviation
Engaging in interagency activities at work is important to career advancement in this organization.	3.7	1.6
My organization rewards employees for investing time and energy in building collaborative relationships.	3.3	1.5
My organization rewards members for their IA collaborative activities.	3.3	1.4
Collaborative talents and achievements are considered when people are reviewed for promotion.	3.4	1.6

Reward Systems Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
3.4	1.5	268	.86

Metrics for Collaboration. Metrics did not emerge as a theme in the inductive research, but the two questions in Table 7 combined to form a scale as the measurement model was developed. The items have very good reliability with an alpha coefficient of .83. They assess the degree to which an organization has identified or established measurement criteria and performance standards to assess interagency collaboration efforts.

In Figure 6, Metrics is placed between the strategy and purpose domain and the reward systems domain. On the one hand, metrics operationalize goals, often strategic goals, and they may serve as indicators of effectiveness. On the other hand, metrics can be integrated into the performance appraisal process and thus become part of the reward system.

Table 7. Means, Standard Deviations, and Coefficient Alpha for the *Metrics for Collaboration* Items and Scale

Metrics for Collaboration Items	Item Mean	Item Standard Deviation
My organization has identified measurement criteria to evaluate interorganizational efforts. [1]	3.0	1.5
My organization has established clear performance standards regarding interorganizational work. [1]	3.1	1.4

Metrics for Collaboration Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
3.0	1.5	264	.83

[1] In the Homeland Security and Defense samples, the wording "interagency" was used rather than "interorganizational."

Information Sharing. "Information sharing" emerged as a theme in the Hocevar, Thomas, and Jansen (2006) research in the domain of lateral mechanisms or lateral processes. Three items in Table 8 make up an Information Sharing scale with very good reliability. The items are diverse; they refer to people, the organization, and to organizational norms.

As we noted when we defined collaboration, some work relationships demonstrate low levels of interdependence (i.e., pooled interdependence) in which information sharing represents all that is required of organizational allies. Such organizations are able to accomplish their goals and objectives independently if information sharing is effective; more developed collaborative relationships (e.g., liaisons, regular task force meetings, joint exercises) are unnecessary.

Table 8. Means, Standard Deviations, and Coefficient Alpha for the *Information Sharing* Items and Scale

Information Sharing Items	Item Mean	Item Standard Deviation
My organization has strong norms that encourage sharing information with other organizations. [1]	3.8	1.5
My organization provides other organizations adequate access to information we have that is relevant to their work. [1]	4.1	1.4
People in my organization share information with other organizations.	4.4	1.2

Information Sharing Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.1	1.4	226	.83

[1] In the Homeland Security and Defense samples, "agencies" was used rather than "organizations."

Collaborative Learning. When organizations face problems that require teamwork, either because of sequential or reciprocal interdependence, learning how to work with organizational partners becomes more important. The three items in Table 9 form a scale with very good to excellent reliability. The items assess the degree to which the organization commits resources to training, works with other organizations to identify lessons learned and develops strong norms for learning from other organizations. They assess the degree to which the organization might be regarded as a collaborative learning organization. We judge that this scale belongs in the lateral processes domain of the collaborative capacity model.

Table 9. Means, Standard Deviations, and Coefficient Alpha for the *Collaborative Learning* Items and Scale

Collaborative Learning Items	Item Mean	Item Standard Deviation
My organization commits adequate human and financial resources to training with other organizations. [1]	3.3	1.4
My organization has strong norms for learning from other organizations. [1]	3.6	1.4
My organization works with other organizations[1] to identify lessons learned for improved collaboration.	3.5	1.3

Collaborative Learning Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
3.5	1.4	225	.85

[1] In the Homeland Security and Defense samples, “agencies” was used rather than “organizations.”

Social Capital. "Social capital" and "interpersonal networks" emerged as an important theme associated with success in Hocevar, Thomas, and Jansen (2006), and the two items in Table 10 have good internal-consistency reliability, thus forming a scale in the lateral processes domain. They assess the degree to which organizational employees/members take the initiative to build relationships and know who to contact in other organizations or agencies.

Table 10. Means, Standard Deviations, and Coefficient Alpha for the *Social Capital* Items and Scale

Social Capital Items	Item Mean	Item Standard Deviation
Our employees know who to contact in other agencies for information or decisions.	4.1	1.4
Members of my organization take the initiative to build relationships with their counterparts in other organizations.	4.3	1.3

Social Capital Scale Statistics			
Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.2	1.3	307	.79

Individual Collaborative Capacity. Hocevar, Thomas, and Jansen (2006) identified a number of themes describing the collaborative capabilities and attitudes of individuals within the organization. The seven items in Table 11 are combined into an Individual Collaborative Capacity scale that has very good to excellent reliability. These include items that focus on skills, capabilities and expertise, understanding and knowledge of other organizations work and perspective, willingness to engage in shared decision-making, and seeking input from the other organization.

Table 11. Means, Standard Deviations, and Coefficient Alpha for the *Individual Collaborative Capacity* Items and Scale

Individual Collaborative Capacity Items	Item Mean	Item Standard Deviation
Our employees have the collaborative skills (e.g., conflict management and team process skills) needed to work effectively with other agencies.	4.0	1.3
Members of my organization are aware of the capabilities of other organizations with which we have to work.	3.9	1.2
Members of my organization respect the expertise of those in other organizations with whom we work.	4.5	1.2
Members of my organization understand how our work relates to the work of other organizations with whom we need to collaborate.	4.3	1.2
Members of my organization are able to appreciate another organization's perspective on a problem or course of action.	4.0	1.1
Members of my organization are willing to engage in a shared decision-making process with other organizations when addressing interorganizational issues.	4.2	1.2
People in my organization seek input from other organizations.	4.1	1.3

Individual Collaborative Capacity Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.1	1.2	258	.86

Barriers to Collaboration. All the items and scales described to this point have been facilitating factors or enablers that support the development and maintenance of collaborative capacity. In contrast, the items in Table 12 are barriers to collaboration. Agreement on these items is undesirable, whereas agreement on other items is desirable. This requires that the item means and the scale mean must be reverse coded to compare it to other scales, subtracting it from 7 so that a mean of 3.3 becomes 3.7. This reversal is used in comparisons among scales in subsequent sections of this report.

Five somewhat diverse items are related to each other as Barriers to Collaboration with a good correlation of .75. The items are diverse; they assess—from top to bottom in the Table 12—aspects of history, individual collaborative capacity, role conflict, policies, and unique requirements. The items cover a number of domains within the collaborative capacity model and cannot be placed within any single domain.

Table 12. Means, Standard Deviations, and Coefficient Alpha for the *Barriers to Collaboration* Items and Scale

Barriers to Collaboration Items	Item Mean	Item Standard Deviation
A history of interorganizational conflict affects our interorganizational capability.	3.6	1.5
People in my organization tend to be suspicious and distrustful of their counterparts in other organizations.	3.1	1.4
I face incompatible requirements or requests when working with other organizations.	3.3	1.1
Conflicting organizational policies make collaboration difficult.	3.6	1.3
My organization's unique requirements make collaboration difficult.	2.7	1.5

Barriers to Collaboration Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
3.3	1.4	136	.75

Interagency Teams. Respondents in the Homeland Defense and Security sample were directed to the items in Table 13 if they answered "yes" to: "My organization has a representative on an interorganizational team." Respondents in the Acquisition and Contracting sample only were directed to these items if they indicated they had served on one or more "interorganizational special project or tiger teams."

The items might be regarded as assessing an aspect of the domain of lateral processes. Task forces are a common form of lateral coordination between differentiated units that face a common problem space where collaboration is required (Galbraith, 2002). These items have very good to excellent reliability.

Table 13. Means, Standard Deviations, and Coefficient Alpha for *the Interagency Team* Items and Scale

Interagency Team Items	Item Mean	Item Standard Deviation
My organization gives members of special project teams (or tiger teams) adequate authority to speak on behalf of the organization.[1]	4.2	1.4
My organization supports the decisions and recommendations of the special project or tiger team.[2]	4.3	1.2

Interagency Team Scale Statistics

Mean	Standard Deviation	Sample Size	Coefficient Alpha
4.2	1.3	193	.85

[1] The Homeland Defense and Security sample item did not include the words "project teams (or tiger teams); it only referred to "members of the interorganizational team."

[2] The Homeland Defense and Security sample item did not include the words "the project or tiger team"; it referred to "the interorganizational team."

The Interorganizational Collaborative Capacity Scales. Table 14 repeats the scale statistics presented in Tables 2 through 13, ranking them from high to low. As a reminder, all items used a 6-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." Thus, 3.5 is the scale midpoint. Values higher than 3.5 indicate agreement, and values of 6 indicate unanimous agreement. In addition, the reader should note that the Barriers to Collaboration scale's mean has been reverse coded to enable comparison with other scales. Again, this is because it is the only scale where a high value indicates a lack of collaborative capacity. (Again, reverse coding the mean for a 6-point scale is determined by subtracting the mean from 7). Because the scale has been reversed, it is labeled Lack of Barriers to Collaboration.

From discussions with our students, many of whom are clearly SMEs, we know that practitioners can engage in lengthy conversations about the pattern of results they see in the items that make up the scales and in the pattern of results in the scales themselves. A few examples are presented here to illustrate scale interpretation.

In various administrations, the Need to Collaborate scale and its items are the highest in the survey. This indicates that the respondents report that their organization sees the need to collaborate. This will perhaps remain a common result. We have selected contexts in Acquisition and Contracting and in Homeland Defense and Security in which messages from the highest levels of the chain of command and even stories in the national media emphasize the importance and criticality of collaboration. In addition, commands that support administering the survey would be unlikely to do so unless they perceived collaboration to be an important priority.

The Resource Investments mean is considerably lower than the Felt Need mean and somewhat lower than the Strategic Collaboration mean. Students often discuss these items in terms of the challenges of "talking the talk" *versus* "walking the walk" (cf. Argyris, 1992/1974).

The Structural Flexibility scale reveals more flexibility than some might expect, given that these respondents generally work for large government bureaucracies. The

standard deviation, as for the other scales, indicates a range of values. Some individuals perceive more flexibility than others, and determining the sources of the distribution of this flexibility-inflexibility throughout the organization (i.e., running cross-tabulations for different units) could lead to insights.

Reward Systems shows a relatively low score, lower than Structural Flexibility. Some practitioners note that it is easier to reorganize and change procedures than to change institutionalized reward systems. Because incentives and rewards are especially powerful for generating organizational culture, discussions in which people explain how reward systems often fail to support collaborative activities represent a potentially powerful opportunity for action strategies.

Metrics for Collaboration is rather consistently among the lowest scores, and the low values promote interesting discussions. These include the issue of how important such measures really are, the degree to which such measures might produce counterproductive behaviors, and the role of leadership in assessing individual and motivating performance. Individuals sometimes note that the ICC survey is itself an attempt to develop collaboration metrics.

The surveys obviously measure respondents' perceptions, and perceptions tend to differ, sometimes being accurate and sometimes being inaccurate[4]. To give one example, consider the scale that assesses strategic collaboration. It is possible that low scores represent a realistic assessment of leader behavior. Leadership may not be oriented toward ICC, and they may be failing to address fundamental issues of goal setting and failing to meet with leaders of other organizations. However, it is also possible that leadership is doing these things, but there is a communication gap, and the actions being taken are not being perceived by all or some segments within the organization. Analyzing the different responses of departments within an organization and of different levels of the hierarchy provide insights about respondents' perceptions.

[4] Perceptions also shape reality, which is another reason that collecting survey data can be useful: they provide insights into individual expectations, orientations, and behavior.

Whether the results represent a reality of leader behavior or misperceptions, or some combination, action plan strategies can be generated to improve this domain of collaborative capacity.

Table 14. Means, Standard Deviations (S.D.), Sample Size (n) and Coefficient Alpha for the Collaborative Capacity Scales

Scale	Mean	S.D.	n	Coefficient Alpha
Need to Collaborate	4.7	1.3	307	.81
Strategic Collaboration	4.3	1.4	251	.85
Social Capital	4.2	1.3	307	.79
Interagency Team	4.2	1.3	193	.85
Structural Flexibility	4.1	1.2	135	.78
Information Sharing	4.1	1.4	226	.83
Individual Collaborative Capacity	4.1	1.2	258	.86
Resource Investments	3.7	1.4	227	.88
Lack of Barriers to Collaboration[1]	(3.7)[1]	1.4	136	.75
Collaborative Learning	3.5	1.4	225	.85
Reward Systems	3.4	1.5	268	.86
Metrics for Collaboration	3.0	1.5	264	.83

[1] The Barriers to Collaboration scale is the only scale in which a higher value represents a lower collaborative capacity. It is thus reversed so that it can be compared to the other scales and relabeled as Lack of Barriers to Collaboration.

Comparing the ICC of a Set or Community of Organizations

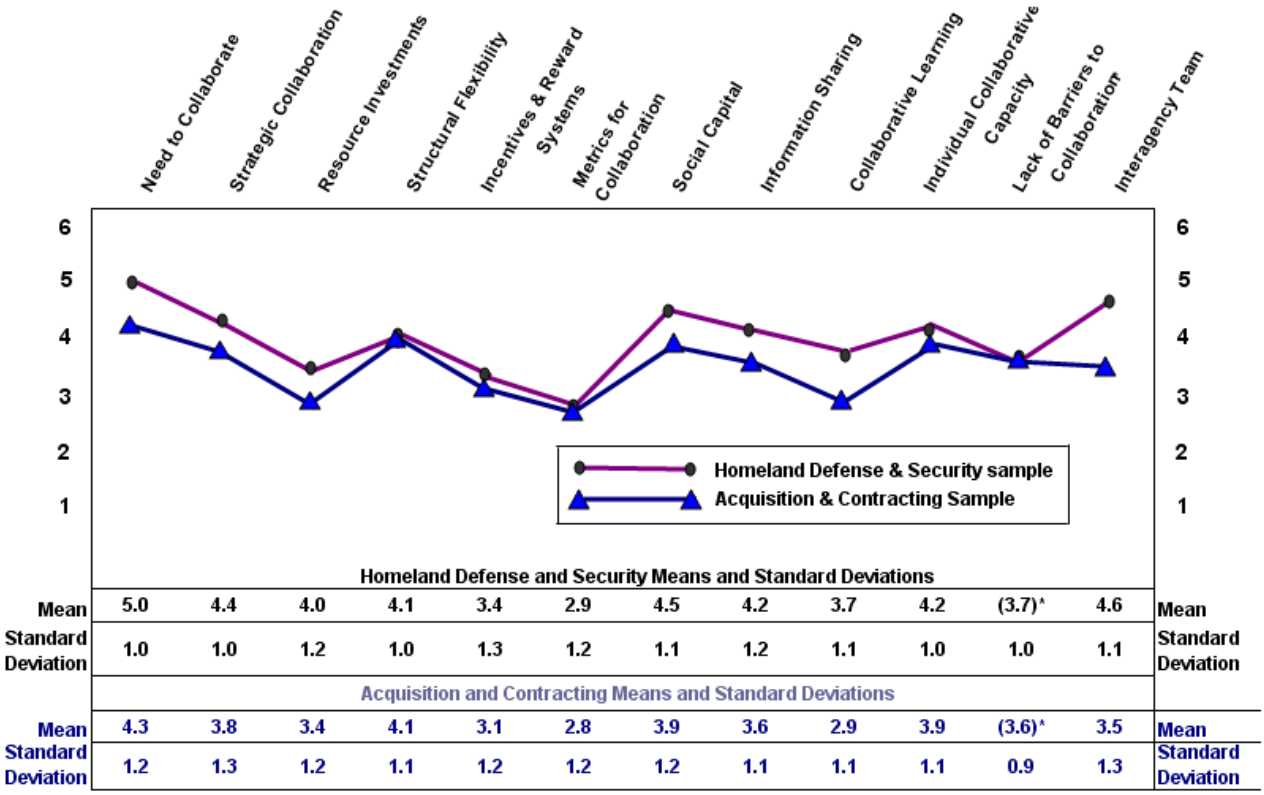
The ICC results can be used to compare samples from different organizational sets, different communities of practice, or even different industries. By administering surveys to individuals from multiple organizations, we should be able to describe the collaborative capacity of that organizational set. Table 15 compares the means of two such sets: the Homeland Defense and Security (HDS) and Acquisition and Contracting (AC) samples.

Table 15. Means, Standard Deviation (S.D.), and Sample Sizes (n) for Homeland Defense & Security and for Acquisition & Contracting Communities

	Homeland Defense & Security			Acquisition & Contracting		
Scale	Mean	S.D.	n	Mean	S.D.	n
Need to Collaborate	5.0	1.0	145	4.3	1.2	49
Strategic Collaboration	4.4	1.0	145	3.8	1.3	49
Resource Investments	4.0	1.2	144	3.4	1.2	49
Structural Flexibility	4.1	1.0	145	4.1	1.1	49
Reward Systems	3.4	1.3	145	3.1	1.2	49
Metrics for Collaboration	2.9	1.2	141	2.8	1.2	49
Social Capital	4.5	1.1	144	3.9	1.2	49
Information Sharing	4.2	1.2	145	3.6	1.1	49
Collaborative Learning	3.7	1.1	145	2.9	1.0	49
Individual Collaborative Capacity	4.2	1.0	144	3.9	1.0	49
Lack of Barriers to Collaboration[1]	(3.7)[1]	1.0	145	(3.6)[1]	.9	49
Interagency Team	4.6	1.1	117	3.5	1.3	48

1 The Barriers to Collaboration scale is the only scale in which a higher value represents a lower collaborative capacity. It is thus reversed so that it can be compared to the other scales and relabeled as Lack of Barriers to Collaboration.

Profiles and Interpretations. The data in Table15 can also be displayed using line graphs; such graphs often highlight patterns and results that are less obvious in Tables, although they risk overemphasizing the central tendency measure at the expense of an assessment of variability. The means in Figure 3 would seem to indicate no significant difference between organizational communities in terms of Structural Flexibility, Reward Systems and Metrics for Collaboration, Individual Collaboration, and Barriers to Collaboration. The main differences appear to be that the Homeland Defense and Security sample's means are somewhat higher in the strategic domain comprising Need to Collaborate, Strategic Collaboration, and Resource Investments and in the lateral processes domain of Social Capital, Information Sharing, and Collaborative Learning. (The Interagency Team scale's high value in the HDS sample is interesting as it might be viewed as a combination of strategic leadership and lateral processes.)



Homeland Defense and Security Means and Standard Deviations

Mean	5.0	4.4	4.0	4.1	3.4	2.9	4.5	4.2	3.7	4.2	(3.7)*	4.6
Standard Deviation	1.0	1.0	1.2	1.0	1.3	1.2	1.1	1.2	1.1	1.0	1.0	1.1

Acquisition and Contracting Means and Standard Deviations

Mean	4.3	3.8	3.4	4.1	3.1	2.8	3.9	3.6	2.9	3.9	(3.6)*	3.5
Standard Deviation	1.2	1.3	1.2	1.1	1.2	1.2	1.2	1.1	1.1	1.1	0.9	1.3

[1] The Barriers to Collaboration scale is the only scale in which a higher value represents a lower collaborative capacity. It is thus reversed so that it can be compared to the other scales and relabeled as Lack of Barriers to Collaboration.

Figure 3. Profiles with Means and Standard Deviations for the Homeland Defense & Security and the Acquisition and Contracting Samples.

Caution is required in making attributions about differences in organizations as diverse as HDS *versus* AC. To generalize about mean differences, comparable sampling procedures for the two communities are required, which we certainly do not have. Even with excellent sampling, the contextual frames of reference used by respondents as they take the survey need to be considered when interpreting these differences.

Here are a few of the contextual differences characterizing the individuals who are in the AC *versus* HDS samples.

- AC is relatively mature and institutionalized, and the organizations have been created and mandated to facilitate and oversee interorganizational performance. By contrast, much of HDS has been recently reorganized and reconfigured to improve efficiency and collaboration, but there are still a large minority of respondents who report they do not have a mandate to collaborate with other organizations, so collaboration depends on local initiatives.

- AC comprises many functionally-focused, matrixed organizations with inherently conflicting intraorganizational goals and resulting personal role conflict. The functional areas have divergent cultures and goals; —for example Program Managers (PMs) definitely have different goals than contracting officers or even systems engineers. By contrast, HDS comprises independent organizations with distinct chains of command.

- AC comprises primarily civil service members of DoD's acquisition workforce. HDS includes a small minority of military officers and some federal civil servants from diverse agencies, as well as employees of state, county, and city governments.

- Our DHS respondents' perceptions of the consequences or risk in the face of a failure of interagency collaboration were significantly higher than the perception of risk in our AC samples.

Interpretive Norms. This discussion of comparing survey results on organizational capabilities raises the question of interpretive norms. Norms are "descriptive statistics that are compiled to permit the comparison of a particular score (or mean) with the scores (or means) earned by the members (or groups of members) of some defined population […]." (Thorndike, 1971, p. 533). Norms in this context would allow an organization to understand its relative standing on a scale or profile of scales.

The concept of norms for organizations, in contrast to norms for people, is problematic. Norms can be developed and their meaning understood relatively easily for individual human beings. However, developing norms for aggregates of people in organizations is far more difficult and ambiguous. Put differently, the meaning of an "individual person" is more uniform than of an "individual organization". Organizations differ vastly in size, age, history, mission, technology, member demographics and other variables. In addition, organizations are nested hierarchically within other organizations,

and sometimes they are matrixed; their boundaries are more ambiguous. Thus, the entire concept of individual vs. organizational norms requires rethinking. However, without specifically addressing these challenges, we argue that a wide and continuing sampling of individuals from particular classes of organizations (e.g., HDS or AC) may prove useful for comparative purposes. There are some commonalities within various organizational sets and communities, and leadership can derive some sense of their organization's relative standing by cautiously comparing their results to the results of others. By increasing the sample size and more rigorously collecting data across the acquisition community, it is possible to generate information akin to norms. We illustrate the potential value of this in the next section.

Assessing One Organization's Interorganizational Collaborative Capacity

The previous sections of the paper used a diverse set of individuals to analyze the structure of the ICC survey and assess its internal-consistency reliability and convergent validity. It then briefly presented results from two samples representing two organizational sets. It also raised the issues of context and norms for organizational surveys. In this section, we use the survey to do a brief, summary assessment of two units within a much larger organizational system.

Table 16 shows the results for two units of a major DoD Contracting Administration organization that functions in an interorganizational context (cf. Kirschman & Laporte, 2008). In the following discussion of survey results, we quote leaders associated with these units. The quotations come from a teleconference interview conducted with the top leadership team of these units on June 22, 2007 and from comments made when the leadership of one unit conducted a briefing for an NPS Acquisition and Contracting class on August 6, 2008. The organizations and their managers are quoted anonymously to maintain confidentiality.

The organization's mission is to enhance the integration of acquisition processes between DoD clients and contractors, generating cost savings, increasing process

innovations, and ensuring compliance to standards and regulations in federal contracts. Prior to the survey administration, one manager (personal communication, June 22, 2007) said, "We are very much a customer support organization. And so that really requires that in order to provide the support that our customers need, we've got to interact and collaborate with them …. We've got to sit down with our customers and agree and talk and discuss what's important to them." In this context, customers of the organization are other government agencies; they support these agencies with respect to contractors, typically involving major programs. The leadership team appeared to be dedicating considerable time and energy to generate and sustain interorganizational collaborative capacity. Indeed, they seemed to support administration of the survey because of their commitment to developing high collaborative capacity in their units.

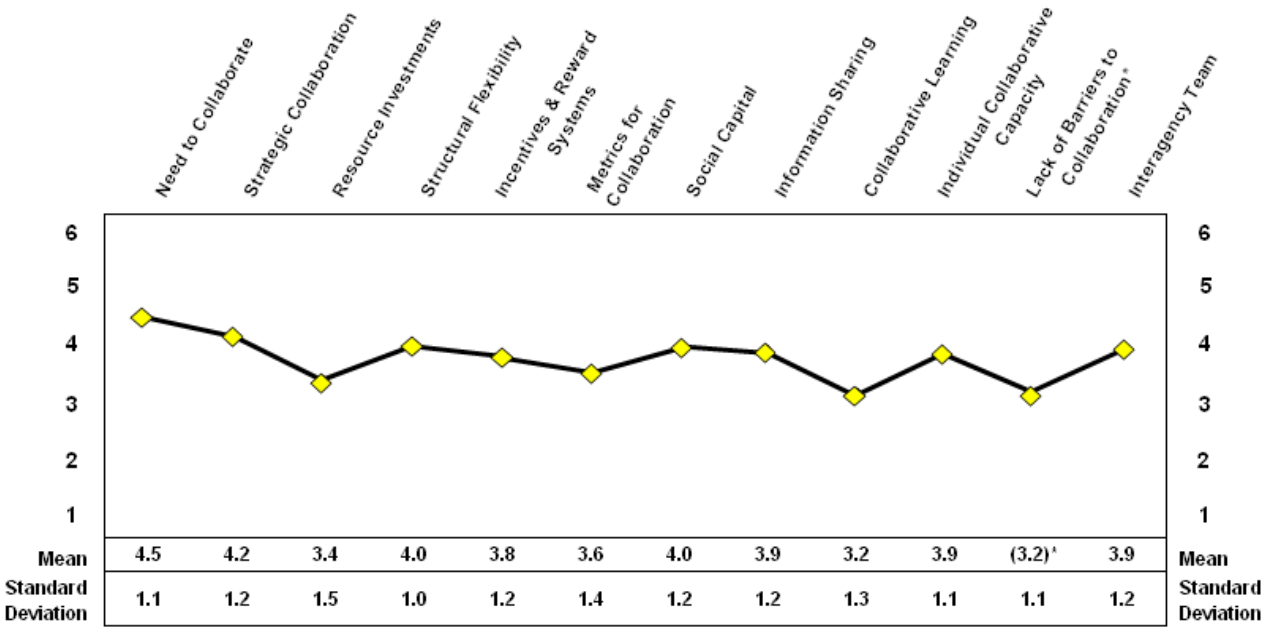
Table 16. Means, Standard Deviation (S.D.), and Sample Sizes (n) for a Major DoD Contracting Administration Organization

Scale	Mean	S.D.	n
Need to Collaborate	4.5	1.1	46
Strategic Collaboration	4.2	1.2	46
Resource Investments in Collaboration	3.4	1.5	43
Structural Flexibility	4.0	1.0	46
Reward Systems	3.8	1.2	45
Metrics for Collaboration	3.6	1.4	43
Social Capital	4.0	1.2	46
Information Sharing	3.9	1.2	46
Collaborative Learning	3.2	1.3	46
Individual Collaborative Capacity	3.9	1.1	46
Lack of Barriers to Collaboration[1]	(3.2)[1]	1.1	46
Interagency Team	3.9	1.2	40

[1] The Barriers to Collaboration scale is the only scale in which a higher value represents a lower collaborative capacity. It is thus reversed so that it can be compared to the other scales and relabeled as Lack of Barriers to Collaboration.

The organization has a history of internal consolidation, becoming more of a joint, DoD based organization; thus, in the past intraorganizational collaboration has been an issue. Executing their mission requires "selling" organizational customers on the support they can provide. In order to be more effective with customers, the organization has gone through what one manager (personal communication, June 22, 2007) called a

"realignment that puts us in a position where we are very focused on specific customers."



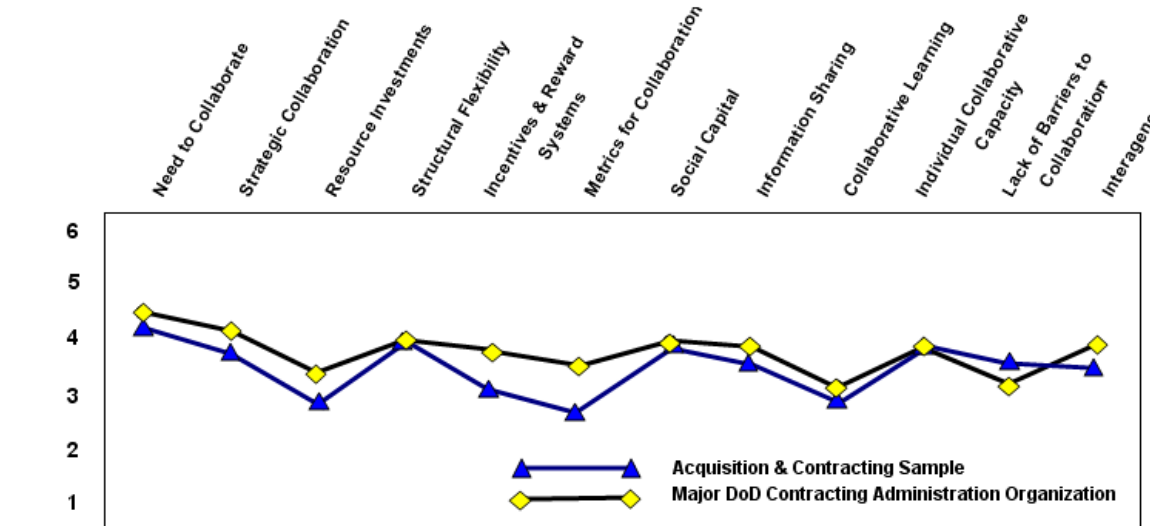
[1] The Barriers to Collaboration scale is the only scale in which a higher value represents a lower collaborative capacity. It is thus reversed so that it can be compared to the other scales and relabeled as Lack of Barriers to Collaboration.

Figure 4. Profiles with Means and Standard Deviations for a Major DoD Contracting Administration Organization.

Figure 4 presents the results from Table 16 in the form of a line graph. In general, individuals in this organization express mild or modest agreement on most factors. There is, on average, mild disagreement regarding the adequacy of Resource Investments and engagement in Collaborative Learning, and there is mild agreement that there are Barriers to ICC. The standard deviations for two scales—Resource Investments and Metrics for Collaboration—appear relatively high, indicating less consensus among the organization's members on these dimensions.

Figure 5 provides additional perspective of these results. It adds the results on the Acquisition and Contracting organizations described in the previous section, and these then can serve as a surrogate for comparative norms. Again, we should be

cautious in our interpretations, but this comparison suggests a somewhat more positive perspective than we gain only by viewing the organizational profile in isolation. The pattern of comparisons shows the Contracting Administration organization as being equal or higher than the normative sample (drawn from 49 different organizations) on all the enabling factors and shows higher ratings in the factors of Resource Investments, Reward Systems, and Metrics for Collaboration. This example should be suggestive of the interpretive value of having a larger, more representative data set for Acquisition and Contracting organizations. In the next section, we discuss the subsystem domains and their factors, which are illustrated in Figure 6.



	Major DoD Contracting Administration Organization											
Mean	4.5	4.2	3.4	4.0	3.8	3.6	4.0	3.9	3.2	3.9	(3.2)*	3.9
Standard Deviation	1.1	1.2	1.5	1.0	1.2	1.4	1.2	1.2	1.3	1.1	1.1	1.2
	Acquisition and Contracting Means and Standard Deviations											
Mean	4.3	3.8	3.4	4.1	3.1	2.8	3.9	3.6	2.9	3.9	(3.6)*	3.5
Standard Deviation	1.2	1.3	1.2	1.1	1.2	1.2	1.2	1.1	1.1	1.1	0.9	1.3

1

The Barriers to Collaboration scale is the only scale in which a higher value represents a lower collaborative capacity. It is thus reversed so that it can be compared to the other scales and relabeled as Lack of Barriers to Collaboration.

Figure 5. Profiles with Means and Standard Deviations for Major DoD Contracting Administration Organization and an NPS Acquisition and Contracting Sample Representing an Organizational Set.

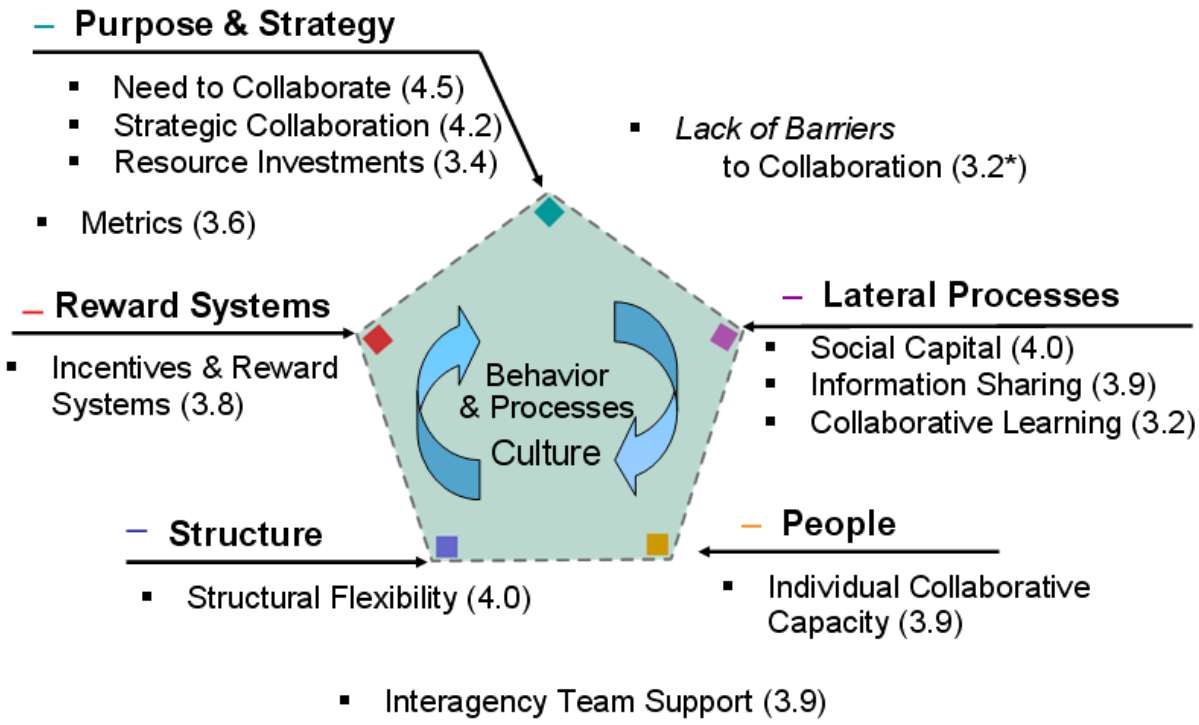


Figure 6. Interorganizational Collaborative Capacity Scale Values Organized by Organizational Domain for a Major Department of Defense Contracting Administration Organization.

The Strategic Domain. In terms of the strategic domain, the Need to Collaborate scale and the Strategic Collaboration scales have relatively high values, with means of 4.3 and 3.8 indicating moderate agreement. This is congruent with the expressed collaborative vision and statements of those in the top leadership team to which the organization reports. A deputy (personal communication, June 22, 2007) noted that, a "key point" for his organization was "bringing in the needed stakeholders, identifying what the key issues are, what the common ground is and then understanding what we can do to complement each other." The survey provides some evidence of the degree to which the message behind this vision is accepted.

In our teleconference with the top leadership team, we clearly heard collaboration and improved collaboration with customers and contractors as strategic priorities. But the timeline suggested that the prime movement from the highest levels has come in the past two years. Clearly, getting the organizational domains illustrated in Figure 6 into a

new realignment around improved collaboration in the context of the federal bureaucracy is likely to be a process that must overcome considerable inertia.

The Resource Investments scale, although higher than the "normative" sample result, remains low, with a mean of 3.4, which suggests this may be a barrier to collaboration (and is certainly perceived as such by many in the organization). It was also raised as a primary issue or barrier by top leadership:

> One of the things that come to mind, just right away, in barriers, is a resource situation. And having the right talent … to be able to provide the support our customers need. This agency has gone down to—I've been here less than two years—so I have the 20,000 number—we are roughly a 10,000 person agency now. So our resources have gone down significantly. (personal communication, June 22, 2007)

Indeed, a commander of one of the units (personal communication, August 6, 2008) said he simply lacked the personnel and other resources to engage all the tasks so that a key part of his job involved risk management to assess where slippage was least problematic. Thus the strategic picture with respect to collaborative capacity is trying to do more with less, so the theme of efficiency becomes paramount.

The Structural Domain. The organization is the result of a restructuring that incorporated service organizations into a joint entity. This was motivated primarily by the need for greater efficiency. It allows private contractors building products for multiple services to simplify their interface problems with the DoD bureaucracy. More recently, the organization has reorganized from a geographic divisional structure to a more product-oriented structure. These changes in departmentation may well affect personnel's perceptions of flexibility. However, it remains a bureaucracy with some regulatory responsibilities.

The organization's previous structural inflexibility was described in a PowerPoint brief presented to students at the Naval Postgraduate School (personal communication, August 6, 2008): "Someone above writes the rules—workers follow the rules—masters check to see that workers are following the rules and if they are, victory is proclaimed on

all fronts." Management rejected this rule-driven behavioral legacy, calling it "too internally focused" and emphasizing more responsiveness to customers. Leadership is clearly aware that improving structural flexibility in the interest of better customer service is a long-term project. The Structural Flexibility mean of 4.0 indicates some agreement that there is some flexibility in the structural domain. This is a more positive result than might be expected if the history of rule-driven behavior described above was still accurate.

The Reward Systems Domain and Metrics. In the ICC model, metrics are viewed as overlapping two domains: reward systems and strategy. Metrics should relate to goals and objectives, but if metrics are used for individual and unit accountability, then they become integrated into the reward system. Leadership in the Contracting Administration organization had invested considerable time, energy and resources in developing metrics and linking them to performance. Consider the following from two high level leaders in a teleconference (personal communication, June 22, 2008):

> We have metrics, and we have a performance commitment that we set down with our customers, and we've agreed that this is important and this is what we are going to do with you. And there's a way to grade those, and that's set out … and as a result of that, then we know … where we fall short.
>
> Information is put into an agency tool that provides agency level visibility from the agency director down to the actual employee implementing the strategy.

In most of our workshops, metrics has been the lowest scale score. The Metrics for Collaboration scale's mean value of 3.6 is no doubt less than the management team would like to see, but a result on this scale that is even slightly into the agree range appears promising to us.

Our conversations with leadership about their efforts to reward and recognize individuals were made in the context of an understaffed organization with a mission of

promoting interorganizational collaboration. The Reward Systems scale mean of 3.8 suggests positive results in maintaining focus in difficult conditions.

The People Domain—Individual Collaborative Capacity. Leadership (personal communication, June 22, 2007) reported that they sometimes lacked people with the required technical skill sets (e.g., engineering talent and software skills). They also asserted the importance of "critical thinking skills" and "soft skills" for dealing with conflict, explaining resource constraints and limitations on support that can be offered. However, they did not express any sense that the people in their organization were deficient in such skills; they did not regard it as a problematic barrier to collaboration. They did indicate that there was "always room for improvement" with such soft, collaborative skills. The discussion was consistent with the Individual Collaborative Capacity scale mean of 3.9; qenerally positive with room for improvement.

The Lateral Processes Domain. The Social Capital mean of 4.0 is somewhat positive, revealing moderate agreement with items indicating individuals take the initiative and know who to contact in other organizations. Information Sharing is also somewhat positive, with a mean of 3.9. Collaborative Learning would seem to be a more demanding level of lateral integration, and its lower mean of 3.2 is not surprising. The organization exists in a complex system of partners with other organizations, and knowing who to contact and developing effective lateral processes is itself a complex endeavor.

Lack of Barriers to Collaboration. Individuals within the DoD Contracting Administration organization still perceive barriers to collaboration, as the relatively low reversed mean of 3.2 suggests. This is an indicator of the inertia that leadership must overcome as they develop ICC in the bureaucratic context.

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Assessing Interorganizational Collaborative Capacity

Developing a reliable, potentially useful survey instrument has been the focus of our current research efforts in order to address the major stumbling block toward advancing the theory development in collaborative capacity. In addition, a reliable, valid survey can be deployed using well-established methods of survey-guided organizational development (Thomas, Hocevar, Jansen, & Rendon, 2007.) In this last section, we would like to put the survey in a somewhat broader perspective, discussing the larger assessment process in which the survey is used, the context dependence of survey scores, the issues of leading and lagging factors in open systems models as they relate to profiles of score values, and continuing and future research in ICC.

Survey Deployment and the Assessment ICC

The ICC survey was designed to fit into a larger assessment process. Assessing an organization's collaborative capacity ideally involves not only a systematic sampling of members' perceptions using the diagnostic survey, but also qualitative methods, such as interviews and focus groups. Interviews, focus groups, and discussions with management prior to survey administration often results in a more tailored, more useful survey. Post-survey interviews and focus groups add depth and understanding to survey results. The survey was designed to be used in action research and organizational development context, and optimal learning occurs when researchers, leadership, and organizational members collaborate.

Surveys have strengths, but they also have limitations. They are an efficient means of collecting data to assess a wide landscape, to efficiently understand the structure and intensity of factors in a larger sample of people. Surveys also signal that management thinks a topic is important enough to ask their people to take time from other tasks in order to provide feedback. However, interviews and focus groups are better able to answer process questions relating to causes and dynamics of collaborative capacity; they present a richer, deeper picture when deployed. The ICC

research program's diagnostic tools include a set of interview questions to assess context and processes. Appendix B provides a sample of the interview questions.

Context Dependence of Survey Scores

Quantitative survey results at the micro-level require contextualization at the macro level. Context has become more important to organizational theorists and researchers in understanding the situational and temporal boundary conditions of theories and survey results (cf. Bamberger, 2008). The structure, dynamics and even the meanings of collaboration and collaborative capacity depend on context, and a theory of collaborative contexts may be required to understand collaborative capacity. (Organizational demographics are assessed on the survey as one means of assessing context.)

We caution against reading too much into any differences between means between the HDS and AC samples above, especially because of different sampling procedures. However, if comparable sampling techniques had been applied to two samples, caution would still be required in interpreting differences. Organizations differ so greatly in terms of their mission and tasks, the environments in which they function, age and maturity, history, size, missions, work processes and technology, and structure, that making sense of results requires contextual knowledge.

Leading and Lagging Factors in the Open Systems Organizational Models

The ICC model is an open systems model; it emphasizes that organizations depend on the congruence or fit (i.e., fitness) of their subsystems (i.e., domains) with respect to each other and the larger environment. To achieve fitness in their political, economic, social and organizational environments, organizations develop habitual routines and patterns of action. The commonality in the pattern of ICC profiles may thus reflect a systemic state of fitness and inertia of the public bureaucracies in our sample.

Organizational development and change—including developing ICC—requires a systemic approach if it is to be sustained. However, trying to change an organization in its entirety generally is not possible. Leadership must choose which subsystem domains they will initially develop and which subsystem domains will be allowed to lag and be changed in the future (Kaplan & Norton, 1992).

For our organizations, the Metrics for Collaboration scale has typically had the lowest—or one of the lowest—scores. By contrast, Felt Need is often one of the highest scores. Based on our feedback sessions with our students and other SMEs, generating a sense of felt need is often a lead factor in organizational change; managers often begin organizational development by communicating a sense of urgency. Developing a sense of felt need also seems to be less subject to inertia than changes involving other subsystem domains. By contrast, our feedback sessions suggest that developing metrics to assess collaboration often is a lagging developmental effort; it is often delayed because of the considerable time and skill required for development and implementation. However, although it might not be typical, leaders may choose to use metrics to lead change efforts. The DoD Contracting Administration organization described in this report arguably is using a metrics management system as a leading factor in their change efforts. Using the ICC survey longitudinally may reveal how collaborative capacity is developing in the subsystem domains composing the organization.

Continuing and Future Research

Feedback workshops with students/SMEs (Thomas, Hocevar, Jansen, & Rendon, 2008) combined with the item analysis and scale development in this report lend considerable confidence to the dimensionality of the ICC model and operationalizations reported here. In our continuing research, we expect to generate a much larger sample scale that will provide an opportunity for more rigorous multivariate analysis.

Research is currently underway to analyze how the survey is used in the context of what we term “relative collaborative capacity.” The ICC survey described in this report assesses an organization’s capacity to enter into relationships with unspecified partners; it assesses ICC with respect to generalized others. By contrast, the research in progress on “relative collaborative capacity” focuses on one specific partner; the survey questions name one specific organization and thus assess ICC for this one specific relationship.

It is possible to use the dimensions in the ICC model to generate a performance appraisal of collaborative relationships. In such a case, items would need to be rewritten or other summary scales created whereby the members of organizations judge their partner organizations with respect to on-going relationships. It is even conceivable that such measures could become integrated into performance appraisals, thus creating a metrics to drive incentives and reward actions that develop and sustain ICC.

Validation of the ICC survey requires research with dependent variables on interorganizational performance or alternative assessments of collaboration processes (e.g., nominations of extreme cases —excellent collaborators *versus* weak or dysfunctional collaborators— by experts or top leaders). This would provide an external, empirical validation for the factors specified in the ICC model, which at this point relies primarily on face validity and convergent validity. This is the most challenging research to perform, requiring more resources and management support than any previous efforts.

Richer diagnoses of an organization’s ICC using qualitative methods in conjunction with the survey also are needed. Understanding collaborative capacity processes and dynamics requires qualitative methods such as interviews and focus groups as well as case studies. Such collaborative efforts between researchers and leaders/managers support the “Action Research” agenda of simultaneously improving organizational functioning and developing better theories and measurements.

These last two issues—research with dependent variables and qualitatively enriched research that is used in conjunction with the survey—are the necessary next steps to furthering our understanding of the dynamics of collaborative capacity and simultaneously improving ICC.

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Conclusion

At this stage of our research, we have considerable confidence in the usefulness of the ICC model and the ICC survey scales reported here. The model of collaborative capacity in Figure 6 conceptualizes an organization's capability to enter into partnerships as a systemic state. It defines that state in terms of a set of factors (e.g., structural flexibility, metrics) organized into the subsystem domains of strategy, reward systems, structure, lateral processes, and people (Galbraith, 2002; Hocevar, Thomas, & Jansen, 2006). This fits into the themes and constructs identified in the literature and our own inductive research. We have created scales to assess the factors that define the state of ICC, and these possess internal-consistency reliability and convergent validity. The items composing the scales suggest action strategies for developing collaborative capacity. Although continuing refinement and validation is necessary, we believe our attempts are representative of the state of the art in theory and research on ICC.

The problems facing the citizens of the United States and the people of the world are complex, interdependent, dynamic, and thus generate high levels of uncertainty. They do not fit neatly into the categories of academic disciplines or of single agencies or organizations. They require collaboration among people, teams, and organizations, often in a context of limited resources. They require collaboration to bring together information, knowledge and expertise located in diverse organizations. Collaboration across organizational boundaries is thus critically important. It also is exceptionally challenging, requiring systematically assessing and developing capabilities in large organizational systems. The ICC survey is meant to be another tool for leaders and managers engaged in these challenging and important efforts.

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Appendix A. The NPS Interorganizational Collaborative Capacity Research Program References

Technical Reports

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Appendix B. Select Interview Questions for Assessing Interorganizational Collaborative Capacity

What is the central problem or opportunity that motivates efforts in collaboration?

What do you see as the primary value/outcomes of collaboration?

What assets—in terms of people, technology, or money—have been dedicated to building collaborative capacity?

Are these commitments increasing or decreasing or remaining stable?

What are the risks if collaboration is not effective?

To what extent is there consensus about the value of collaboration?

To what extent is there consensus about how to collaborate?

What individuals, groups or organizations have the greatest stake in the success or failure of the collaboration?

Is there an interagency team (i.e., a formal coordination committee with representatives from the different agencies)?

Who are the participants?

What kinds of decisions are made by the interagency or interorganizational teams (e.g., an interagency task force, special project teams, tiger teams)?

How are people directly affected by decisions made by the interagency or interorganizational team?

How do your line mangers need to interact with counterparts in your partner organizations?

How do your first-line supervisors and their people have to work together with the partner organizations?

In what context?

To build team relationships and “joint” skills?

Are there formal liaisons between participating organizations?

How do these work?

Do you have full time employees/staff dedicated to interagency/interorganizational work?

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- R-TOC Aegis Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

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- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
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