

Excellence in Contracting

Analysis of STARR Data for the Contracting Workforce

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Executive Summary

The competency modeling process has provided important insights into the technical and professional behaviors and skills required to work effectively in the Contracting Workforce. During this process, subject matter experts (SME) generated narratives about their experiences producing effective outcomes. Because of the richness of these narratives, Contracting leaders requested an analysis with an eye toward gaining additional insights into effective performance in Contracting.

In this research, we have conducted a qualitative analysis of the SME-generated narratives. Due to workforce need, we have performed a secondary analysis of our qualitative results in the context of the Contracting Competence Model. Since the model comprises Units of Competence, we compared the themes that emerged from the narratives to SME-identified Units of Competence, as well as the Certification Levels of the SMEs. From this comparison, we have constructed a profile of excellent performance in the Contracting Workforce.

A Profile of Excellence in Contracting

The strongest features of effective performance were true across all four Units of Competence and all four Certification Levels. This means that no major themes allowed us to distinguish between any Units of Competence or Certification Levels. So when SMEs described situations in which they were able to produce a highly successful outcome, three major themes emerge:

- Contracting SMEs talked primarily about situations that were part of their normal role or function.
- They described ways in which effective communication was central to their success.
- They also convincingly articulated the impact of their actions.

A few modest themes emerged that applied to SMEs with Certification Level 3 (CL3):

- Background research was a key feature of their effectiveness.
- To a lesser extent, CL3 SMEs also applied their previous experience to produce effective outcomes.
- There were also a modest number of CL3 narratives focused on collective action, and process improvements, but these were described in largely general terms.

Implications for the Mission

There is clear alignment between the Communication results from the Competency Assessment of the Contracting Workforce and the importance of Communication in producing effective performance as we have reported here. This alignment, expressed in the narratives as a complex set of communication forms, implies that purposeful development of suitable communication skills is key for engendering the success of Contracting personnel.

Additionally, Contracting leaders must decide whether the results of this analysis align with other goals they may have for the workforce. For example, leaders might ask themselves whether they want Contracting personnel generally, or SMEs in particular, to work primarily within the structure of their existing functional roles. If so, this analysis reinforces their goal.

Contracting leaders can also apply insights from these narratives to promote increased effectiveness across the workforce. Examples include:

- Highlight examples of effective communication as something Contracting personnel do well
- Implement low-cost, high-visibility ways to recognize notable positive impacts Contracting personnel make on a frequent basis
- Emphasize the importance of background research in producing effective outcomes, especially among junior personnel

- Offer more opportunities, especially for junior personnel, to gain experience across different functional areas
- Provide Contracting personnel with clearer and more specific information about working collectively
- Implement a program to recognize process improvements that increase efficiency and cut costs.

By applying these recommendations, Contracting leaders can apply insights from these narratives to promote increased effectiveness across the workforce.

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Introduction

Background and Tasking

The Department of Defense Acquisition, Technology, and Logistics (AT&L) Community developed the Human Capital Strategic Plan 2007-2012, which outlines a path for Military Service Components and Functional Leaders to build the future Defense Acquisition Workforce. With the support and participation of representatives from across the Defense Department, the Contracting Community completed development of the DoD Contracting Competency Model. The model identifies the observable and measurable technical and professional behaviors and associated knowledge that underlie superior job performance for the Contracting Workforce.

The competency management research conducted to date focused primarily on the competencies required to successfully perform the job. However, very little research has examined the organizational culture of the community. Understanding the organizational culture of a cross-agency community such as AT&L is important because it describes the basic assumptions, values and beliefs members of the workforce hold. CNA was tasked by the Defense Acquisition University (DAU) to analyze the key situation data collected from subject matter experts (SMEs)¹ in Phase II of the Competency Modeling process. We used qualitative analysis to classify the approaches, behaviors and outcomes of SMEs, as evidenced by the descriptions they provided.

¹ Throughout this document, we refer to subject matter experts in their role as respondents to the Phase II survey and participants in our research. In this way, we use SMEs, respondents and participants interchangeably.

Issues and Approach

The primary issue addressed in this document is how to improve performance in the Contracting Workforce. During Phase II of the Competency Modeling process, CNA collected descriptions of effective performance from SMEs to gain insights into the behaviors that might improve performance across the Contracting Workforce. The SMEs' responses described the following topics, which define the more specific issues to be addressed:

- The contexts in which effective outcomes are produced
- The behaviors top performers engage in
- The reasoning behind their behaviors
- The effective outcomes produced.

The stories we collected serve as data for our analysis of effective performance in the Contracting Workforce.

Connections to the Contracting Competency Model

Immediately following SMEs' descriptions of effective performance, they were asked to identify the Unit of Competence that most related to the situation they wrote about. Along with the Certification Level of each SME, the Unit of Competence each one selected forms the analytical context for our results. In this way, we present our analysis of effective performance within the context of the Contracting Competency Model.

Report Outline

This introduction is followed by a **Data and Methodology** section that describes the data collection technique, the methodology of the data coding process, and the analytical approach, which includes an analysis of the sample of respondents who provided the data collected. The **Results** of our analyses are reported in the next section and divided primarily into two parts: Trends Across the Dataset and Notable Exceptions. This document ends with a **Conclusions** section, comprising a Profile of Excellence in Contracting and their Implications for the Contracting Mission.

Data and Methodology

Data Collection

In Phase II of the Competency Modeling development process, SMEs documented specific job-related stories in which they, personally, were successful – for example, achieving cost savings, providing higher quality output or producing a more timely result. These stories catalog key behaviors that are required in challenging job-related events, which result in effective job outcomes. We use the Critical Incident technique as the theoretical background for this data collection. This method has a long history of successful use in organizational development-related studies.

Critical Incident-related techniques are methods that rely on a set of procedures to collect, content analyze, and classify observations of human behavior (Gremler, 2004). They provide a behavior-based view of job performance told through the eyes of an actual job holder (Cascio, 1998). It is important to understand Critical Incidents because they can bring focus to effective and ineffective work behaviors directly from research participants, particularly when these behaviors are not easily or efficiently observed. This focus on effectiveness maximizes efforts to collect sound and poignant information directly from the workforce.

The STARR Construct

The particular Critical Incident technique we used was the **Situation/Task-Actions-Reasoning-Results** (STARR) construct, which asked SMEs to describe the incident in four parts. Each part is explained below, along with the specific questions SMEs were asked.

Situation/Task

Respondents were first asked to tell us what specific situation or task they were addressing in the incident. This part sets the scene and allows the reader to understand the context in which the actions took place. They were asked to address three questions: *Where were you? What was your role? What task were you working on?*

Actions

Next, participants told us what actions they engaged in to produce effective outcomes. They specifically addressed the question: *What were the steps you took that led to the effective outcome?*

In providing this information, participants allow us to walk in their shoes and to see through their eyes.

Reasoning

Respondents next explained the thinking behind their behaviors by answering two questions: *What was your rationale that led to the action? What past experience made you choose this action?*

In this answer, participants provided insights into their motivations, strategies and approaches to solving difficult problems.

Results

Participants addressed these questions: *What impact did it have? For example: How much time was saved? What problems were avoided?*

In these responses, SMEs described the effective outcomes themselves, displaying how their behaviors produce excellence in Contracting.

Analytical Approach

Although the competency modeling process may provide some insights into how staff works, and the performance level at which leadership aims, significantly more work is needed to understand the lived experiences of Contracting personnel. CNA staff chose a

qualitative rather than a quantitative approach to study successful Contracting outcomes for various reasons — some practical and some methodological.

Generally, large-scale quantitative approaches are beneficial because they allow for statistical data analysis, and can draw from a potentially representative sample of the group of interest. Unfortunately, the rigid structure of such approaches requires researchers to anticipate responses, limits the types of information that can be collected, and rarely include space to explain rationale or context. Thus, quantitative approaches frequently generate as many questions as they answer.

On the other hand, qualitative approaches can be time-consuming and expensive. They require extensive researcher training, painstaking development of observation tools and protocols, and substantial cooperation and buy-in from all parties involved. However, qualitative approaches offer the opportunity to learn about unanticipated factors and issues, collect information on context and rationale, and hear the naturalistic expressions of the people under study.

For the current project, we had the advantage of existing qualitative data, so we didn't incur the expense of instrument development or data collection. So for practical reasons, we used existing data to investigate successful Contracting outcomes, in part to minimize costs. With little previous situated knowledge to help us tailor our inquiry, we gave respondents unlimited space within the STARR construct to describe the contexts and behaviors from which excellent performance arose.

Methodologically, the key feature of our approach is that the phenomena of interest aren't easily reducible to quantified measures, so our aim was to systematically interpret respondents' stated perceptions and to draw conclusions about these perceptions. The validity of our results is defined in terms of credibility, trustworthiness, and authenticity and is based on the richness of the data.² The techniques we used contributed to validity because our coding and

² A more detailed explanation of validity, reliability and generalizability is presented in Appendix A.

analysis were based on the actual responses, not notes, summaries, or recollections. Also, in reporting our interpretations, we cite the respondents' actual words rather than our paraphrases.

Methodology

Grounded Theory

We used an open coding process led by the participants' words, allowing our interpretations to rely on the data directly, rather than any preconceived ideas about how the participants might respond to the questions. This method is referred to as grounded theory because the themes we identify are grounded in the data (Creswell, 1998). We then grouped the themes that emerge from the content into conceptual groupings through an iterative process of identifying, testing and refining until we constructed a codebook.

Along with the procedural steps we took to develop the codebook, we gave ourselves rules that defined the goals and boundaries of our work. First, we constantly reminded ourselves that a functioning codebook is a tool that helps us describe the nature of the content. This pushed us not to lose sight of the ultimate goal, to describe to readers of this report what excellence in Contracting looks like.

As a practical matter, once we created the broad thematic categories, we forced ourselves to create mutually exclusive subcategories. This forced us to clarify our thinking and clearly articulate distinctions that accurately capture the range of experiences participants described. Fortunately, high-quality software³ has been developed to support systematic analysis of qualitative data (Lewis and Silver, 2007; Maietta, Year; Richards, 2009). We were able to attach codes to excerpts of data, make notations to document our reasoning, tabulate and probe our coding results to look for trends, and perform secondary analysis to interpret trends we found.

³

We chose NVivo (http://www.qsrinternational.com/products_nvivo.aspx).

The Codebook

The codebook framed our analysis of the STARR responses. It consisted of categories based on themes that emerge directly from the data itself. Detailed definitions of each category in the codebook are shown below.

Agency

Agency is defined as the state of being active or exerting power. The **Agency** general category characterizes how respondents came to be working on the task they describe and what source served as the engine behind the actions the respondent took. We distinguish between the subcategories primarily based on the presence, absence, or source of initiative underlying the situation described.

Unlike some other main categories, the Agency category lacks conceptual meaning itself. Instead, it acts as an umbrella to the subcategories. Thus the only data coded to agency are those coded to one of its subcategories.

Items coded to one of the Agency subcategories often include a statement of the problem the respondent is addressing, although this isn't always described fully, and sometimes it isn't described at all. What's key is that these statements set the context for the performance being described.

Agency has three subcategories: Personal Agency, Role/Function, and Tasking.

- Responses coded in the Personal Agency subcategory describe respondents' capability to originate and direct action by personal initiative. For our purposes, it doesn't matter whether the respondent exhibits personal agency within a tasking or as part of her/his expected role or function, or whether the personal agency is operating independent of task or role. The key is whether personal agency drives the action the respondent takes, as it embodies a decidedly proactive approach to producing effective performance.
- The Role/Function subcategory encompasses situations in which the action occurs because it is part of the regular duties

of the respondent's official role or job function. The majority of responses in this category are straightforward statements of respondents' job titles, positions or duties.

- The Tasking subcategory is for descriptions in which the actions are the result of assigned tasks. A large portion of the situations coded here describe assignments of tasking connected to a specific role. These items were coded Tasking rather than Role/Function because the driving force behind the activities was the explicit assignment of the work to the respondent.

Research and Analysis

The **Research and Analysis** category captured situations where respondents gathered, reviewed or analyzed data and information to create new knowledge on which to base decisions or actions. The three subcategories of Research and Analysis are Background, Identify Needs, and Analyze Data.

- The Background subcategory captured general gathering of information, such as compiling previously conducted market research or reviewing the work of predecessors.
- Specific descriptions of respondents identifying gaps or needs, whether by explicit research activity, or based on intuition, were coded to the Identify Needs subcategory.
- The Analyze Data subcategory covers the analysis of empirical data to inform the decision-making process.

Team Building

Responses that were coded as **Team Building** included discussions about building teams using personnel from within or outside the respondent's unit, department or agency. Team Building consists of two subcategories, Assembling the Team and Working with/Leading the Team. The Team Building category is distinguished from the Collective Action category in that Team Building descriptions do not include details about how the team's function produces the outcome.

- Passages coded as Assembling the Team consist of individuals outlining plans to form a team or individuals who described how they put the team together.
- Responses that discussed actions taken to work with a newly formed team or to lead a team were coded as Working with/Leading the Team. For example, one individual described how his past experience working with teams led him to establish and build a team through communication.

Communication

The **Communication** category captures responses in which communication is central to the situation or significantly improved communications are the primary result. While this category has no formal subcategories, the responses cluster along several themes, from broad functions, such as engagement, to specific behaviors, such as accessing networks and negotiating.

There was some temptation to code every incidence where any form of communication is described. But, as a research team, we decided to focus on those entries where communication was truly central to the action, rather than every time a respondent mentioned a behavior that could be interpreted as communication. In other words, we chose to focus on those examples that would best illustrate how communication itself was the primary driver of effective outcomes.

Experience

Passages coded as part of the **Experience** category are ones where the respondent discussed the role experience and/or knowledge played in the actions he/she performed in the current situation. We identified three subcategories among those situations where experience and/or knowledge were mentioned: Previous Experience, Lack of Experience and Lessons Learned.

- Previous Experience referred to instances where respondents mentioned that they used previous experiences to guide their decisions in the current situation they were describing. Respondents often credited their actions to experience gained from time spent working in similar roles or situations. Others stated that training, education, or knowledge of the product

being contracted/purchased and/or their relationship/familiarity with the customer or their practices drove their decisions.

- Lack of Experience was cited when success was attributed to factors other than years of experience in the assigned task. In these cases, respondents often described relying on the experience of colleagues or some aspect of their training to make up for the experience they lacked.
- Lessons Learned focused on instances where respondents described the lessons they learned in the current situation that will help them be (more) successful in a similar situation in the future.

Collective Action

The **Collective Action** category includes situations where respondents discussed working with others as part of a team or a collaborative effort. What distinguished between data coded to the general Collective Action category, or to one of the subcategories was the specificity of the description and whether the work was within the respondent's unit, department, or agency.

Collective Action has two subcategories: Collaboration and Teamwork.

- Those situations where respondents worked with individuals at other organizations (external) were coded as Collaboration.
- Situations where respondents worked with personnel within her/his own unit/department/agency (internal) were coded as Teamwork.

Situations where the coders could not distinguish if the passage included team members who were internal or external were coded to the main category Collective Action, representing a general sense of group effort.

Process Improvement

The STARR data coded as **Process Improvements** described actions that improved existing processes to enhance performance or meet new goals or objectives. These were generally made to fix broken processes, create greater efficiencies, or make up for personnel shortages.

The Process Improvement category had three subcategories: Areas of Improvement, Bridging Gaps, and Process Integration.

- Text coded to Areas of Improvement gave specific details about how the respondents' actions improved a process in a particular functional area and produced a positive outcome.
- Text coded to Bridging Gaps documented instances where changes in process were made in order to mitigate coverage gaps.
- Process Integration codes captured instances where two or more processes, units, or work groups were integrated for the purpose of increasing efficiency and/or improving communication.

Outcomes

Effective performance is typically associated with positive **Outcomes**, yet the outcomes themselves may not seem impressive. In some instances, the outcome might be considered average or expected, yet the actions taken to achieve these results were exceptional because obtaining the expected results entailed overcoming considerable obstacles.

There were three subcategories of Outcomes: Impact, New Organizational Integration, and Recommendation.

- Responses coded as Impact were those describing overt positive outcomes like savings in money and time; non-monetary efficiency gains like accomplishing intended goals with fewer resources; and avoiding bad outcomes such as negative legal action.
- Situations coded as New Organizational Integration were those that involved merging previously distinct groups or

units, as well as partnerships between government, private industry and/or academic institutions.

- The Recommendation subcategory was used for situations in which the respondent described making formal suggestions about policy, modifications of contracts or denials of payment.

Emergent Themes

We also set aside one category as a parking lot for themes that emerged as we worked our way through the dataset. The **Emergent Issues** category was used to place all passages that included recurring themes that did not fit in currently existing categories. We periodically reviewed the data we coded there in case additional concepts emerged.⁴

Connecting Coding Results to the Contracting Competency Model

Based on workforce need, we performed a secondary analysis of our coding results to probe for connections to and trends within the context of the Contracting Competency Model (Hausmann, Tregar and Uzoukwu, 2008; Thomas, Brooks, Uzoukwu-Omoike and Pittsonberger, 2010).

One connection between the STARR data and the Competency Model comes from the competency assessment process itself. Following their STARR responses, SMEs were asked to “select the unit of competence that most relates to the situation written above.” A list of the units of competency, along with their constituent competencies and definitions were given, and respondents selected one competency from the list.⁵

⁴ The categories **Experience** and **Team Building**, along with their subcategories, were developed in this way.

⁵ The Phase II Competency Model as it was presented appears on the next three pages.

The second connection to the competency modeling process that we made was the Certification Level each respondent had achieved. Certification Level is an approximation of each respondent's experience level.⁶

The combination of Units of Competence and Certification Levels formed a construct we imposed on the coding results. In this way, we constructed a method for interpreting our results in the context of the Contracting Competency Model. This construct allowed us to probe for trends, which determined whether the themes that emerged from the STARR data illuminated differences between Units of Competence and Certification Levels. We will discuss the results of this analysis in the Results section.

Table 1 displays the distribution of coded situations cross-tabulated by Units of Competence and Certification Levels. As will be discussed in our presentation of the sample in Appendix C, the STARR data was fairly evenly distributed across the Units of Competence, but are more heavily distributed among the higher certification levels. This distribution is reasonable because subject matter experts tend to have more experience and higher Certification Levels.

Table 1. Cross-tabulation of STARR data by Units of Competence and Certification Levels

Unit of Competence	Certification Level			
	0	1	2	3
Acquisition Planning	14	10	25	41
Solicitation & Contract Award	8	11	16	34
Contract Administration	15	11	25	33
Specialty Areas	6	2	21	47
Additional Focus Areas	1	1	3	12

⁶ Certification Level definitions are presented immediately after the Competency Model description.

Units of Competence

The Phase II Contracting Competency Model presented to SMEs had four Units of Competence. These units, and their constituent competencies, are defined below.

Acquisition Planning

- Determination of How Best to Satisfy Requirements: Includes analyzing requirements to provide business advice, conducting and analyzing market research, performing acquisition planning, and determining acquisition strategy.
- Extent of Competition: Includes considering socioeconomic requirements, promoting competition and justifying other than full and open competition or exceptions to fair opportunity for orders placed against multiple award task or delivery orders contracts.
- Source Selection Planning: Includes documenting source selection plans.

Solicitation and Contract Award

- Solicitation Terms and Conditions: Includes developing terms and conditions.
- Solicitation of Offers: Includes publicizing proposed procurements, issuing solicitations, issuing amendments or canceling the solicitation, responding to pre-award inquiries or protests, and conducting pre-bid/quote/proposal conferences.
- Bid Evaluation: Includes bid evaluation, performing price analysis, and determining contractor responsibility.
- Proposal Evaluation: Includes evaluating proposals and quotes against price and non-price factors (source selection criteria).
- Negotiation and Source Selection: Includes preparing for negotiations, determining whether to hold discussions, establishing the competitive range, negotiating terms and conditions

(including price), determining responsibility, and selecting the awardee.

- Contract Award: Includes awarding contract/issuing task or delivery orders, debriefing unsuccessful offerors, and processing post-award protests.

Contract Administration

- Initiation of Work: Includes planning for contract administration, and conducting post-award orientations.
- Contract Performance Management: Includes administering contract, assuring past performance, resolving contract performance problems, and issuing final decisions.
- Changes and Modifications: Includes issuing contract modifications, change orders or exercising options.
- Accounting, Finance, and Payment: Includes approving contractor request for payment, negotiating rates and administering cost accounting standards.
- Contract Closeout: Includes contract closeout and terminating contracts when appropriate.

Specialty Areas

- Small Business: Assists small business concerns, makes recommendations to contracting officers regarding small business matters, and monitors contractor and government compliance with small business goals and objectives.
- Procurement Analyst: Develops procurement policy and procedures, leads change in the procurement process, advises on procurement matters, performs oversight, and provides training.
- Advanced Contracting Cost and Pricing: Assists the contracting officer in determining reasonableness of cost and/or price by performing complex cost/price analysis utilizing advanced pricing and/or accounting concepts or techniques and advising on other pricing-related matters.

Subject Matter Experts were also allowed to proposed their own additional units of competence. In this case, they could select Your Additional Primary Focus Area of Contracting as the unit of competence associated with the situation they described.

Certification Levels

The Defense Acquisition Workforce Improvement Act (DAWIA) Certification webpage⁷ defines the need for certification as follows:

The Defense Acquisition Workforce Improvement Act (DAWIA) required the Department of Defense (DoD) to establish a process through which persons in the acquisition workforce would be recognized as having achieved professional status. Certification is the procedure through which a military service or DoD Component determines that an employee meets the education, training, and experience standards required for a career level in any acquisition, technology, and logistics career field.

Accordingly, the CNA's competency modeling process used the DAWIA definitions for certification. These definitions are presented below.

Certification Level 0: No certification.

Certification Level 1: Typically involves education covering at least 24 semester hours in accounting, law, business, finance, contracts, purchasing, economics, industrial management, marketing, quantitative methods, or organization and management; baccalaureate degree (any field of study). Includes 1 year of contracting experience. Does not typically require any acquisition training and some functional training (including, but not limited to CON 090, CON 100, CON 120, etc., same-level type courses).

Certification Level 2: Typically involves education covering at least 24 semester hours in accounting, law, business, finance, contracts, purchasing, economics, industrial management, marketing, quantitative methods, or organization and management; baccalaureate degree (any field of study). Includes 2 years of contracting experi-

⁷ <http://www.dau.mil/doddacm/Pages/Certification.aspx>

ence. Typically requires one acquisition training course (e.g., ACQ 101) and some functional training (including, but not limited to CON 214, CON 218, CON 270, etc., same-level type courses).

Certification Level 3: Typically involves education covering at least 24 semester hours in accounting, law, business, finance, contracts, purchasing, economics, industrial management, marketing, quantitative methods, or organization and management; baccalaureate degree (any field of study). Includes 4 years of contracting experience. Typically requires one higher-level acquisition training course (e.g., ACQ 201) and some functional training (including, but not limited to CON 334, CON 353, CON 360, etc., same-level type courses).

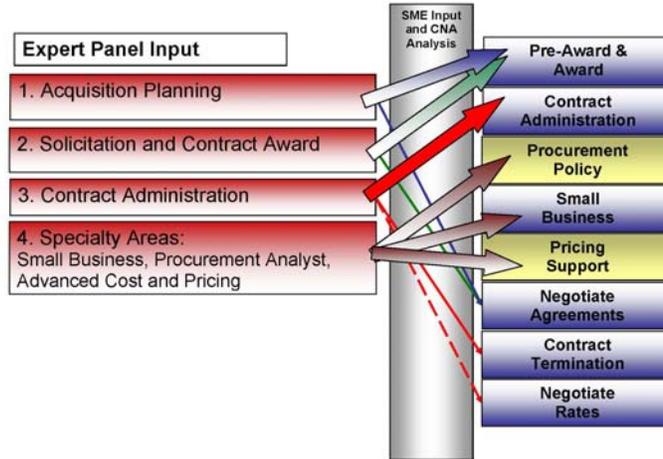
Connecting the Phase II Contracting Model to the Final Contracting Model

Unlike the Phase II Competency Model presented to SMEs, and consequently used for this analysis, the final Contracting Competency Model contains eight Units of Technical Competence. The cross-walk between the Phase II and final models is shown in Figure 1 below (Hausmann, Tregar and Uzoukwu, 2008).

As you can see, there is no direct correspondence between the Phase II units of competence and the final technical units of competence. Therefore we cannot draw a direct connection between the key situations the SMEs described and the final units of competence. This disconnect represents a significant limitation of the results of this study.⁸

⁸ Other limitations are discussed in Appendix B.

Figure 1. Phase II and Phase IV Competency Model Cross-Walk



The Coding Process

We applied grounded theory to create a coding process that allowed us to focus on data fidelity and interpretive consistency. We did this by sequestering the STARR data from the rest of the data collected on the Phase II survey, including demographics, background, and competency ratings. Although the Phase II data collection process generated career field-specific identification numbers, we elected to attach generic identification numbers to the STARR data records so that we had no way to connect these data to the workforce they came from. This helped ensure that we would not be influenced by prior knowledge or experience with competency modeling or any other data on respondents.

Additionally, a member of our project team with programming expertise was select to perform the data extraction, cleaning, and contract tracking. This team member did not participate in the coding, but managed the data so that we could connect the coding results as described above. Data were extracted from the online survey in a comma-separated values (.csv) file format and processed using Microsoft Excel. Data were cleaned according to the business rules for the project, which specify the values that are recorded when respondents enter responses like “N/A” or “NAA” or leave responses

blank. Clean data were organized into random groups of 20 records each (labeled as sequentially-numbered folders).

Ultimately, the coding process was designed to minimize individual researcher bias and to maximize the likelihood that important themes would surface. Specifically, coding was done in pairs. Each team member first coded individually. Then, through discussion, each pair came to a consensus on what the final codes for each record should be. In addition, periodic calibration coding was done with all members of the research team to ensure that the coding schemes were being consistently applied. The coding was done by an overall team of seven CNA researchers.

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Results

In this section, we describe the results of our qualitative analysis, within the framework provided by the Units of Competence and Certification Levels. As a reminder, the analytical construct we used is presented in Table 2.

Table 2. Cross-tabulation of STARR data by Units of Competence and Certification Levels

Unit of Competence	Certification Level			
	0	1	2	3
Acquisition Planning	14	10	25	41
Solicitation & Contract Award	8	11	16	34
Contract Administration	15	11	25	33
Specialty Areas	6	2	21	47
Additional Focus Areas	1	1	3	12

Trends across the Dataset

As we described in the Methodology section, we performed a secondary analysis of the coded STARR responses in the context of Contracting Units of Competence and each respondent's Certification Level. As Table 2 shows, the distribution of results varies across the dataset. We looked for trends in coded responses that would display connections between the STARR responses, the Units of Competence and Certifications Levels.

Generally, we found strong trends in two coding subcategories (Role or Function and Impact) and one main coding category (Communication), but these trends occurred across the dataset, and did not allow us to distinguish between Units of Competence or Certification Levels. This means that stories coded as Role or Func-

tion, Communication or Impact were equally frequent across all Units of Competence and all Certification Levels. Below, we present some examples of these three trends.

Role or Function

Stories coded to Role or Function⁹ ranged from simple statements of a respondent's title, to descriptions of specific roles respondents have within the normal course of their job, to detailed lists of duties the respondent is performing. Simple title or role statements included: "lead pricer on an acquisition" (SID 230, CL3, Solicitation and Contract Award); "Contract Specialist" (SID 291, CL2, Acquisition Planning); "Team leader and project coordinator" (SID 815, CL0, Specialty Areas); and "Role of PCO/SSA" (SID 830, CL3, Your Additional Secondary Focus Area of Contracting).

Location

Similarly, direct statements about the location in which respondents work were pretty straightforward. Examples included the following:

I was at Wright Patterson AFB, OH.
SID 746 (CL2, Solicitation and Contract Award)

I was working in the SABER construction flight.
SID 539 (CL0, Contract Administration)

Specific Role and Title

Other respondents provided more detailed descriptions of their role and/or title and how the situation they described connected to this role. The following are examples of these descriptions:

I led the development of a Source Selection Plan (SSP) Template for use on all source selections at [Location]. As the leader of the effort, my tasks were to build and gain approval of the team, draft the template, coordinate input from site team members, build coalitions and obtain consensus on the product.
SID 132 (CL3, Specialty Areas)

⁹

As a reminder, **Role or Function** is a subcategory of **Agency**.

Based on the weapons system that I am responsible for, I was making repeated repair awards to a contractor for repair of a particular item.

SID 1210 (CL2, Acquisition Planning)

My role is to review the request for payment and make my recommendation to the ACO for approval or denial.

SID 392 (CL1, Contract Administration)

I was the contract specialist in the early 1990s administering a delivery order contract for [breathing] devices. A latent defect in the devices caused them to catch on fire after they were activated.

SID 339 (CL3, Contract Administration)

I am the Contracting Team Lead for Information Technology (IT) procurements at the Defense Distribution Center (DDC). Recently, my team was responsible for awarding and administering two contracts, awarded to different vendors, for installation of Radio Frequency Identification (RFID) hardware and software. ... I was responsible for contract specialist duties on the hardware contract and I was the contracting officer for the software contract.

SID 276 (CL3, Contract Administration)

Detailed List of Duties

Finally, some respondents provided a detailed list of their duties. A typical example of such data is shown below:

In order to perform my daily job I must review the entire PR package, do small business coordination, synopsis, prepare and post solicitation, evaluate offers, determine competitive range and award (competitive) or develop government objective, conduct negotiations, document, and award (sole source), draft contract for award, distribute contract, synopsis, and post to EDA.

SID 206 (CL1, Solicitation and Contract Award)

Communication

We defined the Communication¹⁰ category as appropriate only when communication was central to producing the effective outcome. Examples of broad expressions of communication that were central to stories are shown below:

I held several discussions with the contractor, and Contracting Officer, to understand the status and to discuss a course of action to get construction back on schedule. ... I stayed fully engaged with the contractor as not to miss any details because there are several reasons why a construction project can fall behind.

SID 539 (CL0, Contract Administration)

Communicated what was needed, and when required to key members of team, followed up to ensure understanding and that response to each tasker was received so each could be submitted on time.

SID 815 (CL0, Specialty Areas)

Written Communication

Other stories described specific forms of written communication. As shown in these examples, respondents use documentation and follow-ups to engender effective outcomes:

Due to accounting error the contractor was over paid. To rectify the error I request that the contractor submit a check to reimburse government. Contractor cut check. I then prepared a cost voucher letter to DFAS which stated check #, date, and amount. Letter stated the reason for the refund, and the line of accounting to apply the funds in-order to balance the Material and WIP accounting lines. I submitted letter to my Contract Officer for approval and mailed the check and letter to DFAS.

SID 736 (CLI, Contract Administration)

Having struggled through one option exercise already, I created a guide to be distributed to all potential customers explaining the process for placing an order. This guide included a standardized order form and step by step instruc-

¹⁰ As a reminder, **Communication** is a main category without subcategories.

tions. I also created a guide for the program office so that they understood the process and could communicate it both up their chain and to potential customers. I created spreadsheets that could be used from option exercise to option exercise to track all the customers and their orders in an orderly fashion. I also created a step by step guide for future contract specialists to enable a smooth transition once I left the program. I also provided weekly updates to my POCs to keep them abreast of changes in price and quantity and the progress of the option exercise.

SID 1201 (CL0, Contract Administration)

Negotiation and Facilitation

Sometimes SMEs used negotiation and enlisted the help of communications professions to help ensure success:

Thru extensive communications with Government technical POC and lengthy negotiations with contractor, I issued a bilateral mod, changed FOB to destination, new terms and conditions were established and agreed upon. ... My objective was to create a "win win" situation for all parties.

I worked with both the Government and contractors to ensure favorable outcomes for both the Government and Contractor. One of the Government's goals is to maintain a good working relationship with Contractors. New terms and conditions were established and agreed upon thru a bilateral order modification with the Contractor.

SID 1011 (CL3, Contract Administration)

I then negotiated the services of a professional facilitator to promote a successful partnering outcome. I prepared a Statement of Work based on the planned objectives and established the terms and conditions for the facilitator's performance. ... I also believed the Annual Partnering session would not be productive unless the participants provided input as to the goals and objectives, thus the survey to solicit member input. In addition, I ensured the date, time & place of the session would provide an opportunity for maximum participation to improve the potential benefits for both teams. ... Forty-three Partnering team members (out of a possible fifty-one) attended the session. Overall, the members rated the session as "Good" (4.05 on a 5.0 scale). Changes to the Partnering Agreement were initiated and a Partnering Steering Committee was established. I also ensured the facilitator properly debriefed the

Partnering Steering Committee regarding the post-session survey.

SID 294 (CL3, Contract Administration)

Multiple Forms of Communication

More commonly, respondents used many different forms of communication to produce an effective outcome. In this lengthy example, the respondent used both wide-ranging and controlled communication forms to ensure success:

Actions: I was part of the review process for this effort, writing and rewriting to the very time we posted the RFI. I was responsible for posting the RFI and receiving all of the responses. I and the Contracting Officer took measures to protect the information coming in from vendors such as developing a e-mail box where only we had access, and could only be used to receive mail. We also secured the responses going out of the mailbox to pre-decided trusted agents, controlling the number of people accessing the information (as some of the evaluators were support contractors), ensuring Non-Disclosure Agreements had been signed, ensuring that all communications came through the contracting office. We also scheduled all of the one-on-one, controlled the RFI hardcopy responses, briefed all the team members on ethics and security, issued notebooks by control numbers and controlled the team's technical responses and the contractor's replies, ensuring we stayed on task and did not become opportunities to market for an individual company.

Results: While the extreme measures we took to control information seemed excessive, we had NO leaks of information during the industry days. This strategy comforted the contractors, who were able to speak to us more candidly than before, describing their own processes in detail, information previously believed to be sensitive. At minimum, most contractors would only speak to limited individuals, and in some cases the information was distorted and not very accurate. In this case, we had over 30 contractors, small and large; operator's integrators, and others willing to share their expertise and business practices. In addition to repairing our image, we were able to answer the congressional reports with solid business background and judgment.

SID 589 (CL3, Acquisition Planning)

Impact

In examining trends in the Impact¹¹ subcategory, we found three major sub-themes across the dataset: time and money, efficiency and avoidance of administrative/legal action.

Time and Money

Some of the clearest descriptions of impact center around time and money. Examples of this include the following:

This system was so well developed that a waiver from DoD requiring the use of [Specific Vendor's Particular Program] system was issued to [Location]. The time saving resulted in maximizing of rebates from [Vendor] each month of \$25,000, the best in DoD.

SID 48 (CL3, Solicitation and Contract Award)

42 Competitions were run in an 11 month period totaling \$495M. No break in service occurred. Competitions on average required 90 days from receipt of PR to award. No protests were rec'd. The program saved over 5000 hours in contracting labor hours based on streamlined processes. One competition alone saved a PMA \$14M over prior contract for a 3 year period. Overall the program was a success in both terms of reduced costs and improved CSS rec'd based on improved SOWs, metrics and the competition of the process.

SID 320 (CL3, Acquisition Planning)

Efficiency

Less direct descriptions of impact focus on increases in efficiency. Even though these impacts are less direct than time and money, they are often quite important. The following are examples:

As a result of the teamwork involved and the innovation we used, we awarded a contract for a commercial turn-key system that is currently being built and will deliver next year. ... The system is deployable with a team of less than 10, when the previous [Acronym of Specific System] system was deployable by 200+. We got the DON Procurement Excellence Award for the procurement last year.

¹¹ As a reminder, **Impact** is a subcategory of **Outcomes**.

SID 364 (CL3, Solicitation and Contract Award)

The process was an overwhelming success. End of year processing in SPS occurred without a single deficiency or award delay due to improper actions in SPS. Users are now well versed in working in SPS and are equipped to train newcomers to the Flight. SPS is still time consuming and inefficient for day-to-day work, but we are now maximizing our efficiency with and avoiding work standing still, only to spend frustrated hours solving problems with releasing documents. If I had to put a number on it, I'd estimate an improved efficiency of 40%.

SID 536 (CL2, Solicitation and Contract Award)

Avoidance of Administrative/Legal Action

Lastly, other important but indirect impacts include avoiding administrative and/or legal actions. Examples of respondents successfully achieving these impacts are shown below:

I think that highlighting the deficiencies with the contracting officer and recommending that the evaluation factors be revisited had a positive effect on the requirement as it resulted in an effective and meaningful evaluation. I also think that it significantly reduced the risk of a protest. Time was also saved in that the evaluation went smoothly and no protest was received due to a deficient solicitation. In my opinion, a major problem that was avoided was the technical evaluation panel conducting an evaluation inconsistent with the criteria stated in the solicitation. The evaluation was proper and no protests were lodged against the procurement.

SID 92 (CL2, Contract Administration)

The impact of the delay was that there would be no possibility of chemical leakage into a day-care facility that could result in injury or death and legal liability for the Government, not to mention the mental anguish that such a leak would cause for the contractor and the Government.

SID 983 (CL3, Specialty Areas)

Notable Exceptions

Although the strongest trends did not allow distinctions across the dataset, there are a few notable exceptions. The primary exception

is for Certification Level 3 (CL3). As you might recall from the discussion of the dataset, more than half of the stories were written by SMEs with CL3. As such, these responses somewhat dominated the dataset, and offer the greatest chance for distinction.

Additionally, there are modest trends related to two Units of Competence: Acquisition Planning and Contract Administration.

Certification Level 3

Although Background and Previous Experience are present across the dataset, they show stronger trends for CL3. General Collective Action and General Process Improvement trend modestly across the dataset, but are slightly stronger for CL3. Examples of CL3-coded data in these four categories are shown below.

Background

Responses coded to Background¹² include descriptions of market research, reviews of law and policy, and reviews of reports produced by others:

Through market research I determined that most grounds maintenance for other government bases and commercial sites were done by a fixed price monthly cost.

SID 193 (Acquisition Planning)

I read various GAO decisions to see where the courts are leaning so that when issues come up I can weigh the risks of a potential protest prevailing.

SID 1114 (Acquisition Planning)

Prior to sending the Performance Assessment Report (PAR) to the contractor for review and comment, I reviewed the PAR and noticed that it did not reflect the actual work as documented in the contract file.

SID 846 (Contract Administration)

¹² As a reminder, **Background** is a subcategory of **Research and Analysis**.

Previous Experience

Previous Experience¹³ was important, both when it was directly applicable or when it simply facilitated cooperation. An example of each is shown below:

I've had numerous opportunities to work in many different contracting offices, including assignments outside my primary service in which I was "raised". I've learned many important facts: Not everybody is acquisition-trained to a level one might expect (I deal with a lot of warfighters). Not everybody sees an issue the way you see it. ... In this particular case, I was brand new to the organization and I didn't have much time to establish this rapport. Fortunately, my reputation preceded me and this was helpful to the situation.

SID 852 (Your Additional Secondary Focus Area of Contracting)

My past experience in handling large IT solicitations had educated me on the complexities of large scale multi million dollar solicitations. I applied this knowledge and the skills I had developed over 10 years to this acquisition.

SID 186 (Acquisition Planning)

Collective Action

The modest trend in Collective Action¹⁴ is exemplified by this excerpt:

Not a lot of experience with this type of issue, however, I knew who the experts were within command and within dcma. Worked with experts to develop solution to help the customer.

SID 1017 (Acquisition Planning)

In this case, the description does not contain a lot of detail, but working with experts when the respondent lacked expertise himself shows commitment to an effective outcome.

¹³ As a reminder, **Previous Experience** is a subcategory of **Experience**.

¹⁴ **Collective Action** is a main category; when data was coded to this main category it is usually not specific enough to code to one of the subcategories.

Process Improvement

Similar to the modest trend just discussed, the modest trend in Process Improvement¹⁵ is described in very general terms. The key feature is the contribution the process improvement made to the success of the situation.

Breaking down barriers and cutting through red tape were no longer a problem and a new procedure for the contracting process was developed.

SID 1120 (Specialty Areas)

Units of Competence

Background research is modestly present across the dataset, but trends stronger for Units of Competence 1 (Acquisition Planning) and 3 (Contract Administration). Examples of data coded Background that were identified by respondents as connected to these Units of Competence are presented below.

Acquisition Planning

In the response below, the respondent describes attending a class and reviewing requirements and existing solicitations to become familiar with the differences between Design-Build and Design-Bid-Build projects:

While we were waiting for funding to commence with the development of the design criteria manual the engineers and myself attend a design build course to become more familiar with the process and the differences between a Design Build project and a Design-Bid-Build project. In addition, I started reviewing FAR requirements and other agency Design-Build solicitations.

SID 345 (CL3)

¹⁵

Process Improvement is a main category; when data was coded to this main category it is usually not specific enough to code to one of the subcategories.

Contract Administration

In the response below, the SME describes basing a decision on re-search about Department of Defense Grants and Agreement Regulations:

I researched my options in the DoDGARS (Department of Defense Grants and Agreement Regulations)and decided the best approach would be for the contractor to keep ownership of the vehicle until it proved worthy at [Location].

SID 226 (CL0)

Conclusions

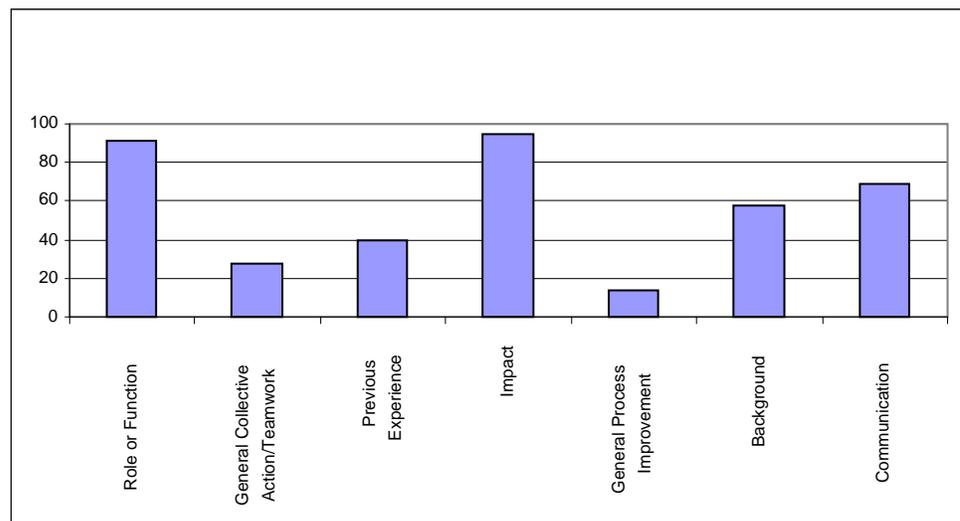
Profile of Excellence in Contracting

When describing situations in which they were able to produce highly successful outcomes, Contracting subject matter experts (SMEs) talked primarily about situations that were part of their normal role or function, as opposed to those they were personally tasked to do or situations in which they enacted personal agency.

Additionally, SMEs convincingly discussed the impact of the actions they described. They included considerable detail and clearly connected their descriptions of impact to the actions and reasoning they presented, making it easy for readers to envision how they were able to be so effective.

As Figure 2 displays, of the 336 stories we coded, more than 90 passages included clear descriptions of the respondent's role or function, and almost 100 provided detailed descriptions of impact.

Figure 2. Trends across the Contracting Dataset



Effective communication was central to the success described in many of the situations. SMEs also reported a good amount of Background research to help them make the decisions and take the actions that produce effective outcomes.

To a lesser extent, SMEs (largely those with Certification Level 3) applied their previous experience to produce effective outcomes. This is understandable since CL3 holders have more previous experience in Contracting than other respondents.

Lastly, there were modest successes based on collective action and process improvements, but these were described largely in general terms. The lack of specificity of these descriptions may, in part, be an artifact of the openness of the question we posed, but it may also indicate that some SMEs were describing the work of a group they managed and were therefore less directly involved in.

Implications for the Contracting Mission

There is clear alignment between the Communication results from the Competency Assessment of the Contracting Workforce and the importance of Communication in producing effective performance as we have reported here. This alignment, expressed in the narratives as a complex set of communication forms, implies that purposeful development of suitable communication skills is key for engendering the success of Contracting personnel.

Given the President's Human Capital Management Initiatives, Congressional mandates, and DoD's Human Capital Management Initiatives, it is important for the Contracting Workforce to improve its ability to meet DoD Contracting mission requirements. Respondents' emphasis on effectiveness within the limits of existing resources is a good contribution to meeting these requirements.

With this in mind, we have detailed below a set of implications of our findings, organized by the major trends we found. It is our hope that this presentation will help Contracting leaders apply insights from this study to their mission.

Role or Function

Many of the SMEs described their actions as part of their typical role or function. A smaller number of respondents described situations in which they were tasked to perform the actions that led to effective outcomes. This means that the SMEs who participated in this study did not need to be directed to take action when it was needed. This is important because it indicates that the SMEs who participated in this study are proactive in improving performance, within the bounds of their usual role or function.

Ultimately, it is up to Contracting leaders to decide whether this finding supports their goals for the workforce. If leaders want personnel to be proactive within the structure of their existing functional roles, this finding is encouraging. If, however, leaders would prefer Contracting personnel generally, or SMEs in particular, to take more personal initiative, that is a skill that will need to be developed further.

Communication

There were many instances where communication played a central role, not only in the context of the situation described, but also as the driver of the effective outcome. This category is strongly aligned to the results of the competency modeling process, where communication was judged to be a key professional competency for the Contracting workforce.

Even with our focus on responses where communication was central to the situation described, the volume of text coded to this category was a strong trend. The most important feature of communication is its ubiquity across the dataset, which reinforces the common perspective that communication is crucial to organizational success. It is important for Contracting leaders to highlight examples of effective communication as something personnel do well.

Impact

The most salient outcomes the respondents discussed were the impacts resulting from their decisions or actions, particularly saving

money and/or time. This is not surprising given the high-profile emphasis in Contracting on increasing efficiency.

Contracting leaders should consider low-cost, high-visibility ways to recognize notable positive impacts on a frequent basis. In addition to boosting morale, such recognition can help create a culture of innovation and achievement throughout the workforce.

Background Research

A number of CL3 SMEs described conducting Background research or the initial gathering of basic information. Background research often included conducting market research about pricing and/or competitors, and reviewing documents to ensure accuracy and/or compliance with regulations or guidelines.

The relative ubiquity of this practice, particularly among experienced Contracting personnel seems well-aligned to many of the behaviors articulated in the Contracting Competency Model. Contracting leaders might consider whether more explicit emphasis on this practice among less experienced personnel is needed.

Previous Experience

Experience and knowledge tend to play important roles in how CL3 SMEs made decisions. Given that this category was developed after we began coding data, this trend made a decent showing.

Contracting leaders should consider more formalized mechanisms to give personnel increased opportunities to work across different functional areas, and thereby increase the experience base from which they can draw. The need for increased experience opportunities may be particularly important for junior personnel, and this need may become crucial as senior personnel retire.

General Collective Action

Across all situations coded as collective action, respondents seem intent on producing the best outcomes with available resources and enlisting colleagues in a collective effort is part of that.

While this intent is important, the lack of specificity of the majority of these descriptions is a concern. The general nature of these descriptions is understandable on one level, since most of the descriptions are produced by SMEs with Certification Level 3. Thus these personnel are more likely to have supervisory roles and less likely to be engaged in the detailed, day-to-day operations of the people they manage.

On the other hand, the modesty of this trend may mean that Contracting personnel think that working collectively is important, but they may lack clarity or specificity on how to implement collective action in practical terms.

General Process Improvement

Contracting SMEs, particularly those with Certification Level 3, indicated that they made improvements in order to fix broken processes, create efficiencies within the organization, or to make up for personnel shortages.

Unfortunately, most of these descriptions were very general in nature. Similar to the General Collective Action descriptions, this is partly due to the supervisory roles many CL3 SMEs play. Additionally, some of the process improvements had not been fully implemented and/or were not long-term changes.

The general nature of these descriptions is similar to the generality we found for collective action. Additionally, some personnel may not feel empowered to implement process improvement changes. Contracting leaders should consider whether sufficient mechanisms exist for personnel to suggest process improvements. Many organizations have programs for workers to make such suggestions, like the Air Force technical Order 22 (AFTO22) program¹⁶ in the Air Force. Air Force personnel report that this program provides a safe way to be proactive and suggest changes that increase efficiency and decrease costs (Kraus, Hodari, Riche and Depasquale, 2006).

¹⁶ <http://www.af.mil/news/story.asp?id=123184280>

Team Building

Team Building is a relatively new code, and very few stories were coded to it. The key feature that distinguishes team building from collective action is that the focus here is on putting together and managing a team, rather than the interaction between the team members.

As with the strong trend in role or function, the lack of trend in team building is not inherently positive or negative. Rather the implication of this result depends entirely on the goals of Contracting leaders. From one perspective, team building (even if it's ad hoc), may be a good way to leverage existing resources. Viewed another way, extraneous team building may be seen as increased bureaucracy and/or unwanted compartmentalization.

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Appendix A: Validity, Reliability and Generalizability

The key feature of quantitative research is that the phenomena of interest (both dependent and explanatory variables) can be measured and represented with data that can be analyzed using statistical methods. In this context, and assuming proper application of statistical techniques, the validity of a result is derived from (1) the accuracy with which variables are measured, (2) the statistical significance of the results, (3) the extent to which results can be replicated, and (4) the generalizability of results to groups outside the estimating sample.

In contrast, the key feature of qualitative research is that the phenomena of interest aren't easily reducible to quantified measures, either inherently or because they're not yet well understood. Nor are the contexts in which the research occurs easily replicated. Thus, one aim of qualitative analysis is to systematically interpret, rather than measure, respondents' stated perceptions about the phenomena of interest and to draw conclusions about these perceptions, including their implications for either theory or policy.

In the context of the current study, the validity of results is defined in terms of their credibility, trustworthiness, and authenticity and is based on the richness and detail of the data. As with quantitative analysis, credibility and trustworthiness are determined by the soundness of the methodology and the transparency with which the methodology and results are presented (Trochim and Donnelly, 2006). The subsections that follow describe the methodology for this study (the codebook development, the data cleaning technique and the data coding process) in detail; here, we note aspects of the methodology that relate to validity and credibility.

The data collection technique described above contributed to validity in two ways. First, authenticity is context-dependent. Thus, we can say that the sample itself enables us to make authentic infer-

ences: because participants knew they were selected because of superior performance, and we could infer that what they described truly characterized their perceptions of effectiveness in Contracting. Since the study was not designed to represent all sub-groups within the workforce, however, it is important to note that there is almost certainly some bias among the respondents. Second, our coding and analysis are based on the actual responses, not notes, summaries, or recollections. Also, in reporting our interpretations, we cite the respondents' actual words rather than our paraphrases.

The data coding process included individual coding, team consensus building, and routine calibrations. By combining systematic methods and multiple investigators, we used a form of triangulation to develop our understanding of the Contracting culture. This type of triangulation has two benefits. First, it acts to decrease the potential impact of any individual researcher's bias on the results (Creswell, 1994). Second, it also allows us to define reliability in terms of the stability or consistency of the coders' interpretations of those responses. This is known as inter-rater reliability. Several researchers have devised methods for measuring and judging inter-rater reliability (Cohen, 1960; Fleiss, 1971; Landis and Koch, 1977; Von Eye and Mun, 2005). Recently, Miller found high inter-rater reliability for a coding scheme and process similar to ours (2007). In particular, her key findings pointed to the importance of the type of consensus building between coders and routine calibrations that we employed.

Finally, the context-dependent nature of qualitative research and the small samples on which it is based mean that results are not normally generalizable from the sample of respondents to a broader population. Instead, generalizability (i.e., the external validity from applying results from one study to new situations or data sets) can only be achieved indirectly (Creswell, 2003). Specifically, researchers can gain a small measure of generalization by aligning their results with similar research, or research on like populations or under similar conditions (Yin, 1989). This type of connection is more like extrapolation and can be enhanced by a combination of detailed context description and close transfer context analysis (Hoepfl, 1997; Trochim and Donnelly, 2006).

In this case, we can compare the results of the current study with those of previous studies (Thomas, Brooks, Uzoukwu-Omoike and

Pittsonberger, 2010). Research has shown that organizations with strong cultures or in high-pressure contexts (like the high-visibility scrutiny of Executive and Congressional oversight of Defense Acquisitions) can promote effective performance by connecting proficiency to mission (Kraus, Hodari, Riche and Wenger, 2007). So, the results of this study can be placed within the context of other studies on similar cultures. Therefore, we believe that our results will be useful for informing both policy and theory.

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Appendix B: Limitations

The Contracting Competency Model presented to SMEs during the Phase II survey was revised based on SME feedback. Therefore, there isn't a direct connection between the effective situations data and the final model. Additionally, the discrete behaviors that make up the competency model do not map directly to the stories told as lived experiences rather than as collections of competencies.

Analyzing these data within the context of the Contracting Competency Model is a somewhat artificial construct. While the model breaks down competency work into specific behaviors, the naturalistic ways in which people work, and thus the ways in which they describe their work, are not as simple as a list of competencies. Thus the content of the stories do not map directly to the construct of the Competency Model.

Since subject matter experts are not representative of the distribution of certification levels in the overall workforce, there is some inherent selection bias.

Lastly, because these data were collected at the end of a lengthy survey, they may be less robust than data collected separately from participants who are less fatigued. For all of these reasons, results of this study may not be generalizable to the overall Contracting Workforce.

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Appendix C: The Sample

CNA collected 628 STARR responses, generated by subject matter experts from the Contracting career field. Each response was collected in four parts, corresponding to the four sections described above (Situation/Task, Action, Reasoning and Results). Respondents wrote their answers in their own words, in four text boxes. They had no word limit. Most responses were a third of a page long (single space, size 10 font) across all four boxes, although a few refused to answer and several exceeded a page.

The formality and detail of responses varied widely as well, from phrases and sentence fragments, to long compound sentences and paragraphs. In all cases, the research team focused on the contents of the response, not the length, grammar, syntax or writing style.

From the 628 responses collected, 622 passed the cleaning process. Of the 622 clean records, 385 were coded. During the coding process, we were unable to code 49 responses. There were several reasons a story was interpreted as uncodable: the text was completely unresponsive; the text complained about the question itself; the text was composed largely of either acronyms or gibberish; or the text was written in such an indirect matter that it cannot be interpreted.

Examples of Uncodable Responses

To keep track of data quality, we documented which stories could not be coded. Some stories were written in ways that made them very difficult to interpret, and unable to be coded. An example of an unresponsive and unreadable response is:

Task: Academic exercise

Actions: Academic exercise

Reasoning: academic exercise

Results: academic exercise

An example of an uncodable response that was written in an uninterpretable manner is shown below:

Task: Implemented a new contract IT tool

Actions: Provided the training, support, resource determination, and identified future needs

Reasoning: Was told to make it happen, identified what I needed to accomplish the task successfully. Past experience that made choose this action was none. Never done before, relied on what I learned in school and made it up as I went along.

Results: The system saves time for our users and makes their job somewhat easier. The system did add new problems

SID 185

This response was uncodable for several reasons. First, the author does not tell us why she/he was performing this task, so we could not code anything for agency. Second, since no personal pronouns were used in the actions box, we don't know whether the respondent enacted these behaviors personally, or whether others were involved. It isn't difficult to imagine that others were involved, but because the author does not make it clear, we can't presume either way.

Further, we don't know the source of the phrase, "Was told to make this happen." The respondent states directly that no past experience was used and that the solution was "made up as I went along."

Lastly, although the respondent says that the action "saves time for users and makes their job easier," no quantification or other evidence is presented to support this statement. The respondent even states that "the system did add new problems," showing that any success was offset by increased difficulty.

Dataset Distribution

After all of the uncodable responses were removed, the sample consisted of 336 codable records, 53.5 percent of the STARR responses collected. To ensure that the sample appropriately represents the

full dataset, we compared the distributions of clean (622), coded (385) and codable (336) records by Units of Competence and Certification Levels.

As Table 5 shows, there is strong alignment in the distribution of clean, coded, and codable stories by Units of Competence and Certification Levels. Thus, we can be confident that the analysis of our sample of 336 responses appropriately represents the full dataset.

Table 3. Dataset Distribution

Unit of Competence	Clean	Coded	Codable
Acquisition Planning	25% (156)	26% (99)	27% (90)
Solicitation & Contract Award	22% (153)	22% (83)	21% (69)
Contract Administration	28% (178)	25% (95)	25% (84)
Specialty Areas	21% (130)	22% (86)	23% (76)
Additional Focus Areas	3% (21)	6% (22)	5% (17)
Certification Level			
0	9% (56)	13% (50)	13% (44)
1	8% (52)	9% (36)	10% (35)
2	29% (182)	27% (103)	27% (90)
3	53% (332)	51% (196)	50% (167)

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Appendix D: Examples of Coded Data

Table 4 displays the distribution of coded situations, cross-tabulated by Units of Competence and Certification Levels. What this table does not display is the degree to which each story is coded.

Table 4. Cross-tabulation of STARR data by Units of Competence and Certification Levels

Unit of Competence	Certification Level			
	0	1	2	3
Acquisition Planning	14	10	25	41
Solicitation & Contract Award	8	11	16	34
Contract Administration	15	11	25	33
Specialty Areas	6	2	21	47
Additional Focus Areas	1	1	3	12

Not every story contains codable data for every category in the code-book. To give a sense of how the stories were coded, below are two examples of coded data, one story that has many codes, followed by a more typical one with three codes. In each case, the code is shown as a footnote, and the text coded is highlighted.¹⁷

For SID 399 (CL1, Your Additional Secondary Focus Area of Contracting), nearly all of the text is coded, using four different codes, including four separate pieces coded to Communication.

¹⁷ The color of the highlighting has no meaning. We alternated colors to make separately-highlighted adjacent text clearly discernable.

Situation ID: 399	
Task	I was tasked with creating a memo that assessed the impact of the Berry Amendment compliance issues for specialty metals on the programs here at [Location]. ¹⁸
Actions	I interviewed eight different people who had a program with a compliance issue; as a result eight total programs were impacted. ¹⁹ After each interview I discovered how each program was impacted in both the long and the short run. I found out the contractor's concerns and if the contractors had offered any solutions to their compliance issues. ²⁰ I put my findings in the memo for each program.
Reasoning	I found that talking to the Contracting Officers first hand gave me the knowledge that I needed in order to formulate a valuable memo. They were most familiar with their own programs and provided very useful information and documentation. ²¹ In the past I have found that going to the source of information is the most effective way to find the information that you need. ²² The Contracting Officers were able to explain their problems thoroughly and give me the insight that I needed. ²³
Results	The major issues that Contracting Officers had were traceability, difficulty tracking source metals, price and lead time increases due to Berry Amendment Compliance, and Administrative Burden costs. The findings will help make the depth and breadth of the compliance issues known and will help [Location] to devise a strategy for addressing each problem. ²⁴

In comparison, SID 135 (CL1, Solicitation and Contract Award) is only coded to three different codes, covering roughly half of the text. This is a more typical amount for the stories.

-
- 18 Tasking
 - 19 Communication
 - 20 Identify Needs
 - 21 Communication
 - 22 Previous Experience
 - 23 Communication
 - 24 Communication

Situation ID: 135	
Task	Working in Support Equipment as a Contract Specialist trying to procure an item to support the Fleet that was being outsourced to a distributor at a high cost. ²⁵
Actions	I called the manufacturer directly and asked them why they wouldn't sell the item directly to the Navy.
Reasoning	The rationale that led to the action was the fact that the distributor was charging 27% more than the manufacturer's list price. ²⁶ This was the first experience I had with a situation like this, so I really didn't use and past experience. I relied on the fact that there had to be we could make this procurement happen.
Results	There really wasn't a whole lot of time saved, maybe a couple of weeks, but the impact was in dollars. The Navy was able to save money b/c the manufacturer decided to sell directly to the Navy and has since stopped using the distributor involved in this situation b/c they were marking up the price unfairly. ²⁷

²⁵ Role or Function

²⁶ Identify Needs

²⁷ Impact

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