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Facilitating Effective Reform in Army Acquisition

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PREFACE

This publication documents a briefing presented to the Honorable Gilbert F. Decker, Assistant Secretary of the Army (Research, Development, and Acquisition), Dr. Kenneth J. Oscar, Deputy Assistant Secretary of the Army (Procurement), and Mr. Dale Adams, Principal Deputy for Acquisition, U.S. Army Materiel Command, on November 6–7, 1997. It describes research conducted as part of a project entitled "Understanding Incentives in the Army Acquisition System." This briefing focuses on work force perspectives on acquisition reform and recommends several policy options for improving attitudes, beliefs, and behaviors in support of the reform effort.

The research was sponsored by the Assistant Secretary of the Army (Research, Development, and Acquisition) and U.S. Army Materiel Command and was conducted in the Force Development and Technology Program of RAND's Arroyo Center. The Arroyo Center is a federally funded research and development center sponsored by the United States Army.

Facilitating Effective Reform in Army Acquisition

Presented: December 1996

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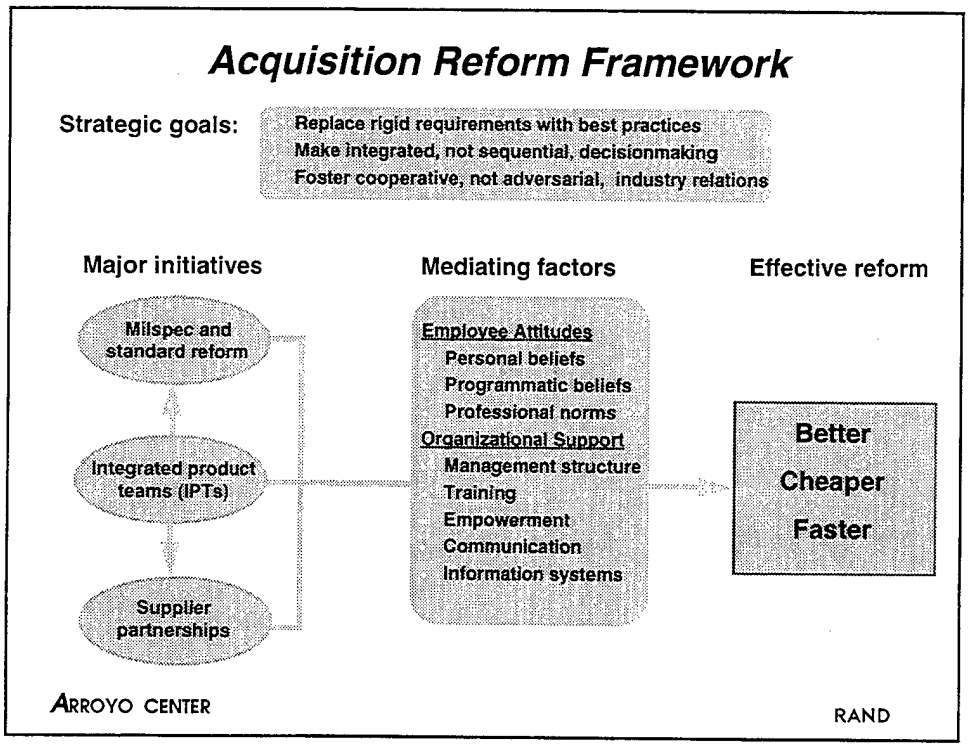
As noted in the preface, this briefing documents the findings of a study of "incentives" in the Army acquisition system. The study was sponsored by the Assistant Secretary of the Army for Research, Development, and Acquisition (SARDA) and the Army Materiel Command's Office of the Principal Deputy for Acquisition.

In 1994 the Department of Defense (DoD) began to implement acquisition reform as outlined in the "Perry Initiatives." These initiatives were designed to increase the flexibility and speed of DoD's acquisition system while simultaneously reducing the costs inherent in contracting with the military services. These initiatives included three major policy thrusts:

- eliminate use of military specifications (milspecs) and standards, and replace them with performance-based specifications,
- expand use of integrated product/process teams (IPTs) in acquisition, and
- develop "partnerships"—in line with those used in the private sector—with major DoD suppliers.

The Department of the Army embraced these reforms and began efforts to implement them throughout its acquisition system. However, after initial attempts to implement these policies, Army leadership began to be concerned that the reforms were not being embraced by the "rank and file" of the acquisition work force.

This study examines support for the various reforms within the Army acquisition work force and suggests changes to current implementation and training efforts. While initially designed to examine the role of personnel policies and incentives in motivating compliance, the study evolved into a broader examination of the role of employee attitudes, perception, and organizational support mechanisms in the process of acquisition reform. What we have learned in this effort is described in the following charts.



The figure in this chart describes the conceptual framework that guided our research. This figure represents our conception of the Army's reform effort and the factors important in determining its effectiveness. Essentially, this figure is our model of the changes taking place in Army acquisition. It is based on observation of Army reform efforts and input from literature on organizational change/management, "reinventing" government, and bureaucratic behavior. Each element of the chart is described below.

Strategic goals: The overall goals of the "Perry Initiatives" provide the context within which the Army's reform efforts are taking place. The strategic goals of reform aim to create an acquisition system that is more flexible, integrated, and less "stovepiped"; that exhibits elements of "best practice" in procurement and supplier relations; and that is based on cooperative relations with suppliers.

Major initiatives: As noted earlier, there are three major initiatives designed to help meet strategic goals and produce effective reform (a more commercial, faster, better, and cheaper acquisition system)—milspec and standard reform, IPTs, and supplier partnerships. While often described independently, the initiatives are interrelated and mutually supportive. As will be described in more detail in subsequent charts, efforts to eliminate milspecs and standards and move toward partnerships with industry are affected by the success of IPTs. To the extent that IPTs bridge functional gaps in the management process, facilitate information flows, and reduce risk among stakeholders, they make change—such as operating without traditional milspecs and standards—easier for Army personnel. In addition, IPTs are an important element in effective supplier partnerships. While IPTs are encouraged for use internally within the Army to improve management, they are also proposed externally—between the Army and its contractors—to improve communication between the Army and the weapon producer/supplier. Thus, effective IPTs also facilitate the movement toward better supplier relations. While support for each of these initiatives will be examined individually, it is important for the reader to keep in mind that they are indeed related.

Mediating factors: While the reform initiatives are designed to produce desired changes within the Army acquisition system, their true effect or success will be determined by mediating factors within the work force and the organization. These factors are drawn from the literature on bureaucratic behavior and organizational change/management . Basically, mediating factors can be broken into two categories: employee attitudes and organizational support mechanisms.

Clearly, the behavior of public employees—such as support of reforms—will depend on their assessment of factors such as beliefs about how reform will affect them personally (personal beliefs), their view of co-workers and professional standards (professional norms), and beliefs about how reform will affect their organizational/work objectives (programmatic beliefs).

Organizational change literature notes that specific organizational attributes can constrain or facilitate the adoption of reform in an organization. These factors are identified on the chart, and include organizational structure and human resource management practices, training, employee empowerment, communication, and information systems. The adequacy (or the perceived adequacy) of each of these mechanisms and their use in change efforts can be important in producing effective reform.

Effective reform and organizational change: The reform initiatives, filtered through the mediating factors, are designed to produce effective reform—essentially, meeting strategic objectives. It is the belief of DoD and Army leadership that an acquisition reform system based on performance specifications, internal and external IPTs, and improved buyer-supplier relations will result in better, less-expensive products that are produced in a more timely fashion.

Will these three reforms result in the desired changes? This study does not address this question. It focuses exclusively on the implementation of the reform initiatives, be they advisable or not (it is generally our belief that they are advisable). Having said this, it is evident what this study does not do. This research does not evaluate the effect of reform policies or their adequacy in meeting the strategic goals of reform. Instead it examines the potential success of current reform efforts by examining the extent to which employee attitudes and support mechanisms are conducive to effective change. In other words, this study will examine the various reforms, the state of their implementation, and the extent to which the mediating factors appear to facilitate or constrain effective change. It is hoped that the observations and conclusions made here about attitudes and support mechanisms will help Army policymakers improve and target their implementation efforts. To achieve this goal, the study asked a series of key research questions, identified on the next slide.

Research Questions

- **What are the prevailing attitudes toward reform?**
- **In what ways are attitudes and beliefs affecting behaviors?**
- **How do organizational support mechanisms affect support and behavior?**
- **How can current implementation efforts be improved?**

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In conducting our work, we attempted to address the following four key research questions. Each question is designed to provide information on the state of current implementation efforts and the factors affecting employee willingness to adopt the reforms.

What are the prevailing attitudes toward reform? This question is essential in the initial assessment of support for each of the reform initiatives. Obviously, support levels can vary for the reforms individually or among groups within the acquisition work force. Determining basic support levels and the extent to which the reforms have been adopted is essential information for policymakers.

In what ways are attitudes and beliefs affecting behaviors? Understanding the effect of employee attitudes on behavior will be essential information if suggestions are to be made on how to restructure training and implementation policies. In order to correct beliefs and attitudes that are damaging to reform efforts or to leverage beliefs and attitudes that are supportive of reform efforts, policymakers must understand how employee attitudes and beliefs affect behavior.

How do organizational support mechanisms affect support and behavior? This question examines the extent to which organizational factors affect employee attitudes and support levels. Identifying the effect of these factors on support and behavior may identify viable "policy levers" for consideration by Army management.

How can current implementation efforts be improved? This is the primary question pursued by this study. Having identified the role of attitudes and organizational support mechanisms on employee support and behavior, it should be possible to provide general guidelines to Army officials on how to better target their reform implementation and training efforts.

Research Methods

Detailed case studies of programs and matched contractors

- **Army programs: ATACMS-BAT, Longbow, PLS, M-1 Abrams, Bradley IFV, PM-night vision, PM-SATCOM, Advanced towed cannon, and FSCATTS**
- **Contractors: GD, Hughes, TI, MD, Lockheed-Martin, Litton, Loral, GTE, Oshkosh, and United Defense**

On-site field interviews to analyze large-scale change efforts in the private and public sectors

- **Chrysler, NYNEX, Xerox, TI, a large conglomerate, and the state of Washington**

Survey of the Army acquisition work force

- **Stratified random sample of 3,000 DAWIA designated workers**
- **1,800 responses that appear to provide unbiased data on the entire work force**

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To answer the four research questions, we used both qualitative and statistical methodologies. The chart above describes the three main elements of the research effort.

In order to develop an understanding of the Army acquisition system, the reforms, their impact on various acquisition programs, and the views of Army personnel, we conducted nine detailed case studies of Army acquisition programs. The nine programs were selected to represent a broad spectrum of program characteristics, such as acquisition phase, program size (ACAT level), type of technology (military or commercial), and program location (buying command). Each case study was based on extensive document and literature review, as well as site visits. Site visits (2 to 3 days in length) focused on qualitative data collection through personnel interviews. Interviews were conducted with program executive officers (PEOs), program managers, divisional directors, and line staff at all levels within the military, engineering, quality assurance, logistics, contracting, and safety functions. These personnel and functions were selected due to their centrality in the acquisition process and program management. In addition, complementary interviews were conducted with prime contractor personnel involved with each of the selected programs in order to get contractor perspectives on the Army reform effort and its effects. Data from these case studies not only provided context for our research, but allowed initial qualitative analysis and the development of hypotheses on the reasons for support and acceptance of reform. Perhaps most importantly, the case studies provided information essential in the development of the survey discussed below.

Understanding that the Army was attempting major changes in its organization, another element of our research agenda included discussions with six nondefense (mostly commercial) organizations believed to have undertaken successful large-scale organizational change efforts. These interviews helped to supplement our review of the literature on current issues in, and management approaches to, organizational change efforts. Since IPTs and supplier partnerships originated in the commercial sector, these interviews provided essential information on current "best practice" in the field with potential applications in the Army context.

In order to allow quantitative analysis and testing of hypotheses, our research method included a comprehensive survey of the Army acquisition work force. As the chart notes, we surveyed a randomly selected sample of 3,000 workers (DAWIA [Defense Acquisition Workforce Improvement Act] designated). In addition, the sample was stratified to allow statistically meaningful comparisons among subgroups. The survey was broad, eliciting views on the three reform efforts, employee support and attitudes toward reform, perceptions of support mechanisms present, and perceived level of compliance with the reforms. The survey response was good, with approximately 1,800 surveys returned—representing a response rate of 60 percent. Our analysis of these responses reveals no significant patterns in the response rates (across occupational or program characteristics). This suggests that the sample provides unbiased, statistically valid estimates of pervasive attitudes, perspectives, and behaviors for the acquisition work force at large.

Empirical Methodology

- **Statistical analysis (ordered logistic regressions) of reported beliefs, attitudes, and behaviors**
- **Explanation of response distribution by examining multiple factors**
  - **Personal characteristics: education, tenure, rank**
  - **Job characteristics: specialty, location**
  - **Management factors: program, matrix, integrated product teams (IPTs), collocation, senior and primary rater**
  - **Other human resource factors: training, compensation policy**
- **Efforts to link beliefs, attitudes, and reported behaviors**
  - **Difficult to separate correlation and causation**
  - **Identification of targets of opportunity**

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As noted in the previous chart, the data provided by the survey allowed quantitative analysis of the link between employee attitudes, organizational support mechanisms, and reform behavior. Many of the upcoming charts in this briefing present the results of these quantitative analyses. Therefore, it is useful at this time to briefly describe the empirical methodology used to link attitudes, beliefs, and reform behavior.

We conducted statistical analyses—ordered logistic regressions—of beliefs, attitudes, and behaviors reported in the Army acquisition survey. In each case, we attempted to explain the distribution of reported attitudes and behaviors by examining multiple factors simultaneously. These factors included personal characteristics, job characteristics, management factors, and other human resource factors.

We also attempted to link beliefs, attitudes, and reported behaviors with each other. Of course, it is difficult to separate correlation from causation. To the extent possible, we employed available econometric techniques for identifying causal relationships, especially when we considered some of the key policy variables at the Army's disposal—such as IPT and Roadshow training. Although one must exercise caution in interpreting some of our results, we feel confident that we have identified several important targets of opportunity for improving implementation of acquisition reform.

Briefing Overview

- **Overall progress of reform**
- **Progress in reforming milspecs and standards**
- **Implementation of integrated product teams (IPTs)**
- **Movement toward industry partnerships**
- **Recommendations for improving reform implementation**

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The chart above presents the outline of this briefing. Each of the major policy initiatives will be examined in turn, starting with an initial assessment of the overall progress of reform. This assessment examines work force perceptions of the reform effort "writ large"—cutting across all three major policy initiatives. This assessment of progress establishes the context within which reform is being attempted. It includes an examination of employee perceptions of the change resulting from reform; their attitudes toward and support for reform; an assessment of workplace incentives; and their views on the level of organizational support mechanisms within the Army acquisition system (see page 2).

This assessment will be followed by an examination of progress in reforming milspecs and standards—the centerpiece of the current Army reform effort. As indicated earlier, the success of milspec and standard elimination is likely to be affected by greater use of IPTs. Therefore, progress in instituting IPTs is examined next. In addition, IPTs are an integral part of broader efforts to move toward a more cooperative relationship with industry. This third initiative will be examined as well. Finally, the briefing will conclude with a summary of major conclusions and recommendations for improving the implementation of all three initiatives and acquisition reform in general.

Reforms Are Resulting in Perceived Changes

	Better	No Change	Worse
"Interaction with the contractor"	29%	66%	5%
"Interaction with external oversight"	23%	73%	4%
"Amount of discretion I have"	39%	53%	8%
"My understanding of priorities"	50%	33%	17%
"How we collaborate"	43%	48%	9%

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Based on responses to the survey items outlined in the above chart, it appears that the work force does perceive real change taking place in the acquisition system. It is important to point out that the statistics reported above indicate the perceptions of the acquisition work force. They do not indicate that real changes are in fact taking place, only that Army employees perceive change in these factors. Perception is most likely based on reality and experience, and may be very important in motivating change and reform behavior.

Implicitly, the Army reforms are designed to improve interaction with the contractor and external oversight; increase employee discretion; improve the understanding of acquisition priorities; and improve the way employees collaborate. In all these cases, at least 20 percent of the employees surveyed feel matters have improved (gotten better). The greatest improvement is perceived to have taken place in the communication of acquisition priorities and in the process of collaboration (50 and 43 percent, respectively).

It is worth noting that a sizable proportion of the respondents believe that "no change" has occurred in the five items described above. We choose to emphasize the significant number of respondents indicating change for the better. Since this reform process is only a little over two years old, the number of respondents seeing improvement seems significant. In addition, in most cases fewer than 10 percent of the employees surveyed feel the reform initiatives have made these factors worse.

Support for Reform Exists

Survey statement	Agree	No Opinion	Disagree
"There are compelling reasons to reform the process"	87%	8%	5%
"People working on my program agree with reform"	61%	22%	17%
"The reforms outline sensible behaviors"	51%	33%	16%
"My managers are not willing to give up traditional ways"	34%	22%	44%
"The various reforms fit together in an integrated fashion"	48%	24%	28%
"When the current leadership changes, so will the reforms"	53%	27%	20%

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In the literature and our interviews it became apparent that factors such as the perceived "need" for reform, adequacy of reform initiatives, co-worker support, and leadership commitment were associated with "support" for reform. The items in the chart above were devised to measure these elements of support.

The perceived need for reform appears to be widely shared within the work force. Of those surveyed, 87 percent agreed that "there are compelling reasons to reform the [acquisition] process." The literature on organizational change and the approach employed by the private-sector firms interviewed in this study indicate that a shared perception of the need to change can be vital to a successful change effort.

A significant number of respondents appear to believe that the Army's current reform efforts address this "compelling need." For example, 51 percent of those surveyed believe the current reforms "outline sensible behaviors." In addition, 48 percent believe the reforms "fit together in an integrated fashion." It appears that a significant number of employees believe the reforms are adequate at some level.

Another important element affecting support is the perceived support of co-workers. Of those surveyed, 61 percent indicated that their co-workers "agree with reform." Much of the literature on organizational change indicates that middle-level managers can be a barrier to effective change. In the Army context, views on middle-level management appear mixed. Of those surveyed, 44 percent disagreed with the statement "My managers are not willing to give up traditional ways," while 34 percent indicated they are. Finally, the permanence of the reforms does appear to be in question by the work force. When asked if the policies would change "when the current leadership changes," 53 percent of those surveyed indicated they thought this outcome was likely.

While many believe reform is necessary, a significant minority expressed some reservations. For example, 34 percent indicate resistance from their managers, 28 percent believe that that the reforms do not fit together in an integrated fashion, and over 50 percent believe that the reform efforts will not live beyond the tenure of current leadership.

What "Incentives" Are Important?

	Average	Civilian	Military
Avoiding personal risk	37%	41%	27%
Maximizing income	39%	48%	10%
Receiving medals/awards	32%	35%	20%
Gaining peer recognition	59%	62%	51%
Supporting the soldier	98%	98%	100%
Following orders	59%	58%	62%
Doing job correctly	99%	99%	100%
Doing job quickly	75%	74%	77%
Achieving program goals	97%	97%	98%

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In order to assess the motivations affecting support for the reform initiatives, we asked a series of questions about the relevance of a variety of personal factors. The above tabulation presents the percentage of those surveyed who indicated that the stated "incentive" was "important" in their workplace decisions—such as whether or not to implement reform. This percentage is reported for the sample as a whole and for the civilian and military subgroups. Although we explored differences between other subgroups, none of these differences were large, nor were they predictive of levels of support or reported behaviors.

Two related patterns emerge from the data:

- Personal incentives are valued more highly by civilian employees, and
- Programmatic incentives are viewed as important by both groups.

Clearly, civilian employees value personal rewards more than military personnel do. The first four "incentives" in the table reflect personal rewards, and the percentage of civilian employees who feel these are "important" exceeds that for military personnel in all four cases. For example, 37 percent of the sample indicated that avoiding personal risk is important. Civilian personnel were more likely to emphasize this factor (41 percent) compared with the military (27 percent). Almost half of all civilians cite maximizing income as being important, while only 10 percent of the military personnel state that income is important.

The final five "incentives" can be considered programmatic—they pertain to organizational and/or acquisition program outcomes, such as "achieving program goals" and "supporting the soldier." These programmatic goals were cited as being important by virtually all the survey respondents, both military and civilian.

Despite these differences, our analysis indicated that variations in the value placed on general incentives (such as the above) do not appear to be highly predictive of overall support for reform or reform behavior. Greater predictive utility is derived from employee perceptions of specific personal and programmatic outcomes. This distinction will be explained and these results explored in upcoming sections.

Support Mechanisms Need to Be Aligned

Survey statement	Agree	No Opinion	Disagree
"My pay is determined by the success of the team"	13%	24%	63%
"My managers empower me to make decisions"	66%	12%	22%
"There is good data on past performance"	27%	28%	45%
"Information systems meet our new needs"	32%	22%	46%
"Reform communication is clear and consistent"	30%	24%	46%
"I'm not sure what is expected of me"	26%	28%	46%
"I have received sufficient training to work w/ reforms"	37%	18%	45%
"Even with all the changes, I feel my job is safe"	30%	19%	51%

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Although the work force appears to support reform, it is clear that support is not unanimous and that efforts should be considered to increase support levels. In particular, support mechanisms can be better aligned. Several items in the survey were designed to measure the perceived presence of organizational support mechanisms in the Army acquisition system. These are listed in the table above.

While this list is not inclusive of all potential support mechanisms or factors, it does identify beliefs related to several key mechanisms, such as human resource policies, empowerment, measurement and information systems, communication, and training. Each of these factors is identified as important in facilitating large-scale organizational change in the literature and through our interviews with successful nongovernmental organizations.

Current reform efforts appear to have made the most progress in empowering acquisition employees. Of those surveyed, 66 percent feel that their managers empower them to make decisions.

The perceived presence of other support mechanisms is, however, much lower. On the human resources side, few employees feel their pay is linked to team success (13 percent). Measurement and information systems are considered inadequate with 45 percent of respondents disagreeing with the statement that past performance data are "good" and 46 percent disagreeing with the statement that current information systems "meet our needs." Views on the adequacy of communication related to the reforms are mixed. On the negative side, 46 percent of respondents disagree with the statement "Reform communication is clear and consistent." On the other hand, 46 percent disagree with the statement "I'm not sure what is expected of me." Finally, a significant number of respondents—45 percent—appear to feel they have not received sufficient training to work with the reforms.

Thus, while support for reform exists, it should be possible to increase support levels through a greater understanding of why employees might resist reform and an emphasis on changing attitudes and behavior through the alignment of organizational support mechanisms. The next three sections will examine each of the major initiatives and provide general recommendations on how the Army can approach improving the implementation of its acquisition reform initiatives.

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We first examine progress in reforming milspecs and standards.

As indicated earlier, the Army has adopted a "zero tolerance" approach toward the use of milspecs and standards in the acquisition process. Specifically, milspecs and standards are not to be included in requests for proposal (RFPs) and statements of work (SOWs) related to Army acquisition programs. If a program manager desires to include milspecs and standards, a waiver must be granted by the relevant acquisition authority (most often SARDA or the PEO).

The next nine charts will present our analysis of the current state of milspec and standard reform within the Army acquisition system. We will begin by assessing employee beliefs about the likely effects of reform and their overall support for the effort. Having established this context, we will then identify how support levels vary within the work force and whether the level of support appears linked to actual elimination of milspecs and standards (behavior). Having identified the level of support and its effect on behavior, we will examine how beliefs about the effects of milspec and standard elimination affect support levels. This process should allow the identification of important perceptions and misconceptions affecting the willingness of employees to implement milspec and standard reform. Having identified important beliefs, we will next examine the effect of training and communication programs in changing beliefs. Finally, we will summarize the major conclusions and provide some general policy recommendations on how to improve the implementation of milspec and standard reform.

Overall Views of Milspec Reform Are Generally Positive

65% of respondents support the elimination of milspecs and standards

72% believe that reform will reduce current program costs

88% believe that eliminating milspecs will encourage the entry of commercial firms

Beliefs on a range of other effects are mixed (about 50–50)

- **Quality**
- **Life-cycle costs**
- **User satisfaction**

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As this chart shows, attitudes toward milspec reform are generally positive, with 65 percent of the respondents indicating that they support the policy.

A basic approach in our research is to examine the relationship between beliefs about reform and support levels. The next two items on the chart show that beliefs about two "key" outcomes desired of reform—reducing current program costs and encouraging the entry of new firms—are also positive. Specifically, 72 percent of respondents believe that milspec reform will reduce costs and 88 percent believe that it will encourage the entry of commercial firms.

While beliefs about some key outcomes/effects are very positive in the work force, beliefs about the effect of reform on other outcomes are more mixed. The final item in the chart indicates that on outcomes such as product quality, life-cycle costs, and user satisfaction, only about 50 percent of the surveyed work force feels that milspec and standard reform will result in desirable outcomes (such as increasing product quality, lowering life-cycle costs, and increasing user satisfaction). Outcomes such as these, where variability in beliefs is greatest, may help us in understanding why 35 percent of those surveyed do not support milspec and standard reform.

Should Milspecs and Standards Be Eliminated?

Survey statement: "I support the elimination of milspecs and standards"

	Strongly agree	Agree	Agree somewhat	Disagree somewhat	Disagree	Strongly disagree
Engineer	12%	26%	27%	15%	11%	9%
QA	5%	15%	23%	18%	19%	20%
Contract	26%	35%	22%	9%	4%	4%
Military	24%	34%	23%	9%	6%	4%
Matrix	10%	23%	27%	16%	13%	11%
Tenure > 20	4%	14%	23%	18%	20%	21%

Projections are based on logistic model estimates

Organization, phase, and program size are *not* significant predictors

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This chart predicts survey responses to the statement "I support the elimination of milspecs and standards." The projections are based on parameter estimates from an ordered logistic model that linked the distribution of responses (from "strongly agree" through "strongly disagree") to multiple characteristics. In other words, the figures reported above are projections of how responses to the statement change based on important characteristics of the population; some of these characteristics are listed in the leftmost column of the table above.

The first line of the chart (shaded) is provided as a baseline for comparison. This line is the predicted response of a typical engineer. Engineers were chosen as the baseline since they have a distribution of responses that is generally reflective of the average member of the acquisition work force. As indicated, approximately 65 percent of engineers responded that they "strongly agree," "agree," or "somewhat agree" with the statement of support for milspec and standard reform.

The next five lines of the table project the response pattern if this typical engineer's characteristics are changed in some manner. These projections are based on the parameter estimates of the following ordered logistic model (in general form):

(Response Distribution) = f (career field, job characteristics, personal characteristics, organization characteristics, and program characteristics)

Of the many variables measuring career field and job, personal, organizational, and program characteristics, the six identified in the chart above were the most significant in predicting the response distribution. When the typical engineer is transformed into a quality assurance employee holding all other characteristics constant—as reported in line two of the table—we can see that agreement with the survey statement plummets from 65 percent to 43 percent—a statistically significant reduction. By varying the career field and holding all other variables constant, this result provides the marginal effect of the QA career field on projected responses (compared with engineers).

In fact, career field appears to be the most important characteristic explaining responses to the support statement. While the effect of being a QA employee lowers support, the chart shows that the effect of being in the contracting or military career fields (other factors held constant) increases the overall support level from 65 percent for the typical engineer to 83 percent for contracting and 81 percent for military personnel. Not only are contracting and military personnel more supportive than the typical engineer, they are almost twice as supportive as QA personnel.

The fifth line describes the isolated (and independent) effect of being a matrix employee (not affiliated with a program management office). In this case the response of a typical engineer will fall from 65 percent agreement to 60 percent. While statistically significant (at the 95 percent confidence level), the effect of matrix affiliation does not appear to be large in a practical sense. For example, while 12 percent of engineers strongly agree with the statement of support, this percentage falls to 10 percent for an engineer who is assigned to a functional buying command (i.e., the matrix). This matrix effect would be the same for all the career fields, including engineers, QAs, logisticians, business, and contracting, as well as military personnel.

It is worth noting that much of the observed difference between matrix and program management personnel can be attributed to systematic variations between the mix of characteristics that generally prevail in each of these situations. For example, matrix personnel are more likely to be in quality assurance and less likely to be military employees. These characteristics—career field—and not the matrix affiliation are more likely the sources for the observed variation in support between individuals in the Army acquisition corps.

The final line indicates the marginal effect of tenure (measured as having over 20 years experience in acquisition). As reported, support for milspec and standard reform falls dramatically for those (in all occupations) with long tenure in acquisition. Based on our interviews with acquisition personnel, this lower support level could be the result of caution on the part of senior employees who fear for their job and position.

Finally, several other variables were analyzed, but none had significant effects on the response distribution. While our initial interviews with acquisition personnel suggested that factors such as organization (specific buying command or PEO), program phase (e.g., development versus manufacturing), and program size (Acquisition Category [ACAT] level) would have a large effect on employee support and attitudes, this does not appear to be the case. None of these factors were statistically significant in predicting the response distribution of support for milspec and standard reform. Although simple cross tabulations would indicate differences along these characteristics, most of these can be attributed to systematic variations in the personnel mix (such as career field and tenure).

Reported Behaviors Vary Based on General Support for Milspec Reform

Survey statement	Agreement: Those supporting milspec reform	Agreement: Those not supporting
"I do not use milspecs or standards"	74%	52%
"I rewrite milspecs into performance specs"	60%	53%
"I communicate a desire for milspecs to contractor"	5%	17%
"Request a waiver"	9%	33%
"I use milspecs and standards until directed otherwise"	14%	26%
"Rely on contractor to propose non-milspec approach"	60%	60%

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Is there a link between support and reform behavior? A simple analysis of reform behaviors for those who support reform and those who do not suggests there is such a link.

To illustrate this point, the sample was divided into two groups depending on the degree of support for milspec and standard reform. In the survey, each group was asked the extent to which they agreed or disagreed that they perform a variety of behaviors consistent with either implementing or circumventing milspec and standard reform. For example, the first statement, "I do not use milspecs or standards," is the most direct measurement of implementing milspec and standard reform. Other statements, such as "I communicate a desire for milspecs to the contractor," can be considered a description of a behavior that circumvents the intention of milspec and standard reform.

Based on a simple comparison of the percent of each subgroup who agree with the indicated behavioral statement, it appears that support is linked to behavior. For example, 74 percent of those professing support for milspec reform agree with the first (most direct) behavioral statement. In contrast, 52 percent of those claiming nonsupport agree that they no longer use milspecs and standards.

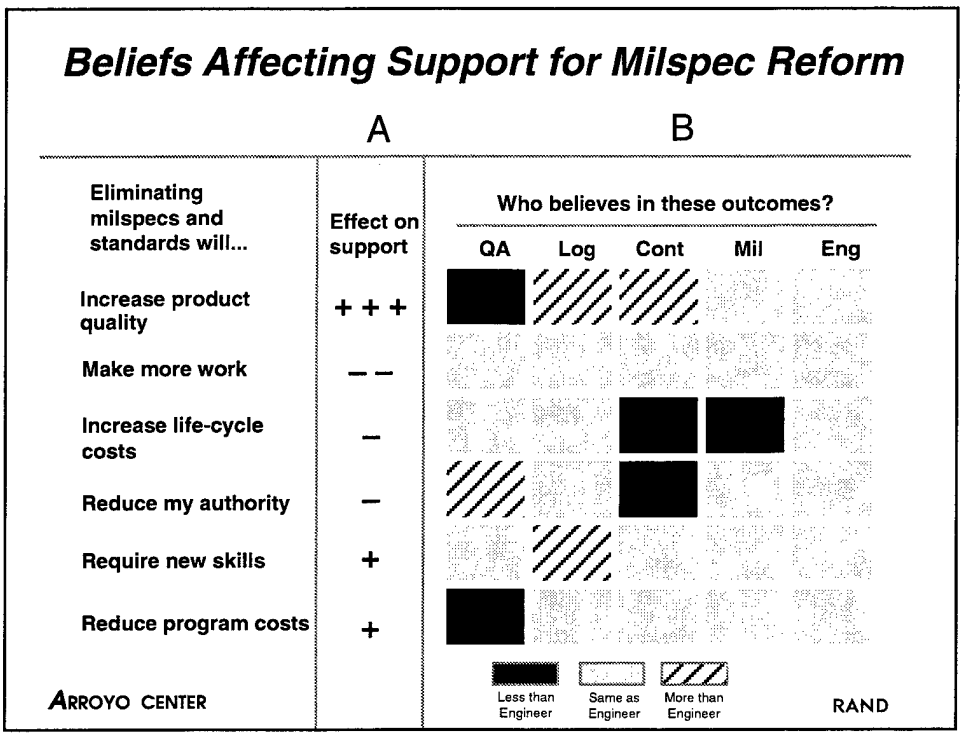
Sixty percent of the supporters report that they rewrite milspecs into performance specs, in comparison with 53 percent of those not reporting support.

A small percentage of individuals admit that they communicate a desire for milspec approaches to contractors, although the percentage is over three times higher for nonsupports (17 versus 5 percent). In addition, almost twice as many of the nonsupporters ". . . use milspecs and standards until directed otherwise" (a delaying tactic) when compared to those who support (26 versus 14 percent, respectively).

It is interesting to note that significant numbers (33 percent) of those resistant to milspec reform request waivers (compared with 9 percent of those supporting the reform initiative). This was slightly unexpected, since earlier interview data suggested that even those who did not support the initiative were reluctant to request a waiver. This reluctance reportedly

stemmed from a fear that requesting a waiver would be frowned upon by upper management. This fear does not appear to be as pronounced as we originally assumed.

It is also interesting to note that an equal percentage in both subgroups report that they "rely on the contractor to propose non-milspec approach." This is a behavior consistent with the Army's policy.



This chart presents the results of two separate statistical analyses. These analyses answer the following two questions:

- (A) Which outcome beliefs appear to have an effect on an employee's support for milspec and standard reform?
- (B) Which career groups hold these beliefs?

(A) In the Army acquisition survey, respondents were asked a series of questions about the "outcomes" they expected to result from an elimination of milspecs and standards. These outcome beliefs were used as independent variables in a regression to predict responses to the statement: "I support the elimination of milspecs and standards."[1] The first column lists the six outcome beliefs that were found to be statistically significant in predicting the extent to which an individual supported milspec and standard reform. A plus mark (+) indicates a positive correlation (the greater the belief in a given outcome, the greater the support) and a minus sign (–) reflects a negative relationship (the greater the belief in a given outcome, the lower the support). A double or triple plus or minus sign (e.g., +++, or – –) signals the magnitude of the effect.

As the + and – signs in column A indicate, beliefs about the effect of reform on product quality were the most important in predicting support for milspec and standard reform. The three plus signs (+++) indicate that individuals who believed that reform would "increase product quality" were much more likely to support the elimination of milspecs and standards. Likewise, respondents who believed that reform would "require new skills" (+) and "reduce program costs" (+) were also more likely to support reform (although the effect of these beliefs was not as large). On the other hand, individuals who believed that reform would: "make more work" (– –), "increase life-cycle costs" (–), and "reduce my authority" (–) were less likely to support reform.

[1]The basic model used in part A is (Response Distribution) = f (outcome beliefs).

These beliefs obviously relate to potentially negative outcomes of reform, so respondents who believed negative outcomes were likely (or positive outcomes less likely) are less supportive. Conversely, those who believed negative outcomes were unlikely (or positive outcomes more likely) are more supportive.

(B) Having identified which beliefs are most important in predicting support, it will be useful to understand which elements of the work force hold these beliefs or, perhaps as important, hold counter beliefs. The results of this analysis are provided in the section marked (B) on this chart.

Section (B) compares the extent to which an outcome belief is likely to be held by each career group. Once again, engineers serve as our base for comparison. Each row under section (B) represents a separate analysis for each outcome belief.[2] For example, compared with engineers, logisticians and contracting personnel are more likely to believe that "eliminating milspecs and standards will increase product quality" (row one). Not surprisingly, quality assurance personnel are more likely not to believe that quality will rise under milspec and standard reform. This is likely the most important factor in explaining the negative support levels of QA personnel (see earlier charts).

The second most important belief in predicting support was the belief that reform would "make more work." Employees who believed this were much less likely to support reform. As section (B) shows, all five career groups essentially share this outcome belief—they all hold the belief at the same level as an engineer.

Those who believe life-cycle costs will rise as a result of reform are less supportive. Contracting and military personnel are less likely to believe that this negative outcome will result. Engineers, logisticians, and QA personnel all seem to share the same level of belief with regard to life-cycle costs.

Those who believe that reform will reduce their authority are also more likely to oppose reform. Not surprisingly, QA personnel are more likely to believe that reform will reduce their authority (when compared to an engineer), while contracting personnel are relatively more likely to believe their authority will increase under reform.

Those who believe that reform will require them to learn new skills are more likely to support reform. As it turns out, logisticians are much more likely to believe that they will need new skills, thus contributing to their positive outlook on reform.

Finally, those who believe program costs will fall with the elimination of milspecs and standards are more likely to support the reform. Only one career group—QA—questions this potential positive outcome. In other words, QA personnel are less likely to believe that program costs will fall as a result of reform. This finding further explains the negative view of this career group.

The large effect of beliefs related to product quality, coupled with the significant effect of beliefs about life-cycle and program costs, suggests that beliefs about program outcomes are somewhat more important in predicting support than are beliefs about personal outcomes. It is important to note that personal outcomes, such as making more work, reducing authority, and requiring new skills, are important in predicting support. Relatively speaking, however, it appears that programmatic concerns predominate in determining support. This observation will be important in the design of policies meant to promote or facilitate the successful implementation of milspec and standard reform.

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[2]The analysis conducted here used an ordered logistic regression to predict the distribution of responses (from "strongly agree" to "strongly disagree") to each of the items noted in the chart based on career group. Therefore, the basic form of the models is

$$\text{(Response Distribution)} = f\ \text{(career field)}.$$

Training Strengthens Reported Beliefs

Survey statement	Benchmark	Roadshow IV	IPT training
"I support the elimination of milspecs and standards" (agree and strongly agree)	38%	46%	45%
"Reform goals are communicated in a clear and concise fashion" (agree and strongly agree)	62%	73%	74%
"Eliminating milspecs and standards will reduce current program costs" (quite likely and very likely)	35%	40%	45%
"Eliminating milspecs and standards will increase product quality" (quite likely and very likely)	23%	24%	31%

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We also assessed the extent to which participation in IPT training and Roadshow IV—the two major forms of training meant to facilitate acquisition reform generally and milspec and standard reform specifically—affected support and related beliefs. To do this, we included a "dummy" variable (equal to one with attendance, zero otherwise) in our regression analyses indicating whether or not an individual had participated in Roadshow IV or IPT training.

The first column of percentages reports a benchmark response rate (essentially the sample average) to the listed survey statements. Here the percentages indicate the share of respondents who indicated that they "strongly agree" or "agree" with each of the four statements in the chart. For example, 38 percent of the sample indicated that they agree (or strongly agree) with the first statement: "I support the elimination of milspecs and standards." Based on regression parameters (holding all other characteristics constant), an otherwise identical individual attending Roadshow IV would report agreement 46 percent of the time. The effect of IPT training was similar, with 45 percent reporting support for milspec and standard reform. Thus, the isolated effect for each type of training—Roadshow IV and IPT training—was a 20 percent increase in the number of respondents indicating that they "strongly agree" or "agree" with the statement of support for milspec and standard reform.[1]

The impact of training on the three remaining beliefs was similar. Both Roadshow attendance and IPT training served to enhance understanding of reform objectives. Those attending both types of training are also more likely to believe that eliminating milspecs and standards will reduce current program costs. In this case, IPT training has a larger positive effect on beliefs.

[1]Of course, this correlation may be spurious, with individual support as well as participation in training being due to some other, unmeasured, phenomenon. To test this, we employed standard econometric techniques for assessing the potential problem. We were able to reject the hypotheses that Roadshow attendance or IPT training were endogenous variables. Thus, our evidence strongly suggests that there is a high payoff to modest training investments.

It is interesting to note, however, that Roadshow IV attendance did little to change beliefs related to reform effects on product quality (the key outcome belief identified on the previous chart). IPT training, on the other hand, improved perceptions of product quality resulting from elimination of milspecs and standards. This finding suggests that the Roadshow training program did a poor job in convincing participants of the positive quality outcomes to be expected as a result of eliminating milspecs and standards.

Who Has Received Training?

	Roadshow IV	IPT Training
Engineering	**22%**	**44%**
Quality assurance	**22%**	**52%**
Logistics	**19%**	**51%**
Contracting	**29%**	**36%**
Military	**22%**	**59%**
Sample average	**23%**	**52%**

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Having identified the potential effects of training on support levels and key outcome beliefs, it is useful to examine the extent to which the acquisition work force has participated in the two training programs.

As indicated in this table, only 23 percent of the surveyed work force attended Roadshow IV. This suggests that there is significant potential in expanding the number of individuals who are exposed to training. Also note that all occupational fields appear to have attended Roadshow IV with similar frequency. For example, the percent attending from the QA ranks is the same as for military personnel (22 percent). This illustrates the point that training sessions are not necessarily drawing individuals who are predisposed to supporting reform.

In addition, 52 percent of all respondents have undergone IPT training (range by career group from 36 to 59 percent). This suggests that some cost-effective strategies—such as expanding training—exist for influencing prevailing attitudes toward reform in a positive direction.

Conclusions: Milspec and Standards Reform

- Resistance is related to functional domains
  - Resistance is magnified with long tenure in acquisition
- Programmatic incentives and outcome beliefs play largest role
  - Concerns center on quality, life-cycle costs, program costs
- Personal incentives and outcome beliefs play smaller role
  - Job security, risk avoidance are important for civilians
  - Workload concerns emerge
- Structural issues are less important than previously believed
  - Matrix is a smaller factor than expected
  - PEO and command affiliation appear insignificant
  - Yet, functional hierarchy is most resistant
- Training can change beliefs and reported behaviors
- Experience with an effective IPT enhances support

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We found that variation in support and behavior is highly correlated with functional domains or career groups. Program management and contracting personnel are clearly the most supportive of milspec and standard reform. Quality assurance personnel, on the other hand, are the most opposed to the reform. Besides functional domains, resistance also appears to be centered among employees with over 20 years of experience in the acquisition process.

Programmatic incentives and outcome beliefs play a large role in explaining these systematic variations in support for reform. Programmatic concerns—which can also be functional concerns (i.e., quality and QA personnel)—such as quality, life-cycle costs, and program costs appear to drive support for reform among Army employees.

While less important than programmatic concerns, beliefs about personal outcomes are also important. Although job security and risk avoidance are important to civilian employees, they are not dominant factors. There is, however, widespread concern over increases in the workload and reductions in personal authority.

It is interesting to note that structural or organizational issues are less important than many of the employees and managers we interviewed believe. The matrix organization has a small effect, once occupational affiliation is taken into account. The PEO and command affiliations are insignificant. However, the upper levels of the functional hierarchy remains the most resistant to reform, perhaps because of a vested interest in the organizational status quo.

The evidence strongly suggests that modest amounts of training can change beliefs and reported behaviors. In addition, although not reported earlier, our analysis indicates that experience with an effective IPT[1] enhances support for milspec and standard reform. As indicated earlier, IPTs can play an important role in facilitating the implementation of milspec and standard reform—we will have more to say on this topic in the next section of the briefing.

[1]An effective IPT is one that has a charter.

Recommendations: Improving Implementation of Milspec Reform

- **Target training/communications efforts to those who are resistant**
  - **Don't "preach to the choir"; military and contracting personnel are already largely supportive**
  - **Focus on resistant elements of QA, engineering, and logistics functions**
  - **Decentralize and expand training efforts to reach more of target work force**
  - **Emphasize technical concerns—e.g., quality and cost impacts**
  - **Improve the Roadshow, emphasize IPT training**
- **Some human resource policies should be considered**
  - **Minimize impact on workload by reallocating resources**
  - **Consider retraining and finding new roles for senior employees**
- **Break down functional resistance through effective IPTs**

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The conclusions on the previous chart suggest several policy options for improving the implementation of milspec reform. First, it would be useful to target additional training and communications to those who are most resistant, especially elements of the QA, logistics, and engineering functions. These efforts should address technical concerns, such as quality and life-cycle cost impacts. This can best be accomplished through decentralized training efforts that are tailored to address programmatic issues. Despite impressive effects on the attitudes of attendees, it is clear that the Roadshow approach can be improved on this score. To the extent possible, continued IPT training for acquisition employees is to be encouraged.

Changes in human resource management policies may also have some potential to improve implementation of milspec and standard reform. First, it would make sense to minimize workload concerns by reallocating resources—at least to explicitly recognize that reform may require an initial upfront investment in people and training. Also, given the resistance among senior employees and within some career groups, it might make sense to consider retraining and/or relocation of some employees.

Finally, functional resistance has been identified as a key barrier to the implementation of milspec and standard reform. Evidence suggests that IPT training and participation on effective IPTs can help in overcoming this resistance—primarily through changes in underlying outcome beliefs. The next section examines IPTs.

Briefing Overview

- **Overall progress of reform**
- **Progress in reforming milspecs and standards**
- **Implementation of integrated product teams (IPTs)**
- **Movement toward industry partnerships**
- **Recommendations for improving reform implementation**

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Given that greater use of IPTs is a major emphasis of acquisition reform efforts and IPTs have proven to be useful in facilitating support for milspec and standard reform, this section examines work force beliefs about IPTs and their relationship to milspec and standard reform. Specifically, this section will examine the IPT-related outcome beliefs of the acquisition work force; the relationship between these beliefs and work force views on the ability of IPTs to facilitate milspec and standard reform; and the role of various IPT training strategies in changing IPT-related outcome beliefs. In conclusion, we will comment on the "conventional wisdom" about what makes IPTs successful in the private sector and provide recommendations on how to better implement teams in the Army context.

To improve coordination among the many players in defense acquisition and to ultimately streamline the process, the "Perry Initiatives" identified the need for greater use of Integrated Product Development Teams (IPDTs) or IPTs. Teams have become a major focus within DoD and the services. They are designed to minimize "stovepiping" of functional duties, increase communication—both laterally and vertically—and reduce oversight and system delays to streamline the process.

Unfortunately, the acquisition work force lacks a common and well-understood definition of IPTs. The definitional problem may stem from the fact that teams can be and are expected to operate at various levels within the acquisition system. Within DoD, teams are thought to operate at basically three levels:

(1) Overarching IPT: This team is made up of DoD and service officials from the Program Manager (PM) level and above—principally PMs, Program Executive Officers (PEOs), service officials, and DoD officials.

(2) Program-level IPT: This team is made up of those active in the management of a program. It is essentially a multifunctional team that spans the current matrix management system.

(3) Contractor IPT: This team is made up of PM personnel and contractor personnel. It is the most product oriented of the three types of teams (the others being more process oriented).

The analysis in this section focuses on a general "IPT concept" most accurately described as the program-level and contractor IPTs discussed above.

Beliefs About IPTs Are Largely Positive

Factor affected by IPTs	Respondents expecting an increase	Respondents expecting a decrease
Development costs	13%	47%
Product quality	57%	9%
User satisfaction	62%	6%
Communication	78%	4%
Oversight	24%	34%

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In general, beliefs about IPTs are largely positive. In the survey, respondents were asked whether they believed that IPTs would result in an increase or decrease in several key program outcomes (development costs, product quality, user satisfaction) or acquisition process factors (communication, oversight)—these are identified in the leftmost column. Based on the survey, it appears that respondents expect IPTs to promote improvements in development costs, product quality, user satisfaction, and communication. On the other hand, respondents were not as optimistic about effects on oversight, with 24 percent versus 34 percent expecting an increase rather than a decrease. These figures also imply that 42 percent of those surveyed believe that IPTs will not affect the level of oversight. During many of our site visits we heard several anecdotes that supported this belief. Teaming approaches are predicated on a free flow of information, with participants letting go of their traditional adversarial roles. Some of our interviewees believed that external auditors have a difficult time working in an environment that stresses collaborative solutions rather than reactive sanctions.

Why Do Respondents Believe That "IPTs will make it easier to eliminate milspecs"?

Using IPTs will increase...	Effect on Ability to Reform
Job satisfaction	+
Development costs	–
Life-cycle costs	–
Work required	–
Promotion opportunities	+
Oversight	–

Using IPTs will increase...	Effect on Ability to Reform
Innovation	+
Program delays	–

Other Factors...	Effect on Ability to Reform
Poor data on past perf.	–
IPT experience (effective)	+
Received IPT training	+

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Recalling some of our earlier results, it was determined that IPT experience and training are related to greater support for milspec and standard reform and positive outcome beliefs with regard to the effects of milspec and standard reform. This chart reports the results of an ordered logistic regression conducted to explain the observed distribution of responses to the following statement: "IPTs make it easier to eliminate milspecs and standards." This model predicts the response distribution (from "strong agreement" to "strong disagreement") for this statement based on the specific outcome beliefs of survey respondents.[1] Basically, this model identifies those IPT-related outcome beliefs that are important in shaping employee beliefs with regard to the effect of IPTs on their willingness to implement milspec and standard reform.

The beliefs reported in this chart are listed in order of importance in explaining the response distribution to the statement. Once again, a plus sign (+) indicates a positive correlation between an outcome belief/factor and the level of agreement with the statement (the greater the agreement with an outcome belief, the greater the agreement that IPTs will make it easier to eliminate milspecs and standards). Likewise, a minus sign (–) indicates a negative relationship (the greater the agreement with an outcome belief, the lower the agreement with the statement). For example, beliefs about the effect of IPTs on job satisfaction were the most important determinant of agreement with the statement. In this case, the greater the belief of a respondent that IPTs will increase job satisfaction, the greater his agreement that IPTs will make it easier to eliminate milspecs and standards.

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[1]The basic form of the model employed here is

(Response Distribution) = f (IPT-related outcome beliefs, IPT participation, and acquisition process beliefs).

While the primary independent variables are IPT-related outcome beliefs, several other categories of independent variables were considered, including IPT experience and "acquisition process beliefs"—such as respondent beliefs on the adequacy of past performance data—all of which were hypothesized to affect beliefs about IPTs.

In addition to beliefs about job satisfaction, those respondents who believe IPTs will increase promotion opportunities and innovation within the acquisition system are more likely to be positive about the efficacy of IPTs in eliminating milspecs and standards.

Negative outcome beliefs are inversely correlated with agreement with the statement. Specifically, respondents who believe that using IPTs will increase development costs, life-cycle costs, work required, oversight, and program delays are more likely to find IPTs less than effective in facilitating milspec and standard reform. An implication of this result is that respondents who do not believe that IPTs will result in these negative outcomes are more likely to find IPTs useful in facilitating milspec and standard reform.

Going beyond IPT-related outcome beliefs, three "other factors" appear important in predicting the response distribution for this statement. Respondents who believe that the Army's past performance data are "poor" are less likely to believe that IPTs are effective in facilitating reform. On the other hand, respondents who have experience on an "effective" IPT (an IPT with a charter) and who have received IPT training are much more likely to find IPTs effective in facilitating milspec and standard reform. In fact, although not reported explicitly in this chart, based on our analysis it appears that serving on an IPT without a charter made a negative contribution to employee beliefs about the efficacy of IPTs.

Finally, while not identified explicitly in the chart, career group remains an important determinant of beliefs. In this case, the general pattern holds, with QA personnel being the most negative and least likely to view IPTs as facilitating milspec and standard reform, and military, logistics, and contracting personnel being generally more positive.

Effectiveness of IPT Training Varies

Average increase in respondents who "strongly agree"

	External training	Internal training	Defense Acquisition University	Contractor-provided training
IPTs improve work processes (8 items)	+60%	+50%	+30%	+10%
IPTs improve program outcomes (15 items)	+50%	+20%	+20%	+15%

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Beliefs about the effects of IPTs were greatly affected by participation in various forms of training. The above chart summarizes the results of regression analyses of answers to questions about improvements in work processes (8 items) and in program outcomes (15 items). Controlling for several other factors (such as career group, tenure, etc.), the summary provides a measure of the average percentage increase in the number of respondents who, as a result of training, "strongly agree" that IPTs will improve the work processes or program outcomes.[1]

External training is training provided by an outside consultant, generally at the request of the local command or program office. These consultants include local community colleges and private firms. This type of IPT training was the most effective, resulting in an increase of 60 percent and 50 percent in the number of individuals reporting that they "strongly agree" that IPTs improve work processes and program outcomes, respectively.

Internal training, generally provided by program management, is also quite effective in increasing beliefs about work processes. It was substantially less effective than external training in affecting beliefs about the effects of IPTs on program outcomes.

Training provided by DAU was somewhat less effective than internal training with regard to beliefs about work processes, and had equal effectiveness on beliefs about program outcomes. While less effective than external training, both internal and DAU IPT training resulted in positive shifts in the distribution of beliefs.

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[1]The eight items relating to work processes included factors such as general perspectives on employee understanding of IPTs and their role on teams, as well as items measuring the effect of IPTs on work processes (3 items), decisionmaking, ease of adopting milspec and standard reform, and ease in adopting best-value contracting methods. The 15 items relating to program outcomes assessed employee beliefs about the effect of IPTs on: development costs, product quality, user satisfaction, concept to product time, rework, innovation, communication, job satisfaction, program delays, oversight, conflict between PM and functional directors, conflict between government and user, life-cycle costs, workload, and advancement opportunities. Some of these outcomes are not strictly programmatic, but do relate to program success.

Training provided by defense contractors (the same firms providing the Army with R&D, production, etc.) was the least effective. However, in these cases, large uncertainty in the estimates (primarily because of the small sample size for this category) makes it difficult to come to definitive conclusions.

Who Has Received IPT Training?

	Defense Acquisition University	External training	Contractor-provided training	Internal training	No training
Sample	15%	16%	9%	21%	48%
Military	27%	19%	11%	22%	38%
Engineering	11%	17%	9%	23%	49%
Quality	12%	25%	11%	25%	41%
Contracting	7%	12%	3%	18%	68%

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While it has already been pointed out that only about 52 percent of the surveyed work force had participated in one or more forms of IPT training, it is worth noting that participation in IPT training does vary by career group.

By and large, military personnel have received the most IPT training—only 38 percent have received no IPT training. Contracting personnel, on the other hand, have the lowest level of IPT training—68 percent have received no IPT training. This corresponds with information gained in our interviews of acquisition personnel. In general, military personnel are in program management roles. IPTs are commonly viewed as a program management improvement, and these personnel are more heavily trained. Contracting personnel, on the other hand, are commonly viewed as independent of the program office and are not as likely to be involved in PM-directed IPT training activities.

Internal training appears to be the most popular form of IPT training, with between 18 and 25 percent of each career group having participated in it. The "most effective" form of training—externally provided training—is also well subscribed, with between 12 and 25 percent of each career group participating. While a substantial number of respondents have experienced some form of IPT training, a large majority have not received the two most effective forms. If IPT training helps in making employees more willing to eliminate milspecs and standards, intensified training should be considered.

Four Keys to IPT Success

1. **Used only when appropriate**
   - **when integration will assist in meeting objectives**
2. **Guided by clear and consistent objectives and responsibilities**
   - **well defined and understood task**
   - **clear and consistent responsibilities—team charters**
3. **Emphasis on proper staffing**
   - **key roles and functions represented**
   - **training provided to all members**
   - **special focus on team leaders**
4. **Strengthened by organizational support systems**
   - **performance evaluation systems**
   - **training programs**
   - **empowerment/authority to team leaders and members**
   - **information systems**

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The importance of training to beliefs and perceptions about IPTs is not necessarily surprising. An essential element of successful teams is an adequately trained and motivated work force. Based on both our review of the literature on teaming and on our site visits to various corporations, we were able to identify four broad "keys" to successful IPTs. The keys to success are described in the chart above.

First, IPTs should be used only when appropriate. Rather than mandating teams broadly across the organization, successful organizations employ teams carefully and only when they are deemed appropriate. Basically, teams should be used when there are clear advantages to integrating and communicating across functions or disciplines in the organization. In addition, teams can be time consuming and costly (particularly initially), and they should be used only when there are sufficient resources (financial, human, and time) available.

Second, successful IPTs require a predefined task or objective around which team members can be motivated. In order to meet this objective, successful teams often use clear and consistent statements of responsibilities—sometimes called team charters. These charters lay out the team's objective, the plan for meeting it, and the responsibilities of team members.

Third, organizations associated with successful IPTs place a great deal of emphasis on properly staffing their IPTs. Properly staffed IPTs include all key actors and functions involved in meeting the team's objective. In addition, these organizations provide IPT training to members in order to improve team efficacy. Moreover, a special emphasis is placed on the selection and training of team leaders.

Fourth, effective IPTs require support from other elements of the organization. Basically, an IPT cannot function "on its own"—organizational support systems must be modified to enable and facilitate effective teams. The organizational support systems that must be modified include performance evaluation and reward systems which must account for team, as well as individual, performance; training programs which need to address communication and teaming skills; empowerment/authority guidelines, to provide team members necessary autonomy and decisionmaking power; and information systems which provide for effective communication and management.

Conclusion: IPTs Have Great Untapped Potential

- **Successful IPTs require attention to specific considerations and organizational supports—especially training and leadership**
- **Empirical evidence links effective IPTs with positive attitudes and preferred behaviors**
  - **Respondents are more likely to believe IPTs will increase quality and user satisfaction**
  - **More likely to support milspec and standards reform**
- **Substantial improvements are possible in Army IPTs**
  - **Currently, only 50% of respondents have been on an IPT**
  - **Only 50% of respondents have received training**
  - **There is no common definition or understanding of IPTs**
  - **40% of respondents do not understand their role on a team**
  - **Only 30% of respondents indicate their team has a written charter; 38% don't know whether or not they have a charter**

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As the IPT literature maintains and our interviews with private-sector firms confirmed, IPTs are most effective when they are

- used appropriately,
- guided by written charters and/or mission statements,
- staffed properly, and
- strengthened by necessary organizational support systems.

Among support systems, training is essential, especially for team leaders. Moreover, the experience of Army programs implementing IPTs suggests that training is most effective when it is locally tailored (internal training by a PM or Buying Command) and/or provided by professionals (external training). The most effective IPTs and IPT training we observed was conducted by highly motivated and trained program managers.

Our analysis also indicates that experience with an "effective" IPT (in our definition, one with a charter) can be linked to positive attitudes and preferred behaviors (such as implementing milspec and standard reform). For example, respondents who have served on such IPTs believe that they will increase quality and user satisfaction. In addition, those with experience on an effective IPT are more likely to support milspec and standard reform.

While the evidence on IPTs and IPT training in the Army is largely positive, substantial improvements are possible. Currently, only half of all respondents participate on IPTs and half of all respondents have received IPT training. There is no common definition or understanding of IPTs within the acquisition work force, and 40 percent admit that they do not understand their role on a team. Only 30 percent indicate that their team has a written charter—qualifying it as an effective IPT in our analysis—and almost 40 percent do not even know whether the teams they have served on have had or have a charter. IPT participation under such circumstances contributes little to acquisition reform and, in contrast, may actually work against the ultimate objectives.

Recommendations: Establishing Effective IPTs

- Use team charters and training to ensure role clarity and common understanding of responsibilities and team goals
- Tailor team size and structure to program and command needs
  - Small programs, "basket" PMs require different teams
  - Tailor training to needs of individual programs and commands
- Emphasize leadership in overall teaming effort and on teams
  - Continue to use PMs to implement teams
  - Train team leaders
- Explore team-based evaluations and rewards
  - Will be hard with different military and civilian systems/rules
  - Consider continued use of nonmonetary rewards

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Based on our review of the literature on IPTs, our site visits with private-sector firms, and our interviews with Army personnel attempting to implement IPTs, it appears that effective IPTs require a common team concept (or set of concepts) and definition. The organization and its members must understand what teams are and how, and when, they are appropriate. One can bolster common definitions and role clarity through extensive team training programs. On our site visits to private-sector firms, we were struck by the fact that most successful organizations have dramatically increased their budgets for training, even as they downsize other functions and departments.

In addition, common definitions and objectives are needed at the individual team level. Team charters can be used to ensure role clarity and a common understanding of participant responsibilities and team objectives. The use and importance of charters can also be emphasized in IPT-related training.

While a common conception of what IPTs are is desirable, there is no standard blueprint. Instead, teams need to be tailored (in terms of size and structure) to suit particular program and managerial needs. For example, small programs and/or "basket" PMs have different requirements than larger ACAT I programs. The program portfolios of basket PMs are often diverse, with a relatively small staff spread across a number of programs. Applying a standard IPT template—more than likely developed for larger, higher-profile ACAT I and II level programs—may not make sense for these organizations. In addition, as noted earlier, our analysis suggests that attitudes and beliefs about IPTs are best shaped through localized or program-specific training provided by external sources or the PM.

Emphasis must be placed on leadership—both in the broader effort to implement teams Army-wide and on individual teams. As we noted earlier, in our interviews with Army personnel, the most effective teams were those that were strongly supported and sponsored by the PM. In addition, these teams placed a great deal of emphasis on the quality of their team leaders.

Finally, the Army must explore team-based evaluation and reward systems. In many of the Army programs and commands we visited, new IPTs were simply placed within existing

management systems. Employees were evaluated by their traditional "reviewers," and team-based evaluations were rare. In addition, team responsibilities were often simply added to an employee's current duties—giving the impression of added burden without linkage to an employee's performance evaluation. In addition to modifying the evaluation system, attention should be given to the rewards provided by that system. However, we realize team-based monetary rewards will be difficult to implement in the Army context. Different rules and pay systems for military and civilian employees will make it hard to reward team members equally for performance. Rewards can, however, be nonmonetary. The Army should consider continued use of medals, other forms of peer recognition, and "time off"/leave to encourage team behavior. In addition, budgetary rewards—monetary rewards accruing to the program or the activities of the team—should also be considered. Simply allocating more money in support of a team's objective may provide incentive enough for team cooperation and initiative.

Briefing Overview

- **Overall progress of reform**
- **Progress in reforming milspecs and standards**
- **Implementation of integrated product teams (IPTs)**
- **Movement toward industry partnerships**
- **Recommendations for improving reform implementation**

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As noted earlier, a third key element of the Perry Initiatives is a new emphasis on the creation of "buyer-supplier partnerships." In an effort to make defense contracting more appealing (to both current contractors and commercial contractors), DoD and the Army are attempting to improve relationships with their supplier base. These improvements are modeled along those taking place in private industry. In private industry, increased emphasis has been placed on long-term stable relationships between buyers and suppliers. Major commercial firms—some of which were interviewed for this study—are developing closer, more cooperative relationships with their suppliers. Common components of these relationships are buyer-supplier IPTs, best-value contracting, long-term contracts, preferred supplier status, and mutual trust.

DoD and the Army are attempting to adopt similar relationships with their suppliers. As noted earlier, IPTs are an essential element in creating better buyer-supplier relationships. The increased communication and cooperation inherent in the teaming process helps to create and foster better, longer-term relationships between buyers and suppliers. In addition, better relationships with suppliers will be essential to the success of milspec and standard reform. In most cases, Army program offices are relying more on the contractor to propose alternative performance-based requirements for traditional milspecs and standards. Without traditional milspecs to rely on, the Army must have better communication with contractors and confidence in the capabilities of its suppliers. For example, without the MILQ-9858 quality standard, Army QA personnel and PMs must now rely on ISO 9000 or similar quality certifications and/or jointly developed program-specific quality plans.

This final section of the briefing relies largely on interview and site visit data to describe the "new model" of buyer-supplier relations, comment on the extent to which "partnerships" are being attained between the Army and its suppliers, and provide some general conclusions and recommendations on how the partnering process could be improved in the Army. To conclude this section, we focus on one particularly promising program within the Army Materiel Command (AMC)—the CP^2 Program—which can serve as the foundation for better buyer-supplier relationships for the Army.

Workforce Views of Partnerships

Most expect positive outcomes (agree vs. disagree)

- **Increase quality (60% vs. 10%)**
- **Decrease program costs (48% vs. 17%)**
- **Increase trust (70% vs. 4%)**
- **Increase cooperation (74% vs. 4%)**

Experience falls short of potential

- **Only 30% report better cooperation**
- **66% cite need for better communications systems**
- **45% indicate past performance data are poor**

Regression analysis identifies several possible levers

- **Effective IPTs and IPT training improve beliefs**
- **Past performance data strengthen beliefs and can be linked to higher support for all reforms**

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Before discussing the specifics of the "new model" for buyer-supplier partnerships and the degree to which the Army and its contractors have "partnered," it is useful to examine the survey data and the level of support for partnerships within the acquisition work force.

Perhaps somewhat surprisingly (given the history of adversarial relationships between the government and its contractors), work force views on industry partnerships were quite positive. Most employees expect positive outcomes to result from better partnerships. For example, 60 percent expect an increase in product quality (10 percent disagree, with the remaining 30 percent staying neutral). Program costs are expected to decrease and relationships with industry are expected to improve. Most expect trust and cooperation to be enhanced.

On the other hand, experience to date may be falling short of expectations. Although 74 percent *anticipate* improved cooperation with industry, only 30 percent actually report better cooperation. One common problem cited in our interviews with Army personnel was the absence of adequate systems for communications (e.g., compatible computers). This was confirmed by the survey. Another problem—identified in our interviews and confirmed by the survey data—is a lack of confidence in past performance data (upon which a partner can be evaluated). Almost half (45 percent) of those surveyed believe that past performance data are "poor" (only 27 percent find the data "good" and 28 percent had no opinion).

Additional regression analysis identified several possible policy levers affecting employee perceptions of partnerships. Again, effective IPTs and IPT training improved beliefs about the benefits of partnerships—corresponding to their central role in "effective" partnerships. Finally, past performance data, when viewed as adequate, could be linked with more optimism about the effect of partnerships on program outcomes and, therefore, support for partnerships. To the extent that data can be used to evaluate competitive bidders on future contracts, firms will have stronger incentives to perform well on current contracts. When such incentives are in place, less oversight (and more trust) and true partnerships are possible.

Buyer-Supplier Relations in the Private Sector Are Changing

Old model	New model
Procurement a low priority	Procurement part of overall strategy
Low price	Best value
Short-term contracts	Long-term relationships
Many suppliers	Preferred suppliers
Market relationship	Cooperation
Design preceding purchase	Suppliers involved in development
Emphasis on past performance	Greater emphasis on past performance
Quality test on delivery	Demonstrated quality process
Adversarial relationship	Mutual trust

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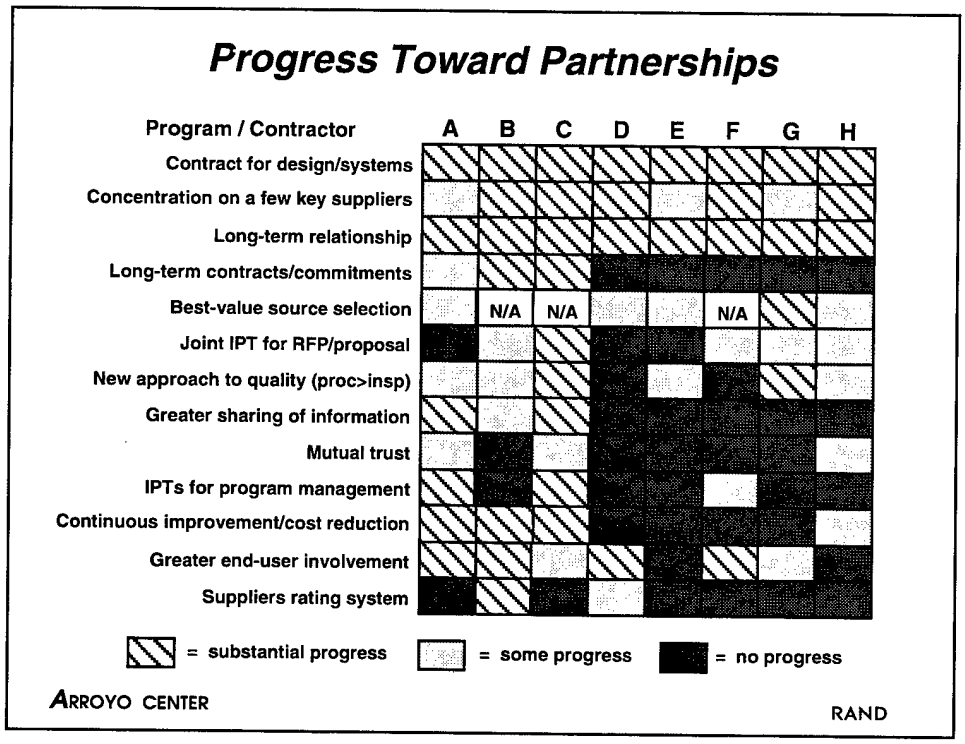
This slide summarizes what we mean by the "new partnership model." Based on a survey of the literature dealing with partnerships, it becomes evident that the "new model" represents a serious departure from the old. Basically, the "new model" places increased emphasis on the role of suppliers and their products. It focuses on quality and best-value contracts as the foundation for long-term, stable, cooperative, and trusting relationships with a smaller number of preferred suppliers.

In general, many aspects of the "new model"—such as best value, long-term relationships, and demonstrated quality processes—are elements of current Army acquisition reform efforts. Through our site visits with Army program offices and their prime contractors we were able to assess the extent to which progress had been made in reaching this "new model."



This slide summarizes our findings from eight of our visits to defense contractors and discussions with the matched sample of Army programs identified earlier. Therefore each letter represents a given program office–prime contractor pairing. For reasons of anonymity, the pairings are labeled "A" through "H."

For each pairing, we evaluated the extent to which the interviewees gave evidence of progress in terms of the partnership dimensions listed on the left of the chart. We concluded that the program office and the contractor had made "substantial," "some," or "no" progress in achieving the private industry—or "new model" standard of partnering.

For example, defense contracting has always involved contracts for design or system integration, and long-term relationships with a small set of key suppliers. By these criteria, defense contractor–government relationships look like partnerships in the private sector. Also encouraging is the degree of progress in application of best-value source selection, the use of joint IPTs for the RFP/proposal, the use of new approaches to quality, and greater end-user involvement—with at least some progress being made for five or more of the eight pairings in each case.

By other dimensions, much less progress has been made. Pairings D through H exhibit some or no progress across most of the remaining dimensions. These include long-term contracts, greater sharing of information, mutual trust, government-contractor IPTs, continuous improvement/cost reduction, and suppliers rating systems.

Examination of the chart suggests that pairings A, B, and C have been most successful in moving toward "new model" style buyer-supplier partnerships. A key question is: What is different about these pairings that may indicate why they are relatively more successful? Without revealing the identity of these programs or contractors, three key factors seem to help explain their relative success in moving toward closer relations: (1) at least two of the three programs were under strong budget pressure—giving both the program and the contractor incentives to cooperate in order to "save" the system; (2) all three programs were typified by strong leadership from the PM, especially regarding reform implementation; and (3) each program had long-term relationships with its prime contractor, assisting cooperative efforts.

Conclusion: Significant Barriers to Partnerships Exist

Desired outcome	Barriers
Mutual trust	• Independent oversight • Adversarial history
Supplier ratings	• Inadequate past performance data • Lessons not shared
New approach to quality	• QA resistance • External oversight
Greater end-user involvement	• Inflexible ORD • Layers of decision making

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In this chart, we isolate a few of the most important elements—or desired outcomes—of effective partnerships and identify the key barriers to their realization in the Army context. For example, building greater mutual trust between the Army and its contractors is hampered by the existence of independent oversight functions (outside the Army's control, or outside the control of Army acquisition officials) as well as a history of adversarial relationships.

Movement toward supplier ratings systems in the Army has been hampered by poor past performance data. Currently, the requisite data do not exist, nor are lessons learned shared across programs (within the Army or across services). A lack of data makes it difficult for the Army to fairly evaluate "good" partners or punish "poor" partners from the past.

New approaches to quality, emphasizing continuous process improvement and certification rather than testing (such as the ISO 9000 certification process) are central to the new buyer-supplier paradigm. In our interviews with Army personnel it was commonly noted that resistance from the QA function (also confirmed by survey data) and the external oversight and testing camps were major impediments to movement toward partnerships. Obviously a new definition for quality—one that focuses on certified quality processes rather than extensive product testing—will be hard to implement in a system that relied on the specific quality-related milspecs and standards (MILQ-9858, etc.).

Finally, the new paradigm of partnering requires greater end-user or customer involvement. Greater user involvement is often cited as an important factor in determining the ultimate success of acquisition reform. Unfortunately, data from our interviews suggest that user participation in acquisition and its reform varies by program and by user. In our interviews with acquisition personnel it was often stated that greater user participation is precluded by inflexible operational requirements (ORDs) and the layers of bureaucracy involved in changing requirements.

Recommendations: Gradually Address Barriers

Desired outcome	Barriers	Solutions
Mutual trust	• Independent oversight • Adversarial history	• Build gradually via IPTs, supplier ratings, and source selection
Supplier ratings	• Inadequate past performance data • Lessons not shared	• Expand supplier certification & data base • Link with source selection
New approach to quality	• QA resistance • External oversight	• Scale down inspectorate • Retrain for new role
Greater end-user involvement	• Inflexible ORD • Layers of decision making	• User IPT participation • Empowered user representative

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As this slide indicates, we can envision several steps the Army can take to help address the barriers to effective partnerships.

Developing mutual trust will naturally be a gradual process. The Army should consider using government-contractor IPTs to increase the flow of information and communication. In addition, the development of a supplier rating system (likely in concert with industry) will help to provide government officials with the data necessary to evaluate and select partners.

Such supplier rating systems are a key element of effective partnerships in the private sector. The Army should maintain efforts to develop a system of certifying its suppliers based on their past performance and other considerations. Such a system can then be linked to source selection to help provide stability and the basis for long-term relationships. As we will discuss in the next two slides, the foundation for such a supplier certification and rating system is under development in Army Materiel Command (AMC)—the Contractor Performance Certification Program (CP^2).

If the primary barriers to new quality approaches are coming from various functional personnel within and outside the Army, it may be advantageous to minimize resistance by scaling down "the inspectorate" and retraining employees. "The inspectorate" refers to Army and DoD organizations in charge of "inspecting" the quality of products—such as the QA function, the Defense Contract Management Command (DCMC), the Defense Plant Representatives Office (DPRO), and the Defense Logistics Agency (DLA). Consideration should be given to reducing the amount of product inspection and increasing the amount of process certification. In all likelihood, such a change in activities will require new skills and perspectives. To the degree possible, efforts should be made to retrain QA personnel on new quality approaches, such as ISO 9000 and their changing role in the acquisition system.

If inflexible ORDs and layers of decisionmaking are barriers to greater user involvement, the Army should consider placing users on Army IPTs or Army-contractor IPTs. These participants must, however, be empowered to represent the user and to modify requirements as needed. This may be a difficult task without the full cooperation of user organizations.

Contractor Performance Certification Program (CP^2) Is Promising

- **Possible benefits from (CP^2)**
  - **Strengthens Army-supplier partnerships**
  - **Reinforces new approach to quality**
  - **Reduces testing and oversight costs**
  - **May offer simultaneous ISO certification**
  - **Emphasizes continuous improvement**
- **Implementation is uneven**
  - **Progress only in some commands**
  - **Limited benefits to contractor**

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The Contractor Performance Certification Program (CP^2), launched originally by AMC in the late 1980s and then substantially revised in 1995, provides a potentially promising movement closer to best practices in the management of suppliers. CP^2 contains all of the main elements of ISO 9001's quality certification program,[1] as well as more stringent criteria in areas of particular importance to the Army—e.g., design process control and software development. It also adds elements not included in ISO 9001 that are related to the public-sector nature of the procurement process and/or important success factors for the development of complex weapon systems: e.g., technical risk management, IPTs, warranty performance, environmental/hazardous waste and safety procedures. Thus, the CP^2 initiative is similar to supplier certification programs at industry leaders such as Boeing and Ford, where they insist on performance above and beyond the ISO standard in some areas.

Although the revised CP^2 is still in the early implementation phase, experience from commands that have been leaders in its development and in past efforts at supplier certification suggests there may be many potential benefits, including:

- Helping to build partnerships with primes and subcontractors as teams of Army quality experts do precertification audits to help identify areas of improvement; this reinforces the new approach to quality, stressing the need to get the process right the first time, rather than inspecting afterwards for quality defects.
- Once contractors have demonstrated consistent quality processes to receive certification, both sides can achieve cost savings by eliminating non-value-added tests and oversight.

[1]The ISO 9000 series is the International Standard Organization's standard for quality management systems. To obtain ISO 9000 certification, an organization must demonstrate that it has all of 20 "key" quality management components in place. These "key" components are considered to enable an organization to deliver quality products or services on a consistent basis. ISO 9000 is rapidly growing in popularity as multinational corporations insist that their suppliers obtain certification in order to standardize quality systems on a global basis.

- Since the CP^2 criteria encompass all the elements of ISO, and since many of the Army's quality inspectors involved in the initiative have received ISO training and quality auditor status, a few contractors have been able to receive ISO certification at the same time as CP^2. This saves both sides the costs and time required for separate certification processes.[2]

[2]Army staff have been reluctant to promote this benefit for fear of being accused of unfair competition by private ISO auditors.

Improving the Potential for Partnerships by Building on (CP2)

Build on (CP2)

- **Link more closely with source selection**
- **Extend to all Army, not just parts of AMC**
- **Expand focus of ratings to overall supplier performance**
- **Recognize comparable private-sector certifications**
- **Emphasize capabilities required for meeting military performance requirements**

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One of the critical ways in which the Army can increase the incentives for contractors to participate in CP2 is to link the supplier certification program more closely to source selection. Currently, the reform push to increase the use of past performance data in source selection appears to be progressing quite separately from CP2. By creating a common set of metrics across programs, tracking these data continuously, and using them as a tool for both program management and a key criterion for future source selections, the Army can move much closer to rewarding good performers and punishing bad ones—the foundation of private-sector partnerships. Indeed, the Air Force's experience with supplier ratings suggests that it is not those contractors with the best quality and delivery records that will support the initiative. Several respondents cited the Air Force's CPARs database as a potential model, although this appears to be used more in source selection than in day-to-day program management, with information not made public among the supplier base.

In order to get the full benefits of CP2, the Army should consider extending it in several ways: first, putting pressure on those elements of AMC that have been slow in implementation to participate more actively in the initiative; second, extending it throughout the Army through a clear directive from the Assistant Secretary, and third, expanding the ratings criteria to include all elements of contractor performance—e.g., delivery time, costs—and not just quality.

The Army could also consider qualifying certain contractors who have already met high commercial quality standards on closely related products—such as Boeing—without a separate CP2 certification process. It is important to recognize, however, that meeting commercial quality standards does not always equate with the capacity to meet the military's often more stringent environmental and performance requirements. One of the areas where CP2 could add real value is in identifying contractors that have demonstrated this capability and helping other new suppliers, which may not have this military experience, to understand the testing and other capabilities they need to satisfy the Army's needs.

A Final Word on Implementing Acquisition Reform

- **Successful implementation requires alignment among a large number of mechanisms**
- **Research suggests that there is no "silver bullet" for facilitating reform**
- **However, several promising policy levers exist that would collectively make a substantial difference**
  - **Break down functional resistance through targeted training, information, and communications that address programmatic concerns**
  - **Make more effective use of IPTs (internally and in partnerships with industry) through training, mission definition, and role clarification**
  - **Promote effective partnerships by building on supplier certification efforts, developing past performance data, and linking with source selection**

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While we have provided specific conclusions and recommendations related to facilitating and improving the implementation of milspec and standard reform, IPTs, and buyer-supplier partnerships, several important and general conclusions are worth reiterating.

First, successful reform requires alignment among a large number of organizational support mechanisms. While all are important to fostering change in an organization, no single factor dominates. For example, our discussion of milspec and standard reform emphasized the importance of focusing training efforts on the programmatic concerns (with quality, costs, etc.) of those most opposed to reform. In addition to training, the discussion of IPTs identified the important role of evaluation systems, empowerment, and communication and information systems in facilitating reform.

As we hope the analysis and conclusions here have shown, there is no "silver bullet" for facilitating reform. A great deal of change will need to be motivated gradually and "on the margin" through changes in many variables—such as training, human resource policies, and new information systems (past performance data).

While change is likely to occur gradually and on the margin, several promising policy levers do exist that, when taken together, can make a substantial difference in our estimation. First, the Army should do more to break down functional resistance through targeted training, information, and communications that address the programmatic issues that impede reform (such as the concern for quality). Second, the Army must make more effective use of IPTs. IPTs are an important element of acquisition reform because they break down the functional barriers that impede change—they are important to facilitating milspec and standard reform as well as buyer-supplier partnerships. IPTs can be bolstered through training, mission definition, and role clarification.

Finally, the Army can promote more effective partnerships by building on current supplier certification efforts, developing better past performance data, and linking these data with source selection.