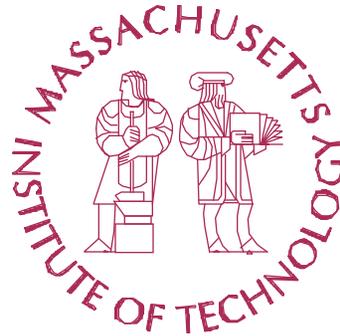


# **Lean Aerospace Initiative Plenary Workshop**

## **Reaching Out to Commercial Suppliers**



**March 31- April 1, 1998**

**Presented By:  
Eric Rebentisch  
MIT**

**Research Sponsored By LAI**



- **Background**
- **Survey Description**
- **Analysis and Findings**
- **Summary and Implications**



## ***Recent Evolution in Emphasis on Commercial Practices***

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- **Dr. Gansler—USD(A&T)—has long track record of pushing for commercialization and dual use**
- **Recent (2 Feb 1998) priority statement (one of five):**
  - **need to increase civil/military industrial integration in all aspects of weapon system acquisition (from R&D through support)**



# ***Policy Focus Team Commercial Practices Research Activities***

- **Survey of 23 government acquisition programs leading in the use of commercial practices**
  - use of commercial practices in acquisition resulted in cost and cycle time savings
  - implementation insights still largely gained “by doing”
  - findings published in March-April *Program Manager*
- **Survey of 152 electronics sector suppliers on views of engaging in military business**
  - to be discussed today
  - findings to be published in July-August *Program Manager*



# Research to Assess Potential for Commercial/Military Integration

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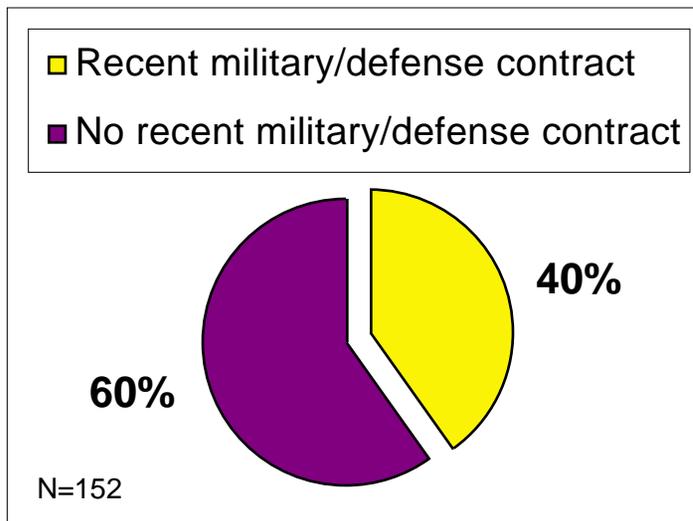
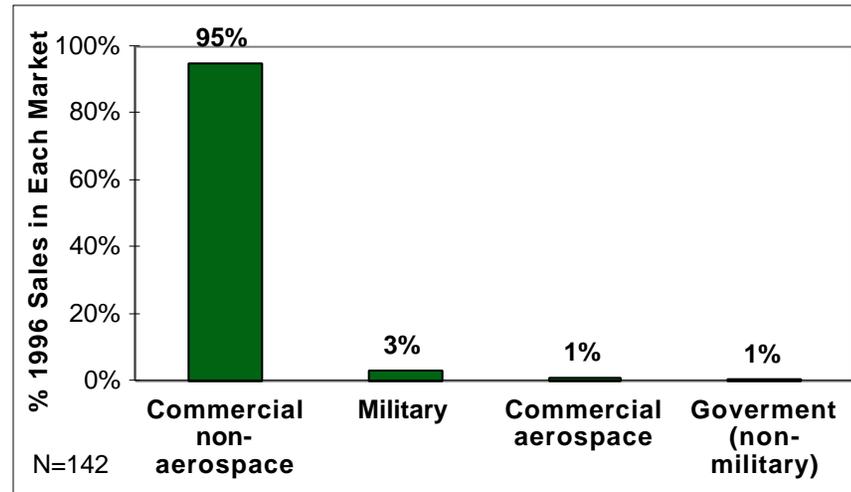
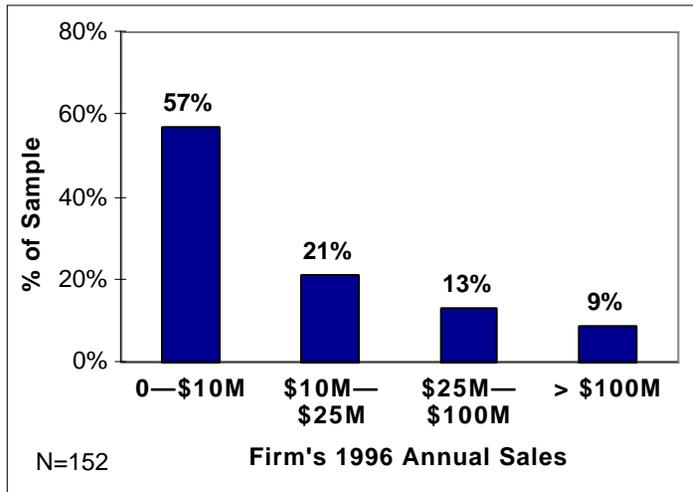
- **Objective:**
  - survey commercial firms to assess their willingness to engage in or expand military business
  - assess whether acquisition reforms have diffused to the supplier base
- **Target population:**
  - electronics manufacturing services (EMS) and contract assemblers
    - services include sales of components & PWBs, assembly, design, test, rework & repair, and other
  - \$14.5B domestic industry—projected to double by 2000, \$59B worldwide (1996 sales)
    - OEMs account for ~80%, but many highly-capable smaller EMS firms create a competitive market
    - 2.2% of domestic sales (1996) to government/ military customers

# EMS Survey Research Methodology

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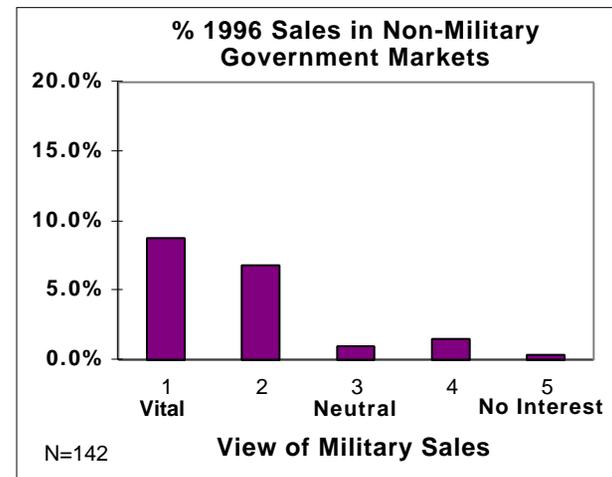
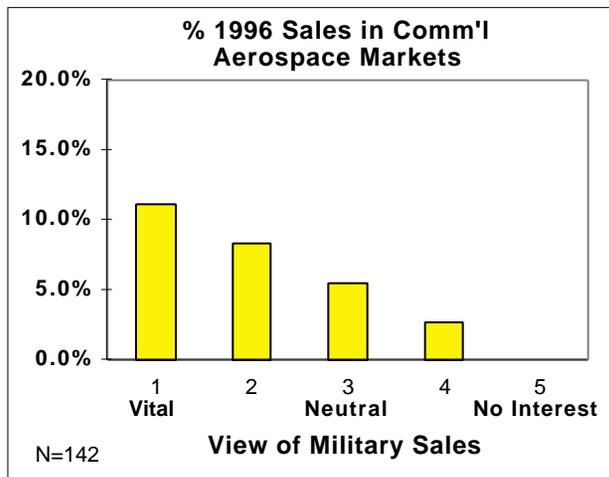
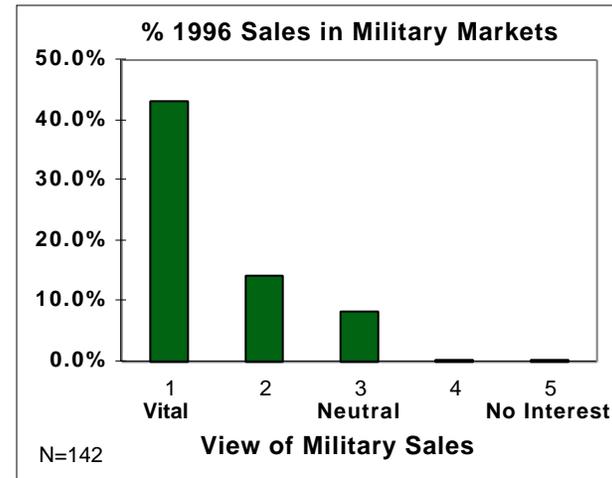
- **Survey jointly developed by team effort:**
  - Kimberly Sterling—IPC (Institute for Interconnecting and Packaging Electronic Circuits)
  - Mike Heberling—Anteon Corp.
  - Ron McDonald & Mike Nanzer—TRW
  - Eric Rebentisch—MIT
- **Surveys sent to 1340 firms**
  - distributed by IPC to member firms
    - electronics manufacturing services (EMS) firms
    - bare printed wiring board (PWB) manufacturers
- **152 surveys returned (11% response rate)**
  - 66 EMS firms
  - 64 PWB manufacturers
  - 4 EOMs
  - 18 others (incl. 14 which did not specify)

# Sample Demographics



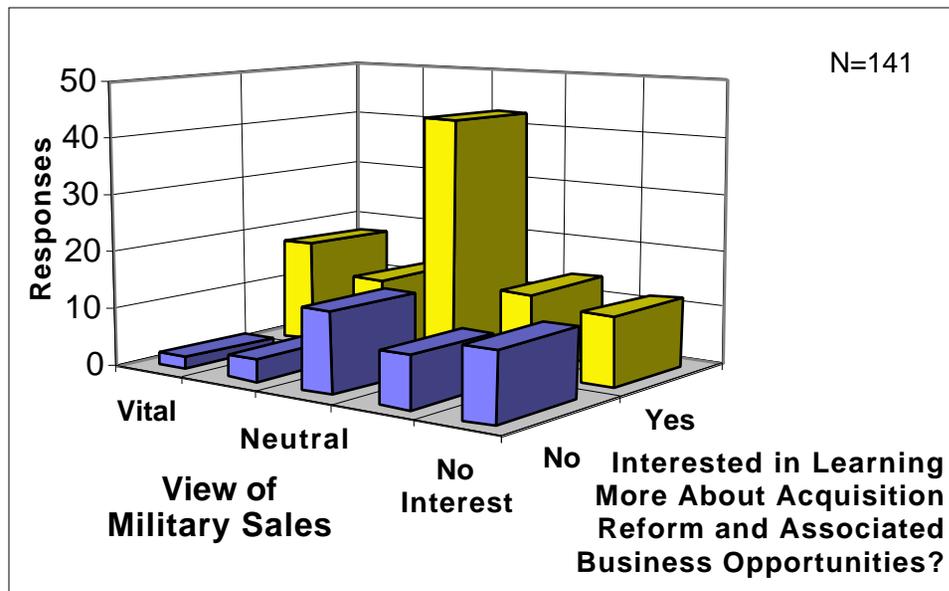
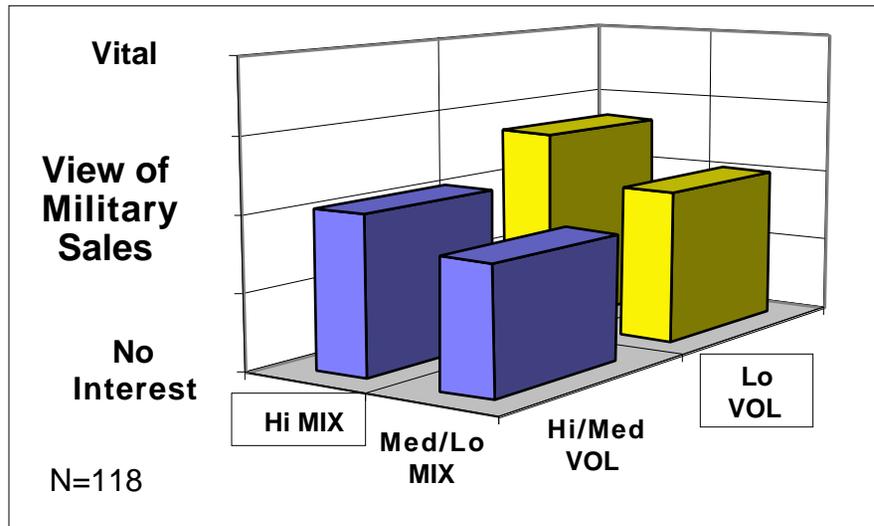
- **Sample contains a diverse array of firms:**
  - generally smaller, single facility entities with a few large firms
  - primary sales in commercial sector
  - mostly commercial, with some experience with military sales
  - demographics similar to previous IPC industry surveys with more response from smaller firms (<\$25M sales)

# Which Firms Are Interested in Military Sales?



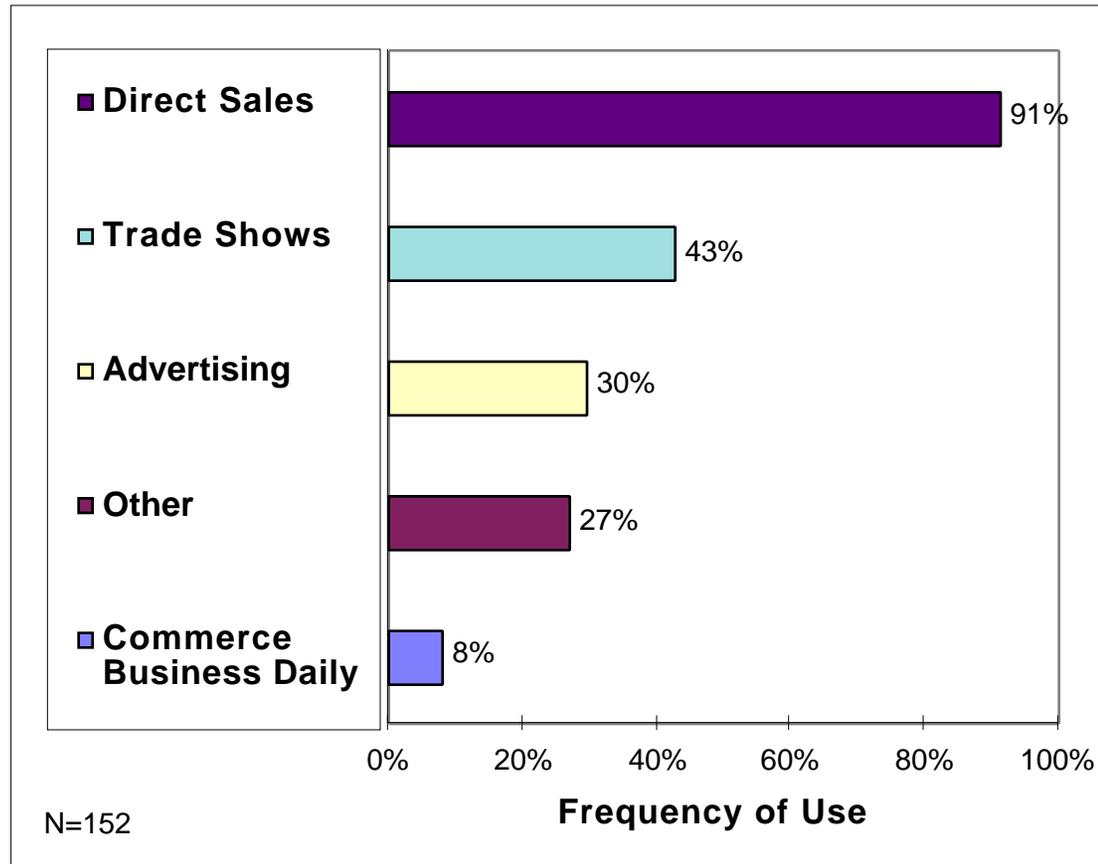
**Firms that primarily serve the commercial sector tend to view military sales with less interest**

# Potential for Military Sales by Commercial Suppliers



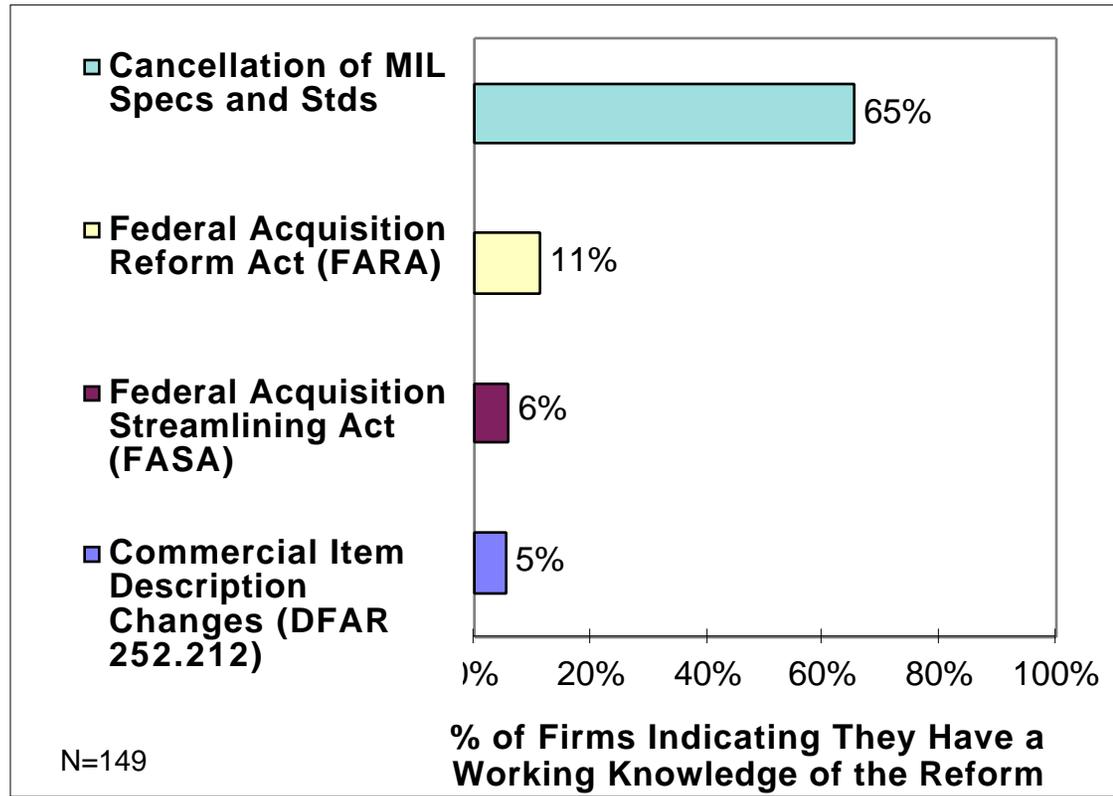
- **Indications are positive for leveraging the commercial supplier base:**
  - Firms specializing in low volume production are relatively more interested in military business
    - good fit with smaller military lot sizes
  - More firms than not (in all categories) expressed interest in expanding business through military sales
    - “show me” attitude

# Sources of Knowledge of New Business Opportunities



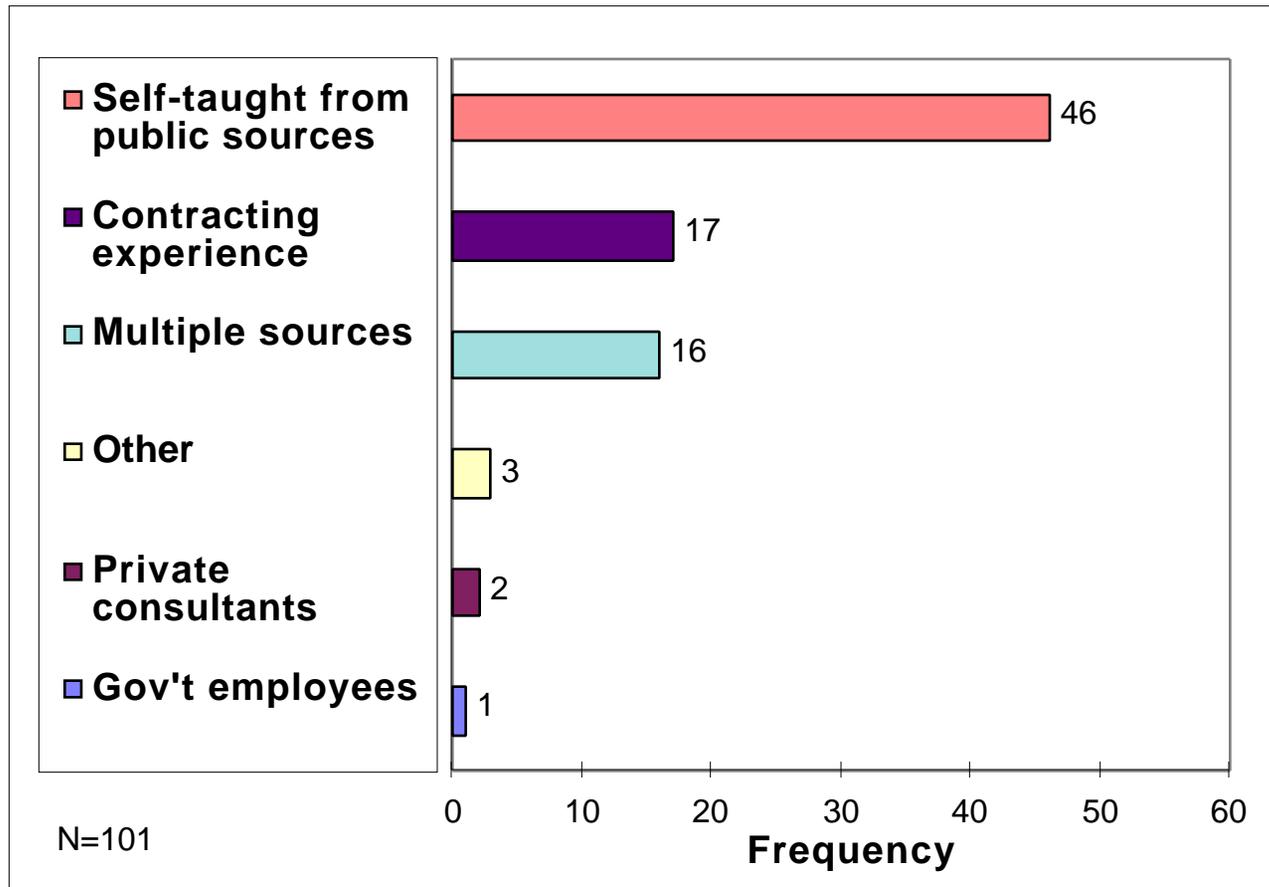
- **Traditional media channel for government business announcements not typically consulted by EMS firms**
  - No difference in sources used by firms with varying levels of interest in military sales

# Knowledge of Acquisition Reforms



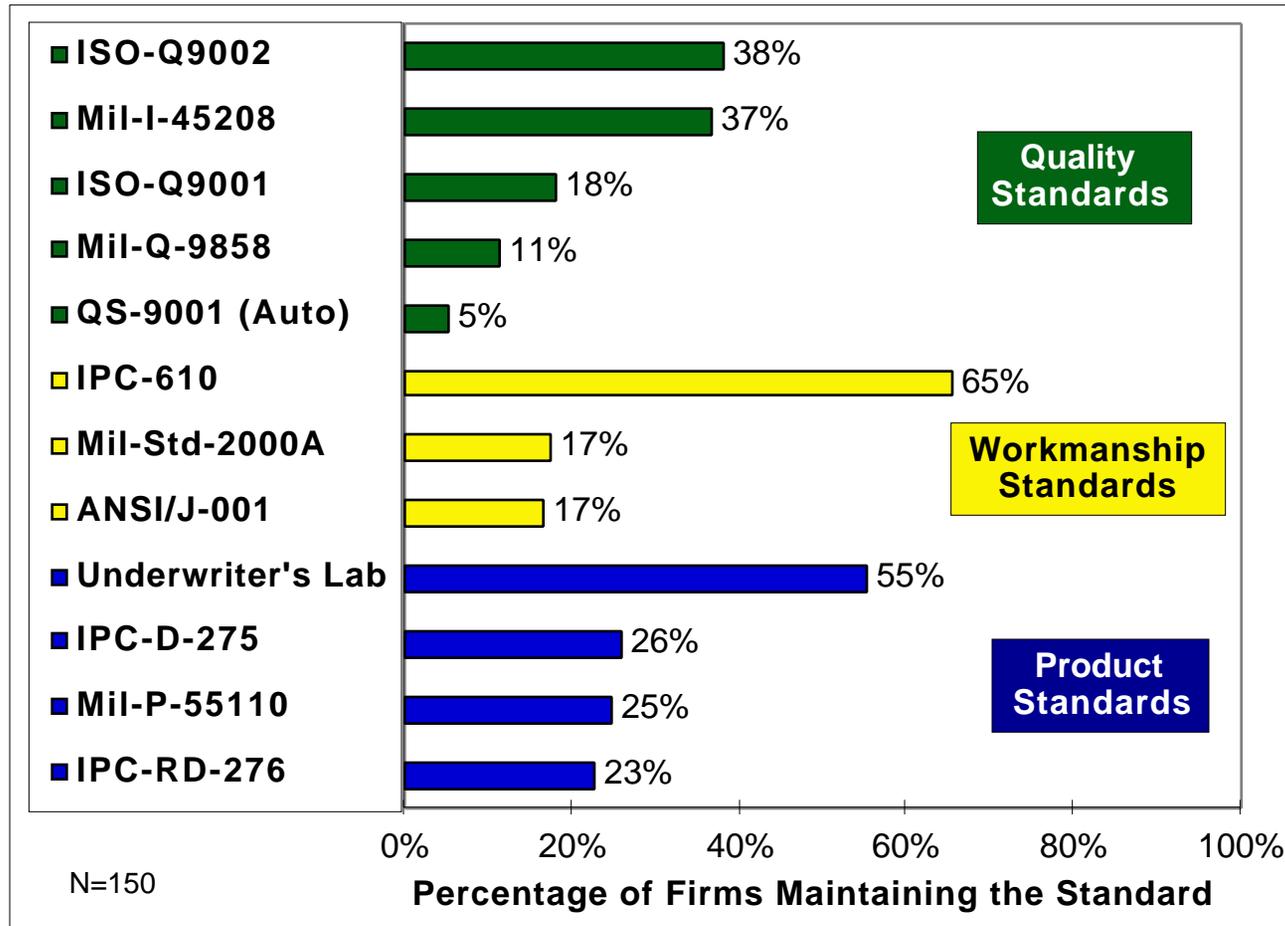
- Knowledge of reforms that are key to the accomplishment of civil/military integration is still lacking
  - only 14.5% of firms indicated they had a working knowledge of reforms—primarily firms that have higher levels of military sales
  - little knowledge of commercial item description changes evident

# Sources of Acquisition Reform Knowledge



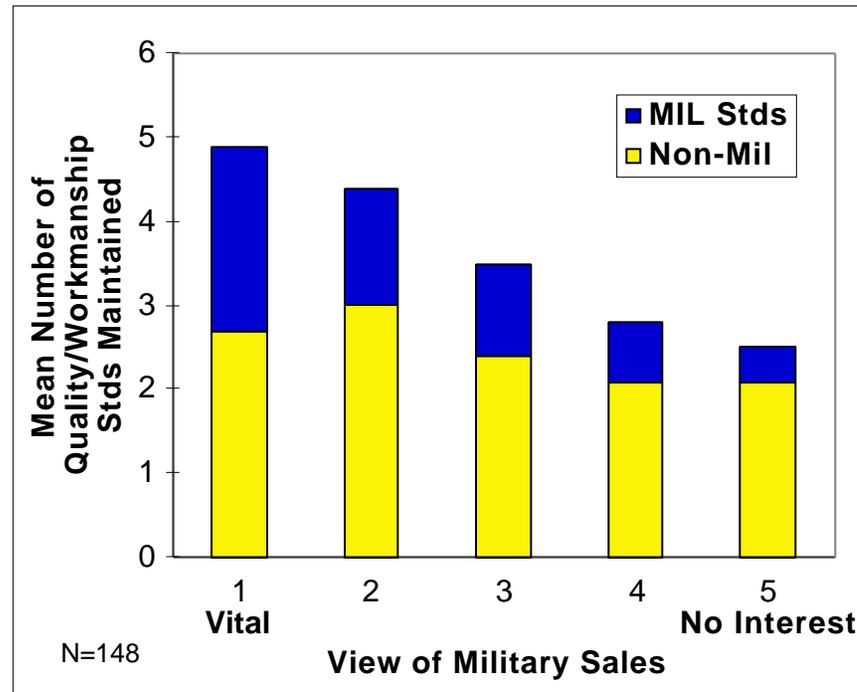
- Sources mirror findings of previous SPO research:
  - reform knowledge comes primarily from self-education and learning-by-doing

# Prevailing Quality or Workmanship Standards



- **EMS firms maintain a diverse array of standards**
  - some have previously been declared obsolete
  - **Single Process Initiative available to relieve them from existing contracts**

# Military Sales Still Means More Unique Standards?



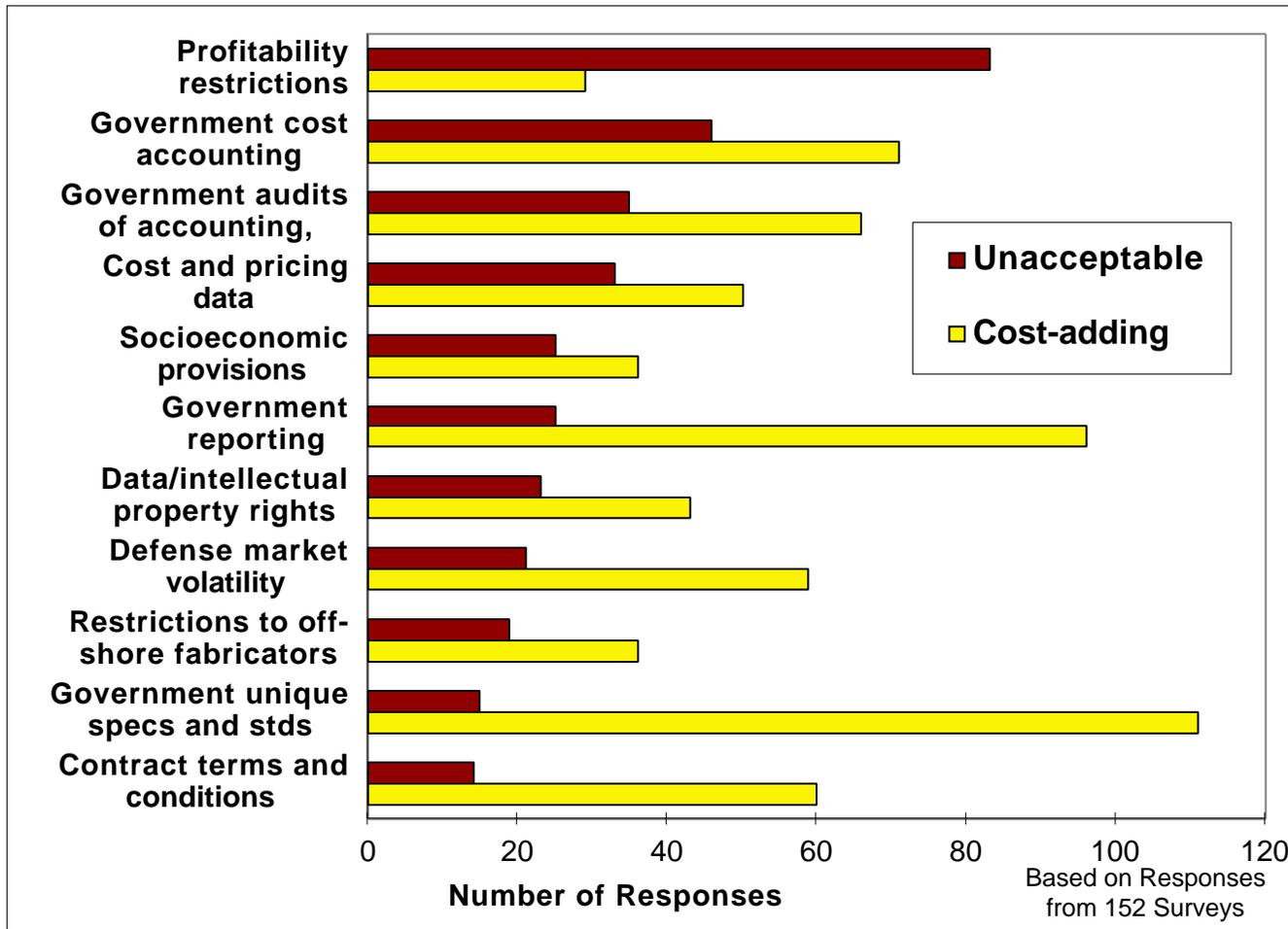
- Firms that rated military sales as more important were also more likely to maintain the following standards:
  - Quality: Mil-Q-9858, Mil-I-45208
  - Workmanship: Mil-Std-2000A
  - Product: Mil-P-55110, IPC-D-275, & IPC-RD-276
  - Mil-Q-9858, Mil-Std-2000A, & Mil-P-55110 all appear frequently in SPI process change proposals



# Related Single Process Initiative (SPI) Activities

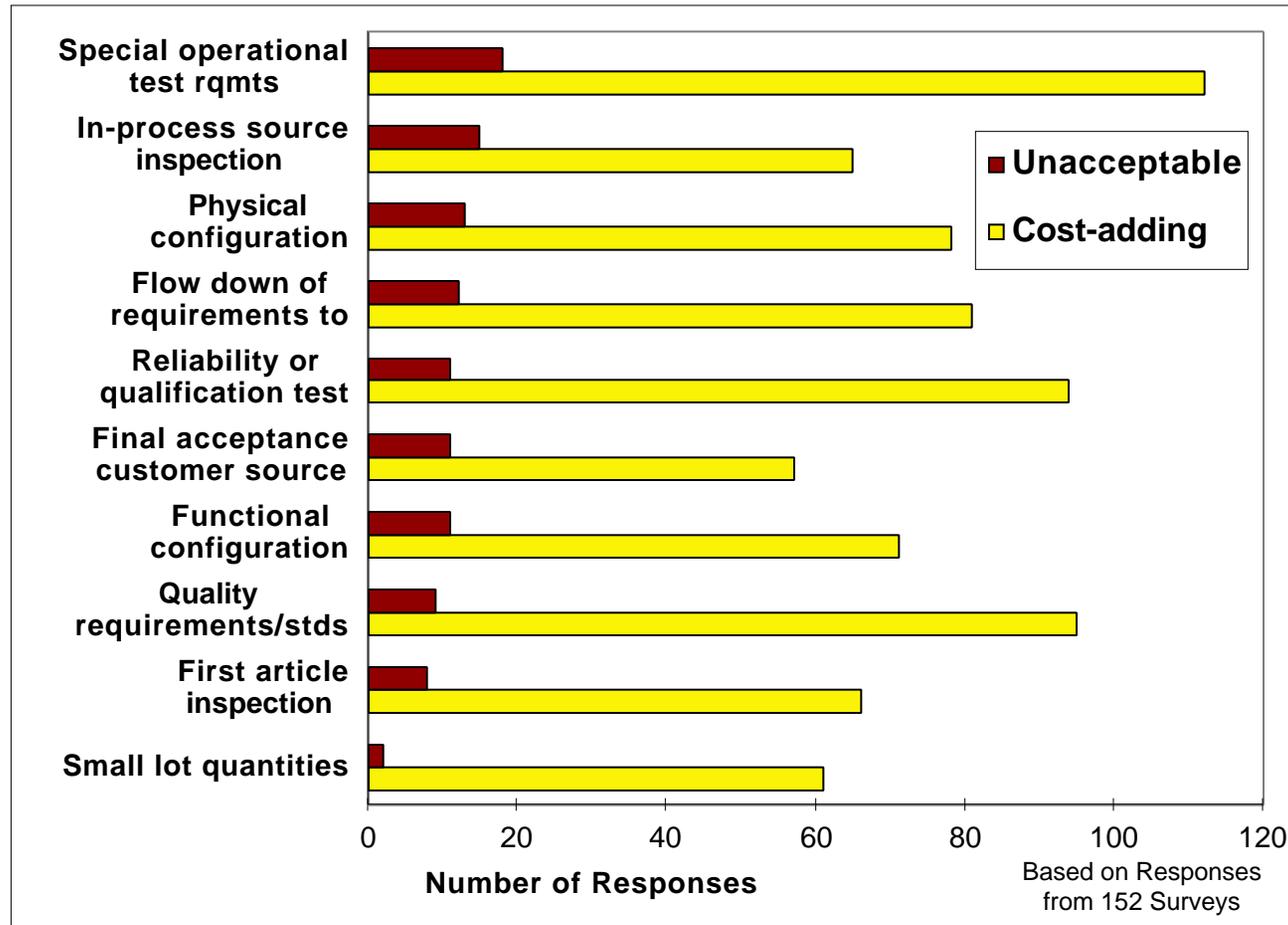
- **SPI results (from Nov 1997 SPI database)**
  - 1163 proposals → 685 process changes implemented → 258 changes with cost savings to government customer
  - Of 685 SPI changes implemented:
    - Mil-Q-9858A occurred in 112 cases (16%)
    - Mil-I-45208 occurred in 73 cases (11%)
    - Mil-Std-2000A occurred in 27 cases—16 additional cases involving Mil-Std-2000 (6%)
    - Mil-P-55110 occurred in 10 cases (1.5%)
- **Cost avoidance by selected process groupings:**
  - printed wiring board (PWB) manufacturing—\$1.9M
    - 5 firms changed from Mil-P-55110 to commercial standards
  - quality assurance (QA) system—\$13.8M
    - 12 firms changed from Mil-Q-9858A to commercial standards
  - soldering—\$9.4M
    - 10 firms changed from Mil-Std-2000 or Mil-Std-454 to commercial standards

# “Contractual” Inhibitors to Possible Military Sales



- **Commercial EMS firms find manipulations of the normal functioning of the marketplace unacceptable**

# “Technical” Inhibitors to Possible Military Sales



- EMS firms used to meeting customer needs (for a price)
- Technical inhibitors much lower magnitude than contractual inhibitors



## Summary

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- **Many commercial EMS firms appear to be a good fit with current acquisition reform goals**
  - interested in expanding business
  - are experienced with low volume/high mix production
- **But, barriers remain to be overcome**
  - those firms availing themselves of the benefits of acquisition reforms are largely self-taught
  - existing communications channels for government contract announcements are infrequently consulted by EMS firms
  - firms interested/engaged in military sales still maintain more quality/workmanship standards than fully commercial counterparts
  - commercial EMS firms have low tolerance for “unreformed” practices associates with military contracting



# Implications

- **Communication and use of acquisition reforms**
  - is there a government role to communicate and encourage use of reforms to lower tiers of supply web?
- **The role of standards**
  - are “commercial” standards sufficiently detailed to replace Mil specs and stds in all cases?
  - has the cancellation of many Mil specs and stds had a positive, neutral, or negative effect on the diversity of standards at lower tiers in the value chain?
    - i.e., do downstream industrial customers always observe predominant supplier sector standards?
  - who in the value chain develops and maintains standards with the government exiting that role?