

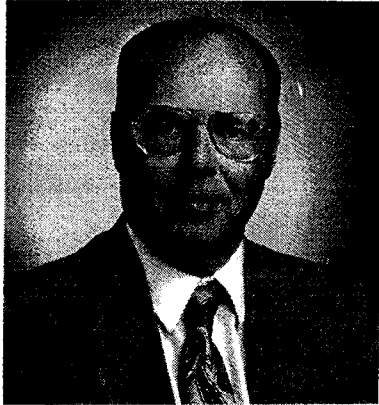
# IMPLEMENTATION OF SPECIFICATIONS STANDARDS AND ACQUISITION REFORM (SSAR) THROUGH VALUE ENGINEERING

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and

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Giuseppe Sgroi, is Value Management Program Manager and is responsible for Value Engineering (VE), Operation and Support Cost Reduction, Modernization through Spares and Technology Insertion Programs at the U.S. Army Communication Electronics Command (CECOM). He received a BE in Industrial Engineering from Pratt Institute, NY. Giuseppe is a Certified Value Specialist and received his certification from the Society of American Value Engineers on June 1994. Giuseppe has facilitated numerous successful workshops, at CECOM, using the VE methodology. He has published several technical papers on a variety of VE subjects. Giuseppe was presented with the U.S. Army Materiel Command VE Professional award for 1992 and 1993.

## ABSTRACT

This paper will focus on the Army's Acquisition Reform initiatives and specifically at the Specifications and Standards Reform that have been directed by DA. The key metrics include cost, improved efficiency, the widest possible use of commercial/non-development item (NDI) products and technology transfer. It will highlight some specific program examples where the application of value engineering methodology and incentives can provide major life cycle cost and system performance

benefits that assure the highest quality improved products are provided to the warfighter.

## INTRODUCTION

Throughout the early 90's the Department of Defense (DOD) has faced a continuum of budget constraints and prioritizations that have limited the services ability to fund key acquisitions as well as science and technology programs. Figure 1 identifies this trend through the mid 90's. With cost being a key driver, and considering future warfighter

needs as we proceed into the 21ST century, it became apparent that services would have to look to new ways of doing business across a wide spectrum of mission areas. In response to this issue the Secretary of Defense, in a memo dated 29 June 94, directed major changes towards Acquisition Reform (AR). In response to this memo the Department of the Army (DA) staff has prepared an implementation plan titled "Army Implementation Plan, Blue Print for Change: Towards a National Production Base".

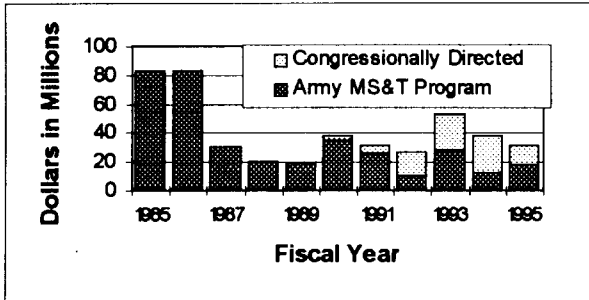


Figure 1

ARMY PERFORMANCE BASED ACQUISITION PROCESSES

Whether we are talking contract statements of work, or actual specifications, the definition of performance based requirement can be simply stated as a compilation of all quantifiable characteristics that define what the end customer requires to meet his mission need. Performance based requirements state the need in terms of the required results with criteria for verifying compliance, but without stating the methods (manufacturing or materials processes) required to achieve the end result. The methodology is passing more of the responsibility for product performance to industry. Government oversight and associated cost is reduced while minimizing total risk to the customer. The industrial base benefits from the elimination of cost of sometimes overwhelming government oversight, as well as from the capability to innovately manage their materials and manufacturing processes consistent with their commercial product lines.

To achieve acquisition reform via reformation of the military specifications and standards employed in the procurement process, substantial changes will be required across the Army's acquisition and logistics communities. To buy smarter, a number of thrusts have been implemented that have demonstrated

significant payoffs. Adoption of the open system architecture (OSA) approach brings commercially available, widely accepted standard products from multiple vendors into the weapon systems world. Horizontal technology integration (HTI) applies common enabling technologies across multiple system platforms that result in increases in force capability. Benefits are reduced acquisition costs through economy of scale life cycle cost savings and a focused technology base that precludes duplication of effort. HTI applications have also been employed in software functionalities and have been demonstrated in software reuse efforts.

Implementation of the specifications/standards acquisition reform will enable the Command, Control, Communications, Computer, Intelligence, Electronic Warfare and Sensor (C4IEWS) team to maintain technological superiority and be able to respond to the demands of the future. Our customers, the soldiers, must be supplied with rapidly acquired state-of-the-art products and technology from reliable suppliers.

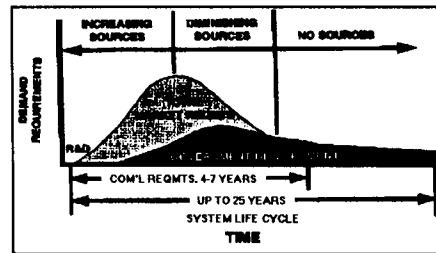


Figure 2

MILITARY VS COMMERCIAL MARKET DRIVERS

To better understand why the Army is so interested in exploiting the commercial market place one needs to compare the acquisition/product life cycle for commercial vs. military parts and products they support. Figure 2 describes the comparison for the traditional military vs. commercial electronic product line. The example is just the average. If we look at the extremes in the commercial market place, the computer, computer software, cell phone/pcs product lines have life expectancies measured in months not years. This market place has been driven by consumer pressure for more of the same. Cost on these products has continually reduced while product functionality has improved by many orders of magnitude in just a few years. The Army has now

put a lot of emphasis on integrating these commercially driven technologies into products for the warfighter. One way this is being accomplished through technology upgrades of systems and their component parts. To be successful the Army must acquire and logistically support these systems in the same manner as the commercial products are supported. The program examples described in the paper will highlight the savings and other program benefits that are becoming a reality as the acquisition reform program is executed.

INDUSTRIAL PARTNERSHIP KEY TO TEAM  
C4IEWS STRATEGIC PLANNING

Industry is strongly encouraged to suggest how, by working together, we can improve and reduce the cost of military electronic equipment. The link to industry must occur through the wide use of multidisciplined teams and partnerships that are mentored by technical/professional societies, which are now commonplace. Proposal teaming by the industrial base must become the norm rather than the exception. The principles of acquisition reform must be executed through the use of Integrated Product and Process Development/Management and by the Integrated Product Teams (IPT). The bottom line is that industry is taking on more responsibility. Government oversight is being reduced to a level consistent with what is required to assure that the warfighter is provided with quality products, on time, and within budget and mission needs. The business opportunities for industry are primarily developed as programs within IPTs. They include training the cultural change in an IPT environment, mentorship projects that focus on "thinking out of box" and continued development or enhancements of the performance based environment. Other programs (i.e. Operation and Support Cost Reduction, Modernization through Spares, Savings through Value Enhancements, Technology Insertion and Value Engineering (VE)) are being linked under the Value Management umbrella, as part of CECOM's commitment to executing an aggressive SSAR Program. These initiatives offer significant business opportunity for the Industrial Base through the incentives that the VE program offers to the producers of products that warfighters need to win wars.

VALUE MANAGEMENT, A NEW WAY OF  
DOING BUSINESS

OLD WORLD

Since VE was first introduced in the U.S. Army, 40 years ago, the majority of the VE changes have been submitted during the production phase of a program. This has led to the belief that VE should only be used during the production phase of a program or contract. This belief was created and perpetuated by the interpretation of the Federal Acquisition Regulation (FAR) VE clause 52.248-1. For a proposal to qualify as a VECP the FAR states: ... a VECP means a proposal that:

*(1) Requires a change to this, the instant contract, to implement: and*

The requirement basically states that it must change the contract and the easiest way to show that you are changing a contract is by changing the government controlled configuration managed, functional baseline. A functional baseline is a firm definition of design criteria and objectives that cannot be changed except through a formal change procedure.

NEW WORLD

Acquisition reform has changed the way the government does business with industry, no longer is the government imposing Mil Specs on items that we are buying, we are now using performance specs. In simple terms, we are no longer telling contractor how to build items we are now telling them what we need, it is up to the contractor to provide it. The use of performance specs has created a dilemma for both government and contractors, in the old environment we established a configuration baseline. In the current environment the establishment of a baseline is questionable. Based on the VE history most VECPs were submitted when a baseline existed, it would seem that the lack of a baseline would diminish contractor participation in the VE program. Currently most of the DoD activities are experiencing a decline in the number of VECPs being submitted.

The time is right for the VE program to change the perception that VE can only be used during the production phase of a contract and take advantage of the Acquisition Reform "environment" to institutionalize the use of the VE methodology during the definition of requirements and the Research and Development phase of a program. In order to prove the applicability of VE in a performance based environment the CECOM Value

Management Office(VMO) has teamed up with the CECOM Specification and Standards Acquisition Reform Team to identify potential workshop candidates. The VMO has recently held five VE workshops and is planning to hold an additional ten workshops in 1997. The VE workshops concentrated on; establishment of the requirements for the performance specifications, converting and analyzing military specifications or program peculiar specifications and analyzed previously converted specifications which were used in recent procurements.

The VE workshops are one week long and use the equipment IPT, the contractor who is/will/has worked on that particular piece of equipment and the user of the equipment. The workshops are facilitated by a Certified Value Specialist (CVS). By combining the government, contractors and users, we ensure success by maximizing the team creativity, establishing a "true" partnership between gov't and contractors. The workshop stimulates "Out of the Box Thinking" and creates IPT mentorships. A mentorship develops a project leader, funding source for the VE proposal and insures successful implementation of proposals. The following are the results of recently held workshops:

#### H250 HANDSET

As a result of using the Function Analysis System Technique (FAST) diagrams, the workshop teams were able to identify a methodology for converting the H-250 Specification to a performance based requirements document. The fundamental concept was the recognition that the Requirements portion of the document was the responsibility of the government/user, and Verification was to be the responsibility of the contractor providing flexibility to him for best value proposal.

The process used in this VE workshop would be the prototype for future VE workshops. The methodology of segregating the Definition and Conformance parts of the Performance Based Specification and assigning the responsibility for the conformance part to the contractor can be used for all future Acquisition Reform efforts where the objective is reduction of spec size while also achieving improved communication and better value.

The following lists the major results and recommendations of the VE workshop teams.

1. The original Mil Spec was restricting contractors creativity.
2. Original Mil Spec was converted to a draft Performance Spec as part of SSAR spec conversion. The VE workshop team used the converted draft performance spec and Mil spec as reference documents.
3. The team rewrote handset specs to combine Requirements and Verification Paragraphs of document into a new Requirements.
4. Revised Verification section of specification to make contractor responsible for verification. The contractor is to submit his verification plan with his proposal response to Request For Proposal/Quote. Government will review and modify as required, and after agreement with the contractor, approve the verification plan which then becomes part of the contract.
5. Included interface requirements in specifications and added handset dimension requirements schematic for reference.
6. Identified the cable as the major cost driver (55%) of the H-250 handset.
7. Recommended making the H-250 a Qualified Parts List (QPL), which would eliminate government test requirements.
8. Contractor will be submitting several VECs to change current production and reduce the unit cost by approximately five dollars.

#### FIREFINDER RADAR SYSTEMS

Two recent workshops were held on the FIREFINDER system. The first concentrated on the TPQ36(V)9 and 37(V)3 and (V)4 Legacy systems and the second one on the 36(V)8 Electronic Upgrade. Both workshops questioned specification requirements, maintaining or improving system performance and lastly look at reducing production and life cycle costs.

The first workshop resulted in the contractor recommending the evaluation of the performance specification on the system operating temperature requirement. Although a performance specification existed on these systems, the government was still

using the Military specification for the temperature requirement, therefore maintaining the use of military components, instead of cheaper commercial equivalents. In addition the contractor submitted 33 candidate proposals which would enhance the system performance and reduce costs. Currently the government is reviewing for possible submittals as VECPs.

The second workshop looked at the 36(V)8 which was the electronic enhancements of the legacy FIREFINDER systems. Here too the contractor and government teamed up and identified several areas of improvements. Three potential VECPs were identified, potential savings would exceed \$1.2 Million.

#### GYROS (DISPLACEMENT AND DIRECTIONAL)

The workshop was intended to address the outdated technology problem of the directional and displacement gyroscopes currently used on board Army rotary wing aircrafts, and determine replacement technology that may be available. The workshop created a partnership between Team C4IEWS, PM BLACKHAWK, six gyro manufacturers (Litton, Honeywell, BF Goodrich, Naras Aviation, Flightline, & Allied Signal) and two rotary wing airframe builders (Boeing & Sikorsky) participated.

The workshop members were divided into two teams, one looking at plans for sustainment of the current gyros and the other addressed the future replacement of assets while retaining form, fit and function. For each study, Industry representatives provided valuable input/ recommendations. For the current gyro overhaul and repair programs, it was recommended that the MIL SPEC requirements, written in the 1960's, be replaced by existing commercial specifications such as the ones FAA uses. A change to commercial specifications will enable these programs to utilize the latest available technologies. These changes will permit greater MTBF on units, and greater accessibility of repair parts for the contractors. Recommendations for future gyro replacements with current technology will focus on the use of commercially available units to replace the 1960's vintage gyros. A total of 16 ideas (14 from team one and two from team two) which could yield significant savings to the government by improving the performance, maintainability, reliability and interchangeability of the gyros.

Team C4IEWS has established a gyro mentorship program and will take the initiative to follow up on the recommendations for improvements and implementation to the current repair program. The long term goal, replacing the vintage design with state of the art technology, will be coordinated with the associated aircraft PMs.

The results of the workshops is encouraging , the workshops provided the synergy for the government, contractor and users to become partners/team in the mutual development of a function oriented performance specs while enhancing the overall system and reducing production and life cycle costs. This was a WIN- WIN effort for both the government and the contractor and will ensure that the VE methodology will be used during the contract definition phase of a program.

#### AN/PPS-5 A MENTORSHIP PROGRAM

The AN/PPS-5 is one of a number of pilot/mentor programs now being funded under the acquisition reform initiatives seed money. The program is focused on exploiting the latest computer and digital signal processing (DSP) communications technology to extend the life of a currently fielded but obsolete product. The cost of this project will be lower than the original cost to develop the base product . More importantly we will be providing the soldier with the latest state of the art digital sensing capability that far surpasses the performance of the currently fielded system. The obsolescence issue will be a problem of the past since replacement parts will be provided through a continuous series of upgrades that will track current technology derived from the commercial market place. The logistics cost is attacked on several fronts. The vision will become a reality on this program.

#### AN/PPS-5 PROGRAM USES A NUMBER OF INITIATIVES

In addition to the VE program, the PPS-5 utilized the OSCAR program to obtain the necessary funds to add to the SSAR redesign effort and development of a prototype. Through the use of DSP and an aggressive acquisition program we could provide cost savings for the Army as well as meet the needs of the soldier today and in the future. The cost savings are best demonstrated by the insertion of new technology which reduced the cost and quantity(from over150 to 10 or less) of spares. The

