THE NEXT STEP . . .

EMERGING ISSUES AND IMPLICATIONS FOR PROGRAM MANAGEMENT IN THE ACQUISITION OF TRAINING SYSTEMS IN THE AIR FORCE

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ABSTRACT

The evolution of major training acquisition organizations from a device/equipment focus to a total systems emphasis is more than a reflection of the growing concern for more accuracy, timeliness and economy on the part of both using organizations and program managers. It is a far more basic statement of policy and philosophy that recognizes that training should be an integral and primary function of all military activity and cannot be separated into component parts (i.e., initial, mission, continuation) without the whole becoming significantly less than the sum of its parts. While this systems integration requirement will affect the user and technical arenas in many profound ways, the real challenge to the success of acquiring accurately configured, timely, cost effective and objectively based total training systems lies in the ability of management to direct, control, measure and coordinate each element and resource to its maximum benefit to the system.

It has been stated on more than one occasion that the Army's job is to 'equip the man' while that of the Air Force is to 'man the equipment'. Using the change in focus from equipment to systems, it appears that these two quips might be modified to 'equip and prepare the available human resources to maximize his or her ability to do the mission'. This description contains many provocative concepts and implications but as a minimum suggests that management focus must evolve from simple training tasks and devices definition to a total responsibility for the integration of the man's or woman's entire education and training throughout their military exposure. This tasking and/or responsibility takes on special criticality when considering the following:

A. Demographics suggests that manpower availability and quality may be significantly lower in the not too distant future. Since existing and near future systems have been designed and implemented around a sufficient number of highly qualified (mostly male) personnel, the impact that lower numbers and lower qualification level may have on mission readiness is potentially profound.

B. The Air Force is currently utilizing an available manpower pool of over 1,138,000 personnel to accomplish its mission worldwide. One of the requirements of acquiring a new weapon system must be insuring that available manpower is present to support the new system and that every person assigned is used to his or her maximum potential and benefit to the Air Force. Using a task or device concept in training requirement definition negates consideration of this responsibility. Assumption of responsibility for total system acquisition requires managers to account for all MPT issues on a life cycle cost basis.

C. As high technology continues to provide new and more capable weapon systems to the Air Force, current methods of specifying and acquiring training are becoming more and more suspect. With major issues such as contractor vs. 'blue suit' training and specialist vs. generalist force structures, questions on the ability of the task and skill oriented ISD process' ability to support training system specification and statement-of-work requirements have arisen.

D. Program managers, facing the new requirements of training system acquisition, are now required to have a whole new set of skills, knowledges and perspectives available for decision making. How many such managers are qualified and equipped to integrate MPT issues, high technology advances in both the weapon system and the training arenas, research and development activity and mission and operational requirements with the complex and demanding requirements of the acquisition process?

This paper is intended to address these issues with particular emphasis on the program manager and his relationship with industry. This emphasis is especially appropriate because of industry desire to provide totally supported weapon systems and because of the fact that industry will continue to be the major source of training system acquisition support for the

Air Force. The paper will define the evolving issues in training systems acquisition, define the current tools and methodologies which are currently being implemented, and propose several initiatives and requirements which must be achieved if program managers of the future are going to be able to realize the total benefit a training system concept has to offer.

INTRODUCTION

The Training Equipment Acquisition Organization was directed to acquire a weapon system trainer for a new weapon system whose mission was tactical support. Working closely with weapon system experts from existing systems, a shopping list of desired configuration requirements including a daylight wide field of view tactical visual (requiring a full Research and Development effort), four crew stations, and a real world fidelity requirement was defined.

Several years and tens of millions dollars later, the Air Force and industry had produced one of the finest technical training devices ever produced. The full motion, fully visually supported weapon system trainer met all design requirements, contained a capability to simulate over 5,000 faults, provided full mission simulation capability to all four crew positions simultaneously and interactively and was available for full training activity over 98% of the time. The total technical complexity and capability of the device exceeded any other previous industry simulation effort. The program manager and his acquisition team accomplished their task to their fullest capability and within allocated resources.

Unfortunately, the weapon system trainer failed to support the users training requirement at the time of Initial Operating Capability. The simulator itself was ready almost one year after the aircraft became operationally ready necessitating costly Type I training support. Due to the R and D required for the visual system it wasn't ready until an additional eighteen months later necessitating the removal of the device from the mission certification process. When in either the tactical mode or the systems training mode, two or three of the crew members had to sit idly by while specific crewmember training objectives were accomplished. Less than one percent of the defined and available fault capability was incorporated into the device syllabus. There was no supplementary courseware, part task trainers or training support available so that the device had to be used for almost all mediated ground based training activity.

External to the device, there were other problems associated with the training program. The device's Instructor Operator Station was so complex that it required a full time operator. The using command did not realize this requirement until after device installation and no manpower resources were available. Indeed, a manpower shortage necessitated the conversion of training device maintenance to contracted support negating much of the acquired technical documentation. Immediately after the installation of the visual system, an earlier Engineering Change Order for the weapon system was finally funded for the training device and the device was shut down for several months to accomplish the needed modification.

After some internal analysis, the user of the device discovered that these limitations and detractors plus a lack of management, scheduling and integration expertise had reduced the potential effectiveness of the training device to only 10 or 15% of the potential capability it would have had if it had been designed, configured, developed and acquired as an integral part of a total training system.

While this case study is a composite of many experiences in the training device acquisition arena, it encapsulates many of the reasons that organizations throughout the services and industry are currently working toward instituting training system approaches to the acquisition of training and training equipment. This thrust seems to be centering around three basic activities. First, is an effort to gain more control over the factors which affect the acquisition process and support of a training device. In addition to the traditional program management responsibilities of performance, schedule and cost; reliability, maintainability, supportability, safety, competitiveness and quality assurance have been added as Program Management areas of responsibility. The second activity centers around the idea of stringing together different devices or technologies to produce a training system concept which attempts to train students to full qualification levels requiring a wide spectrum of knowledges and skills. The third activity is the acquisition of fully trained crewmembers from industry. This concept has gained wide acceptance in those training arenas where the airline experience can be exploited and a common military/industry standard of performance can be quanitified and agreed upon. While each of these activities or thrusts has valuable merit and is needed to improve the quality of training in the military, this paper will suggest that these thrusts in and of themselves do not constitute the real issues and impacts of a total systems approach to training. Nor do they realize the benefits that supporters of systems approaches to training have long campaigned and worked so hard to realize.

THE REAL ISSUES AND IMPLICATIONS OF A SYSTEMS APPROACH TO TRAINING ACQUISITION MUST BE TOTALLY CENTERED ON THE PERCEPTIONS NEEDED TO ACCEPT TOTAL RESPONSIBILITY FOR THE TOTAL TRAINING TASK ITSELF RATHER THAN ON A SOLE RESPONSIBILITY FOR ACQUIRING JUST THE EQUIPMENT AND TECHNOLOGY.

Primarily, the question is one of what is the perceived role of training in the Air Force, in the acquisition community and in the Weapon Systems Acquisition Process? The answer is deeply rooted in the perception of whether the acquisition community equips the man or

simply provides the equipment for the man to operate. The history of American warfare and even the more recent Air Force warfare experience is based heavily on having superior equipment and logistics support. However, the real success stories attached to this history almost invariably include the warrior using degraded or minimal equipment to achieve overwhelming success under the most unplanned for and stressful conditions possible. Ultimately, the role and mission of all military organizations is strictly dependent on the individual warrior and his individual spirit, expertise, and ability to adjust as needed to contribute to the success of the whole. Unless he or she is born that way, this means training.

> THEREFORE THE CRITICAL RESPONSIBILITY OF ALL MILITARY ACTIVITY IS TO PREPARE THE WARRIOR TO WAGE THE FIGHT BETTER THAN HIS OPPONENT. TRAINING IS THE SINGLE MOST CRITICAL ELEMENT IN ACHIEVING THIS OBJECTIVE AND ONLY THROUGH A TOTAL TRAINING SYSTEM PERSPECTIVE CAN THE BEST POSSIBLE PREPARATION AND RESULT BE ASSURED.

Therefore, it becomes imperative that any participation in the process of preparing the individual to accomplish his mission must have a perspective which fully supports the individual wherever he or she has a responsible portion of the mission. Whatever the objective of the proposed acquisition (from a full mission or system capability to the minor modification of an existing capability), it is this perspective which must be in hand before a real systems approach to training acquisition can be established.

The question which must be addressed first is the role of technology in this training perspective. There is a fundamental disconnect between the warrior and the technologist. The warrior is primarily interested in accomplishing a mission under the most desparate of conditions and surviving. The technologist is primarily interested in bending technology to his own will. The technologist usually has little or no deep insight into the psychology, motivation or spirit of the warrior. The technologist tries to obtain descriptions of mission requirements in concrete measurable parameters and then apply technology to the enhancement of the warrior's mission. The problem is in the language that is used and in the fact that most warrior 'experts' are not equipped to describe the battlefield future technology will define. Therefore, the question becomes one of whether or not technology is proactive or reactive. Do we apply a technology to a perceived task because we have the technology or because it is uniquely suited to mission enhancement? The answer lies within the perspectives of both warrior and technologist communities and how those perspectives are used to create the dialog of the performance task definition process which drives the definition of training requirements and the proper application of technology to support those requirements.

Currently, there is evidence to indicate that technology has outstripped the warrior's ability to operate, maintain and support it to its maximum capability on the battlefield. In addition, many technologies have the capability to drive human performance requirements beyond established limits as is the case in 'G' loading and integrated avionics data creation capabilities. It also seems that training and human factors research and development has likewise fallen behind the quickening pace of technology and threatened the warriors effectiveness on the battlefield as a result. It is time to recognize that the training versus technology relationship must parallel each other because each is equally vital to the success of the warrior. Therefore, when the term training perspective is used throughout the remainder of this paper, it is intended to provide the understanding needed to achieve this equality.

THE TRAINING PERSPECTIVE REQUIREMENT

This warrior/technologist training perspective is comprised of five elements, each of which is critically important to establishing the fully supported total training system, be it an entirely new weapon system training effort or simply the update of an existing one. (It is important to note that perspective does not necessarily imply responsibility for the accomplishment of the following elements. Perspective is the ability to consider the element and its implications in the context of the whole and to make decisions within the area of responsibility based on that whole.)

1. Each military organization is part of the United States military system, an interactive, interrelated and interdependent series of elements charged with the total defense of the country. Each of these elements has a role to play within the system (mission) and is allocated resources based on that mission. Thus each person and job in the military is an integral part of a total force structure which must be constantly analyzed and iteratively adjusted to maximize the benefit of that job and person. This force structure must be flexible to the perceived threat, the available resources, trends in technology and capability, and to the policies of a politically sensitive government. At this level, interservice relationships and mutual support requirements must also be determined. Significant amounts of training critical decision making and information is contained within the "big picture" which is often missed or ommitted from the training development process simply because of the perception that these elements do not apply or will be accounted for someplace else. How many training programs today:

a. provide regular joint interservice training to common mission objectives?

b. provide real full mission qualification by measuring performance required in a battle arena?

c. provide the real threat environment and enemy strategic and tactical objectives along with friendly (NATO?) support

activity?

d. provide the real threat environment and a degraded equipment performance requirement?

e. provide all of the equipment and environmental conditions related to the real mission requirement? (deployed conditions, NBC suits, limited logistics support)

f. provide realistic communications, EW and ENP considerations?

g. provide future looks at threats, capabilities and needs?

2. Within each of the services and the Air Force are Manpower and Personnel organizations charged with responsibility for aggregate and system specific manpower and personnel policy, planning and support. Aggregate responsible organizations are mainly concerned with MPT issues with an Air Force wide perspective while system specific organizations are responsible for issues associated with specific weapon systems. The manpower and personnel communities span the gap between the force structure perspective (manpower is mainly concerned with force structure, modeling, analysis and future requirements and strengths) and specific systems (personnel is mainly concerned with the identification of skills, job classification criteria, grade structure and selection requirements). The proper manpower and personnel perspective is essential to the training task because they are responsible for:

a. the availability of adequate quantities and quantities of personnel to operate, maintain and support new weapon systems and subsystems.
Currently the Army and Navy are developing intensive programs (Hardman and Manprint) to define future manpower requirements on new systems. However, no current capability exists which addresses current or future availability or alternatives (trade-offs) within existing systems.

b. the identification and dissemination of demographic information of future Air Force personnel. As the Air Force evolves into a much more demographically representative organization, the impacts and new requirements must be projected into the acquisition process. New programs requiring eight to ten years to field require sound baseline information on this information not only for the system design itself, but for the support of technical schools and existing programs which will provide inputs to the new system.

c. the management of each individual to achieve the maximum benefit to the Air Force throughout an active duty, reserve or guard career and beyond. This idea raises the question of training versus education again in a perspective of not only immediate needs but growth into future additional duties and responsibilities. The easiest training possible is to students who are already knowledgeable in the subject area and education is a means of developing those universal conceptual skills needed to transcend weapon systems, AFSCs and mission demands as the current Rivet Workforce Program envisions.

d. the identification of new skill requirements, job descriptions and task list modifications within an AFSC or skill level. Experience in a significant number of major weapon systems including the B-1B and E-3A AWACs programs suggests that the earlier identification of such problems will have significant life cycle benefit to the entire MPT system and to the user.

e. the measurement of human performance capability. While not a true responsibility of the MP community as such, this level of perspective is the proper point at which to suggest that as the complexity of the manpower, personnel and training task grows, the measurement task (placing each individual in the most beneficial space) offers some real future benefit in terms of better placing individuals with broader capabilities or who have potential if specialized developmental support is provided. This is also the position to suggest that little attention is currently being given to enhancing human performance capabilities to levels above the performance baselines of most system designers. Cognitive, affective and psychomotor behaviors and capabilities all seem to be open to innovative training enhancement study and research. For example improved 'G'force endurance, better visual skills, improved cognitive organizing and perception skills and team skills seem to be examples that would benefit specific system related training activity.

3. The third perspective is in the concept of the weapon system itself. Not only does a weapon system acquisition program require a specific focus of resources, technology and mission requirements but it also requires a careful analysis and integration of man's place (and especially the Air Force person's place) within the system. Specific considerations include:

a. Automation versus manpower. Acquisition costs can be significantly reduced by offloading tasks onto Air Force manpower during the operational life cycle of the weapon system. Each design decision in this area has a direct training, manpower requirements, life cycle cost and mission support implication for the Air Force. In addition, the availability of design decision making is often not enough for training analysts. Many times the rationale for such decision making is paramount to critical task identification and the structuring of training paths.

b. The analysis of jobs and tasks for the utilization of job aids to offset training requirements and high skill levels. Embedded training capability is an example of a problem which must be addressed. Weapon system configuration is usually a competitive activity and designs must be frozen well in advance of when training media/method decisions are made. How can proper training system configuration

decisions be made when the embedded aspects of the decision have already been made by the designer of the hardware? It is also currently difficult to determine manpower trade-offs in terms of how much of an investment is it worth to engineer the man out of the loop or to cost a man who the designer requires but the Air Force doesn't have?

c. Airframe manufacturers spend extensive efforts assessing human factors and designing systems which can be fully supported. However, little information normally reaches the training community, especially that data which leads to alternative/degraded/battle damaged scenarios. With the inclusion of fly-by-wire integrated avionics systems into most new aircraft systems the implications for operators, maintainers and mission supporters who must deal with more severely damaged but flyable airframes required in the conflict is extensive to the training community.

d. The weapon system cannot achieve Initial Operating Capability without an integrated training system which produces trained Air Force operators, maintainers and supporters in sufficient numbers and with sufficient skills needed to demonstrate mission capabilities. This means that training milestones must be integrated within the entire weapon system acquisition schedule and sufficient resources, data and management interface must be made available to insure concurrent success.

e. More and more airframe manufacturers see total system responsibility as a means of assuring full contract compliance and producing fully supported and mission effective weapons systems. This responsibility should include the total training system and could encompass all weapon system training activity into a single integrated effort. The management, scheduling, acquisition and coordinating advantages alone suggest significant savings across all training requirements. For instance, by using a concept of commonality in a total training system acquisition activity, significant cost savings might be found in:

(1) avoiding duplication of engineering effort.

(2) joint Front-End MPT Analysis.

(3) facilities.

(4) courseware.

(5) computers/software/ Training System Support Centers.

(6) joint use of training capability.

(7) inventory of spares.

(8) maintenance of the training system.

(9) management of ECP/ECOs.

(10) GFE/Prime Weapon System Contractor interface.

(11) analysis of alternative/ resource allocation.

(12) design influence.

f. While these opportunities address ideas for streamlining related training activities which are traditionally separated, the real opportunity within the weapon system perspective is the opportunity to transport weapon system elements directly to the training arena. This idea should be considered separately from the issue of GFE or simply the delivery of system components, including transportable software to the training manager. Within the early design process over 70% of life cycle cost decisions for the life of the system are being made. Why shouldn't the rationale, justification and data from those decisions find their way to the training system. Transportable software or embedded training are much more than bytes of information. They are technical and human factor strategies for the accomplishment of mission required tasks and capabilities. The same rationale and strategy must be reproduced within the training system. This suggests that the managerial relationship between the designer/manufacturer and the warrior should be one of participative management. This is a difficult concept to establish in a competitive environment but one which, according to best information, our potential enemies seem to have addressed.

g. Recognition that the weapon system is a living entity throughout its life cycle (requiring constant analysis and update) and so must be the total training system which supports it. Training and its implications and requirements must be an equal partner in all weapon system activities and decision making. This living relationship between the weapon system and training system must be maintained on a direct real time a basis at all times.

4. The fourth perception must consider the training system which takes a not yet competent individual and changes him or her into a competent individual. The focus here is that the first step must be to define the needed changes in behavior in terms of both terminal objectives and enabling objectives as a whole and then apply technology to meet program goals and constraints. Primary to this effort is the accurate definition of all training related goals and objectives defined in the above perception elements. After accomplishing this process (and insuring the resulting data is kept current) and selecting media/methods appropriate to the resources available the real tasks in the training system must be addressed. Specifically, how is training accomplishment and task performance measured not only in terms of test and evaluation criteria but in terms of cost of training effectiveness. This is especially true in light of the Air Force's trend toward contracted training system support

where a major issue is is contracted support truly cost effective and if so how much. It also points to a major issue that has been before Air Force user, research and development expertise, and acquisition authority for some time without resolution. Specifically, how much fidelity is enough? The airline experience has raised technology to a level sufficient for Air Force missions that are comparable. However, the additional technological requirements imposed by tactical mission requirements continue to tax technologies and budgets alike. If total training systems can address mission requirements in terms of affective, cognitive and psychomotor domains in a systems based manner, then managers can research the practicality of low fidelity alternative training requirement solutions conceived within the training system perception. This might be the future to keeping costs in line while increasing the ability of training to enhance mission readiness.

Emerging systems rely heavily on predecessor systems for guidance, lessons learned and baseline information. An equally important aspect of this relationship to the past is how design of the new system can lower training time and costs by using commonality and past experiences wherever practicable. Prime weapon system contractors are just now being asked to look into this idea (supportability) from a logistics point of view but certainly the MPT aspect is equally of value especially across the services. The minor modification of an existing technical school or school device could represent significant savings in time and resources. The addition of performance requirements to existing pilot training programs could lower new weapon training system program costs.

The real perspective attached to the total training system perspective is the interaction of individual devices/media/technologies and how that interaction can affect total system performance. One of the guiding precepts of any team or system is that the total is greater that the sum of the individual parts. That goal is impossible without a total training system perspective. Throughput, scheduling, alternative training paths and management expertise all must center around preparing the warrior. Role modeling, fidelity issues, performance measurement, currency, atmosphere and spirit must all be addressed by training professionals who use technologies as tools to achieve worthwhile goals and objectives through the training of individuals. Overly automated training methods can demotivate and discourage. Only the professional trainer is fully prepared to realize the greater value a system can achieve.

5. The final system perception must center its focus on the individual device, media/method or technology and its objectives, configuration and performance. Probably the most interesting consideration of a device/technology perception is whether the item is intended to equip the man (instructor?) or provide an alternative for the student (man) to get on the equipment. The classroom is a dynamic laboratory and workplace for the instructor and is configured in such a manner as to flexibly support the teacher/instructors role in what is ultimately an individualized learning/education process. So should every device and tool at his disposal. And yet training is an interactive process requiring that the instructor focus on the student and the training task. Many training media/methods ignore this operative requirement and simply provide a list of environmental/systematic conditions. Evaluations of training media/method effectiveness place the instructor as the most influential factor in the effectiveness equation. This is mainly due to the role model influence he provides in reinforcing the acceptability of the device and the value of the training. This instructor role is an important consideration in the decision to use contractor support for these activities as opposed to the Air Force blue suit presence to insure mission credibility.

Devices must be designed to be flexible (surge), simple to keep current, and responsive to the needs of the whole system. A device cannot be designed without its role within the system being carefully analyzed as to not only use but supportability, reliability and maintainability. A device only orientation will also limit the ways in which a single device can be used. Most traditional training programs provide a linear lock-step progression through a course of instruction. A device is used once for its specific designed role. Using a whole system perspective a device can conceivably be designed once for multiple roles in specific training courses, specific training systems and throughout the force structure.

This perception must also include all of the support elements which need be present to maximize the training benefit of a piece of hardware. Not only does this include the environment, training material, technical materials and consumables, but also includes scripts, and instructor job aids. One of the most beneficial tools possible is a scheduling capability which accounts for partial system degradation in helping the instructor/training manager use alternatives to maximize student time in the training environment.

The responsibility for training requires that all training responsible managers focus on the trainee and the act of training itself and measure their success by those parameters rather than the performance of the supporting technologies.

Finally, the device is not simply a piece or integration of technology. It is a tool for the trainer and must be human factor engineered to fit within a system operated, maintained and managed by people. The only acceptable acceptance criteria for a training system and its individual components is its on-the-job effectiveness. This criteria significantly alters current acceptance methods and responsibility authority.

ISSUES AND IMPLICATIONS

With a clearer awareness of the perceptions required and the objectives which must be dealt with in a true systems approach, a review of the current situation and some of the issues and implications this new focus will encounter will further define the challenges which will confront the training system program manager and industry.

During the acquisition of any major training system within the Air Force today four major commands (ATC, AFLC, AFSC and the using command) plus several collateral Air Force Headquarters organizations have assigned training related responsibilities especially if the system requires both maintenance and operational training support. Since these commands each have a large number of organizations within them responsible for various aspects of the training management function, coordination becomes the most demanding task in living up to the requirements of a total systems perception. Conflict resolution, operational and maintenance plans and policies for emerging systems, and the integration of goals and objectives early enough and consistently enough to implant training as a driver in the design process has not been accomplished to date.

The development and implementation of a Front-End Manpower, Personnel and Training Analysis process into the early acquisition cycle is a solid step in the right direction. However, limited experience and data in such areas as training effectiveness/training transfer, life cycle cost analysis in the total training system, and the mitigation or cost effective management of the highly iterative nature of the training/education process remain deterents to a weapon system or training system program manager's willingness to fund early analysis costs.

The use of the Instructional Systems Development (ISD) process in the acquisition process has failed to provide the Air Force with the definitive contractor relationship originally envisioned. While originally designed to aid in the development of courseware and low cost mediated instruction, ISD was intended to define the knowledges, skills and behaviors assumed to comprise each training activity in terms of its operative components. However, today evaluation of inflight performance is usually limited to FAA standards and subjective criteria which open the door to full device fidelity. The challenges which are posed by the tactical environment, where instantaneous, individualized pilot and pilot team actions (including an infinity of possible stimuli and correct responses) are the training objective, cannot be quantified for acquisition using traditional ISD methodology. Even using the full perspective approach to defining a total training system places responsibilities on the process that technologists are not currently prepared to handle.

The interrelationship between technological capability and training requirement is also complex. Technological advances are typically the result of trial and error and incremental advances that may or may not answer a current real need. However, the need to compete and realize profit requires Industry to attempt to tailor any internal, in-hand capability to the users need. This interaction often results in the specification of specific contractor capability rather than the in-depth analysis of real need for an open competition. One of the problems in the acquisition community is the need to acquire training and training support for a future need using future technology and capability. The user doesn't always have the total picture of that future or of all of the components a total training system perspective might require. Since user acceptance is a vital component of that perspective the Industry/user interface has become a complex and often frustrating aspect of the acquisition process.

INDUSTRY CHALLENGES

The initial challenge facing industry is to accept the challenges posed by a total training system perspective. For both the prime weapon system manufacturer and for those industry organizations responsible for the many support elements required in fielding and supporting Air Force weapon systems, this entails a review of current policy, practice and capability. The following list of possible review areas reflects some thoughts in areas where current training marketing dialog may not be sufficient to support a total training system perspective.

a. It appears that the current training systems marketing environment is still top heavy with buzz words and technology descriptions. Very little dialog is directed at performance standards, training effectiveness measures, transfer of training capability and cost effectiveness data.

b. There is no current means of effecting a participative management structure into the total training system environment in a manner that fully protects the interests of everyone. If total training systems are 'living' functions, they will have to be managed in such a manner that the training system is fully responsive to the mission and to the immediate needs of the individual student.

c. There is no current model which integrates total training system requirements into a life cycle cost matrix from which alternative configurations/strategies can be analyzed and optimal solutions analyzed and justified.

d. One of the biggest incurred costs associated with training is data. Could universal industry standards or the development of a prime contractor database useable by everyone associated with the weapon system program become potential ways to reduce data acquisition and support costs and still maintain training program standards and needs?

e. There is also a significant cost incurred in the development of software for separate devices/technologies. It seems plausible that through authoring models and standard language that commonality and transportability of software development, update and utilization could be reduced.

f. Research into the specific issues and implications of this five part perspective also seems to be a need that industry would seem uniquely suited to support. Too much current research gets lost between the question of generic application and specific requirements and conditions. Could a total training system perspective and a profit motive drive the economic application of research activity to define the parameters, tools and processes needed to span technology/warrior and industry/military differences?

g. Finally, it also appears that industry needs to determine whether it has the skills, experience base and management ability to assume responsibility for the total training task. This determination must go deeply into marketing, technical, training and management disciplines. What is being called for is a review of current goals, objectives and successes to determine whether or not industry is organized, manned and dedicated to the future training requirements and mission accomplishment of the military.

PROGRAM MANAGER CHALLENGES

For the Program Manager, a training system perspective is a large missing element in the acquisition of weapon systems which fully support the needs of the Air Force and entire force structure of the military. Training is the link between technological capabilities and true combat mission readiness. The task is one of insuring that sufficient data and interaction between all of the players in the acquisition process exists to make the training requirement equal to the other components of a weapon system acquisition program and thus insure the accomplishment of total program goals of cost, performance, schedule, reliability, maintainability and supportability. Training is seldom adequately addressed in any of these forums and because of its unique character and deep involvement in each is critical to the success of the whole.

As manpower reallocations have already removed simulator maintenance personnel and many training instructor positions from the Air Force manpower roles, so has it limited the development and placement of managers and experts who can adequately represent the needs of the training community and therefore, at least to a large degree, the warrior. The biggest challenge facing the program manager is to quantify and justify this need and to effect a solution as soon as possible. One possible solution is the development of an interservice, intercommand Air Force participative management team to both develop the expertise and represent training interests throughout the acquisition community. Such a team could assume career path proportions because of the need for multiple acquisition based assignments in command headquarters, training organizations and in various components of the acquisition community. Since a significant amount of such activity on a fragmented basis already exists perhaps this effort wouldn't amount to much more than a consolidation of current manpower expenditures.

It is also a program management responsibility to encourage total training system dialog, communication and interaction. Forums such as I/ITSC are but one way of doing so. One of the biggest challenges is demonstrating how a total training system perspective can concretely benefit the acquisition process. This challenge will be met incrementally as success builds on success.

The program manager is essentially an integrator of many diverse skills, professional perspectives, ideas, and acquisition requirements. Seldom does he have the indepth knowledge or experience in any one discipline of the acquisition process to master it or to be able to make total decisions for it. This is especially true of the users world, his mission requirements and the conditions under which he must operate. For this this reason he assembles a team of experts to represent all points of view and to finally agree on compromises and joint acquisition activity. However, there is one area with which the program manager must be the master. That area is the future. Very few people within the military are assigned responsibility for the future in quite the concrete, cost based way in which the program manager is. His daily problems are current ones. The issues and decision making he is responsible for are current ones. However, with every one of those problems, issues and decisions he must consciously and with a total perspective couch every action he takes in the long term future impacts they will have. Without joint industry/military support to insure that that total perspective is maintained throughout the life cycle of a weapon system the warrior cannot be expected to achieve the success upon which we all rely so heavily.

THE NEXT STEP...

THE TOTAL SYSTEM

Current program management objectives in the Air Force center on the traditional cost, schedule and performance parameters, the newly introduced reliability, maintainability and supportability program requirements, and upon the more recent concerns for quality assurance. None of these objectives is supported by expertise which is prepared to integrate training goals and objectives into a total weapon systems acquisition process using a total training system perspective that includes operational, maintenance, support and depot level training consideration. This is despite the fact that every one of these acquisition objectives sooner or later critically impacts or is impacted by training activity and, therefore, the long term ability of the user to optimize

the process to provide the warrior with a mission effective system. Therefore, it is not unreasonable to suggest that, if each of these program management objectives is a building block used to reach mission effectiveness,then training is the mortar which will determine how strong and this process will ultimately be. This is not to suggest that training is any more or less important than any of the other building blocks. It is instead meant to suggest that a training perspective is required throughout the structure and that training as a discipline and a professional activity must establish a position of equality among its peers in the acquisition process. It would seem a logical 'next step' in the evolution of the training system that the Interservice/Industry Training System Conference as a leading professional body and forum undertake the steps necessary to implement this goal.

ABOUT THE AUTHOR

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