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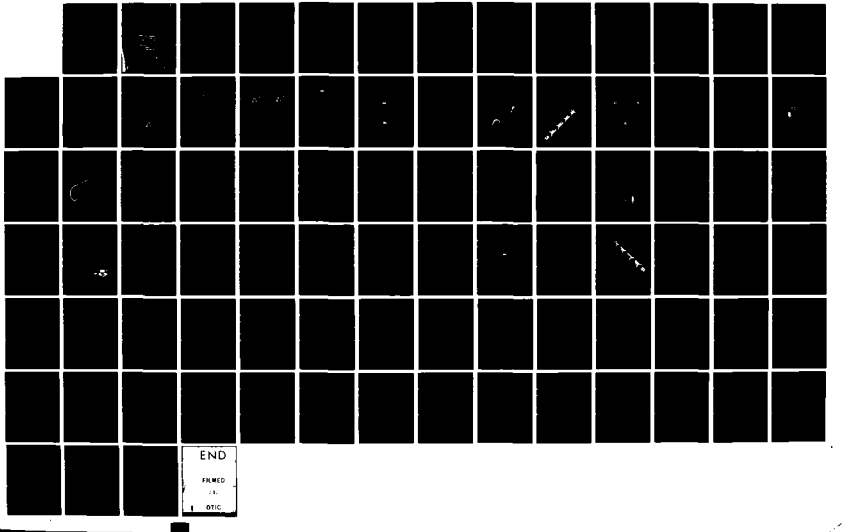

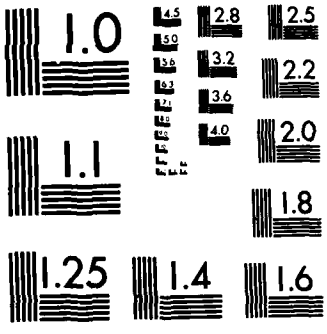

MULTI-DIMENSIONAL PROGRAM MANAGEMENT

A RESEARCH STUDY

POLICY AND ORGANIZATIONAL MANAGEMENT DEPARTMENT
DEFENSE SYSTEMS MANAGEMENT COLLEGE
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This is a student research project with the following objectives:

(1) To model a generic program management office and the system of which it is an element. This model systematically illustrates the integration and necessary interface of the human, organizational, and technical aspects of program management,

(2) To use the model as a baseline to identify or develop skills and methodologies the PM might use to manage this integration.

(3) To identify resources as they apply to the skills and methodologies that have been identified.

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DISCLAIMER

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INTRODUCTION

The Acquisition Process

During the next decade we are going to field over 400 new systems into the defense inventory. Many of these systems will either replace older ones, support existing ones, or be both new in technology and utilization against a new threat. The threat itself will have the most impact on acquisition decisions, but there are many other factors to be considered. In a macro sense the life cycle of major system acquisition can be shown as depicted in Figure 1.[1] Some factors that impact this system are the threat, Congressional actions, foreign policy, inflation or the media. Internal to OSD we have factors such as funding, the user's, test facilities, OSD and service decisions.

Present in both the external and internal environments of system acquisition are the relationships of individuals and organizations. The communications, formal or informal, written or spoken are representative of these relationships. The perspectives from which any individual or organization interfaces with the acquisition process are key to the degree to which a factor may impact that process. With people as individuals and individuals making up organizations, both will have particular biases and perceptions as they carry out their functions in system acquisition. Recently a Senator related that his strong interest in the procurement of a weapon was due to an emotional experience he had during the Korean War. He was concerned that a future soldiers life may depend on this new weapon system and he wanted it to do its job. Therefore, what we have is an acquisition process developed and changing due to the perspectives and biases of individuals and organizations, communicated sometimes effectively or ineffectively.

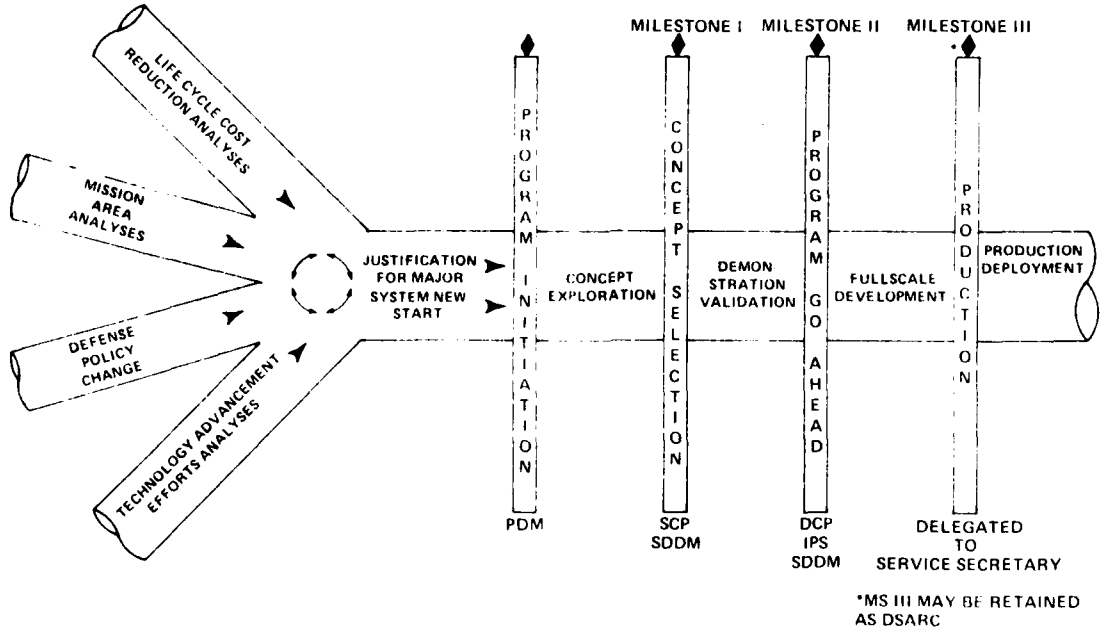


Figure 1
Life Cycle of Major Acquisition

The Role of the Program Manager

In the acquisition business the Program Manager (PM) is saddled with integrating acquisition functions from the development of strategy prior to program initiation, to supporting the system and conducting product improvement after system deployment. This integration process can be visualized as Figure 2.

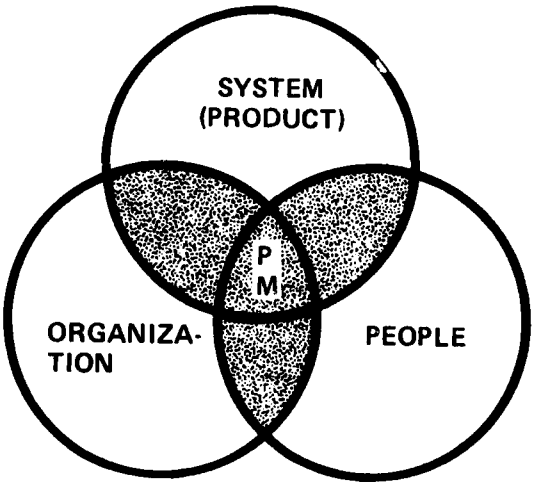


Figure 2
Acquisition Integration

As the system moves through the process, not only are there different development phases for the system, but different organizations and individuals involve themselves in varying actions. OSD reviews and DSARC decisions, OMB audits, laboratory studies, personnel offices, the "30 Minute Expert," all of which impact the acquisition process and whose impact must be managed by the PM. To add to this complexity, the "players" are changing, thus changing the perception and biases that must be understood when integrating their impact on the PM's program.

In many programs the PM is also one who is here today and gone tomorrow. A recent review of nine major systems in the Army showed PM's averaging 12-18 months. None of the changes were due to failures, but for career development and a priority need for the PM in another job. This requires the PM to have an almost immediate understanding of the system, organizations, people, and how they interact. And, to continually sense the environment, analyze change, and make integration decisions to effectively navigate the system through acquisition.

Issue Statement

If the elements outlined above exist for PM's in the acquisition process, how are the impacts analyzed and skills or knowledge applied to this integration process? What are some of the skills necessary to accomplish these tasks? What resources are available to the PM to acquire or improve these skills/knowledge base and assist in the integration. Finally, what will the future bring to support the PM?

Research Objectives

The objectives of this research are as follows:

1. To model a generic Program Management Office (PMO) and the system for which it is an element. This model will systematically illustrate the integration and necessary interfaces of the human, organizational, and technical aspects of program management.

2. To utilize the model as a baseline to identify or develop skills and methodologies the PM might use to manage this integration.

3. To identify resources as they apply to the skills and methodologies we have identified.

It is desired that this document might serve as a resource for PM's and their PMO's, and support the instructional philosophy of the Defense Systems Management College (DSMC).

Methodology

The model developed will be based on logical conclusions and data obtained through the use of a questionnaire distributed to individuals in the field of system acquisition. This will require an understanding of the integration responsibilities of program management and the interfaces present in system acquisition. This model will establish a common understanding before proceeding to identify and develop methodologies and skills for program management.

It is the intention of this research that the methodologies and skills do not imply a "cookbook" approach to program management. But does generate a desire to examine new ideas and project some future ideas to enhance program management.

The development steps will be:

1. Take a macro view of the interface in depth found in program management.

2. Depict the internal interface with organizations, people, and the system/product domains.

3. Describe the interface boundary factors and how they may hinder effective interaction.

4. Examine the multiplicity of program integration by taking points in time and summing the impacts each will have on the Program Manager's decision-making process.

5. Finally, to add the dimensionality found in the life cycle of system acquisition, to the interface in depth of program management.

The final product will be the Multi-Dimensional Program Management Model.

PROGRAM MANAGEMENT QUESTIONNAIRE

In the development of the Multi-Dimensional Program Management Model, an initial concept paper was sent out with a questionnaire to validate the concept. This validation strategy provided feedback on the reality of the model and recommendations to modify elements based on reality. The following groups of people were requested to respond:

- Program Managers
- DOD personnel attending the Executive Refresher Course, DSMC
- Faculty of DSMC with program management experience
- Students attending the Program Management Course, DSMC

The questionnaire was designed in the first section to provide demographic information on the individuals experience and service, and a brief description of their program(s). The second section provided feedback on the reality and effectiveness of the model in the concept paper. It also provided data on the agreement of goals and the understanding of responsibilities among people and organizations related to their program. Finally, this section provided feedback on change for the model and general comments by the respondents on program management. A copy of the concept paper and questionnaire are at Appendix A. The data obtained and a discussion of selected data are at Appendix B.

MULTI-DIMENSIONAL PROGRAM MANAGEMENT

Model Development

People make up our system acquisition programs of which the system is the product of their integrated efforts. The ease with which that integration takes place can be measured subjectively by (1) how well the formal and informal communications process functions, (2) how congruent goals and objectives are, and (3) how well understood roles and responsibilities are for individuals and organizations. To manage the integration process is to recognize the actual interface and logically apply skills to measure the effectiveness of this interface. Then utilize different skills to enhance the interface.

If we accept the integration role as being a responsibility of the Program Manager, then the PM's environment can be represented by the multiple interfaces between the people, organizations, and the system being acquired. Figure 3 shows this environment.

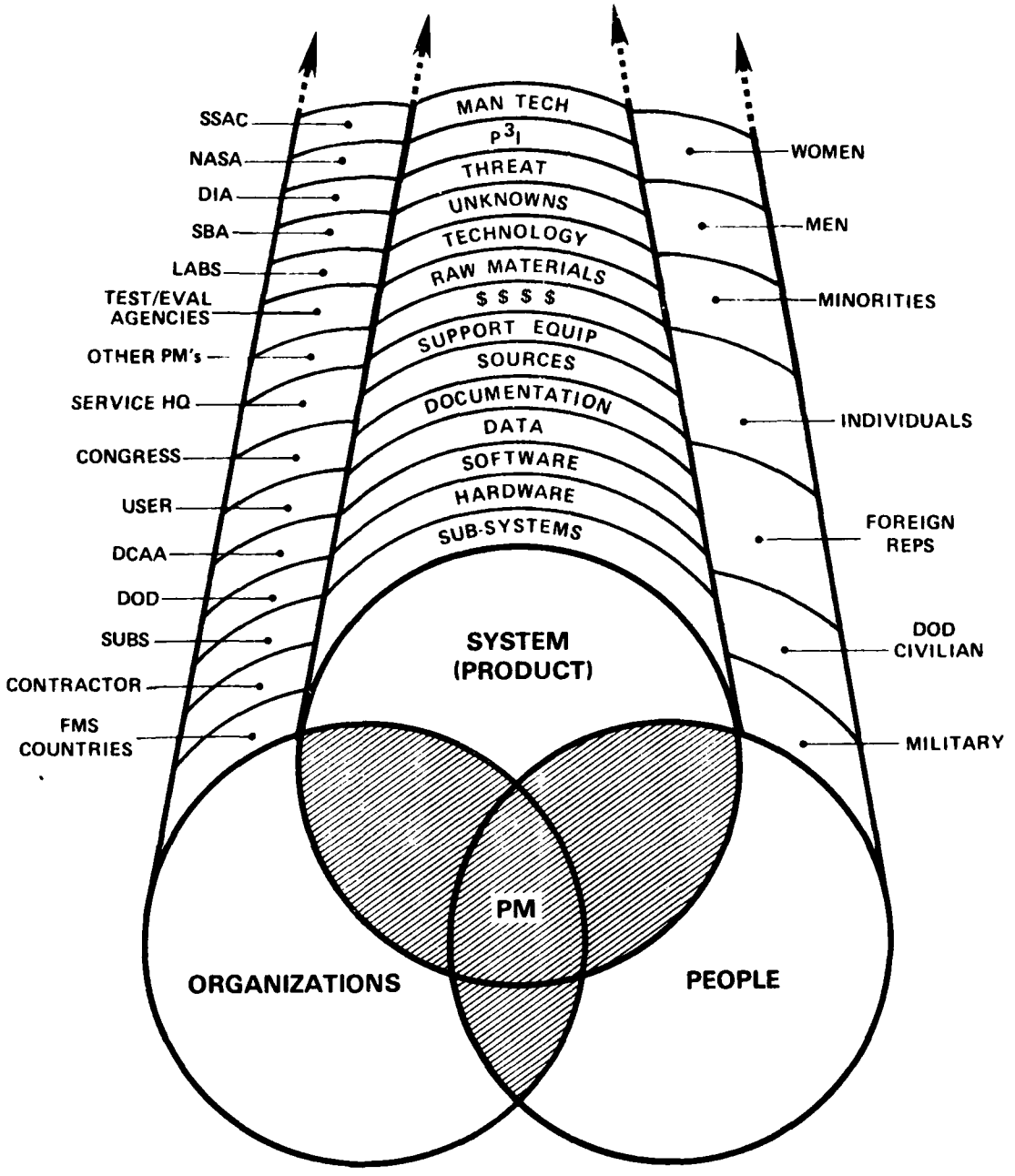


Figure 3
Interface in Depth

Although there are many more areas that could be depicted in Figure 3, just accepting these indicates there are 7 elements of the people domain, 15 in the organizational, and 14 in the system. This could equate to 1,470 possible interface relationships for the PM to integrate.

Hearing this the first time, some have questioned the responsibility of the PM to integrate Congress into system acquisition. The law accomplishes this. But ,the PM will integrate the impact of Congressional decisions, particularly funding, into the acquisition program. The actual interface could have several scenarios; PM testifies before Congress, System Acquisition Report (SAR) is reviewed by a committee, the PM briefs a staffer or service congressional liaison officer, and many more. The bottom line will be the decisions and resultant actions from which an impact(s) will have to be integrated.

Simply put, it takes people to make organizations, who interact to acquire systems which involve subsystems, and are made for people to use. Since the interfaces are multiple and indepth, it will take multiple strategies to manage this interaction.

If the hierarchy of systems model is used to evaluate Figure 3, then the people domain becomes a subset of the organizational domain. The representation here is in how each of the domains interact and the resultant impact of their interaction. Breaking each of these domains apart gives another level of interaction which satisfies the hierarchy of systems model. Figure 4, People Domain shows the interact between elements which make up an organization or are representatives of different organizations. When the integration takes place, the elements are understood to have their own values, biases, behavior, etc., and this will be translated into an organizational set of values, biases, behavior, etc. An example of this organizational interaction is at Figure 5.

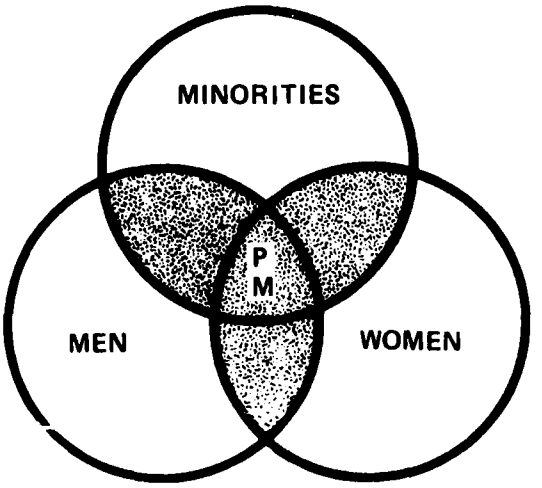


Figure 4
People Domain

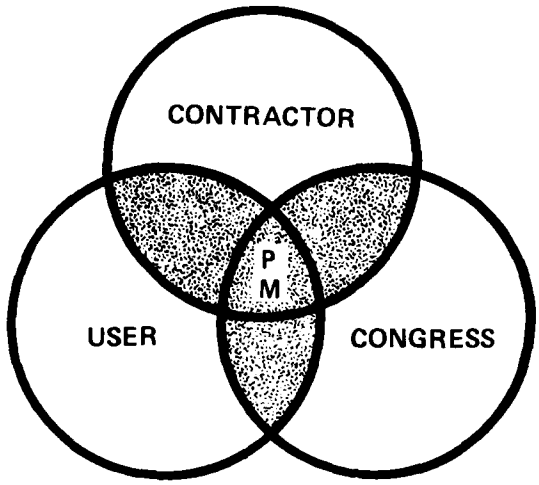


Figure 5
Organizational Domain

In this organizational example, the PM is responsible for taking the impacts of these elements and integrating them into the acquisition program.

- The contractor can influence Congressional decision-making as a constituent of a particular Congressman or Senator.
- The user can be called to testify or is interviewed by a staffer as part of Congressional decision-making.
- The user can provide input into the contractor design. The contractor's capabilities can drive the utilization of the system.

These interactions may or may not physically take place, but the PM will be integrating their communicated information, decisions, and actions as impacts on the system acquisition program.

So far each of the domains presented here have been people or consist of groups/organizations of people. The system or product is also a domain that has internal interfaces. Figure 6 are examples of possible system integrations.

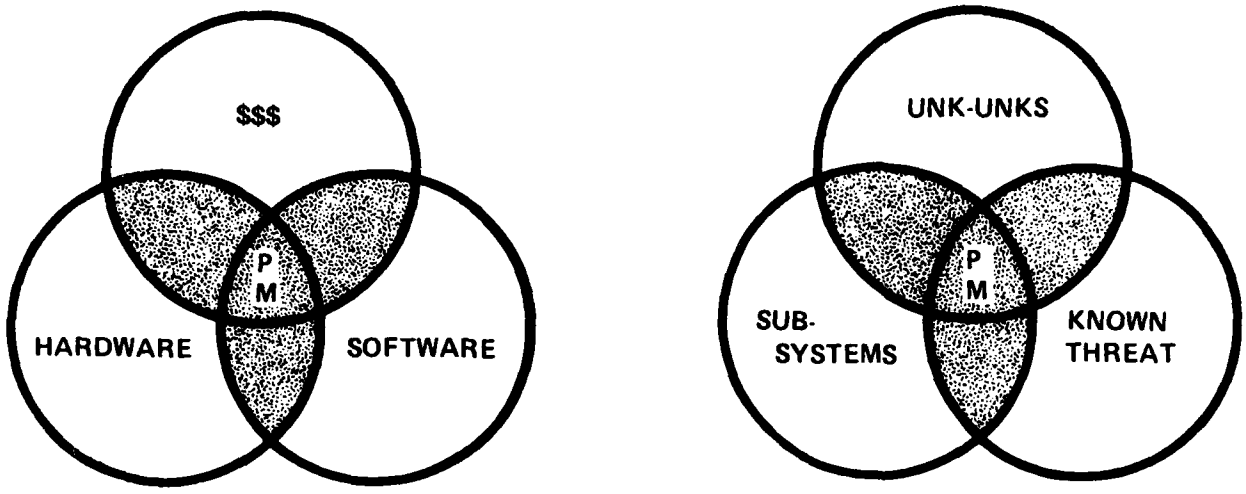


Figure 6
System Domain

The hardware and software interfaces can be extremely delicate in the design and performance of a system. And the effectiveness of these interfaces can be directly affected by the dollar resources available. The second example shows the known threat impacting the sub-system design and vica versa, the sub-systems being designed to meet the known threat. The unknowns present themselves as the limits of state-of-the-art or unknown changes in the threat. Several people in many organizations will be working on the system domain, but the PM integrates their impacts.

Earlier the effectiveness of an interface was mentioned as a measure of the integration within the domains or among the domains. If this is to be used, a description of the interface is appropriate. As an example, elements of the organizational and system domains will be used. Figure 7 depicts the interaction of the contractor with the known threat.

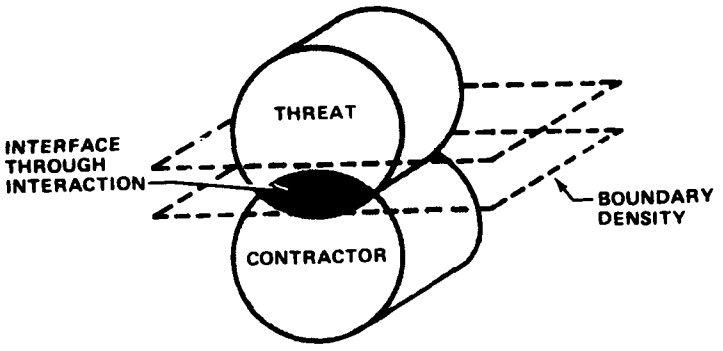


Figure 7
Interface Boundary Representation

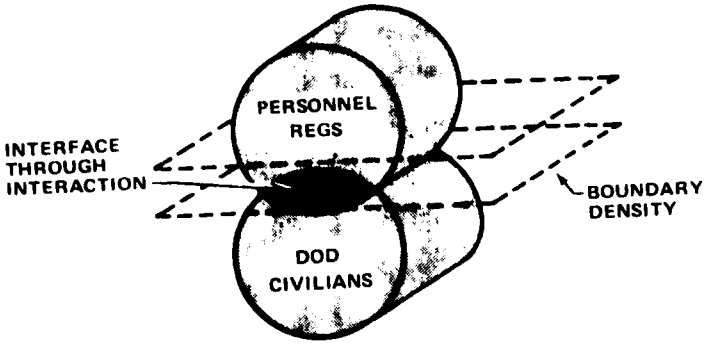
With the identification of the threat, a people and organizational process supplemented by system technology, a need is communicated to potential contractors. Generally, this is in the form of an RFP written by the PMO. In some instances it can be in other formal or informal communication mediums when the government is unsure of the nature of the threat or the existing state-of-the-art to meet the threat. The effectiveness of an interface between the contractor and the threat will be dependent on the existence of a boundary which hinders their interaction. And, there will be factors that contribute to the density of this boundary. To visualize the boundary effects, picture a chain link fence where communication and visual sensing can take place versus a tall concrete wall where interaction is almost non-existent.

In the contractor-threat example, the density of the boundary may be affected by the openness of communications, the state-of-the-art in threat identification, corporate goals of the contractor, politics, and possible others. The PM will seek to reduce the boundary density by coordinating open communication, seeking additional assistance in threat identification, and having an understanding of corporate and governmental politics.

A second scenario could involve DOD civilians and DOD personnel regulations and directives. Their interaction is seen in Figure 8a. Here the PM must manage his civilian work force according to DOD guidance. The boundary factors may become freeze and hiring restrictions, the ability to effectively deal with unproductive personnel, or the ability to properly reward those that have contributed outstandingly. The only tool a PM may have to reduce boundaries may be communications up and down to gain support for decisions.

The interfaces do not have to cross domains to have an interaction. Figure 8b is an example of two organizations interacting. Here the PM must integrate the coordination of GFE or GFM for the prime contractor's use. An issue of organizational goals or responsibilities may occur as boundary factors increasing boundary density if goals are not congruent or responsibilities understood.

8(A)



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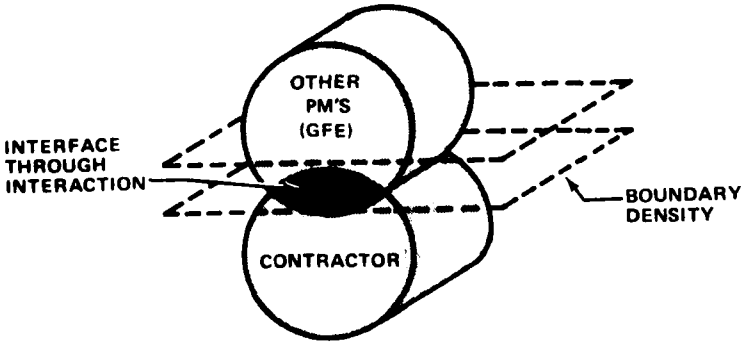


Figure 8
Domain Interfaces

Up to this point, a series of examples have been presented to illustrate interface and potential boundaries. Since the interfaces are multiple, a listing of potential boundary factors may be in order. Each domain has a set of boundary factors but those for the People and Organizational domains are very similar. Again, this is due to organizations being made up of people; and when they come to the organization, they bring in their values, biases, behavior which contribute to those of the organization.

SYSTEMS/PRODUCT

- Technology State-of-the-Art
- The Threat Assessment Capabilities
- Available Resources
- Authorized $$$
- Appropriated $$$
- Design Capabilities
- Engineering Capabilities
- Manufacturing Capabilities
- Contracts
- T&E
- Quality
- Training
- Maintenance Capabilities
- Support Capabilities
- Others

ORGANIZATIONAL

- Organizational values
- Biases
- Perspectives
- Organizational goals
- Expectations
- Needs and desires
- Organizational behavior
- Politics
- Regulations and Directives
- Organizational structure
- Communications
- Facilities
- Media
- Priorities
- Organizational Resources
- Ownership/Propriety
- Others

PEOPLE

- Individual Values
- Biases
- Perspectives
- Individual behavior
- Needs and Desires
- Expectations
- Communications
- Personnel Regulations
- Personnel Resources
- Accountibility
- Rewardability
- Mobility
- Management Styles
- Personal Abilities/Willingness
- Others

Figure 9
Boundary Factors

With an understanding of interface, boundaries, and boundary factors, and the acceptance of the PM's role in integrating the impacts of the domains and/or their elements, the next step is to take snapshots in time to see the phasing of the PM's environment. Figure 10 represents three scenarios the PM could be managing for which the boundary factors would have to be recognized in order to effectively manage each situation.

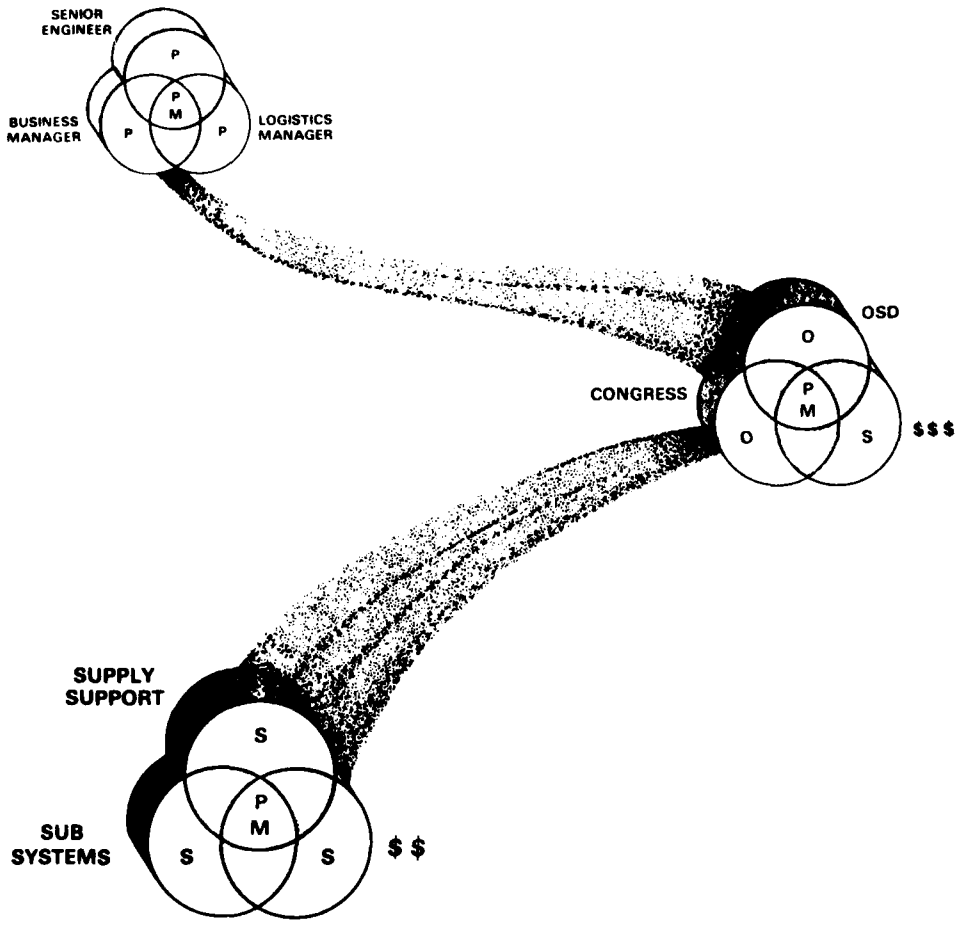


Figure 10
Dynamic Transitioning of Interface Management

Figure 10 starts off with an Integrated Logistics Support issue in the system domain. The PM is dealing with the dollars required to effectively supply parts and spares to support the system upon deployment. This issue is then transitioned to a funding issue to include these dollars in an upcoming budget request for Congressional approval. This represents an interface between two elements of the organizational domain, Congress and OSD, and dollars from the system domain. Finally, the ILS issue is a focal point for a conflict issue within the people domain. The PM has to manage the interface between the Senior Engineer who is pushing the performance design and the Logistics Manager who is seeking support considerations in the design. The Business Manager is setting further bounds by injecting the dollar constraints of the program. These scenarios depict the dynamic transitioning a PM must go through when managing interfaces between the people, organizational, and system domains.

The Multi-Dimensional Program Management Model

To complete the model, time must now be continuous. Taking the graphics from Figure 1, the life cycle of system acquisition, and Figure 3 on interface in depth, the dimensionality is coupled with time. The graphic result is Figure 11.

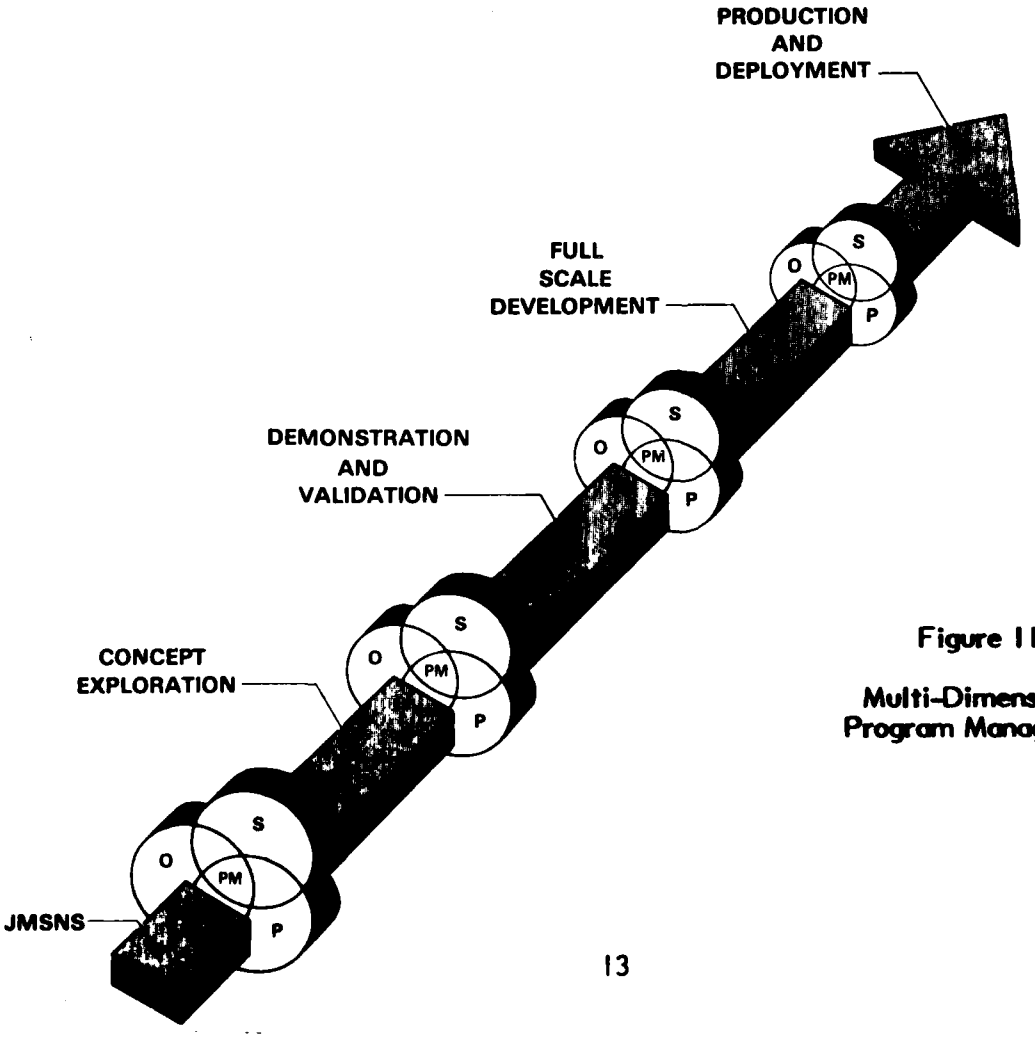
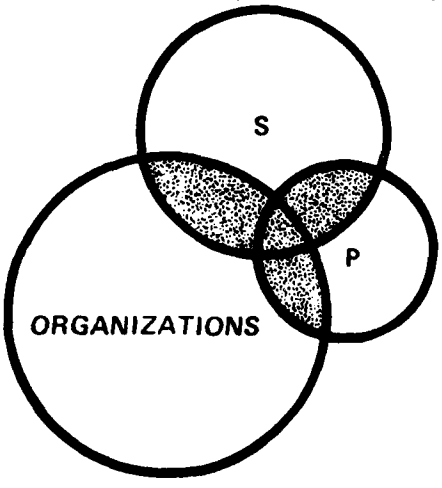


Figure 11

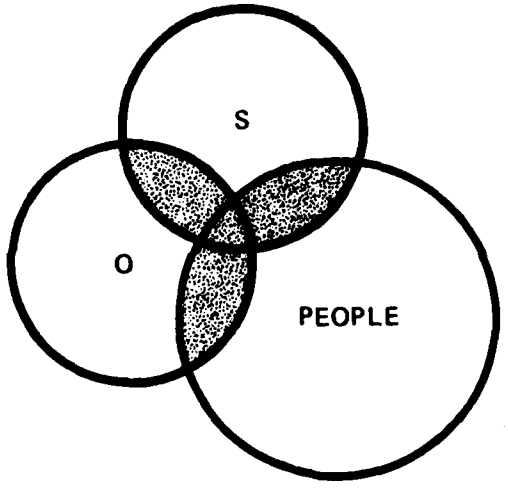
Multi-Dimensional Program Management

Since these graphics limit the visualization of flexibility of the interfaces with respect to time, a discussion is required.

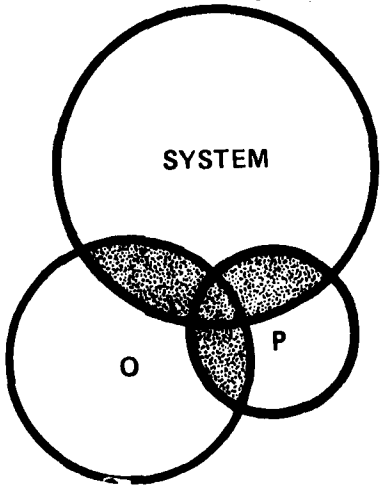
During the life cycle of system acquisition, particular domains may be more dominant than others. Coupling this idea with the symbology of Figure 10, interfaces are changing as situations change, the result would appear anharmonic. Frequency and amplitude of the integration changing as a result of situational change.



Organizational
Dominant



People
Dominant



System
Dominant

Figure 12
Domain Dominances

This notion is reinforced by data in the questionnaire. Several respondants wrote of the continuous change and flexibility of the interfaces they managed. This equates to the influence a particular domain or element may have on the integration at any moment during system acquisition. An analysis could sum up this transition and influence as follows:

Acquisition Phase	Domain Influence on Integration
• Program Initiation	People emphasis in getting the right ones to conceptualize solutions.
• Demonstration/Validation	Organizational dominate as organization's power and capabilities come into play. Systems and people still very important.
• Full Scale Development	Systems dominate with organizations being important as production contracts are considered.
• Production/Deployment	Organizations and system dominate as people influence decreases.
• Beyond Deployment	Organizations dominate, system is somewhat important, and people influence low.

In summary, the Multi-Dimensional Program Management Model is a combination of those graphics presented in Figure 3 -- Interface in Depth, Figure 7 -- Interface Boundry Representation, Figure 11 -- Multi-Dimensional Program Management, and the following points:

- Boundaries have densities that are expanded or reduced by boundary factors. The size of the density indicates the effectiveness of the integration.
- Interfaces are transitioning and domain influence varies with the situation. A summation of this transition and influence may indicate a general dominance pattern.
- Finally, the Program Manager may in actuality directly integrate the functions and actions of only a portion of the elements in the people, organization, and system domains. But, he/she is responsible for integrating the impacts of all elements of the domains on the acquisition of his/her system.

Utilization of M-DPM Model

Program Management is dynamic in its simplest of forms. The aspects of major vs. non-major acquisition, joint vs. sole service acquisition, and the added dimension of Foreign Military Sales (FMS) merely complicates an already complex environment. This complexity requires the identification of interfaces, a skill that must be developed by the PM and his staff. The system interfaces generally are quite visible, they fit/don't fit, there are enough/not enough resources, etc. The organizational and people interfaces are much harder to distinguish with the fluid and less definable environments of system acquisition.

An understanding of the M-DPM Model and its implications could assist in interface recognition. One senior PM responded to the questionnaire by stating that the principles of the M-DPM Model helped him to identify the most sensitive interfaces at any given time. This can be accomplished by understanding the following:

- Who or what constitutes the interface?
- What is their position in the interface?
- What possible actions may result from this interface?
- How effective is the interface based on known boundary factors?
- Finally, what are the potential impacts on my program?

To supplement this analysis, the PM should also have a strategy based on what is desired from the interface and how can the PM/PMO affect the interface.

I personally do not expect PM's or their staff to embrace M-DPM as the tool to solve all problems and situations. The principles though, should be considered with all other skills and knowledge a PM utilizes to manage the acquisition environment. It also becomes an effective way of communicating the complexity of program management to those who are unfamiliar with it.

As mentioned, the model is a sensing tool; it describes the environment. Therefore, many other skills are necessary which will be discussed next.

MANAGEMENT METHODOLOGIES AND SKILLS

No Cookbook

As stated earlier, the methodologies and skills presented in this research paper are not to be construed as a complete kit bag or cookbook for the PM or PMO. But, to generate a desire to examine ideas; some old, some new, and to take a look into the future of program management. If we accept the M-DPM Model, the use of methodologies and skills may look like Figure 13.

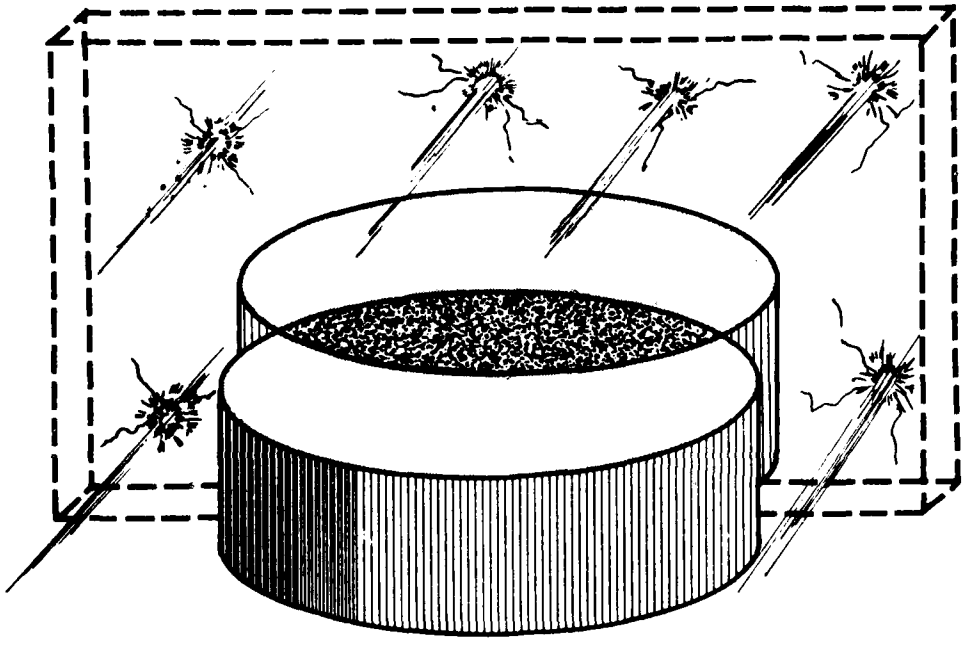


Figure 13
Breaking Down Interface Boundries

The PM as a Navigator

The PM is the leader that takes the PMO and the system through the acquisition cycle. He develops and maintains an effective team made up of many roles -- scouts, pacemen, planners, problem solvers, and implementors, each moving along his/her course. As the ship passes through rough waters or unfavorable winds, the PM must analyze their impact and chart a new course. This requires a keen understanding of the destination and the environment.

The path can be charted through effective planning at various levels as an active, not passive, function.[2] The planning stages are:

- **Level I** - Normative Planning

  This is the goal-setting and problem definition phase characterized by the questions, "Where should we be, and why?"

- **Level II** - Strategic Planning

  This is the phase where resources are identified and potential obstacles are analyzed. Here the questions are, "Where can we be, and how?"

- **Level III** - Operational Planning

  During this phase time schedules, impacts of decisions and actions, and available resources ($$$, personnel, etc.) are analyzed. The questions are, "Where will we be, when, and in what configuration?"

To understand the environment through which the course is charted requires a systematic approach. From the inside looking out, the Multi-Dimensional Program Management Model is a tool. From the outside looking in, the Open System Model is effective. Figure 14 reflects this model in a manner the PM may view his system and its environment.

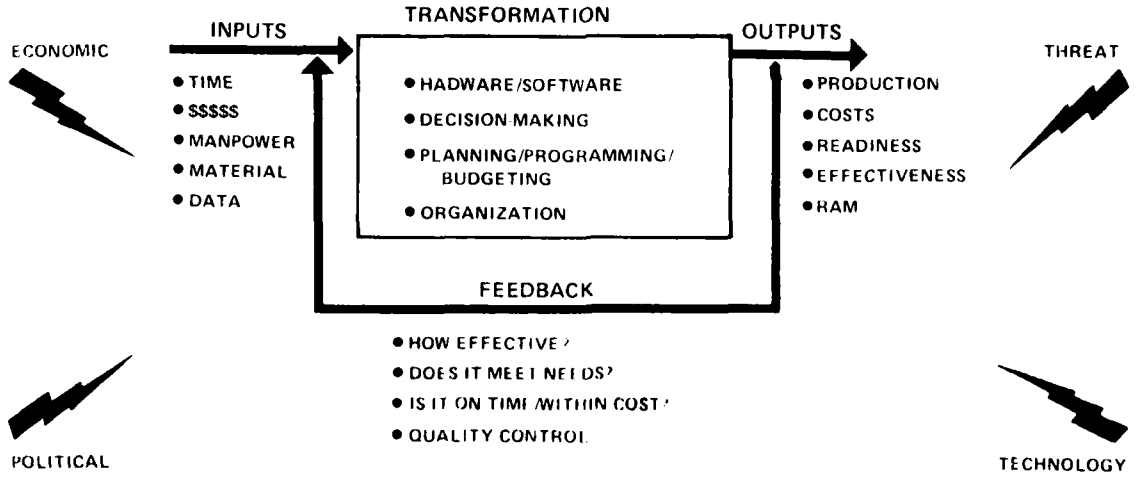


Figure 14
A PM's Open System

By developing a picture of what the PM and PMO are dealing with and effectively planning at each level, the course will be plotted and destination known. To get there will require the integration of "systems" leaders across organizational boundaries to manage critical interfaces.[3] They will have to syncronize their actions through goal integration to minimize the impacts on system acquisition. The PM will find himself at the center of this system.

Transitioning the System

A methodology to accomplish the transition through the acquisition process is shown in Figure 15. To utilize this model will require the creation of a "critical mass" as the strategy for influencing complex change.[4] The critical mass is made up of people from organizations in and outside the PMO. They are individuals who have legitimate and informal power to create change. The critical mass looks somewhat atomic in scope as opposed to a standard organizational chart. An example of "system critical mass" might be Figure 16.[5]

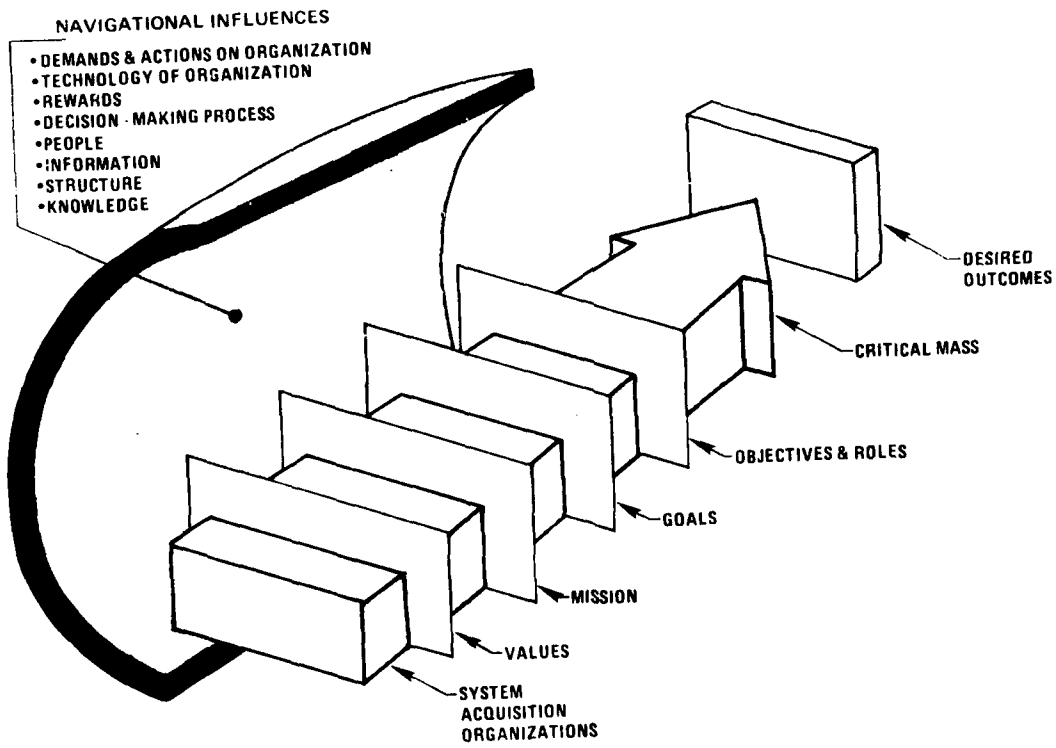
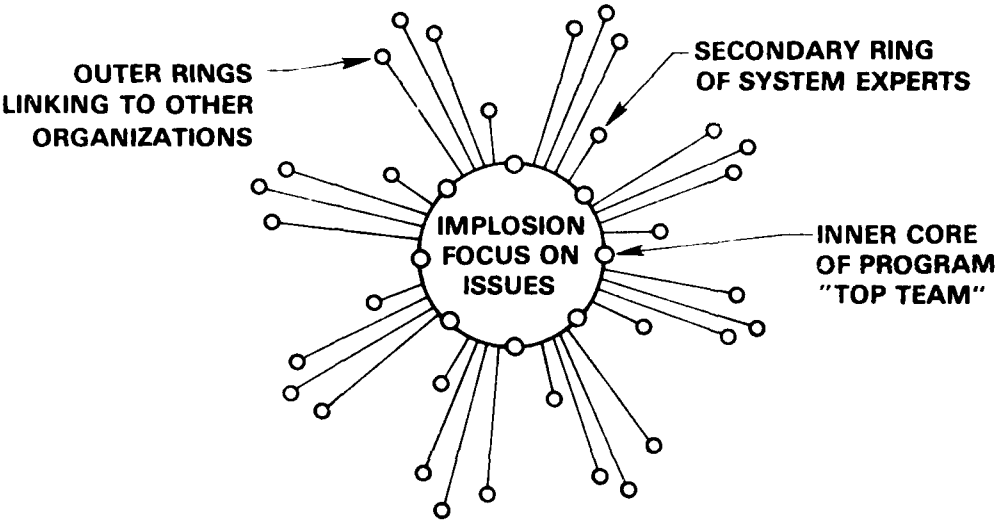


Figure 15
System Navigation

The members provide a vision for transition and through networking and synergy; implode the acquisition process to critical mass. This generates enough energy and direction to overcome resistance. With the critical mass made up of organizations and individuals who can impact system acquisition, there is ownership in the implementation of decisions. This ownership reduces resistance to change and reinforces a system of networks for future action.

Returning to the transition model in Figure 15, the establishment of a critical mass, their objectives and responsibilities can be developed by taking the time to understand the elements of the model. The organizational values, mission, goals, objectives, and responsibilities make up the substance of the critical mass and the "navigational charts" they will utilize. This model has been used successfully within organizations who function as one entity and those who have come together to reach an integrated goal. For these reasons the model could be utilized at the PMO level to chart their direction and create their own internal critical mass. Or, by the PMO and its prime interface organizations, Figure 16, to organize their abilities to support system acquisition.



POTENTIAL CRITICAL MASS MEMBERSHIP:

INNER CORE	SECONDARY RING	OUTER RINGS
• GOV'T PM	• FUNCTIONAL EXPERTS	• SERVICE HQ'S
• INDUSTRY PM	• SUBS	• DSD
• PCO/ACO	• USER	• OTHER PM'S
	• LABS	• DPESO
	• TEST AGENCIES	• DCAA
	• AFPRO/NAVPRO/ARPRO	
	• DASC/PEM/PC	

Figure 16
System Critical Mass

Some of the major obstacles to this method for managing change and problem-solving are:[6]

- Acceptance by key leaders/managers of the need to break traditional barriers and use non-traditional methods such as critical mass.

- Requires a great deal of upfront trust and honesty.

- Requires a political strategy to deal with the high level impact and "turf" issues.

- Development and utilization of horizontal and vertical communications mechanisms to disseminate information quickly in a rapidly changing environment.

- To establish an evaluation mechanism to tell the organization how well or poorly it is doing. Again honest is key.

- How to let go of the old ways while taking on the new ideas.

The application of the Transition and Planning Model is best served by using an organizational consultant to plan and execute its use. These consultants are available in all services and as independents outside DOD. A discussion of consultants will be in the section on resources. The actual steps in applying the model are at Appendix D.

To expand the discussion on organizational involvement would be to propose the development of a "system acquisition network." This structure would be made up of the systems critical mass, the organizations they represent, and other organizations that can impact acquisition, but are not a part of the critical mass. This network may look like Figure 17.

Utilization of the principles may improve the communications and decision-making process within a system acquisition program. This brings us to the skill of process observation; a study and evaluation of the decision-making process.

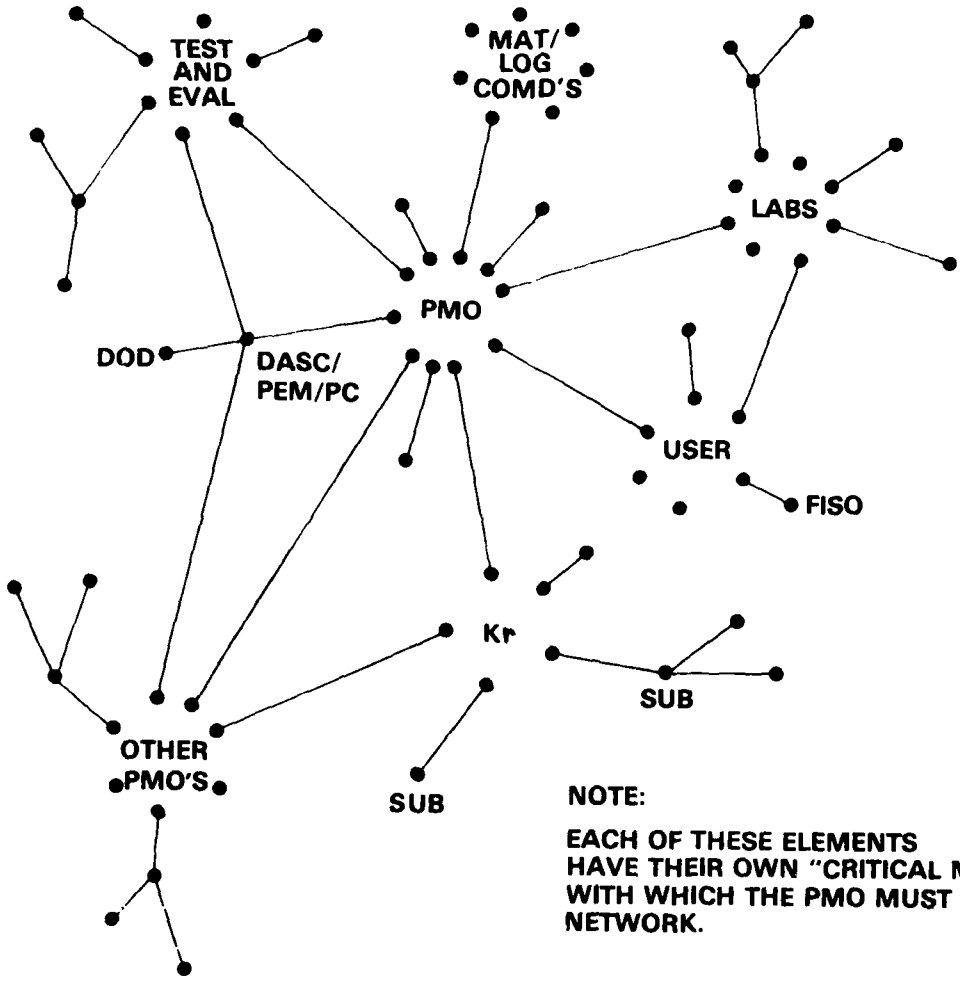


Figure 17
Network for System Acquisition

Process Observation

This skill deals with the ability to distinguish and analyze the situation in two parts:

- Content - What is happening.
- Process - How it is happening.

On the surface the content issues are usually visible and easily identifiable. Examples could be known cost/schedule variance, design problems, test results, and management decisions to correct these issues. The process of how these issues occurred and how management deals with them is generally more difficult to visualize. The importance of this visualization lies in the ability to recognize ineffective processes in decision-making.

At one time or another each of us have been involved in a group effort; decision briefing, or staff meeting. And during these affairs we have asked ourselves:

- Do we have enough information?
- Is what is being discussed relevant to our decision?
- Are all the key players here?
- How will this decision affect our other activities?

Each of these are process observations of the decision-making process. Whether involved in a meeting, working as a team on a project, or individually tackling issues, the secret is to pull away once in a while to analyze the situation through a process.

In 1971, John A. Olmstead with the Army Research Institute developed a process to analyze the way organizations make decisions.[7] This same process can be applied to any systematic situation. Modelling the process could appear as shown in Figure 18.

The Information Gathering process is made up of the ways information is gathered from the external environment or internal system (refer to Figure 14 for the PM's system). Here the availability, medium, accuracy and timeliness are essential to effective information sensing. Next the sensed information must be transmitted to those elements of the organization who must make decisions or take actions. Communicating the gathered information to those who need it in a timely manner is important.

With this information, the determination of if an action will or will not be taken must be made for a conclusion process to start. Having relevant information at the proper levels of decision-making authority is necessary for timely decisions. To analyze the decisions, the stability aspects of a decision must also be considered. This requires decision-makers to recognize the potential effects of their decision and be aware of the ability of their organization to adjust to changed conditions.

Once the decision is made it must be transmitted through a directive, order, policy, plan or other medium to the organizational elements who will implement the decision. To insure the decision has been communicated effectively may require a discussion to obtain clarification. Once communicated, the Implementing process primarily concerns itself

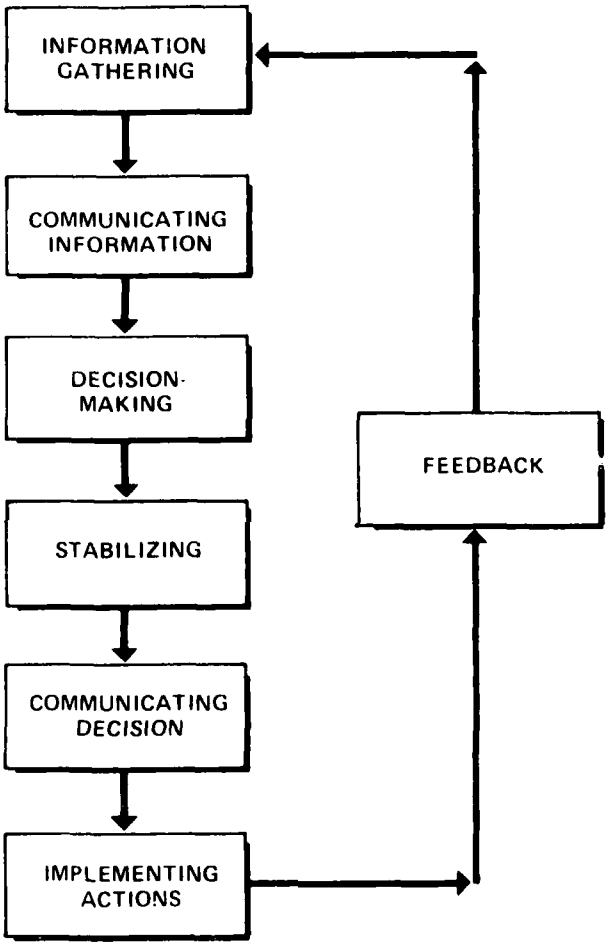


Figure 18
The Process Observation Model

with how the actions are to be executed. Here decision-makers are concerned with the effects of decisions and how the implementation correlates with the original decision.

Finally, an assessment of the effectiveness of the organizations actions are conducted to provide information for possible change to future decisions. This feedback process becomes an input to the Information Gathering process. It concerns itself with the timeliness and appropriateness of decisions and actions through follow-up actions. Follow-up actions are also inputs to Information Gathering.

To enable the decision-maker to practice this skill, a list of process observation questions are at Appendix C. For many the difficulty is not in asking the process questions, but in pulling away from the content of what is happening or being discussed so the process of how it is happening can be analyzed. Techniques to insure process observations take place could be to assign the task to someone in your work group or for yourself to break away and upon your return, concentrate on processing. The physical act of moving or sitting back in your chair allows you to withdraw from the content issues and provide you with a processing perspective. Another method is to invite a consultant in to analyze your process strategies by sitting in on meetings or work sessions. At the conclusion of the meeting or at times you have agreed to with the consultant, an assessment of how your group/organization functions could be provided. A discussion of consultant use will be made later.

An effective use of this skill can provide insight to organizational and individual functioning and its effectiveness.

Managing the Innovative and Contextual

If we view the system acquisition business as a process, then skills and a program management process are needed at the helm. The process becomes continuous in an innovative organization as it attempts to reach the contextual future state -- system deployment. The manager in the innovative organization can view this continuous process as:[8]

- Getting Ideas
- Blending Ideas
- Funding
- Transition the program → System / Organization(s)
- Managing program interfaces

An innovative contextual program will also require the PM to rapidly transition in time between the past, present, and future of Figure 19.

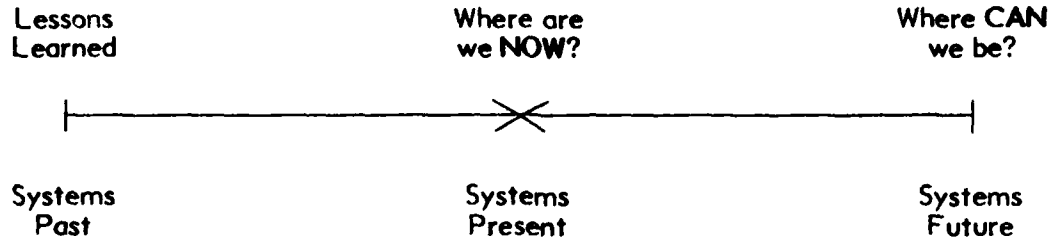


Figure 19
Systems Time Line

The PM must spend only that amount of time it takes to understand the past and confirm the present before regaining his/her position in the future. As the PM makes this transition to the future, the visualization of "what can be" becomes the substance for navigating the program. This is a contextual view of program management. This implies that our PM's must operate from a different point in time -- System Future.

PLANNING. If we combine the ideas earlier of strategic planning with contextual visioning, the PM can then visualize the completed acquisition strategy before the needed actions are identified. In other words, the PM sees "what can the system be" before he/she identifies how they will get there. Systemically, the planning process can then be:

OBJECTIVES	What do we want it to be?
METHODS	Alternatives to how we can get there.
RESOURCES	What we need to get there.

A matrix can now be developed for planning, implementation, and evaluation.

	PLANNING	IMPLEMENTING	EVALUATING
OBJECTIVES	What do we want?	Reach objectives →	Did we meet our objectives?
METHODS	What is the best method?	Apply method.	Were the most effective methods used?
RESOURCES	What resources are needed? →	Obtain resources.	Were the right resources selected and available?

Figure 20
Planning, Implementing and Evaluating Matrix

CONTEXT. With an understanding of strategic planning, the idea of being contextual or managing context needs expansion. Context is the bounding of a situation where content becomes what is inside that boundary.[9] If our PM is into painting, the edge of a mat is the context and the picture within the mat is the content. And since PM's deal in knowns, know-unknowns, and unknown-unknowns, then the following is valid:

CONTENT = Knowns and Known-Unknowns

CONTEXT = Unknown-Unknowns

If the PM locks into the content issues, he/she will be unprepared to handle the "unk-unk's" when they become known. Therefore, how the PM navigates the program can be an indicator of how contextual his/her scope is for the system.

If we link context with process observation, we can see how a PM can be contextual in the management of the program. It can be evident in the questions, actions, or behavior of the PM. Does the PM concentrate on what is known or is he/she always placing themselves in the system future? An example of context could be Figure 21.[10]

Figure 21
Context for Two

The lines in (A) are equal in length; this is one context. In (B) they are also equal, but presented in a different context and now (A) and (B) are not visualized as equal. For the PM, if he/she asks the right questions so that the boundary does not limit the answers to the knowns or known-unknowns, then the program's scope will be prepared to handle the unk-unk's. This management behavior expands the context of the program.

Another example of context is how the PMO staff are utilized. Many are used as "problem-solvers, trouble-shooters, fire-fighters, etc." They pride themselves on saving something or reducing risk because risk equals a problem. With this responsibility comes two dilemmas:

1. Self-Fulfilling Prophecy — There is/will be a problem.
2. Problem Ownership — If it is solved, my job is finished.

These dilemmas have been seen in some engineering and design approaches where a hardware problem given unlimited time and money can become a cost and schedule problem. Generally, this is propagated by our "carrot-stick" reward system built on the notion that "if you do better you will get more."[11] By changing the context of how our people are managed, the important factors become the mission, goals/objectives and acquisition strategy. And doing your job according to these factors becomes important and rewarded. If this context is used, our engineer is not contributing to the program because his/her efforts do not compliment our objectives and strategy.

One last example of improper focus in context is the current utilization of quality assurance programs. The context being used reinforces quality assurance versus quality work up front. To some degree this too can become self-fulfilling. With a context directed towards QA, the results are a large QA team, high dollar costs, and a workforce that relies heavily on what the QA team finds. By changing the context to quality work up front, the desire is to "do it right the first time," reducing the QA requirements.

INNOVATION AND CONTEXT. With an understanding of context and defining innovative as "coupled knowledge," the acquisition life cycle can take another form; Figure 22.[1]

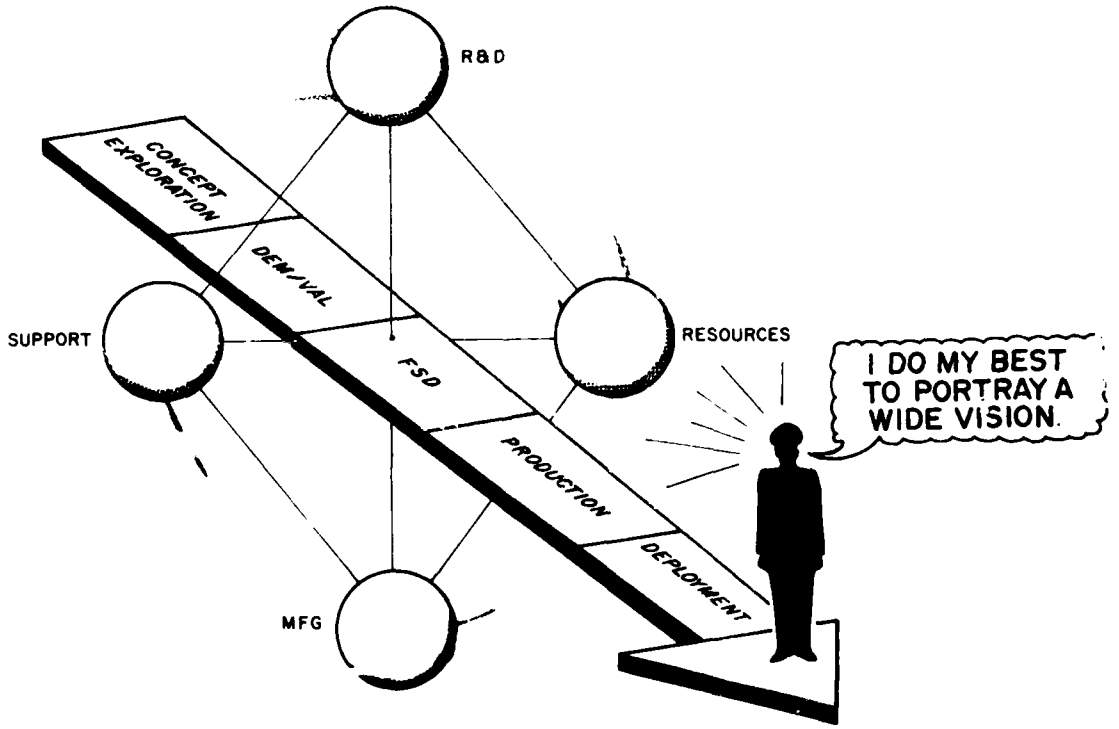


Figure 22
Innovative and Contextual Acquisition Life Cycle

The PM takes an "open" view of acquisition from the system future and establishes an innovative organization by integrating the skills and knowledge of his/her staff. This helps the PM out front as the navigator managing the acquisition process and the staff moving the system through this process.

FUTURE TECHNOLOGIES FOR PROGRAM MANAGEMENT

Where Are We Headed?

The Program Manager of today and most certainly tomorrow is going to be a "systems leader" with the challenge of managing their level of Force Modernization.[13] The PM's background and responsibilities will thrust him/her to the forefront of this defense transitioning. With our technology and that of the Threat changing rapidly, the PM's sensing and communicating skills will have to be continuously enhanced. Coupling the pace of technology with the complexity of the PM's integration responsibilities, new methodologies are needed for program management.

The DSMC Interface

Many of the questionnaire respondents and several PMO folks I have talked with are looking for management techniques to assist in their situations. There are some activities on-going at DSMC and I will recommend two more.

PROGRAM SUCCESS. There are studies in progress on analyzing success in program management and to develop the traits and causes of success. Once reduced and published to the program management community, this data could assist PM's in acquisition strategy development and program management.

PMSS. The Research Department is developing a computer assisted decision-making tool called PMSS, Program Managers Support System.[14] This system will assist the PM/PMO in the assimilation of program data and allow them to develop decision alternatives and study their impacts. It will not make the decision, but will help to determine "what if" parameters. Figure 23 models the systems implementation.[15]

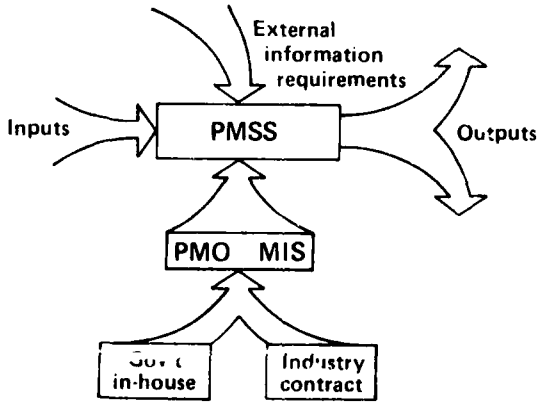


Figure 23
PMSS Implementation Approach

The process will require identification of the PM/PMO's internal and external information requirements for program management. These will be the PMSS inputs. The PM/PMO's will also identify the information and actions to be supplied outside the PMO. These will become the PMO outputs (see Figure 14, PM's Open System). By understanding the interfaces of the program:

- What are the interfaces?
- Who is involved?
- What are the boundary factors reducing the effectiveness of the interface?

The PMO can then utilize PMSS along with their "gut" feeling and experiential judgment base to make decisions. In this process of combining Management Science, Operations Research, Behavioral Science, and Computer Science technology as part of the transformation process (Figure 14), the outputs could have a broader context, and be more accurate and timely.

At this time DSMC plans to produce a PMSS Guidebook, configurations and spec's, and a software package for implementation.[16]

There are many more activities at DSMC, many even as a student I probably haven't heard about. The Policy and Organization Management Department (POMD) has an active course of instruction in Executive Communications and Human Resource Management. They also provide a selective consultant service to OSD and the services along with their research work, to assist organizations involved in systems acquisition. DSMC's most active source of current acquisition issues are published in Concepts and PM Magazine. The Research Department devotes itself to the identification of these issues and sources or methodology for solving or assisting the acquisition community in resolving key issues. Since the purpose of my research does not include a "tour" of DSMC facilities, I will cut the DSMC Interface discussion at this point. More assistance resources will be discussed under the section on resources.

RECOMMENDATIONS AND CONCLUSION

First, I hope my research can provide some insight or validate your thoughts on how the system, organizations, and people interface. But, there are also a few ideas that have come from the interaction and research in the development of this paper.

The "Think Piece"

DSMC has started a moderate level research effort for PMC students to use as a learning medium. In PMC 82-2, the initiatives of Deputy Secretary Carlucci's Acquisition Improvement Program (AIP) were divided up for student comment. This technique served several purposes.

1. To enable each student to gain some additional insight into the AIP and how it is envisioned.

2. Provided a reality check for AIP since many students are representing programs of all services.

3. Hopefully spawned many new advocates for acquisition improvement.

By reviewing the backgrounds of the students, it becomes evident that there is an excellent potential to gain innovative ideas from their broad knowledge and experience base. This base could be tapped through the "Think Piece" program much the same way a prolific Colonel once prophesized.

Colonel Mike Malone, US Army (Ret), told a story of a fictitious instructor at the Army's Command and General Staff College who took some students and had them study the C^{3}I failures of a large DoD exercise.[17] He limited each to one paragraph per failure, 10 per student. After a few weeks they met to prioritize and categorize each failure. He then had them look to technology and see what was available today that could have benefited each category. Finally, the fictitious instructor had the students summarize some new methodologies and skills to better the C^{3}I issue.

Although this concept was one man's imagination, its implementation is being studied at CGSC and the Army War College. This same principle could be utilized at the SX group level to broaden the context of current system acquisition issues. This could expand the information base of the Research Department and provide a methodology for sharing knowledge and experiences among students and the acquisition community.

System Acquisition Networking

Today in DoD and industry, technology and information are expanding like scientists perceive the universe expands. A concept that is becoming more and more utilized to keep up with the pace is computer network conferencing. By linking various organizations concerned with common issues, the expertises of many are brought to bear on the subject. As success is gained, it is shared with others. As "what can it be" questions are posed to the net, new unknowns are uncovered, broadening the issue context.

As I discussed earlier, the power of linking the "critical mass" of various organizations in system acquisition, the potential for directed energy at current issues is vast. To link technology to critical mass would require the following:

- A voluntary commitment by those linked to the network based on the desire to contribute to improving the system acquisition process.
- Honesty, openness, trust and candor among network members.
- An inexpensive terminal and telephone connection with hard copy capability.
- A computer conferencing program for members to tie into at their discretion.

The Defense Systems Management could sponsor this activity linking both DoD, the industrial base, and other system acquisition agencies. Not only would this serve as a medium to put forth concepts or issues for comment, but could also draw the members closer together in resolving some of the problems confronting the acquisition process. Figure 24 presents an example of a system acquisition network.

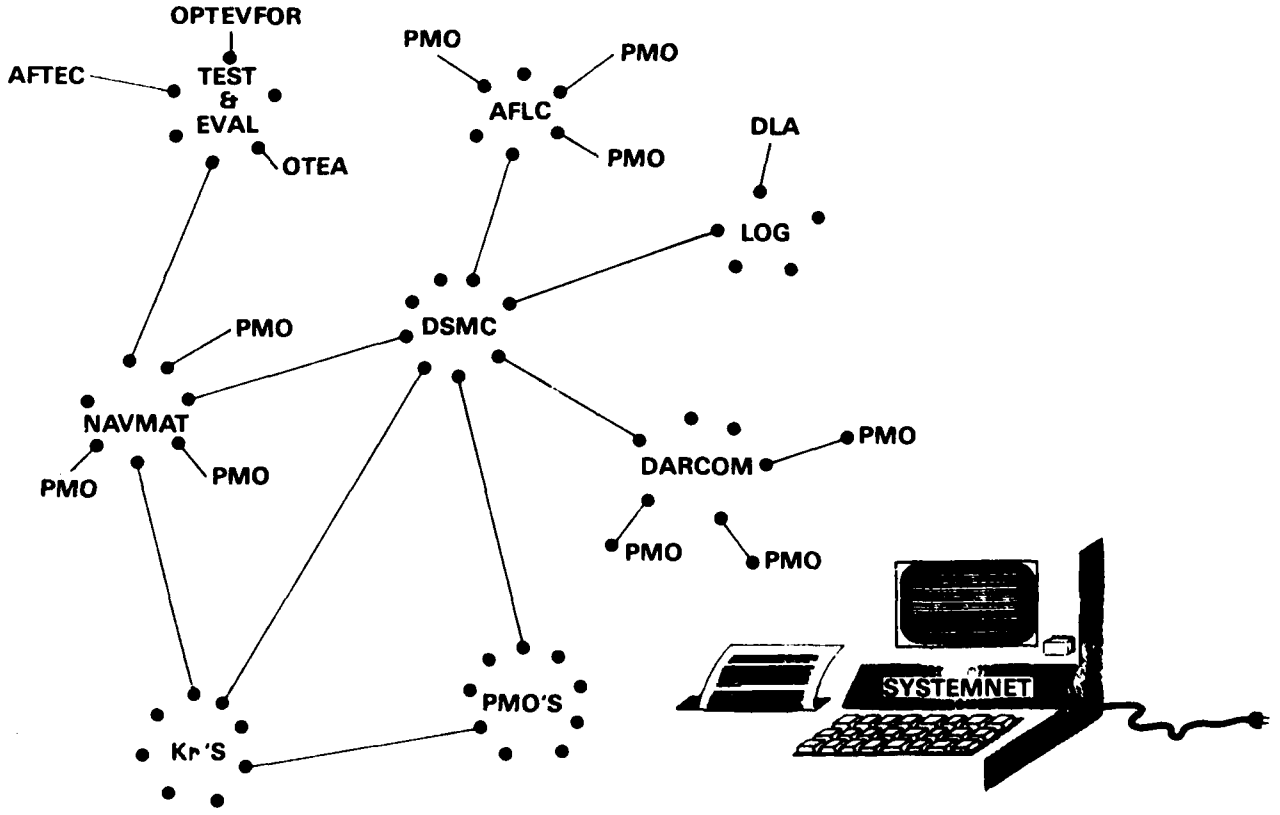


Figure 24
System Acquisition Networking

This network concept has been functioning very successfully in the US Army through the Army War College at Carlisle Barracks. It is known as the "Delta Force" and is highly supported by the Army's Chief of Staff. Appendix F contains the Delta Force concept.[18]

Other Recommendations

- Provide instructions on process observation to PMC students and include its practice as a part of the System Exercise (SX).
- Broaden the scope of the research on interface and context to include the concept of Brain Dominance. This could provide data on how to utilize left brain right brain, and double-dominant individuals when managing interfaces.
- Utilize the Multi-Dimensional Program Management Model to portray interface and expand the methodology section to include:
    1. How to pick and assign PMO personnel to assist the PM in handling interface situations.
    2. How to train PMO personnel to recognize boundary densities and their factors and to manage them.

Conclusions

The Multi-Dimensional Program Management Model is a valid representation of the complex environment of the Program Manager and the Program Management Office. Understanding its principles of interface and boundaries could provide insight on how to enhance integration by recognizing where to place the most effort. Again, the methodologies and recommendations were not meant to provide a cookbook solution to integration management. But, to provide some indication of what can be utilized if pursued to full understanding or consultant assistance is employed.

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DSMC, PMC 82-2

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APPENDIX A

ORIGINAL CONCEPT PAPER/QUESTIONNAIRE

INCLOSURE 1

In this concept paper, the Multi-Dimensional Program Management Model will be developed to establish a common understanding before proceeding to Inclosure 2, the questionnaire. This development will be in steps.

1. Depicting the internal interface within organizations, personnel, and the system/product domains.

2. Taking a more macro view of the domains to show interface in depth.

3. Describing interface boundary factors and how they may hinder effective interaction.

4. Combining the above steps with the system acquisition life cycle to obtain the M-DPM Model.

THE MULTI-DIMENSIONAL PROGRAM MANAGEMENT MODEL

A proper model must first be developed so that key interfaces can be studied before turning attention to interface management methodologies. Below we can view different acquisition organizations as they are integrated by the Program Management Office (PMO).

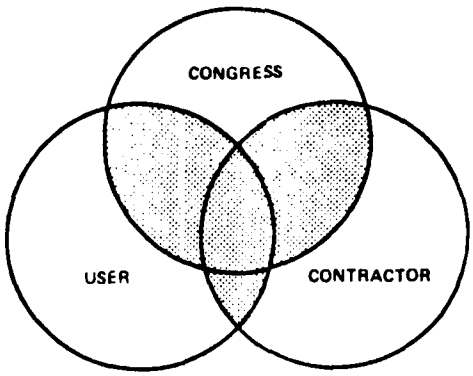


Figure 1
Organizational Interaction

It is a role of the Program Manager (PM) to successfully integrate the functions of these organizations as they apply to the acquisition process. This same model can be used when describing the system/product and the personnel involved in system acquisition and life cycle management.

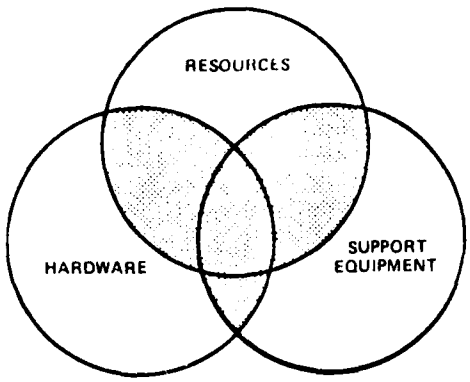


Figure 2
System/Product

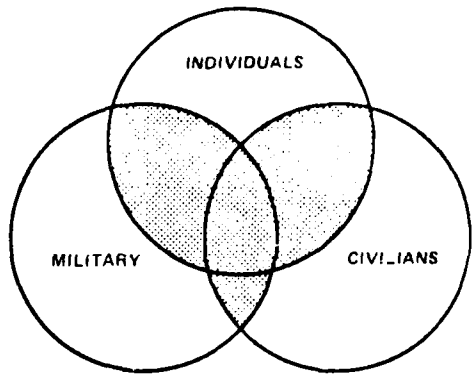


Figure 3
Personnel

Therefore, Figures 1-3 imply there are multiple interfaces for the PM and PMO to continuously manage in the domains of product, organizations, and personnel.

Although we have only depicted three areas in each domain, acquisition reality tells us there could be many levels within each domain. If we list several areas under each domain and take a more macro view, the model now takes on much more depth. Figure 4 illustrates the interaction of the major domains and the resultant interfaces in depth.

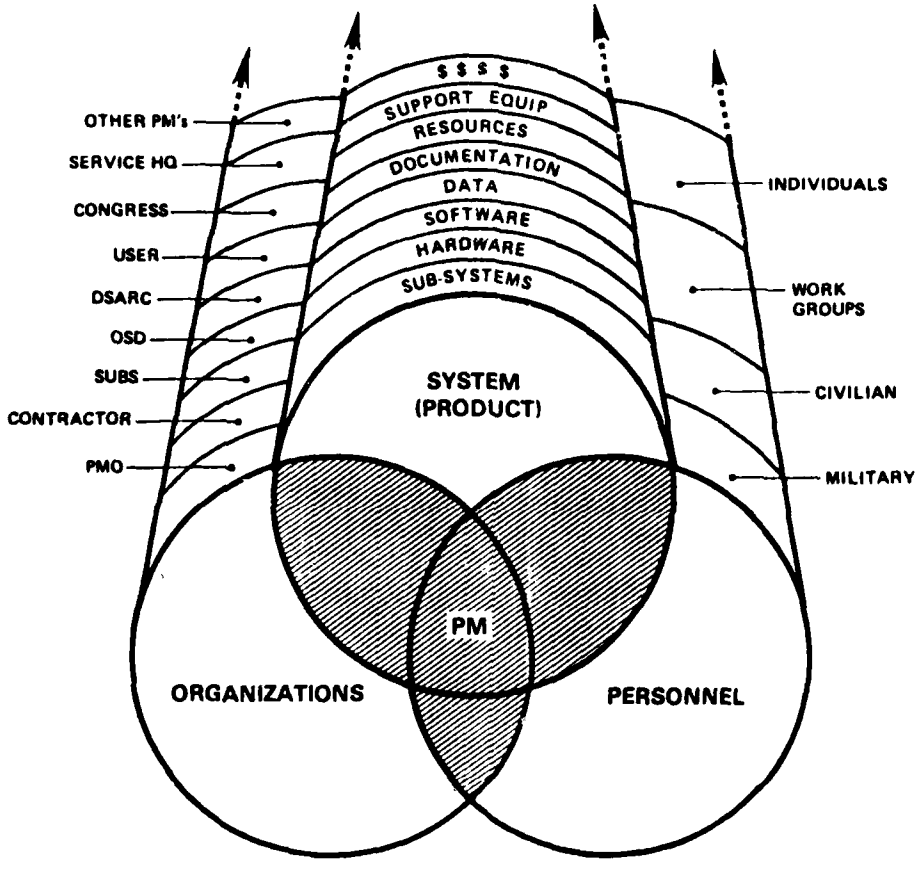


Figure 4
Interface in Depth

At this stage, the combinations of interfaces between product, organization, and personnel are of a large magnitude. It takes personnel to make organizations who interact to acquire systems which involve subsystems, and are made for people's use; etc... Since

interfaces are multiple and in-depth, it will take multiple strategies to manage this interaction. This will require a description of an interface itself.

For this example we will take two groups from the organizational domain, the contractor and the user. On most of our systems, the user and contractor must interact from concept exploration through production and deployment. During interface, boundaries may develop hindering the effectiveness of the interaction. Visually this may look like Figure 5.

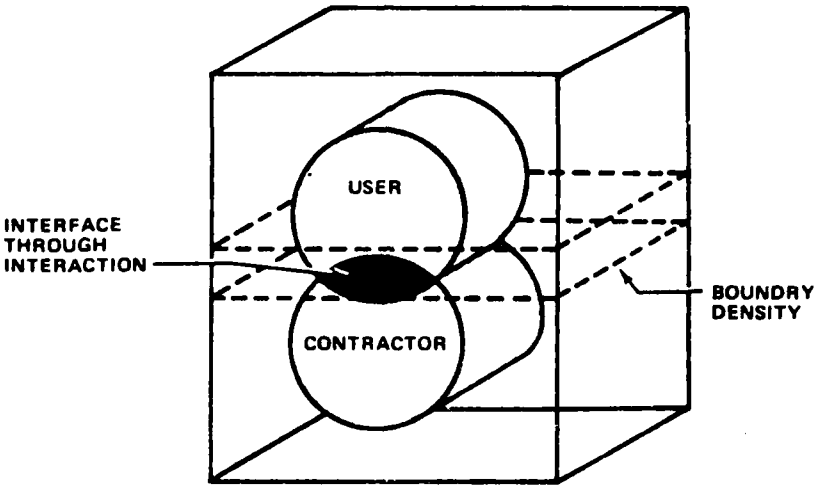


Figure 5
Interface Boundary Representation

The dotted lines represent the boundary hindering effective interaction by varying degrees, dependent on the factors which contribute to increasing the density of the boundary. The boundary factors affecting density are:

- Organizational values
- Biases
- Perspectives
- Organizational goals
- Expectations
- Needs and desires
- Organizational behavior
- Politics
- Regulations and Directives
- Organizational structure
- Communications
- Others

The density itself implies the difficulty in achieving effective interaction. It is this boundary density the PM is tasked to reduce, hopefully to the point that it no longer exists--total effective interface management between user and contractor. This would indicate a purpose to the research study. Through modeling, an understanding of the Program Manager's responsibilities in the integration and interface management could lead to identification and analysis of management methodologies to be used by a PM.

As a further step in identifying boundaries, while referring to Figure 4 again, the personnel and system domains might reflect these potential boundary factors:

***PERSONNEL**

- Individual Values
- Biases
- Perspectives
- Individual Behavior
- Needs and Desires
- Expectations
- Communications
- Others

SYSTEMS/PRODUCT

- Technology
- The Threat
- Available Resources
- Authorized $$$
- Appropriated $$$
- Design
- Engineering
- Manufacturing
- Contracts
- T&E
- Others

*Note how personnel and organizational boundary factors are similar. This is because they are people issues where the system factors are non-people.

As a last step in portraying the magnitude of the interface issue, we can show the dimensionality by applying interface in depth (Figure 4) to the system acquisition life cycle. This results in the Multi-Dimensional Program Management Model, Figure 6.

If this depicts an accurate view of the magnitude and dimensionality of the PM's integration and interface management issues, the next step will be to identify and analyze methodologies and skills such as:

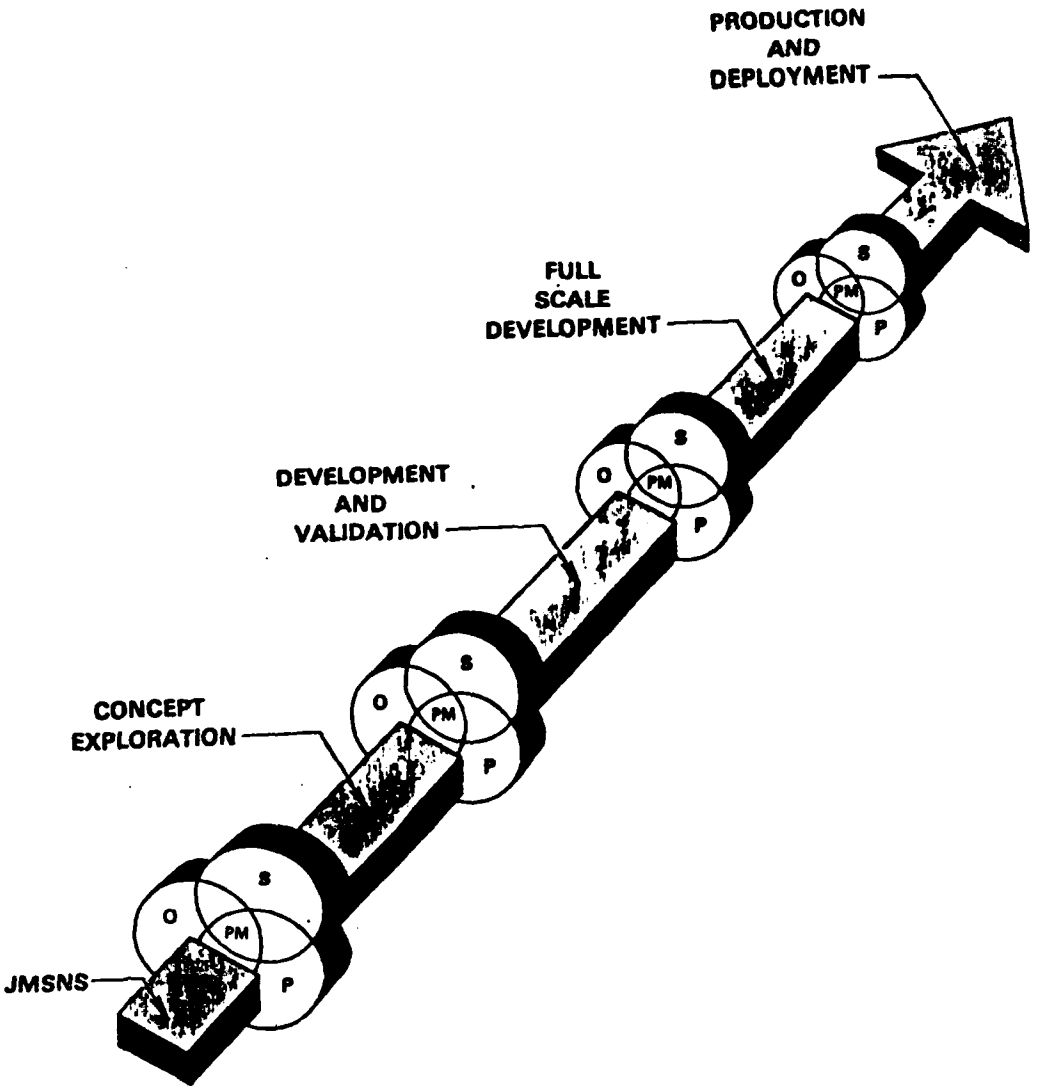
- Goal integration
- Role clarification
- Transition management

...just to name a few. Then to provide a list of potential resources from which the PM and/or his PMO could obtain the necessary skills, knowledge, or assistance.

But first the model concept must be refined and validated. This leads us to the questionnaire.

PROCEED TO INCLOSURE 2

FIGURE 6. THE MULTI-DIMENTIONAL PROGRAM MANAGEMENT MODEL



INCLOSURE 2

With Inclosure 1 as a basis for common understanding of the M-DPM Model, the following questions are asked to gain clarity and your views on the subject matter.

DEMOGRAPHICS

1. PM's Service: _____ Army _____ Air Force _____ Navy _____ Marine Corps

2. Joint Acquisition: _____ Yes _____ No

3. Major Acquisition: _____ Yes _____ No
(DODD 5000.1)

4. Management Structure of PMO:

_____ Functional _____ Product _____ Matrix

5. Where is your system in the acquisition process?

_____ Concept Exploration
_____ Development and Validation
_____ Full Scale Development
_____ Production/Deployment

6. First unit cost or estimate: _____

7. How long has PMO been established? _____

8. How long have you been the PM? _____

9. Size of PMO: _____ personnel

10. Percentage of military in PMO: _____% military

11. Average turnover in PMO during one year

_____% turnover

The following questions are directed at the Multi-Dimensional Model and how it might relate to your situation.

1. Could you see your PMO in this model?

Very little similarity (1) (2) (3) (4) (5) Very much like ours

2. How effective is the interface represented?

	Ineffective				Effective
Personnel	(1)	(2)	(3)	(4)	(5)
Organizations	(1)	(2)	(3)	(4)	(5)
System	(1)	(2)	(3)	(4)	(5)

3. How effective are the boundaries explained?

	Ineffective				Effective
Personnel	(1)	(2)	(3)	(4)	(5)
Organizations	(1)	(2)	(3)	(4)	(5)
System	(1)	(2)	(3)	(4)	(5)

4. Would this model, an in-depth explanation, and a discussion of methodologies to breakdown boundaries be useful to PMO's?

Not very useful (1) (2) (3) (4) (5) Very useful

5. What changes would you make to the Multi-Dimensional Model?

6. Is there general agreement with the goal and objectives in your program?

		Very Little				Strong Agreement
a.	Among Personnel	(1)	(2)	(3)	(4)	(5)
b.	Among Organizations	(1)	(2)	(3)	(4)	(5)

7. What other boundary factors exist for you?

Personnel:

Organizations:

System/Product:

8. Are operational territories and responsibilities clearly understood in your program?

	Most Unclear				All Are Clear
Personnel	(1)	(2)	(3)	(4)	(5)
Organizations	(1)	(2)	(3)	(4)	(5)

9. Referring to Figure 4 (Inclosure 1), which elements cause the most concern in integration and interface management?

PERSONNEL	ORGANIZATIONS	SYSTEM
(1)	(1)	(1)
(2)	(2)	(2)
(3)	(3)	(3)
(4)	(4)	(4)
(5)	(5)	(5)

10. What are the most important skills/knowledge for a PM to understand and use?

(1 - Important, 2 - Somewhat, 3 - Not Very Important)

_____ Business Management
_____ Design
_____ Leadership
_____ Group Dynamics
_____ Communications
_____ Systems
_____ Behavioral Science
_____ Engineering
_____ Self-Awareness
_____ Counseling
_____ Process Observation (how things happen)
_____ Creative Thinking
_____ Acquisition Process
_____ Others not listed:

11. What other comments would you like to add based on your experiences?

Thank you for your openness and sincerity in helping me with this research. I wish to again mention that I will personally handle all data in a confidential and anonymous manner.

I do/do not desire a copy of the study.

Return to Phil Hamilton's student box NLT 15 September 1982.

Thank You!

APPENDIX B

QUESTIONNAIRE DATA REDUCTION

The data has been broken out into:

- Section A which includes selected demographic information.
- Section B with numerical and single answer information on the model and the respondant's program.
- Section C comprising structured comments on the model and program management in general.
- Section D, a discussion of selected data.

It must be noted that some respondants elected to not answer some questions.

SECTION A

	PM's	ERC	DSMC Faculty	PMC Students
• Number of Respondents	16 of 21	9 of 29	18 of 24	14 of 26
• Service				
Army	7	3	6	2
Air Force	6	4	5	9
Navy/MC	3	1	6	3
• Involved in a Joint Program	7	3	9	3
• Involved in Major System Acquisition	15	5	12	9
• Management Structure of PMO				
Functional	2	3	5	4
Product	2	3	5	4
Matrix	12	2	9	3
• Which Phase of Acquisition	All	D/V to P/D	All	All

- PM's were found to be primarily in FSD and P/D
- ERC were most in P/D
- Faculty were mostly in FSD
- Students were generally in FSD and P/D

- Size of PMO

Highest	445	450	250	450
Lowest	9	33	5	2
Average	137	145	46	100
• Percentage of Military in PMO	31	34	33	45
• Percentage of Annual Personnel Turnover	16	15	26	17

Section B

Where the answers to questions are numerical, refer to the questionnaire at Appendix A for the qualifier. Generally, a 1 or 2 implied low or somewhat negative answer and 4 or 5 is high or positive.

1. Could you see your PMO in this model?

   PM's: 42 **ERC:** 3.5 **Faculty:** 3.4 **Students:** 3.6

2. How effective is the interface represented?

	PM's	ERC	Faculty	PMC
Personnel:	3.8	3.1	3.2	3.4
Organizations:	3.7	2.9	3.3	3.4
Systems:	4.0	3.1	3.3	3.4

3. How effective are the boundries explained?

	PM's	ERC	Faculty	PMC
Personnel:	4.3	3.0	2.5	3.4
Organizations:	4.4	2.6	2.8	3.5
Systems:	4.4	2.8	2.8	3.3

4. Would this model, an in-depth explanation, and a discussion of methodologies to breakdown boundries be useful to PMO's?

PM's: 3.3 **ERC:** 2.3 **Faculty:** 3.2 **PMC:** 3.8

5. See Comments.

6. Is there general agreement with the goal and objectives in your program?

	PM's	ERC	Faculty	PMC
Among Personnel:	4.2	3.6	3.1	3.7
Among Organizations:	3.9	2.5	2.8	3.8

7. See comments.

8. Are operational territories and responsibilities clearly understood in your program?

	PM's	ERC	Faculty	PMC
Among Personnel:	4.0	3.7	3.7	3.2
Among Organizations:	3.9	3.1	3.4	3.4

9. Which elements cause the most concern in integration and interface management?

		Personnel	Organizations	Systems
PM's:	(1)	Individuals	Contractor	Resources
	(2)	Civilians	OSD/Congress	Support Equipment
	(3)	Work Groups	Users	Software/Documentation
ERC:	(1)	Individuals	Users	ILS
	(2)	Work Groups	OSD/Congress	Resources
	(3)	User Rep's	Contractor	Documentation
Faculty:	(1)	Individuals	Higher HQ's	Resources
	(2)	Civilians	Contractor	Hardware
	(3)	Work Groups	Users	Software
PMC:	(1)	Work Groups	Congress	Software
	(2)	Individuals	Contractor	ILS
	(3)	Civilians	OSD	Documentation

10. What are the most important skills/knowledge for a PM to understand and use?

(1 - Important, 2 - Somewhat, 3 - Not Very Important)

	PM's	ERC	Faculty	PMC
Business Management	1.1	1.1	1.3	1.2
Design	2.2	2.1	2.0	2.0
Leadership	1.0	1.0	1.2	1.0
Group Dynamics	1.2	1.6	1.7	1.5
Communications	1.0	1.2	1.1	1.1
Systems	1.6	2.1	1.7	1.7
Behavioral Science	1.7	1.7	1.8	2.0
Engineering	1.9	2.0	1.8	2.1
Self-Awareness	1.7	1.0	1.6	1.8
Counseling	1.7	1.9	2.2	2.1
Process Observation	1.3	1.7	1.5	1.9
Creative Thinking	1.2	1.8	1.6	1.7
Acquisition Process	1.3	1.2	1.4	1.4

Additional skills and knowledge recommended by respondents

- Problem-Solving
- Politics
- User Needs Assessment
- Threat Analysis/Capabilities
- Delegation
- ILS
- Manpower
- Test and Evaluation
- Tech Management
- Memory

SOLICITED COMMENTS TO SPECIFIC QUESTIONS

Question 5: What changes would you make to the Multi-Dimensional Model?

Program Manager Comments:

- Change personnel to resources: funds, personnel, facilities, etc.
- Can't argue with model, but seems basic
- Include the development community
- Add more factors and degrees
- Unknowns
- Changing personalities - decision makers
- Show me how everything is interacting with everything else at the same time
- Add international interactions
- Users only interface with Congress when submitting testimony support requirements
- Include Small Business - These set aside sometimes create boundry factors for Kr's
- Expand personnel boundries to include minorities and women - management challenges
- Add P^3I to keep up with threat. Development phase of P^3I (6.2, 6.3A) generally parallels FSD and P/D (6.3B, 6.4)
- Correct course - expand it

Executive Refresher Course Comments:

- Why not informal vs. formal - Good ol' boy networks are most important
- Add contract administration - CAO
- Add flexibility between phases.

DSMC Faculty Comments:

- Show complexity of interface issues and how composition changes throughout life cycle
- Add more depth to discussions
- How are work groups different from organizations?
- Using hierarchy of systems model, personnel and organizations are the same, not discrete domains
- Different organizations require different emphasis depending on life cycle phase
- Inconsistent hierarchy between personnel and organizations
- Add more to discussions
- Expand and show how PM could effectively apply the model
- Show more examples
- Need methodologies to break down boundries

PMC Student Comments:

- Add FMS/State Department
- Add logistics and training
- Show how O/S/P is continuous throughout acquisition and always changing
- Increase emphasis on interface - too important
- Develop techniques and methodologies to use
- Expand
- How do we break down the boundries?
- Interfaces are variable
- Distinguish between near-mid-long term activities
- Consider the changes in the interface intensity (density)

Question 7: What other boundry factors exist for you?

Personnel Boundry Factors:

Program Manager Comments:

- "30 minute experts" - To be briefed means you are now an expert with suggestions
- Personnel resources
- "This is the way we do it in my service"
- Lack of training

Executive Refresher Course Comments:

- Freeze and hiring restrictions
- Personnel goals

DSMC Faculty Comments:

- Individual goals
- Personnel regulations and directives
- Individual guidance and directives
- Lack of mobility in civilian work force
- Lack of accountability
- Lack of rewardability

PMC Student Comments:

- Management styles
- Personal abilities
- Evaluation and promotion policites
- "Tire kicking" Visitors
- Unproductive personnel

Organizational Boundry Factors:

Program Manager Comments:

- Different Kr's/subs
- Layered organizations - can only say no
- Perception of threat by combat developer vs. material developer
- Behind the scenes support - upfront everything looks rosey (don't want to be embarrassed)
- Not invented here - Don't use it
- Lack of ability to compromise - Example - User won't give up cost driver because his HHQ might say he is stupid

Executive Refresher Course Comments:

- Production facilities
- OSD vs. Army
- *Foreign alternative systems*
- Media hostility
- CAO
- Supporting agencies - Energy Department

DSMC Faculty Comments:

- *Procedures that limit latitude of functional managers to support program*
- Personnel resources

PMC Student Comments:

- Manpower levels (actual vs. need)
- FMS countries and their values/culture
- MOA's

- Politics
- Operational procedures
- Labs
- Ilities
- Independent testers
- Suburban supporters
- Development and training commands
- JCS
- DIA
- Too rigid procedures
- Joint service programs
- NASA
- DARPA

System Boundry Factors:

Program Manager Comments:

- PIP's
- Multiple sources
- Priorities

Executive Refresher Course Comments:

- $$$
- ILS

DSMC Faculty Comments:

- Schedules
- Time, $$, resources

- Need/threat

PMC Student Comments:

- SPEC's/STD's
- Quality
- Parallel development/concurrency
- Hi Tech
- State-of-the-art
- Technology demonstrators vs. prototypes
- Maintenance
- Training

Question 11: What other comments would you like to add based on your experiences?

Program Manager Comments:

- In real world, it's dynamic.
- Truth is few organizations or personnel are results oriented outside the PMO.
- PMO is still more complicated.
- Too many decision makers in the act above PM - PM makes minor ones.
- PM performance proportional to Kr's - We have to get bad Kr's to improve.
- Small effective staff using matrix with some degree of automation can do a tremendous amount.
- During CE and Dem/Val, the "long pole in the tent" is how well you prepare and execute RFP's.
- Remember you can agree to disagree.
- You can't systemize human relations and interfaces.
- Good graphics of interaction - causes excellent recognition of where sensitive interfaces are required.
- People are also resources.
- Strongest interfaces are between PMO, User, HHQ's and Kr.
- PM really manages change and the problems caused by change.
- There are more "nays" than "yes's" as the PM goes up the chain. PM must convince critics and supporters that changes are (1) inevitable, (2) manageable, and/or (3) good.
- User, logistics, Kr, and PMO must be rewarded for making realistic cost/schedule/performance tradeoffs. Because of this they won't compromise.

Executive Refresher Course Comments:

- I don't think it can be reduced to a tidy diagramatic illustration.
- Credibility with command and staff most important.
- Don't feel it is useful except in a textbook.
- No two PMO's or PM's are alike.

- What has been successful in successful PMO's? Drivers, trends, patterns, etc., *let's pass them out.*
- A good idea for teaching interface in Project/Program Management.
- Hard to keep program objectives foremost in PM's mind much less all other organizations and individuals.
- Communicating goals/objectives most important job of PM. Model could help here.

DSMC Faculty Comments:

- Phase 0 - People emphasis
- Phase I - Organizations dominate
- Phase II - Systems dominate with organizations and people important
- *Phase III - Organizations dominate with systems important and people decreasing in importance.*
- PM does not reduce boundry density.
- *Model is an over-simplification.*
- As a model, it's O.K.
- The model is too abstract.
- Interesting approach to general acquisition theory.
- Boundries hinder effectivess - Why?
- Total effective interface - Is this reality?
- Does a PM really use models to understand his responsibilities in interface management?
- Any PM should serve as a staff officer at OSD or service HQ's - PM must know his way around.
- PM must know when to fight/when to compromise.
- PM should be allowed to choose his own staff.
- PM should know contracting.

PMC Student Comments:

- Good representation but each PMO different.
- How does this fit with every PMO is unique?
- Model can serve as a core and uniqueness stems from auxillary differences.
- Some PM's organize around key personnel vs. functional areas. As long as they were informed, the functions were accomplished.
- Kr and users talk through PMO.
- Dynamics are hard to get a handle on.
- There are "non-doers" in some PMO's just like other organizations.
- There are no well defined rules to work by.
- Who is or/should be on team - everyone.
- The PM can only concentrate on a few interfaces at a time - He needs help.
- System interfaces are easy - definable organizational interfaces are fluid and less definable. Personnel interfaces are most difficult - change continuously and frequently.

Discussion of Selected Data

PARTICIPATION. The participation of those requested to respond was more than adequate with the exception of the Executive Refresher Course. I believe this fact could have been a result of the priority my research had with respect to the other activities they were absorbing.

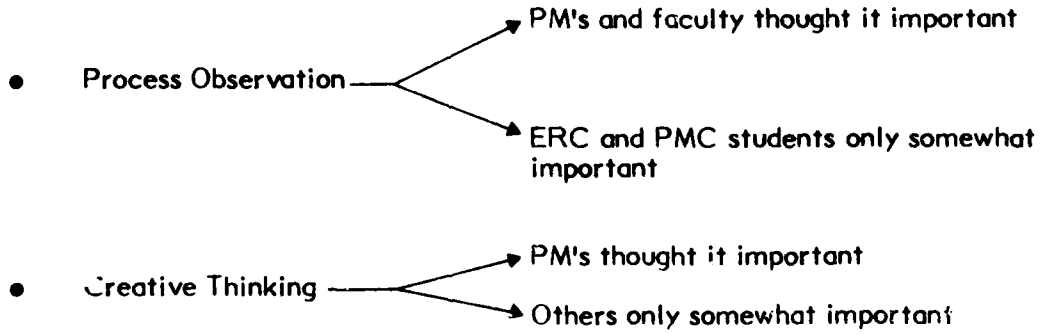
ACQUISITION PHASE. The balance of involvement of respondents in different phases of acquisition helps to validate the dimensionality of system acquisition. Most were in Full Scale Development (FSD) or Production/Deployment (P/D).

SIZE AND TURNOVER IN PMO. It was interesting to note that the Air Force consistently had the highest number of personnel in their SPO's, while the Navy generally had the least. Within the PMO's there was an average 20 percent annual turnover in personnel. This turnover factor can definitely affect the interface boundries due to the need to continuously bring folks "up to speed".

GOAL/ROLE UNDERSTANDING. The most important data received strongly supports a boundry density concept and how it is dependent on boundry factors. All respondant groups, with the exception of PM's, answered the questions on the understanding of program goals and responsibilities as less than 4.0. The ERC was as low as 2.5 and 3.1 respectively. This would imply that there is a general concern over goal integration and role ambiguity.

ORGANIZATIONAL AND SYSTEM CONCERNS. In the area of interface management, there was general agreement that Congress, OSD, the users and contractors provide the most organizational concerns. While resources ($$, people, materials), software, and documentation and ILS provided the system concers. Resources are self-explanatory, but software could be due to the fast expanding technology which only a few in management have a solid grasp. The documentation concern could be tied to the old adage, "the job's not done till the paperwork is finished." With the constraints on funding and the increased publicity on deployed systems, an increased emphasis on ILS has evolved. In the last couple of years, several of our latest weapon systems have been on T.V. and in the newspapers because of ILS problems.

SKILLS AND KNOWLEDGE. There are a lot of skills each group held high in importance. Generally, leadership, business management, and communications were highest, while the technical areas were lowest. There was also some consensus on having an understanding of politics and needs or problem assessment. The lowest correlation areas centered around:



The remainder of the questions and comments were primarily directed at the M-DPM concept paper. As can be seen from the original concept paper and this final research paper, a large majority of those comments either drove the context and content of the research or were directly included.

APPENDIX C

STEPS IN THE PROCESS OBSERVATION MODEL

INFORMATION GATHERING

The process by which the organization gathers information about its external or internal environment.

INFORMATION GATHERING addresses the following questions:

- Was all information available to the organization obtained by it?
- Was information recorded, interpreted, and assessed for importance?
- Was information obtained accurate, timely, and relevant?

COMMUNICATING INFORMATION

The process of transmitting information to those elements of the organization who must make decisions or take actions.

COMMUNICATING INFORMATION addresses the following questions:

- Was information communicated to everyone who needed it when they needed it?
- Was the communication of information complete, accurate and timely?

DECISION-MAKING

The activities of one or more persons leading to a conclusion that some action will, should, or should not be taken, as a result of gathered information. Decision-making is not limited to PM's; it may include other personnel.

DECISION-MAKING addresses the following questions:

- Was all relevant available information used in decision-making?
- Were the decisions made at each level correct in view of information available to decision-makers?
- Were decisions timely?

STABILIZING

Actions intended to adjust internal operations to maintain internal stability and unit integrity that might otherwise be disrupted as a result of decisions.

STABILIZING addresses the following questions:

- Were potential effects of decisions taken into account? (Accommodate change, new developments, other decisions)
- Were unit procedures flexible enough to adjust to changed conditions and situations?

COMMUNICATION DECISIONS

The process of transmitting decisions through a command, an order, or instructions to those parts of the organization that must implement them. Includes discussion and implications of those decisions, and attempts to obtain clarification.

COMMUNICATING DECISIONS addresses the following questions:

- Was communication of the decision complete, accurate, and timely?
- Was everyone informed who should have been informed about decisions and requirements?

IMPLEMENTING ACTIONS

The process of implementing those decisions within the organization; primarily concerned with hos actions are executed.

IMPLEMENTING ACTIONS addresses the following questions:

- Was execution of actions correct and effective?
- Were actions executed IAW the intent of the decisions and plans?
- What were the effects of any aborted/changed decisions and plans?

FEEDBACK

Activities that assist the organization to assess the effectiveness of its actions and that they provide information for possible change or future actions.

FEEDBACK addresses the following questions:

- Was action taken to obtain information about the outcomes of decisions and actions?
- Was information obtained in follow-ups considered in making new plans or decisions?
- Was feedback information timely and appropriate?

APPENDIX D

TRANSITION AND PLANNING MODEL

This Appendix will direct itself to a functional explanation of how a program could utilize the Transition and Planning Model as a methodology for system navigation (Refer to Figure 15). It is strongly encouraged that the organizational leader, in our case the PM, contact a service consultant for assistance in implementation of the program. This would allow the PM to take an active role in the tasks at hand while the organizational consultant(s) facilitates group interaction. The consultant(s) will also be skilled in assessing where the organization's concerns are so that this model could be effectively tailored to the PMO's needs and expectations.

The first step is to identify what values your organization possesses and desires to live by during this next phase of system acquisition. This is a time to gain clarity on what is currently happening in the organization and understand reasons for the "deltas" with respect to what is desired.

The next step is to conduct an "organizational scan" of the PMO to determine the demands on the organization. There are three types of demands.

- External demands.
- Internal demands developed due to external demands.
- Internal demands not associated with any external demand.

It must be recommended that the group should only address those demands that they (PMO) have control over -- planning and/or implementing. Secondly, the current and future state should be discussed.

After a discussion of the organizational demands, a mission statement for the PMO can be written or revised based on what the organization must do -- External Demands. From these last two discussions, demands and mission, coupled with the desired values the PMO wishes to follow, the organizational goals and objectives can be determined. These are defined as:

GOALS	Directional statements of what is to be accomplished; qualitatively.
OBJECTIVES	Specific steps to be accomplished which lead to mission and/or goal attainment; quantitatively.

These steps should pretty well identify the direction of the PMO and now it is necessary to determine how it will get there.

The next step is to establish the organizations priorities for work effort within the PMO. This can be done by analyzing the demands on the organization as they relate to mission, goals, and objectives. Since the mission, goals, and objectives are written based on the external and internal demands listed, a mental prioritization was accomplished

during this discussion. To analyze the demands, a relationship matrix can be used. This requires (1) coding each demand using the criteria below, (2) deleting any demand that is unnecessary (internals), (3) listing for review with external organizations those that it is felt are not necessary (external), and (4) establishing a priority for work effort for each demand.

CODE	MEANING
1	Mission essential.
2	Needed, but not required.
3	Routine, nice to have.
4	No relation to mission, goals, or objectives.

The deletions should come from those coded #4 and possible some #3's. At this time a review of the mission statement, goals, and objectives should be made to insure no modification is needed.

In order to carry out the planned mission, goals, and objectives, a PMO support team will be necessary. Each member of this planning session should identify how they can support the transition by addressing:

1. What should I do through tasks, actions, or functions?
2. What support do I need from the team and/or its individual members?
3. What support can I provide to each member based on what they must accomplish?

Once a comparison and discussion has taken place, changes should be made to insure each is now aware of their specific roles and responsibilities as they relate to the mission, goals, objectives, and demands. The next step is to insure that no one individual or element of the PMO is overburdened. And, that the PMO and its elements are adequately structured to facilitate the tasks at hand.

The next assessment should be to study obstacles and people/organizational resources as they relate to the previous work. This will require an analysis of:

- What/Who are the obstacles to reaching our goals/objectives?
- What individuals or organizations are absolutely essential to achieving our desired future state? And will they...
  1. make it happen?
  2. let it happen?

3. help it happen?

4. block it?

This can be accomplished by completion of Table 1.

GOAL/OBJECTIVE/ TASK/ACTION	INDIVIDUAL/ ORGANIZATION	MAKE IT HAPPEN	LET IT HAPPEN	HELP IT HAPPEN	BLOCK IT

CODE	MEANING
X	Where they stand now.
Y	Where we desire them to be.

Table 1
Individual Organizational Interface Assessment

Now the group should determine how they can influence the change of "Y" to "X".

This completes the determination of organizational direction and how the course is to be traveled. At this time one last team assessment should take place to gain clarity on the PMO's abilities, knowledge, and expertise. This would be to identify and discuss the team relationships in Table 2 based on the previous work.

PMO STRENGTHS	PMO WEAKNESSES	HOW WEAKNESSES ARE NULLIFIED

Table 2
Team Assessment

A final review of roles and responsibilities to accomplish the goals/objectives and nullify the weaknesses will complete the program. As a final step to insure commitment, and the most important, the responsibilities must be tied to the organization's rewards and evaluation system. Since the team has been involved in charting the direction of the organization, developing responsibilities and team support systems, typing the reward system will insure implementation takes place and in a timely manner. One additional step that has been most useful is for each person and/or organization to develop an Action Planning Worksheet as in Table 3.

PRIORITY	GOAL/ OBJECTIVE	GUIDANCE/ ACTIONS	DATE START	DATE COMPLETE

Table 3
Action Planning Worksheet

As an organizational consultant, this methodology was utilized successfully in many organizations from small staff elements to large civilian or military organizations. It is a building block approach to identifying mission, goals, objectives and responsibilities. It also reduces boundary factors by gaining clarity in these areas and developing a support system among the organizational team. It also has been successful when utilized by the "critical mass" teams discussed earlier and pictured in Figure 16, although not in a system acquisition environment. A purpose of this research is to recommend its use.

Some final comments. Automating the tables listed would allow individuals or organizations to review the status of any specific task or action so they could determine where the organization is in meeting its goals or objectives. And, see if they are required to interface at a particular point in time based on the plan. At minimum, they should be reviewed every 3-6 months. It has been my experience that the entire session can take 2-5 days based on the size of the organization and the depth of assessment. The reviews take two hours to one day depending on their frequency.

APPENDIX E

RESOURCES

What Assistance Is Available

The depth a PM desires to go into the use of behavioral science skills in managing the complexities of program management are up to the individual. Within each of the services there exists an organization whose mission it is to provide this expertise, tailored to the needs of the organization and its leader or manager. Each service has designed their organization, instructed service members, and implemented programs focusing on techniques to increase organizational effectiveness.

The Air Force has their program at Maxwell AFB; the Leadership Management Development Center. It operates on a central consultant team concept where their consultants visit various Air Force organizations to assist the commanders, leaders, and staff. The consultants administer a questionnaire, analyze its data, and provide it back to the organization along with their interpretations. Based on this data and their interaction with the leaders, the consultants assist in any type of workshops/seminars that are desired.

The Navy's Human Resource Management Program maintains its school at Millington NAX, Memphis, TN. They also have regional HRM Centers in the following areas to service their installations and fleets.

- Washington, DC
- Norfolk, VA
- San Diego, CA
- Pearl Harbor, HA
- London, UK

The Washington, DC office would be in support of all Navy activities in that area, to include the PMO's with NAVAIR, NAVSEA, NAVELEX, and NAVMAT. The Navy's program offers a greater assessment and intervention planning capability than the Air Force. Although they use surveys in the assessment phase, they are moving away from a dependency on that type of data collection and supplementing it with other forms of assessment. At this time the Navy is transitioning its involvement to the "flag" level to insure their activities are making the most impact for the betterment of the Navy.

The Army's program, Organizational Effectiveness, is the most advanced of the three services in the use of behavioral science skills and methodologies. They have the largest consultant force of any organization, civilian or military. They train their consultants at Fort Ord, CA at the Organizational Effectiveness Center and School. The consultants are then assigned to each post/installation, major command, and the Army Staff. The school also maintains an External Operations Division comprised of senior consultants who avail themselves to issues that have a large impact on the Army and its missions. Like the Navy, OE consultants can assist commanders or leaders in many aspects of team development, role clarification, goal setting, and transitioning. The Army consultants can also expand their expertise to advance problem-solving, strategic

planning, and high performance organizational design. There emphasis is again at the command levels to leverage their organizational impact.

Finally, the Defense Systems Management College sends its HRM instructors to various DoD and service organizations, upon request, to assist in organizational improvement. Not only are they capable of consulting for organizations responsible for system acquisition, but they also offer seminars and workshops for acquisition managers.

Each of these organizations are highly skilled, have a broad base of consulting experience, and can be a significant asset to a PM. And, with the challenge of the '80's to field new systems to improve our defensive posture, the consultant can bring critical skills to the system acquisition team.

How To Utilize Organizational Consultants

The role an organizational consultant takes when they are working with the organization's leadership is "to observe and report in an anonymous and confidential fashion the activities of personnel as they plan, execute, and supervise operations. And, to use behavioral science skills to assist the organization in goal attainment. As a model, this can be seen in Figure 25.[19]

In the organization the PM, commander, and/or staff leaders are the real "change agents". They identify a potential need for change through their own observations, or observations by others, to include the consultant. Although the consultant gains entry into the organization at the request of the PM or commander, it is for the organization as a whole the effort is being targeted, thus implying the consultant works for the organization. As shown in Figure 25, the pathway from assessment to results can take any of the following courses:

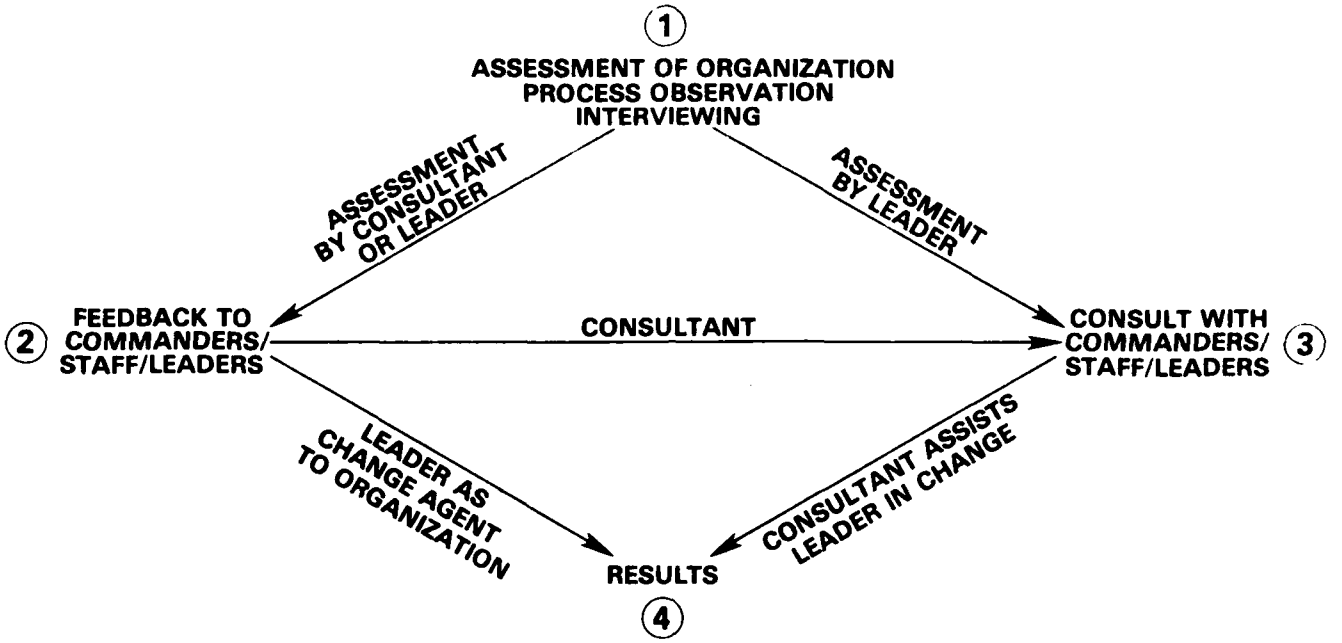
1. The leader makes the assessment, provides feedback, and institutes change (1 → 2 → 4). The consultant serves as a sounding board and makes recommendations.

2. The leader makes the assessment and calls on the consultant to assist in organizational change (1 → 3 → 4).

3. The consultant is requested to provide assessment data, it is fed back, and the leaders make the changes they desire (1 → 2 → 4).

4. The consultant is requested to provide assessment data, it is fed back, the leaders use the skills of the consultant in organizational change (1 → 2 → 3 → 4).

The consultant can provide dynamics around the leader's options or facilitate planning and implementation by key personnel. But simply put, they can serve as a consultant in the leader's efforts to transition the organization from the less desirable present state to the more desirable future state. This same concept can work at any level of command or leadership because the consultant is working for the organization allowing the leadership to become the change agents for the organization.



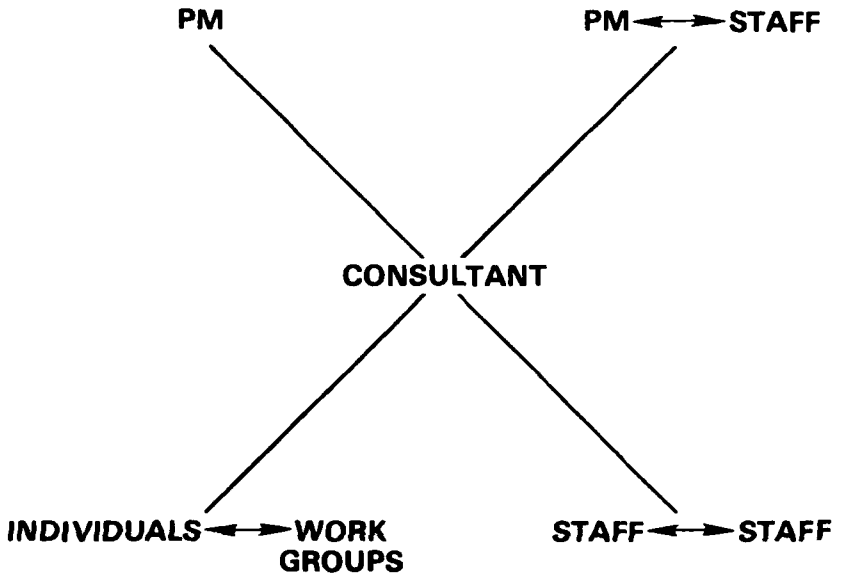
ASSESSOR	CHANGE AGENT(S)	PATH
Leader	Leader	1–2–4
Leader	Consultant/Leader	1–3–4
Consultant	Leader	1–2–4
Consultant	Consultant/Leader	1–2–3–4

Figure 25
Roles of the Consultant and Leaders in Organizational Change

One particular role for the consultant that was initially a by-product of this work, but since has become more intentionally used, is that of "catalyst". First, the assessment of organizational processes through interviewing or observations has an extremely high catalytic effect on the sharing of information between subordinates and leaders, organizations, and individual staff sections. Secondly, key leaders involved with the consultant in process observation feedback and the change process go through a skill transference. They too begin to make process observations and enact change as desired which enables the consultant to address other issues. This again lends itself to the "leaders as change agents" concept because they begin observing their organizations or staff sections behavior and choose to change those aspects that are less desirable. This

catalytic action is present because the leader is role modeling to his/her subordinates that the use of consultant skills in assessing the organization implies we as members can talk and take action to change aspects we determine are less desirable.

An example of utilizing a consultant in a PMO is depicted in Figure 26.[20]



Consultant
TASKS TO BE PERFORMED

- Assess the organizations and/or individuals as to how they interact.
- Observe the functioning of organizations and/or individuals.
- Provide feedback to key personnel.
- Facilitate discussions or structured sessions based on the PM's desires after reviewing feedback. They may also be performed for staff and other leaders.
- Serve as a catalyst to improve the sharing of information.

Figure 26
How the Consultant Interfaces in a PMO

I must comment that my experience with organizational consultant comes from four years with the US Army Organizational Effectiveness Program and work with public and private organizations. I have had limited interface with the Air Force and Navy programs, but their methodology is similar to what I have described. Each consultant, civilian or military, who is worth his/her salt will be up-front about their capabilities and place your organizational desires ahead of their personal concerns. They should also utilize a Memorandum of Agreement as to their involvement in organizational change and how they will interface with the PM and the organization. The PM or organizational leader should also document:

- What are his/her expectations.
- How should feedback be given and at what intervals.
- To what depth should the consultant activities go.
- What will or will not be addressed and why.
- How will follow-up be accomplished.

This MOA will provide a basis for the conduct of the consultant operation.

Again, I wish to emphasize the consultant resources of the military are almost unequaled in skill and utility. A most valuable resource.

References to Consult

The following references can provide additional information on organizational development, the use of consultants and facilitators, and general management theory.

- French and Bell — Organizational Development: Behavior Science Interventions for Organizational development, 1978.
- Huse and Bowditch — Behavior in Organizations: A Systems Approach to Management, 1977.
- Hersey and Blanchard — Management of Organizational Behavior: Utilizing Human Resources, 1977.
- Huse — Organizational Development and Change, 1975.
- Kast and Rosengweig — Organization and Management: A Systems Approach, 1974.
- University Associates — The Annual Handbook for Group Facilitators
- Dyer — Team Building: Issues and Alternatives, 1977.

- Kepner and Tregoe — The New Rational Manager, 1981
- OEC&S — The OE Communique, Quarterly.
- The references of this research.

Many of these books and periodicals are located at the offices of your service consultant organizations. They can also be found in the libraries of major universities.

APPENDIX F

DELTA FORCE--THE CONCEPT

Delta Force is a voluntary group of American soldiers and citizens who contribute ideas for improving our Army. It is informally organized--both an organizational "ring" chart and a mailing roster are maintained--but not hierarchically structured. Members dedicate their diverse talent and expertise to the problem statement: "Understanding that we work through people, how can our Army improve its ability to plan, equip, man, run, train and fight, now and in the future?"

Organization. Because personal competence, moral courage, candor and commitment are the values sought in each member, the characteristics of the individual, rather than the position the individual occupies, is the criterion for membership. Many academic and job area disciplines are represented on delta Force. Strength in diversity and a variety of experiences and abilities gives Delta Force its capability of providing cross-disciplinary objectivity.

Delta Force is administered by the Director of the Army Staff through the commandant, US Army War College, at Carlisle Barracks, PA. The Commandant maintains a small staff consisting of a director (Colonel), deputy director (Lieutenant Colonel/Major), admin NCO (Sergeant first Class) and two secretaries, to run the Delta Force nucleus located at Carlisle Barracks. The nucleus manages Delta force and does a clearing-house function. It synthesizes, edits, reproduces and distributes concept papers from and to the members. It conducts three-day conferences for members about once a quarter.

Membership on the "ring chart" (the Delta Force organization chart) consists of about 85 citizens, military and civilian. Membership is dynamic. As old members leave, new members who have demonstrated competence, courage, candor, commitment, and expertise are added. Membership is determined by the director of Delta Force, with approval by the USAWC Commandant.

The Delta Force mailing list more accurately portrays working membership than the ring chart. The current mailing list of over 130 entries includes the ring chart plus those who have expressed an interest in Delta Force's activities and products. Most people on the mailing list contribute their time and talent even if they're not listed on the ring chart.

Modus Operandi. Delta Force deals in ideas--concepts which answer the question posed by the problem statement. We communicate these concepts with the Delta Force Concept Paper. Each concept paper is shared with everyone on the mailing list. Each member is asked to give his/her views on it--a process resulting in cross-disciplinary objectivity. The original concept developer then rewrites the concept, advantaged by the collective critique of other Delta force members. We then pass the resultant concept on to the appropriate Army agency for information/action.

We also enter concepts into a computer-assisted conference network for comment and vote by participating Delta Force members. Operating with portable terminals and a

telephone connection, members can have any concept printed out in hard copy, enter a critique of the concept, and view all other critiques that have been entered. We intend to eventually replace the mailing system with the computer conferencing system. It is more timely, flexible and efficient. Its potential is limited only by the availability of portable terminals.

THE SUBJECT

Delta Force's problem statement, "Understanding that we work through people, how can our Army improve its ability to plan, equip, man, run, train and fight, now and in the future?", is extremely broad. We categorize concepts into one of seven study thrusts covering four functional areas:

Preparing	I	II	III
Peacetime Operations	IV	V	
Wartime Operations		VI	
Future		VII	

I. Planning the Force: Includes unclassified issues about military planning as a function (planning in the force), force structure planning (what kind of force we will have), contingency planning (how we will use the force), and planning theory and practice (planning for the force).

II. Equipping the Force: Includes issues about combat developments of materiel and equipment, proposed hardware systems and associated man-machine interface issues.

III. Manning the Force: Includes issues about personnel life cycle including recruitment and retention and issues about personnel policy formulation and impact.

IV. Running the Force: Includes issues about how we run our Army Organizations including the human dimension, effects of change, the science of systems, command and control, and information flow.

V. Training the Force: Includes issues about all types of Army training and the training systems that support it.

VI. Fighting the Force: Includes issues about who, what, how, when, where and why of Army combat and force readiness.

VIII. The Future Force: Includes issues about how our Army will plan, equip, man, run, train and fight its forces in the extended and near future.

Although Delta Force has experts in each of the seven categories, members are not limited to issues of their own particular expertise. In matter of fact, the power in the Delta Force method of concept development results from cross-disciplinary critique. A training developer gets advice from a stress expert--a combat developer gets help from a futurist. In this manner, unintended second and third order effects have a higher likelihood of a priori discovery.

Working the Problem. Delta Force is both supply and demand driven. We encourage members to originate conceptual solutions to the problem statement based on their professional knowledge and experience. however, demands in the form of issues developed through the DAS and the Commandant are the primary catalyst for Delta Force concept development. In keeping with the problem statement, issues are wide ranging, both in subject matter and impact.

Delta Force is not the proponent for anything. It deals cooperatively with those agencies whose proponent responsibilities include planning, equipping, manning, running, training and fighting the force. After a concept is completed, it is passed to appropriate individuals/agencies for their disposition. To avoid proponency conflicts and maintain independence and freedom from bureaucratic constraint, Delta Force purposely does not take "credit" for any action its concepts initiate.

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NOTE: This Appendix is a reprint of the DELTA FORCE Concept.

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