

Cross-Functional Teaming and Eradication of “Stove Piping” in Government Acquisition

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Abstract — *Throughout the years, Government Acquisition has been affected by a situation called “Stove piping”, which restricts the flow of information and channels it through vertical lines of control. This results in duplication of efforts and/or delays in process tasks. This project addresses the problem through the usage of Key Performance Indicators (KPI) and visual metrics of program surveillance teams to understand and assess the tasks status, restructuring seat/office configuration to foster interaction in team members based on common program and not employee group/division, and creating an interactive shared drive/repository for deliverables with clearly defined and measurable goals to guide the team’s work. Several issues have been considered in this approach, including the complications that the human element brings to the equation, support from organizational leaders, and compliance with federal guidelines governing the handling of information and workspace policies in government facilities. This approach results in a System of Systems (SoS) with a more agile workforce and a more effective business strategy.*

Key Terms — *Cross-Functionality, Government Acquisition, “Stove Piping”, System of Systems (SoS)*

INTRODUCTION

In spite of the current challenges that affect the government acquisition enterprise, an application of the continuous improvement methodology may not be enough to create a tangible positive effect. As for government acquisition entities, it is a challenging environment where the workforce is the main component. Based on this fact, one of the main goals is that the workforce has a degree of centrality, where collaboration through cross-

functional teams can create an efficient and directed approach. After translating capability objectives into requirements, it is evident that one of the most significant challenges involves the concept of “Stove piping”, which in essence inhibits or prevents cross-organizational communication.

The objective of this project takes in consideration an increase in operational and productivity Return of Investment (ROI). By evaluating how collaboration affects processes, it is imperative to consider a reduced cycle time and how to avoid associated costs due to redundancy of efforts in an organization. The project utilizes the functionality of Key Performance Indicators (KPI) and visual metrics from the surveillance teams to understand and assess the status of the tasks. KPIs provide a quick overview of how and if the teams are attaining the goals and measurable impact that is expected.

BACKGROUND

In an organization, ‘Stove Piping’ virtually eliminates a cross-functional environment where the workforce can perform as a synergistic unit. Instead, the organization as a whole gets affected by the sharply defined roles and the narrow channels of control. This situation affects both private industry and Federal Government in very similar ways and sustaining this pattern establishes a “one task - one team” methodology.

Understanding what constitutes the system and the implied relationships is imperative when dealing with a System of Systems (SoS). There has to be a clear strategy to support the SoS objectives, technical details, and the current system development plans. Right now, government acquisition has various initiatives that address those points, but it is evident that the changes of internal

structures have affected the process. It is certain that there are many legacy systems in place, which have the potential of becoming anti-patterns. By analyzing this situation, it becomes clear that some changes have to be executed, starting with the assessment of the current SoS performance against the capability objectives. Taking in consideration this approach, government acquisition can certainly create a more agile workforce with a renewed business strategy. This would definitely require an evolution of current terms and agreements where the needs and constraints are well understood, so appropriate actions can be taken. Throughout the years, government acquisition has been affected by numerous changes due to internal and external forces. Stability has not been attained in many aspects of the business strategy, and when adding the factor of the close relationship that government agencies and defense industries have, adapting to change is imperative. “Monitoring-while-assessing” process impacts on changes are crucial for an engineer working in government acquisition. An engineer can certainly establish a strategy of proactive intervention so that the solution options can actually affect the existing problems instead of transferring them. A SoS has a tendency of relocating problems, so upgrades to the system while avoiding situations like this can be extremely challenging.

After a thorough evaluation of the upgrades to the SoS, the organization has to be willing to be cross-functional. In today’s business environment, effective cross-functional teams can be a valuable tool for meeting the expectations and performance standards [1]. This entails a change of methodology at one of the most fundamental levels; the workforce. An answer to the quote “That’s how things are done around here” is expected, and with a balanced technical management, that answer can be attained. In order to respond to this, the architecture and organizational issues have to be carefully considered. Government acquisition has a challenging architecture that is highly dependent on the type of industry and/or sector that is being worked with. It can be aerospace, ground systems,

sea based, etc. A detailed understanding of the functionalities is necessary in government acquisition, where the conflict that is created between the needs and demands of each part of the organization can be significantly different, and a technique that fits all can be almost unattainable. This is where cross-functionality comes into play, understanding the functionality and dependency of the elements contained in a SoS. By establishing a flexible approach that doesn’t sacrifice one system in benefit of the other, a move in the direction of cross-function can be a reality.

The US Government has divided the acquisition process in Acquisition Categories (ACAT), which are established in Table 1. By establishing these parameters, the actual context of “Stove Piping” and the implications that a cross-functional initiative has becomes apparent and relevant to the development of this project.

Table 1
Acquisition Categories

Acquisition Category	Dollar Value for ACAT Designation	Decision Authority
ACAT I	Required eventual total expenditure for research, development, and test and evaluation (RDT&E) of more than \$480 million constant dollar or for procurement, more than \$2.79 billion constant dollars	Head of Component
ACAT II	Required eventual total expenditure for research, development, and test and evaluation (RDT&E) of more than \$185 million constant dollar or for procurement, more than \$835 million constant dollars	Contract Administrative Executive
ACAT III	Acquisition programs that do not meet ACAT I or ACAT II	
ACAT IV	ACAT programs not otherwise designated as ACAT III are designated ACAT IV	

Functionality and adaptability in government acquisition is incredibly important. With all the complications that a dynamic business environment has, many aspects have to be taken in consideration. Types of contracts and production settings affect the role of systems engineering and the surveillance that is required to the programs that are being developed. This requires a clear definition of the roles that the workforce will be performing and the acknowledgement that the officials of the agency will provide. Government acquisition as a whole is moving in a new direction. This implies that modifications and adaptations of existing systems need to be addressed. Changing the approach from control to collaboration will never be an easy task, but with new techniques, systems engineering will have the required strength to overcome the current situation and focus on a strategy that effectively understands SoS and the implied relationships.

METHODOLOGY

After the literature analysis, which revealed how critical the problem of “Stove Piping” is and the implications that it has in the fiscal condition of the government, an in-depth assessment of the current major program acquisition processes was completed. An evaluation of the tools that are utilized to assess the condition and progress in each program was performed, which proved the redundancy of efforts in each Program Surveillance Team (PST). For each program, with some exceptions, a division of work is completed through several types of team members, which have the responsibility of providing objective and actionable contract, technical, cost, schedule, and performance data. Some of the multifunctional specialist categories include Engineers, Contract Administrators (CA), Earned Value Management personnel, Quality Control personnel, etc. This allows for the opportunity to have multiple sources of information, identify different elements inside each team that serve as guidelines to the assessment of current condition and the desirables in the future

condition and understand the various semantic definitions of each job category inside a PST.

Four in-depth interviews and a survey were conducted with PST members and others that were related to the outcome of current program surveillance processes. Figure 1 shows the response to a survey which provided insight on how the team members perceive the idea of Cross-Functional Teaming and what benefits they think are the most relevant to their team and organization.

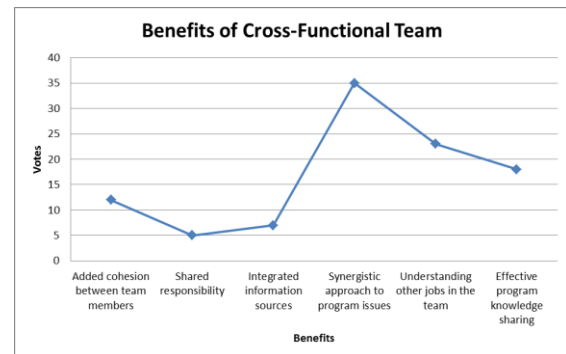


Figure 1
Survey Results

The data collection procedure followed a Grounded Theory approach which provided some guidelines for producing knowledge directly from field phenomena [2]. Such an orientation was adequate to the proposed objective of this research since the research question for this paper is related to an application context poorly discussed in the existing literature.

The questions discussed during the interviews primarily focused on the team’s procedures as well as its impacts on integration and team/organizational performance. First, respondents were inquired about what activities demand cross-functional integration and its respective impacts over performance. After that, they were questioned about the structural characteristics and possible benefits of cross-functionality and also with reference to how these teams proceed in order to integrate internal functions toward the accomplishment of common goals.

After an in-depth analysis of the information provided by the team members, an educated approach to the management of these teams was

completed by gaining insight on how they see cross-functionality and how involved they would like to test the strategic theory principles in their teams. This procedure was performed to look for patterns that support the “Stove Piping” environment in the organization and develop the best course of action that, if extrapolated, could have deep changes in how the Government Acquisition Enterprise operates. This strategy was defined with three (3) approach points:

- Use Key Performance Indicators (KPI) and visual metrics of program surveillance teams to understand and assess the tasks status.
- Restructure seat/office configuration to foster interaction in team members based on common program and not employee group/division.
- Create an interactive shared drive/repository for deliverables with clearly defined and measurable goals to guide the team’s work.

Such procedure provided a variety of elements concerning implementation strategies and impacts, as presented in the next section.

RESULTS

In the organization surveyed, several teams were evaluated in the process of implementation and adaptation to a more cross-functional environment. Therefore, several teams’ characteristics were identified through content and program type analysis. These characteristics were divided into three main categories of the evaluation framework, as shown in Table 2.

Table 2
Main Categories of Evaluation Framework

Category	Characteristics
Team Procedures	Occurrence, Mechanisms and Periodicity
Application Context	Team’s Environment and Specific Goals
Power Distribution	Concentration or Balancing of Power among Team Members

Based on the content of Table 2, it is possible to draw some insights about the influence of Cross-

Functionality over the internal integration of the project and the eradication of “Stove Piping” in the PSTs. The development and implementation of this project was certain to cause issues with personnel simply because of how human nature reacts to change. Some modifications to the project included reviewing various initiatives that have been discussed throughout the years without success. The reality of project implementation that hinders the continuity of success lies in the fact that there’s no sustainment plan that solidifies the techniques in the workforce.

Additionally, a support mechanism in order to establish a sustainment approach once the changes have been made became a priority. It is evident that periodic revisions in order to monitor morale and project tasks that were improved during the development and implementation of the project are of great importance. One of the last issues encountered involved the teams’ seat reassignment, taking in consideration the logistics in terms of IT and preferential accommodation. It is certain that this is a critical step for the increase of cohesion in the team during a cross-functional adaptation. By establishing a team’s personnel location in close proximity to each other instead of segregated by functional area, each member of the team is “forced” to interact with other members outside of their normal “circle”, but from the same PST. Certainly, the situation is not ideal for many team members, mainly because of resistance to change and familiarity with people that share their own functional area.

After around a month after the implementation of the relocation initiatives and gathering the inputs for the interactive shared drive inputs, an interview/meeting with PST members and stakeholders was completed. During this meeting, valuable information was received regarding the up to date perceived benefits of the cross-functional initiatives and how “Stove Piping” became a more visible problem than before. Cross-Functional Teaming reduces hierarchical centralization [3], conflicts and language barriers [4], speeds-up processes, as well as helps to maintain focus on the

organization's broad goals [5]. As these earlier literature findings, the interviewees cited the perception that the interpersonal integration provided by the cross-functional initiatives in this project may reduce stress and misunderstanding between company employees. This impact primarily arises from the familiarity among team members, increasing people mutual knowledge, team spirit and confidence levels.

A primary observation was that the Government Acquisition enterprise, and specifically the PSTs, make different choices in terms of the goals and tasks of the cross-functional teams, the timing impact of their decisions (short or long term), connection with processes, strategies and structure definitions, formality or informality prevalence and power structure. The new interactive shared drive will cement the benefits by having a cross-functional initiative readily available in each computer that creates a more effective process status communication system. Moreover, relevant program information can reinforce the program data in order to maximize the predictive insights of the operational surveillance efforts.

DISCUSSION

This research provides an exploratory framework regarding the organization of cross-functional teams and the implications that "Stove Piping" has in a limited scope government acquisition facility. During the course of this project, multiple conversations have taken place. One aspect of the conversations was common; having a cross functional team is necessary, but there's no clear way forward to achieve it. It's certain that dealing with people and their workplace is a very personal thing for many employees and many employees have been working for many years in the same place and doing the same thing and resent the changes that a project can do to their "habitat" The approach has been to educate and challenge them to change, since in the end it's about the relationship between the organization and them. This project's sustainment plan will continue

periodic revisions in order to monitor morale and project tasks that were improved during the development and implementation of the project.

The teams' procedures may be categorized in terms of occurrence, mechanisms and periodicity. The application context is concerned with the processes that the cross-functional team deals with, and the achievement of goals related to these processes expected results. The decision power among teams may be unbalanced, and the decisions may be pointed to the interest of one single area. However, a more balanced sharing of power among members may favor inter-functional integration and the achievement of common firm goals. Therefore, procedures aligned with a cross-functional approach in place of a "Stove Piping" approach may reflect in the achievement of positive impacts and the execution of surveillance plans that support the mission.

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