

Engineers in the Procurement Process at NASA

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Abstract — *Procurement is the process of acquiring goods and services for a company. At the Kennedy Space Center the completion of an acquisition was taking long periods of time. This was caused because the engineers, who are knowledgeable in the technical field, needed training, guidance and the tools in the Procurement field. Engineers were trained in the field and tables and guidelines were given and explained to them. A better communication and understanding arose between the Contract Specialists and the Engineers, also helping to improve and make the completion of the process faster. It was proved that the applied strategies decreased the total amount of time taken to complete an acquisition. Engineers learned the documents they needed to turn in to the Contract Specialist for each different scenario and they also understood the documents to be worked by the Contract Specialist during the Procurement Process.*

Key Terms — *Acquisitions, Contracts, Contract Specialists, Process.*

INTRODUCTION

The National Aeronautics and Space Administration (NASA) is an independent agency of the United States Federal Government responsible for the civilian space program, as well as aeronautics and aerospace research. The agency is also responsible for the Launch Services Program which provides oversight of launch operations and countdown management for unmanned NASA launches.

Procurement is the process of acquiring goods and services from an external source, often via competitive bidding process, and coming to an agreement in terms. Acquisition is acquiring by

contract, with appropriated funds, supplies or services (including construction) by and for the use of the federal Government through purchase or lease.

Engineers are the employees responsible for the projects at NASA. They are pioneers in the technical area by doing experiments, designing and improving launches. Materials, supplies, goods and contracts are needed to perform the daily activities in the engineering field. This is when the Procurement process starts. The Contract Specialist is a procurement employee who has the authority of acquiring goods and services for the Kennedy Space Center (KSC). Engineers do not have the knowledge and skills of Procurement and this has been causing delays in completing the acquisition process. The problem was that, because of their lack of training and experience in Procurement, the engineers were not following the correct steps that applied for each of the different acquisition scenarios neither doing the correct documents and forms. The completion of a Procurement could take months because documents needed to be corrected or were missing. This led to the objective of this project, which is to reduce the time of the process of acquiring a good or service at the KSC.

BACKGROUND

The acquisition process begins as soon as a need is identified. Early involvement and communication with procurement staff is essential. Figure 1, The Procurement Process will help the engineers to know and understand the procurement process from the start to the closeout. Acquisition Planning is required before starting the Procurement Process. The Engineer and the Contract Specialist must classify the type of

acquisition for each different scenario before starting the acquisition process at KSC.

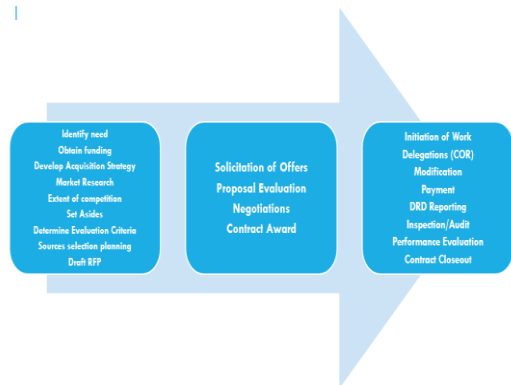


Figure 1
The Procurement Process.

There are three major types of negotiated acquisitions as shown in Table 1: Sole Source, Brand Name and Competitive. Sole Source means that only one company is able to provide the commercial item or service that is needed. Brand Name means that it has to be a specific brand and that any company that could provide the specific brand could compete. Competitive means that any company can bid if they are able to provide the specific requirements.

Table 1
Type of Acquisitions

Negotiated Acquisitions		
Sole Source	Competitive	Brand Name

Figure 2 shows that the NASA major Procurement players are the Contractor, the Contract Specialist and the Contracting Officer Representative (COR). The Contractor is a private non-federal company that bids to win a contract with NASA. The COR is a NASA federal employee that is in the field supervising the contractor's work and serves as an intermediary between the

Contractor and the Contract Specialist. The Contract Specialist is the only employee authorized to obligate the government's money.

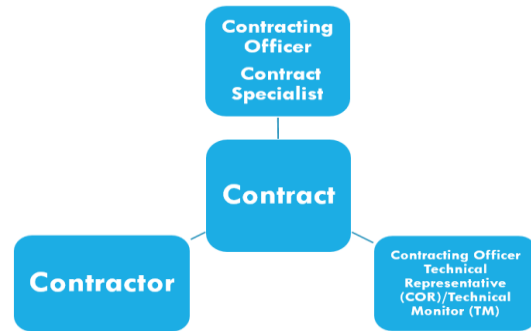


Figure 2
NASA Major Procurement Players

Contract Specialist Role

The Contract Specialist is the Procurement employee that completes the acquisition process for a good or service that is needed at KSC. They develop acquisition strategies and supporting determinations and findings. Contract Specialists prepare various types of solicitations, such as requests for quotes, request for proposals, invitation for bids and review quotes or proposals that included the price analysis to determine fair and reasonable price, negotiations, and preparation of award documents. Post-award functions include contract administration, monitoring contractor performance, negotiating changes, and ensuring compliance with contract terms and conditions. Vision is to deliver the best value product/service to the customer in a timely manner, while maintaining the public's trust and fulfilling public policy objectives.

Procurement Instruments

The Federal Acquisition Regulation (FAR) [1] is the Procurement guide and is used in all federal agencies. The FAR includes 53 parts with the instructions for acquisitions and contracts. The FAR establishes uniform policies and procedures for Government acquisition and identifies roles and responsibilities and regulates the activities of all government personnel in the acquisition process. The NASA FAR Supplement (NFS) is specific for

NASA's Agency acquisition regulation and it supplements the FAR. Some of the contracting tools are the Solutions for Enterprise Wide Procurement (SEWP) and Federal Business Opportunities (FedBizOpps). These are online platforms where the Contract Specialists post the requirements and private companies can bid. The company that submits the lowest priced quote that is technically acceptable wins the award. Systems Applications and Products in Data Processing (SAP) is a system Contract Specialists use to do the award to winning company. Procurement for Public Sector is another system that Contract Specialists use to do awards.

Small Business

The Small Business Administration (SBA) establishes small business size standards as Table 2 shows on an industry-by-industry basis. Small business size standards matched to industry North American Industry Classification System (NAICS) codes are published by the SBA. NAICS codes are updated by the Office of Management and Budget through its economic classification policy committee every five years. It is the policy of the Government to provide maximum practicable opportunities in its acquisitions to small business, veteran-owned small business, service-disabled veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns. Such concerns must also have the maximum practicable opportunity to participate as subcontractors in the contracts awarded by any executive agency, consistent with efficient contract performance.

Table 2
Small Business Classification

Acronym	Business Designation
WOSB	Women Owned Small Business
EDWOSB	Economically Disadvantaged Women Owned Small Business
HUBZone	Historically Underutilized Business Zone
SDVOSB	Service-Disabled Veteran-Owned Small Business
VOSB	Veteran-Owned Small Business

ANALYSIS

Engineers are the technical employees that need to understand the Procurement Process and speak the same language as the Contract Specialists in order to decrease the time of the process. This could be achieved by giving training to the engineers via online, seminars, meetings and hand-outs. One of the objectives of these training was to let them know the specific documents they needed to give to the Contract Specialist before the Procurement Process started. Table 3 specifies the documents the engineers need to give to the Contract Specialists so they can start the Procurement Process. All of them need to be included in the Acquisition Package for the process to begin. The Purchase Requisition (PR) is the amount of money available to do the purchase. Other forms specify the requirements like KDP-F-1188, NF-1707 and the KSC Form 10-144. A quote is also required for Market Research and compare to the prices submitted during the bidding process.

Table 3
Requirements to be turn in by the engineer

Prior to the Procurement Process Documents
Purchase Requisition (PR)
KDP-F-1188- Purchase item description (Items/CLINs)
NF-1707- Special Approvals and Affirmations of Requisitions
KSC Form 10-144- Additional KSC Special Approvals and Affirmations of Requisitions
Quote of the good or service

Another objective of these trainings was to explain them the difference between the three major types of acquisitions and the specific requirements each one should accomplish. The engineers understood that they are three major types of acquisitions; Sole Source, Brand name and Open Market and the documents and forms that applied for each scenario.

Table 4 classifies the major types of acquisitions and specifies the documents to be worked by the Contract Specialist.

Table 4
Requirements to be work by the Contract Specialist

Sole Source	Competitive	Brand Name
Only one company can provide a specific brand	Any company can provide what is required	Any company can provide it but it has to be a specific brand
Market Research	Market Research	Market Research
Small Business NF-1787	Small Business NF-1787	Small Business NF-1787
JOFOC (Justification or Other than Full and Open Competition)	N/A	Brand Name Justification
RFP (Request For Proposal) RFQ (Request For Quote)	RFP (Request For Proposal) RFQ (Request For Quote)	RFP (Request For Proposal) RFQ (Request For Quote)
Technical Evaluation	Technical Evaluation	Technical Evaluation
Price Analysis	Price Analysis	Price Analysis
Award	Award	Award

RESULTS

It was found that with the correct training given to the engineers about the Procurement Process the objective of decreasing the amount of time required to complete an acquisition was accomplished because the total time that it took was less. Before the training, it usually took approximately five months. After the appropriate training it took three months, which is two less months. The tables designed to give direction to the engineers showed to be a strong tool to help them understand and speed up the process. It was proved that when the Engineers and the Contract Specialists worked the Procurements together as a teamwork with a strong communication back and forth involved, contributed to make faster the completion of the process.

DISCUSSION

The results contributed to the knowledge of the field of Procurement because the completion of the process is going to take less time after the implementation of the trainings, charts and tools that were designed to help the Engineers to have a better understanding in this field and to determine which steps to apply for the different acquisition

scenarios. The results are also positive for the Contract Specialists because with the understanding of the Engineers they will submit the correct documents and the Contract Specialists will have the complete package to start doing the Procurement Process. With the implementation of the tables that served as a guidance, the Engineers understood their role in the Procurement Process and what was expected from them. They also understood the role of the Contract Specialist and the communication between both improved. With the Engineers being able to submit the correct documentation prior to the process and being able to understand the documentation during the process was an achievement for Procurement.

CONCLUSION

The objective of this paper was to reduce the time of the process of acquiring a good or service at the Kennedy Space Center. This objective was accomplished. One of the major findings is that with the engineers having the appropriate Procurement knowledge and guidance, they will complete and turn in the correct documents, making the job of the Contract Specialist straightforward without the waste of time. Another finding is that it was proven that teamwork and a good communication between both sides, the Engineer and the Contract Specialist supported the completion of a successful acquisition process in shorter period of time. The tools and tables used for the improvement of the Procurement Process have now been established to follow as rules for the Engineers and the Contract Specialists. This will ensure that the acquisition process will be completed in a shorter and faster period of time than it was before the implementation of the new structure.

REFERENCE

- [1] Wolters Kluwer, "Federal Acquisition Regulation," 2019 ed., Wolters Kluwer Editorial Staff, Philadelphia, PA, 2019, pp. 1-2010.