Improving Procurement Processes Utilizing Computer Modeling

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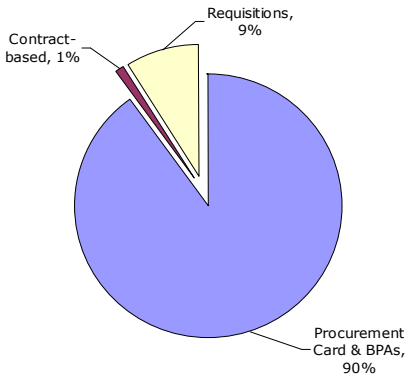
In September of 2007, the Purchasing and Material Control Department of the Greater Orlando Aviation Authority (GOAA) was charged with improving the Procurement process and also improving customer service to both its internal and external customers.

Business process reengineering combined with computer modeling and analysis was used to conduct the study. Productivity Apex, an Orlando-Florida based company who specialize in computer modeling, was contracted to create a model of the existing procurement processes to serve as the base measurement and to assist the Purchasing Department in finding and measuring potential improvements based upon the computer model.



GOAA Purchasing Department processes approximately 11,000 requests representing a $100M annual spend. Of these requests, about 90% are satisfied utilizing decentralized methods (procurement cards & releases against BPAs) and represent $10M. Procurement cards do not require Purchasing Department action. The remaining 10% are satisfied utilizing centralized procurement methods (Requisitions or Contract Based Purchases), represent $90M and do require Purchasing Department action. In order to improve customer service levels, the purchasing department needed to know the current baseline value and how these values compared with other similar organizations. As represented by the chart, 90% of what we process is by P-Card or BPA's but

90% of our dollars is processed through requisitions utilizing quotes, Bids and RFP's.

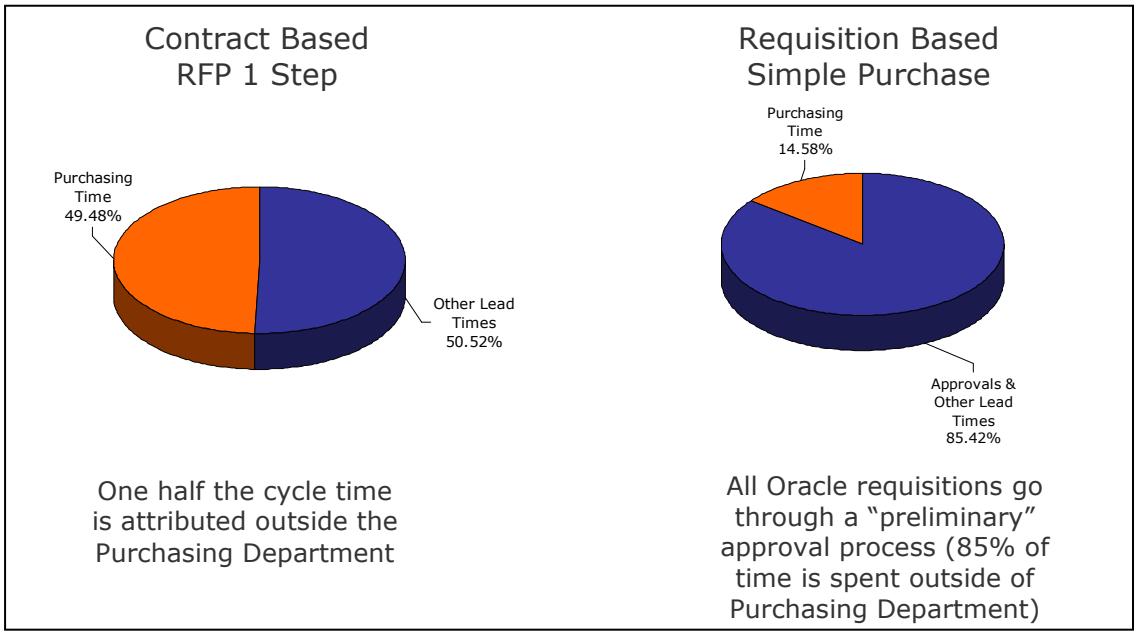
The first step was to identify the purchasing division processes (532 processes), and then the process flow was captured. The Information was painstakingly mapped out by hand for Invitation for Bid, Request for Proposal (both 1 and 2-step), the quoting process, and the Contract process and compiled as numerical data which measured time to complete each step by staff, and also measured the time spent outside of the Purchasing Department with other functioning groups (Legal, Procurement Committee, Executive Director, Board etc). In addition, the following were also measured and compiled as baseline data: the number and value of requisitions, the number and value of quotes, number and value of formal solicitations (IFB and RFP), number and value of existing contracts, number of staff and time spent on each process (staff utilization), and the threshold amounts per existing policy.

Next, a model of the captured data and information were developed to serve as the base measurement and to assist the Purchasing Department in finding and measuring potential improvements based upon the computer model. The data required were identified, collected, analyzed, and entered into the model. Several sources of data were utilized including Oracle financial software, Microsoft Project, and the purchasing department data which were maintained in Excel spreadsheets. The model was executed and validated.

The output of the model includes all the metrics discussed earlier. The following table shows the cycle times of the different purchasing processes.

End-to-End Cycle Time (Days)	Min	Average	Max
RFP 2Step (Request For Proposal)	170.0	255.6	368.5
RFP 1Step (Request For Proposal)	147.3	191.2	237.0
IFB (Invitation For Bid)	122.6	128.7	131.9
RFQ (Request For Quote)	47.4	52.0	58.9
Single Source	9.1	10.2	11.1
OEC Other Entity Contract)	6.9	7.3	7.5
Encumbrance	5.8	6.1	6.8
Sole Source	4.8	5.0	5.2
Simple Purchase	4.8	4.9	5.1

The output also showed the proportion of cycle time in purchasing versus non-purchasing time. An example is shown below,



Concurrently with model development, a benchmarking study was conducted. A survey was compiled from other Governmental Purchasing Agencies of the same size located in Florida which included process times and threshold amounts utilized to measure the GOAA purchasing department against its peers (best in class). Once the model was created, the Purchasing Department viewed all of the data and was able to pinpoint where some of the problems existed and brainstorm potential solutions. These potential solutions were plugged into the model, and the model was able to run new scenarios with these potential improvements and show statistically the percentage or amount of change that could be expected. A summary of the benchmarking results is shown in the next two tables table.

Metric	GOAA Baseline	Benchmark Values		
	Threshold	Average	Excellent	Best-in-Class
Informal Quotes ($)	$5,000	$10,000	$18,300	$26,599
Formal Quotes ($)	$50,000	$33,000	$81,500	$130,000
Formal Bids ($)	$50,000	$50,000	$90,000	$130,001

Metric	GOAA Baseline	Benchmark Values		
	Cycle Time	Average	Excellent	Best-In-Class
Average **Requisition** Cycle Time (Days)	6.2	9.5	7.25	5
Average **IFB** (Invitation For Bid) Cycle Time (Days)	128	72.5	62.55	52.6
Average **RFP** (Request For Proposal) Cycle Time (Days)	191	100.5	84.45	68.4

Based on the model, many process improvements were reviewed. The following improvements are those that will make the largest initial impact in the Purchasing cycle times and provide a higher customer service levels to our user Departments. These improvements have been reviewed by Senior Staff and the Executive Director, and will be brought forward for approval via updated Purchasing Policy changes to the GOAA Board in the Spring of 2008. The four recommended changes will improve the Purchasing process cycle time in the following areas; simple purchase, request for quotes, IFB and RFP by as much as seventy-eight days. (Please see the attached graphs for supporting information). The Purchasing Department also noted that there were several areas of improvement that Purchasing could work on internally. These included working with Legal to boilerplate IFB and RFP documents so that Legal would only have to review the documents one time versus every time a new IFB or RFP was issued, improving communications between departments on time tables for the issuance of IFB's and RFP's, working with Planning to get current maps of the Airport Property, and improving internal approvals to help speed up the process. The computer modeling has provided measurable statistical analysis and data which will be utilized to measure the current recommended improvements as well as any future improvements.

- Purchasing Managers approval up to $100k.
- Streamline Legal processes.
- Minimize delays by improving purchasing processes.
- Increasing simple purchase threshold to $25K.

A summary of the improvement results is shown in the next table.

Metric	GOAA Baseline	GOAA Scenario (1-4)	Improvement/ Change	Benchmark Values		
				Average	Excellent	Best-in-Class
Average **Requisition** Cycle Time (Days)	6.2	5	**19%**	9.5	7.25	5
Average **IFB** (Invitation For Bid) Cycle Time (Days)	128	87	**32%**	72.5	62.55	52.6
Average **RFP** (Request For Proposal) Cycle Time (Days)	191	113	**41%**	100.5	84.45	68.4
Informal Quotes ($)	$5,000	$25,000	**$20,000**	$10,000	$18,300	$26,599
Formal Quotes ($)	$50,000	$100,000	**$50,000**	$33,000	$81,500	$130,000
Formal Bids ($)	$50,000	$100,000	**$50,000**	$50,000	$90,000	$130,001

The model has an easy to use graphical user interface; the user interface was designed and implemented in purchasing personnel domain language and does not require any computer modeling background. The GUI/model was implemented in the department and currently is used by some of our staff to run and test new operational scenario and quantify its impact on the department's performance metrics. The Purchasing Department now has a tool that provides statistical data and can backup any recommendations for improvement with statistical analysis and probable outcomes to measure against.

Please see the attached supporting documentation.