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Model for Integrating Metrics into the Procurement Process		

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MODEL FOR INTEGRATING METRICS INTO THE PROCUREMENT PROCESS

Introduction

In this era of "faster, better, and cheaper", Performance Based Acquisition (PBA) of products and services requires management based on analysis of value-added metrics (cost, schedule, and performance). Currently, industry and government agencies have multiple, diverse approaches for determining and utilizing metrics. Together, there is a need for a common understanding of metric tools to be used to support Performance Based Acquisition. This model, consisting of metric tools and their use, provides one approach to address this need, one that will remain in effect throughout the life cycle of those products and services.

This model complements and is consistent with a long list of other industry/government models and quality requirement documents such as the ISO 9000 series (ANSI/ASQC Q 900x , EIA-599, etc. and is applicable to all customer/supplier relationships).

I. Purpose

To describe a model that is applicable during the acquisition process to gain insight into suppliers' approaches to using metrics in monitoring, managing, and improving their processes and products. This model also facilitates a common framework to understand and recognize potential suppliers' performance on relevant past contracts or purchase orders.

II. Scope

This model is designed to enhance insight into the application of meaningful metrics. The emphasis is on business processes which may best provide indication of the level of risk to the customer when contemplating or continuing business with the supplier base. (E.g., the RFP/RFQ, proposal, supplier selection, and performance).

III. Definitions

Metric -- is a quantitative measure of an activity, result, reaction (one, two or all three).

IV. How to use this model

A. Metric Utilization and Guidelines

1. Utilization

- a. Metrics are essential to understanding the performance of any business system. Metrics are indispensable for validating past performance - a significant evaluation

factor in the customer acquisition process. Focused metrics can provide confidence (or identify the need for change) in current product/process performance. Metrics are essential management tools that suppliers use in satisfying customer and stakeholder requirements.

2. Guidelines

a. Suppliers vary significantly in many ways. Therefore, the development and utilization of metrics will vary according to given supplier business parameters such as size, product, service, proprietary nature of processes, and the extent of business mix. Which metrics are to be used; for what purpose; during which phase of the product's life cycle, for which areas of operational improvement; are fundamental decisions to be made by each supplier as appropriate to their own management style and business strategy.

This document is designed to serve as a model for all customers and suppliers. It offers a list of metric categories that are in use in the industry today. It relates their strategic, tactical, and local utility to various functions. Metrics listed are neither all inclusive, nor reflective of a minimum set. The point to keep in mind is that metrics are value-added information, which in itself has an acquisition cost and some associated value. Metrics may be simple observations or complex calculations, repetitive in nature or single events, manually generated or automatically produced by the process. The business process, however, must provide for them in an economical manner in proportion to their worth. Costly modifications to supplement established processes solely for the generation of arbitrary management indicators will likely not be cost effective.

B. Documentation of Selected Metrics

Although not the desired state, specific metrics may be contractually required. Others may be the result of customer influence to aid them in their oversight responsibility. Experience indicates that most will result from the suppliers documented processes for design, development, production, installation, and servicing (as applicable to the business). All will likely be dynamic, changing with the various acquisition phases, with improvements in the quality management system, and with the overall maturity of the company.

Accordingly, suppliers are advised to document a metrics management process, in lieu of specific metrics, to support both the acquisition process and the changing needs of the company. Contractually required metrics should be the exception rather than the rule, and when required, should be readily negotiable as change is indicated during the product life cycle.

C. Utilization of Metrics

- . Generation of metrics throughout the business process has associated cost. They have no value unless used for their intended purpose - to measure the health of selected performance, cost and schedule events, and to provide a basis for system improvements. There should be evidence that they are generated, used, and effective within the appropriate supplier/customer functions and at the appropriate management levels. Examples of objective evidence are given in section V, A-2. Any significant change in metrics should trigger actions at various management levels to optimize supplier competitiveness in its business arena.

D. Definitions (See Appendix F)

V. Operation / Implementation

A. Organizational Responsibilities:

1. The long term health and growth of a business and its organization requires the review and evaluation of measurable indicators by each level of that organization (see Figures 1 through 4). The metrics categories in this model are typical across industry and will be found, in one form or another, within every capable company. These companies use metrics of the type outlined here in performing day to day operations as well as when establishing business strategies. The categories listed in this model are not all inclusive and it is not implied that they apply to every business at all times. However, there should be evidence that the supplier has walked through the process of establishing metrics (health and performance indicators) similar to these (types of) metrics as part of their operations at these levels:

<u>CATEGORY</u>	<u>EVALUATED BY</u>	<u>KEY ELEMENTS</u>
Strategic Metrics	General Manager Customer Management Program Office	Cost Schedule Performance
Tactical Metrics	Middle Management Customer - Program Management Program Office	Cost Schedule Performance
Local Metrics	Process Owners Local (site) Customer Representatives "Hands on" Personnel	Cost Schedule Performance

2. There should be evidence at each evaluation level that the business metrics are clearly understood and are used as tools in measuring and managing the business. The objective

evidence may be reflected and displayed in various management reports, action plans, and business meeting minutes. A few examples of which are: trend analysis reports, Corrective Action Board Minutes, vendor performance reports, shop floor process data displays, customer survey analysis reports, material inventory trend reports and/or process team action plans.

3. Most metrics, in order to be useful (value-added), include upper and/or lower action limits, e.g., predicted turnover rate that makes good use of personnel, maximum number of rejects over time, etc.

B. Metrics:

1. Strategic Metrics

The Strategic Metrics outlined as examples in the following list will measure and provide specific information for the top level decision making process for the business. Metric Excellence i.e., Customer use and satisfaction is an indication of efficient use of resource and end-result effectiveness The following listing is not intended to be all inclusive. It is only a categorical representation, depicting how many of the premiere suppliers measure or grade their performance.

a. Performance Metrics

- Major Subcontracts rating
- Program status
- Plant status
- Monthly Purchase Order (P.O.) backlog (not issued)
- Plant level rework - %
- Small Business Procurement - %
- Small Disadvantaged Business Procurement - %
- Injury/Illness - YTD
- Personnel turnover rate
- Past contract performance - Delivery, Cost and Schedule
- ROS - Return on Sales
- ROI - Return on Investment

Note:

Metrics creation and use is a "closed-loop" system where customer feedback closes the loop with the metric provider.

Note:

Rating systems may be used to grade performance of suppliers. An example of such a system is the " Green, Yellow, Red " (GYR) rating concept:

Green	The number and/or types of observations where corrective action is indicated are infrequent and of small impact.
Yellow	Minor observations requiring scheduled action and management tracking. Multiple minor observations that do not affect the product or safety.
Red	Multiple minor observations that indicate a trend toward out-of-control conditions or major observations that impact product integrity or personnel safety and require scheduled action and management tracking.

b. Cost Metrics

- Award Fee earned
- Cost Performance Indicator (CPI) – Value/Cost
- Composite Overhead Rate
- Composite Overtime - %
- Labor by month

c. Schedule Metrics

- Delivery Performance by Month
- Schedule Performance Indicator (SPI) – Milestones Met/Milestones Planned
- Specifications/Drawings released vs. Specifications/Drawings planned by month
- Software models released vs. Software models planned by month

2. Tactical Metrics

- .
- The Tactical Metrics outlined as examples in the following list will normally be assigned to the Operations Manager and Customer Management for review and evaluation. By their very nature, these are usually dynamic and require constant consideration. Lessons learned from historical data are essential to assure that metric efficiency enhances (adds value to) the business. Please note the following listing is not intended to be all-inclusive. It is only a categorical representation depicting how many of the nation's premiere suppliers measure or grade their performance.

a. Performance Metrics

- Trend analysis
- Audit results