

## CUSTOMER RESPONSE TIME IMPROVEMENT THROUGH VE

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### ABSTRACT

This paper reviews current thinking on providing total customer satisfaction and describes how the Value Engineering (VE) methodology has been successfully applied toward improving response time within an organizational network.

### INTRODUCTION

It is a widely accepted fact that for any company to remain competitive in today's market, it must respond to the customer needs in a timely manner. In fact, many companies have made "Customer Satisfaction" the major tenet in their operating philosophy. To achieve this customer satisfaction, various methods and strategies are being employed by different companies with varied success. There are several books, publications and articles describing the various methods. Richard Park, PE, CVS,<sup>1</sup> describes four of the methods:

- Simultaneous Engineering,
- Taguchi Methods,
- Quality Function Deployment and
- Failure Mode Effect Analysis,

and shows the relationship of VE to the various methods. Mr. Park's paper gives an excellent overview of how the "Force of Change" has created the need to implement new theories to meet the changes and how the theories that were around 30-40 years ago fit into the present thinking. No further attempt will be made to elaborate on these particular points.

The different approaches or methods to manufacturing and customer satisfaction encompass a basic philosophy with certain objectives. The objectives as stated by Robert Hall<sup>2</sup> in his book, Attaining Manufacturing Excellence, are:

- \* Eliminate waste.
- \* Reduce lead time for: Customers. Materials. Tooling and engineering changes. New product introduction.
- \* Increase quality.
- \* Reduce costs.
- \* Develop people: Increase skill, morale, and productivity.
- \* Improve continuously.

The objectives are broad and require problem solving skills and dedication of purpose to obtain.

There is an overlapping of purpose in most, if not all, of the methods. Full value is often not realized when a limited objective is applied to any one method, such as Just-In-Time is limited to scheduling, inventory, and logistics. It is from these objectives that a multitude of methods have been introduced to the value improvement community.

A method for dealing with response time improvement or reducing lead time, has been labeled under several names: Cycle Time Analysis, Resource Activity Analysis, Throughput Cycle Time Analysis, Throughput Time Management, Customer Response Time Improvement and others. Whatever the name, the goal is to increase customer satisfaction by being able to react quickly to the customer demands and providing a world class product or service.

The Chairman of our company in an open letter to all employees said, "This concept has become the most important aspect of Delco Electronics business".

### CUSTOMER SATISFACTION.

It was determined that the tools or methods of Throughput Cycle Time Analysis would be one approach used to accomplish this objective. Customer refers to both internal and external customers. Throughput Time Management (TPTM) will be the term used to describe this process.

### INTEGRATION OF TPTM STEPS AND VE JOB PLAN

The steps as outlined in a TPTM process can be summarized as follows:

1. Identify the process to be studied
2. List the steps in the process.
3. Identify time required for each step in the process
4. Identify value-added and non-value-added time.
5. Draw a time line for the process.
6. Identify and analyze obstacles to reducing both value-added (VA) and non-value-added (NVA) times
7. Implement methods to overcome obstacles.
8. Repeat this process.

FIGURE I illustrates one method of graphing a TPTM chart. Emphasis is placed on eliminating non-value-added time and reducing value-added time.

A comparison of the steps and purpose of TPTM and the VE Job Plan reveals that there is an overlapping of objectives and some similarity in processes. An important objective of each process is to provide and promote "Value". It is my belief that the steps of TPTM fits into the VE Job Plan in the following manner:

#### TPTM.

1. Identify Process.
2. List Steps-Process Flow
3. Identify Time
4. Identify VA & NVA times
5. Draw Time Line
6. Identify & Analyze Obstacles
7. Implement Methods
8. Repeat Process TPTM

#### VE JOB PLAN

1. Information Phase - Objective & Scope
2. Information Phase - Process Flow
3. Information Phase - Process Flow/ Cost Visibility
4. Information Phase - Function Analysis
5. Information Phase - FAST
6. Information, Creativity and Evaluation Phases
7. Planning and Execution Phases
8. Follow-up Phase

Based on the above information and interpretation of how the two processes relate and interact with each other, at Delco, we found that the objective of TPTM could be accomplished using the VE Job Plan.

The approach taken toward defining VA and NVA activities is: Value Added Those activities that are required to produce a reliable product or services that is desired by a customer. Non-Value Added Activities that produces no value that can be perceived or used by the customer.

#### VE JOB PLAN FOR TPTM

The Job Plan as shown in Appendix A, incorporates all the steps of TPTM.

Information Phase: The information phase follows the same pattern as a normal VE study. In determining the objective and defining the scope, identification of the process is accomplished. A completed process flow chart lists the steps and defines what

time is associated with each step.

The next two steps in the TPTM process, identifying VA and NVA activities and drawing a time line, are accomplished very effectively by using function analysis. Identifying the functions of the study and allocating the time required for those functions greatly enhance the capability of identifying what VA and NVA activities can be reduced or eliminated.

activities and all other functions equate to non-value-added activities.

Figure II is a representation of this relationship.

Having reached this agreement the Job Plan can proceed through the normal FAST process.

Thoughtput Cycle Time Chart

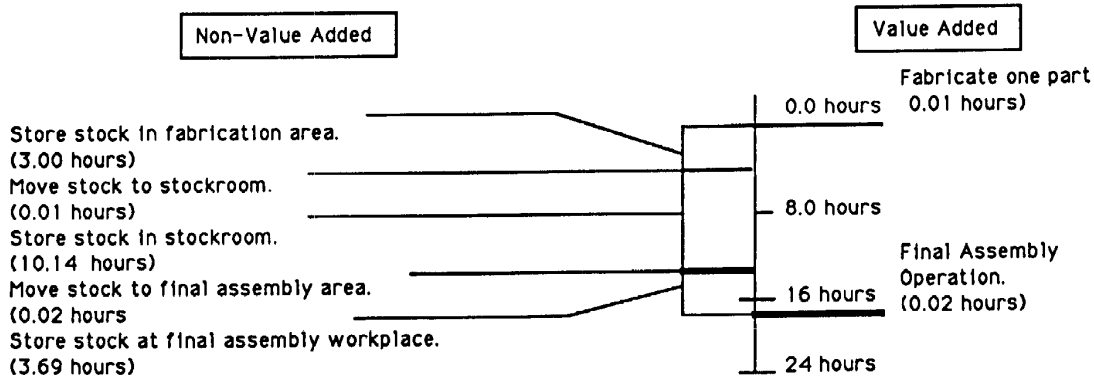


FIGURE 1

The listing of VA and NVA items, by drawing a time line as shown in Figure I, is accomplished by using the Function Analysis System Technique (FAST) diagram. To make the conversion from VA and NVA to FAST, an agreement and understanding of the terms and their purposes must be reached.

In constructing the FAST diagram, Basic and Secondary Required functions are considered equivalent to value-added

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A step labelled "Problem Identification" is used at this point to place added emphasis on how to reduce or eliminate time and to establish an additional building block for the Creativity phase. This step encompasses the TPTM process of identifying obstacles. The question asked during this step is "What problems

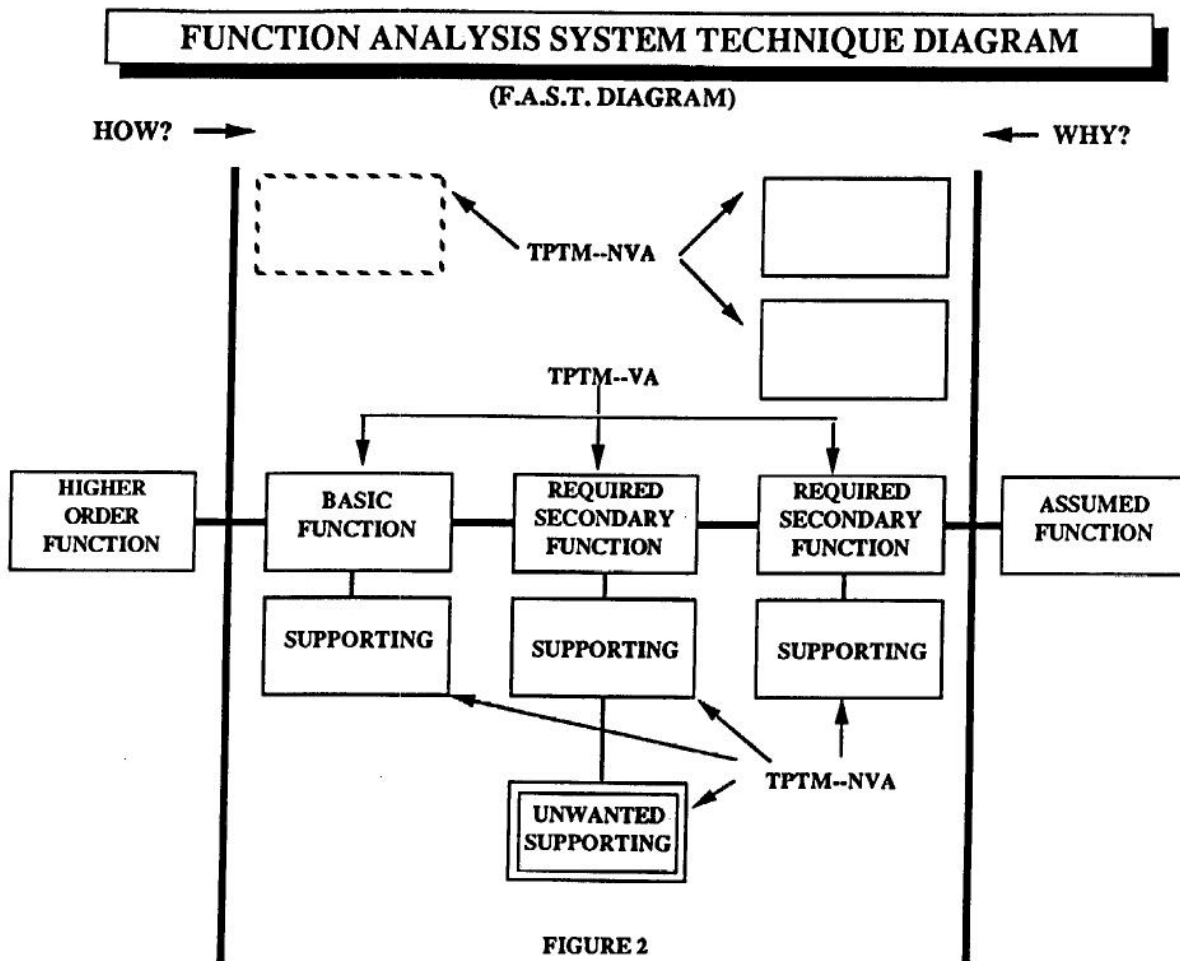


FIGURE 2

are associated with each function and what time is involved." The answers are recorded and used in the creativity phase.

Creativity Phase: Applying the Creativity Phase of the Job Plan to the TPTM sixth step greatly enhances the process by providing a structured approach to brainstorming. Using the FAST diagram and the Problem Identification list as thought starters, the regular VA method of brainstorming is followed.

The Other Phases: The Evaluation, Planning, Execution and Report Phases follow the regular Job Plan outline for any study. During these Phases emphasis is placed on eliminating or reducing the problem areas and developing a plan that is effective and quickly implemented.

RESPONSE TIME IMPROVED

How well the application of the VE Job Plan applies to TPTM is summarized by the following studies at our company:

1. MATERIAL ORDERING SYSTEM Cycle Time: Original: 17 working days. Implemented: 5.6 working days. Response time improvement: 67%. Cost Reduction Proposal (CIP). Savings: \$60,000/year Time to Implement: 2 months. See Figures 3 & 4

**FUNCTION ANALYSIS SYSTEM TECHNIQUE DIAGRAM**

**MATERIAL ORDERING SYSTEM (ORIGINAL)**

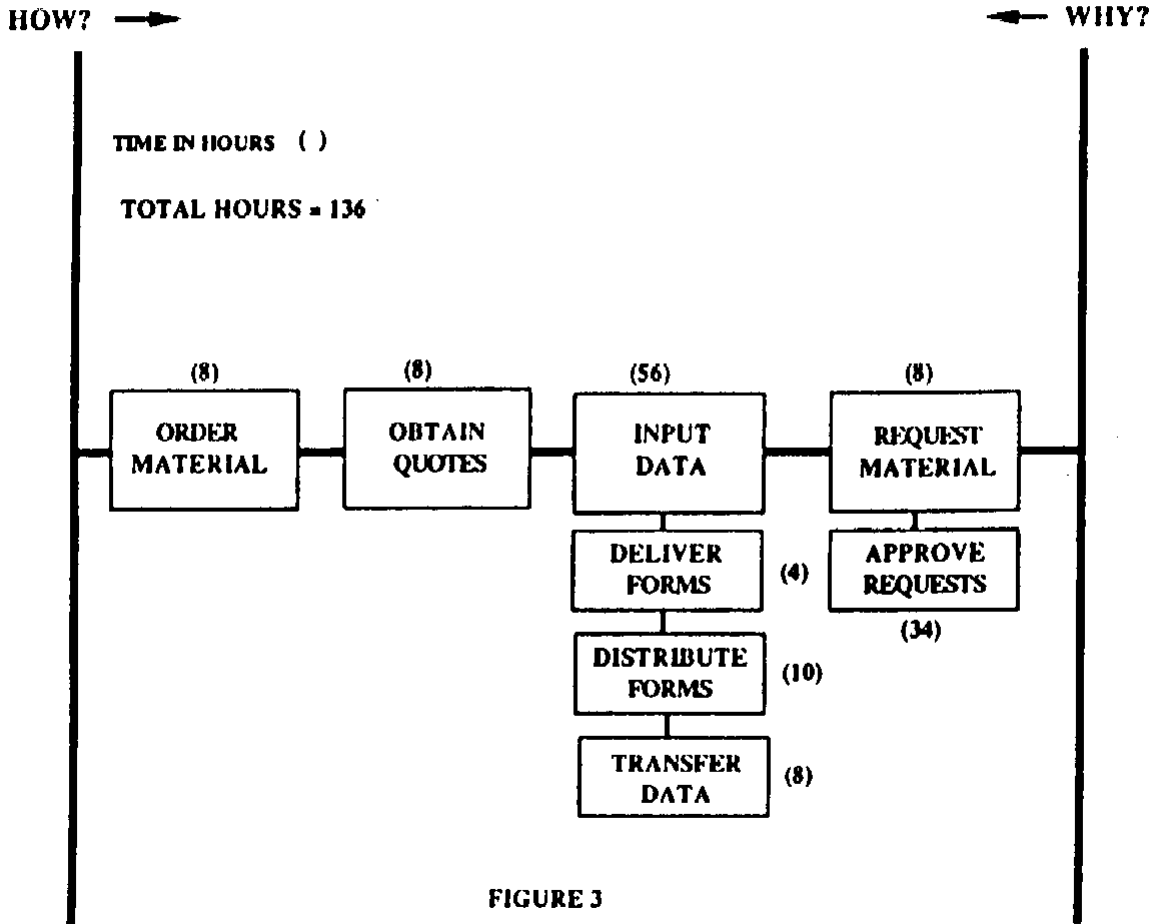


FIGURE 3



Execution.

Report Phase: - Write CIP for documentation, follow-up and recognition. Report status on regular basis until fully implemented.