

## Electronics and Engineering

Value Engineering can be applied to products, processes or services. Complex products or processes may give the best returns, due to the increased scope for simplification.

### Value Engineering: The search for unnecessary cost

#### What is Value?

A product or service is generally considered to have good value if that product has appropriate performance and cost.

- Value is always increased by decreasing costs
- Value is increased by increasing performance, if the customer needs, wants and is willing to pay for more.

#### What is Value Engineering?

A complete system for identifying and dealing with the functions that cause non-contributing cost or effort in products, processes or services. Also known as **Value Analysis**, the **Value Methodology**, **Value Management** or **Value Control**.

#### Why apply Value Engineering?

Value Engineering (VE) is a known cost reduction technique. VE concentrates on what a product does for the customer rather than what it is. The term used to define this process is Function Analysis. If you are not performing Function Analysis, you are not performing Value Engineering.

#### The 6 Phase Job Plan

The VE process is guided by the 6 phase Job Plan. There are some variations of the VE Job Plan, but the core process remains consistent.

#### Phase 1 – Information Phase

Detailed product or process knowledge is a pre-requisite to a successful VE program. The objective of this phase is to scope the project, set improvement targets, and gain management approval to proceed with the project.

The information gathered during this phase may include:

- Customer and user attitudes (primary buying influences, perceived faults, relative importance of features, comparison with competition, etc.)
- Documentation sources (drawings, BOMs, procedures, specifications, costings, etc)
- People sources (design, marketing, finance, maintenance, manufacturing, etc)
- Secondary sources (similar products, eng/design standards, regulations, etc.)

#### Phase 2 - Function Analysis Phase

The objective of the Function Analysis phase is to identify inappropriate or unnecessary cost in a product, process or service. This is the single most important phase of Value Engineering.

A function is a two-word performance description using an active verb and a measurable noun (e.g. 'preserves food', 'cuts grass').

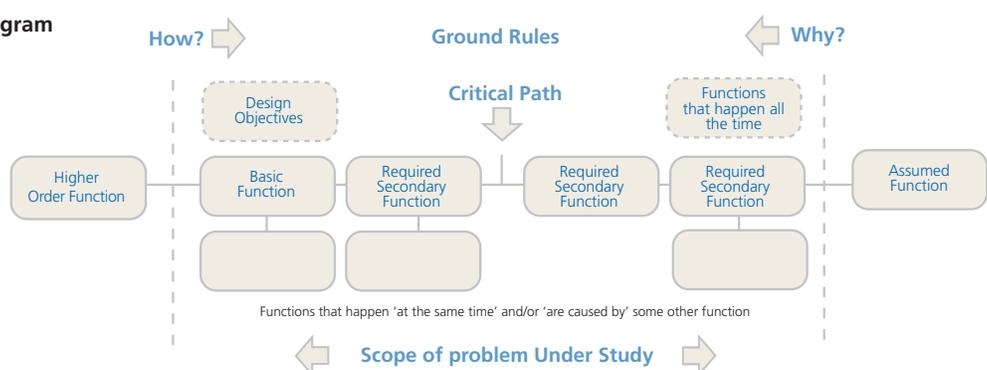
'Function thinking' facilitates the viewing of a product, process or service objectively in terms of what it does. People from diverse backgrounds may communicate and understand each other and the product in a language void of technical jargon.

#### 2.1 Identify functions of a product, process or service:

- Use features to surface functions - from direct observation, expert team member, production literature, drawings or users.
- Define the functions of each feature. If the goal of creative opportunity is to be achieved, then two-word function definitions are imperative. *While the naming of functions may appear simple, the exact opposite is the rule.* (Miles: Techniques of VA)

Figure 1: FAST Diagram

A picture of all the functions showing their relationships to each other and clearly showing what each function does.



## 2.2 Classify the functions - primary or secondary

- Primary Function is the basic or required reason for the existence of the product and answers the question 'What must it do?' (e.g. deliver current)
- Secondary Functions are support functions that answer the question 'What else does it do'?

## 2.3 Build a function model - FAST (Function Analysis System Technique) - see Figure 1.

### FAST Diagram:

'A picture of all the functions showing their relationships to each other and clearly showing what each function does'.

## 2.4. Assign cost to functions

- Identify what it costs for your organisation to produce the item (Material, Labour)
- Allocate costs to functions.

## 2.5. Assign worth to functions

- Assign previously established user/customer attitudes (Information phase) to the functions
- Establish a relative importance of functions.

## 2.6. Compare cost to worth - establish best improvement opportunities

- Identify value mismatches.

## Phase 3 - Creativity Phase

The objective of the Creativity phase is to generate a large quantity of ideas for performing each function selected for further study. This will be achieved through Brainstorming and/or other creativity techniques.

## Phase 4 - Evaluation Phase

The objective of the Evaluation phase is to select feasible ideas for development into specific value improvement initiatives.

Sort ideas as to how well they meet criteria of project:

- Eliminate nonsense or 'thought provoking' ideas
- Group ideas by category
- Have one team member to 'champion' each idea during discussions/evaluations
- Rank the ideas within each category according to prioritised evaluation criteria
- If competing combinations still exist, use matrix analysis to rank mutually exclusive ideas satisfying the same function.

## Phase 5 - Development Phase

The objective of the Development phase is to select and prepare 'best' alternatives or combinations of alternatives for improving value. Each of the remaining concepts are further analysed in a decision process that allows the 2 key components governing any decision to be clearly understood: the benefits we hope to gain and what we must pay to obtain them.



## Phase 6 - Presentation Phase

The objective of this phase is to obtain agreement to proceed with implementation of recommendations. On successful approval, the project is ready for implementation.

## Which products or processes?

Value Engineering can be applied to products, processes or services. Complex products or processes may give the best returns, due to the increased scope for simplification. Products or processes with higher usage offer greater savings overall. Old products or processes may benefit from new technical developments.

BSM is a leading management and technology consulting company. We help clients achieve significant improvement by implementing sustainable process, people and e-technology solutions.

The BSM re-engineering team specialises in assignments in:

- Maximising Productivity
- Maximising Velocity
- New Products and R&D Management

For further information please contact:

John Larkin  
Principal Consultant  
E: john.larkin@bsm.ie  
T: + 353 91 746900  
F: + 353 91 746959

Previous Focus Newsletters are available at [www.bsm.ie](http://www.bsm.ie)