EXAMPLES OF VERBS

• Passive
  • Provide support
  • Permit parking
  • Allow attachments
  • Determine resolution
  • Submit budget
  • Develop exhibits
  • Seek approval

• Active
  • Support weight
  • Park vehicles
  • Attach components
  • Resolve problem
  • Budget expenses
  • Exhibit products
  • Approve procedures
FAST DIAGRAMMING

• FAST IS AN ACRONYM FOR functional analysis system technique, which was born out of the value engineering discipline.

• Basically Fast is a diagramming process which visually highlights the functions of a product, system, or service and their inter-relationship. It was developed by Charles W. Byetheway.

• FAST is a logical process and follows the VALUE ENGINEERING format of describing a function with two words – and active verb and a measurable noun.
Function Analysis System Technique (FAST)

- Purpose of FAST
  - Logically identifies, develops, and analyzes functions

- The FAST diagram
  - Specific function relationships
  - Validity test
  - Deepens understanding of problem
  - Show design
  - Supports creativity
  - Stimulates logical and organized thinking

- Uses
  - Communication
  - Understanding
  - Clarification
  - Interrelationships
  - Relative importance of functions

- The basic difference between FAST Diagramming and other techniques is that FAST is function-oriented and not time-oriented.
Types of FAST Models:

• Technical FAST Diagram

• Classic FAST Diagram

• Customer-Oriented FAST Diagram
MAJOR ELEMENTS OF A FAST DIAGRAM

• Every FAST diagram has two vertical scope lines, one on the extreme left and one on the extreme right; everything in the study lies inside them.

• Every FAST diagram has a critical path running from left to right with a sequential arrangement of those functions to complete a required process of design.

• The higher order function lies outside the left scope line.

• The basic function lies immediately inside the left scope line.

• Functions of the highest order or level are at the extreme left of the diagram; lower level functions at the extreme right.

• The assumed function lies outside the right scope line.
CLASSICAL FAST MODEL
HOW/WHY LOGIC

• On the critical path the functions are put in order by using a test of How/Why logic consisting of two questions: How? Why?

• In order to have logic, the diagram must satisfactorily answer these two questions:

  • When “How?” is asked of any function on the critical path, the answer must be found in the function immediately to the right.
  
  • When “Why” is asked of any function on the critical path, the answer must be found in the function immediately to the left.

  • If the order of the function fails this two-way test, a function is either MISPLACED or IMPROPERLY DESCRIBED.
Intuitive Logic

HOW? Left to Right
- Starting with the goals answers how to achieve the goals

WHY? Right to Left
- validate the intuitive logic of “HOW?”

WHEN?
- Independent Function, supplements intuitive thinking
FINAL POINTS TO KEEP IN MIND

• It is not necessary for the diagram to be 100% technically correct to be useful.

• A logic diagram can be a very quick, effective, and highly visible tool in communicating information.

• The process or creative stimulation that accompanies the creation of a logic diagram might be of greater benefit than the finished product.
COST/WORTH = VALUE INDEX

• This ratio is used to determine the opportunity for value improvement. It is usually identified in the function analysis phase, where:

• **COST:** The total expense of resources to produce a product, service, process, or structure;

• **WORTH:** The lowest expense believed to be necessary to perform a function(s) without regard to criteria or codes; or, the least expenditure required to attain the function or functions needed.

\[
\frac{\text{COST}}{\text{WORTH}} = \text{VALUE}
\]

• $\text{COST} > 1$, therefore a poor $\text{VALUE}$
• $\text{COST} = 1$, therefore a good $\text{VALUE}$
• $\text{COST} < 1$, therefore a great $\text{VALUE}$, or a bargain, (or $\text{WORTH}$ was over estimated)
Value Index

The Basic Equation

Value = Function/Cost

Value Index = Cost/Worth
VALUE INDEX - PENCIL

- Worth – What is the least cost to perform the function “Makes Mark”?
  - Suggestion: Use a piece of lead rock

- What does that cost?
  - Suggestion: $0.30

Value Index = Cost/Worth

- Pencil Cost: $2.92
- Least Cost: $0.30
- Value Index = $2.92/0.30 = 9.7

VI more than 1; cost more than worth – VALUE MISMATCH – Opportunity for Improvement
Attributes of a Creative Person

- Problem Sensitivity
  - Being aware the a problem exits
- Idea Fluency
  - Being able to produce ideas in copious quantities
- Flexibility
  - Being adaptive in the approach to a problem
- Originality
  - Ability to produce a great number of new and unique ideas
- Constructive Discontent
  - Dissatisfaction with existing conditions with an attitude of mind which seeks to improve the conditions
Attributes of a Creative Person (continued)

- **Observation**
  - Alertness to the environment
  - Ability to combine and recombine information in a variety of ways

- **Orientation**
  - Develop proper frame of mind toward creativity

- **Motivation**
  - Mustering of the necessary energy to work toward goal-drive and energy

- **Permissive atmosphere**
  - Environment in which new ideas are encouraged
Group Brainstorming Rules  
(Creativity)

- Criticism is ruled out – Judgment is suspended until subsequent evaluation
- Free-wheeling is welcomed – The wilder the idea the better; It is easier to tame down than to think up
- Quantity is wanted – The greater the number of ideas, the more likelihood of good ones
- Combination and improvement are sought – In addition to contributing ideas of their own, group members should suggest how suggestions by others could be turned into better ideas, or how two or more ideas could be combined into a still better idea.
EVALUATION PHASE

Specific Work to be done:

• Rank ideas
• Evaluate ideas
• Select ideas

Questions to be answered:

• How feasible is each idea?
Will each idea perform the function?
SAVE INTERNATIONAL

• About the Organization
  • SAVE International website: www.value-eng.org

• Certification Program
  • AVS – Associate Value Specialist
  • VMP – Value Methodology Practitioner
  • CVS – Certified Value Specialist
ROADMAP TO CERTIFICATION

- AVS
- VMP
- CVS
- CVS-LIFE
Types of Certification

For individuals who are new to VE:
- Complete Mod I & Pass AVS Exam
- Teach VE
- Must be renewed every four years

For those who are not necessarily full-time in VE Business:
- Complete Mod I & Pass VMP Exam.
- Accrue Required CP’s
- Lead VE Team
- Teach VE
- Must be renewed every four years

The highest degree:
- Complete Mod II,
- Accrue required CP’s & Pass CVS exam
- For those who are fully qualified and are in the VE field.
- Lead VE Teams
- Teach VE
- Must be renewed every four years

Certified Value Specialist

Associate Value Specialist

Value Methodology Practitioner

AVS

VMP

CVS
## VE approved courses

<table>
<thead>
<tr>
<th>Module I</th>
<th>Module II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>40-hour VE Training Workshop</strong>&lt;br&gt;20 Hours lectures, 20 Hours Project</td>
<td><strong>24-hour advanced VE Seminar</strong>&lt;br&gt;Lectures &amp; Exercises</td>
</tr>
<tr>
<td>History, Definitions, Job Plan</td>
<td>Overview of VE Job Plan and Advanced Function Analysis and FAST</td>
</tr>
<tr>
<td>Function Analysis, FAST</td>
<td>Project and Team Structure</td>
</tr>
<tr>
<td>Creativity</td>
<td>Advanced Creativity</td>
</tr>
<tr>
<td>Life Cycle Cost Analysis</td>
<td>Financial Evaluation</td>
</tr>
<tr>
<td>Evaluation and Implementation</td>
<td>Interpersonal Skills</td>
</tr>
<tr>
<td></td>
<td>Value Management</td>
</tr>
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CERTIFICATION PROGRAM - AVS

Requirements:

1. Complete a SAVE approved Module I course (40 hours)

2. Pass the AVS examination
CERTIFICATION PROGRAM - VMP

Requirements:

1. Complete a SAVE approved Module I (40 hours)

2. Demonstrate practical application of the Value Methodology

3. Pass the VMP examination

4. Activity must continue for recertification every four years.
CERTIFICATION PROGRAM - CVS

Requirements:

1. Complete SAVE approved Module I and Module II courses

2. Demonstrate practical application of the value methodology,

3. Submit and have approved an original paper on a value related subject

4. Successfully pass the CVS examination.

5. The Certification Board offers three tracks for CVS certification.

1. Value specialist, who teaches, facilitates, leads or participates in studies using the value methodology.

2. Value program managers who are responsible to their employer for the management or direction of an in-house value program. The program manager is not only responsible for the success of a study, but is also responsible for the overall success of a value program

3. NEW - Academic track
ROADMAP TO CVS

Possible stepping stones:

• Get listed as a team member on the SAVE web site

• Work closely with your advisor (CVS)

• Speak to groups about VM (include SAVE Chapters and groups outside of your normal associations)

• Write articles for group newsletters about VM
WHO CAN HELP?

• CVS Candidate

• CVS Advisor

• SAVE Certification Board Administrator

• Clients/Others
CVS CANDIDATE

• Communicate with your CVS advisor

• Find opportunities yourself (networking)

• Get listed as a team member on the SAVE web site

• Consider VMP as interim
CVS ADVISOR

- Communicate with your CVS candidate
- Find opportunities for the CVS candidate
- Talk to clients about using an assistant
- Advise and review the candidate’s progress
- Review CVS candidate’s application and paper
- Assist CVS candidate with review for the CVS exam
CLIENTS/OTHERS

- Clients be open to the CVS using an assistant
- Other CVSs be open to adding an assistant for a study
- Time to attend the study/workshop
- Be creative!
Summary:

“A truly creative person allows their mind to travel unrestrained from the unknown to the known and on to a new and even greater unknown while never really losing sight of the objective”

Donald Hannan
OK, so what IS “Value Engineering”?

“An organized study of functions to satisfy the user’s needs with a quality product at the lowest life cycle cost through applied creativity”.
FUNCTION ANALYSIS

You can’t always get what you want.

But if you try somehow, you just might find, you get what you NEED.

Acknowledgement:

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