

Value Methodology Glossary of Terms

Activity – A specific task, action, or operation that describes how a function is performed. For example, the activity "pour coffee" describes how the function "dispense liquid" is performed. Activities are the means leading to the attainment of a function.

Annuity – A series of payments made at equal intervals. Examples of annuities used in the Development Phase and relative to life-cycle cost analysis include yearly insurance premiums, monthly mortgage payments, annual energy costs, insurance, licenses, etc.

Balanced scorecard – A technique used to document and communicate the objectives, related key performance indicators and targets, and anticipated outcomes of an organization (and/or its projects, products, and services).

Break-even point – The sales amount—in either unit (quantity) or revenue (sales) terms—that is required to cover total costs, consisting of both fixed and variable costs to the organization.

Change management – A collective term for all approaches to prepare and support individuals, teams, and organizations in implementing change. The most common change drivers include: technological evolution, process reviews, crises, changes in consumer habits, pressure from new business entrants, acquisitions, mergers, and organizational restructuring. It includes methods that redirect or redefine the use of resources, business processes, budget allocations, or other modes of operation that significantly change a company or organization.

Constraints – The state of being checked, restricted, or compelled to avoid or to perform some action. For most VM studies, there are restrictions on some parameters of a solution (e.g., laws, standards, market demand, policies, resources, commitments made, etc.). These restrictions are called constraints and can be real or perceived. VM may be an effective tool for turning perceived constraints into opportunities for value improvement.

Consultant – One who gives professional advice or services.

Convergent thinking – A mental process that focuses on coming up with the single, well-established answer to a problem. It is synonymous with the term "critical" thinking.

Cost-benefit analysis (CBA) – A method used to ascertain the soundness of any investment opportunity and provide a basis for making comparisons with other such proposals. All the positives and negatives of the VM study subject are first quantified in monetary terms and then adjusted for their time-value to obtain correct estimates for conducting a CBA.

Cost, initial – The expenditure of all the resources needed to design, deliver, produce, or establish a project, product, process, service, or organization. Cost has different dimensions that can be measured by factors such as materials, labor, equipment, time, risk, etc. and be quantified in currency. Cost should not be confused with "price," which is the amount of money exchanged or set as consideration for the sale of something. Initial cost is also frequently referred to as "capital cost."

Cost, life-cycle (LCC) – The sum of all recurring and one-time (non-recurring) costs over the full lifespan or a specified period of a project, product, process, service, or organization. It includes the initial costs, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life, including salvage or decommissioning costs.

Cost model – A resource model used to graphically depict the relationship of elements relative to their cost. For example, a cost model of a building might show the relative cost of each of the major systems (foundation, superstructure, exterior enclosure, etc.), sorted from high to low, on a bar chart. Cost models are often augmented with a Pareto distribution (see Pareto model below).

Creativity – A phenomenon whereby something new and somehow valuable is formed. It is the ability to produce original and unique ideas or to make something new or imaginative. Creativity can be supported and enhanced by the utilization of creativity methods and techniques. Creativity in VM leverages divergent thinking with a focus on functions.

Creativity techniques – Methods that promote creativity and the generation of new ideas for developing visions or to solve problems.

Criteria – Standards for evaluation upon which a decision or a judgment is based.

Customer – A person or an organization that purchases a product or service. The customer plays a critical role, if not the most important in determining value. In some cases, the customer may also be a user.

Divergent thinking – A process or method used to generate ideas by exploring many possible solutions. Divergent thinking typically occurs in a spontaneous, freely flowing, "non-linear" manner, such that many ideas are generated in an emergent, cognitive fashion. Divergent thinking requires a judgment-free environment and aims to elicit ideas that may be unconventional.

Efficiency – The ratio of useful output to total input. Efficiency refers to very different inputs and outputs depending on specific fields and industries.

Escalation – Changes in the cost or price of specific goods or services in a given economy over a period. This is similar to the concept of inflation, except that escalation is specific to an item or class of items (not as general in nature). Changes in the money supply do not usually drive changes in cost, and escalation tends to be less sustained. Note that escalation is different than inflation.

Evaluation – To determine the significance, value, or condition through careful appraisal and study.

Expected value – A quantitative measure of value expressed by multiplying an anticipated outcome by the probability of its occurrence.

Facilitator – One who is substantively neutral, has no significant decision-making authority, enables a group to improve how it identifies and solves problems, and increases the group's effectiveness. In

the context of VM, one who leads the group through the VM Job Plan.

FAST – The Function Analysis System Technique (FAST) is a group process that creates a diagrammatic representation of the HOW-WHY logic of functions, and their interrelationships, of a project, product, process, service, or organization under study.

Freewheeling – A state of unrestrained, divergent thinking not bound by formal rules, procedures, or guidelines.

Function – A non-specific, two-word abstraction, consisting of a verb and noun, that describes what an element of a project, product, process, service, or organization does.

Function, all-the-time – Functions that happen continuously or occur on a repetitive, ongoing basis, relative to the project, product, process, service, or organization.

Function analysis – A detailed examination of a project, process, product, service, or organization to identify, classify, and organize its functions; allocate performance and resources; and prioritize functions for value improvement.

Function, basic – The essential function(s) that fulfill the purpose or intent for which a project, product, process, service, or organization exists and answers the question, "What must it do?" There can be more than one basic function.

Function, higher-order – The specific goals or needs that the basic function(s) fulfills and are beyond the scope of the VM study subject.

Function logic path – All functions on a FAST diagram that are connected to each other in the HOW-WHY logic direction.

Function, lower-order – Functions that are not part of the scope of the VM study and are inputs for a project, product, process, service, or organization.

Function, one-time – A function that occurs only once relative to the project, product, process, service, or organization.

Function performance specification (FPS) matrix – A technique whereby the quality or performance criteria related to the subject functions are correlated along with related specification units of measure, parameters, targets, and flexibility.

Function resource matrix – A technique whereby the functions of a project, product, process, service, or organization are correlated to its attributes, such as space, weight, cost, time, performance, risk, etc. The purpose of a function resource matrix is to develop insight into how functions contribute to value and to aid in prioritizing which functions offer the greatest potential for value improvement.

Function, secondary – A function that supports the basic function(s) and results from the approach to achieve the purpose or intent of a project, product, process, service, or organization.

Function, unwanted – A function identified by the customer, user, or stakeholder as undesirable that is caused by the approach used to achieve the purpose or intent of a project, product, process, service, or organization.

Future value – The value of a current asset at a specified date in the future based on an assumed rate of growth. Examples of factors that are often expressed as a future value (FV) in a life-cycle cost analysis include major periodic maintenance, equipment or building system replacements, salvage or demolition costs, etc.

Gantt chart – A Gantt chart is a type of bar chart that illustrates the relationship of activities to a schedule. Articulations of Gantt charts may show interdependencies of activities and define the "critical path" (the longest series of required sequential activities) of a project or process.

Grading – To classify ideas on a scale, such as by quality, size, color, etc.

Handout – A document summarizing the key information needed by both the VM study team and the stakeholders attending the presentation. It is not intended to include specifics about the Job Plan phases nor all details of each VM proposal, but to share some basic information to make the presentation run easily. In most cases, these documents will be two to five pages in length. In some cases, a PDF copy of the slideshow used by the team is distributed. Handouts generally become obsolete after the presentation ends, since the VM study team, facilitators, and other stakeholders will focus their efforts on the formal report.

Hitchhiking – The process of taking one idea and building on it to create a different idea.

Implementation meeting – A key activity of the Implementation Phase, also called a resolution meeting. The purpose of this meeting is to resolve the disposition (usually acceptance or rejection) of the VM proposals developed and presented in the previous two phases of the VM Job Plan.

Implementation plan – An overall schedule for all activities necessary to implement the results of the VM study. It typically contains detailed action plans, including schedules, milestones, tasks, resources, and level of effort required, and identification of the parties responsible for completion of the implementation actions. Schedules (e.g., Gantt charts) and other project management applications usually support the implementation plan.

Inflation – A quantitative measure of the rate at which the average price level of an array of selected goods and services in an economy increases over a period of time. Inflation is often expressed as a percentage and indicates a decrease in the purchasing power of a nation's currency.

Interest rate – The amount of money charged, expressed as a percentage of the principal, by a lender to a borrower for the use of assets. In terms of borrowed money, the interest rate is typically applied to the principal, which is the amount of money loaned. The interest rate is the cost of debt for the borrower and the rate of return for the lender. It should be noted that the term "discount rate" refers to the interest rate that Federal Reserve Banks charge commercial lenders, and that is frequently used by public sector agencies in LCC analysis. The VM study sponsor may define a preferred discount rate to be applied to their specific cash flow analysis.

Life-cycle cost (LCC) analysis – The sum of all recurring and one-time (non-recurring) costs over the full life span or a specified period of a project, product, process, service, or organization. It includes the initial costs, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life. The VM study sponsor should ultimately provide direction on the appropriate methods and factors they wish to be applied.

Life-cycle period – The length of time considered in a life-cycle cost analysis. For example, a life-cycle cost analysis performed for the useful life of a highway bridge might assume a life-cycle period of

75 years, which is a typical period used to define the "useful life" of the structure.

Neutral – Not engaged on either side.

Present value – The current value of an asset. In life-cycle cost analysis, present value (PV) is the current value of a future sum of money or stream of cash flows (an annuity) given a specified rate of return.

Pareto model – A further articulation of any resource model that graphically illustrates the cumulative distribution of values. For example, a Pareto distribution curve overlays a bar chart that shows the cumulative contribution of each element of cost. The basis of the Pareto model is the so-called 80/20 rule, which means that 80 percent of the total cost of a system can be linked to 20 percent of its elements. Pareto analysis is used to select important elements, to prioritize problems, and to highlight important issues. It also helps to see the small number of important issues as well as their relative importance to each other.

Performance – The extent to which a project, product, process, service, or organization achieves its intended function(s). Performance can be measured quantitatively or qualitatively, the measurement of which answers the question of how well the function(s) is(are) being performed.

Productivity – The rate of output per unit of input; usually for a production process, however it is used also for construction activities.

Process flowchart – Process flowcharts are tools for visualizing manufacturing, business, administration, etc. processes. Process flowcharts usually have two sides, and the processes are placed horizontally on it. All the processes in the organization are placed between customer expectations (left side, input) and customer satisfaction (right side, output). Organizational processes include management processes, value-creating processes, and supporting processes. There are many international standards for displaying process maps, such as UML (Unified Modeling Language), Event-driven Process Chain (EPC), Business Process Modeling Notation (BPMN) (ISO/IEC 19763-5: 2015), and VSM (Value Stream Map).

Project management plan – A project management plan is a tool for planning and managing a project. The document continuously evolves with the project

and is always updated with the latest relevant information. The project management plan should be accessible to all project members, as it is one of the most important documents of communication.

Quality – A subjective term for which each person or sector has its own definition. In technical usage, quality can have two meanings: 1) the characteristics of a product or service that bear on its ability to satisfy stated or implied needs; 2) a product or service free of deficiencies. According to Joseph Juran, quality means "fitness for use"; according to Philip Crosby, it means "conformance to requirements."

Quality management plan – A document defining the acceptable level of quality, which is typically defined by the customer, and describes how the project, product, or process will ensure the specified level of quality. Quality control activities monitor and verify that deliverables meet defined quality standards. Quality assurance activities monitor and verify that the processes used to manage and create the deliverables are followed and are effective.

Quality model – A model that illustrates the relationship between customer satisfaction and the degree of quality provided by a project, product, process or service. One such example is quality function deployment (QFD) which is a method to transform qualitative user demands into quantitative parameters, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts and, ultimately, to specific elements of the manufacturing process.

RACI matrix – RACI is an acronym for "responsible, accountable, consulted and informed." A RACI matrix is typically used to cross reference activities and deliverables with stakeholders to define the level of involvement. For example, a public agency might be identified as "consulted" for the review of a project document. The information on a RACI matrix is used in supporting communication and managing stakeholders.

Random function identification – A technique that lists the elements, components, or parts of a project, product, process, service, or organization and then identifies the various functions related to them. Once the functions have been identified using this technique, they may be classified and organized for subsequent analysis.

Ranking – To arrange ideas by priority or importance relative to other ideas being considered.

Resistance to change – Action taken by individuals and groups to hinder change-related activities when they perceive a change as a threat to them. Keywords here are "perceived" and "threat." The threat need not be real for resistance to occur. The usual description refers to change within organizations, although it is found elsewhere. Resistance is the equivalent of objections in sales and disagreement in general discussions. Resistance may take many forms, including active or passive, overt or covert, individual or organized, aggressive or timid.

Resource model – A graphic and/or numerical representation (such as a spreadsheet, pie chart, cost model, Gantt chart, etc.) indicating resources such as cost, space, time, and energy and associated performance or risk allocated to each component of a project, product, process, service, or organization.

Resource – All inputs of cost, time, energy, space, materials, labor, etc. required to accomplish a function.

Return on investment (ROI) – A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost. To calculate ROI, the benefit (or return) of an investment is divided by the cost of the investment. The result is expressed as a percentage or a ratio.

Risk – An uncertain event that could have an impact on the cost, schedule, or performance of a project, product, process, service, or organization. Risks can either be positive (opportunities) or negative (threats). The Value Methodology must consider the impact of risks to value.

Risk model – A resource model that represents the probabilities and impacts of threats and opportunities. Risk models can be qualitative or quantitative in nature. They include tornado charts (a graphic form of risk rankings), HEAT maps, histograms, and probability density curves.

Risk register – A matrix used to record information concerning subject risks. Risk registers usually include a description of the risk, type of risk (threat or

opportunity), probabilities, impacts, triggers, and possible response strategies.

Schedule – A procedural plan indicating the time, duration, and sequence of activities or operations. Schedule may be considered as an input (a resource) or an aspect of performance, depending upon the context of the project, product, process, service, or organization.

Scope – The defined parameters of the subject under study. The subject scope is often supported by various forms of information that include narratives (or a scope statement), specifications, drawings, schedules, plans, estimates, and other supporting analysis.

Simple payback – In capital budgeting, the period of time required to recoup the purchasing power of the funds expended in an investment or to reach the break-even point. For example, a \$1,000 investment made at the start of Year 1, which returned \$500 at the end of Year 1 and Year 2, respectively, would have a 2-year payback period. This method does not recognize the time value of money.

Specifications – A specification often refers to a set of documented requirements to be satisfied by a material, design, product, or service. The characteristics of quality and performance are usually defined by specifications for projects, products, processes, and services. Different types of specifications have different meanings. Examples include functional, technical (i.e., design and engineering), operations, and maintenance specifications.

Stakeholder – An individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of the project (i.e. VM study)."

Status reports – A status report is a document describing the situation of something, such as a project at a specific point in time during the Implementation Phase or at the end of the phase. It may utilize a variety of presentation techniques, whether in writing or verbally supported by graphics, charts, diagrams, tables, or any other forms of visualization.

Subject matter expert (SME) – A person who is an authority in a particular area, discipline, or topic.

Subject objectives – Functions that express specific, compulsory requirements, or articulate broader goals of the subject, whether it is a project, product, process, service, or organization.

Time – The measured or measurable period during which an action, process, or condition happens. Time, as an element of value, may be considered as an input (resources) as well as an output. For example, time may be considered as an input when considering the delivery of a project and as an output when experiencing a service such as a massage.

Time value of money – The time value of money is the concept that money available at the present time is worth more than the identical sum in the future, due to its potential earning capacity. This core principle of finance holds that, provided money can earn interest, any amount of money is worth more the sooner it is received.

User – An individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of the project (i.e., VM study).

Utility – An economic concept that is used to quantify the usefulness of, or level of, satisfaction derived from a thing. Utility is closely related to the concepts of performance and quality.

Value – An expression of the relationship between the performance of functions relative to the resources required to realize them. -This can be expressed as $\text{Value} = (\text{Function Performance}) / \text{Resources}$.

Value engineering change proposal (VECP) – A change submitted by a contractor, pursuant to a contract provision, to improve the value of the project or product under contract. VECPs are a vehicle to incentivize contractor innovation and are commonly used in public sector contracts.

Value Methodology – A systematic process used by a multidisciplinary team, led by a qualified VM facilitator, to improve the value of a project, product, process, service, or organization through the analysis of functions.

Visual presentation – For the sake of clarity among the diverse VM community members, we differentiate "presentation" and "visual presentation." In this text, we define the presentation as the overall effort to compile and communicate the

VM study results to stakeholders, including preparation and the meeting held to communicate those results and data. Visual presentations, as used herein, refer to a specific type of common presentation tool used by many practitioners. They are often created in Microsoft PowerPoint and other similar software packages and are displayed on projection screens, large monitors, or in print-outs.

VM facilitator – One who is substantively neutral, has no significant decision-making authority, enables a group to improve how it defines and solves problems, and increases a group's effectiveness. In the context of VM, one who leads the group through the VM Job Plan.

VM Job Plan – A sequential approach for applying the Value Methodology, consisting of the following eight phases: 1) Preparation, 2) Information, 3) Function Analysis, 4) Creativity, 5) Evaluation, 6) Development, 7) Presentation, 8) Implementation.

VM pre-study meeting – A formal exchange of information that identifies, clarifies, and communicates the conditions of a VM study, including its subject, objectives, participants, schedule, and logistics.

VM program – A program within an organization that manages, implements, tracks, educates, trains, and advocates for the Value Methodology within the organization.

VM program elements – The components to a VM program. These are described and defined in this section. The most successful VM programs use most, if not all, these aspects. However, even programs that only use a few aspects can be effective and advantageous to the organization. This section outlines the major program elements that must be considered.

VM program manager – The individual responsible for directing, leading, and managing an organization's VM program.

VM proposal – A developed idea resulting from the application of the Value Methodology during a VM study to increase the value of a project, product, process, service, or organization. VM proposals may alternately be described as alternatives or recommendations.

VM study – A structured effort to improve the value of a project, product, process, service, or organization

through the application of the Value Methodology by a multidisciplinary team facilitated by one who is competent in VM techniques, ideally a Certified Value Specialist® (CVS®).

VM study decision maker – A person involved in determining the acceptance or rejection of VM proposals.

VM study report – A document containing all the information developed at the time of the study, needed for stakeholders to make informed decisions about which VM proposals to implement. It is recommended that the executive summary be developed in such a way that it could be a standalone document for broader circulation. Reports should include the background and description of the project under study; a complete listing of VM proposals; complete VM proposals containing all relevant data; complete analysis conducted by the team; a comprehensive listing of all ideas generated and evaluated, along with their evaluation rationale; a brief description of the VM process; agendas; and, a listing of all participants with their contact information. Audiovisual materials may be added to VM study report when prudent.

VM study sponsor – The person, or organization, responsible for defining the specific objectives of the VM study and the stakeholders' needs.

VM study subject – The subject of the VM study can be anything for which there is a desire to explore opportunities for improvement. The Value Methodology is commonly applied to define new, or enhance existing, products, processes, projects, services, or organizations.

VM team – A multi-disciplined group of participants, led by a trained facilitator, who apply the Value Methodology to the subject of a VM study.

Voice of the customer – A process and/or method of eliciting the preferences and requirements of customers and users relative to value.

Weighting – To give something (here, especially, the criteria) a specific meaning. Therefore, different criteria can be differentiated, and the importance becomes obvious.

Work breakdown structure (WBS) – A tool that splits a project into components. It identifies all the project's tasks and deliverables and breaks them down into many small, meaningful, manageable parts (work

packages). A WBS helps to show the scope of the project, regulate progress, set accurate costs and timetables, and shape project teams. Once a WBS has been created, it may be transformed into a schedule