

SECTION II.3

DESIGNING USING VALUE MANAGEMENT

1. WHAT IS VALUE MANAGEMENT?

Value Management (VM) is a systematic and multidisciplinary effort directed toward analysing the costs incurred and benefits delivered by a construction project for the purpose of improving value to the client. First developed about 50 years ago in a manufacturing environment, Value Management techniques are now extensively used in many sectors to increase the effectiveness of projects and optimise the through-life costs of products.

In more formal terms, Value Management may be defined as *the systematic and creative process through which the life-cycle value of a facility is enhanced by co-ordinated and collective effort from the whole supply chain. This is achieved by the identification, prioritisation and incorporation of client defined values' into the final design solutions.*

For a construction project, we define *value* as “the ratio of benefits delivered through the resulting facility to its through-life cost”.

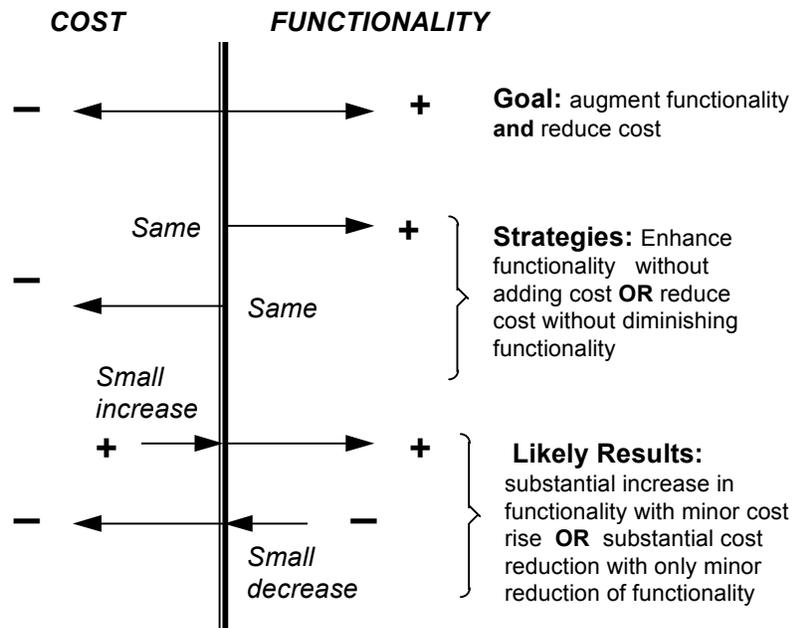
$$\text{Value} = \frac{\text{Benefits}}{\text{Through-Life Cost}}$$

We choose to use the term “benefits” rather than the more commonly used “function”, or “functionality”, as for example in the guide to VM produced by the Institution of Civil Engineers (ICE) and the Treasury. This is because the more inclusive term “benefits” allows considerations other than functionality to be included in decision-making. Such considerations may for example be environmental or aesthetic. However the nature of “benefits” needs to be assessed and clarified for each project.

1.1. Ways of enhancing value in a project

There are three basic ways of enhancing value in a project, as summarised in Figure 1. The ideal way is increasing benefits while at the same time reducing cost. In practice, however, value management activities tend to progress along one or other of two distinct lines: either to enhance value by improving benefits without adding cost, or to provide the same benefits at a lower cost.

Figure 1 Ways to enhance Value by VM activities



These two strategies usually result either in a minor loss of benefits with a significant reduction in cost, or a significant improvement in benefits in the face of a modest increase in costs. In either case the value delivered by the project has increased.

1.2. Value activities during a project

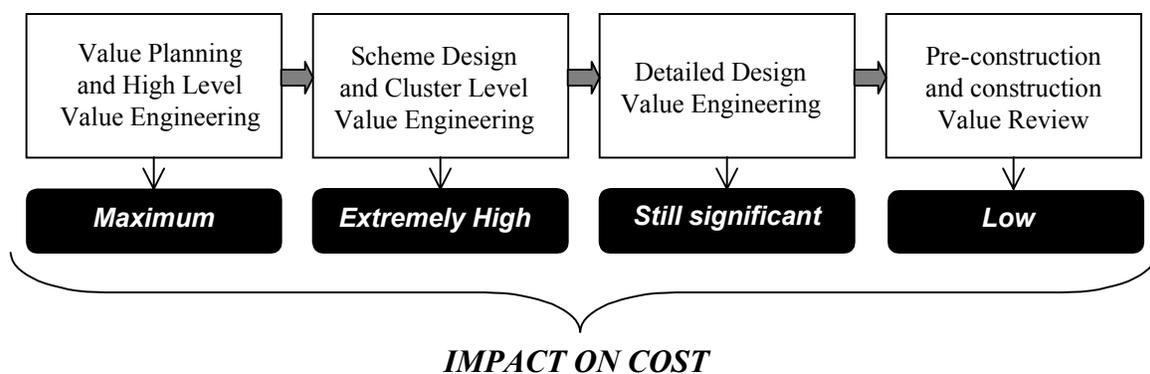
The term “Value Management” is sometimes used to indicate both the whole process and some specific phases of it. This can be a source of misunderstanding and confusion. Accordingly, we use the following terms to define value-related activities during a project:

- *Value management:* the whole, continuous and systematic process for achieving the best value by managing the relations between benefits and costs
- *Value planning:* value management activities in the early phases of a project aimed at defining a clear hierarchy of Client objectives, i.e., the functions and other values that really matter to the particular client, as well as cost limitations must be observed
- *Value engineering (high level-with cluster advice and input):* value management activities in the early phases of development of the spatial concepts of the design, aimed at identifying the design strategy that will be most effective in delivering the particular configuration of value that the client wants, in terms of desired benefits and cost limitations
- *Value engineering (detailed level - within clusters):* value management activities carried out to optimise design options in view of overall value and cost principles set for the project

- *Value review and consolidation*: activities carried out to ensure the alignment of the output produced by the supply chain with the values expressed by the client

It must be emphasised that VM activities have a proportionately greater impact in the early phases of a project, which is when most of the costs are committed. Figure 2 for example summarises the impact of VM activities at various points on the cost of a project, assuming VM is being used to reduce costs whilst keeping benefits more-or-less constant. The cost of implementing an apparently cost effective design solution during the latter stages of a projects will invariably outweigh any beneficial cost savings

Figure 2: The Impact of Value Management activities on Cost



2. HOW VALUE MANAGEMENT WORKS

Several standard methodologies for VM are now established within the construction industry. Although they adopt different terminology and a variety of analysis and representational tools, they all share two important common features: the emphasis is on function and they all follow a similar, and well established, pattern.

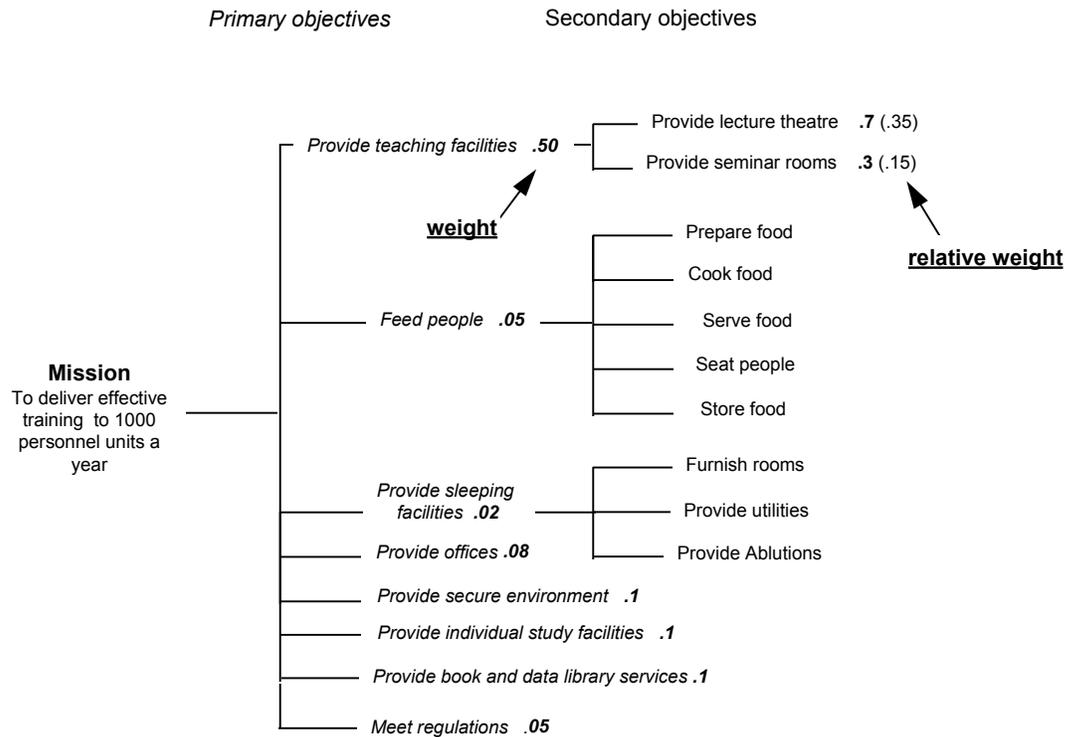
2.1. *Emphasis on functions and benefits*

Function analysis is a key component of VM, which distinguishes it from other forms of group decision-making methods and design optimising techniques. The aim of function analysis is to improve the client’s satisfaction by identifying and giving priority to the criteria that determine the value of the project. This is usually achieved by stimulating intense and thorough discussion amongst a representative group of users or other stakeholders in the desired facility; compelling members of this group to consider aspects that they would not normally.

A typical method for identifying, exploring, and ordering project objectives according to their perceived value is the development of a FAST diagram or a “Value Tree ” by a group of user and other stakeholder representatives. On the basis of a mission statement for

the facility as a whole, the workshop’s participants set out to explore the objectives and sub-objectives of the project. Weightings are attached to the objectives and sub-objectives, in either quantitative (usually a percentage score) or qualitative (high, medium, low) form. The results of the analysis are usually summarised in a tree-like graph (see Figure 3).

Figure 3: Weighted Value Tree



Although the above example uses only functional requirements to specify benefits, design character or “aesthetic” objectives can in principle be added in either the “primary” or “secondary” categories, and weighted as felt appropriate. For example, a primary objective of “provide an appealing, up-to-date visual impact”, might be present in the value tree of another project.

Some criteria should always be considered under primary objectives as they capture the clients attitude on certain key aspects of the project viz.

- Importance of life cycle costs
- Importance of aesthetics
- Requirements for flexibility of use
- Requirements for expandability
- Sustainability
- Quality standards
- Maintenance regime, etc.

2.2. Established pattern

VM is based on the attempt to maximise the contribution of the team by separating creative thinking and systematic analysis. Function analysis is therefore carried out within a structured pattern that usually includes the following stages:

1. *Information*; during which all participants develop a shared understanding of the scope of the study and obtain relevant information on the project.
2. *Function analysis*; based mainly on the construction of a weighted value tree.
3. *Speculation*, during this stage creative methods are used to identify alternative ways in which the identified functions can be achieved.
4. *Evaluation*, in which the alternatives are tested against agreed criteria, and the most promising are selected.
5. *Development*, this stage, usually carried out by “champions”(i.e. specifically appointed individuals or teams) during the period between the main event and the follow-up, aims to develop and analyse in details some of the chosen solutions.
6. *Presentation*, in which solutions are reviewed and decided upon.

This pattern repeats for all the value events in a project, although the focus moves from the analysis of desired benefits at an early stage of the project, to the selection of technical solutions at later stages.

2.3. Value, cost and risk

Although value, cost and risk are discussed in separate sections within this part of the Handbook, they are strictly related.

Value management and cost need to be addressed at the same time in the process using the principles and tools discussed elsewhere in this handbook (e.g., tools B.1, C.2 on value Planning and Value Engineering in practice and section II.5 and Tool C.5 on costing). Failure to address them simultaneously exposes the team to the risk of choosing solutions that while satisfying clients’ needs, at a closer scrutiny reveal not to be affordable. This requires a new iteration of the design process, with potentially serious repercussion in term of project time and use of resources.

In a similar way, any option identified and/or selected during VM carries new risks that need to be properly addressed and managed. Although value and risk activities may be carried out in different settings and facilitated by different individuals, they should always be performed tightly co-ordinated. Each value event should be followed by a risk meeting.

2.4. Value events

Although value management is a continual process, in different phases of a project it is possible to identify specific occasions and events when value is explicitly considered. Figure 4 summarises how and when the supply chain partners may be involved in adding value to the project through participation in value management activities.

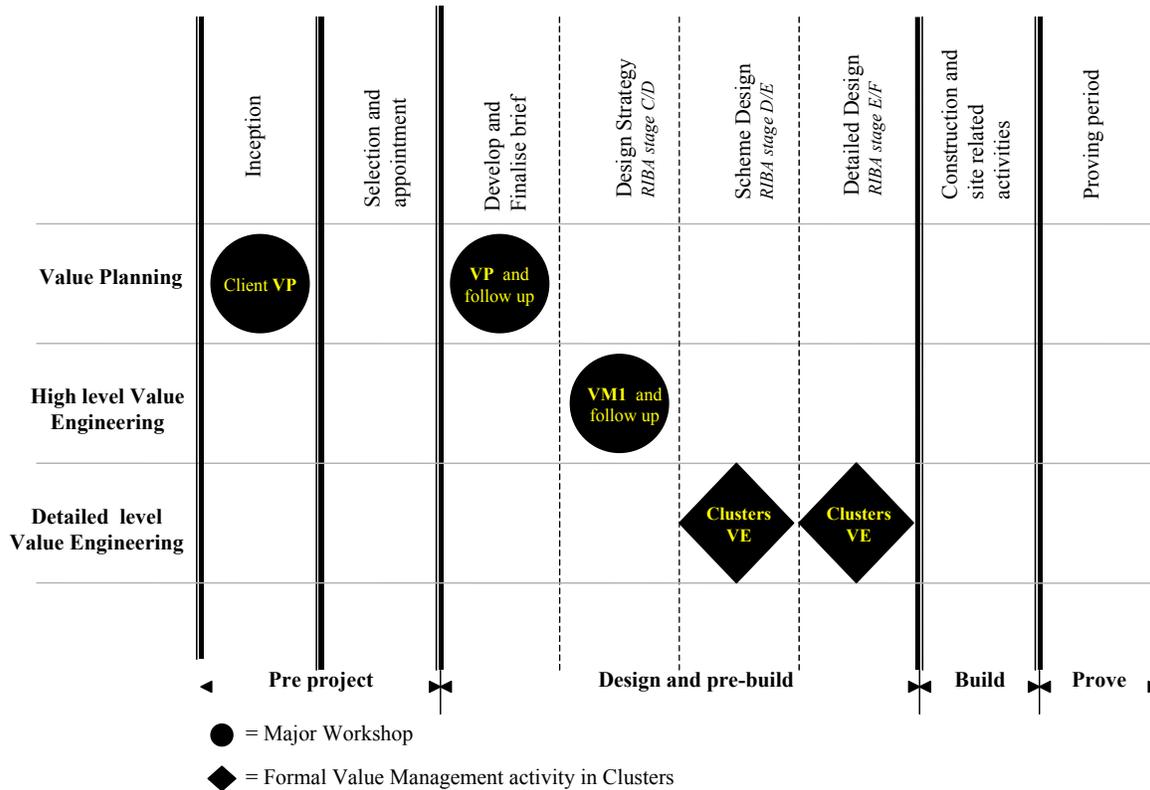


Figure 4: Value events in the Project

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Be is an independent body formed from a merger of the Reading Construction Forum and the Design Build Foundation in 2002. Its 100 member organisations come from the demand and supply chains of the 'industry formerly known as construction', ranging from public sector and private sector clients and developers to contractors, designers, consultants, specialists and suppliers. It leads research and implementation activities in support of a vision of delivering integrated built environment solutions through collaborative working.

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