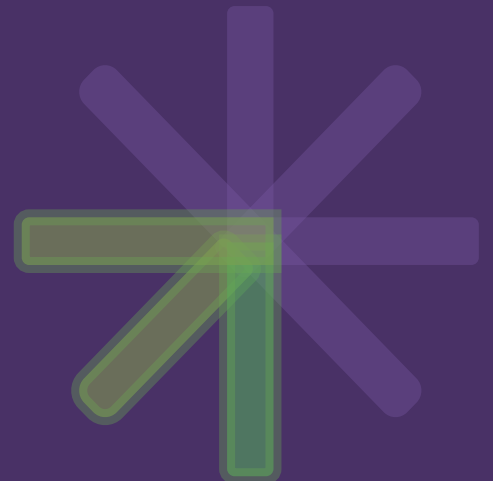

Value Engineering and Function Analysis for Capital Projects Training Course





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Programme Summary

Value engineering and function analysis for capital projects is a five-day training course for senior leaders at strategic level, culminating in a value study plan for a live or upcoming capital project. Capital budgets are often cut late and bluntly, removing function the asset needed while waste survives. The approach examines what each element must do, finds alternatives that deliver it at lower whole-life cost, and builds value studies into governance. Mars Training Centre UK delivers this programme in value engineering for capital projects.

The Business Case

Early design decisions fix much of a facility's whole-life cost, yet many organisations review value only when tenders exceed budget. A structured value study at the right gate lets owners challenge requirements, test alternatives and protect required function while releasing capital.

- Capital Cost and Value for Money: Improve when alternatives are tested against defined functions before design is frozen.
- Whole-Life Operating Cost: Falls when energy, maintenance and replacement are weighed alongside the initial price.
- Change and Redesign Exposure: Reduces when assumptions and requirements are challenged early through a recorded value study.

Principles and Evidence Base

- Value Methodology Job Plan SAVE International VM Guide: Provides the phased study sequence used in Sessions 1 to 4.
- Function Analysis System Technique FAST: Uses how-why logic to expose cost drivers in Session 2.
- Life-Cycle Cost Analysis: Compares alternatives on acquisition, operating, maintenance and disposal cost in Session 3.
- ISO 15686-5 Life-Cycle Costing for Buildings and Constructed Assets: Frames consistent whole-life cost assumptions in Session 3.

Intended Participants

- Leaders who approve capital project scope, budgets and gate decisions.
- Senior managers responsible for design, engineering or cost outcomes on major projects.
- Asset owners accountable for the operating and maintenance cost of completed facilities.
- Public-sector officials who oversee capital programmes and value-for-money reviews.



The programme serves construction and infrastructure, energy and utilities, healthcare estates and government capital programmes.

Learning Outcomes

1. Participants will be able to evaluate where and when a value study adds most to a capital project.
2. Participants will be able to construct a FAST diagram that links basic and secondary functions to cost.
3. Participants will be able to generate and screen alternatives that deliver required functions at lower whole-life cost.
4. Participants will be able to compare options using life-cycle cost analysis and weighted criteria.
5. Participants will be able to justify value proposals to sponsors and decision boards.
6. Participants will be able to design governance that tracks accepted value proposals through to implementation.

Programme Structure

Day 1: Value Engineering Principles and Timing

Where in the project life cycle does a value study change outcomes most?

- Value as the Ratio of Function to Whole-Life Cost
- Value Methodology Job Plan Phases
- Value Engineering Versus Cost Cutting and Scope Reduction
- Study Timing at Concept, Design and Pre-Tender Gates
- Information Phase: Owner Requirements, Constraints and Cost Models

Day 2: Function Analysis and FAST Diagrams

What must each element of the project actually do, and what does it cost to do it?

- Verb-Noun Function Definition
- Basic, Secondary and Required Functions
- FAST Diagram Construction With How-Why Logic
- Cost-to-Function Allocation and Worth Analysis
- Selecting High-Cost, Low-Worth Functions for Study

Day 3: Creative Alternatives and Life-Cycle Cost

How are alternatives generated and compared fairly over the life of the asset?

- Creative Phase Techniques and Judgement Deferral
- Idea Screening and Shortlisting
- Life-Cycle Cost Analysis and Discounting
- ISO 15686-5 Whole-Life Cost Assumptions
- Weighted Criteria and Performance Scoring Matrices



Day 4: Development, Presentation and Governance

How do value proposals win approval and survive into delivery?

- Development Phase: Technical Validation and Risk of Each Proposal
- Value Proposal Presentation to Sponsors and Boards
- Facilitating Multi-Disciplinary Value Study Teams
- Embedding Value Studies Into Stage-Gate Governance
- Implementation Tracking and Benefits Realisation Registers

Day 5: Applying Value Engineering to a Capital Project

How are the methods combined into a study plan for a participant project?

- Applying Study Timing Criteria to a Participant Project
- Building a FAST Diagram for a Selected Project Element
- Testing Two Alternatives Through Life-Cycle Cost Comparison
- Peer Challenge of Draft Value Proposals
- Value Study Plan Presentation

Methodology

The programme is built around a staged case study that participants work through as a value study team, applying each phase of the job plan to a hospital wing, a pumping station and an office campus. Peers and the facilitator challenge each output, so participants practise the analysis and the sponsor conversation.

- Suggested activity: Building a FAST diagram for a ventilation system.
- Suggested activity: Comparing two pump station designs on life-cycle cost.
- Suggested activity: Presenting value proposals to a simulated project board.

Capstone Output

Each participant completes a value study plan for a capital project in their organisation. It sets out the study timing and scope, team, a FAST diagram for a priority element, shortlisted alternatives with life-cycle cost comparisons and an implementation register for the project sponsor.

Frequently Asked Questions

Is value engineering for capital projects suitable for leaders who are not engineers?

Yes. It is designed for directors, sponsors and officials who approve capital spending, and assumes no prior value study training.



Which standards and models underpin value engineering in this programme?

It rests on the value methodology job plan in the SAVE International VM Guide, the Function Analysis System Technique, life-cycle cost analysis and ISO 15686-5 for whole-life costing of constructed assets.

How is the value engineering study plan used at work?

You present it to your sponsor to commission a value study at the right gate, with scope, team and priority functions defined.

How does value engineering differ from project cost control?

Value engineering questions what the project must do and finds cheaper ways to deliver it, while cost control monitors spending against an approved budget.