TECHNICAL HIGHLIGHT:

# VALUE ENGINEERING

JANUARY 2026

**VALUE ENGINEERING**

Value Engineering (VE) is the application of the Value Methodology, optimizing value to acquire the highest quality in products and systems at the lowest possible cost. This powerful methodology uses a team approach to analyze functions for a product, facility design, system, or service. VE may be applied to any business or economic sector including industry, government, military, construction, and services. The Department of War (DoW) VE Program is an effective business practice that can yield return on investment for cost, capability, performance, and schedule.

## ❖ VE MISSION

Initiate and implement systematic value improvements of goods or services by analyzing functions and resources. The underlying principle is to analyze all cost and resources for developing or maintaining an item to ensure that functions are being achieved economically. The intent is to improve the value of programs, projects, activities, and acquisitions by optimizing the balance between performance and resources while accounting for risk. By enhancing value characteristics and minimizing unwanted constraints, VE can increase customer satisfaction and add value to investments.

***Eliminate Unnecessary Costs and Improve Value***


**Figure 1. Elements of Value**

## ❖ BACKGROUND

The concept emerged in the 1940s primarily to address material shortages during World War II. Today, VE is used in industries including manufacturing, construction, and military systems. The DoW VE Program is designed to encourage innovation, improve value, and reduce costs over the acquisition life cycle. Individual VE programs oversee value activities including Value Methodology Studies, Value Engineering Change Proposals, and other value-improving initiatives.

**Job Plan**

**Information**
Gather relevant data about the item under study and understand objectives, specifications, and constraints.

**Function Analysis**
Identify functions that require improvement (or elimination) using active verb/measurable noun phrase.

**Creativity**
Brainstorm ideas that improve desired functions while promoting open-mindedness and formulate alternative solutions.

**Evaluation**
Analyze generated alternative solutions for feasibility, considering technical possibilities, costs, and benefits.

**Development**
Develop workable alternative solutions considering technical details, implementation challenges, and resource impacts.

**Presentation**
Present the proposed solutions to stakeholders or decision-makers for approval to begin implementation.

**Figure 2. Value Methodology Phases**

## ❖ METHODOLOGY

The Value Methodology includes these stages:

- Pre-Study: Conduct initial data collection and customer relations
- Study (using the 6-phase Job Plan)
- Post-Study: Complete and implement changes

## ❖ APPLICATION

The broad application of VE in industry and government addresses opportunities to improve product and process obsolescence, maintenance, technology insertion, complex procedures, software, licensing, labor, scheduling, and design. VE is applicable to many goods and services.

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TECHNICAL HIGHLIGHT:

# VALUE ENGINEERING *continued*

## ❖ STATUTORY REQUIREMENTS

Public Law (111-350) requires all executive agencies to establish VE programs to focus on improving performance, reliability, quality, safety, and life-cycle costs. The Office of Management and Budget (OMB) directs DoW to execute responsibilities that ensure appropriate use and consideration of VE as a management tool. OMB conveys that VE is a useful tool supporting agency performance goals and defending budget requests. As the DoW Senior Accountable Official for VE, the USW(R&E) delegates these responsibilities to Components through DoD Instruction 4245.14, "DoD Value Engineering Program," with implementation guidance in Standardization Document 24 (SD-24), Value Engineering: A Guidebook of Best Practices and Tools.

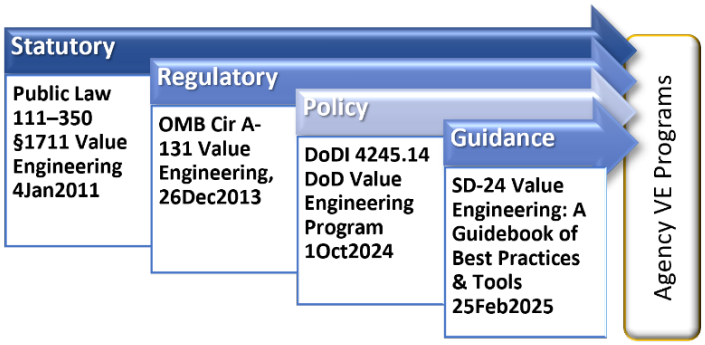


**Figure 3. Architecture for VE Policy and Guidance**

***Value Engineering seeks to achieve essential functions at optimal performance at the lowest possible cost while ensuring quality.***

## ❖ BENEFITS

- **Improved Performance:** Enhanced product or system performance by focusing on essential functions.
- **Cost Reduction:** Significant cost savings without sacrificing functionality or quality.
- **Innovation:** Encourages creative thinking and innovation by challenging conventional approaches.
- **Reduced Risk:** VE programs can help teams identify and mitigate risks relative to performance cost, and time.
- **Sustainability:** Promotes sustainable practices by minimizing resource consumption and waste.

## ❖ EXAMPLE

A program initiated VE Study of transport equipment to analyze alternative solutions to address deficiencies and streamline the baseline configuration. This study focused on improving the transportability and mobility. After evaluating alternatives, removing the trailer and using a larger truck to house equipment provided the desired improvements and eliminated deficiencies, resulting in net savings of $8.7 million.

## ❖ KEY CONCEPTS

- **Value:** Relationship between functions and resources expressed as a formula, where Value = Function/Resources; as such, increasing value is achieved by either enhancing function performance and/or adjusting resource costs.
- **Function:** The specific purpose or performance expected from a product or service.
- **Resources:** Key input, such as cost and schedule, to achieve the performance and quality expected.

**Baseline Configuration:**


**Redesigned Configuration:**

**Figure 4. Applying VE**

## ❖ RESOURCES

OUSW(R&E) Value Engineering: https://www.cto.mil/sea/ve/

Title 41 1711 Public Law 111-350: https://uscode.house.gov/

DoD Instruction 4245.14: https://www.esd.whs.mil/Directives/issuances/dodi/

SD-24 Value Engineering: A Guidebook of Best Practices and Tools: https://www.cto.mil/sea/pg

USACE Value Engineering Program: https://www.usace.army.mil/Value-Engineering/

SAVE International: https://www.value-eng.org

Email: osd-sea@mail.mil | Subject: Attn Specialty Engineering

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