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Policy rationale & Value Engineering

Ana Lucia Jaramillo

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Outline

- Value Engineering
- Policy rationale: innovation, risk management, monitoring
- Conditions & legal basis
- Conclusions & examples
- Discussion

Value Engineering definition

- ❖ Value Engineering (VE) is a systematic approach directed at analyzing the functions of systems, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life-cycle cost consistent with required performance, reliability, quality, and safety.

Value Engineering

❖ The method

$$\text{Value} = \text{function/cost}$$

Function: is the measurement expressed in currency, effort or exchange

Cost: is the price paid or to be paid

❖ VE procurement approach: VE clause

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The method: a bit of history

- Lawrence Miles – GE - II World War: shortage of raw materials, component parts - substitutes
- US Navy - 1954
- DoD – mandatory since 1962
- Federal Acquisition Act – 1981

- During the past several years the Department of the Navy has experienced over \$3.5B in cost savings through VE methodologies. One of the largest cost savings occurred in the Virginia Class submarine program to shorten construction cycle time by 2 years, which saved over \$2B. Another area of savings occurred in PEO LMW's AN/SQQ-32(V) program to simplify component fabrication through VE methodologies resulting in \$49M in cost savings.

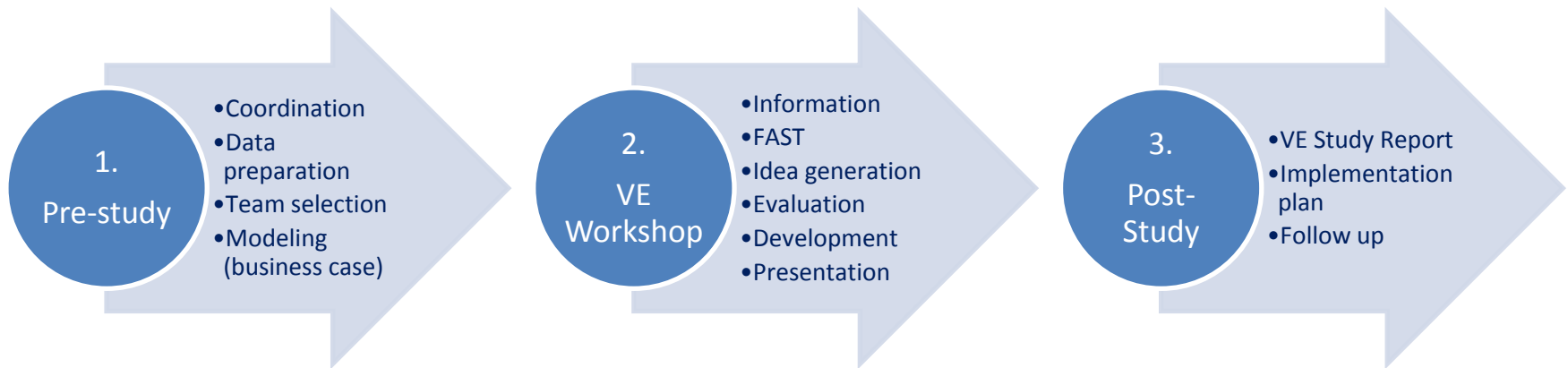
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The method: functional analysis



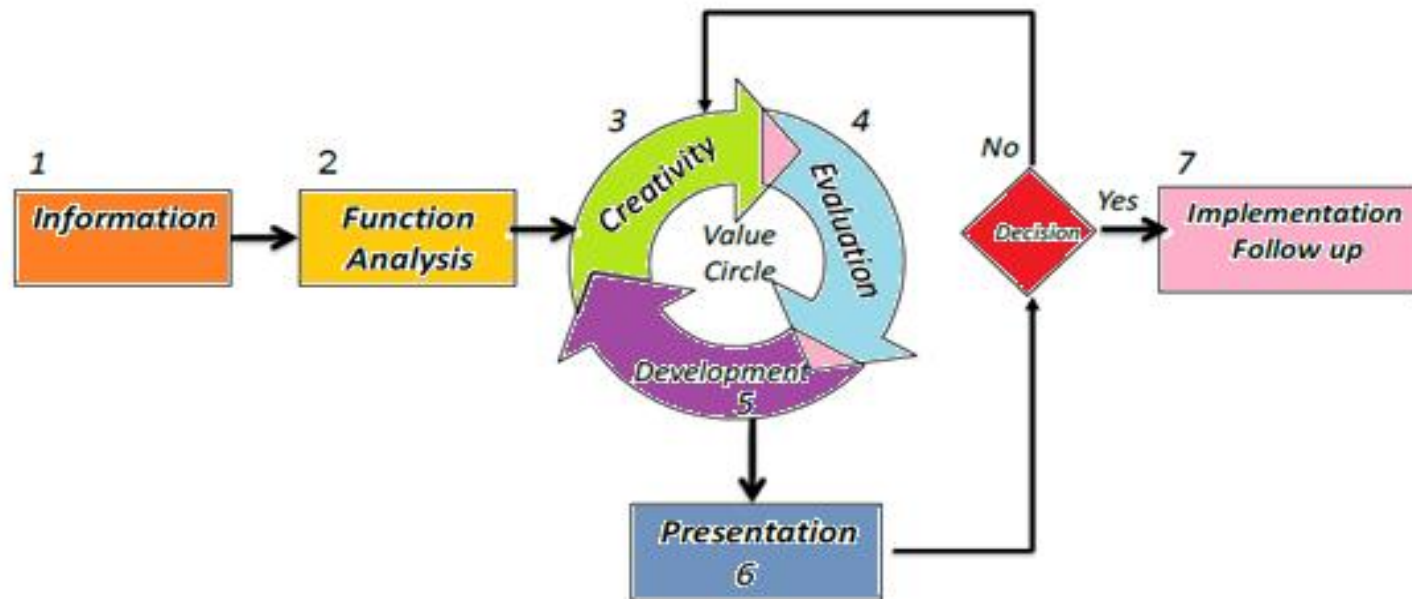
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The method: stages



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The method: Phases



Value Engineering *Clause*

1. Value engineering definition

The sum of activities and actions, aiming to ensure that the [Contractor] fulfils its obligations such as to create added value for the [contracting authority]; these activities and actions target innovative development, effective and/or efficient organization of the project or similar.

2. Change orders and Value engineering

- VECP: activities, savings (TCO: Total Cost Ownership), risk analysis, contractual changes.
- Proposal presentation and implementation (plan)

3. Contract cancellation and termination

Policy rationale

- ❖ Innovation incentives
- ❖ Risk management
- ❖ Monitoring

Innovation incentives

❖ Functional approach

Functional and performance-related requirements are means to favor innovation in public procurement and should be used as widely as possible.

Risk management



Business case

- "minimum" functionality / performance requirements to achieve the minimum quality/efficiency improvements needed
- Shared risk and savings

Causes of unnecessary cost

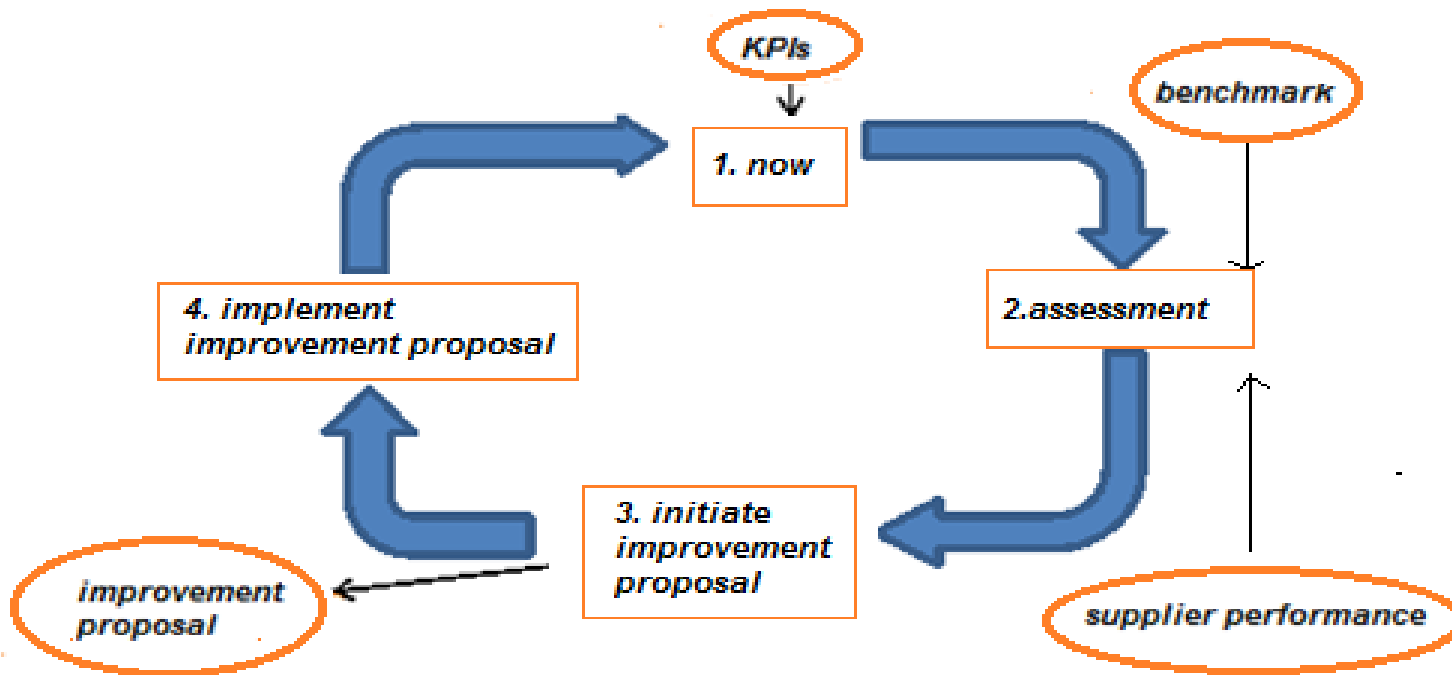
- ❖ Failure to examine attributes which cause no useful function
 - ❖ Failure to examine specifications due to needlessly expensive materials/components
 - ❖ Poor build ability: failure to consider construction implications during design
 - ❖ Lifecycle: failure to consider future operational costs
 - ❖ Opportunity: failure to consider the cost of losing potential revenue
-
- A relationship between cost, value and function can be summarize as follows: “it is important to avoid confusing cost with value. If added cost does not improve quality or the ability to perform the necessary functions, then value is decreased.

Monitoring

❖ 4 step plan

1. Prepare the assessment;
2. Assessment/evaluation;
3. Initiate improvement proposals; and
4. Implement improvement proposals.

Monitoring



Value Engineering conditions

- ❖ The intention to use VE should be advertised upfront, in the contract notice, and clearly established as part of the technical specifications.
- ❖ Compliance with the principles of equal treatment, non discrimination and transparency.
- ❖ Consider modifications of a contract .
- ❖ Avoid substantial changes of the contract.



Value Engineering

Legal basis

❖ EU Public Procurement Directives : special conditions

The special conditions relating to the performance of a contract should be linked to the subject-matter of the contract and indicated in the call for competition or in the procurement documents. Those conditions may include economic, innovation-related, environmental, social or employment-related considerations.

Value Engineering

Legal basis

❖ EU Public Procurement Directives : modification of contracts during their term:

(a) where the modifications, irrespective of their monetary value, have been provided for in the initial procurement documents in clear, precise and unequivocal review clauses, which may include price revision clauses, or options. Such clauses shall state the scope and nature of possible modifications or options as well as the conditions under which they may be used. They shall not provide for modifications or options that would alter the overall nature of the contract or the framework agreement.

➤ EU Case Law

Substantial modifications

A modification of a contract or a framework agreement during its term is considered substantial where it renders the contract or the framework agreement materially different in character from the one initially concluded.

Substantial modifications

- ❖ One or more of the following conditions is met:
 - introduces conditions which, had they been part of the initial procurement procedure, would have allowed for the admission of other candidates than those initially selected or for the acceptance of a tender other than that originally accepted or would have attracted additional participants in the procurement procedure;

A new procurement procedure is required

Substantial modifications

- ❖ One or more of the following conditions is met:
 - changes the economic balance of the contract or the framework agreement in favor of the contractor in a manner which was not provided for in the initial contract or framework agreement;
 - extends the scope of the contract or framework agreement considerably;
 - a new contractor replaces the one to which the contracting authority had awarded the contract in other cases than those provided in specific circumstances.

A new procurement procedure is required

Value Engineering *check list*

- Specify clearly an expected outcome
- Define Incentives
- Establish performance measures: a baseline and good performance measures

Value Engineering *check list*

- **Secure top management commitment:** They also need to help sustain a partnership over time since relationships between the contractor/economic operator and public procurer can be tested in the face of changing market conditions, legal pitfalls, and other barriers.
- **Establish where the money will come from:** In addition, the contractor/economic operator could be required to offer ways to share the savings and to share the risk that the savings will be achieved.

Value Engineering conclusions

- Transparency (market consultation, announcement, tender documents & contractual documents)
- Clear formulation of the VE approach
- Contract monitoring is crucial.

Value Engineering

Business case examples

Table 1. Hardware procurement example /

Quantity	Unit Cost	Profit	Original Unit Price	Total Cost	
500 Units	€ 10.000	€ 1.000	€ 11.000	€ 5.500.000	
Quantity	Revised Unit Cost	Profit	Per Unit Share	New Unit Price without Shared Savings	New Totals
500 Units	€ 6.000	€1.000 ^b	€ 2.000,00	€ 9.000,00	€ 4.500.000
Total Savings = Original Price- New Subtotal (€5.500.000 – €4,500,000)					€ 1.000.000
Contractor Share of Savings Using a 50/50 Share (€1.000.000 × .5)					€ 500,00
New Contract Total (€10.000 × 500 Units) ^b					€ 5.000.000

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Business case examples

Table 2. Data-Entry Service Contract Example

Quantity	Unit Cost	Profit	Original Unit Price	Total
500 Person Months	€ 10.000	€ 1.000	€ 11.000	€ 5.500.000
New Quantity	Unit Cost	Profit	Per Unit Share	New Unit Price without Shared Savings
300 Units	€ 10.000	€1.000 ^a	€3.333 ^b	€14.333 ^c
Total Savings (Original Price €5.500.000 – New Subtotal €4.300.000)				
Contractor Share of Savings using 50/50 share (€1.200.000 × .5)				
New Contract Total (€16.333 × 300 units) ^c				

a. Profit is not reduced by the reduction in the cost base. b. €1.000.000 x 300 units. c. The unit price with the VE savings is € 16.333 since the new unit price of €14.333 would be increased by €2.000 (€600.000 savings x 300 units).

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Business case examples

Table 3. Cleaning contract before a VECP

Requirement	Quantity	Unit	Rate	Total
Sweep 15.000 sq. ft. of office space daily, Mon–Fri, for the 5-year period Oct 1, 20XX–Sep 30, 20XX	1200	Days	€60.00	€ 72.000
Mop 15.000 sq. ft. of office space weekly for the 5-year period Oct 1, 20XX–Sep 30, 20XX	250	Weeks	€120.00	€ 30.000
Wax and polish 15,000 sq. ft. of office space monthly for the 5-year period Oct 1, 20XX–Sep 30, 20XX	60	Months	€240.00	€ 14.400
Total				€ 116.400

A contractor could propose to replace the tile with carpet and show a net savings in upkeep over a period of time. The carpet would have to be vacuumed weekly at a rate of €120 and shampooed twice per year at a rate of €300. While there would be an initial investment for installation of the carpeting, the savings in cost of upkeep could result in significant savings over the length of the instant contract and the 4 option years.

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Business case examples

Table 4. Cleaning contract after VECP

Requirement	Quantity	Unit	Rate	Total
Purchase and install 15,000 sq. ft. (1,667 sq. yds.) of industrial strength carpeting	1,667	Sq. Yd.	€20.00	€ 33,340
Vacuum 15,000 sq. ft. of office space weekly for the 5-year period Oct 1, 20XX–Sep 30, 20XX	250	Weeks	€120.00	€ 30,000
Shampoo carpet twice yearly for a 5-year period Oct 1, 20XX–Sep 30, 20XX	10	Each	€300.00	€ 3,000
Total				€ 66,340
Net Savings (€116,400 – €66,340)				€ 50,060
Contractor Share of Savings Using a 50/50 Share (€50,060 × .5)				€ 25,030
Revised Total				€ 91,370

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Business case examples

Table 5. Medical Service Contract Example Before VECP Changes

Description	Quantity	Unit	Unit Price	Total Price
Provide a complete annual physical to military personnel	10,8	EA	€ 100	€ 1.080.000

Since most of these people are in good physical condition and the majority of personnel are young, the contractor could propose a VECP for a modified physical plan. Under the plan, anyone under 25 years of age would get a complete physical every 3 years, anyone 26–35, every 2 years, and anyone over 36, every year.¹³ Those not given a full physical would have a modified physical that could be done at a lesser cost of €50. The VECP results in its assumed that the population is divided equally among the three age bands.

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Business case examples

Table 5. Medical Service Contract after VECP

Description	Quantity	Unit	Unit Price	Total Price
Provide a complete annual physical to military personnel	6	EA	€ 100	€ 600.000
Provide a modified physical to military personnel	4,8	EA	€ 50	€ 240.000
Subtotal	10,8			€ 840.000
VECP Savings (€1.080.000 – €840,000)				€ 240.000
Contractor's Share of Savings Using a 50/50 share (€540.000 × .5)				€ 120.000
VECP savings	10,8	EA	€25.00	€ 120,00
New Contract Total				€ 980.000

Discussions

Thank you !

Ana Lucia Jaramillo

a.jaramillo@corvers.com

Corvers Procurement Services B.V.

Julianaplein 21

5211 BB 's-Hertogenbosch

Tel: 073-612 6566

info@corvers.com

www.corvers.com