

WHITE PAPER

A Blueprint For Value: Implementing Value Engineering (VE) Programs in the Federal Government

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Introduction

This document provides a blueprint for federal agencies to implement the statutory and regulatory requirements for Value Engineering (VE) as mandated in Public Law on Public Contracts, revised January 2011 (Public Law 111-350, 124 Stat. 3718.) OMB Circular A-131 implements the Public Law stating that the circular provides guidance to support the sustained use of value engineering (VE) by Federal Departments and Agencies to reduce program and acquisition costs, improve performance, enhance quality, and foster the use of innovation. The law states:

§ 1711. Value engineering

Each executive agency shall establish and maintain cost-effective procedures and processes for analyzing the functions of a program, project, system, product, item of equipment, building, facility, service, or supply of the agency. The analysis shall be—

- (1) performed by qualified agency or contractor personnel; and*
- (2) directed at improving performance, reliability, quality, safety, and life cycle costs.*

It is important to note that the law emphasizes the concept of total value, and not just cost effectiveness, by emphasizing the need to improve performance, reliability, quality, and safety.

OMB Circular A-131 expands on, and provides additional direction to federal agencies by outlining the following requirements:

1. Designate a qualified SAO at a high level
2. Establish a VE policy
3. Establish a VE program
4. Execute VE within the agency on its projects, products, and processes

The function of this document is to provide a blueprint for federal agencies to implement VE to improve the value of the value of the projects, programs, processes, systems, and services it delivers to the tax paying public. For both government and industry management, it provides an overview of the benefits of a strong VE program.

What is a Value Engineering Program?

A Value Engineering, or Value, Program is defined as the formal capacity to plan, manage, execute, implement, and track VE within an organization. A Value Program performs the following types of efforts to improve value:

- **VE or Value Studies** - This is the core requirement of OMB Circular A-131 and Public Law and should be the basis of Component VE Programs. VE or value studies refer to the application of a body of knowledge referred to as the Value Methodology (VM). The Value Methodology (VM) is 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. The formal VM process includes eight distinct phases referred to collectively as the VM Job Plan (SAVE International® 2020, 2). VE studies result in VE proposals (VEPs).

- **VE Proposal (VEP)** – A proposal developed by either government personnel or contractors under contract to improve value. VEPs are formal recommendations resulting from VE studies or other value-improving initiatives that apply function analysis. VEPs are not limited to acquisitions, as VE can help improve any element of government business. When applied to acquisitions, VEPs can come at any point in the acquisition lifecycle.
- **VE Change Proposals (VECPs)** - A proposal submitted by a contractor consistent with the VE clause(s) in the contract that, through a change in the contract, would lower the project’s life-cycle cost to the Government without impairing essential functions, characteristics, or performance. The contract change requirement can be the addition of the VECP to the contract with attendant savings. VECPs are applicable to all contract types, including contracts with performance-based specifications.
- **Other Value Improving Initiatives** – Activities other than VE studies or VECPs that result in a change that improves value.

OMB Circular A-131 provides a parallel definition describing VE as “a systematic process of reviewing and analyzing the requirements, functions, and elements of systems, project, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required levels of performance, reliability, quality, or safety” (Office of Management and Budget Circular No. A-131). Typically, the implementation of the VE process increases performance, reliability, quality, safety, durability, effectiveness, or other desirable characteristics. VE is also known by other terms such as value analysis, value management, value planning, value assurance, value control, and value improvement. Some of these terms were coined to minimize confusion surrounding the use of the word engineering since one does not have to be an engineer to apply VE.

Because “costs” are measurable, “cost reduction” is often thought of as the sole criterion for a VE application. Cost reduction is an easily measurable benefit addressed in this document; however, increased value is the real objective of VE and an increase in value does not always result in cost reduction.

In fundamental terms, VE is an organized way of thinking or looking at an item or a process through a functional approach. It involves an objective appraisal of functions performed by elements, components, activities, products, equipment, procedures, services, and so forth—anything that requires resources. VE is performed to eliminate or modify any element that significantly contributes to the overall cost without adding commensurate value to critical functions.

What is value?

Value, within the context of VE, is an expression of the relationship between the performance of functions relative to the resources required to realize them. This can be simply expressed as $\text{Value} = (\text{Function Performance}) / \text{Resources}$ (SAVE International® VM Guide, 2020, 6). Resources refers to key inputs, such as cost and schedule, while function performance relates to the essential performance and quality required to satisfy customer and user needs. Risk and uncertainty must also be considered as they relate to performance, cost, and time. A useful way to think about value is in the Venn diagram shown in Figure 1.

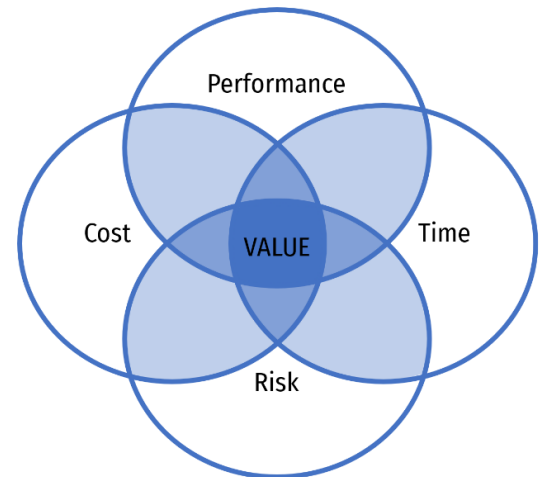


Figure 1- The elements of value

What is a function?

The thorough analysis of expected and achieved functions is the most important element that makes VE unique among so many problem-solving methods. “Function” is the element of value that focuses on achieving the customer’s needs while broadening the mind of the team performing VE. A “function” is a non-specific abstraction, consisting of an active verb and a measurable noun, that describes what an element of a project, product, process, service, or organization does or should do (SAVE International VM Guide®, 2020, 2).

What VE is not

There are several common misconceptions of VE that are worth addressing. These include:

- **VE is not “cost cutting.”** Cost cutting is focused on reducing scope. VE frames problems through the analysis of functions and the identification of alternative ways to perform those functions consistent with user requirements.
- **VE is not just “good engineering.”** VE is not something that just happens as part of the normal design process. VE requires a planned effort following a formal process, the VM Job Plan, led by trained individuals.
- **VE is not the same as Lean Six Sigma.** The function of Lean is to “remove waste.” The function of Six Sigma is to “reduce variations” and “reduce defects” to “improve quality.” The function of VE is to “improve value.” VE is concerned with ensuring that the solutions being optimized first satisfy the basic functions rather than optimizing the wrong solutions.
- **VE is not another example of bureaucratic “red tape.”** While VE is indeed a requirement, it is more importantly a sound and effective business practice. Government agencies at all levels routinely implement VE programs that yield an impressive return on investment (ROI). For example, state departments of transportation yield ROIs ranging from 44:1 to 352:1 (NCHRP Report 850, 64).

History of VE within the federal government

The foundational concepts of VE date back to the 1940s, when Lawrence D. Miles, the creator of Value Analysis (as he originally called it), worked for the General Electric Company in Schenectady, New York. Tasked with providing increasingly difficult-to-find materials and parts required for the military during World War II, Miles began looking for ways to provide the function required, as opposed to the specific piece or part requested. Many of these “substitutes” performed as well as, if not better than, the originally requested items and, in some cases, for less cost. This was the birth of function analysis, as we know it today, and remains the single most important distinction of VE (SAVE International 2020, 1).

In 1954, the Navy’s Bureau of Ships became the first DOD organization to establish a formal VE program. Miles and another General Electric employee, Raymond Fountain, set up the Bureau of Ships program to help reduce the cost of ship construction, which had nearly doubled since the end of World War II. The Bureau of Ships asked that the technique be called “Value Engineering” and staffed the office with people under the general engineer position description.

In 1959, the contractual requirement for VE was added to the Armed Services Procurement Regulation, the forerunner of today’s Federal Acquisition Regulation (FAR). VE was initially used only with command approval, but, in June 1962, the DOD’s procurement regulations were modified to establish VE as a mandatory program for the Department and for its contractors. The US Army Corps of Engineers (USACE) has maintained an active VE program since 1964.

VE was largely a DOD program until the OMB issued Circular A-131 in 1988 to expand the program into other organizations “where appropriate.” A 1993 reissuance closed several loopholes in the circular, and now it requires that all Federal Agencies use VE and that OMB be advised annually of top VE projects,¹ net life-cycle cost savings, cost avoidance, and cost sharing achieved. In January 2014, OMB updated the 1993 version of Circular A-131 to bring it into compliance with current Public Law. P.L. 111-350, dated January 4, 2011, requires each executive agency in the U.S. Government to establish and maintain cost-effective VE procedures and processes.

Since this time, the use of VE in the federal government has grown, and several agencies beyond the DOD have formally adopted it including the Department of Transportation, Department of State – Overseas Building Operations, General Services Administrations, Bureau of Reclamation, US Forest Service, and the US National Park System.

Despite this, VE is still vastly under utilized and most federal agencies still lack formal programs. This blueprint is designed to help those agencies without VE programs begin implementing them while supporting those with programs to improve upon them and increase their effectiveness.

¹ From a terminology perspective, once a VE project is formulated to address a problem, a VE study is conducted to determine alternative solutions to the problem.

Why Use Value Engineering?

There are many reasons to apply VE beyond cost reduction.

- **Performance** – Because VE focuses on functions it is deeply vested in the performance of those functions. VE can help identify essential performance and find ways to optimize it.
- **Efficiency and Effectiveness** – VE is a proven tool for improving the efficiency and effectiveness of processes, services, and organizations. It is useful for identifying unnecessary functions and streamlining systems.
- **Innovation** – VE fosters innovation by leveraging functions to think laterally about potential solutions. Its emphasis on multi-discipline teams to apply creative thinking to develop function-driven approaches to solving problems.
- **Time** – VE can be applied to focus on ways to deliver functions in a more time conscious manner. Time, like cost, can be quantified and different approaches can be considered with an eye toward improving schedule.
- **Cost** – VE is perhaps best known to be an effective approach to reduce initial costs. However, VE focuses on total life cycle costs, which considers the time value of money over the life of the subject, whether it is a facility, weapon system, vehicle, or program.
- **Risk** – Risk and uncertainty must be considered in improving value. VE can help teams identify risks and find effective ways to avoid or mitigate risks relative to performance, cost, and time.
- **Benefits to Stakeholders** – Finally, VE asks the question – who determines value? This essential question must consider a wide range of stakeholders including:
 - Users / Beneficiaries – Those that benefit directly from the application of VE to federal projects, programs, processes, and services are the ultimate “users.” This could include members of the public that benefit from a facility, program, or service; and/or the federal employees who also utilize or implement them. The effective application of VE will ultimately benefit society by improving the intended outcomes government facilities, programs, and services.
 - Executives – VE can assist those in an executive management or command role in improving their decisions related to the delivery of facilities, programs, and services. It will also help them improve the efficient use of limited resources in delivering them.
 - Agency Personnel – Project managers, contracting staff, engineers, and other government personnel will benefit from VE by helping them perform their jobs more effectively and efficiently - maximizing the value they deliver in support of agency functions.

- Contractors – Contractors can benefit from VE primarily using VECPs. Through this vehicle, contractors are encouraged to exercise their innovative thinking to create a win-win scenario.
- Taxpayers – Taxpayers, the American people, are the ultimate “customers” of the federal government. Tax dollars directly support the federal government in its role fostering prosperity and defending the country. It is the responsibility of government to make the best use of these resources in the execution of its core mission.

Laws and Regulations

Public Law on Public Contracts, revised January 2011 (Public Law 111-350, 124 Stat. 3718.) states:

Each executive agency shall establish and maintain cost-effective procedures and processes for analyzing the functions of a program, project, system, product, item of equipment, building, facility, service, or supply of the agency. The analysis shall be

- 1) *Performed by qualified agency or contractor personnel; and*
- 2) *Directed at improving performance, reliability, quality, safety, and life cycle costs.*

OMB Circular A-131 implements the Public Law stating that the circular provides guidance to support the sustained use of VE by Federal Departments and Agencies to reduce program and acquisition costs, improve performance, enhance quality, and foster the use of innovation. Agencies should maintain policies and procedures to ensure VE is considered and integrated, as appropriate, into the planning and development of agency programs, projects, activities, as well as contracts for supplies and services, including performance based, architect-engineering, and construction contracts (OMB Circular A-131, 1).

Agencies subject to the Chief Financial Officers Act of 1990 (Public Law 101-576) (CFO Act) shall designate a senior accountable official (SAO) at a level with sufficient authority within the Department or Agency to coordinate, oversee, and ensure the appropriate consideration and use of VE. The “Qualified” for SAO is taken from the Law which requires VE to be considered/applied by qualified Agency or contractor.

To accomplish this purpose, the Circular establishes VE policy and promotes broad applicability. It is Federal policy that:

Federal agencies shall consider and use VE as a management tool to ensure realistic budgets, identify and remove nonessential capital and operating costs, and improve and maintain acceptable quality in program and acquisition functions. Consistent with the guidelines in the circular, senior agency management shall ensure that agency VE policies and practices support effective, efficient, and environmentally sound arrangements for conducting the work of their agencies and provide a sound basis for identifying and reporting accomplishments (OMB Circular A-131, 4).

An important point that should be emphasized is that a threshold of \$5 million in value is established for applying VE to government contracts. The circular outlines a “fixed” vs. “flexible” approach to this threshold. It states that if you have a qualified SAO, then the fixed or flexible approach to application can occur and the VE effort can be scaled. Without a qualified SAO, agencies have no next steps and must solely execute the “fixed” threshold approach and must study of all contracts over \$5 million.

Key elements of the OMB Circular are listed under “Agency Responsibilities” and charge agency Senior Accountable Officials (SAOs) with responsibilities including:

- Maintaining agency guidelines and procedures for consideration, use, screening, and scaling of VE efforts.
- Ensuring training for agency personnel.
- Maintaining plans for VE use in the agency.
- Ensuring funding for the VE program.
- Maintaining documentation on the VE program.
- Reporting results of the VE program annually.

OMB provides additional direction to agencies regarding the use of value engineering/value management in Circular A-11, Preparation, Submission, and Execution of the Budget.

Value Programs

A Value Program cannot be established in a vacuum. It must be fully integrated with other organizational activities. VE can be thought of as an enterprise change initiative. As such, care must be given in tailoring a Value Program that is designed to meet the specific needs of each federal agency. Toward this end, a common set of Value Program characteristics must be considered. These include:

- Organizational Structure
- Policy
- Business Processes
- Training
- Culture

This chapter focuses on discussing these characteristics; their various levels of development and evolution; best practices and considerations; and supporting examples that illustrate approaches to realizing a Value Program. Those items are then summarized into a “starter kit” that may serve as a good starting point for agency Value Programs to prioritize efforts and plan for long-term success.

Value Program Maturity Model

This section lays out a framework to consider and discuss the characteristics of a Value Program relative to various levels of development and maturity. This framework is referred to as the “Value Program Maturity Model” (Table 1).

The model considers each of the five characteristics described above relative to four general levels of development. The levels provide a way of thinking about the maturity of a Value Program by describing key observations for each. It should be noted that it is possible for a government agency to have different levels of development for the five characteristics as well as the sub-characteristics where they exist.

- **Initial.** This level is described as nascent where there is generally an absence of development for a specific characteristic.
- **Developing.** This level is described as having a characteristic reach the first stages of development and formality.
- **Established.** This level is described as having a characteristic meeting fully formed state. There is room for growth and improvement, but the characteristic has reached a fully functional level.
- **Optimized.** This level describes a characteristic that has reached a high level of effectiveness.

The Value Program Maturity Model below focuses primarily on the level of implementation of the five characteristics. When using this model to assess Value Program maturity, the quality and effectiveness of the characteristic (e.g., policy that complies with federal

requirements; or processes that support effective planning, execution, and reporting of value activities) is assumed.

Each characteristic is defined as follows:

Organizational Structure: This characteristic describes the identification and location of the Senior Accountable Official (SAO) within an agency responsible for the Value Program. There could be one or more SAOs within an agency depending on the need. This characteristic also includes the personnel in support of the SAO in executing the Value Program as a functional responsibility for the agency.

Policy: Each federal agency must develop its own internal VE policy(s) that have been attuned to meet its specific context and needs. Doing so can enhance the effectiveness of a component’s Value Program.

Business Processes: This characteristic includes the broad range of procedures, processes, guidance, and practices that establish how the Value Program functions. Such processes can range from informal to formal and possess various levels of documentation.

Training: This characteristic considers the level of training of personnel within the agency related to both the functioning of a Value Program as well as the application of VE. This emphasis on training both Value Program personnel and other agency employees results in a well-educated organization that successfully complies with its VE policy and OMB Circular A-131.

Culture: This characteristic describes the degree to which the individuals within an agency have embraced value improvement as a key focus of the organization.

VALUE PROGRAM MATURITY MODEL

	Initial	Developing	Established	Optimized
	No agency SAO designated for VE	Incomplete agency coverage by SAO(s) for VE program	Complete agency coverage by SAO(s) for VE program	Highly effective agency coverage by SAO(s) for VE program
Organizational Structure	No agency Value Program Manager (VPgM) and/or assigned VE program support personnel	Designated VPgM(s), but insufficient VE program support personnel and/or resources	Adequate VE program support personnel and/or resources	Optimal VE program support personnel and resources
	No agency VE policy	Existence of some form of VE policy in the agency	Formal agency VE policy	VE policy across all lower agency entities
Policy	No implementation of VE policy	Inconsistent implementation of some form of VE policy in the agency	Inconsistent implementation and enforcement of formal agency VE policy	Universal implementation and enforcement of VE policy

	Initial	Developing	Established	Optimized
Business Processes	No documented Value Program processes	Partial documentation and implementation of Value Program processes	Full documentation and implementation of Value Program processes	Full documentation and implementation of Value Program processes and integration with agency business processes
Training	Little to no formal VE trained personnel (internal or industry)	Value Program personnel have some formal VE training	Fully qualified and trained Value Program personnel	Value Program personnel are actively providing VE training for other personnel within the agency
Culture	Lack of awareness of VE	Lack of acceptance of VE	Value friendly environment	Universal focus on value improvement

Table 1: The Value Program Maturity Model

Organizational Structure

Organization Structure Development Levels

Initial: At its infancy, an agency’s Value Program may not yet have identified a Senior Accountable Official (SAO) for VE and/or the has not staffed the Value Program with any support personnel to carry out the tasks to manage, execute, or otherwise fulfill necessary requirements.

Developing: At this stage, the agency’s Value Program may have designated one or more SAOs for VE but not all the agency business and workload are covered. Another indicator of this level of development is that each agency SAO has some Value Program staff, such as a Value Program Manager (VPgM), or other Value Program personnel, but resourcing is insufficient to carry out all tasks to manage, execute, or otherwise fulfill necessary requirements.

Established: Development indicative of this level could look like an agency having one or more SAOs covering all elements of the agency business and workload and that the agency Value Program has adequate support resourcing (positions, funding, time) to carry out all tasks to manage, execute, or otherwise fulfill necessary requirements.

Optimized: At this fully developed level, an agency would have highly effective coverage by the SAO(s) with the ability to fulfill all the “Agency Requirements” from OMB Circular A-131 and the Value Program has optimal program support personnel and resourcing.

Best Practices and Considerations

As an agency implement the requirements its VE policy, the following best practices and considerations may assist with ensuring success regarding the organizational structure of their Value Programs:

Consider the purpose of the SAO designation. Each Federal Department or Agency can choose to establish an overall SAO for VE at the Department/Agency level, or require that SAOs for VE be designated at the next level down in the agency’s hierarchy (Bureau, Office, etc.). The role of SAO sometimes requires significant oversight to fulfill the “Agency Responsibilities” from the OMB Circular, and agency Value Programs have found greater success when the SAO function is established as this lower level. This transfer of requirements enables agencies the greatest flexibility to implement its VE policy to best suit the differences in structure, process, acquisitions, and general execution of various divisions and functions within it.

Consider both qualifications and organizational placement of the SAO. OMB Circular A-131 requires that the SAO be located “*level with sufficient authority within the Department or Agency to coordinate, oversee, and ensure the appropriate consideration and use of VE.*” An agency VE policy should require that its SAO be qualified in VE, requiring consideration of relevant experience, training, credentials, and education. This means that the qualified SAO would be proficient in the business of the area(s) under their purview as well as VE and Value Program requirements. Addressing these elements when designating the SAO(s) ensures that an individual charged with the responsibility for the Value Program can effectively carry out the responsibilities listed in the OMB Circular, ensure effective application and implementation, and advise leadership accordingly.

Consider designating more than one SAO for the Agency. Along with the considerations identified above, agencies may determine that more than one SAO makes sense based on differences in functions and business lines. For example, the Army currently does this by having one SAO in the US Army Corps of Engineers (USACE) for engineering, construction, real property, and technical policy and another SAO in Army Materiel Command (AMC) for everything else.

Resource the Value Program as an assigned mission responsibility. The agency’s VE policy should require that the agency “provide resources necessary for the VE Program” and OMB Circular A-131 requires that agencies ensure that funding is “identified and included in annual budget requests to OMB.” As agencies look to establish, reinvigorate, further develop, or optimize their Value Programs, this approach to resourcing is explicitly allowed by the OMB Circular.

Staff the Value Program with personnel assigned as primary duties. An effective approach allows direct access to individuals qualified in VE to assist with implementation of an agency Value Program including access to expertise, enhanced reporting and documentation, and improved compliance with requirements. Across the federal government, the most successful Value Programs are those with qualified personnel dedicated with managing the Value Program.

Policy

Policy and Guidance Development Levels

Initial: At this stage, an agency may not have any policy or guidance for VE or, if such policy exists, little or no implementation (for discussion purposes, 20% or less) of the policy has occurred.

Developing: At this level, the agency may have implemented some level of basic VE policy and/or guidance. Implementation indicative of this level would look like inconsistent (less than 50%) adoption across the applicable divisions, offices, or business areas.

Established: A Value Program developed to this level may have some formal VE policy and/or guidance specific to applicable programs, business lines, and/or with partial integration into other policy and guidance. Implementation and enforcement exists for some (over 50%) areas within the agency.

Optimized: A characteristic of an optimally developed Value Program in this regard might be demonstrated by the presence of clear and integrated policy and guidance regarding the Value Program with universal (80%+) implementation and enforcement in all relevant areas.

Best Practices and Considerations

Consider the use of agency-level policy, instruction, or other directives to designate Agency SAO(s). Agencies have the flexibility to designate one or more SAOs by any means, but a recommended approach would be to incorporate this designation into existing mechanisms (policy, directive, or otherwise) that personnel across the agency can access on-demand.

Utilize the combination of SAO and policy to adopt a more flexible approach to Value Program requirements. Having an SAO and a policy allow agencies to focus VE application to the areas of opportunity that make the most sense for the organization. Otherwise, the default requirements for the agency would be to adopt the baseline policy of the OMB Circular, which states that "VE shall be required for new agency projects and programs when the cost estimate is at least \$5 million."

Business Processes

Business Processes Development Levels

Initial: Early in the development of a Value Program, an agency may not have implemented any processes in relation to value activities. At this stage, agency personnel likely have a lack of understanding on VE and the timing, steps, and integration points for VE in a given acquisition or program office.

Developing: At this stage, a Value Program might have some processes defined and implemented, but work remains to clearly document and implement necessary processes to ensure personnel are well-equipped to coordinate and execute value activities.

Established: A Value Program at this stage of development might have full documentation and implementation of all relevant processes related to the Value Program, with opportunities to better integrate into existing business processes for other agency elements such as acquisition types, budget programming and execution, decision making, governance, or financial reporting.

Optimized: Optimal development in this regard might look like the presence of fully documented Value Program processes and integration with all other relevant business processes.

Best Practices and Considerations

Tie in with existing processes related to programming, planning, and development of projects and acquisitions. Value Program requirements are easier to implement when integrated with other business processes.

Account for the upfront planning and implementation efforts necessary for successful value activities. Successful Value Program processes consider time to plan and execute value activities as well as time for decision and implementation of value proposals.

Common business process categories within a Value Program typically include:

- Screening and determination process for application of VE;
- Planning and resourcing Value Program activities;
- Validation of VE outcomes to ensure accuracy and defensibility; and
- Reporting benefits of VE activities

Training

Training Development Levels

Initial: Early in a Value Program's development, the organization may not have any personnel with training in VE, the Value Methodology, or Value Program requirements.

Developing: At this stage, the agency may have a Value Program with personnel that have accomplished some level of formal training in VE and Value Program requirements.

Established: A Value Program developed to this level would likely have fully qualified Value Program personnel, knowledgeable in VE and Value Program requirements.

Optimized: At this fully developed stage, the agency's Value Program personnel are actively providing training to other personnel within the organization, in alignment with the requirement to train others in OMB Circular A-131.

Best Practices and Considerations

Consider how value activities will be accomplished in the agency when determining the training needs for staff. If the agency wishes to outsource VE workshops to contractors or other government agencies, then the training for the agency's Value Program staff may benefit from a focus towards program management and understanding how best to integrate with the business of the agency. On the other hand, if the desire is to keep technical VE facilitation as an in-house resource and capability, additional training, experience, and credentials will be necessary to complete those tasks.

Seek industry credentials for Value Program staff. Regardless of how value activities will be accomplished for the agency, a best practice is to seek industry credentials in both VE and program management to ensure Value Program staff are well-equipped to address the workload and ensure success. SAVE International® is the professional accrediting body in the US for VE practitioners.

Leverage the professional Value Practitioner community. As mentioned above, there is an entire professional community of qualified value practitioners to provide VE training; facilitate VE studies; and assist agencies in the development of their Value Programs. SAVE International® provides information on practitioners and trainers available to support your agency's VE efforts.

Leverage existing resources for training. Refer to the "Where do I start?" and "Resources" section of this document for existing VE training resources.

Culture

Culture Development Levels

Initial: At the infancy of a Value Program, staff across the agency have little to no awareness of VE and Value Program requirements.

Developing: A Value Program developed to this point may demonstrate a culture where staff are somewhat aware of the Value Program, but acceptance is very low. Here, typically there is a great deal of resistance to value activities and the main rationale for the use of VE comes down to compliance with federal requirements.

Established: At this stage, the culture has developed to generally accept VE and the Value Program as part of the agency's business. Leaders are aware of and understand the

requirements, and staff periodically request Value Program support even when it is not required.

Optimized: The culture of an optimally developed Value Program would demonstrate a broad understanding that the Value Program supports universal value improvement for the agency. Organizations at this level routinely see new and opportunities to use VE, with agency employees routinely seeking out Value Program staff to use Value Program tools, techniques, and resources for innovative solutions to challenges of all types.

Best Practices and Considerations

Retain benefits of the Value Program. Some agencies, like the DoD, allow their Value Program to retain the benefits of value activities (e.g., cost avoidance, cost savings) and reinvest the benefits to further incentivize the Value Program. Where possible, agencies should reinvest the validated cost avoidance and cost savings into other areas that increase awareness, interest, and adoption of VE and the Value Program.

Share successes often. The positive impacts of VE, VEPs, and VECs go far beyond financial impacts. Recognize excellence for improvements to quality, safety, reliability, maintainability, efficiency, and effectiveness resulting from value activities. Encouraging staff to nominate projects, programs, teams, and individuals for recognition in support of the Value Program can support both the agency's goals and improve the permeation of a value-focused culture.

Identify a Champion. Adoption of VE and the requirements of an agency's VE policy are best supported through the use of Champions at the leadership level. This Champion may or may not be the SAO(s), depending on the organization. In many cases, Value Programs find more success when the Champion and SAO roles are separated. The Champion leads and encourages others to embrace the Program, its benefits, and helps establish a long-term supportive culture.

Dedicate staff to the Value Program. Although this best practice was mentioned above, the agencies with the strongest cultures towards value, VE, and execution of the Value Program are those that have dedicated resources to oversee, manage, and execute the requirements. These individuals not only help implement requirements and educate others, but they serve as a consistent focal point and resource to assist employees from all organizations in matters related to value, VE, and the Value Program.

Added duties can be a hindrance. Conversely, those agencies that resource the Program as an added duty to existing staff and organizations often find that the Value Program requirements quickly become an afterthought. As a secondary or tertiary responsibility, designated individuals and their supervisors prioritize other work and both compliance and outcomes struggle as a result. When leadership chooses to fulfill Value Program responsibilities as an afterthought, a supportive culture is almost impossible to build.

Value Program Development Considerations

Location within the organization

The placement of the Value Program within an organization requires careful consideration. VE, by its nature, precipitates change. The cultures of all organizations, to some degree, resist change. Therefore, if a Value Program is to be successful in its goal of improving value, then it must be positioned within the organization in such a manner that it succeeds in ensuring effective implementation of the necessary changes.

Locating a Value Program within an organization requires consideration of the following factors:

- **Avoid “departmentalization.”** The Value Program should not be pigeon-holed as being “owned” by any function or department. For example, if a Value Program is located within an agency’s “contracting” department, then other departments will likely view it as a contracting endeavor. Because value is holistic, care must be taken to avoid creating the perception of VE as the tool or service of a specific entity within the organization. That undesired perception engenders mistrust by other facets of the organization and creates internal roadblocks to implementation.
- **Establish clear lines of accountability and authority.** As a catalyst for change, care must be given to establishing lines of authority between the Value Program and upper management. Recommended changes that emanate from a Value Program will require direct support from upper management who have the authority to make decisions related to implementation and the expenditure of organizational resources to see them through. Decision makers should be held accountable for decisions to accept or reject recommendations. This transparency is important in building trust within the organization.
- **Seek a location that supports customers, users, and stakeholder interests.** Value Programs are better positioned for success when they align with customer and stakeholder interests. After all, VE should be focused on the voice of the customer; therefore, isolation is dangerous.

Integration with other programs

Consideration should be given relative to how a Value Program should interface with other continuous process improvement (CPI) programs such as Lean Six Sigma. VE shares many characteristics of other value enhancing methods and can work quite well with such programs. For example:

- Some organizations locate their Value Program at a higher, executive level in conjunction with other strategic management activities.
- Public agencies that deliver capital projects often locate VE with related activities such as risk analysis, constructability review, and project controls. These activities and programs are generally concerned with managing quality, schedule, cost, and

risk; and, all tie nicely into the VE concept. Many organizations use VE as a project control activity and embed these types of activities into VE studies.

- Private sector organizations sometimes co-locate VM with internal entities that perform other improvement processes, such as Lean, Six-Sigma, and quality practices.

OMB Circular A-131 provides additional information on how VE and other management improvement processes complement each other.

Authority and reporting structures

Levels of authority relative to the Value Program need to be clearly established to reduce the potential for internal resistance to change. Typically, the following levels of authority should be defined:

- **VE study planning authority.** Define how VE studies are planned and programmed within the organization for the fiscal year. This should include how the VM studies will be funded by the organization.
- **VE study initiation authority.** Define who within the organization can initiate a VE study. The decision to conduct a study requires the expenditure of staff time and resources. Consider how personnel are assigned to studies and how their time is accounted for.
- **VE proposal decision authority.** Define who has the decision-making authority to approve or reject VE proposals emanating from VE study efforts. Consider how the costs to implement changes are accounted for and how they are funded.

In addition to determining levels of authority, the Value Program should also clearly define how VE study efforts are reported and to what level. The level of documentation required is important, and the Value Program should coordinate with the various internal stakeholders on what information is needed to support the decision-making process. This includes documentation of Preparation Phase activities; VE study reports; VM proposal implementation activities; and tracking and monitoring VE proposal implementation.

Organizational awareness and training

Building organizational awareness relative to a Value Program requires effort and is essential to its long-term success. The presence and purpose of a Value Program should be clearly communicated throughout the organization. The organization's decision to make an investment in VE provides a significant opportunity for the entire organization to both participate in and benefit from it. Several activities are recommended along these lines:

- Upper management should champion the creation and continued advocacy of the program and communicate it throughout the organization. The organization should understand the purpose and objectives of the program, an overview of how it functions, and what it means for its employees and customers.

- Value Program activities and performance should be regularly communicated. This can be through newsletters, emails, blogs, or other internal and external communications.
- Share applications and experiences by supporting related communities of practice to advocate the use of VM.
- Awards and recognition should be considered to acknowledge outstanding efforts and achievements made through the Value Program to encourage continued success.
- Innovation emanating from a Value Program should be communicated to customers and stakeholders. This is an excellent opportunity to market value being added through VE.

Training and education are another key consideration. The following information outlines the level of training and education that should be considered for people within the organization.

- **All personnel.** Consideration should be given to developing a brief overview of the Value Program, including information on the process, goals and objectives, key personnel, and anticipated levels of employee participation. This general training could be delivered in a variety of formats, including presentations, videos, webinars, or other such methods. Consideration should be given to introducing new employees to innovative practices and thinking through VE training.
- **VE study subject sponsor.** Those who intend to serve as the champions of the Value Program should be provided with an executive overview of VM, the structure of the Value Program, organizational roles and responsibilities, and their roles in communicating the importance of the Value Program. Further, upper management should be asked to commit to time for key activities, specifically related to establishing policy and removing organizational roadblocks.
- **VE study team members.** Individuals within the organization who may be involved as team members on a VE study should receive some basic training relative to the VM Job plan and major supporting techniques. This training could be in the form of a Value Methodology Fundamentals course accredited by SAVE International®.
- **VE study subject managers (management).** Those responsible for managing the projects, products, processes, organizations, or services that will be subjected to a VE study should be provided specialized training to help them better understand the Value Methodology and their roles and responsibilities, and to communicate the potential benefits that can be derived from VE studies. Education helps reduce the potential for resistance to change and remove uncertainty and fear related to the changes emanating from VE.

- **Value Program managers.** Those involved in managing the Value Program should complete both Value Methodology Fundamentals courses and supplement them with active participation in professional value societies such as SAVE International®. One of the best forms of education is networking with Value Program managers in other organizations to discuss issues, challenges, and effective management strategies with their colleagues.

Sustaining a Value Program

One of the key components of a successful Value Program is the need for a strong implementation process that is both transparent and assigns accountability. Many programs succeed in the performance of VE studies and identification of good potential alternatives, but they fail to successfully implement the recommended changes. The long-term success of any Value Program depends upon effective succession planning, internal training and retention, and appropriate transfer of institutional knowledge.

Where Do I Start?

Developing a Value Program may seem like a daunting task, however, as with most things, knowing where to start is half the battle. There are a few important steps necessary to get things in motion. These include:

1. Identify a Senior Accountable Official
2. Perform an assessment of the agency budget
3. Develop agency VE rules
4. Identify Value Program Managers
5. Begin developing VE processes
6. **Help is available!!!**

1

Identify a Senior Accountable Official (SAO)

As outlined earlier in this document, each federal agency is required to assign an SAO located with an appropriate level of authority to oversee the Value Program. This is a critical first step, and without doing this the effectiveness of the program will be marginalized.

2

Perform an assessment of the agency budget

Each federal agency has unique goals and objectives along with a budget that is ostensibly developed to support their achievement. It is not possible, or advisable, to perform VE activities on every aspect of an organization. Therefore, it is important to begin by first performing a workload analysis of the agency's annual budget. Based on this analysis, the Value Program can begin prioritizing areas within the agency that have the greatest potential for achieving efficiencies and improving effectiveness. Based on the outcome of this analysis, the Value Program can be aligned to improve areas within the agency that have largest potential return on investment.

3

Develop agency VE rules

Once the SAO has been assigned, the next step is to begin drafting a regulation describing how the agency will meet the law and regulation as outlined in OMB A-131. Fortunately, several federal agencies have established VE rules (regulations) that can be used as a starting point and then tailored to meet the specific needs of the organization. Depending on the agency, it may take some time to draft, review and publish these rules. Considering this, it may be worth considering first creating an agency policy letter as an interim action to move forward with the development of the Value Program.

4

Identify Value Program Manager(s)

The SAO will need dedicated individual(s) assigned to implement and manage the agency's Value Program. As outlined earlier in this document, these individuals should be appropriately positioned within the organization and be assigned management of the Value Program as a primary duty. Bringing these people on early will allow them to be involved in the development of Value Program regulations, policies, processes, and guidance. This will also help develop these individuals as qualified individuals as they learn about the Value Methodology and implement the program.

5

Begin developing VE processes

Once the previous steps have been achieved, the SAO and Value Program Manager(s) can begin developing the supporting business processes and procedures necessary to implement VE on the agency's budget. As previously mentioned, there are several federal agencies with established processes, procedures, and guidance that can be used as a starting point. This Value Program guidance, once established, is necessary to achieve strong outcomes.

6

Help is available!

There are several resources available to help develop your agency's Value Program. The first place to start is to leverage the knowledge and experience of existing federal Value Programs. Provided below is a list of three such agencies as well as SAVE International®, the professional VM society:

U.S. Army Corps of Engineers

The USACE Value Program is among the most effective and established programs of its kind in the federal government. This program has mentored and supported other agencies in developing effective Value Programs and is available to provide assistance. Contact: Corey White, Deputy Value Officer, Corey.D.White@usace.army.mil. [Value Engineering](#)

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation has recently been engaged in further developing its Value Program after years of applying VE to its projects. The USBR has been working with support from USACE in this effort. Contact: Del Smith, Value Program Manager DMSmith@usbr.gov. [Value Program Office | Bureau of Reclamation](#)

Federal Highway Administration

The FHWA administers its Value Program primarily by delegating responsibility to the state departments of transportation. Each state DOT is required to apply VE to

federal aid projects over \$50 million in project value. This type of organization makes good sense where a federal agency disburses funds to the states. Contact: Julie Johnston, Office of Preconstruction, Construction, and Pavements Julie.Johnston@dot.gov. [Value Engineering - Design - Federal Highway Administration](#)

SAVE International®

SAVE International® is the world's premier society dedicated to the promotion, advocacy, certification, and education of Value Methodology professionals. SAVE International®, through its US Advocacy for Value (USAV) Committee, is dedicated to supporting organizations, both public and private, in developing and implementing Value Programs. Contact: Robert Stewart, info@value-eng.org. [SAVE International](#)

Resources

Public Law 111-350

(41 USC 1711) Value Engineering (Available at <https://www.congress.gov/111/plaws/publ350/PLAW-111publ350.pdf>)

OMB Circular A-11

Preparation, Submission, and Execution of the Budget

OMB Circular A-131

Value Engineering

SD-24, Value Engineering: A Guidebook of Best Practices and Tools

Department of Defense

ASTM E1699-14 - Standard Practice for Performing Value Engineering (VE)/Value Analysis (VA) of Projects, Products and Processes

[E1699 Standard Practice for Performing Value Engineering \(VE\)/Value Analysis \(VA\) of Projects, Products and Processes](#)

SAVE International® Value Methodology Body of Knowledge (VM Guide)

[VM Guide - SAVE International](#)