Value Management Plan

for

The LCLS Ultrafast Science Instruments (LUSI) Project

Stanford Linear Accelerator Center
for the Department of Energy

May 28, 2007

PM-391-000-02 R0
## NAME

**Prepared by:**

| Nadine Kurita, LUSI Chief Engineer |

**Approval:**

| Donald Arnett, LUSI Design Supervisor |

| Jerome Hastings, LUSI Project Director |

## Revision Record

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1. Purpose

The LUSI Value Management Plan is described in this document. This plan meets the requirements of DOE Order 413.3, “Program and Project Management for the Acquisition of Capital Assets and OMB Circular A-131, dated May 21, 1993. LUSI will use this plan as a management tool, where appropriate. A graded approach will be implemented to ensure realistic budgets, identify and remove nonessential capital and operation costs, and improve and maintain optimum quality of program and acquisition functions.

2. Value Management Defined

Value Management (VM) methodology is also known as value analysis, value engineering, and value planning. VM is defined as an organized effort 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, quality, reliability and safety. VM is a technique directed toward analyzing the functions of an item or process to determine “best value,” or the best relationship between worth and cost. The VM Program is an integral part of the overall project delivery process and is not a separate entity designed to “second guess” the Integrated Project Team or design authority.

3. Responsibilities

It is the responsibility of the Project Director to ensure that an effective VM program is implemented.

4. Value Management Process

4.1 Pre-Study Preparation

In preparation for the VM study, the facilitator and VM team members will review the project documents provided by the LUSI project team. The purpose of the Pre-Study Preparation is to identify the most appropriate subjects for the VM Study.

The Pre-Study phase involves collecting and defining user/customer wants and needs, gathering a complete data file of the project, determining evaluation factors, scoping the specific study, building the appropriate models and determining the team composition.

4.2 VM Study

The VM study will follow the phases shown below. This will guide the team to determine the high cost areas in the design and to develop alternative solutions for consideration. The Study phases are:
4.2.1 Information Phase
The Information Phase will provide information relevant to the scope of the VM study, as determined during the Pre-Study work phase. This information will be collected, disseminated as needed, and analyzed.

The VM team will present a design review of the various systems. This includes an overview of the project and its operational requirements, which further enhances the VM team's knowledge and understanding of the project. The engineers, designers and physicists will be available to answer questions from the VM team.

4.2.2 Function Analysis Phase
Key to the VM process is the function definition and analysis. It is the primary activity that separates VM from all other "improvement" practices. Functions are identified and classified as either basic or secondary. The components are examined in terms of their function. A logic diagram, referred to as a Function Analysis System Technique [FAST] diagram, is generated to analyze the functions within the scope under study. The FAST diagram shows the "why" and "how" something is done.

The results generated by the function analysis are assigned costs and/or other measurement criteria. Items that have high potential for added value are identified for further consideration during the creative phase.
4.2.3 Creative Phase
During this phase, the team will develop and list creative ideas for performing each function selected for the study. The participants of this study will identify as many concepts as possible that provide the necessary functionality. The VM team looks for a large quantity of ideas and association of ideas.

The evaluation and judgment of an idea is suspended during the Creative Phase. A free flow of thoughts and ideas is required without criticism.

4.2.4 Evaluation Phase
The evaluation phase will systematically reduce the pool of ideas generated during the creative phase to a few concepts that could meet the projects objectives. The resulting potential alternatives are then evaluated with regard to their perceived benefits, advantages, and risks.

A weighted criteria key will be developed in order to evaluate the potential alternatives and each idea be given a total rating number. Ideas rated positively will be developed further and documented on the Value Engineering alternative forms.

Below is an example of a rating index:

5) Improves Cost & Performance: the project will benefit greatly. Significant Cost and/or significant functional improvements.

4) Improves Cost or Performance: will improve the project. Some cost and/or other functional improvements.

3) Technically Feasible: but will require additional analysis to verify if cost and/or functional improvements are possible. May challenge design criteria. Needs further development.

2) Scope reduction: will reduce cost, but at the expense of the project performance.

1) Significant disadvantages: drop from consideration.

4.2.5 Development Phase
The objective is to select and prepare the “best alternative(s)” for improving value. The selected alternatives are developed into viable, efficient, and cost-effective proposals.

The development process could include, but is not limited to: using team member expertise; consultation with the project staff; experts and outside vendors; polling others by survey or other means; and review of other information resources. Every attempt is made to fully develop the life cycle cost model to determine the impact of each proposed alternative on the project cost and schedule. An implementation plan is produced that
includes the proposed schedule of all implementation activities, team assignments and management requirements.

4.2.6 Presentation Phase
In this phase, the VM study team presents its recommendations to the LUSI management. Through the presentation and its interactive discussions, the alternative ideas obtain approval to proceed with implementation, direction for collecting additional information, or rejection of some or all of the recommended alternatives by management.

5. Post Study
Following the VM study, the VM specialist completes the final written study report and sends it to the team members and management. The staff coordinating the Value Study activities, including the VM Team members if needed, assists and monitors the evaluation to help all parties in implementing the added value features. The final estimates of the value of proposals are established.

Following the VM study, a VM report will be generated and distributed to the team members and LUSI management. The report will incorporate the alternatives developed and the final estimates on the proposals.

Each alternative must be independently designed and confirmed, including contractual changes, if required, before its implementation into the product, project, process or procedure.