



How the Value Methodology Optimizes Results of Various Value Improving Practices

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Introduction & Background

Value Improving Practices to be discussed:

- **Lean**

- **Six Sigma**

- **Design For Manufacturing & Assembly (DFMA)**

- **TRIZ**

- **The Value Methodology includes:**

- *Value Analysis*

- *Value Engineering*

- *Value Control*

- *Value Management*

Introduction & Background, Cont.

- Each of these **Value Improving Practices (VIP's)** may be utilized at various stages of a project to ensure *optimal success* in the design and execution of that project.
- Knowing **which practice** to use *when* and *how* in an *integrated* approach is the *key* for the *success* of that organization or business.
- The purpose of this presentation is to:
 - briefly *introduce* these **Value Improving Practices**
 - show *integration points*
 - *results* using *Value Methodology* with these **VIP's**.

Understanding Lean Principles

What is **Lean**?

- **Lean** is used to deliver *timely* and *quality* solutions in the most **efficient** and **effective** manner by using *continuous improvement activities*.
- It is about **reducing lead times** and *delivering products* or *services* to customers when needed by using a *continuous flow system*.
- It focuses on **eliminating waste** in *processes* and *projects* by performing *value added* work.

Understanding 6 Sigma Principles

What is 6 Sigma?

- **6 Sigma** is a process to *statistically* improve a product or process by reducing *failure modes* thus enhancing both cost and quality.
- Classic **6 Sigma** follows a very disciplined job plan most commonly called *DMAIC*:

- Define
- Measure
- Analyze
- Improve
- Control

Information Phase
Function Phase
Creativity Phase
Evaluation Phase
Development Phase

Comparison
to the Job
Plan for the
Value
Methodology

Understanding DFMA Principles

What is Design For Manufacturing & Assembly?

- First, **DFMA** consists of *2 different processes* linked to *optimize total product cost* of design with respect to manufacturing capability:
 - **Design for Assembly (DFA)** – Evaluates the design of the product for *ease of assembly*
 - **Design for Manufacturing (DFM)** – Evaluates the individual components for *process optimization* based upon the customer requirements
 - **DFMA** - The *iterative* approach of evaluating both *design* and *process variables* to **optimize** the most cost effective *final product* assembly

Understanding TRIZ Principles

What is TRIZ?

- **TRIZ** (pronounced “Trees”) is a Russian Acronym for the *Theory of Inventive Problem Solving*.
- **TRIZ** is a *structured brainstorming* technique to solving *inventive problems*.
- **TRIZ** was borne out of a Russian *patent examiners observations*.
- **TRIZ principles** which were developed have been a key to **reliably** solve *1000's of inventive problems*.
- **TRIZ** is *not* an *invention machine*.

Understanding the Value Methodology (VM)

What do **Customers** Want Today?

- Today's customers and clients **expect** the very best **value** for their **hard earned money**.
- True **value** may be **measured** in terms of a formula as illustrated below:

$$\text{Value} = \frac{\text{Performance of Required Function}}{\text{Cost to Acquire Function}}$$

where a **required function** is any '**work**' or '**sell**' function and where cost is the '**overall cost**' or the '**life cycle cost**' of that project or service.

The **VM** is all about **analyzing functions**.

Summary of the Value Enhancing Tools

- **Lean** is used mostly to optimize projects, processes or services by *reducing waste*.
- **6 Sigma** is used to *statistically* improve projects or processes.
- **DFMA** is used to optimize *product design* with *manufacturing capability* in mind.
- **TRIZ** is used when an *innovative solution* is required for a project, process, or product.
- The **Value Methodology** is used to optimize projects, products, processes, facilities, and services using *function analysis*.

How the Value Methodology Optimizes Lean

- Generally, **Lean principles** work with the *existing process* to **reduce waste** and **seldom questions** if that process delivers *high value*.
- The **Value Methodology** can ensure your organization has the *right process* to begin with by employing **function analysis**.
- A well selected *multi-disciplined team* guided by a **value professional**, (a **CVS**), will ensure that *performance* and *cost* are balanced by employing **function analysis** to deliver the absolute *best value* to your client or customer.

How the Value Methodology Optimizes 6 Sigma

- **Six Sigma** generally seeks to *reduce variation* in an existing or new process but really *doesn't challenge* if that process is the *right process* to achieve **high customer value**.
- Again, the **Value Methodology** can ensure your organization has the *right process* to begin with by employing **function analysis**.
- The **CVS** hired will seek to understand the *'Voice of the Customer'* for the **service** or **project** which you are responsible for providing to ensure *optimum life cycle value*.

How the Value Methodology Optimizes DFMA

- **DFMA** can optimize new and current *products* with *respect to manufacturability*, however, by incorporating the **Value Methodology**, an assessment can be made as to whether the *right* product or process *is being offered*.
- Once the **Value Methodology** assessment is completed with the right *multi-disciplined team* led by a **CVS**, then the organization can become *more confident* that the **DFMA analysis** will yield the *best value* for the customer.

How the Value Methodology Optimizes TRIZ

- **TRIZ** actually uses *functions* (called useful functions and harmful functions) in a diagram to **understand contradictions** and then uses *various inventive principles* to resolve those contradictions which many times results in a **unique solution** not previously thought about.
- Thus having an *understanding of the Value Methodology* and how to *develop good functions*, will allow one to develop an **innovative solution** which may already be in existence from *another* field of study.

Results with the Value Methodology

Manufacturing Company's Past Results:

- Value Engineering *Department* of 78 employees
- Annual *cost improvement* of \$143M USD
- *Warranty* improvement by 50%
- Improved *project timing* by 25%
- *Bill of Material* cost *reduction* of 50% due to *innovations* on a *new product* prior to concept



Results with the Value Methodology

DFV Supplier Value Engineering Workshop Summary



System or Subsystem Evaluated: Wire Harness Supplier Workshop

Workshop Date: Feb. 4-6, 2014

Currency:

ITEM No.	PROPOSAL NAME	Ranked BC's Highest to Lowest Savings	QUALITY	CONVERSION	MARKETING	COST CHANGE	Annual Total Cost Savings
1	Different method of internal cabinet sealing: slid foam vs PVC	5					\$
2	Commonize Connectors and Terminals	2					\$
3	Optimize Design Changes (wire guage, etc.)	1					\$
4	Use Tape in Place of Hot Melt, Braided Tube, Epoxy, etc.	4					\$
5	Remove Transparent Inner cover	11					\$
6	Integration of FC and Unit harnesses	6					\$
7	Integration of main harness with LED	9					\$
8	Replace PVC grommets with foams for W10417926	16					\$
9	USE UL1569 for Ground and Signal Wires	17					\$
10	Optimize Wiring Harnesses Packing	21					\$
11	Wiring Harness Process Flow Optimization	24					\$
12	Wiring Harness optimization - multiple design changes	10					\$
13	Modify Diamond LED Module assembly	8					\$
14	Utilization of Tape and Cable Ties	13					\$
15	Evalute connector Pushouts vs Retainers	19					\$
16	Replace & Eliminate Geon Aplication to Tape aplication	7					\$
17	Re-balancing Kobra Line	22					\$
18	Shorten All Wire Ties 50%	3					\$
19	Use UL1569 instead of UL1015 Ground Wire	20					\$
20	Use 20% Regrind for PVC Grommets	12					\$
21	Replace Clam Shells with PVC taping	23					\$
22	Use Wire ID Label to replace one taping operation	18					\$
23	Use 22 AWG instead of 18AWG for all Water Valves	15					\$
24	Optimize Grounding & tube and tape for Ramos	14					\$

Total Workshop Potential Savings

Private and Confidential

\$ 10,517,681

Results with the Value Methodology, cont.

2012 DFV Project Tracking Status

DFV stands for Design for Value. It was the Value Methodology program at Whirlpool

	2012 Projects TOTAL Business Cases - Risk Wt./Ranked ideas Annual Saving (USD)	2012 Tracked, Business Cases - Risk Wt./Ranked ideas Annual Saving (USD)	Actual Annual Savings (USD) Implemented from Projects started in 2012	Actual Annual Savings (USD) Implemented from Projects Started prior to 2012	% of 2012 BC Annual Savings Tracked in ISC/PDTS	% of Annual Savings Implemented from Projects started in 2012
<u>Continuous Improvement Support</u>	\$ 85,041,181	\$ 60,600,319	\$ 10,417,234	\$ 35,662,442	71.3%	17.2%
<u>Mega Project Support</u>	\$ 13,912,610	\$ 13,912,610	n/a	n/a	n/a	n/a
<u>Supplier Workshop Support</u>	\$ 14,173,343	\$ 561,365	\$ -		4.0%	0.0%
DFV 2012 Summary	\$ 113,127,134	\$ 75,074,294	\$ 10,417,234	\$ 35,662,442	Total Implemented Saving \$ 46,079,675	

2012 DFV Deliverables-BC Risk Weighted Annual Savings Opportunities by Region and Workshop Type

BC stands for Business Case



	Continous Improvement (EPI)	TC Mega Project	Supplier Workshops	TOTAL	% of 2012 BC Risk Weighted Annual Savings from EPI Projects	% of 2012 BC Risk Weighted Annual Savings from Supplier Workshops
Asia	\$ 6,031,855	\$ -	\$ -	\$ 6,031,855		
EMEA	\$ 11,552,046	\$ 3,953,606	\$ -	\$ 15,505,652		
LAR	\$ 19,697,787	\$ 442,564	\$ 1,160,135	\$ 21,300,486		
NAR-USA	\$ 37,604,273	\$ 9,516,440	\$ 8,435,643	\$ 55,556,356		
NAR-MX	\$ 10,155,220	\$ -	\$ 4,577,565	\$ 14,732,785		
	\$ 85,041,181	\$ 13,912,610	\$ 14,173,343	\$ 113,127,134	75.2%	12.5%

Summary and Conclusion

- Organizations today should use a **combination** of **Value Improving Practices** to **optimize** projects, products, processes, and services thus ensuring **best value**.
- The **Value Methodology** will enhance:
 - The use of **Lean** principles
 - The use of **Six Sigma** principles
 - The use of **DFMA** principles
 - The use of **TRIZ** principles
- **Innovation** and **business gains** are possible when the **Value Methodology** is **combined** with a **CVS experienced** in these various **Value Improving Practices**.

➤ Personal Resources Available to *Add Value to your Project*

➤ *40-hour Module I Workshop* – *Approved SAVE International®* Workshop conducted *at your facility* on either a new or existing project which needs *value improvement*.

➤ *Associate Value Specialist (AVS) Certification* available

➤ Examination preparation included

➤ *Permanent Workbook* distributed to all team members

➤ *3-Day Module II Seminar* – *Approved SAVE International* Seminar at your facility to *prepare candidates* for *successful* preparation and completion of requirements to pass the *CVS certification examination*

➤ *3-Day VE non-certification Workshops* – Workshop held at your facility to *increase value* of your project.

➤ *Value Improving Practices Workshops* – Will train in all VIP's

➤ *Value Consulting* at www.BoltonValueConsulting.com or

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