

VALUE ENGINEERING

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WHAT IS VALUE?

Delivery of necessary project **functions** while achieving best balance between project performance and project **costs**.

$$Value = \frac{\textit{What we get out of something}}{\textit{What we put into it}}$$

$$Value = \frac{\textit{Function}}{\textit{Cost}}$$

VALUE IS ASKING QUESTIONS ...

☐ VE analyzes function by asking questions as:

☐ What is it?

☐ What does it do?

☐ What must it do?

☐ What does it costs?

☐ What other material or method could be used to do the same job?

☐ What would the alternate material or method cost?



VALUE CONCEPTS

Value Engineering

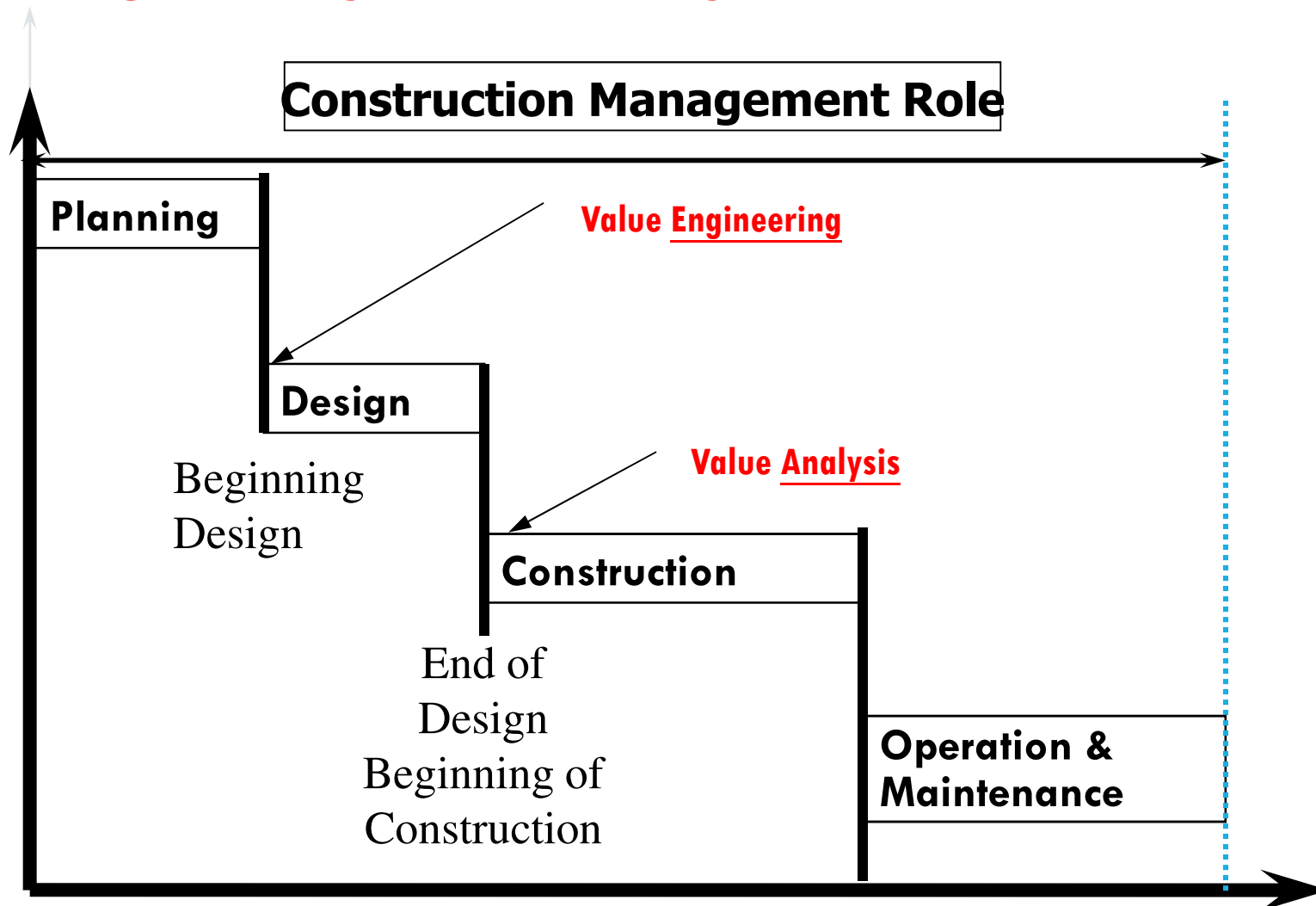
Value Analysis

Value Management

VALUE ANALYSIS VS VALUE ENGINEERING

- ❑ The difference between VA and VE is not in the **approach** taken or **tool** used but in the point as which they occur in the life cycle of the product.
- ❑ **VE** is used during the **product design** and the development stages
- ❑ **VA** is used for the **manufacturing** stage and for purchasing parts

TIMING OF: VALUE ANALYSIS VS VALUE ENGINEERING



VALUE ANALYSIS/ENGINEERING IS

The systematic effort directed at analyzing the functional requirements of systems, equipment, facilities, procedures, and supplies for the purpose of achieving the essential function at the lowest total (life-cycle) cost, consistent with meeting needed performance, reliability, quality, maintainability, aesthetics, safety

VALUE ANALYSIS/ENGINEERING IS

- ❑ Systematic **problem solving** process
- ❑ An analysis of the **functions** of a project or service (Function-based analysis)
- ❑ Directed at **lowering** direct and **life cycle costs**, without affecting performance, reliability, quality and safety.

VALUE ANALYSIS/ENGINEERING IS

- ❑ It seeks to **eliminate unnecessary costs**, while maintaining or **improving the functionality** of the project.
- ❑ It can be applied to **any type of product**, project or investment (especially infrastructure).
- ❑ It uses a **multidisciplinary team** to cover all possible needs of experience

VALUE ANALYSIS/ENGINEERING IS NOT:

☐ A DESIGN REVIEW

- ☐ It is not intended to correct omissions in the design, nor to review calculations made by the designer.

☐ A COST CUTTING PROCESS

- ☐ It does not cut cost by sacrificing needed quality, reliability or performance.

☐ ROUTINELY DONE ON ALL DESIGNS

- ☐ It is not a part of the normal design process, but a formal cost and function analysis.

VALUE MANAGEMENT

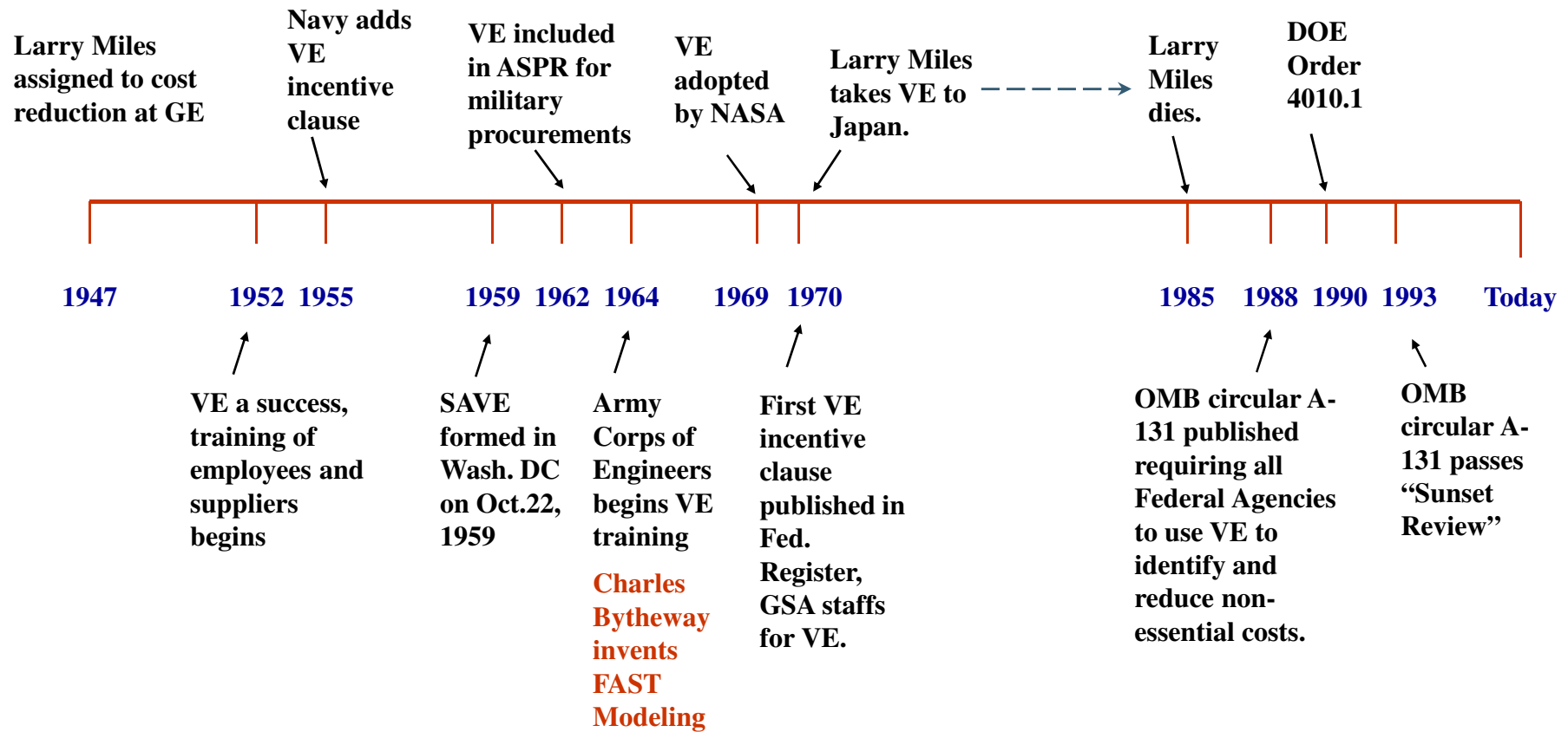
The application of value engineering and value analysis throughout the complete business cycle

VALUE ENGINEERING

Originally called **Value Analysis** by its inventor, **Larry Miles**, an engineer in General Electric's purchasing operation in 1947

VA/VE uses a value equation that says **value** is equal to **function** divided by **cost**.

VE TIMELINE



PROFESSIONAL ASSOCIATION:

Society of American Value Engineers (SAVE)

- To unite practitioners and promote growth of the profession in VE area.
- Founded in 1959.

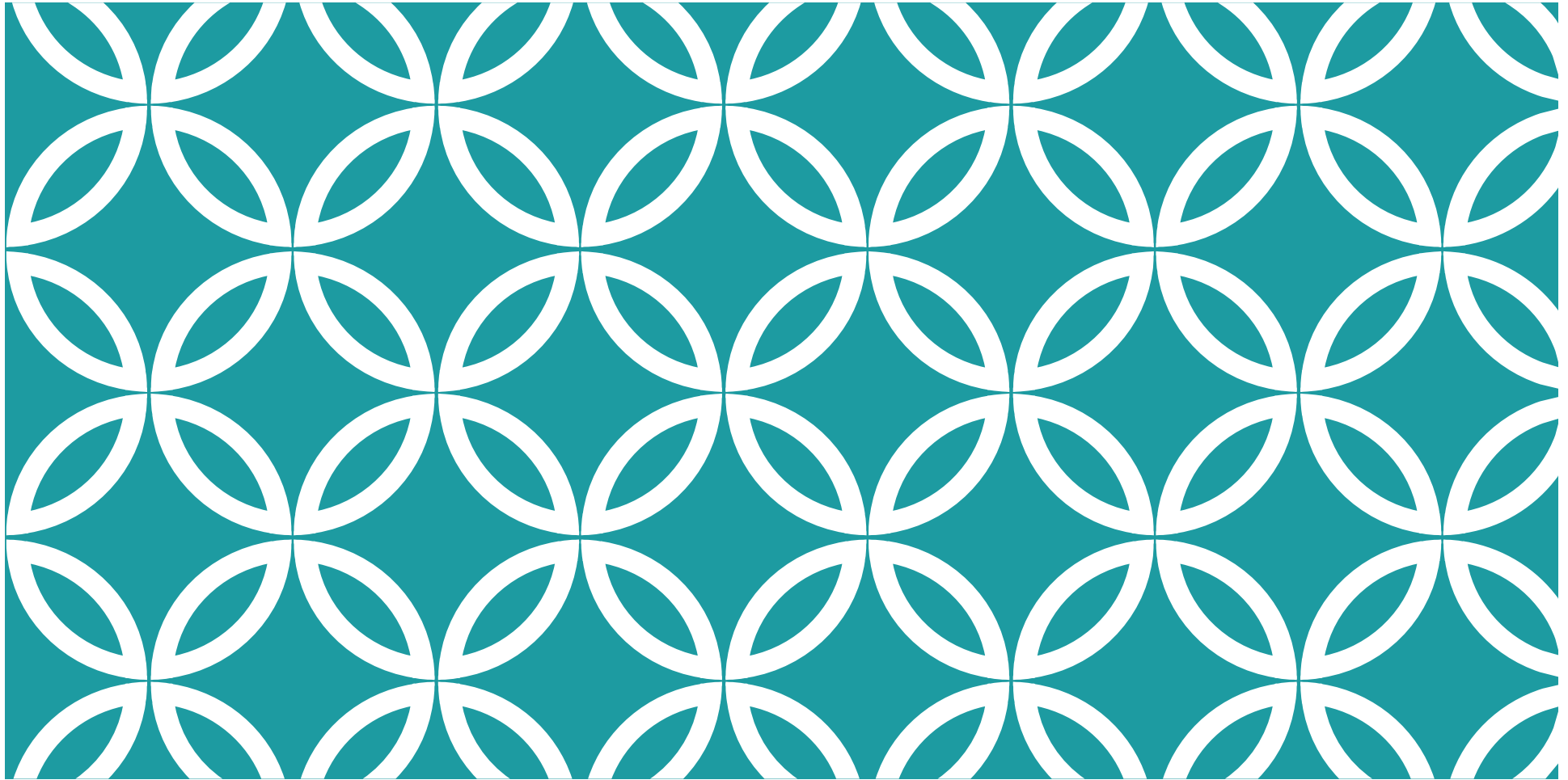
VALUE ENGINEERING COST

☐ VE Costs:

- ☐ 0.3% to 0.5% of total project costs (\$1 million to \$5 million)
- ☐ 0.1% to 0.3% of total project cost (\$5 million to \$50 million)

☐ VE Results:

- ☐ 5% to 10% savings in initial costs
- ☐ 5% to 10% follow-on cost savings in annual maintenance and operations



**WHY USE VALUE
ENGINEERING?** |

WHY VE/VA IMPORTANT?

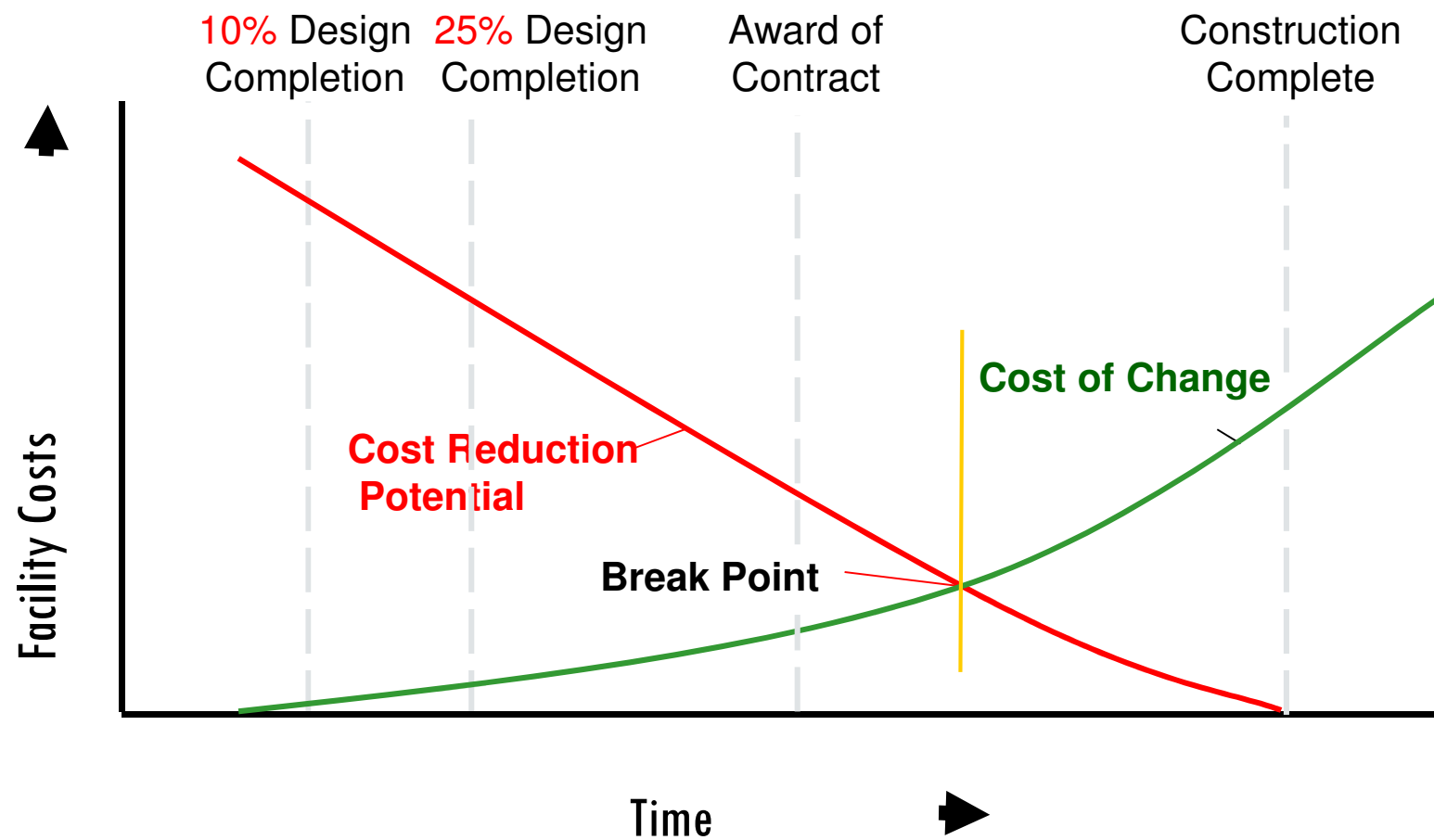
- ❑ Last 3 years (FY2000 – 2003), 2.7 million manufacturing jobs left the U.S.
- ❑ The U.S. is loosing the battle to foreign competition.
- ❑ Labor costs \$12 to \$30 per hour in U.S., VS less than \$1 elsewhere.
- ❑ Fewer and fewer people will be required to produce the world's goods.
- ❑ Lean and Six Sigma alone are not enough!

VE SAVINGS

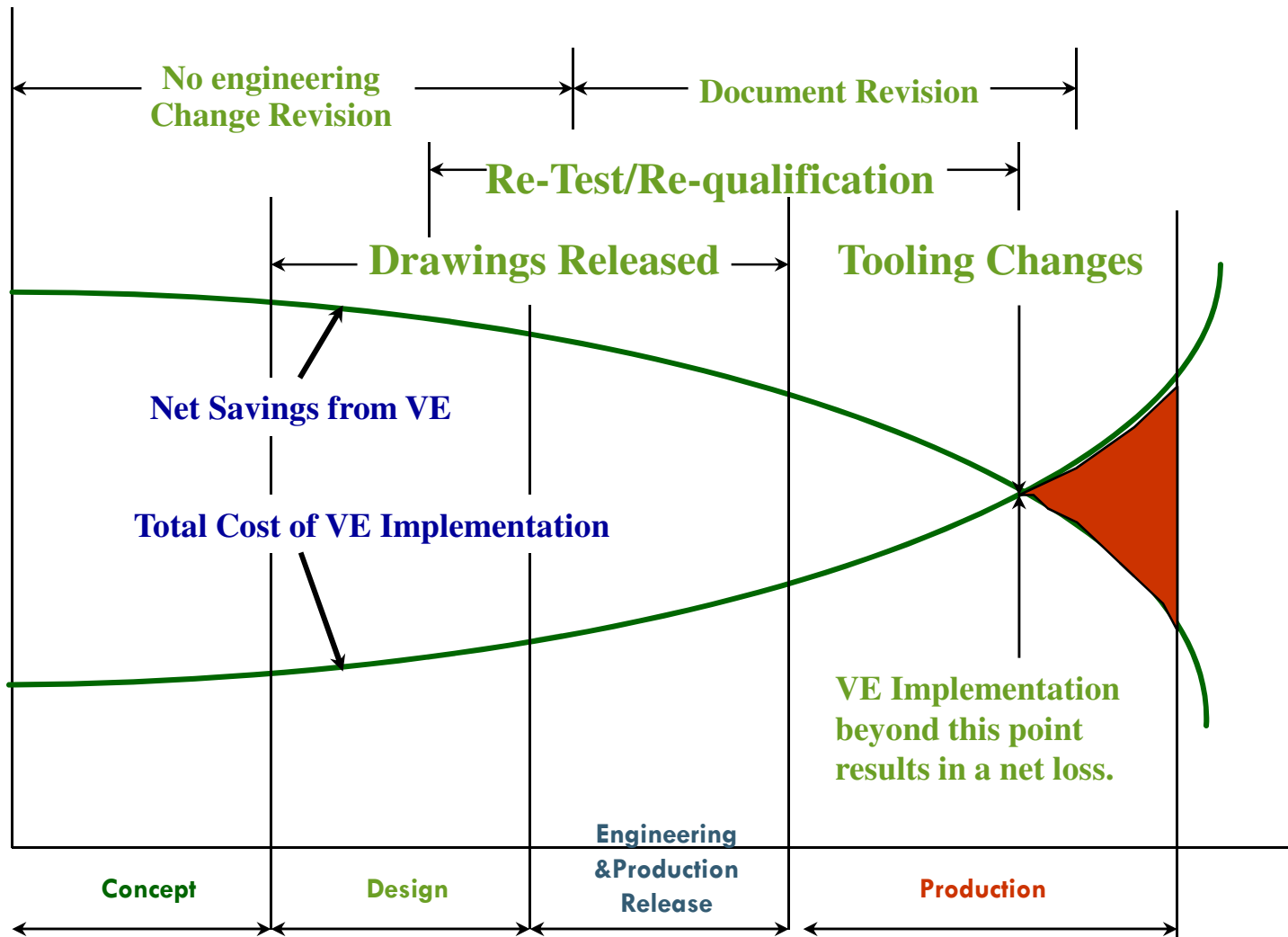
	FY 2003	FY 2002	FY 2001	FY 2000
Number of VE Studies	344	377	378	388
Cost of VE Studies Plus Administrative Costs	8.45 Mil	\$9.02 Mil.	\$7.29 Mil.	\$7.78 Mil.
Estimated Construction Cost of Projects Studied	19,241 Mil	\$20,607 Mil.	\$18,882 Mil.	\$16,240 Mil.
Total No. of Recommendations	2144	2344	2,013	2,017
Total Value of Recommendations	3,163 Mil	\$3,050 Mil.	\$2,375 Mil.	\$3,483 Mil.
No. of Approved Recommendations	914	969	1017	1057
Value of Approved Recommendations	1,016 Mil	\$1,043 Mil.	\$865 Mil.	\$1,128 Mil.
Return on Investment	120:1	116:1	119:1	145:1

<http://www.fhwa.dot.gov/ve/index.htm>

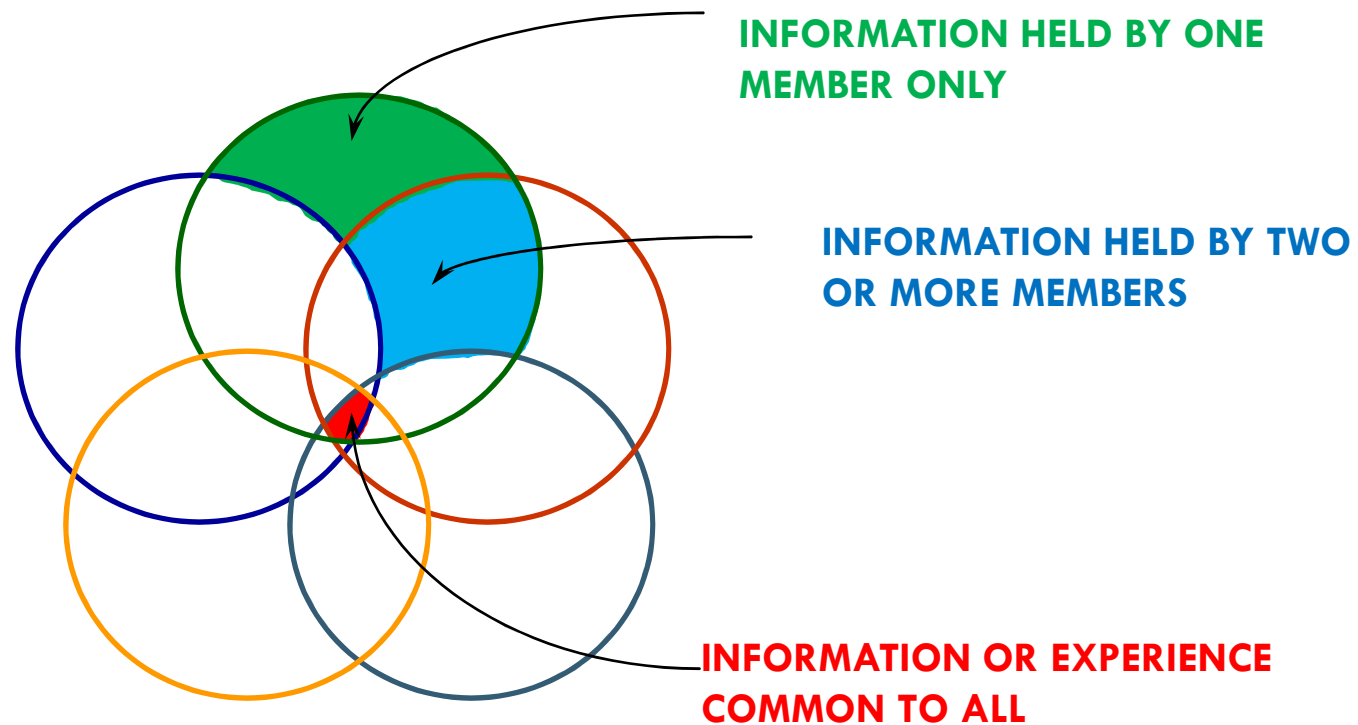
OPPORTUNITIES FOR SAVINGS



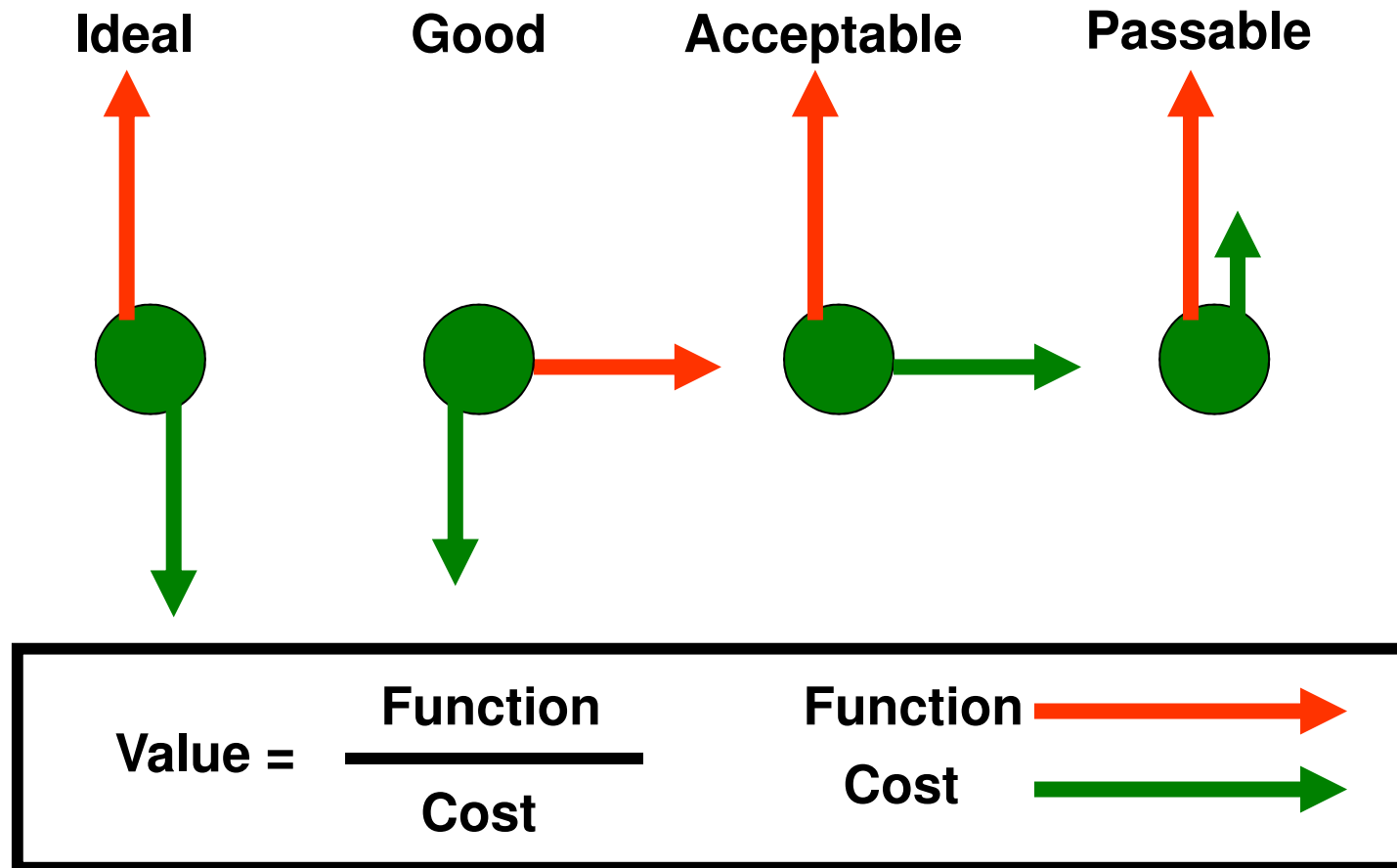
POTENTIAL SAVINGS FROM VE



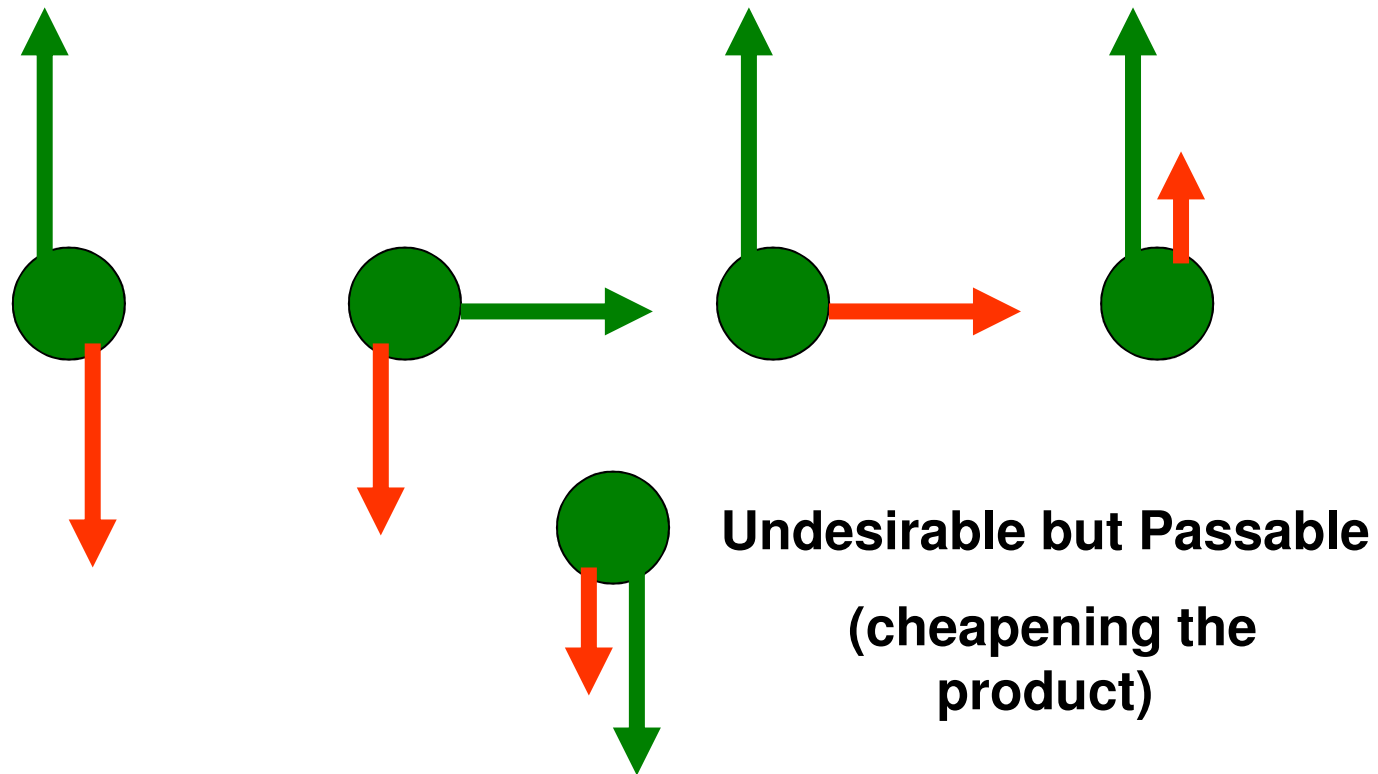
THE COMBINED EFFECT IN VE



CONCEPTS OF VALUE - DESIRABLE

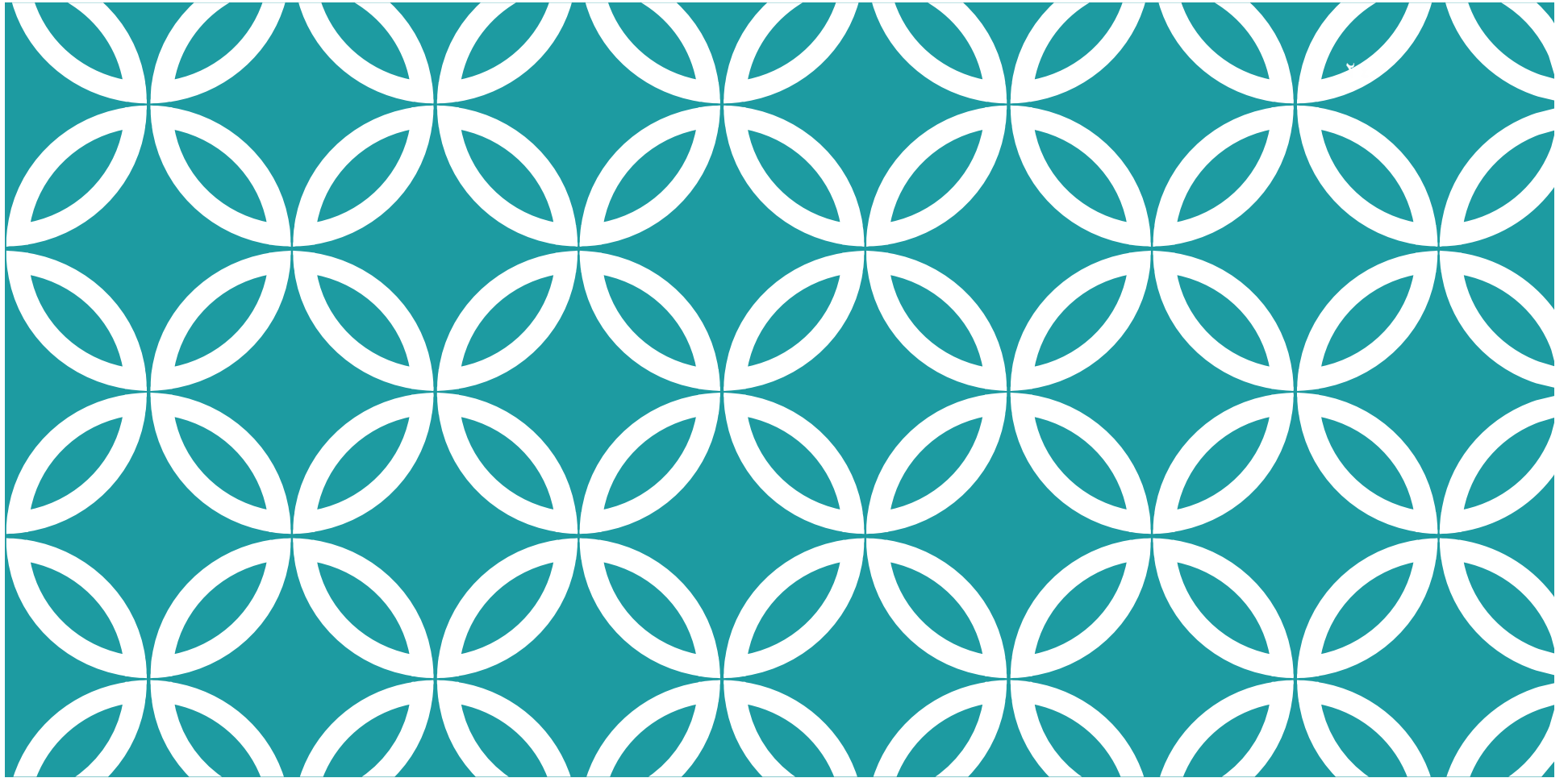


CONCEPTS OF VALUE - UNDESIRABLE



$$\text{Value} = \frac{\text{Function}}{\text{Cost}}$$

Function 
Cost 



THANKS