

Module5- Value Engineering and Analysis

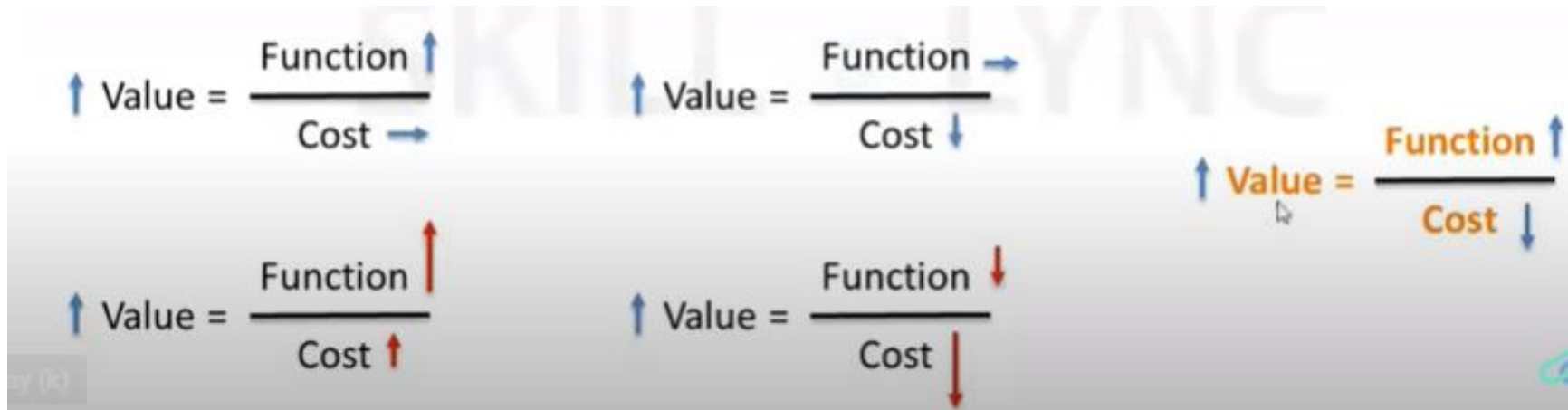
Value

(cost)

- Value is the **cost of product** the customer is willing to pay. The ratio between a function for customer satisfaction and the cost of that function.

$$\left(\bullet \text{ Value}^{\text{max}} = \frac{\text{function}^{\text{max}}}{\text{Cost}^{\text{min}}} \right)$$

- Value analysis or value engineering is increasing the value of **product** by increasing **its function** or by reducing the **cost**.



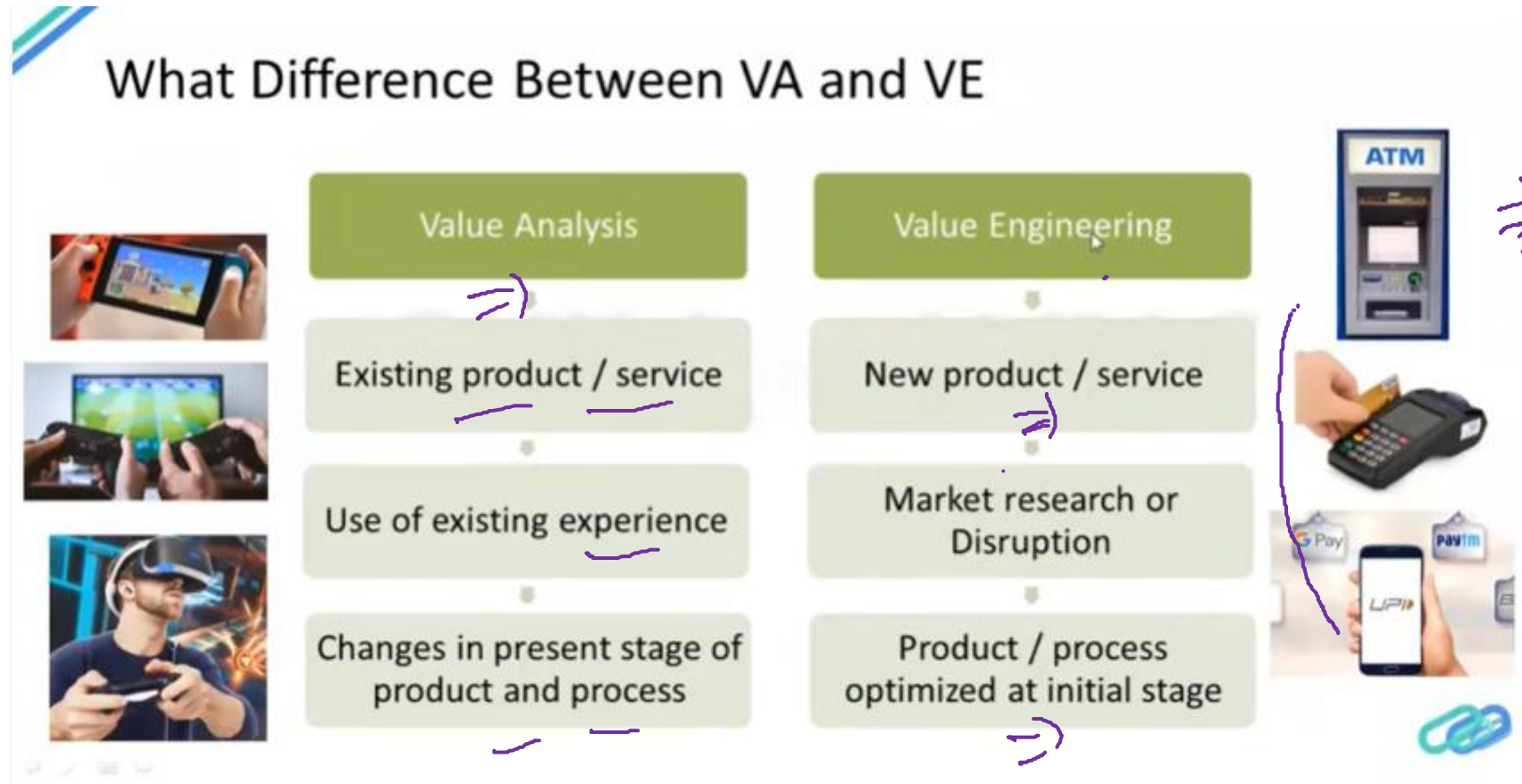
Value Engineering

- Value Engineering supports the product development process concerning new products. It requires a team based product evaluation prior to capital investment in people, plant, equipment or tooling.
- It supports the product development process by building **value into the process**. Value engineering can help control the scope of the design process and helps to utilize capital investments more efficiently.
- Value Engineering is a systematic method to improve the value of products and services by using an examination of their functionalities. Value is defined as the ratio of **benefit to cost**. Value can be increased by improving the functionality benefit or reducing the cost.
- Value Engineering uses rational logic and the analysis of functionality to **identify ways to increase value**.

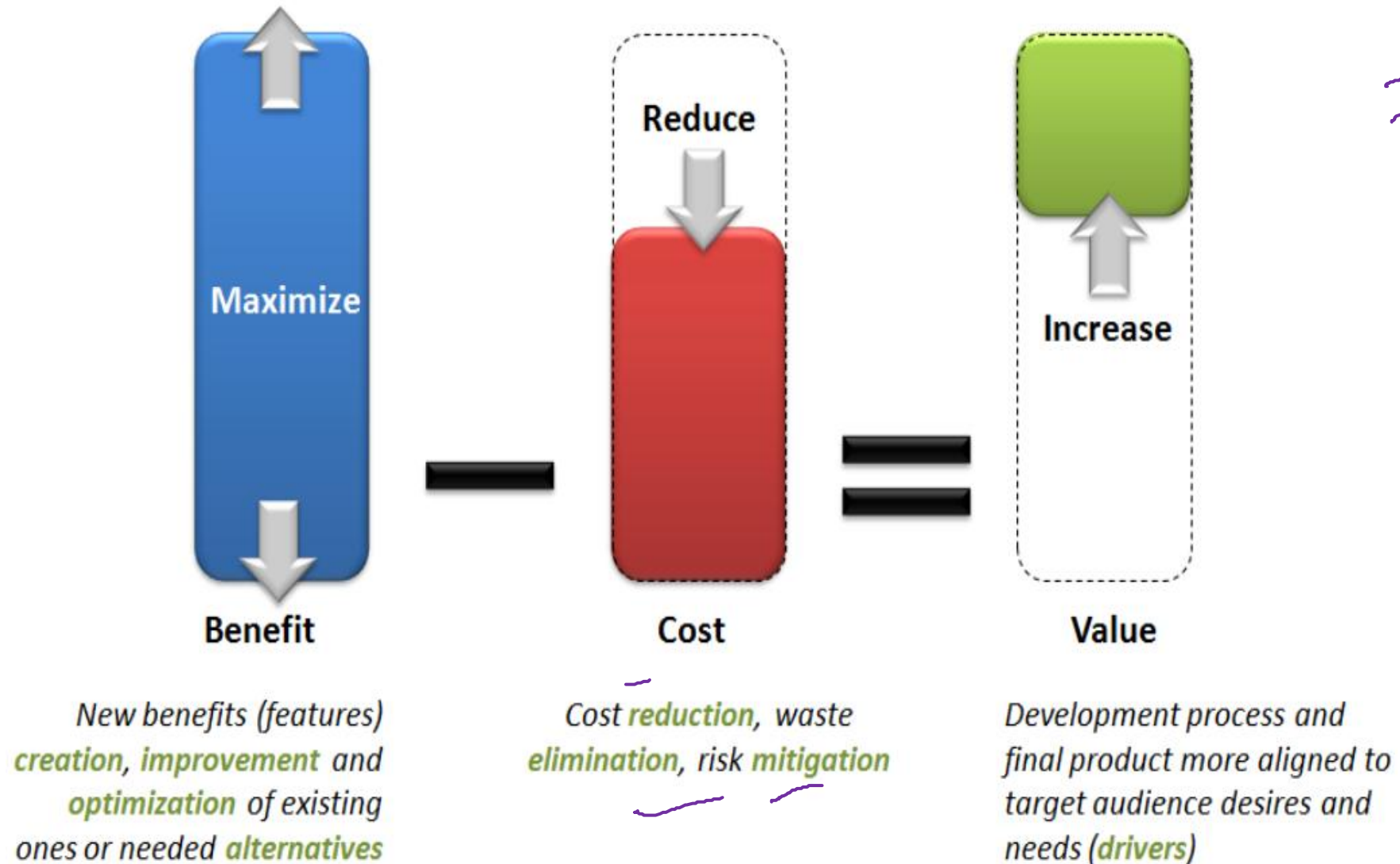
Value Engineering

- VE is a creative, organized effort, which analyses the **requirements of a project** for the purpose of achieving the essential functions at the lowest total costs (capital, staffing, energy, maintenance) over the life of the project.
- Value Analysis is the **team based and methodological evaluation** of an existing product in a broad **range of areas** of the process including current manufacturing process, functionality, cost and design.
- This process requires each of these components to be **thoroughly evaluated** and scrutinized in order to obtain decreased costs, increased profit, improved quality, function and performance, and most importantly **improved customer satisfaction**.

Difference between VE and VA



How Value Engineering works



Value

Same price
Same features
Same maintenance cost
Same risks



Safety
Family
Transport
Comfort
Personal status



Speed
Freedom
Mobility
Adventure



VE phases

PS
1
DES - HLD
LLD
Q1E

• Information Phase



- Understand, Analyze and **Define the objectives and key criteria** governing the project. gain an **understanding of the problem** and any solutions that have been proposed.

• Speculation (Creative) Phase

- This step in the VE study involves the listing of creative ideas. Team members develop a dynamic backlog of the existing workload by breaking it down **into several separate iterations**.

• Evaluation (Analysis) Phase

- In this phase of the Project, the VE Team, together with the Client and/or Users. The phase in the sales funnel where **customers make final decisions** about whether they plan to make a purchasing decision. Its purpose is to make **judgments about a program**, to improve its effectiveness, and/or to inform programming decisions.

VE phases

- Development Phase (Value Management Proposals)

- During the development phase of the VE study, many of the ideas are expanded into **workable solutions**. companies focus on establishing themselves through **activities such as market research, product development**, and the construction of new manufacturing facilities.

- Presentation Phase (Report/Oral Presentation)

- A **briefing/oral presentation** of results is made to the Client and Users, as well as the Design Team representatives.

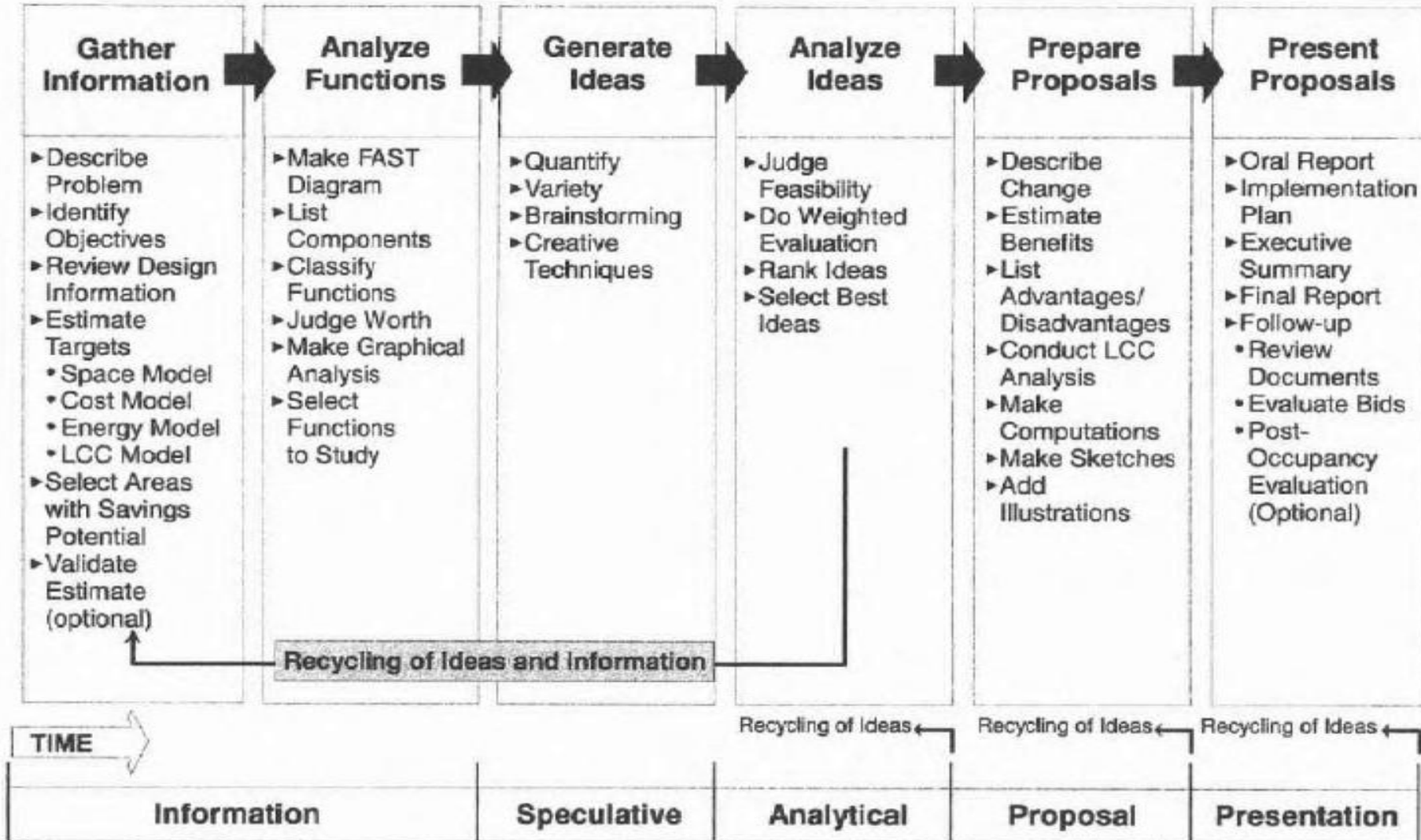
VE Procedures

per 49"

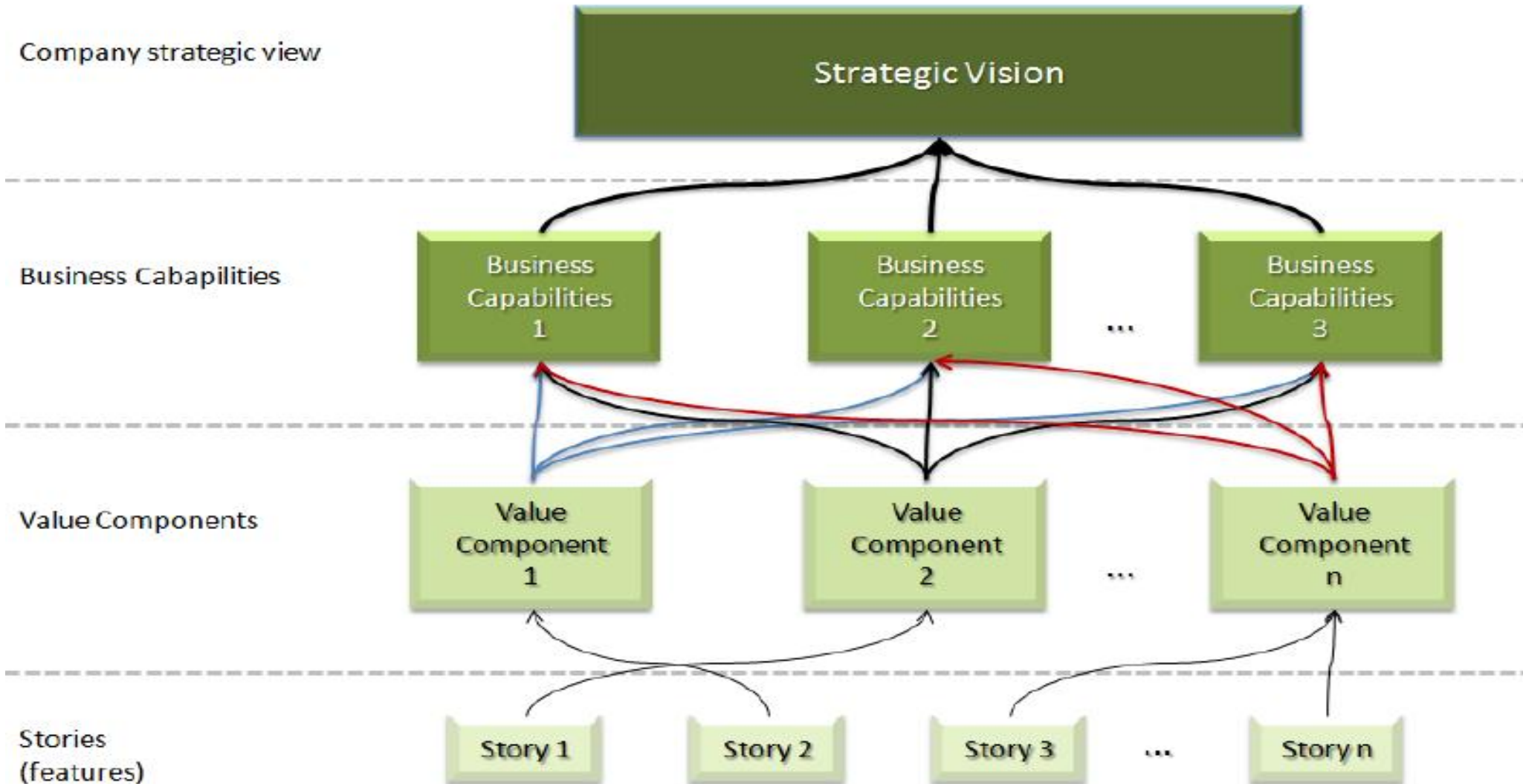
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Flow Chart - VE Procedures

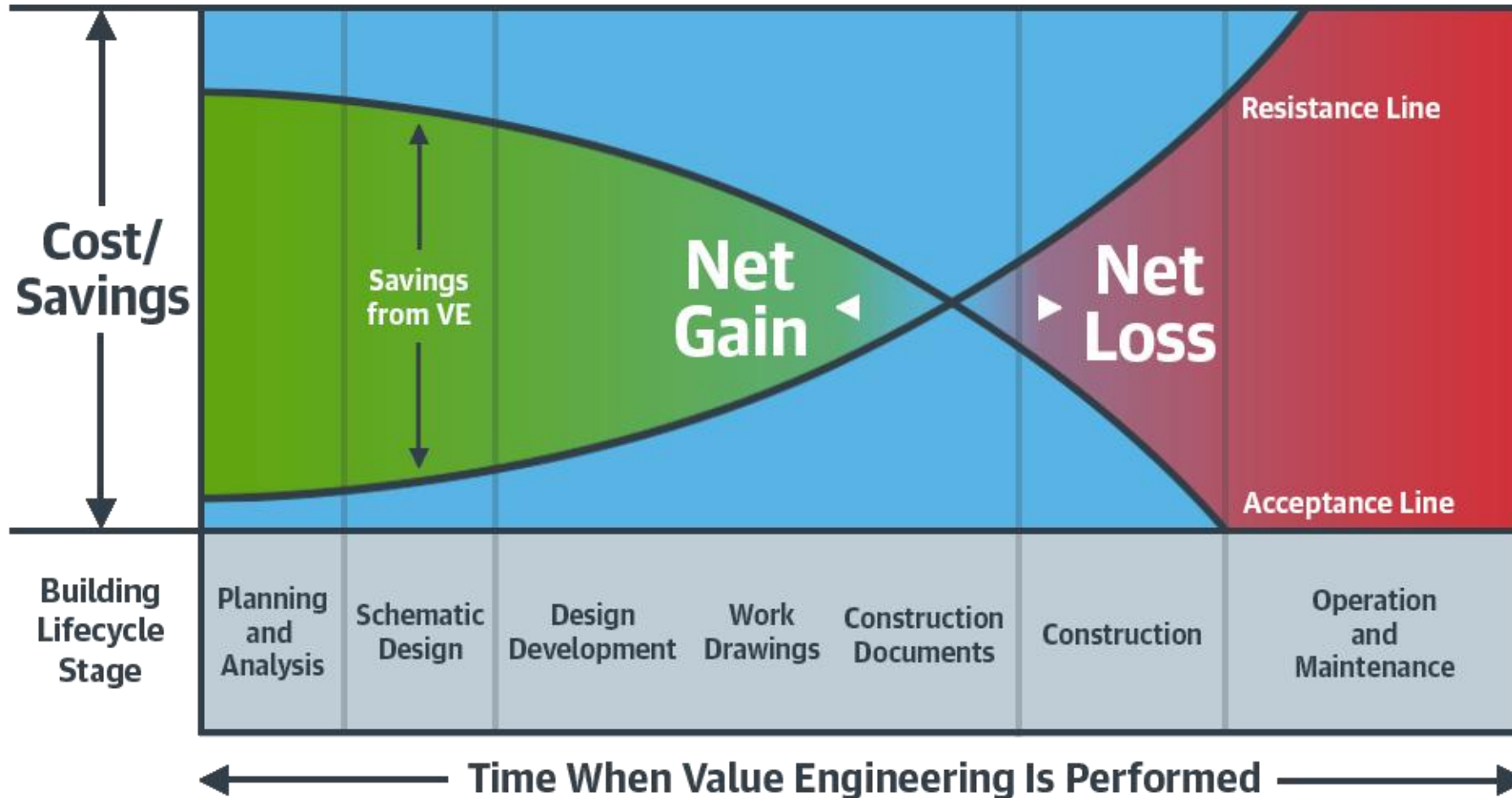


Frameworks for Value Engineering



Value engineering vs Cost cutting

VE is to find the lowest cost way to perform the desired function rather than the lowest cost way of producing the product.



Cost-function analysis of IoT solution components

Factors That Determine IOT Implementation Costs

1. Hardware & Software

2. Infrastructure and **Retrofitting** → compatibility.

3. Planned Downtime →

4. Consultation Services →

5. **Subscription** Fees → gateway.

6. Security Measures

Action Plan - VE

- Review the program
- Perform a **functional analysis** of the facility
- Obtain the owner/users definition of value
- Define **the key criteria and objectives** for the project
- Verify/validate the proposed program
- Review master plan utility options (e.g. Central Utility Plant versus individual systems)
- Offer **alternative solutions** (square footage needs per function, adjacency solutions, etc.)
- Verify if the **budget is adequate** for the developed program

Action Plan

- **Create a Value Roadmap**
- The roadmap should include
 - **Inception**/setup
 - Planned releases: define set of value components that could or should be moved to production together
 - Value activation: plan move to production
- **Demonstrate Value**
 - Value must be delivered and demonstrated to **guarantee value perception**