



# Value Management & Value Engineering

February 2021

# Value Management & Value Engineering

## What is Value Management (VM) & Value Engineering (VE)

- Systematic method of improving the value of a service, system, or product. Determines the best way to manage the important functions while reducing the cost.
  - Does the product have the right features/functions?
  - How a lower cost design can be achieved?
  - Is the product made/purchased at the right cost?

## Why VM & VE

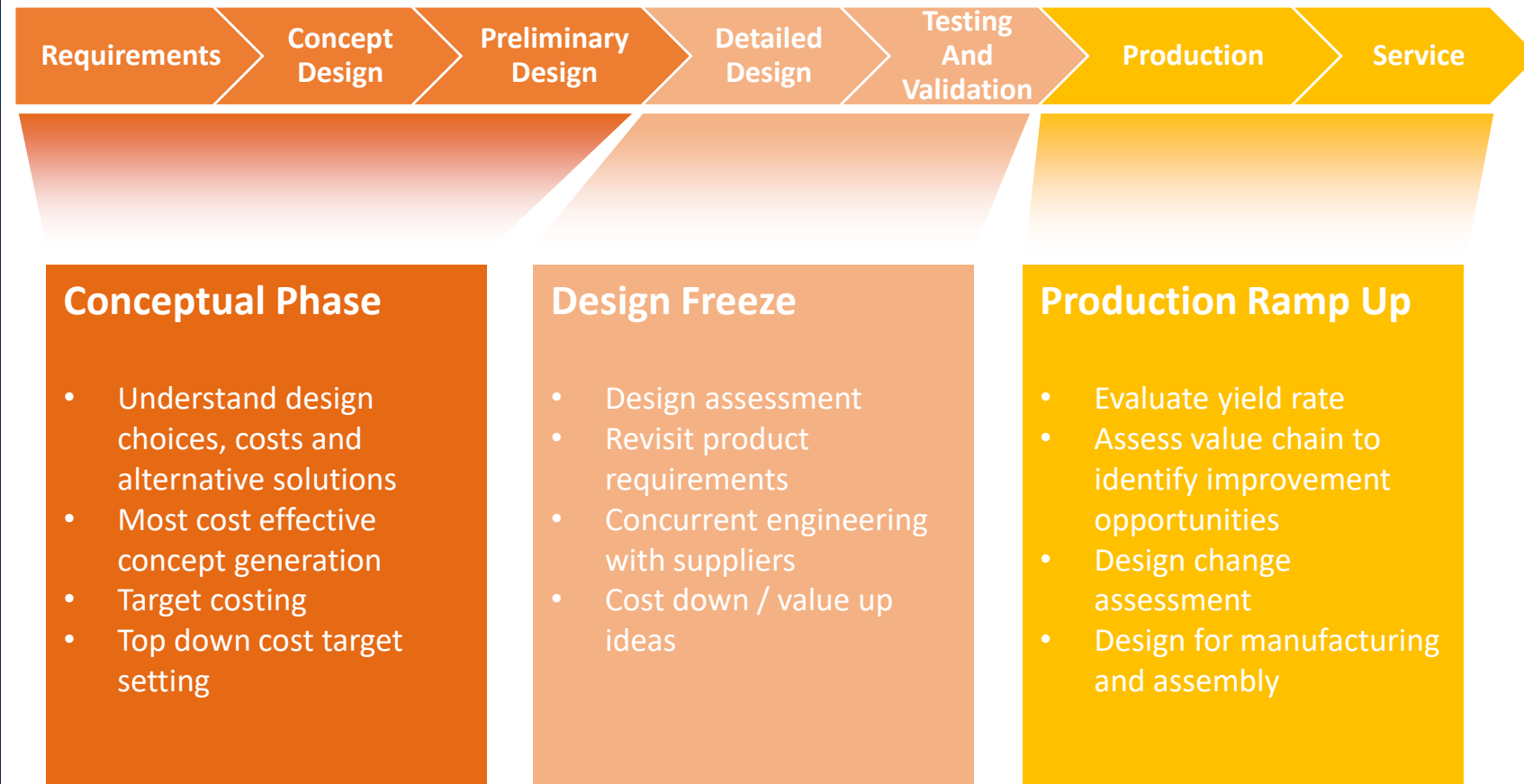
- An imperative investment for growth and industry leadership
- Not just a cost reduction project that cheapens the products or cuts corners
- Without VM & VE, companies run risk of losing market relevance to competition

## Why Engage with a VM & VE Partner

- Fresh perspective to question long-held internal habits and drive innovation
- Working with subject matter experts who can lead cost savings and product optimization in a collaborative effort with low risk
- Eliminate lost productivity by keeping your team focused on primary responsibilities

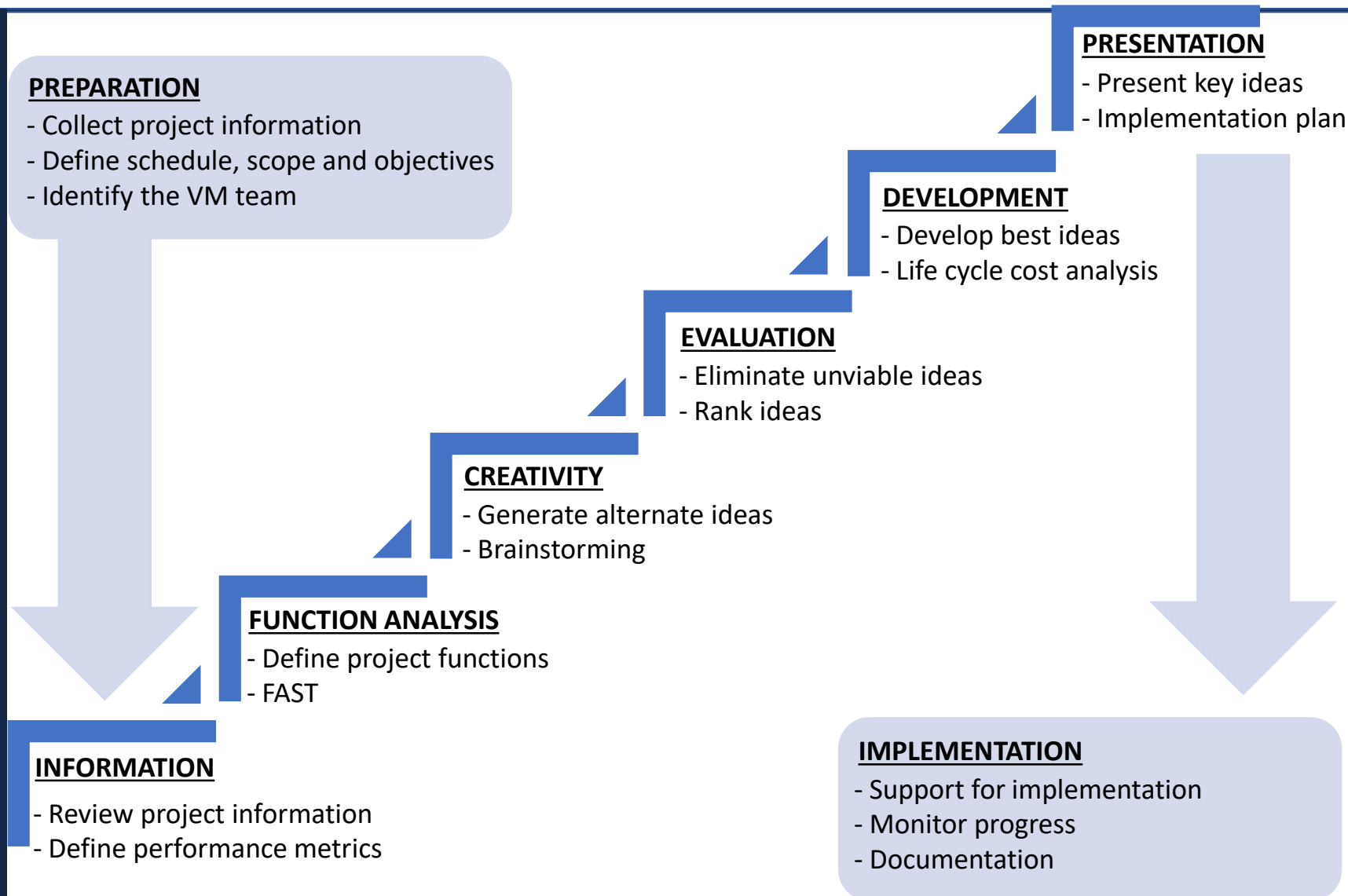
# Value Management & Value Engineering

- Never a bad time to use VM & VE, can be applied at any stage of a project.
- Greater benefits achieved when applied in concept and development phases
- Can be applied more than once during the life of the project
- Even in production phase, VM & VE can be used for enhancement and as a respond to changing customer and economic conditions.
- Can be utilized in manufacturing:
  - To develop new processes
  - To improve quality, efficiency and cost of an existing process.



# Value Management & Value Engineering

- With a well structured methodical approach
- Facilitate the use of team skills and expertise from many disciplines
- Work together with your team
- Utilise the correct tools at the correct time



# Value Management & Value Engineering Examples

## Forging Cost and Lead Time Reduction

**Sector:** Aerospace

**Area:** Supply Chain

**Challenge:** Delays in forging supply and premium payments for transportation to reduce the impact on finish part sales

**Solution:** Problem understanding sessions with the forger and inhouse manufacturing team. Function analysis, generating alternative ideas → changing forging drawing, outsourcing the rough machining to a local low cost vendor.

**Benefit:** Forging lead time reduced by 4 wks (overall lead time reduction is 3wks), forging cost reduced by \$750 (over all cost reduction ~\$600/part), transportation cost reduced.

## Design for Manufacturing

**Sector:** Aerospace

**Area:** Design

**Challenge:** High machining costs due to high variety of tools needed

**Solution:** Problem understanding sessions with the design and manufacturing teams. Function analysis, generating alternative design ideas, concurrent engineering, cost analysis → Utilising common features in part design

**Benefit:** Number of cutting tools reduced, tool change and setup time for machining operations reduced.

## Spare Part Inventory & Cost Reduction

**Sector:** Aerospace

**Area:** After Sales Support

**Challenge:** Increase in spare parts inventory and cost

**Solution:** Problem understanding sessions with the service procurement team, production procurement team, config. team, spare forecast team and design team. Function analysis, identifying secondary functions → no spare need for inseparable 2-dot parts, using the same vendor for spare parts as the production parts

**Benefit:** Sourcing the spare parts from the production suppliers reduced the spare part cost dramatically, new classification for inseparable 2-dot parts eliminated the unrequired spare part orders

# Value Management & Value Engineering Examples

## Transportation Optimization

**Sector:** Aerospace

**Area:** Supply Chain

**Challenge:** Long lead time and high transportation cost of raw materials and consumable from US

**Solution:** Problem understanding sessions with the supply chain team and freight forwarder. Function analysis, location, weigh, frequency of freight analysis, generating alternative ideas, cost analysis → 3 new hubs identified for material consolidation to reduce inland transportation and reduce lead time, eliminating flight transfers and handling of freight

**Benefit:** Annual transportation cost reduction by \$600K, transportation lead time reduction ~ 1 wk.

## Producibility Reviews

**Sector:** Aerospace

**Area:** Design

**Challenge:** Technical drawings hard and costly to manufacture. Design intent not being fully transferred to manufacturing.

**Solution:** Problem understanding sessions with design and manufacturing teams. Function analysis, generating alternative ideas, benchmarking → producibility reviews are introduced. Technical drawings improved with proper datum definitions, achievable tolerances, etc.

**Benefit:** Reduction in manufacturing cost, number of design iterations, and non-conformance management cost.

## Modular Tool Design

**Sector:** Aerospace

**Area:** Manufacturing

**Challenge:** Tooling required to hold 3 different types of turbine blades during laser cladding and adaptive milling operations for repair purposes.

**Solution:** Information is gathered with the help of manufacturing and tool design teams. Function of the tooling at each operation is analysed. Cost analysis, generate alternative ideas → modular, cassette type tooling design to hold all 3 types of blades.

**Benefit:** Tooling cost is reduced by approximately 75%

# Value Management & Value Engineering Examples

## Method of Manufacturing

**Sector:** Aerospace

**Area:** Manufacturing

**Challenge:** Weld failure due to extreme loading under high temperature working conditions

**Solution:** Problem understanding sessions with the design, material and manufacturing teams. Function analysis, design intent challenged, alternative material /manufacturing methods investigated, generating alternative ideas → Part which is originally composed of 9 subparts manufactured as a single part via additive manufacturing.

**Benefit:** Part failure is eliminated, manufacturing time is reduced by approximately %60,

## Forging Cost and Lead Time Reduction

**Sector:** Supply Chain

**Area:** Design

**Challenge:** Bottleneck at supplier, not enough capacity to produce required number of forgings

**Solution:** Problem understanding sessions with the design, material, purchasing and manufacturing teams. Function analysis, material change investigated but alternative material is not weldable → Shim material is added to the joint and crack free welding achieved

**Benefit:** Forging cost reduced by \$580, lead time reduced by 8 weeks

## Coating Operation

**Sector:** Aerospace

**Area:** Manufacturing

**Challenge:** Customer hardness requirement after coating operation is not achievable

**Solution:** Problem understanding sessions with the manufacturing, quality and material testing teams. Function analysis, root cause analysis, selecting the major process parameters, high experiment time and cost → Taguchi method is used instead of classical DOE, which enabled optimal process parameters calculation with only 9 tests.

**Benefit:** Part is manufactured according to customer requirements with zero defect.

**Partner with**



**for functional saving  
without compromising performance**



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