

VALUE MANAGEMENT FUNDAMENTAL THEORY

“KURSUS MODULE 2
JKR MALAYSIA”



VE FACILITATOR

LECTURE CONTENTS

Part 1.1:

- Introduction of Module
- Theory Revision on VM
- Advanced Knowledge of VM

Part 1.2:

- VM Study Facilitation Knowledge

Part 1.3:

- VM & VE Tools & Techniques



LECTURE OBJECTIVES

- To refresh and strengthen fundamental theory of Value, VM and VE
- To enhance competency knowledge and skills of VM Facilitation



VM COURSES (JKR)

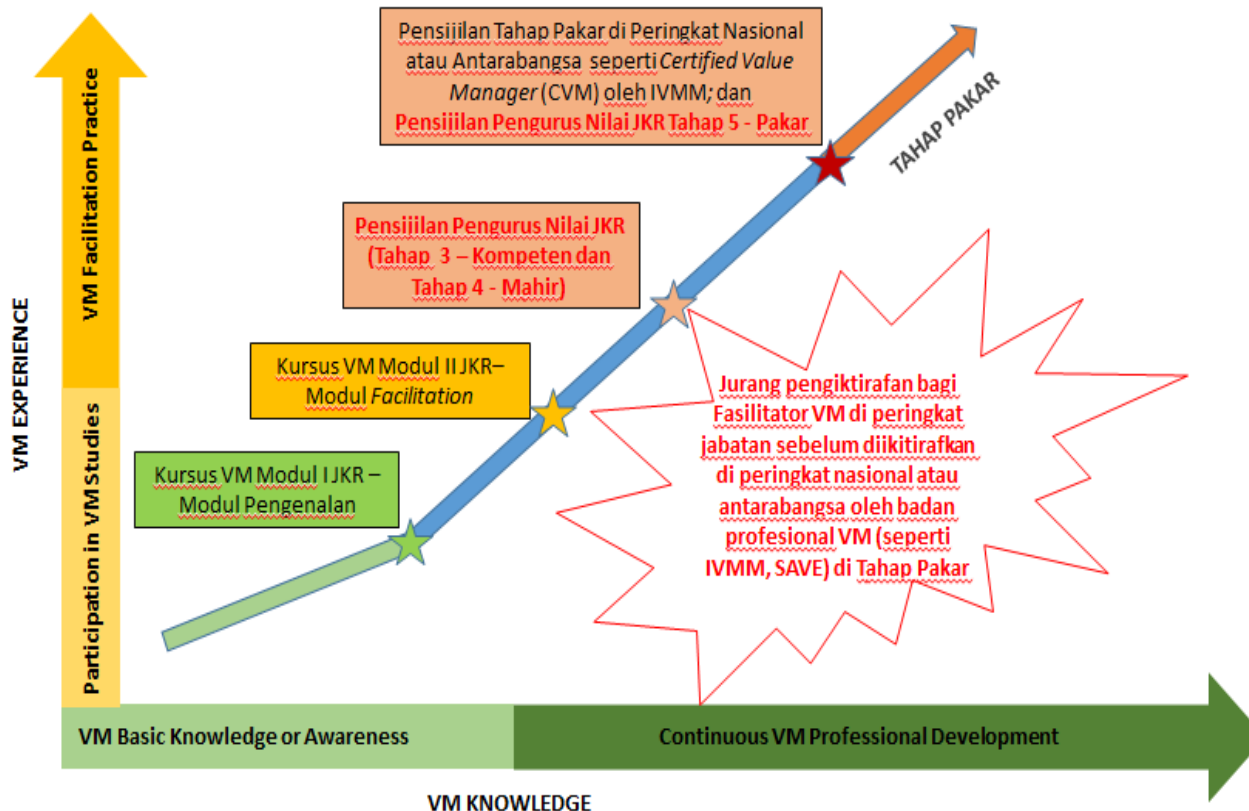
- **Module 1 (Open to all & for JKR Certification)**
 1. Awareness & understanding of VM Principles
 2. Understanding of VM Body of Knowledge
 - a) VM Intervention points in project life cycle
 - b) 3 VM Study Stages
 - c) 6 VM Lab Phases
- **Module 2 (for VM / VE Facilitators & for JKR Certification)**
 1. Advance theoretical understanding
 2. Simulation on VE Lab process & VM tools and techniques
- **Module 3 (for Lead / Group VE Facilitators)**
 1. Management of VE Study Programme
 2. Hands-on of VE tools and techniques
 3. VE Facilitation Skills development

PENSIJILAN PENGURUS NILAI JKR

Syarat Hadir (dan Lulus) Kursus Modul 1 & 2 JKR adalah di antara syarat kelayakan asas bagi aspek pengetahuan dalam Program Pensijilan Pengurus Nilai (*Value Manager*) JKR Malaysia

TAHAP	DEFINISI	GELARAN
3	KOMPETEN (<i>COMPETENT</i>)	QUALIFIED VALUE PRACTITIONER (QVP)
4	MAHIR (<i>PROFICIENT</i>)	REGISTERED VALUE MANAGER (RVM)
5	PAKAR (<i>EXPERT</i>)	CERTIFIED VALUE MANAGER (CVM)

PENSIJILAN PENGURUS NILAI JKR



(Merah) Pengisian Terhadap Jurang Peluang Bagi Pengamal *VM Facilitation* Melalui Pensijilan Pengurus Nilai (*Value Manager*) JKR Malaysia

CVM (IVMM)

Certification Route of Certified Value Manager (CVM IVMM)

VM Module 1 (IVMM Course)



VM Module 2 (IVMM Course)



Membership of IVMM



Minimum 3 years of VM experience (Post Membership) &
comply other certification requirements



Certification of CVM (IVMM)

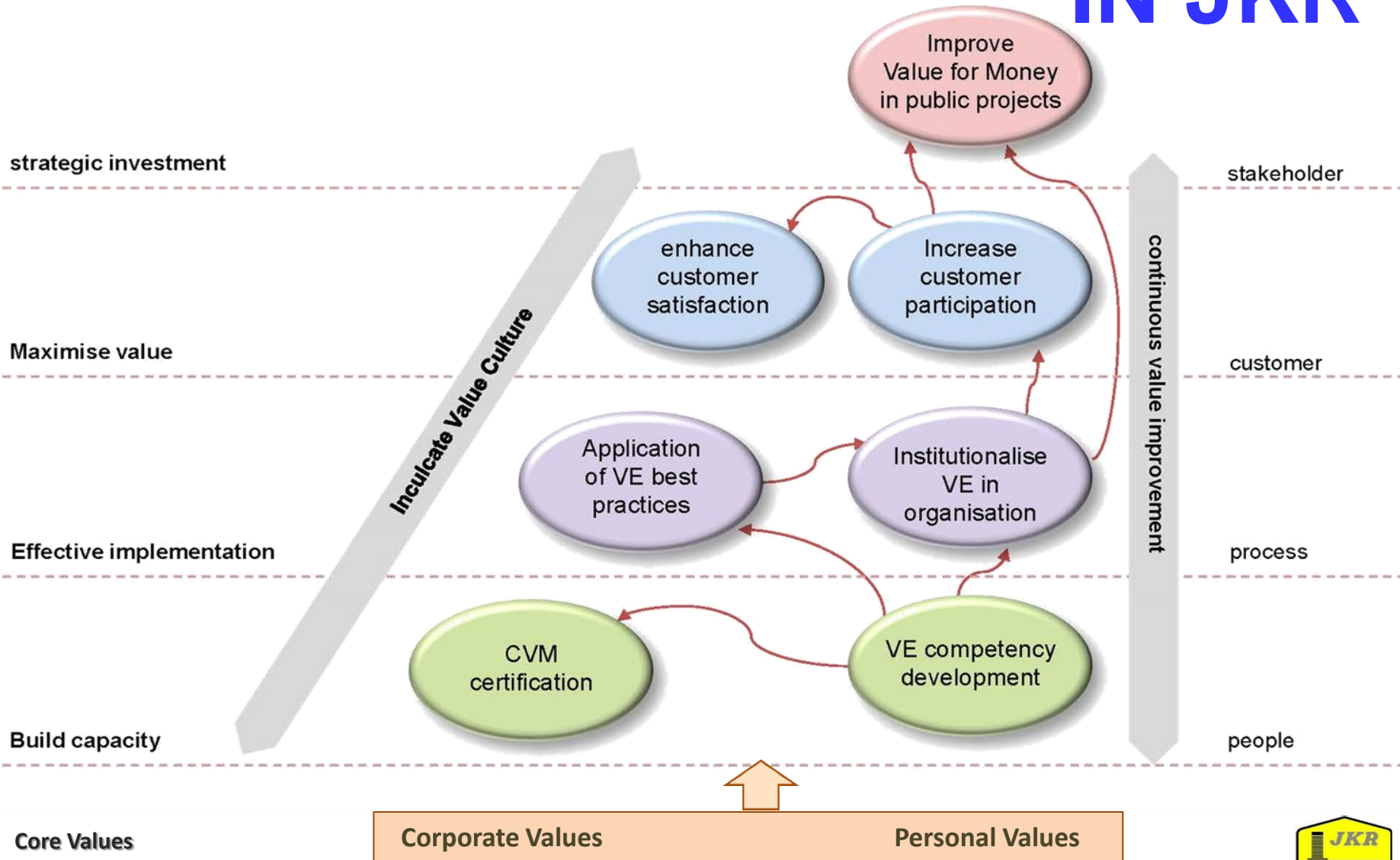
CVM (IVMM)

Requirements of CVM Certification (IVMM)

1. Full Membership of IVMM.
2. **Mandatory lead at least four (4) VM/VE workshops and minimum 120 hours and to submit reports individually.**
3. **Post IVMM Membership of at least 3 years working experience.**
4. Undergone interview session to be conducted by IVMM.
5. Fulfill either 2 of the followings:
 - Present at least 1 paper (VM/VE/LCC) after accredited as a Full Member
 - Publish at least 1 article (VM/VE/LCC) after accredited as a Full Member
 - Teaching a VM subject at higher learning institution for at least 3 years
 - Completed either Master Degree or PhD in VM related subject
 - Fulfil minimum requirement of CPD through attending seminars, trainings or workshops accredited by IVMM or Professional Institutions approved by IVMM of at least 20 hours CPD.

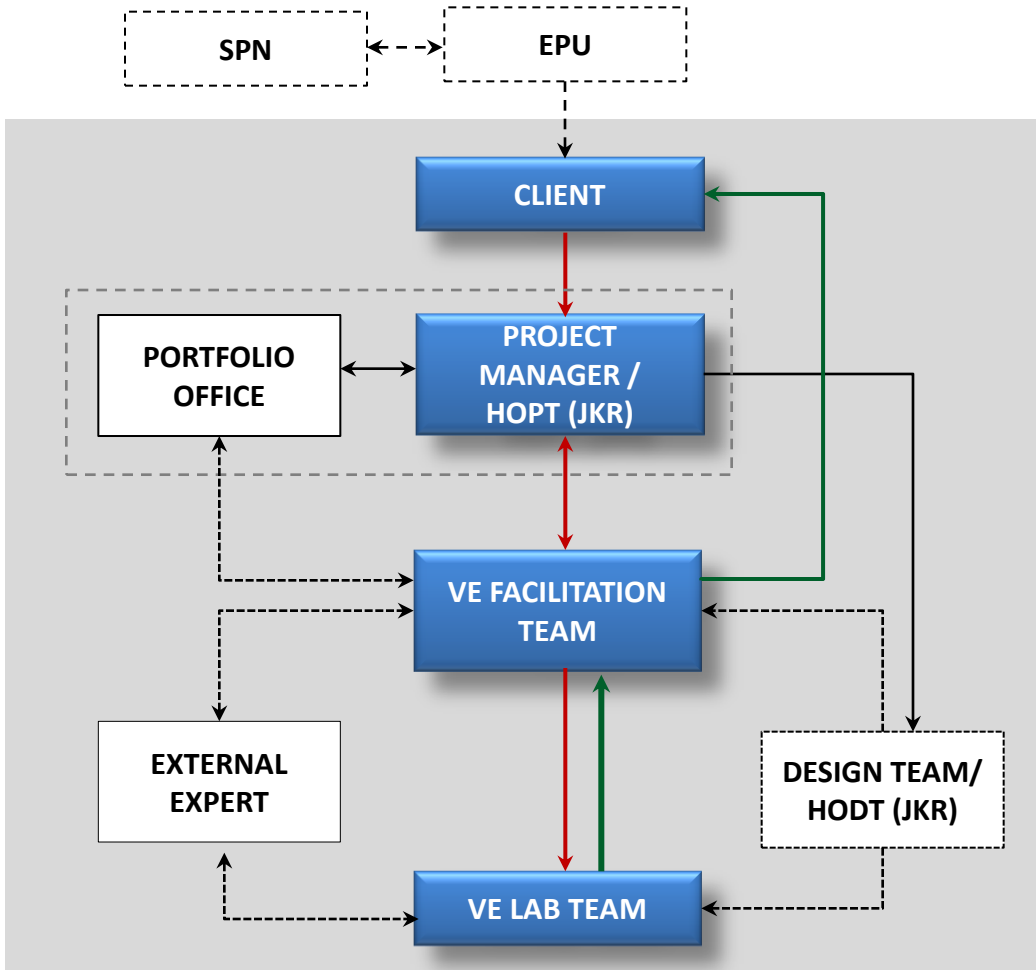


VE FRAMEWORK IN JKR



(Source: VE Application Guidelines in Public Projects, 2014)

VE GOVERNANCE JKR



CLIENT

- Initiate & request for VE
- Submit Agreed VE Report to EPU

PM / HOPT (JKR)

- Manage & Control design to scope & cost of VA
- Assist client in preparing for VE Lab
- Monitor implementation of VE Recommendation

VE FACILITATION TEAM

- Conduct VE Pre Study
- Facilitate VE Lab
- Present/ Submit VE Report
- Conduct Post Lab activities

VE LAB TEAM

- Participate in VE Lab
- Recommend VE Solutions

VE Governance for Public Projects in JKR

(Source: VE Application Guidelines in Public Projects, 2014)



BACK TO BASIC

VM Definition....

Value Concept....

*VM Body of
Knowledge....*



DEFINITIONS OF VM

- Management methodology
- Structured process
- Analysis of functions
- Multidisciplinary team
- Creative & innovative way
- Decision making tool
- Problem solving methodology
- Proactive service

A VM workshop is a
“pressure cooker”
(Kelly, Male & Graham)



DEFINING VALUE

Defining **VALUE** is **difficult** as it is....

- Too **loose** or **broad** usage in various contexts (economics, commerce, mathematics, sociology, customs, ethics, arts etc.)
- **Subjective to the owner** of the perspective (similar to understanding “beauty” from the perspective of “in the eyes of the beholder”)
- **Complex interpretations** that need to consider various perspectives or orientations (e.g. economic values; aesthetic values; use values; social values etc.)
- Consists of “**hard**” (e.g. quality, cost) and “**soft**” (e.g. benefits, satisfaction) **components** (tangible and non-tangible measurement)

VALUE IN CONSTRUCTION

Managing **VALUE** in **construction context** concerns about.....

- Managing its **subjectivity, complexity** and **contending needs** of multiple stakeholders (client, users, designers, managers etc.)
- Optimizing (trading-off) **variables of value**
- Aligning **value objectives (strategic goals)** with the programme / project goals
- Multi **value enhancement focuses** – e.g “Value for Money” (VfM); “Added Value” (on product or process)”; “Lean Construction” (e.g. Six Sigma); “Value Chain Management” (VCM) etc.

VALUE CONCEPT (i)

SAVE International (USA):

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

Where;

Function = Customer's performance requirements;

Resources = Labour, Cost, Time etc.

Or; as a fair return or equivalent in goods or services or money for something exchanged

VALUE CONCEPT (ii)

BS EN 12973:2000 (UK/Europe):

Value =

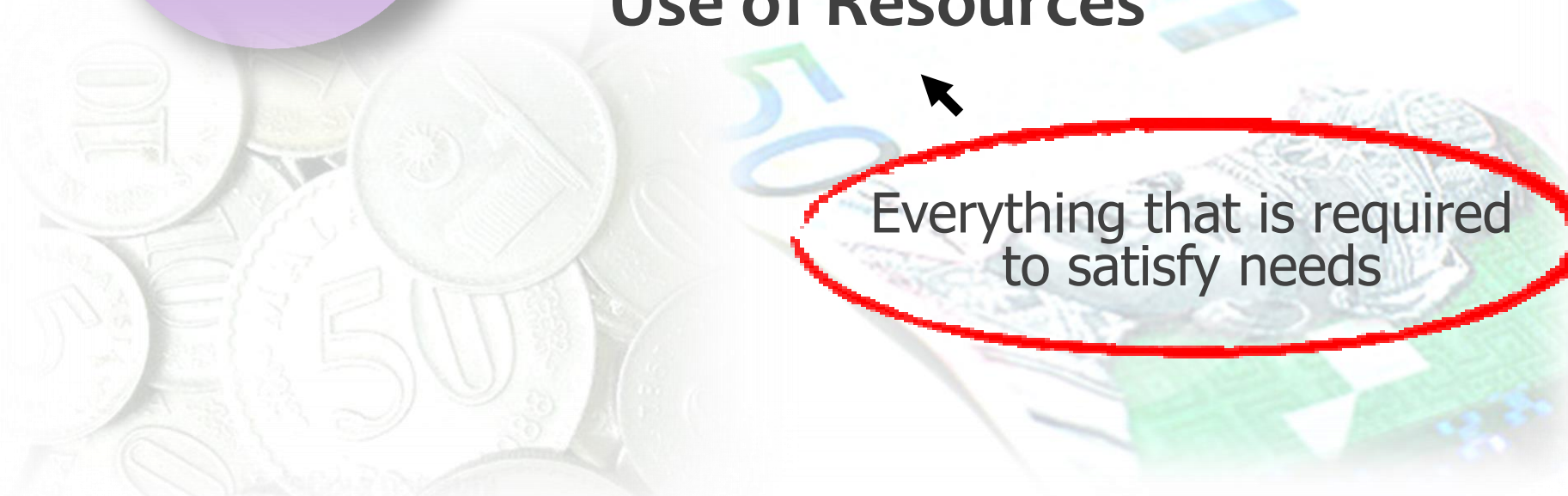
Satisfaction of Needs

Use of Resources

What is necessary for
a desired user



Everything that is required
to satisfy needs



VALUE CONCEPT (iii)



VALUE = $\frac{\text{Function (F)} + \text{Quality (Q)}}{\text{Cost (C)}}$

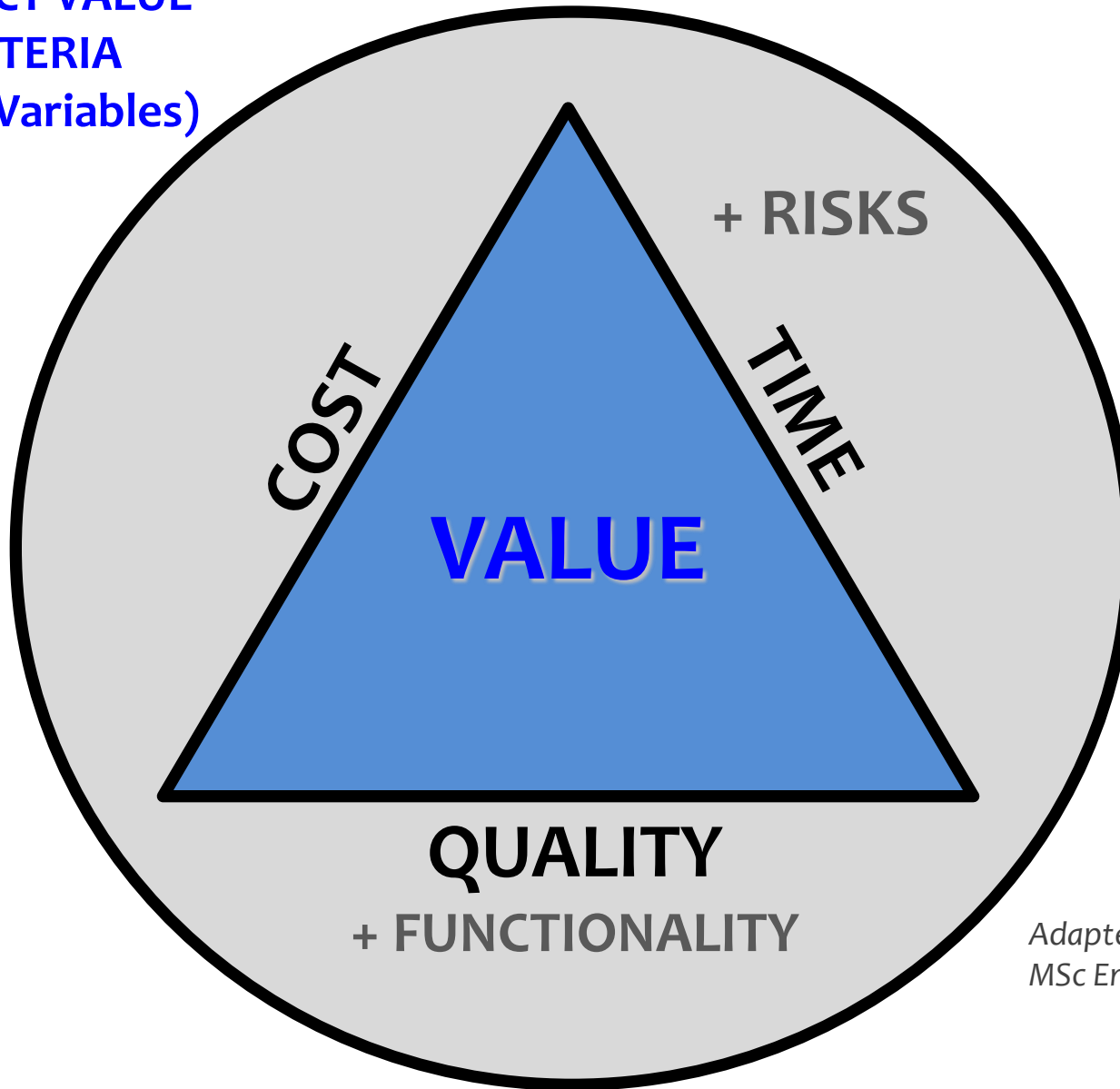
Function = The specific work that a design or item must perform

Quality = The owner's or user's needs, desires and expectations

Cost = The life cycle cost of the product or project

VALUE CONCEPT (iv)


PROJECT VALUE
CRITERIA
(Value Variables)



*Adapted from: Prof. S. Male,
MSc Eng ICME Lecture (2009)*

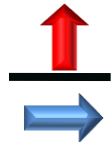
Optimizing Value Variables

Value Concept by Dell 'Isola (1982)


$$\text{VALUE} = \frac{\text{Function (F)} + \text{Quality (Q)}}{\text{Cost (C)}}$$



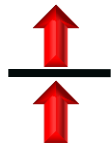
i) Reducing **cost** but maintaining the **function and quality**



ii) Increasing either the **function or quality or both** but maintaining the **cost**



(iii) Reducing the **cost** and at the same time increasing the **function and quality**



(iv) Increasing the **cost** but at the same time improving **function and quality** at a higher proportion

Optimizing (Trading-Offs) Value Variables



VALUE ENHANCEMENT

VALUE ENHANCEMENT APPROACHES:

1. Cost Reduction Approach



Reducing cost but maintaining the function and quality



POTENTIAL IMPROVEMENTS

- Sharing spaces / facilities
- Centralised functions
- Opt for cheaper solutions with same function and quality

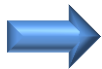
POTENTIAL OUTCOMES

- Optimized solution / design
- Elimination of redundancies
- Unnecessary cost avoidance
- Cost optimization

2. Function Increase Approach



Increasing either the function or quality or both but maintaining the cost



- Add or improve functionality and/or quality within cost
- Opt for better characteristic or technology, yet within cost

- Improved functionality
- Improved quality / characteristic / technology
- No cost implication

3. Compound Approach



Reducing the cost and at the same time increasing the function and quality



- Eliminate unnecessary functions / facilities
- Eliminate unnecessary quality criteria or technology
- Refine functional and/or quality solutions at lower cost

- Unnecessary cost avoidance
- Project cost optimization
- Improved functionality
- Improved quality / characteristic / technology
- Cost optimization

4. Expand Growth Approach



Increasing the cost but at the same time improving function and quality at a higher proportion



- Increase sustainable solutions in design
- Increase operations ability
- Improve maintenance ability
- Improve constructability
- Opt for better technology

- Improved sustainability
- Improved operations / maintainability
- Improved constructability / technology
- Cost optimization



PHILOSOPHY OF VM



MAXIMIZING PROJECT VALUE

Optimize value variables (time, cost, quality, function, risk) and align with strategic objectives through out the project life cycle in achieving best Value For Money.



NOT COST CUTTING

Cost cutting is making adjustments to scope, quantities, specifications etc., in order to bring a project or element within a predetermined cost limit.

VM BODY OF KNOWLEDGE

1 VM Interventions or VM Study Opportunities

2 VM Study Process or VM Job Plan

3 VM Workshop or VM Lab Process

1

GENERIC VM INTERVENTIONS

Strategic Brief	Project Brief	Concept Design	Detail Design	Tender	Construction	Use Stage
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VMS

VA

VE

VE on
Concept Design

VE

VE on
Detail Design

VECP*

Value Engineering Change Proposal or
VECP (by contractor)
* Contract clause to allow VECP is NOT
yet provided in JKR.

VR

*Note: Mainly illustrated from Panduan Pelaksanaan Pengurusan Nilai (EPU, 2011);
and based on JKR practice in conventional procured projects.*

VA STUDY AT STRATEGIC ASSESSMENT

VA

“Get the right project”

- Why invest?

- To establish / validate business case
- To strategize asset creation
- To define project scope
- To cap project budget allocation
- To determine expected benefits or projects outcomes
- To establish project objectives
- To determine client's value criteria / value objectives
- To determine required project functions and deliverables
- To strategize project implementation
(Timelines; Procurement; Risks etc)

VE STUDY AT DESIGN STAGE



VE

“Get the project right”

- How to invest in the right technical solution?

- To verify project objectives
- To establish / verify required functions and deliverables
- To optimize design to meet functional requirements
- To optimize project cost within the capped budget
- To establish / verify client’s value criteria / value objectives
- To establish design quality criteria
- To improve design quality criteria
- To improve quality and efficiency of project performance
- To improve project implementation plan
(Timelines; Procurement; Risks etc)

1

VECP STUDY AT CONSTRUCTION STAGE

VECP

“Further improve the project”

- How builder can further improve the technical solution?

(Effective with a Provision of Incentive Based Program to contractor)

To further improve :

- To improve design efficiency & build ability
- To enhance cost effectiveness (cost saving with incentive)
- To further improve quality
- To further improve construction time
- To further improve functionality, operational & performance
- To introduce innovations

VR STUDY AT USE STAGE

A teal oval containing the white text "VR".

VR

“Assess the outcomes”

- Outcomes realization?
- Lessons learned?

- To measure achievement of project objectives
- To review fulfilment of functions and deliverables
- To measure realization of project benefits or outcomes
- To review / improve quality and operational performance
- To strategize continuous improvement of facility
- To identify and escalate lessons learned future projects

VM STUDY CHARACTERISTICS

CHARACTERISTIC

VA STUDY

VE STUDY

MAIN STUDY OBJECTIVES

- Establish project scope
- Cap cost budget

- Optimize design to function
- Optimize cost within budget

LEVELS OF STUDY

- Project Concept
- Key Spaces / Key Elements & Systems

- Spaces / Flow / Adjacency
- Elements & Systems
- Components & Equipment

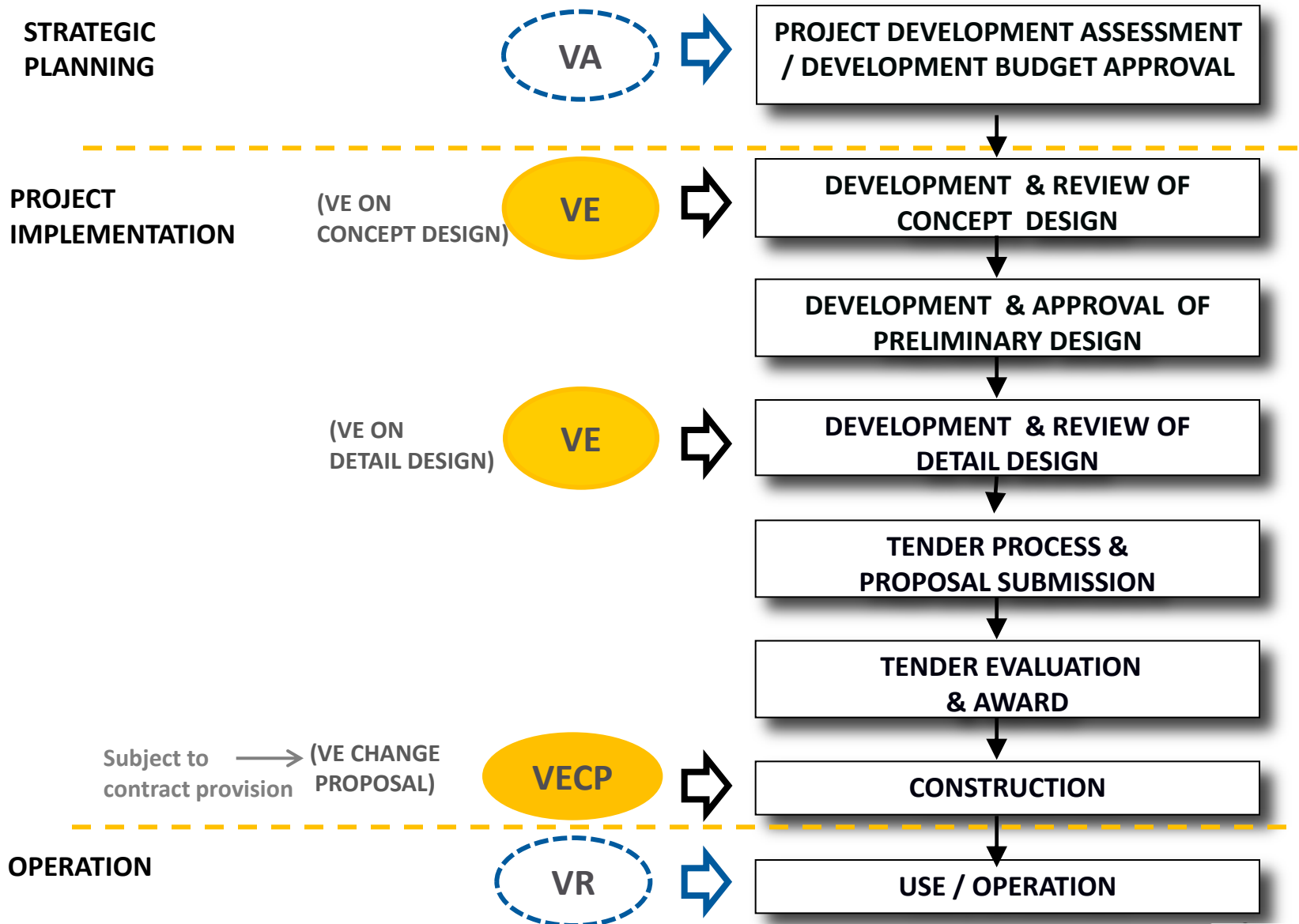
BASIC INPUTS FOR STUDY

- Strategic Brief / Initial Project Brief
- SOA (Building Project)
- Design concept
- Initial costing

- VA findings (scope & cost)
- Detail Project Brief
- SOA (Building Project)
- Concept / Detail Design
- List of equipment
- Initial BQ or full BQ
- Project Cost (as designed)

1

VM INTERVENTIONS IN CONVENTIONAL PROJECTS



1

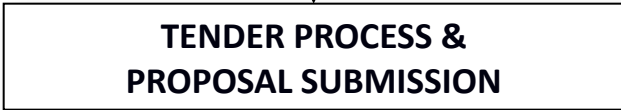
VM INTERVENTIONS IN D&B/ PPP/ PFI

STRATEGIC
PLANNING



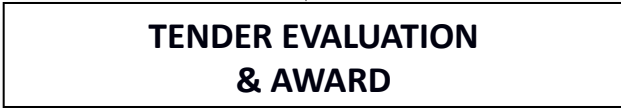
PROJECT
IMPLEMENTATION

(VE ON R.F.P./
NEEDS STATEMENT)



Subject to
procurement
procedure &
tender provision

(VE ON TENDER
EVALUATION)



Subject to
contract provision

(VE CHANGE
PROPOSAL)



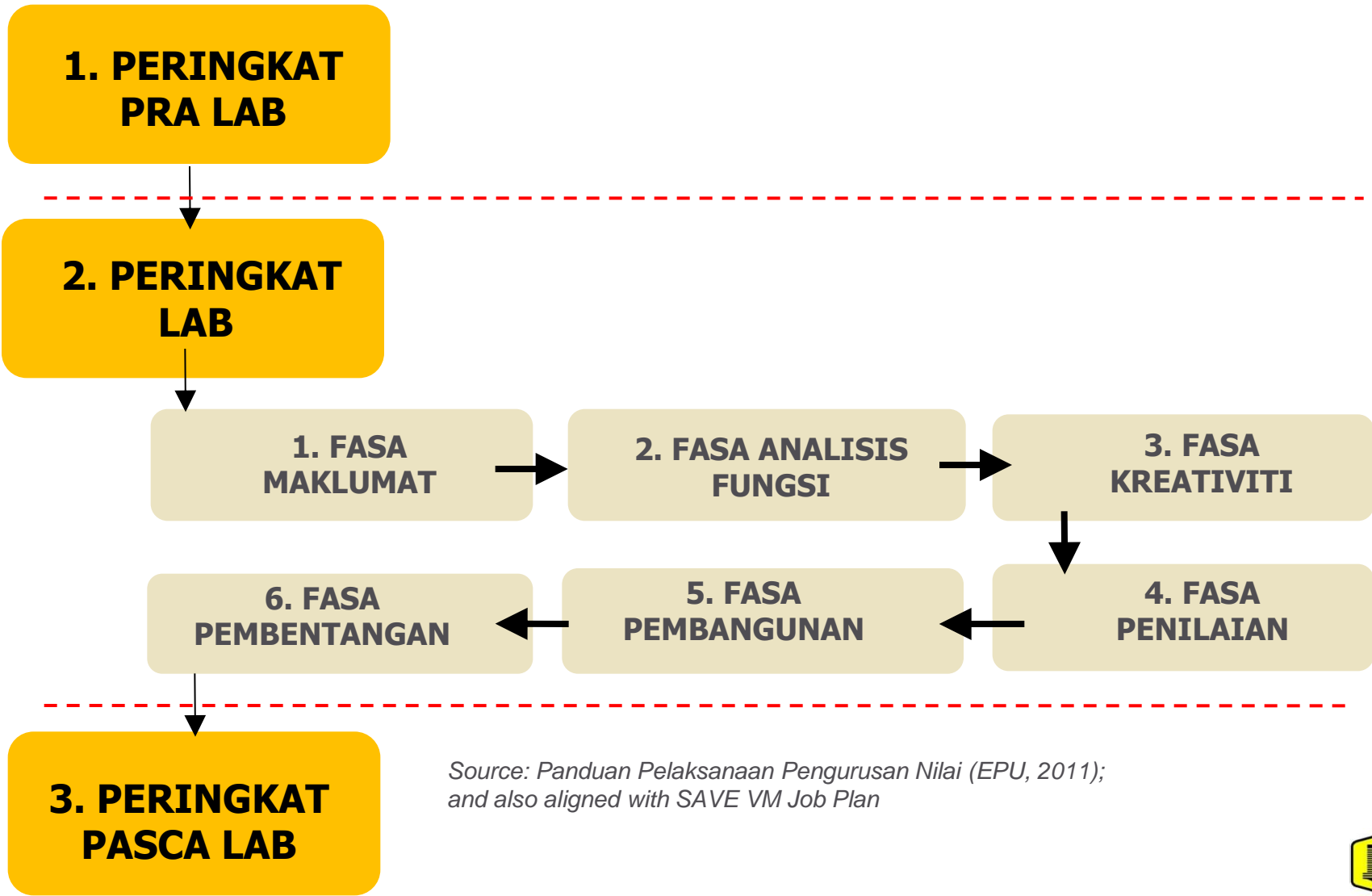
OPERATION



2

3

VM STUDY PROCESS (EPU)



Source: Panduan Pelaksanaan Pengurusan Nilai (EPU, 2011); and also aligned with SAVE VM Job Plan

2

3

VE STUDY PROCESS

STAGE 1 – PRE LAB

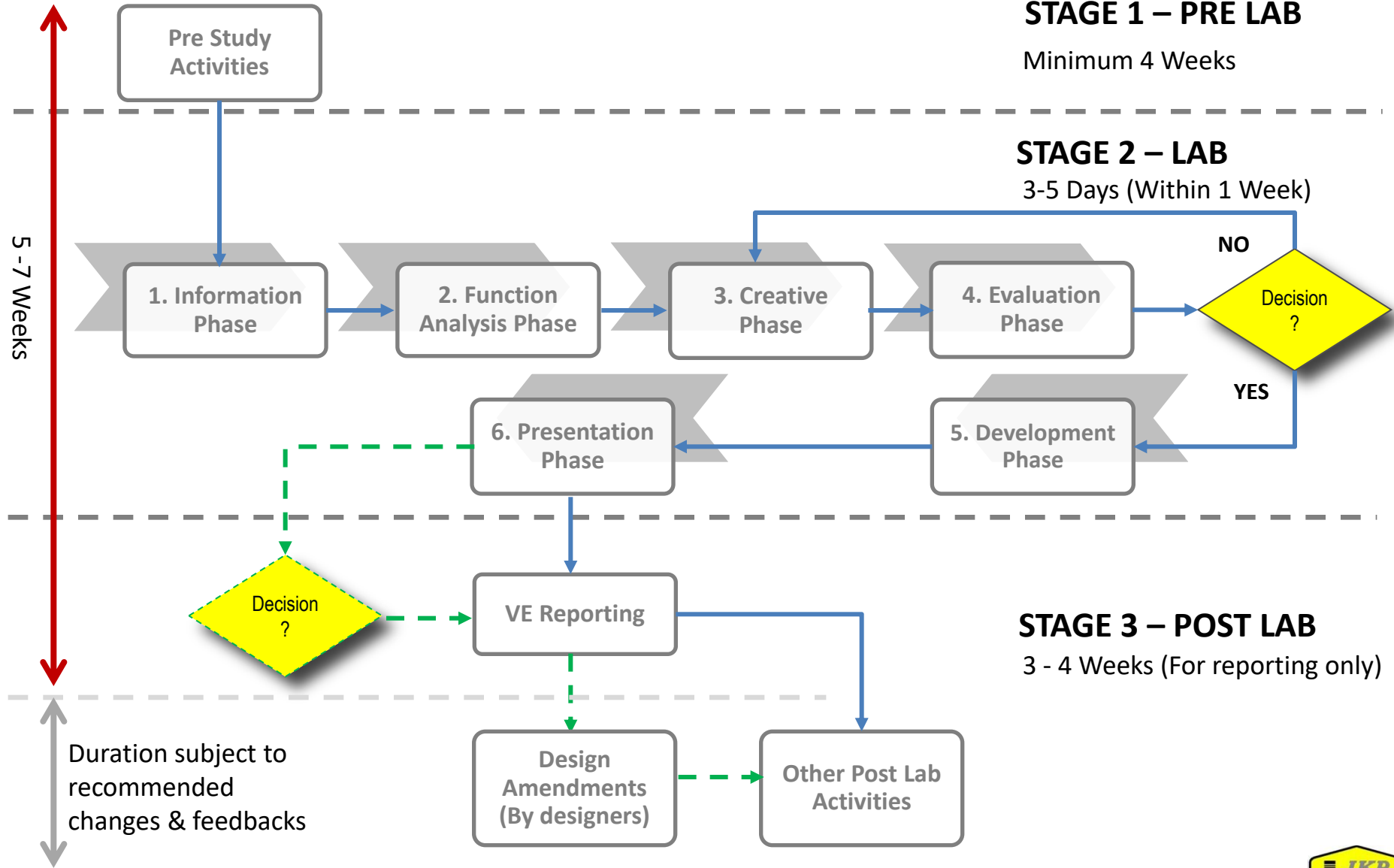
Minimum 4 Weeks

STAGE 2 – LAB

3-5 Days (Within 1 Week)

STAGE 3 – POST LAB

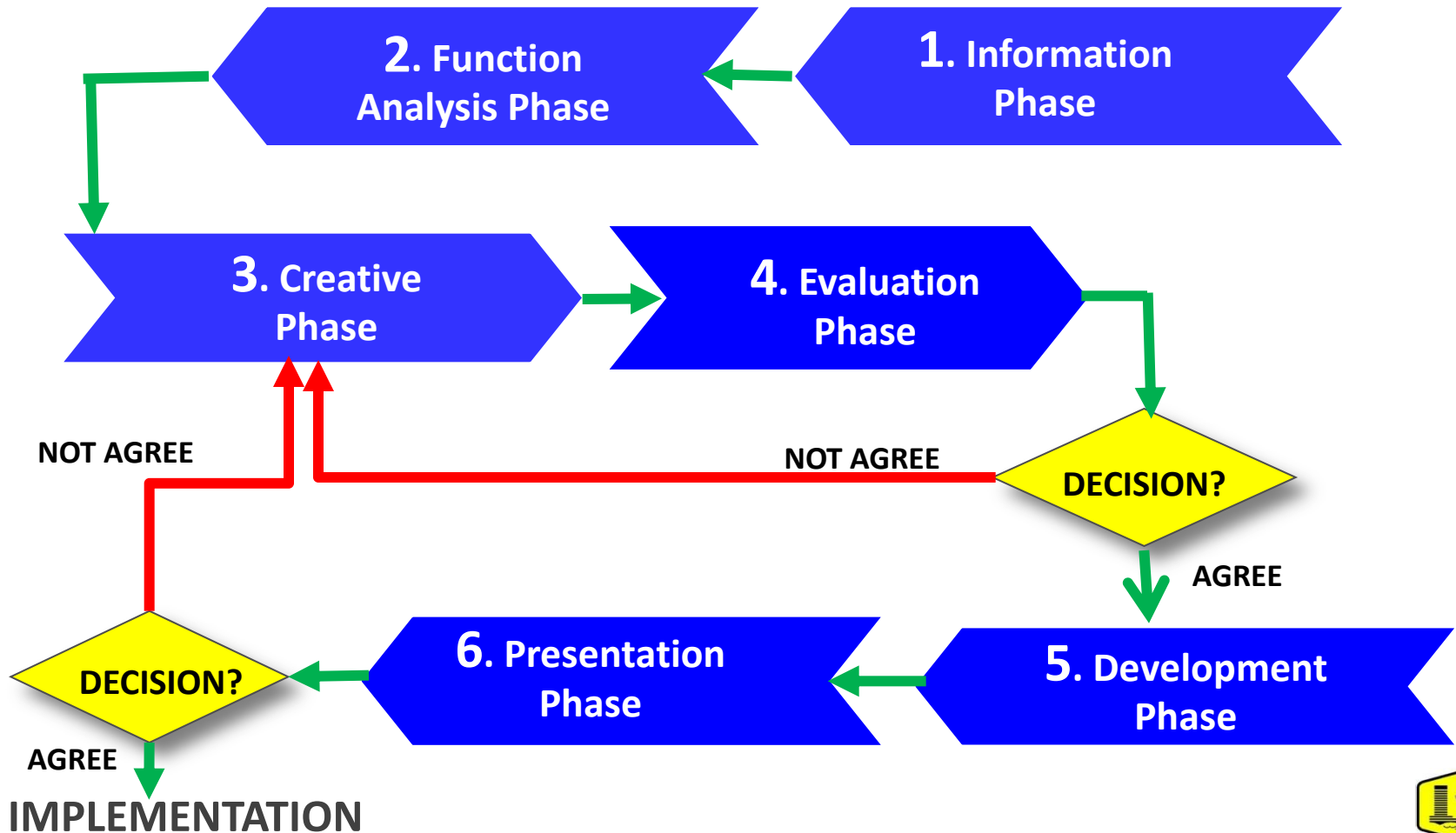
3 - 4 Weeks (For reporting only)



--- Activities by others

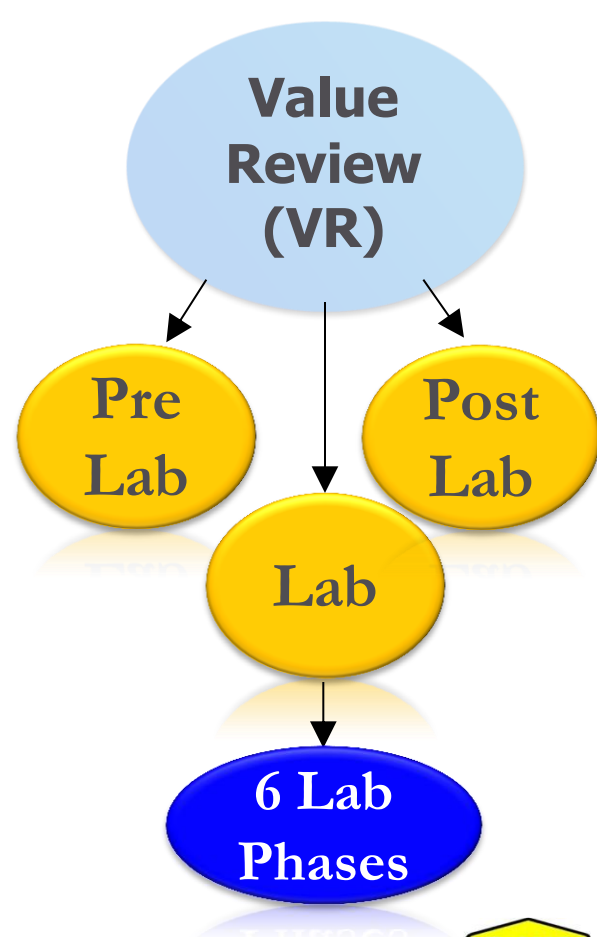
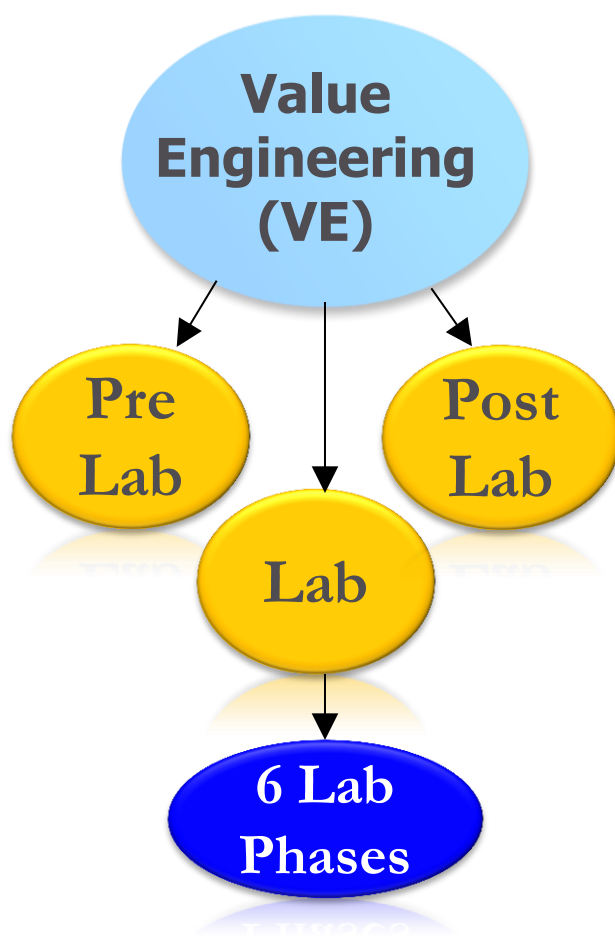
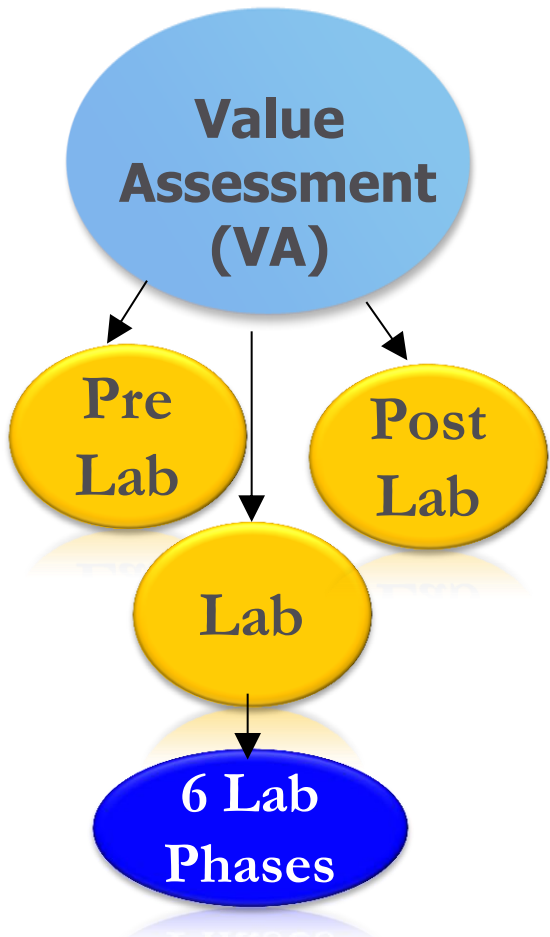
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VM / VE LAB (WORKSHOP) PROCESS



1 2 3

VM APPLICATION STRUCTURE





BIG PICTURE OF VM

*Seeing the 'Big
Picture'...*

VM Advantages...

*Ways Forward
of VM...*

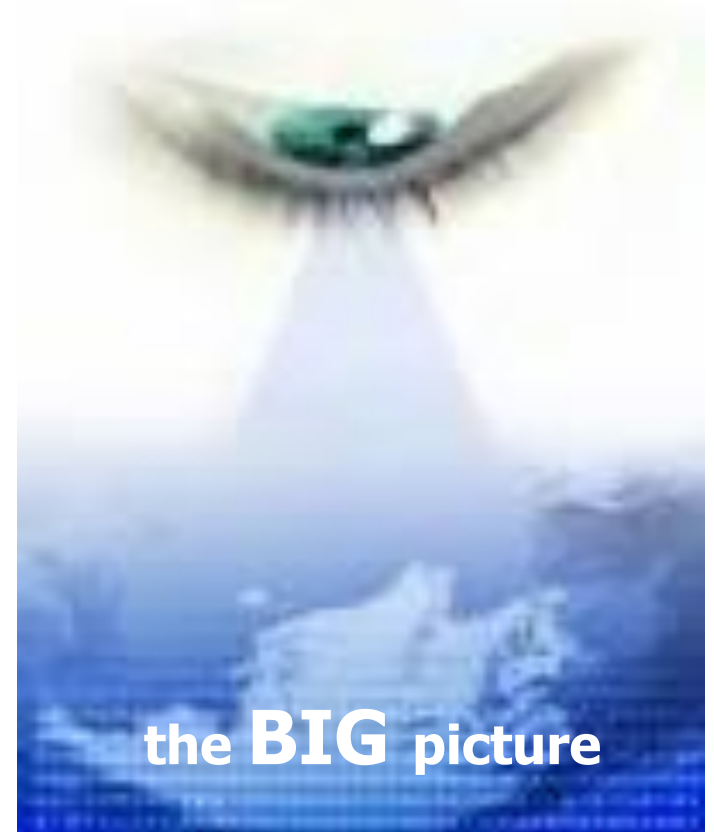


PROJECT MANAGEMENT EXCELLENCE

SEEING THE BIG PICTURE

VM leads to problems solving through seeing the 'Big Picture'.

- The 'Big Picture' - A "bird's eye view" to see an **overall scenario**.
- Clear **strategic direction** and how to achieve them.
- Not to be assumed and to be made known to all **interlinks units**.
- **Opens** to more linkages and brings more ideas, options and solutions.
- Options and actions are to be **aligned and congruent** with the 'Big Picture'.



PROJECT VALUE CHAIN

STRATEGIC PHASE

TACTICAL PHASE

OPERATIONAL PHASE

PROJECT VALUE CHAIN

Corporate value

Business value

Feasibility value

Design value

Construction value

Commission value

Operational value

VALUE CRITERIA AS
"CLIENT VALUE SYSTEM"

VALUE CRITERIA WEAVES THROUGH
"MULTI VALUE SYSTEM"

- Client's value
- Users' value
- Customers' value
- Stakeholders' value (Internal & External)
- Authorities' value
- Financier's value

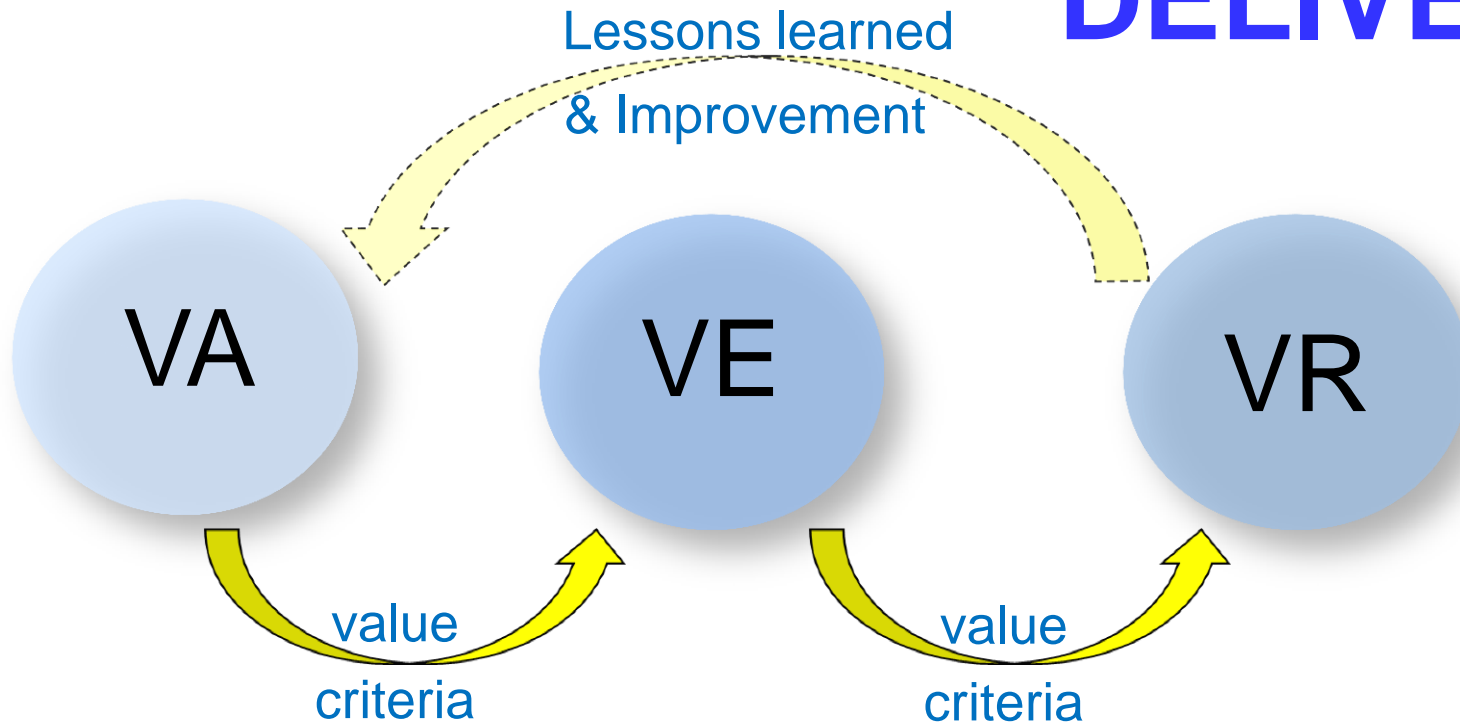
- Client's value
- Designers' value
- Authorities' value
- Project Manager's value
- Contractor's value
- Specialists' value
- Suppliers' value

- Client's value
- Users' value
- Customers' value
- Concessionaire's value
- Authorities' value
- Financier's value

Adapted from: Kelly, Male & Graham (2004)



MAXIMIZING VALUE DELIVERY



- Set clear value criteria
- Ensure value transition
- Ensure value continuity
- Ensure value consistency
- Manage strategic risks

- Ensure value transition
- Ensure value continuity
- Ensure value consistency
- Manage project risks

- Ensure value transition
- Ensure value continuity
- Ensure value consistency
- Review value realization
- Learn the lessons & improve

SYSTEM THINKING

VM promotes 'Systems Thinking':

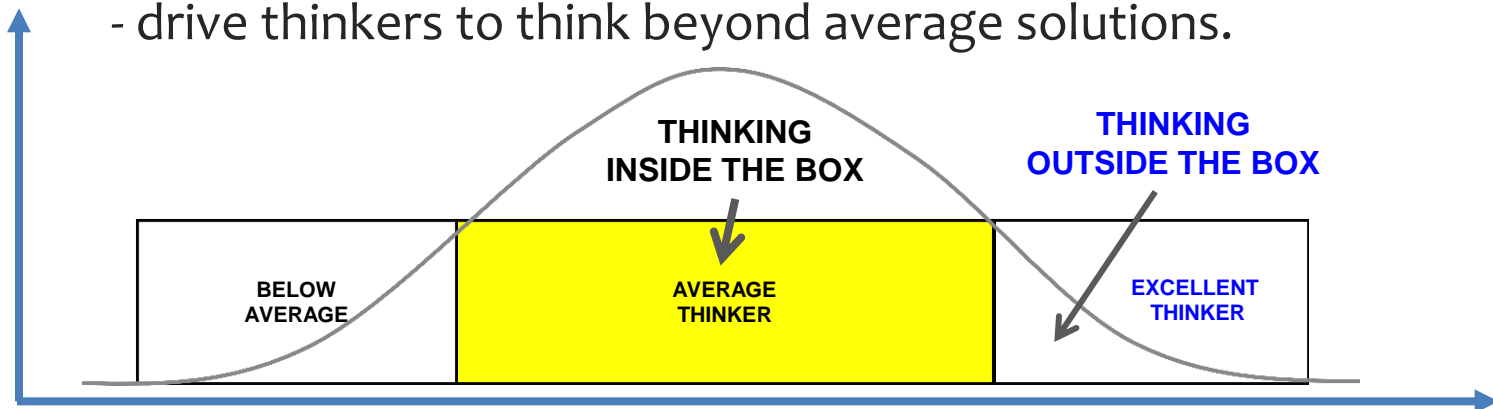
- Takes a holistic view of a project and understand how relates to a larger organizational environment (outcomes based)
- Views things as systems which are interacting, interrelated or interdependent components within an environment to fulfill some purposes (e.g. Whole Life Cycle)
- Effectively deals with complexity and dynamic changes.
- Analytical and problem-solving approach.



CREATIVE THINKING

VM generates creative & innovative thinking:

- Creates a “permissive thinking environment”.
 - sharing information; inviting, accepting & acknowledge ideas.
- Promotes ideas generation.
 - go for quantity first, judge later; hitch hike existing ideas!
- Boosts to challenge the status quo.
 - explore different ways of doing things!
- Triggers creative, innovative & “outside the box” thinking.
 - drive thinkers to think beyond average solutions.





VALUE DELIVERY HAZARDS

- The maximized wish-list syndrome
- “*Asset creation is the solution*” thinking
- Non reconciled contending needs & wants
- Hidden agendas of strategic objectives
- Unidentified & non transmitted value criteria
- Non function-based orientation
- Less emphasis on LCC based investment decision
- Less knowledgeable client (poor understanding on value)
- Change occurs in the client organization / stakeholders



VALUE PROBLEMS AT DESIGN STAGE

- Inadequate project definition
- Less emphasis on value objectives (value criteria)
- Non rigorous functional analysis
- Insufficient end use analysis
- Embedded unnecessary costs
- Inadequate exploration of issues and constraints
- Less effort in seeking alternatives
- Lack of consideration of LCC

Source: R. Ab Ghani, Z.A. Ghazali, ICVEM HK (2012)



VE BENEFITS AT DESIGN STAGE

- Achieves clarity of project needs & requirements
- Governs strategic focus on project objectives & priorities
- Emphasizes on value objectives (client's value system)
- Identifies & eliminates unnecessary costs
- Focuses on functions and fitness for purpose
- Enhances on operational process and end user satisfaction
- Improves communication and decision making process
- Promotes team dynamics, creativity and innovation
- Deals with LCC, not just initial capital
- Performs robust review on entire project and constraint exploration

Source: R. Ab Ghani, Z.A. Ghazali, ICVEM HK (2012)

CONVENTIONAL WAY VS VM

CONVENTIONAL WAY

- No emphasis on aligning to the client's value criteria
- Silos - independent reviews
- Less client involvement
- Less functions driven
- Options are not exhaustively challenged
- Seldom consider LCC in decision
- Re-active solutions to problems
- Less effective communication

VM APPROACH

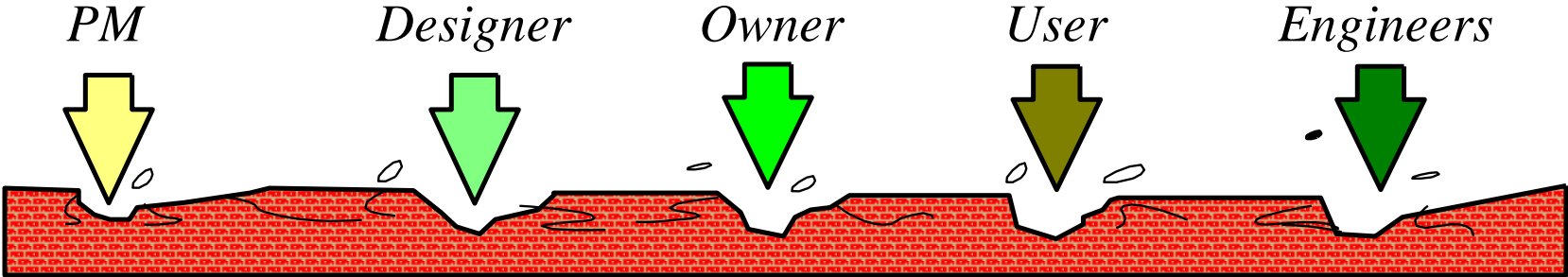
- Align to the pre determined client's value criteria
- Workshop orientated review
- Client's direct involvement
- Functions driven
- Exhaustive and robust challenge on options
- Consider LCC implications
- Pro-active and creative solutions
- Effective communication

More systematic,
disciplined
and far reaching

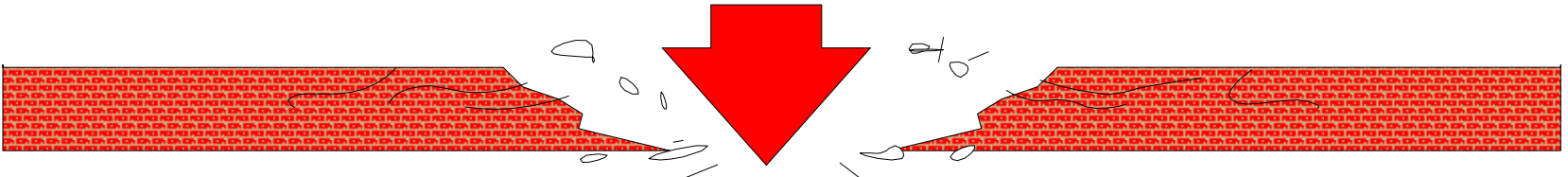


VM TEAMWORK APPROACH

INDIVIDUAL EFFORTS



VM TEAM EFFORT

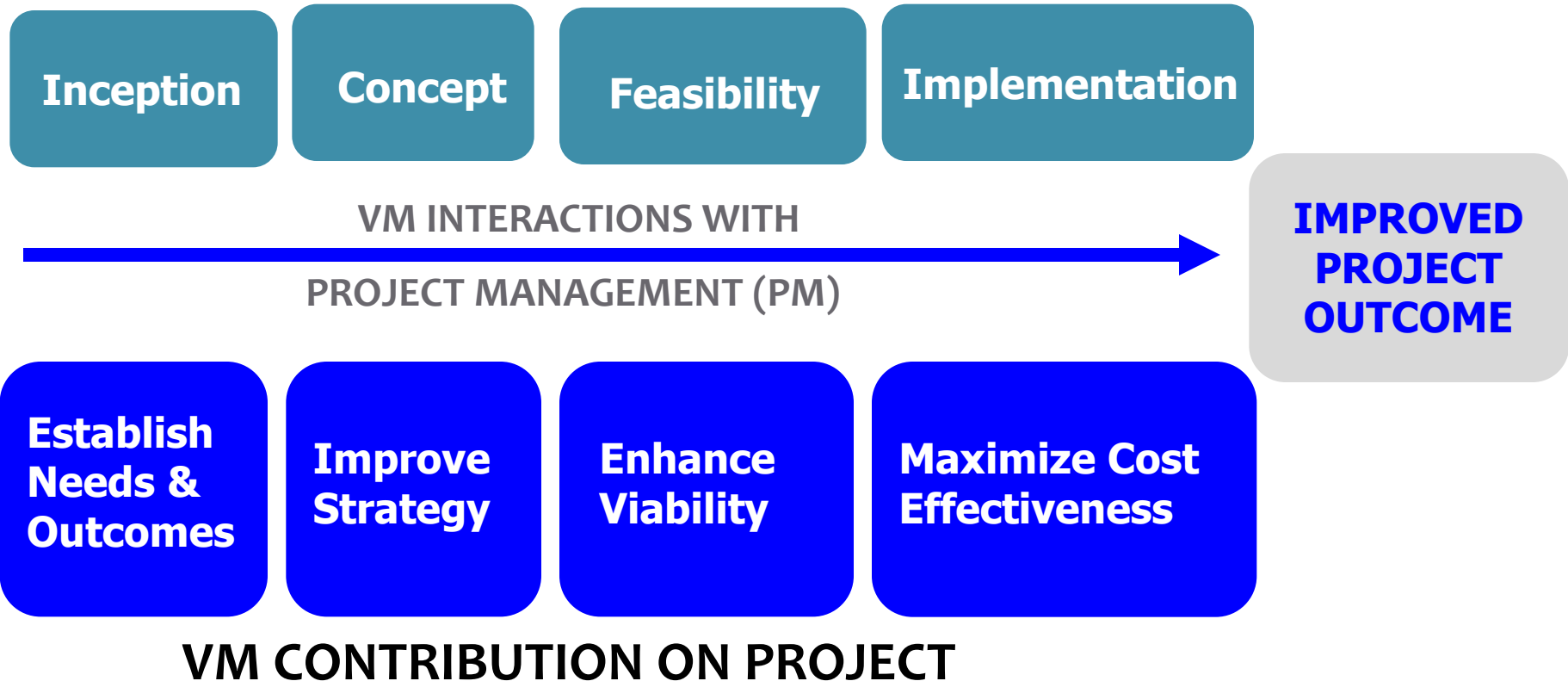


SOLUTION

Source: Abdulaziz S. Al-Yousefi (2008)

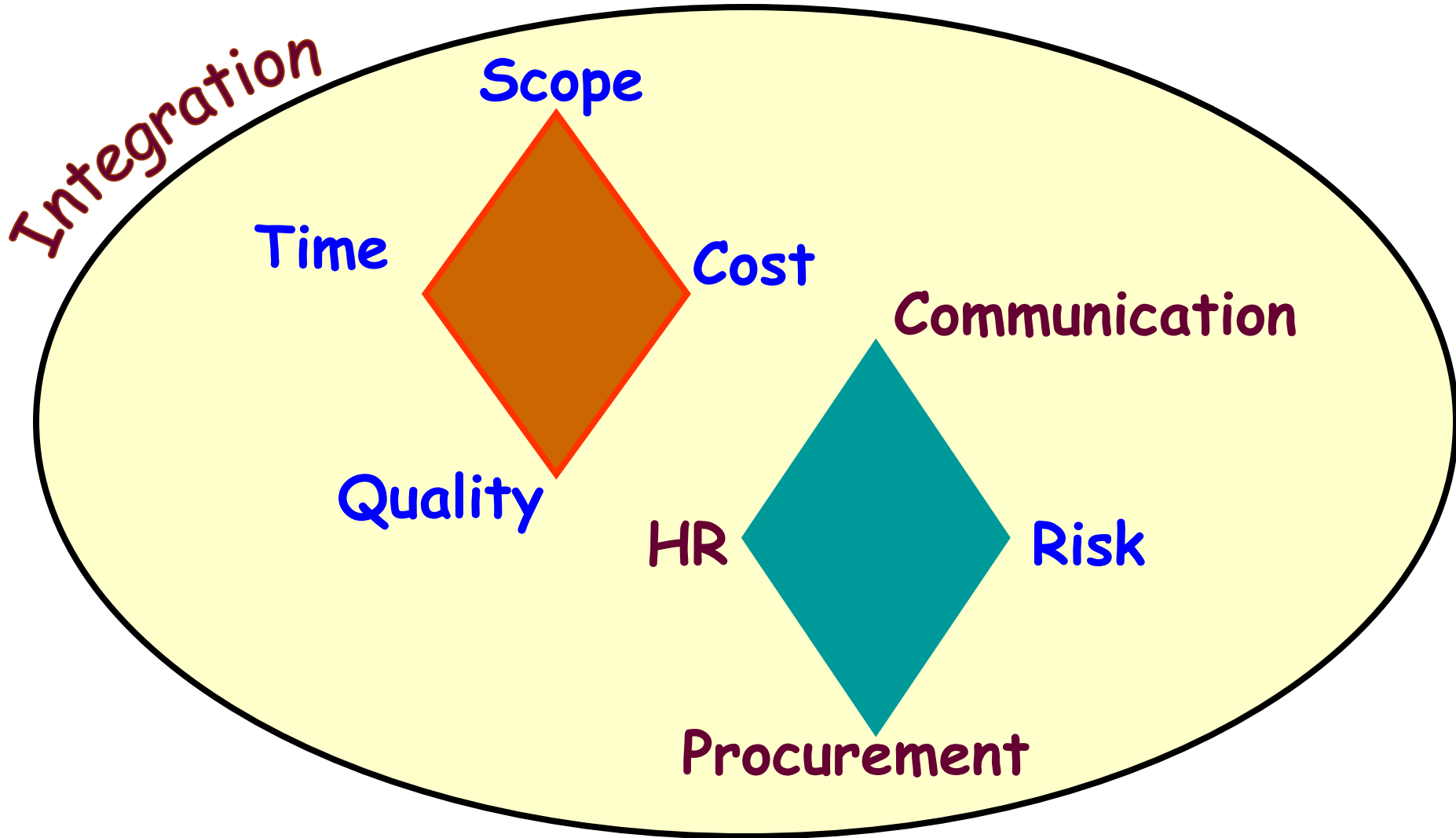
VM CONTRIBUTION TO PROJECT MNMT

BROAD PROJECT STAGES

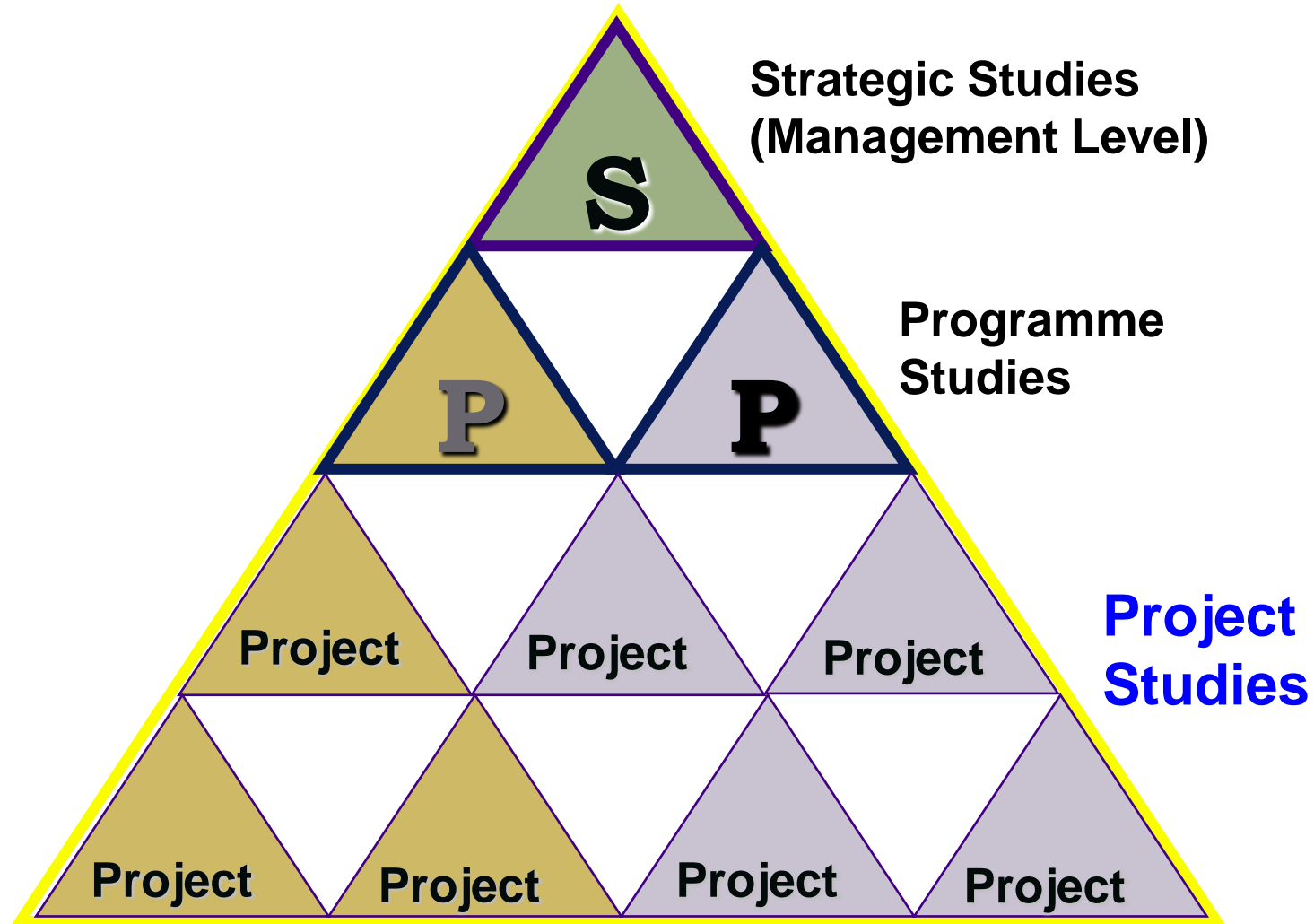


Source: S. Male, IVMM Seminar (2011)

PM KNOWLEDGE AREAS



VM Implementation Levels

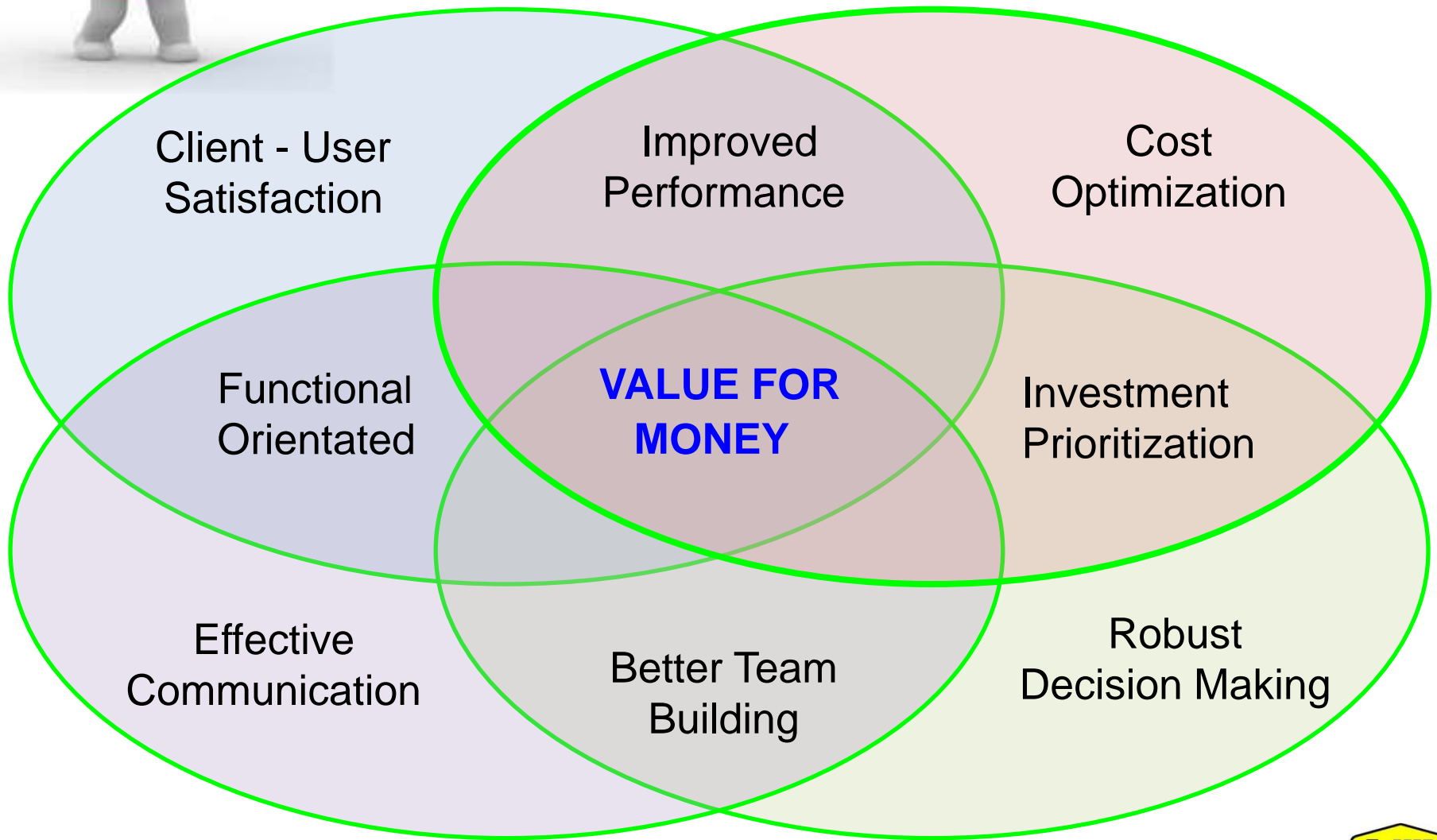


VM Impacts to Construction Projects

- **Costly projects** – 5% or higher cost savings from estimated cost
- **Complex projects** – a platform to get expert second opinions
- **Repetitive costs** – very cost effective in reducing cost in other similar projects
- **Restricted budgets** – to optimize cost for maximizing value



VM OUTCOMES





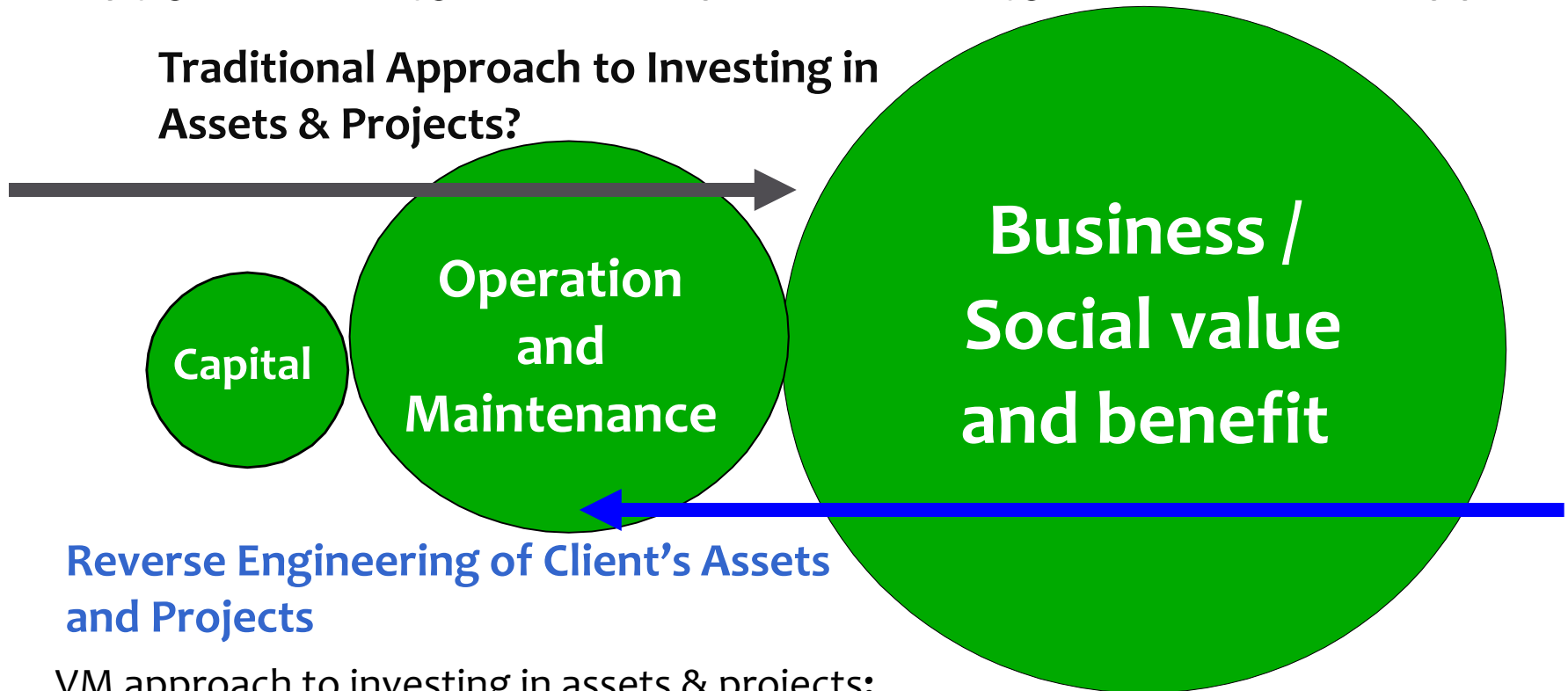
VM WAY FORWARD

- VM in Asset Strategy
- VM Integration with Gateway (*Gerbang Nilai* JKR)
- VM in D&B / PPP / PFI or Relational Contracting (Integrated Procurement Strategies)
- VE Change Proposal (with Incentive based program)
- Life Cycle Cost based VM (LCC Model)
- Value Risk Management (VRM)
- VM in Partnering overlay

VM IN ASSET STRATEGY

Ratio: 1 to 10 to 100

Traditional Approach to Investing in Assets & Projects?



Reverse Engineering of Client's Assets and Projects

VM approach to investing in assets & projects:

Why is it needed in the first place?

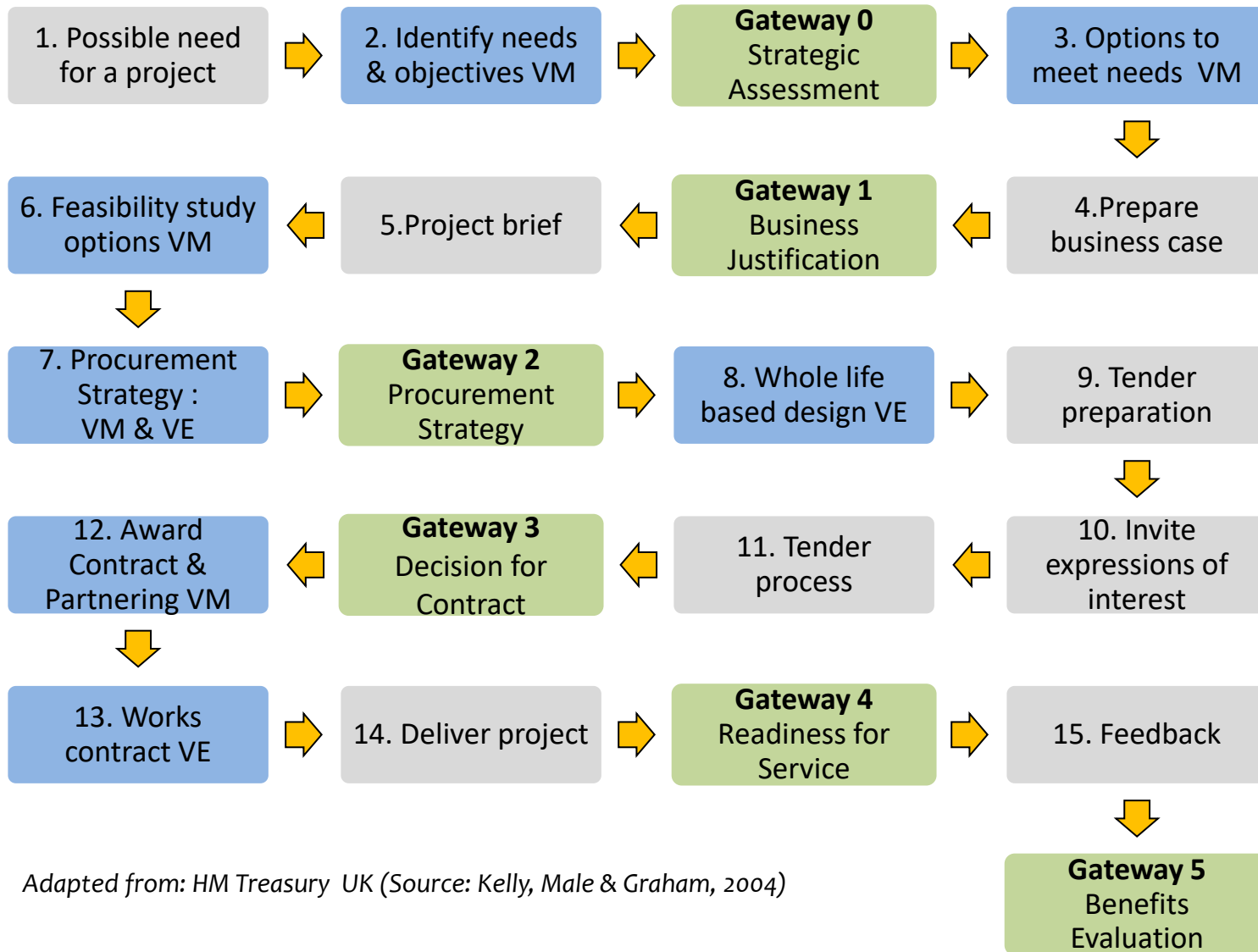
why should we invest? for what purpose? and

what benefits will be derived from that investment?

Adapted from Professor Ken Treadaway (BRE)



VM IN GATEWAY



Adapted from: HM Treasury UK (Source: Kelly, Male & Graham, 2004)

LCC BASED VM

Life Cycle Cost (LCC) based VM.....

An investment decision made on the total LCC of an asset or a component and not just on the initial capital cost, considering the owner's total cost as:

- Initial cost
- Financing cost
- Occupancy cost
- Operating (energy) cost
- Maintenance cost
- Alteration cost
- Replacement cost
- Associated cost (insurance, security, tax etc)
- Salvage / disposal cost



VALUE & RISK MANAGEMENT (VRM)

Integration of VM and RM is best to be implemented throughout the project life cycle - in order to maximize project value by managing the associated risks in parallel, focusing on the need of the value study.

KEY VALUE ISSUES

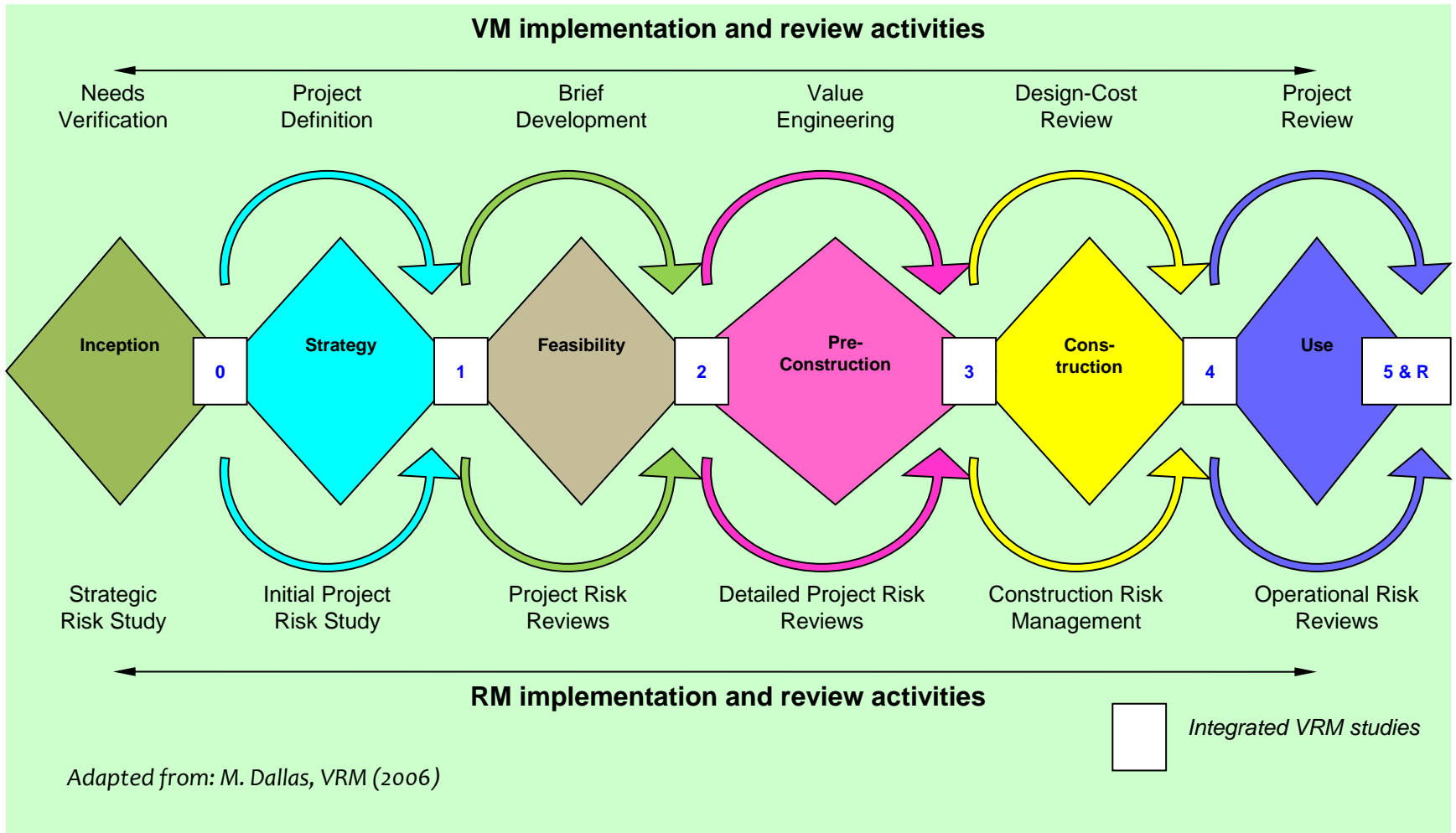
- 0 Why invest?
- 1 Is this the right project?
- 2 What are the project objectives?
- 3 (VE) What is the best technical option?
- 4 Is this the most cost effective solutions?
- 5 Did we achieve our expectations?
- R Is productivity optimized?

RISK ISSUES

- Risks if we invest and if we do not?
- Are risks acceptable?
- Are conditions in place to proceed?
- Are risks allocated appropriately?
- Are risks under control?
- What can we learn for the future?
- Is this business suitable? Still?

Adapted from: M. Dallas, VRM (2006)

VRM STUDY POINTS



VM IN PARTNERING

“Partnering... A structured management approach to facilitate team-working across contractual boundaries...”

(CIB, 1998)

VM integration with Partnering will exploit these benefits:

- Mutual objectives achieved
- Improved team working
- Increased communication
- Reduced barriers
- Developed trust
- Adversarial relationship avoided





*IN THE ESSENCE OF
KNOWLEDGE SHARING.....*

Q & A