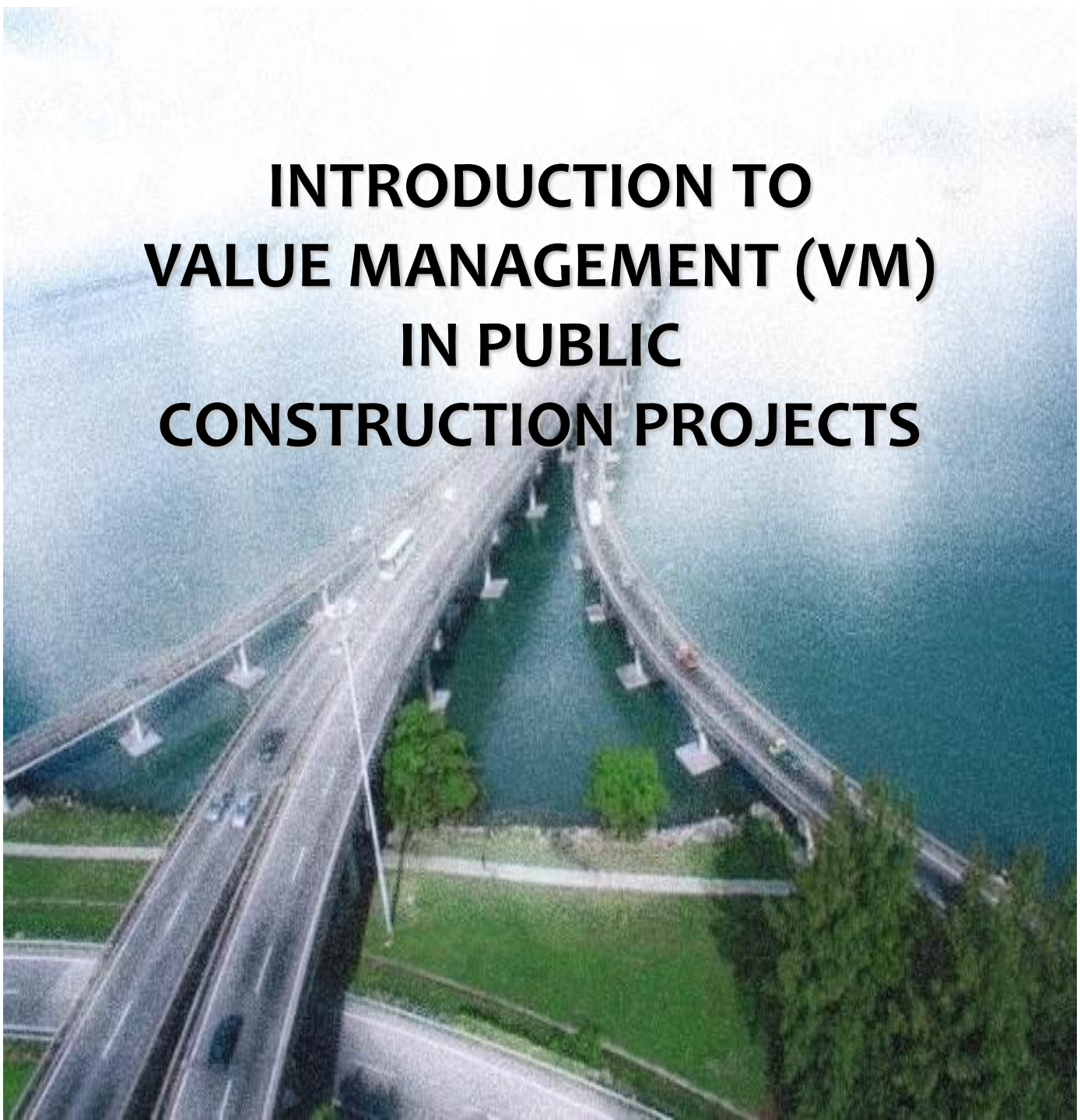

INTRODUCTION TO VALUE MANAGEMENT (VM) IN PUBLIC CONSTRUCTION PROJECTS

KURSUS PEMANTAPAN PEGAWAI KADER

08 – 12 MAC 2021
CREaTE
JKR MALAYSIA

Sr ROHANIS AB GHANI
JUBP (SME VM)
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Lecture Objectives

Awareness of:

- Value and VM in Construction Projects
- VM Interventions within Construction Project Life Cycle
- VM Study Process

Value Management (VM) Definitions

VM is defined as a management methodology or management tool, which:

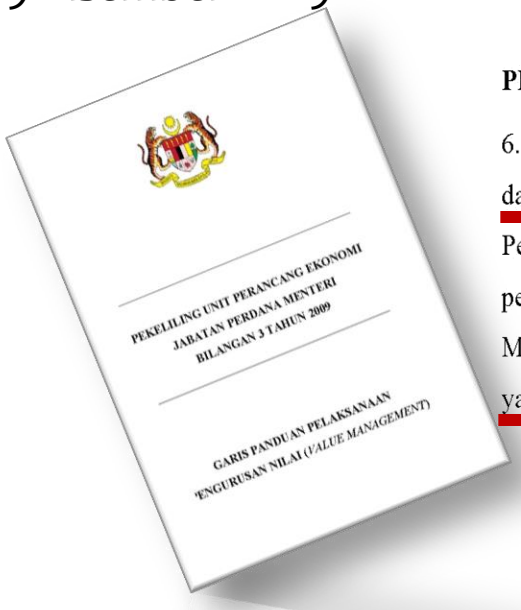
- Applies structured process;
- Emphasize on functions analysis;
- Involves multi-disciplinary team working;
- Applies creative and innovative thinking;
- Provides proactive service
- Effective as a decision making tool; and
- A problem solving methodology….

Value Management Initiative by Government

1A EPU Circular No.3/2009(*Pekeliling UPE Bil.3/2009*)

Garis Panduan Pelaksanaan Pengurusan Nilai,
29 Disember 2009

Managing cost complexity > MYR50 m worth projects



PEMAKAIAN

6. Pengurusan Nilai perlu dilaksanakan bagi program dan projek yang bernilai RM50 juta dan ke atas. Walau bagaimanapun, kementerian dan agensi digalak menggunakan pendekatan Pengurusan Nilai bagi projek yang kurang dari RM50 juta dengan syarat ia tidak menjejaskan pelaksanaan projek berkenaan. Di samping itu, Unit Perancang Ekonomi, Jabatan Perdana Menteri boleh menetapkan penggunaan pendekatan ini bagi mana-mana program dan projek yang difikirkan perlu.

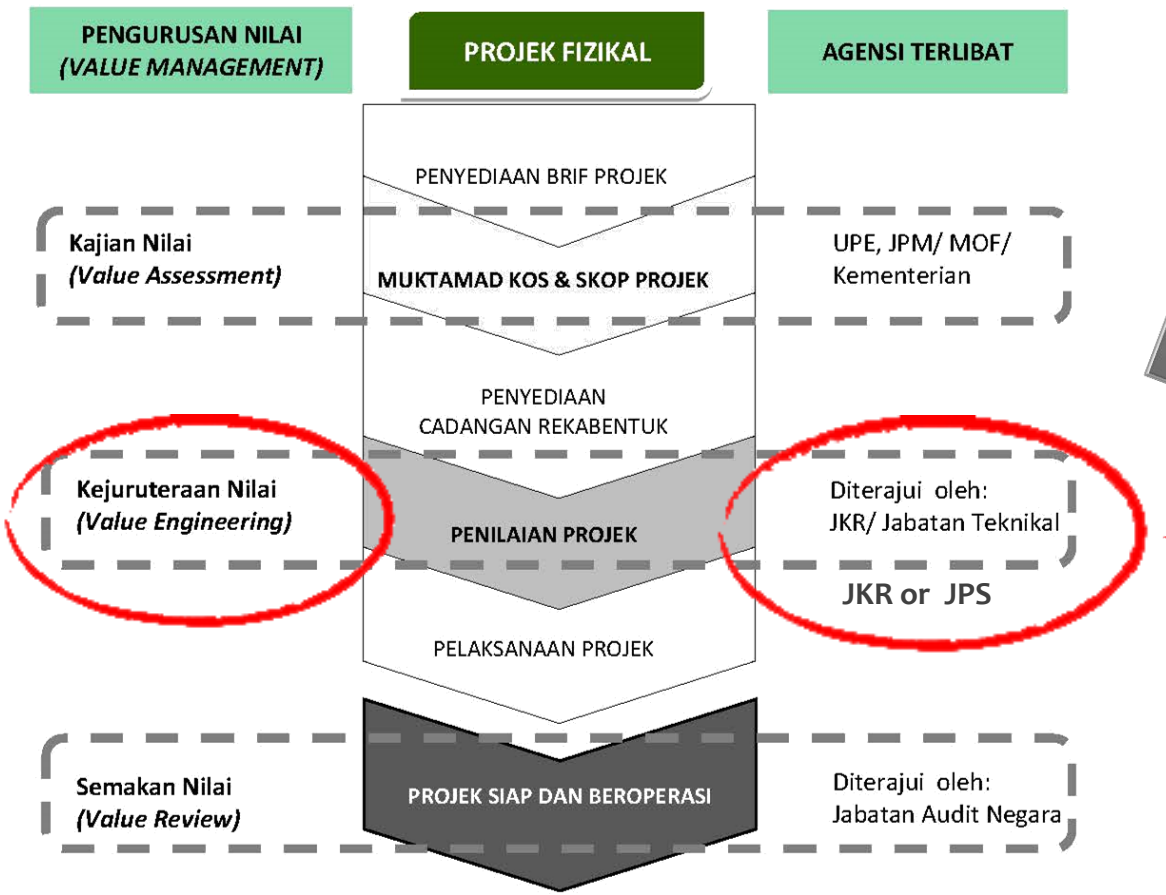
1B EPU Circular No.1/2015 (*Pekeliling EPU Bil.1/2015*)

Penambahbaikan Perlaksanaan Pengurusan Nilai dan Garispanduan dan Peraturan bagi Perancangan Bangunan dalalm Program/Projek Kerajaan Persekutuan, 30 November 2015.

Government's Implementation Guide on VM

2

VM Guide in Government Programme / Project
Panduan Pelaksanaan Pengurusan Nilai dalam Program / Projek Kerajaan , *24 Mei 2011*



VM Standards

Malaysia

National VM Guide &
VM Competency Standards (IVMM)

USA

Value Standard & Body of Knowledge
(SAVE International)

UK/Europe

British / European Standards
BS EN 12973:2000

Australia/New Zealand

AS/NZ Value Management Standards &
TAM 2000 (NSW)

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 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):

What is necessary for a desired user

$$\text{Value} = \frac{\text{Satisfaction of Needs}}{\text{Use of Resources}}$$

Everything that is required to satisfy needs

VALUE CONCEPT (iii)

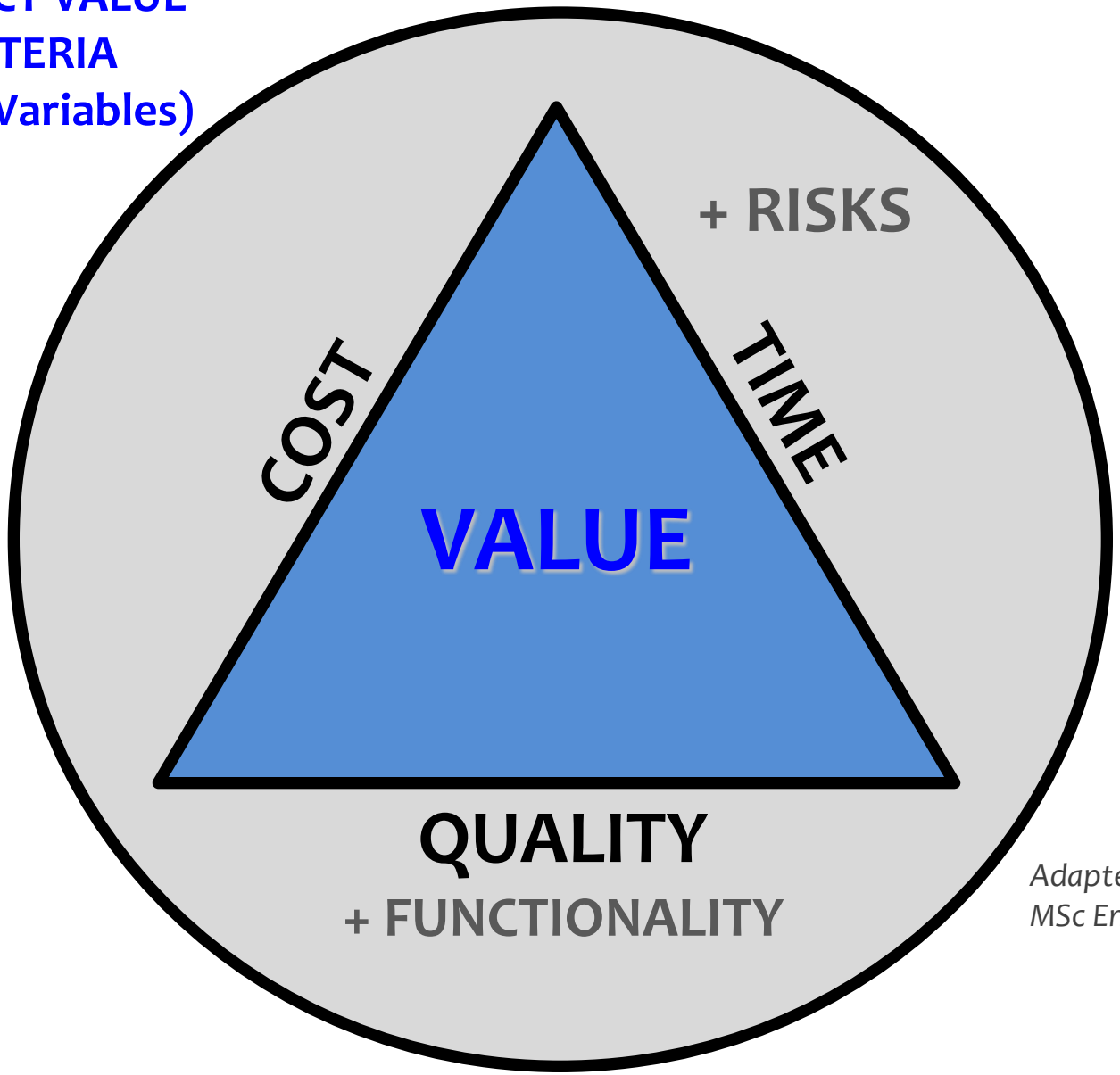
$$\text{VALUE} = \frac{\text{Function (F)} + \text{Quality (Q)}}{\text{Cost (C)}}$$

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 by Dell 'Isola (1982)

VALUE CONCEPT (iv)

PROJECT VALUE CRITERIA (Value Variables)

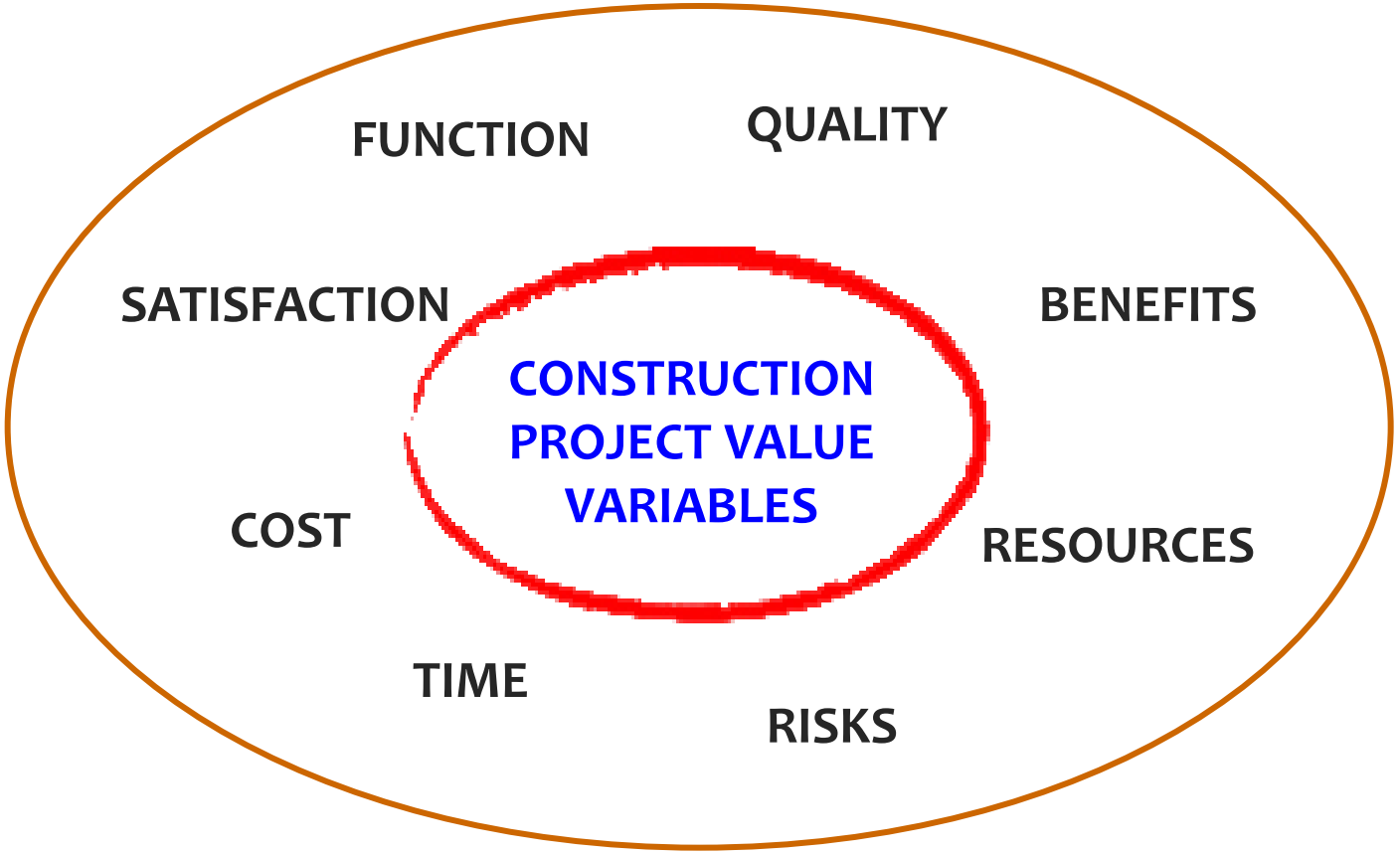


Adapted from: Prof. S. Male, MSc Eng ICME Lecture (2009)

Optimizing (Trading-Offs) Value Variables

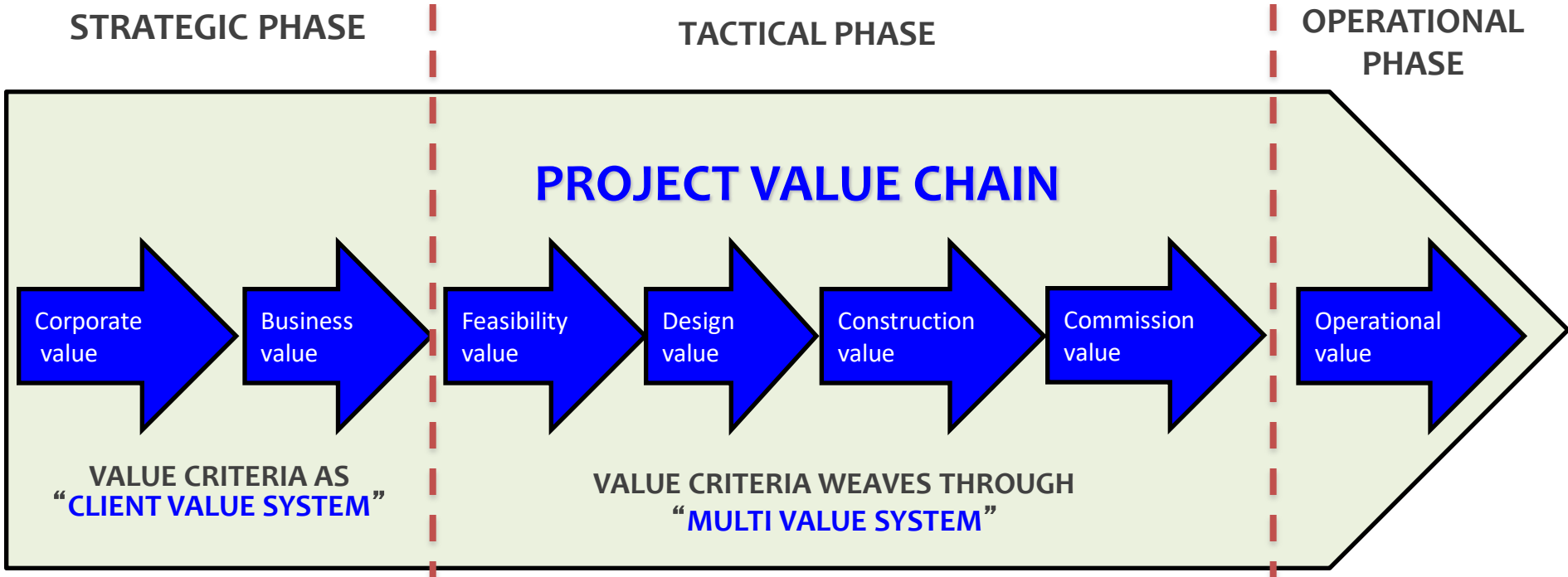
"Juggling among value variables"

Optimizing Construction Project Value Variables



Sr Rohanis Ab Ghani;
Unpublished Research Findings, (UM) 2019

Construction Value Chain Management (VCM)



- 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)

Why Need to Manage Construction Project Value?

- **CAPITAL** is not a free commodity
- **SCARCITY** of funding
- **POOR VALUE** occurs
- **UNNECESSARY COSTS** exists
- **DISSATISFACTION** of clients and users
- In response to **COMPETITIVE ENVIRONMENT** of the construction industry

WE HAVE SO MANY WAYS
TO WASTE MONEY, TIME AND EFFORTS

Source: Al-Yousefi (2008)

Causes of Unnecessary Costs in Projects?

Lack of measurement in value

Lack of information

Lack of time to review

Look for a quick fix solution

False assumption

"wasteful practices in delivering a service or a failure to match the performance or service to customer needs"

"costs which do not meaningfully contribute to the function or purpose of the product or service"

Honest but wrong belief

Habits and attitudes

Reluctance to seek advice

Unrealistic judgement

Human factor

Causes of Poor Value in Construction

- Inadequate available time for reviews
- Conservative, tradition / habitual thinking
- Influences of stakeholders
- Honest misconceptions
- Poor communication
- Lack of co-ordination
- Lack of consideration of buildability in design
- Lack of needed experts
- Lack of needed information

Source: N J Smith (Engineering Project Management, 3rd Edition, 2008)

Common Value Issues in Construction

Project Definition & Inception Phase:

- Lack of clarity of the client, user and stakeholder's needs, objectives and requirements.
- Certain aspects of site, environment and statutory requirements are overlooked.
- Lack of overall project communication procedures.
- Inappropriate process in procurement and appointment of consultants and design team.

Source: MCM Value (VM Professional Course), 2011

Common Value Issues in Construction

Design Phase:

- Inappropriate option analysis of design studies and preliminary cost estimates.
- Some important aspects of operation and maintenance requirements are overlooked.
- Some aspects of conditions of contract, specifications and other contractual requirements overlooked.

Source: MCM Value (VM Professional Course), 2011

Common Value Issues in Construction

Tender Phase:

- Uncertainties and ambiguities of documents and drawings.
- Insufficient tender analysis.

Source: MCM Value (VM Professional Course), 2011

Common Value Issues in Construction

Construction Phase:

- Inadequate establishment of site organization.
- Lack of specific procedures with regards to Drawing Management, establishment and reviewing of Work Programme, Reporting etc.

Source: MCM Value (VM Professional Course), 2011

Common Value Issues in Construction

Handing Over, Operation & Maintenance Phase:

- Some important requirements of operational and maintenance are overlooked.
- Handing over procedures are not properly developed or practiced.

Source: MCM Value (VM Professional Course), 2011

Value Opportunity

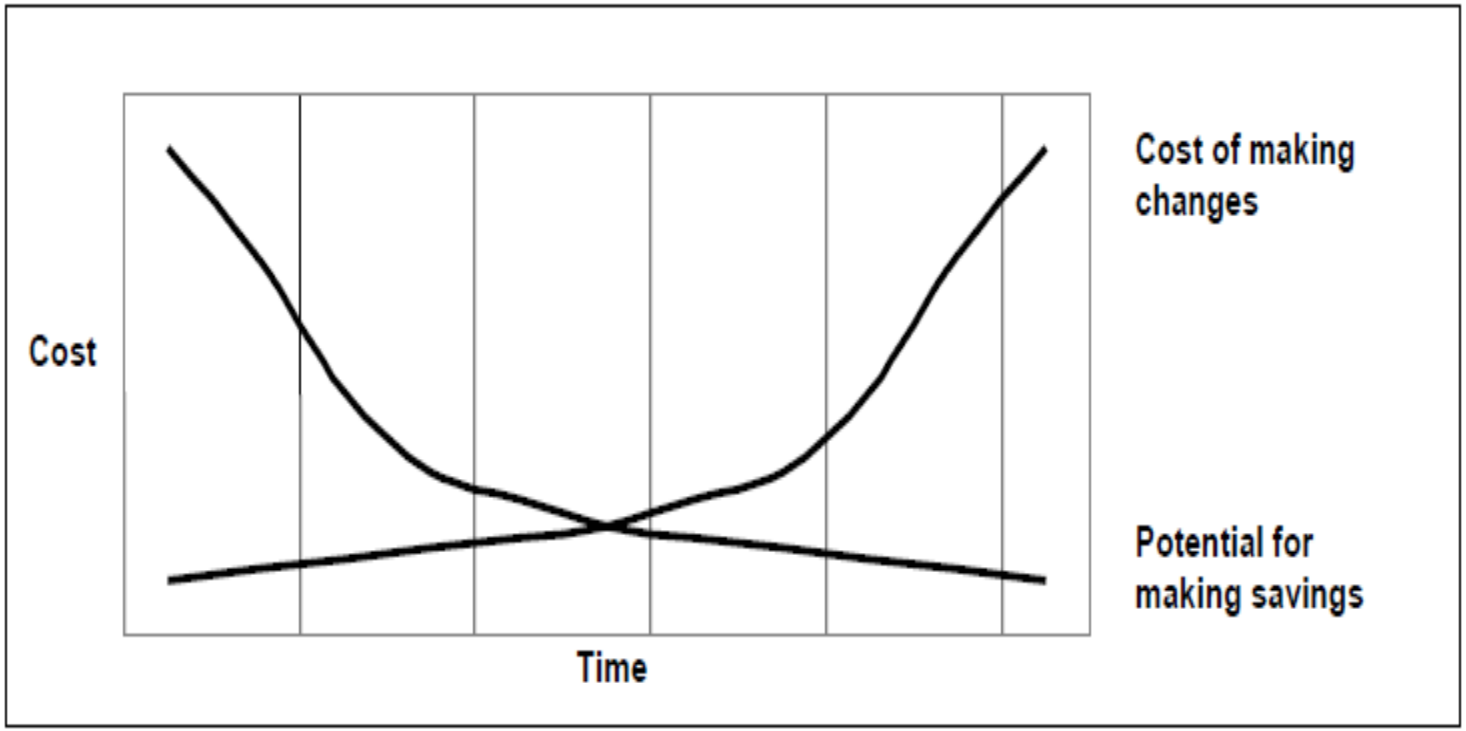
Value Opportunity Points

=

VM Study Interventions; or

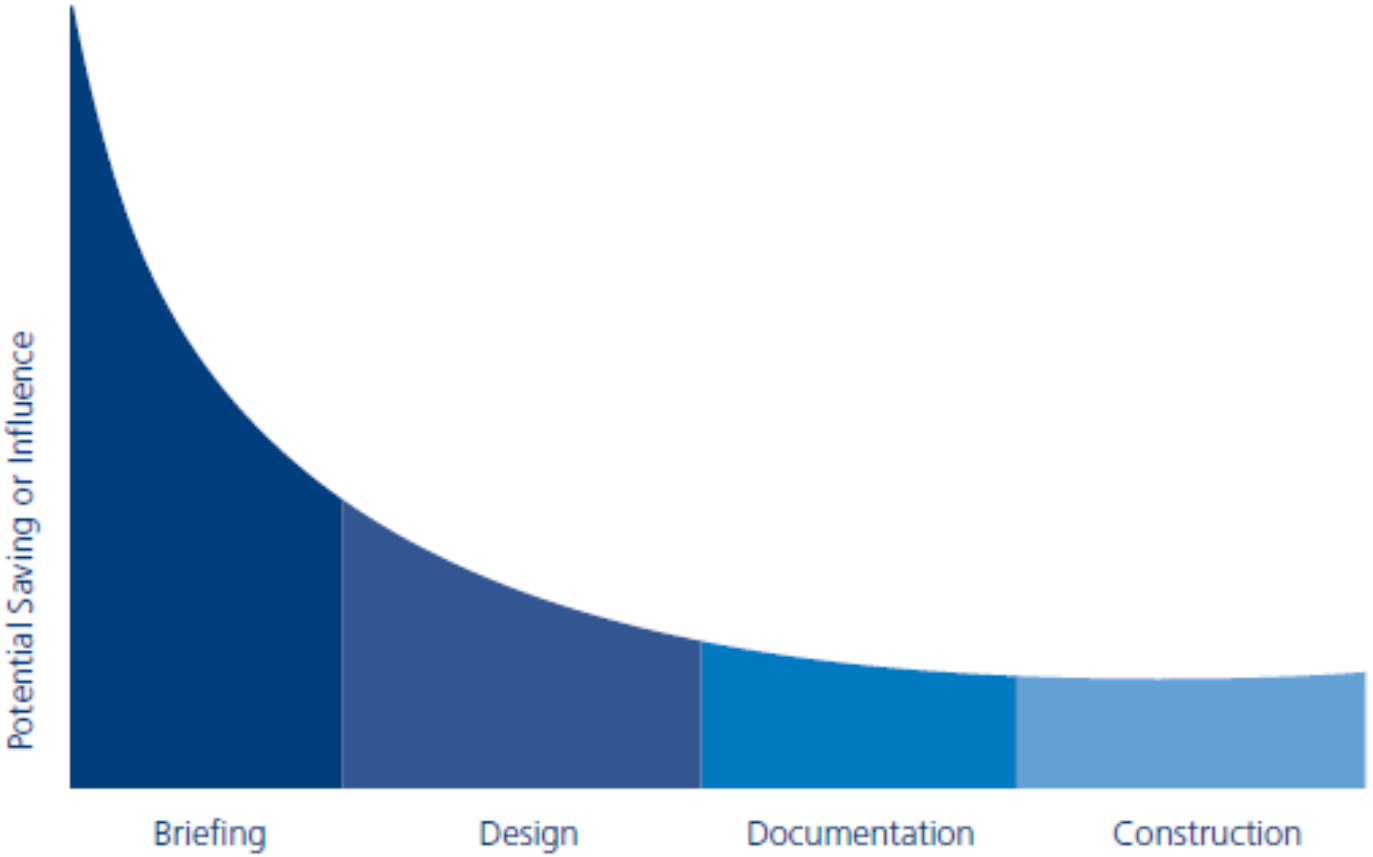
When is the most opportune or beneficial timing for VM study intervention within construction project life cycle?

Value Potential (i)



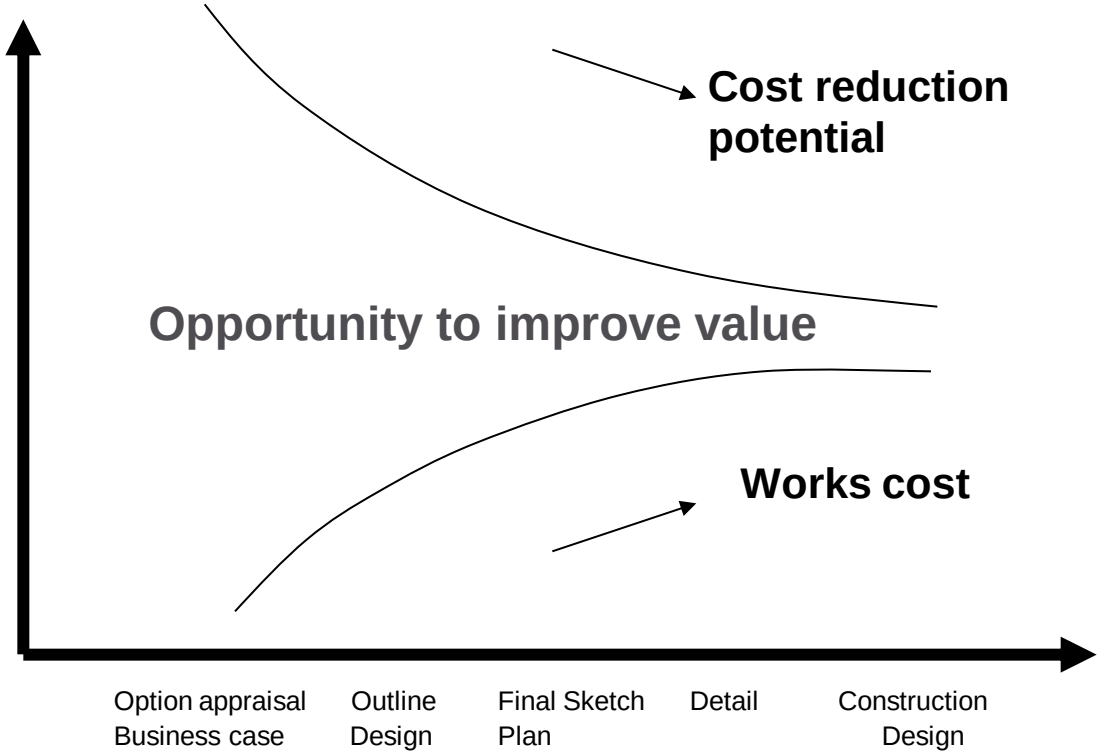
Source: Total Asset Management : Value Management Guidelines
New South Wales Treasury

Value Potential (ii)



Source: Value Management Guidelines Department of Housing & Works, Government of Western Australia

Value Potential (iii)



Source: Guidance No.54 of H.M. Treasury of UK (CUP, 1996)

Value Potential (iv)

Source: Panduan Pelaksanaan Pengurusan Nilai Dalam Program/Projek Kerajaan, Unit Perancang Ekonomi (EPU) JPM

Principle of VM Intervention

Value opportunities arise at points in the project life cycle when there is (or are):

- Unstructured problems occurs
- Need for strategic commitment
- Convergence of information of different parties
- Project viability uncertainty
- Need for technical commitment (design optimization)
- Need for capital commitment (cost optimization)

Rationale of VM Interventions

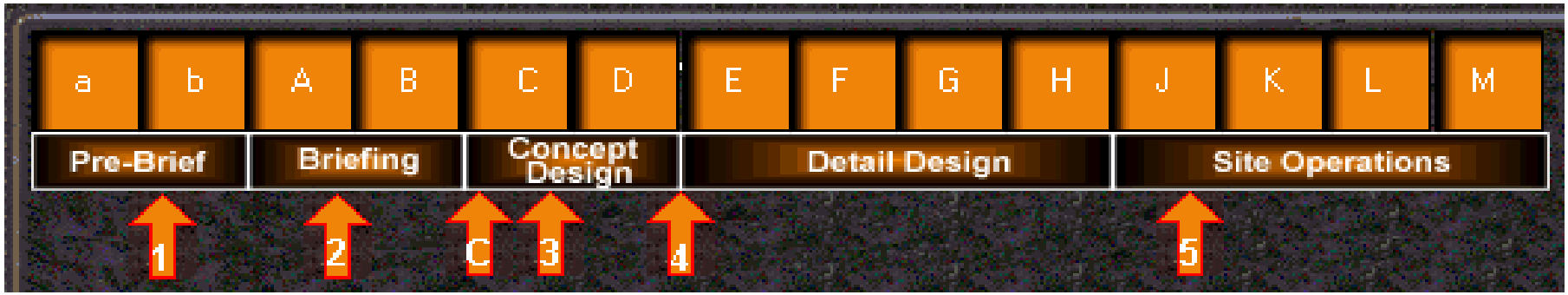
Right VM Interventions for maximizing project value …

- Aligns with client's strategic needs & project objectives;
- Optimizes value variables (function, quality, time, risks etc.)
- Minimizes or eliminates unnecessary costs;
- Continuous value improvement throughout project lifecycle.

And to avoid inefficiencies …

- Iterated processes / wasteful resources / abortive designs
- Cost and time for implementing changes / rectifications
- Demoralize team members / misconception about VM

VM Interventions Benchmark



VM Interventions in the RIBA Plan of Work:

Point 1: Strategic Briefing Study (or Pre Brief Workshop)

Point 2: Project Briefing Study (or Briefing Workshop)

Point C: The *Charette* (in the place of 'Point 1, 2 and 3')

Point 3: Concept Design Study / Workshop (or Outline Sketch Design Workshop)

Point 4: Detail Design Worksyop (or Final Sketch Design Workshop)

Point 5: Operations Workshop

Sources of VM Interventions based on RIBA Plan of Works :

(i) Re-Appraisal of VM Methodologies in Construction, Male & Kelly (2007);
(ii) VM in Construction Projects, Kelly, Male & Graham (2004) &
(iii) The VM Benchmark, Male et al (1998)

VM Interventions Benchmark

VM Interventions	Study Objectives
1. Strategic Briefing Study	Strategic Brief to set on broad scope, purpose, overall budget & programme
2. Project Briefing Study	Convert Strategic Brief into construction terms, outline budget & execution plan
C. The Charette	Audit the brief and Concept Design to align with the strategic value systems
3. Concept Design Workshop	Review the brief and test design options towards the Concept Design
4. Detail Design Workshop	Fine tune the design through functional performance of elements and components
5. Operations Workshop	Convert the design into the construction operational programme

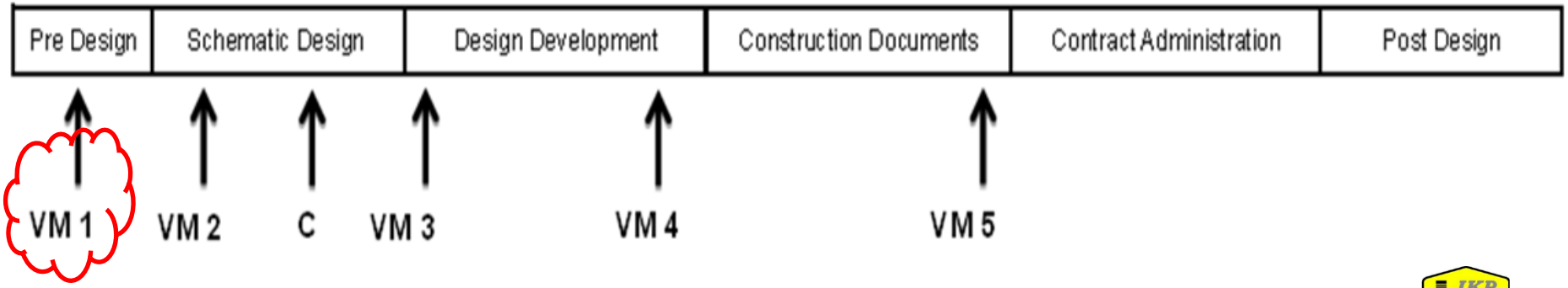
References :

(i) Re-Appraisal of VM Methodologies in Construction, Male & Kelly (2007);
(ii) VM in Construction Projects, Kelly, Male & Graham (2004) &
(iii) The VM Benchmark, Male *et al* (1998)

VM Interventions Comparison (i)

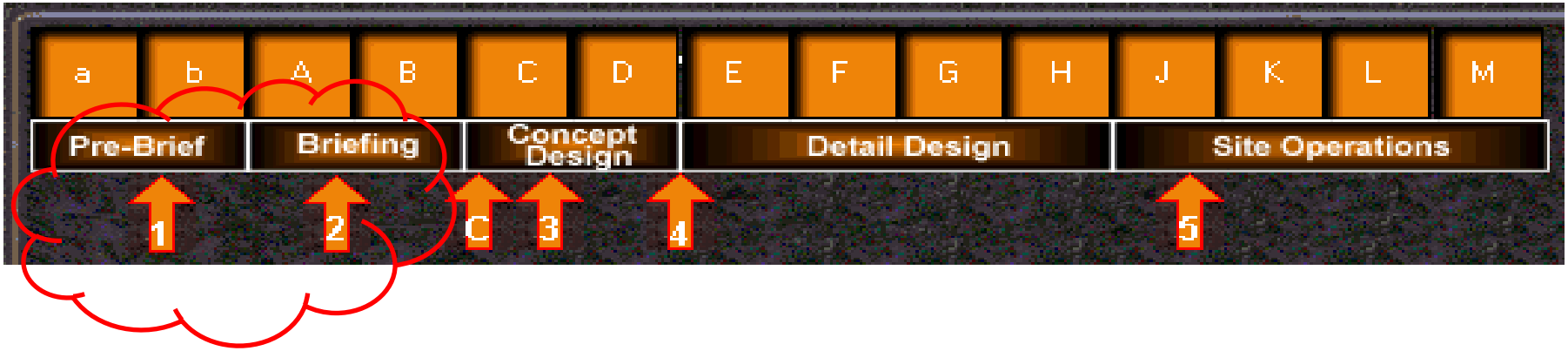
VM Interventions Benchmark (RIBA Plan of Work)

AIA (American Institute of Architects) Design Process (The VM Benchmark, 1998)



VM Interventions Comparison (ii)

VM Interventions Benchmark (RIBA Plan of Work)

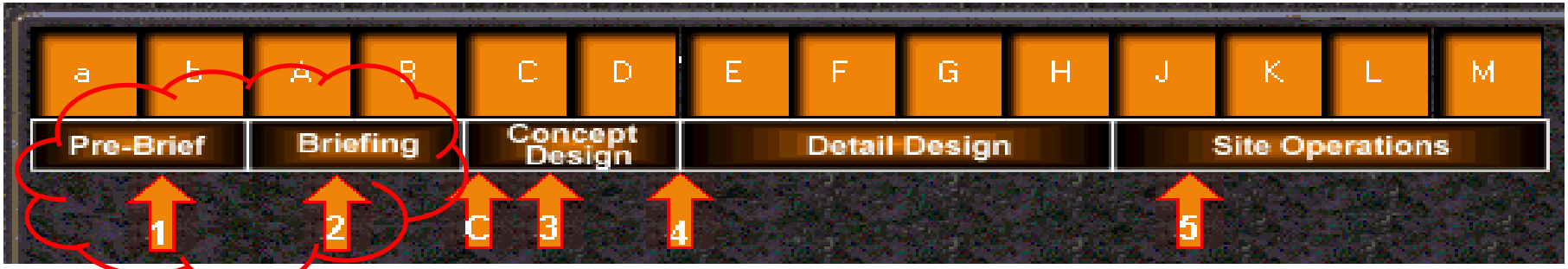


Institute of Value Management United Kingdom (IVM UK, 2009)

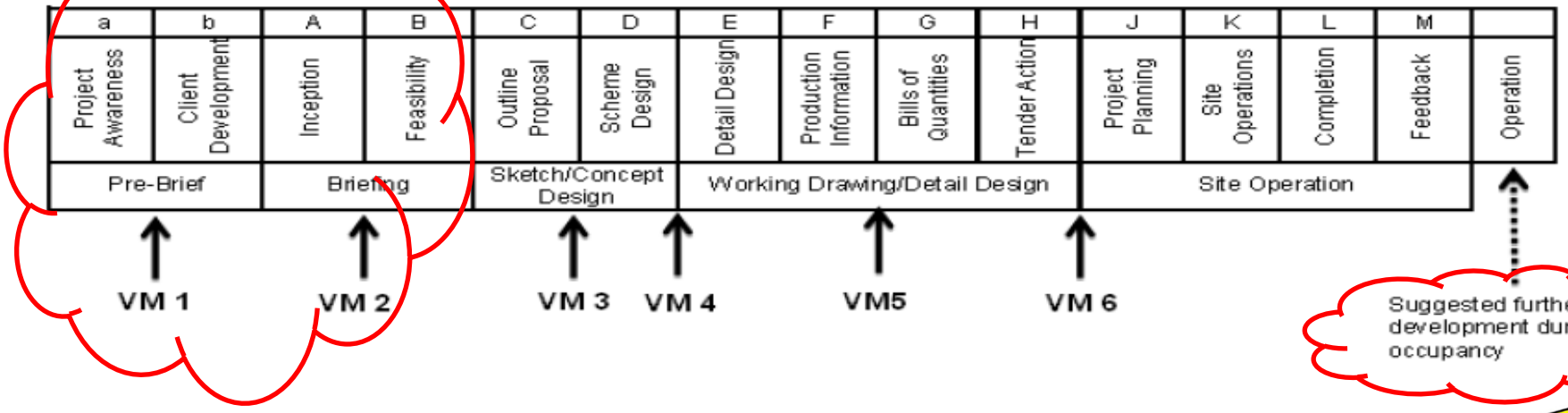
Strategy & Inception	Briefing	Concept Design	Scheme Design	Detailed Design & Construction	Handover	Use
VM0	VM1	VM2	VM3	VM4	VM5	VM6

VM Interventions Comparison (iii)

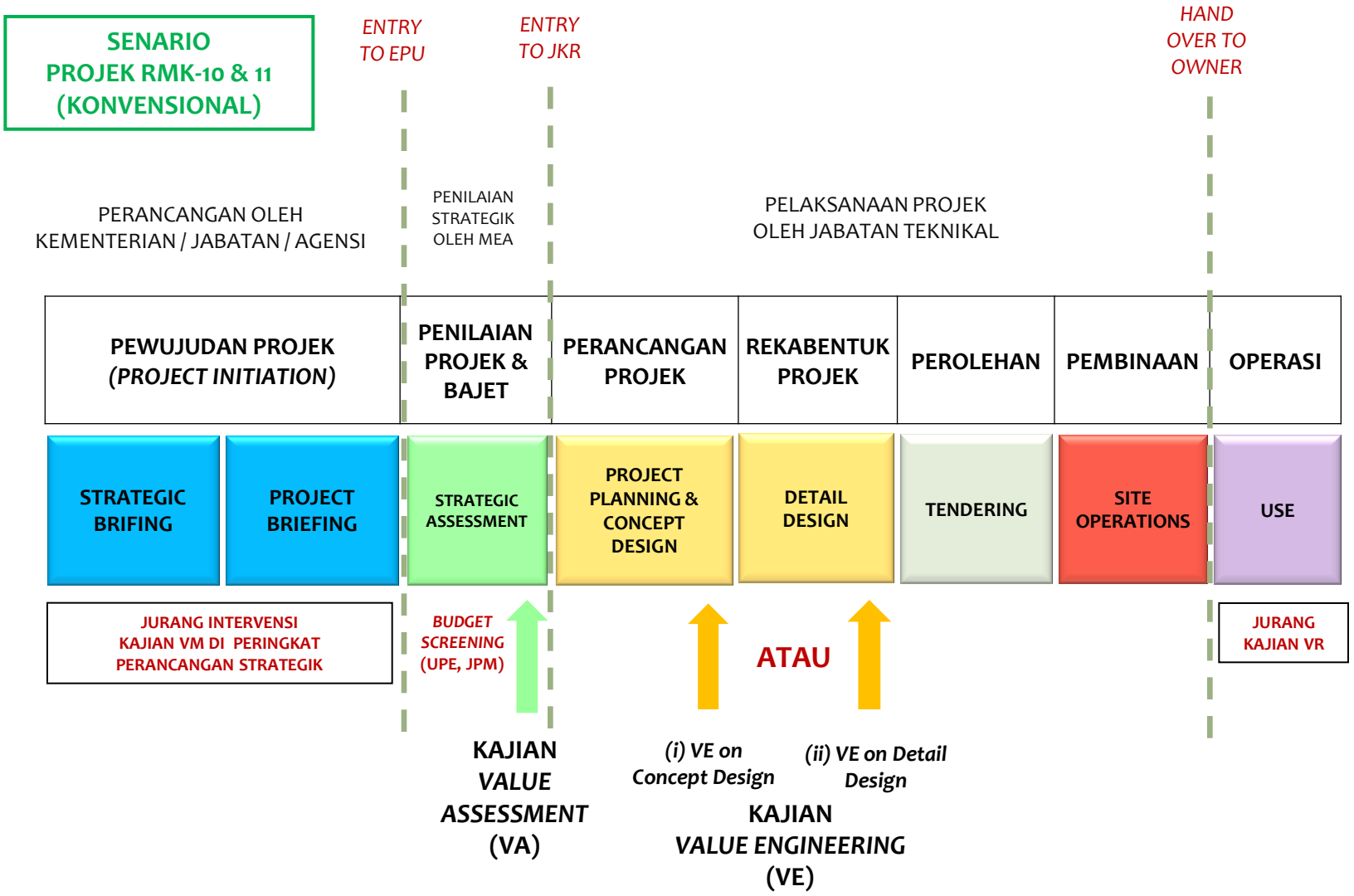
VM Interventions Benchmark (RIBA Plan of Work)



Prototype Guidelines of VM Application for The Malaysia Construction Industry *(Aini Jaapar, 2007)*



INTERVENSI VM DALAM KITAR HAYAT PROJEK (RMKE-10 & 11)



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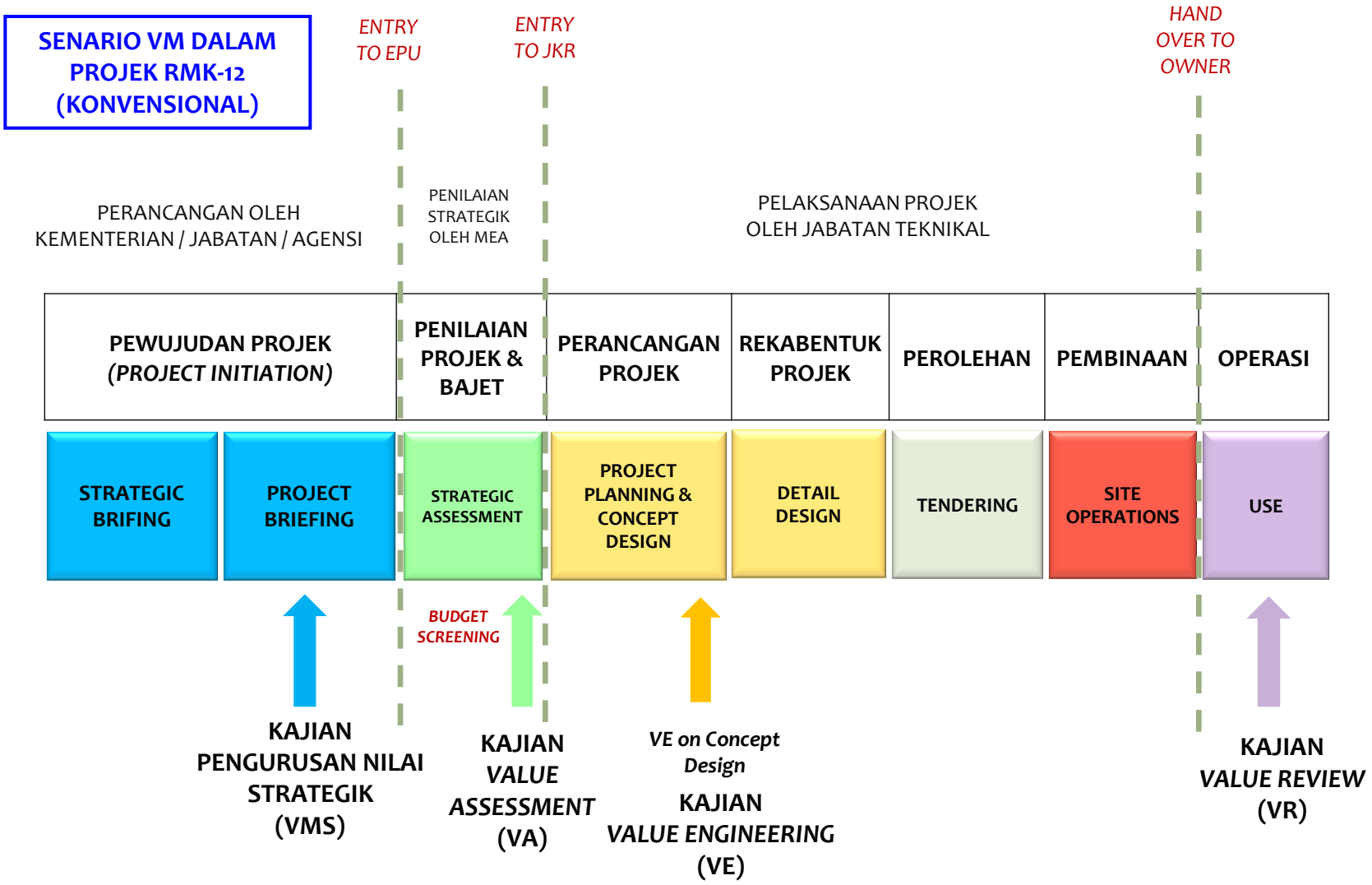
INTERVENSI VM DALAM KITAR HAYAT PROJEK (RMKE-12)



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KAJIAN *VALUE MANAGEMENT* *AT STRATEGIC PHASE (VMS)*

JENIS KAJIAN VM	KAJIAN VM STRATEGIK (VMS)
PERINGKAT DALAM KITAR HAYAT PROJEK	SEMASA PEWUJUDAN PROJEK (OLEH KEM/JAB/AGENSI) • Semasa Kem/Jab/Agensi menyedia permohonan projek; • Sebelum cadangan projek dikemuka kepada MEA
OBJEKTIF UTAMA KAJIAN	• Menentusah daya maju (*viability) projek;* • Memantapkan penentuan projek / Brif; Tapak dsb; • Menyelaras input penetapan Anggaran Kos Awalan (input bagi *Public Sector Comparator* @ PSC); • Memantapkan Strategi penyampaian projek
INPUT ASAS KAJIAN	• Asas justifikasi *viability – Logical Framework Matrix (LFM) & Creativity Index (CI);* • (Deraf) Brif Projek - Skop Projek; SOA & GFA (Bgn), Konsep pembangunan; Penentuan tapak; Status tanah dsb. • Input bagi Anggaran Kos Awalan Projek (input bagi PSC); • Input berkaitan strategi penyampaian projek (Perolehan, Penjadualan Masa, Pengurusan Risiko)

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PERNYATAAN MASALAH TERHADAP VMS

01

Proses Kerja Berulang

02

Notice of change (NOC)

03

Kefungsian Tidak Dipenuhi

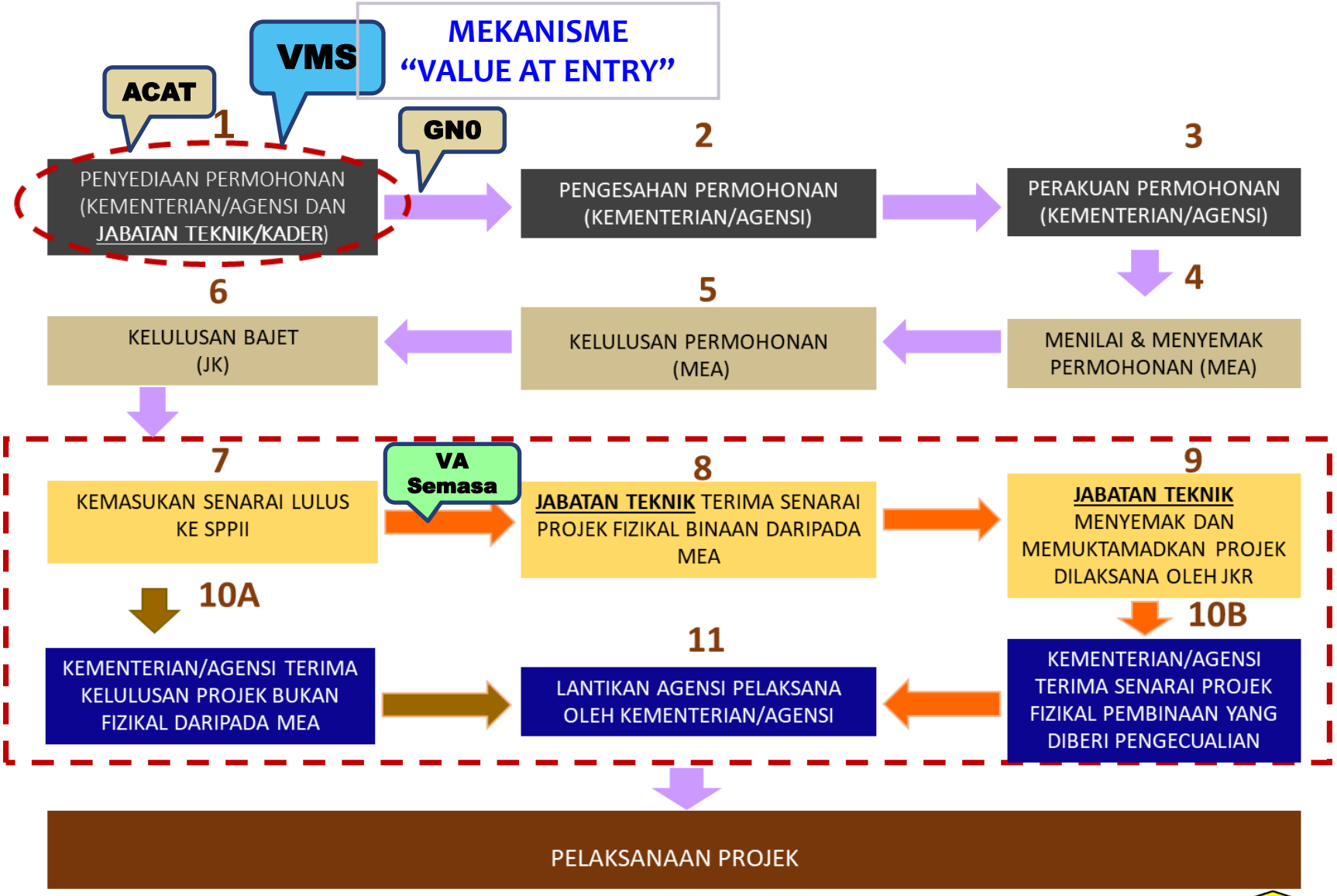
04

Kemajuan Projek Terjejas

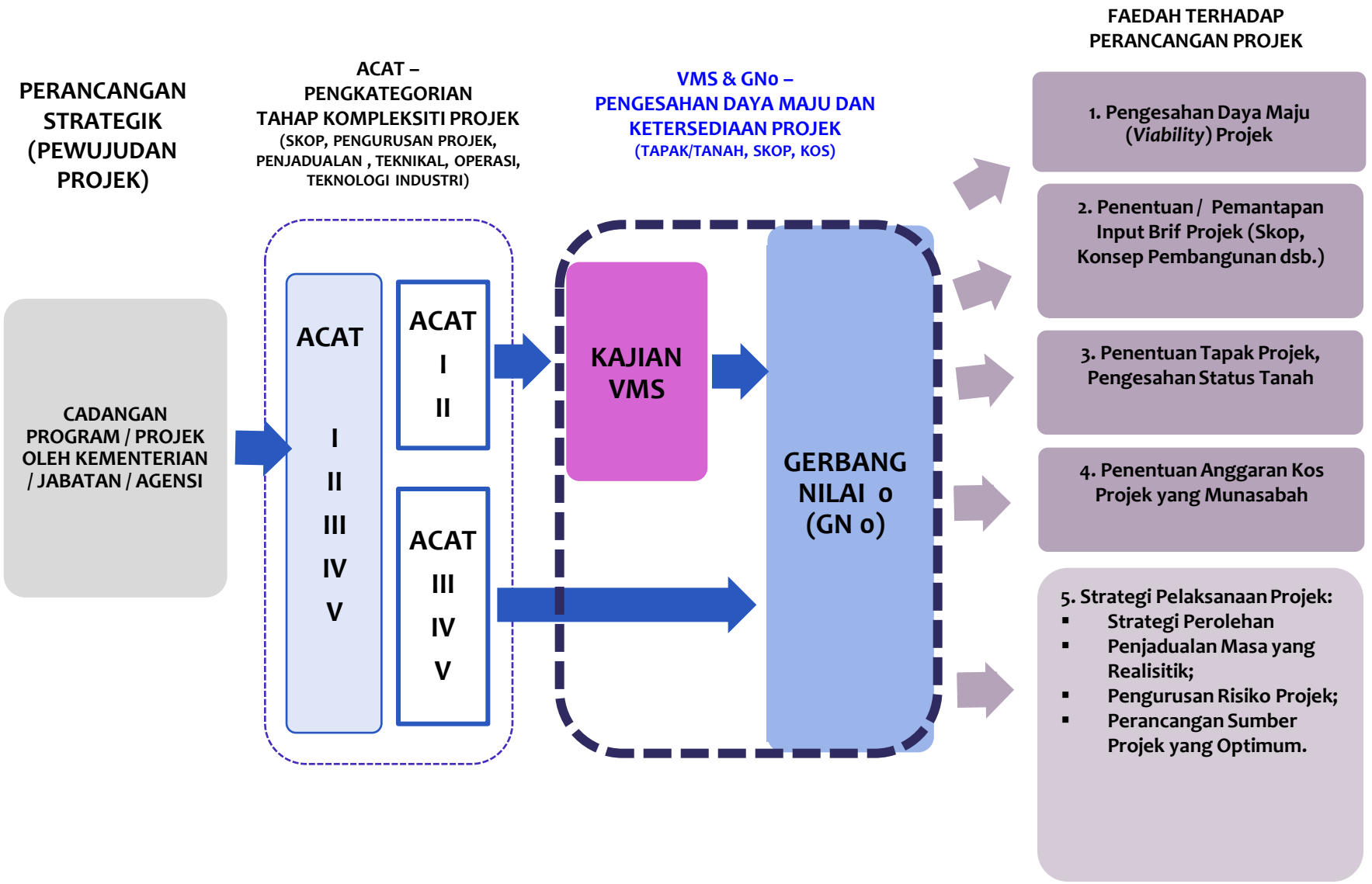
05

Pindaan Keputusan Teknikal

VMS DALAM ALIRAN PELAKSANAAN PROJEK RMK-12



MEKANISME "*VALUE AT ENTRY*" (VAE)



PENYELARASAN PELAKSANAAN VMS – GNO – VA

INISIATIF	KAJIAN VMS	SEMAKAN GNO	KAJIAN VA
PERINGKAT DALAM KITAR HAYAT PROJEK	**PERINGKAT PERANCANGAN STRATEGIK (KEMENTERIAN / JABATAN / AGENSI)**		**PERINGKAT PENILAIAN STRATEGIK (UPE, JPM)**
	• Semasa K/J/A menyedia permohonan projek (Pewujudan Projek); • Sebelum cadangan projek dikemuka kepada UPE, JPM untuk *Budget Screening*.		• Selepas kelulusan projek dan kelulusan bajet (*Budget Screening)*; • Sebelum arahan pelaksanaan projek kepada Jabatan Teknik/Agensi Pelaksana
SASARAN PROJEK	• VMS untuk Projek Kategori ACAT 1 & 2	GN0 untuk semua Kategori, iaitu: - ACAT 1 & 2 laksana VMS dan penuhi syarat terhadap GNO; - ACAT 3, 4, 5 melalui GNO sahaja	• Arahan asal - Projek bernilai RM50 juta dan ke atas; • Arahan pengecualian VM 2021 - Projek bernilai RM200 juta dan ke atas.
ASAS KAJIAN	**Input dari hasil proses di Peringkat Perancangan K/J/A:** • (Deraf) *Logical Framework Matrix/Creative Index (LFM/C.I.)* • (Deraf) Brif Projek - Skop Projek; SOA & GFA (Bgn), Konsep Pembangunan; Penentuan Tapak; Status Tanah; Keperluan khusus; dsb. • Input Anggaran Kos Awalan Projek untuk diselaras melalui *Public Sector Comparator* (PSC); • (Pilihan) Input strategi penyampaian projek (Strategi Perolehan, Penjadualan Masa, Pengurusan Risiko)		**Input dari SPP2 dan lain-lain dari K/J/A:** • Ketetapan Objektif, *Outcomes* Projek; • Skop Projek; SOA & GFA (Bgn); Konsep pembangunan bagi opsyen tapak yang telah ditentukan; Keperluan khusus; dsb. • Jumlah Anggaran Kos Awalan Projek (melalui PSC); • Input Penjadualan Masa.

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KAJIAN *VALUE ASSESSMENT* (VA)

JENIS KAJIAN VM	KAJIAN VALUE ASSESSMENT (VA)
PERINGKAT DALAM KITAR HAYAT PROJEK	PENILAIAN STRATEGIK (UPE, JPM) • Selepas kelulusan projek dan kelulusan bajet; • Sebelum pelaksanaan projek oleh Jabatan Teknik/ Agensi Pelaksana
OBJEKTIF UTAMA KAJIAN	• Menentusahkan Objektif dan *Outcomes* Projek • Memuktamadkan Skop* Projek, SOA & GFA (Bangunan)*; • Menetapkan Kos Projek (Bajet)*. (* Terhad kepada ketetapan Skop & Kos *Budget Screening*)
INPUT ASAS KAJIAN	• Ketetapan Objektif Projek, *Outcomes* Projek; • Brif Projek - Skop Projek; SOA & GFA (Bangunan); Konsep pembangunan bagi opsyen tapak / jajaran yang ditentukan; dsb. • Anggaran Kos Projek; • Input penjadualan masa.

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KAJIAN *VALUE ENGINEERING* (VE)

JENIS KAJIAN VM	VE ON CONCEPT DESIGN (OPSYEN i)	VE ON DETAIL DESIGN (OPSYEN ii)
PERINGKAT DALAM KITAR HAYAT PROJEK	FASA PERANCANGAN PROJEK • Semasa pembangunan Rekabentuk Konsep; • Sebelum Rekabentuk Konsep/Awalan disahkan (dipersetujui oleh klien)	FASA REKABENTUK PROJEK • Semasa pembangunan Rekabentuk Terperinci; • Sebelum projek sedia untuk ditender
OBJEKTIF UTAMA KAJIAN	• Optimumkan Fungsi, Kualiti, SOA/GFA (Bangunan) mengikut Skop* Projek; • Optimumkan Kos*. • Mendapatkan persetujuan klien terhadap Reka Bentuk Konsep (* Terhad kepada ketetapan Skop & Kos VA)	• Optimumkan Fungsi, Kualiti mengikut Skop, SOA/GFA (Bangunan); • Optimumkan Kos* (* Terhad kepada ketetapan Skop & Kos VA)
INPUT ASAS KAJIAN	• Rekabentuk Konsep dan *Master Planning*; • Skop Projek menurut VA; • SOA & GFA ditetapkan VA dan mengikut rekabentuk; • Kos Projek ditetapkan VA dan anggaran kos awalan projek berdasarkan r/bentuk; • Input penjadualan masa; pengurusan risiko, dsb..	• Rekabentuk Terperinci • Dokumen tender (deraf) • Skop Projek oleh VA; • SOA & GFA ditetapkan VA dan mengikut rekabentuk; • Kos Projek ditetapkan VA dan kos projek terkini (sebelum tender); • Input penjadualan masa; pengurusan risiko. dsb.

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KAJIAN VALUE REVIEW (VR)

JENIS KAJIAN VM	KAJIAN VALUE REVIEW (VR)
PERINGKAT DALAM KITAR HAYAT PROJEK	FASA OPERASI (SETELAH PROJEK SIAP DAN DISERAH) DI BAWAH PELANGGAN / PEMILIK ASET / FASILITI • Selepas projek siap dan beroperasi; • Secara berkala atau sekali selepas projek 1 – 3 tahun beroperasi
OBJEKTIF UTAMA KAJIAN	• Menilai pencapaian ketetapan strategik, prestasi penyampaian projek dan prestasi operasi projek telah siap (aset / fasiliti yang beroperasi); • Mengurus iktibar dan pengajaran - *Lessons Learnt*; • Mencadangkan penambahbaikan berterusan bagi projek akan datang dan aset /fasiliti yang sedang beroperasi.
INPUT ASAS KAJIAN	• Laporan Penilaian Outcomes (PO); Kajian VA, LFM, CI (Maklumat KPI *Outcomes* dan Objektif Projek); • Penilaian prestasi pelaksanaan projek (Masa/ Kualiti / Kos) – Penyata Akaun Muktamad, Perakuan Kontrak Projek – EOT, VO, PHK dsb. • Penilaian prestasi operasi aset / fasiliti – Hasil POE dsb.

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PENILAIAN MELALUI *VALUE REVIEW* (VR)

1

Pencapaian ketetapan strategik:
- Ketetapan Objektif Projek dan Outcomes Projek;
- Fungsi Strategik;
- Sistem Nilai Klien (Strategik)
- Anggaran Kos Awalan Projek (VA);
- Pelan Tindakan / Jadual Masa (VA)
- Pelaksanaan Idea VA (Strategik);
- Lain-lain ketetapan Strategik.

2

Pencapaian prestasi penyampaian projek terhadap ketetapan teknikal:
- Penyampaian Skop Projek
- Penyampaian fungsi teknikal projek;
- Kos Projek (VE);
- Strategi Perolehan;
- Penjadualan Masa / Program Kerja
- Pelaksanan Idea VE
- Lain-lain ketetapan Teknikal.

3

Prestasi operasi bagi projek siap yang diserahkan atau aset / fasiliti yang beroperasi:
- Lokasi dan persekitaran;
- Rekabentuk Senibina, M&E; Kemasan dsb.;
- Susunatur Ruang & Aliran Kerja / Pengguna
- Kemudahan fasiliti;
- Kesihatan & Keselamatan
- Kebolehsenggaraan;
- Kos Operasi & Sengggaraan

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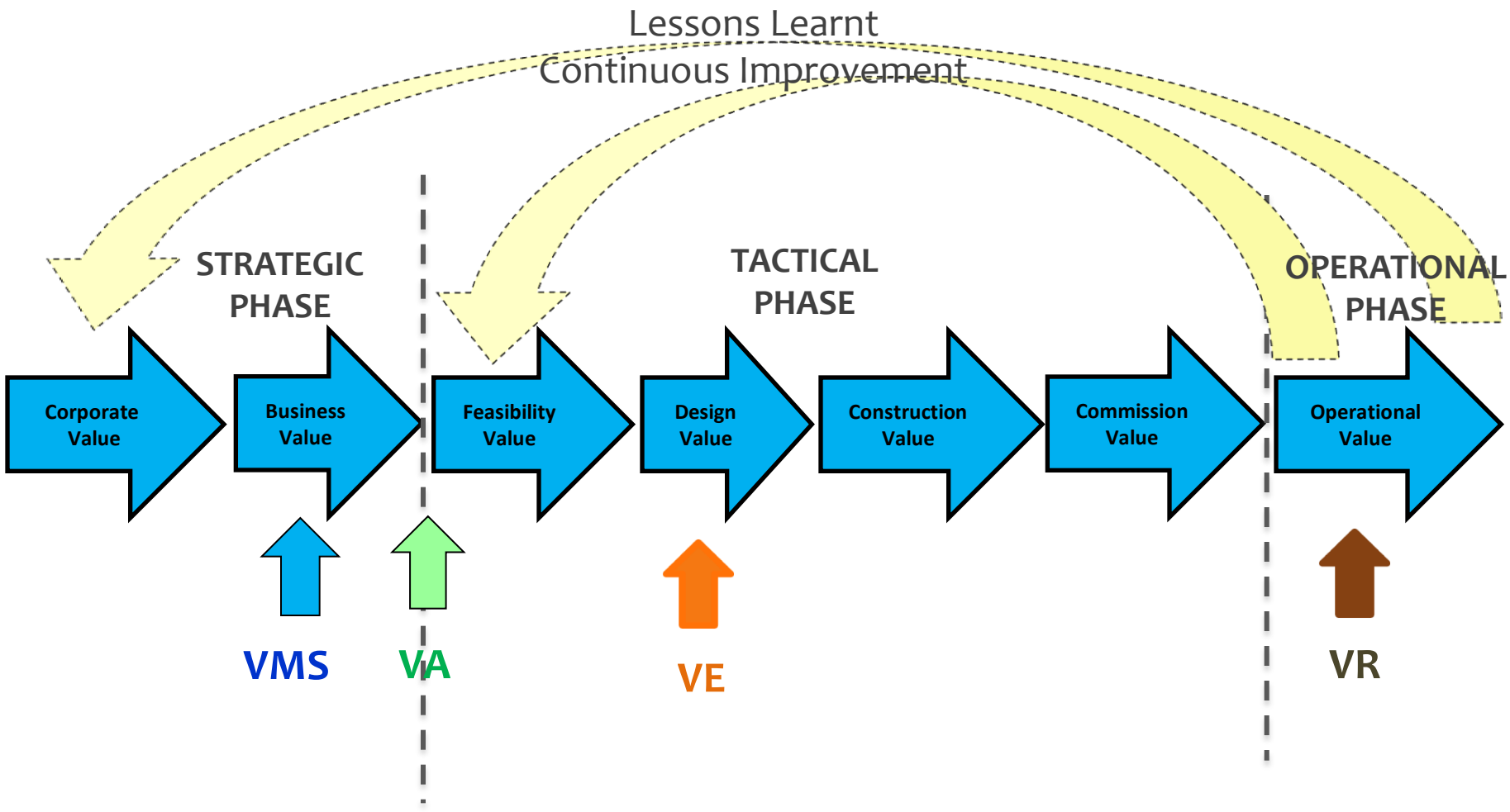
VM WITHIN VALUE CHAIN MANAGEMENT (VCM)



Sumber Diagram Asal: Kelly, Male & Graham, VM of Construction Projects (2004)

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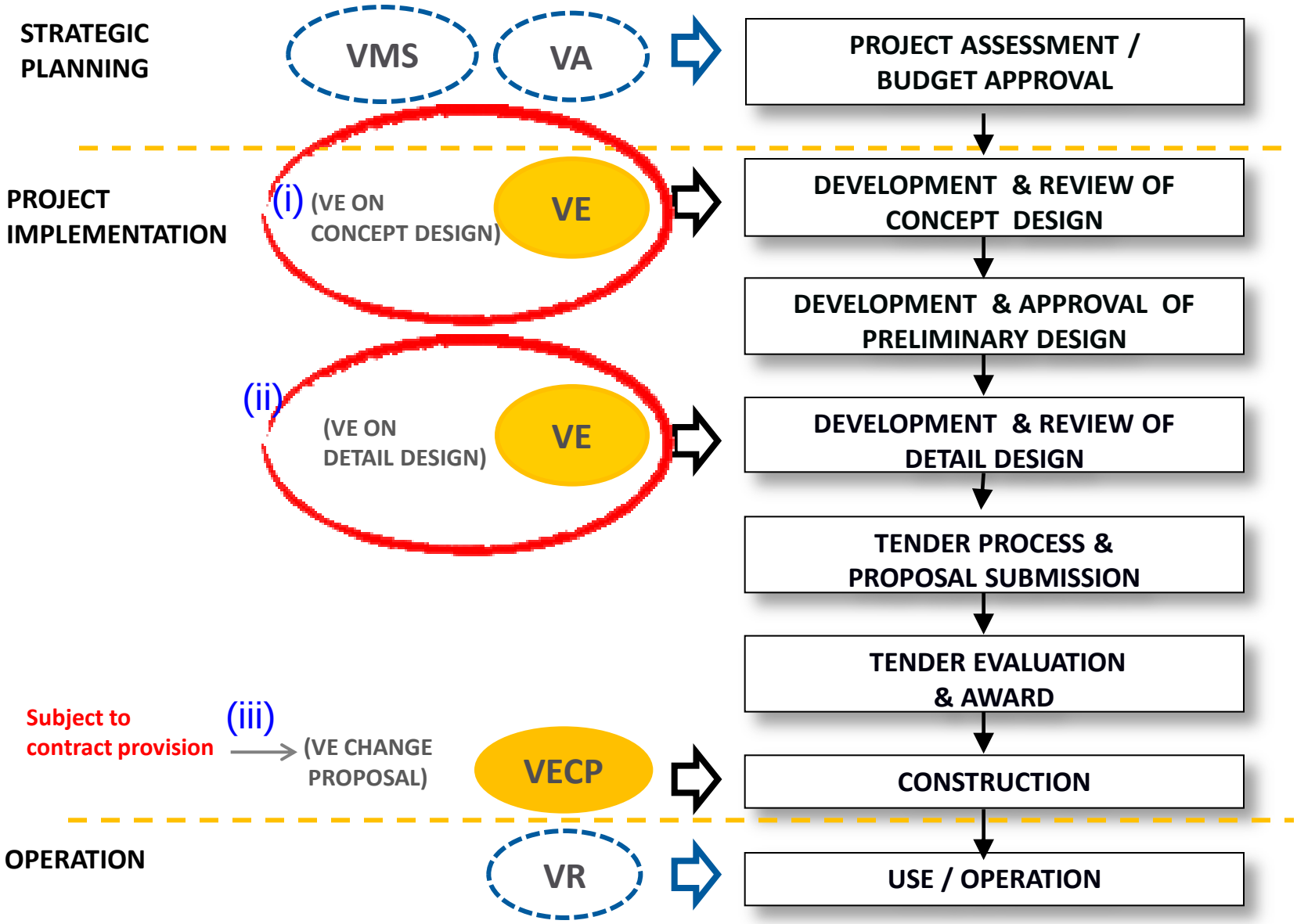
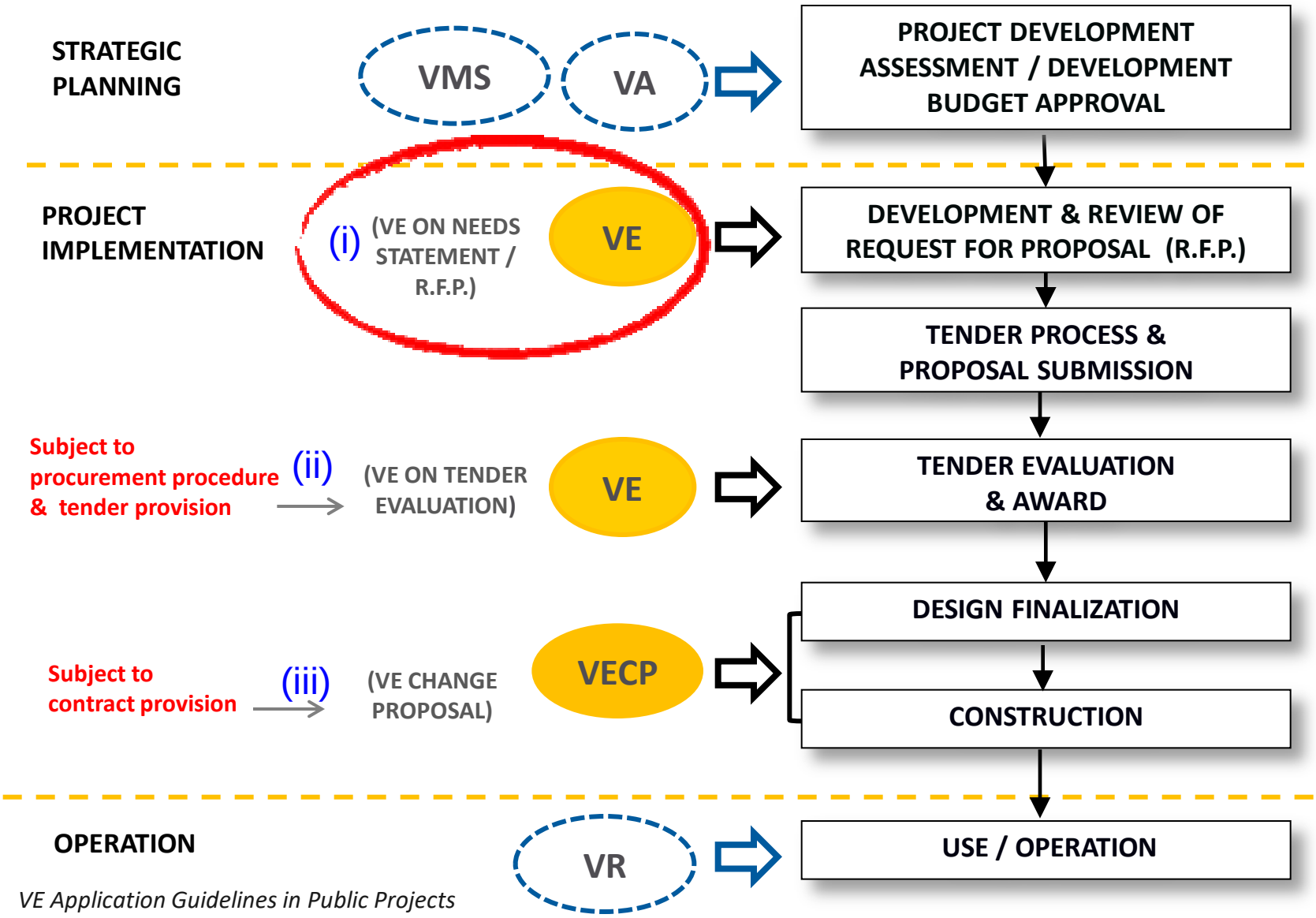
VE IN CONVENTIONAL PROJECTS

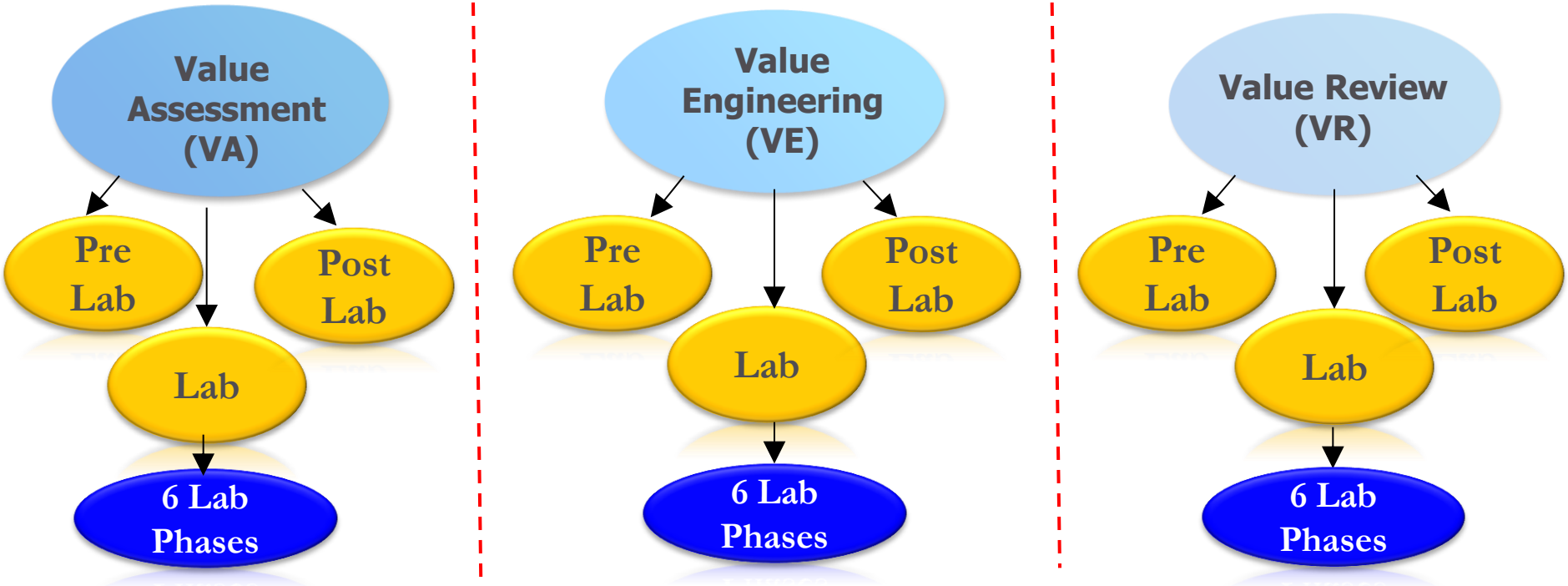


VE IN D&B / INTEGRATED PROCUREMENT SYSTEM

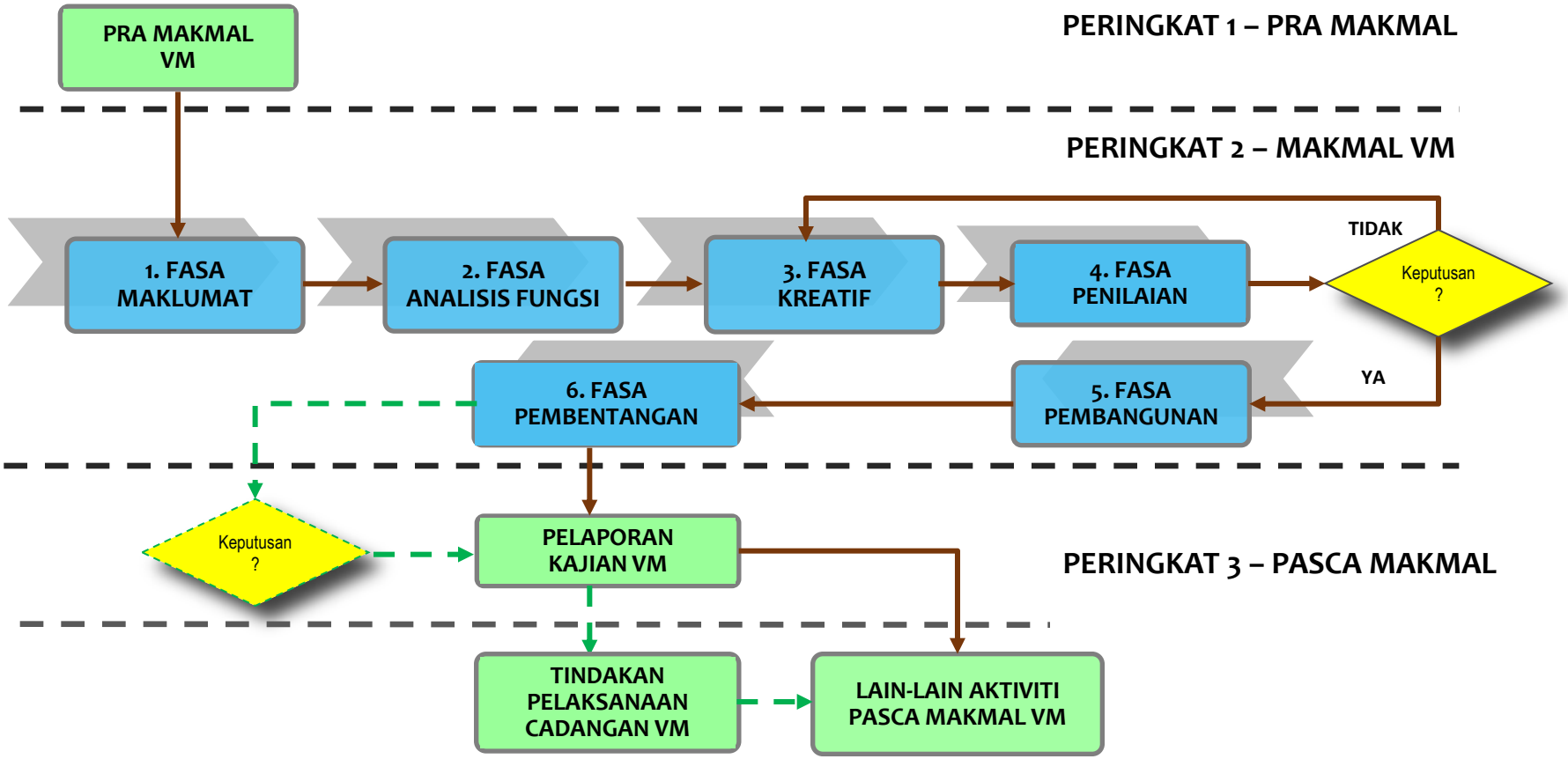


VE Application Guidelines in Public Projects (2013), PWD Malaysia

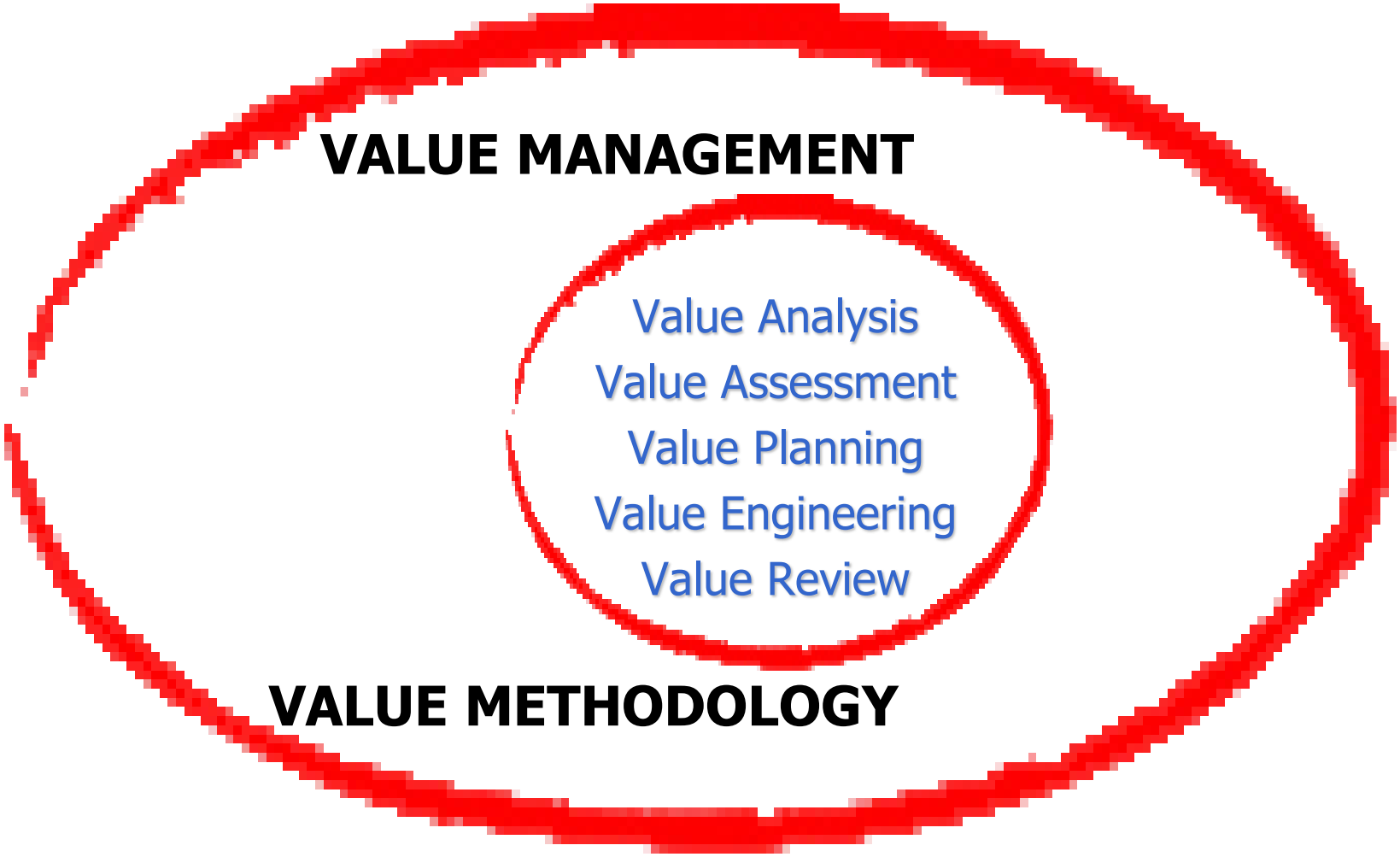
STRUKTUR PROSES SETIAP KAJIAN VM



PROSES GENERIK KAJIAN VM (MENURUT PIAWAIAN VM)



VM Terminologies



Value Management Philosophy

MAXIMIZING PROJECT VALUE

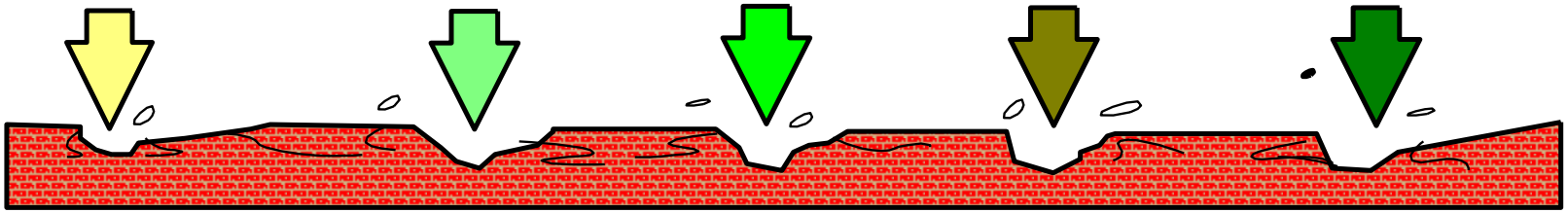
Optimize value variables (time, cost, quality, function, risk), and align with strategic objectives through out the project life cycle in achieving best Value For Money.

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.

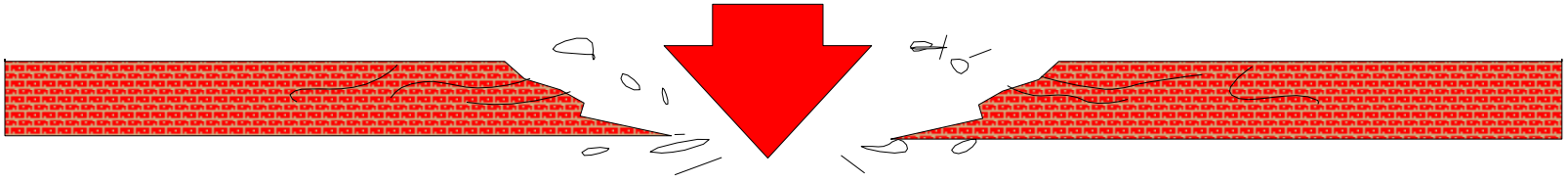
VM Team Approach

INDIVIDUAL EFFORTS



VM APPROACH

VM TEAM EFFORT



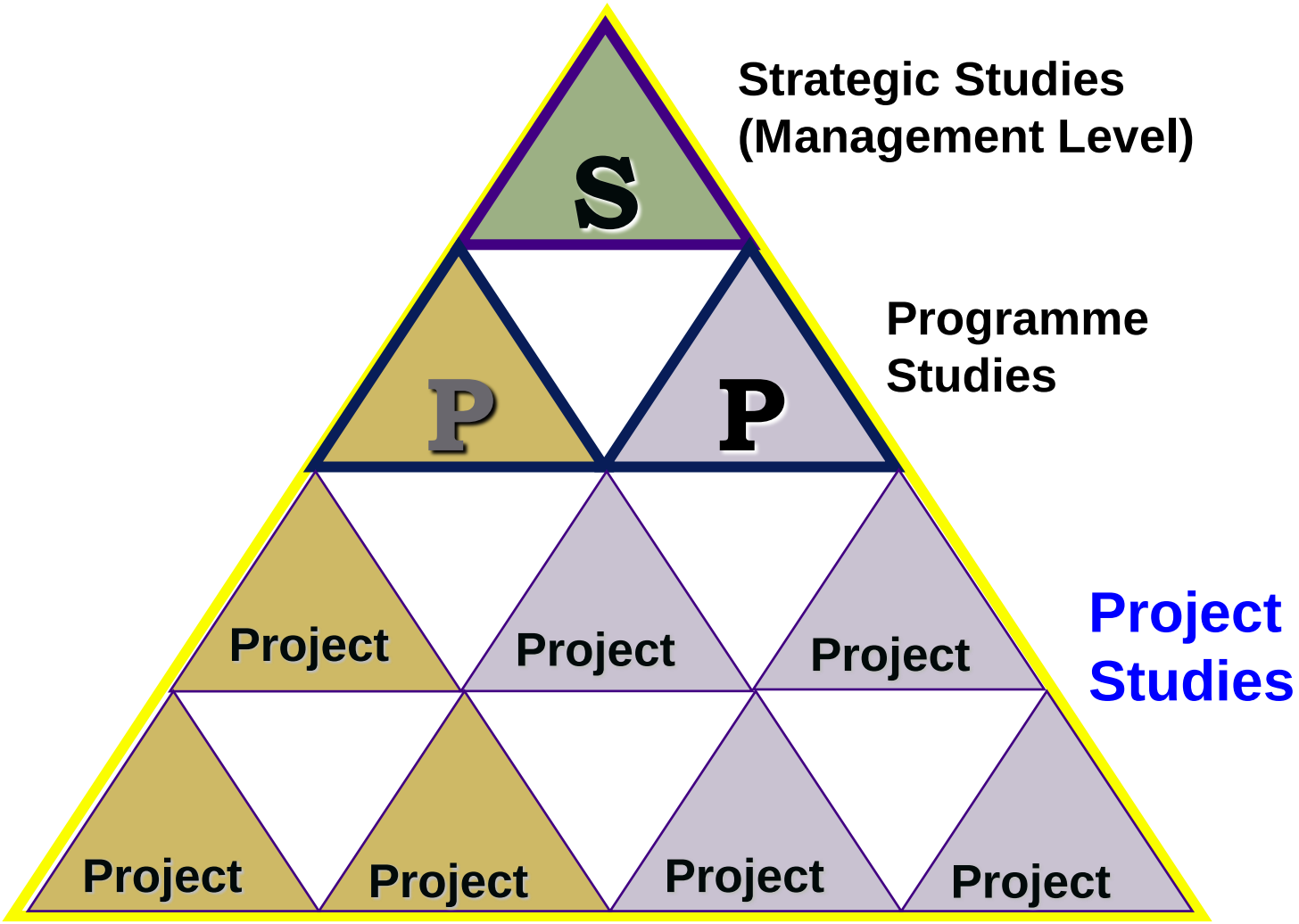
SOLUTION

Source: Abdulaziz S. Al-Yousefi (2008)

VM Impacts on 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 Implementation Levels



VM Benefits

- Better investment decision
- Improved products or services
- Robust management style
- Vehicle for innovation & change
- Effective methods and tools
- Enhanced competitiveness
- Improved communication
- Positive human dynamics

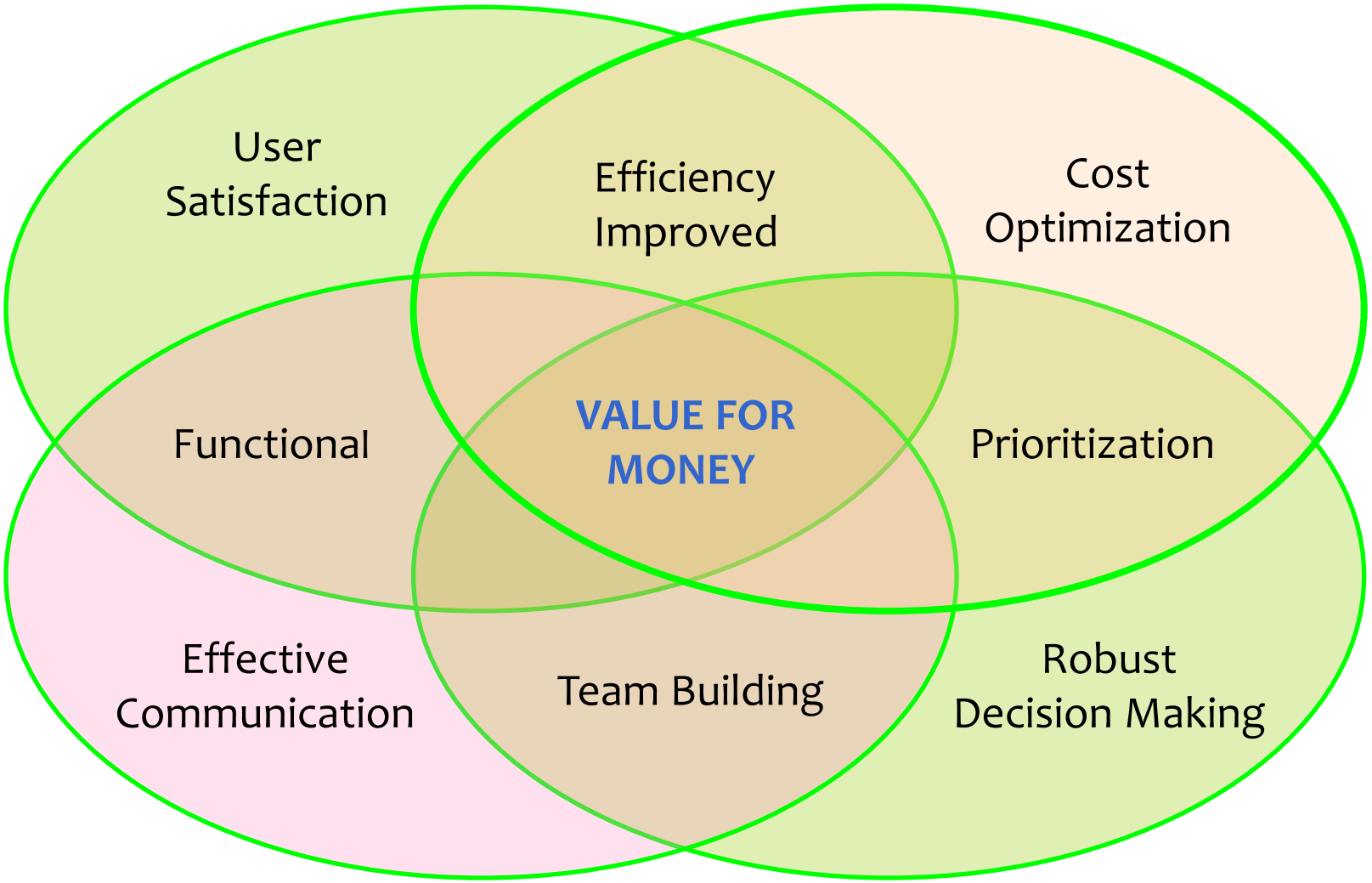
Challenges in VM

- Misconceptions about VM
- Misconduct of VM practices
- Confusion in VM terminology and process
- Lack of commitment and support
- Negative attitudes and rejections
- Unreliable information and data been provided
- Time schedule & cost expenses for VM workshop

Misconceptions about VM

✗ **Just another cost cutting tool**	▶	Eliminates unnecessary cost whilst retains or enhance quality or performance ✓
✗ **Equals to "Design Reviews" or "Cost Planning"**	▶	More systematic, disciplined and far reaching, function orientated, structured decision making tool, emphasizes on audits and a range of alternatives ✓
✗ **Additional "Road Block" & time consuming**	▶	Set strategic interventions along the project life cycle to improve delivery efficiency and whole development time ✓

Outcomes of VM



QUESTIONS ?
THANK U

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