

VM BODY OF KNOWLEDGE: VM STUDY PROCESS



contents

- **VM STUDY PROCESS (JOB PLAN)**

Before we start..



What is a **PROCESS** really ?



**A process is a handy solution
to tackling the same set of
problems you've been
encountering on a day to day
basis**

**Making improvements and
preventing past mistakes, in short
making your job easier**



VM Body of Knowledge



1

**VM Opportunities or
VM Interventions**



2

**VM Study Process or
VM Job Plan**



3

**VM Workshop or
Lab Process**

Process :

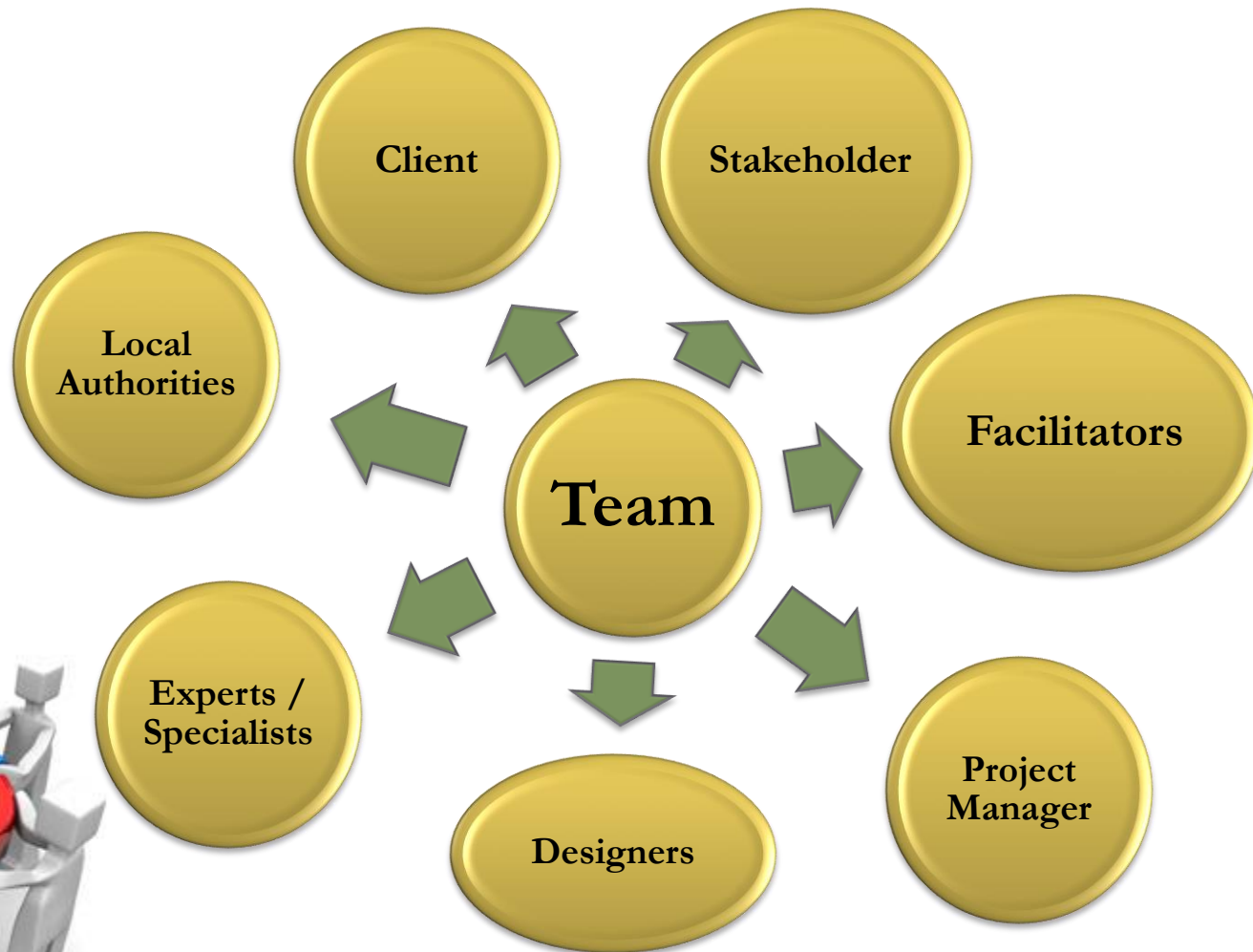
a) what to do

b) how to do it

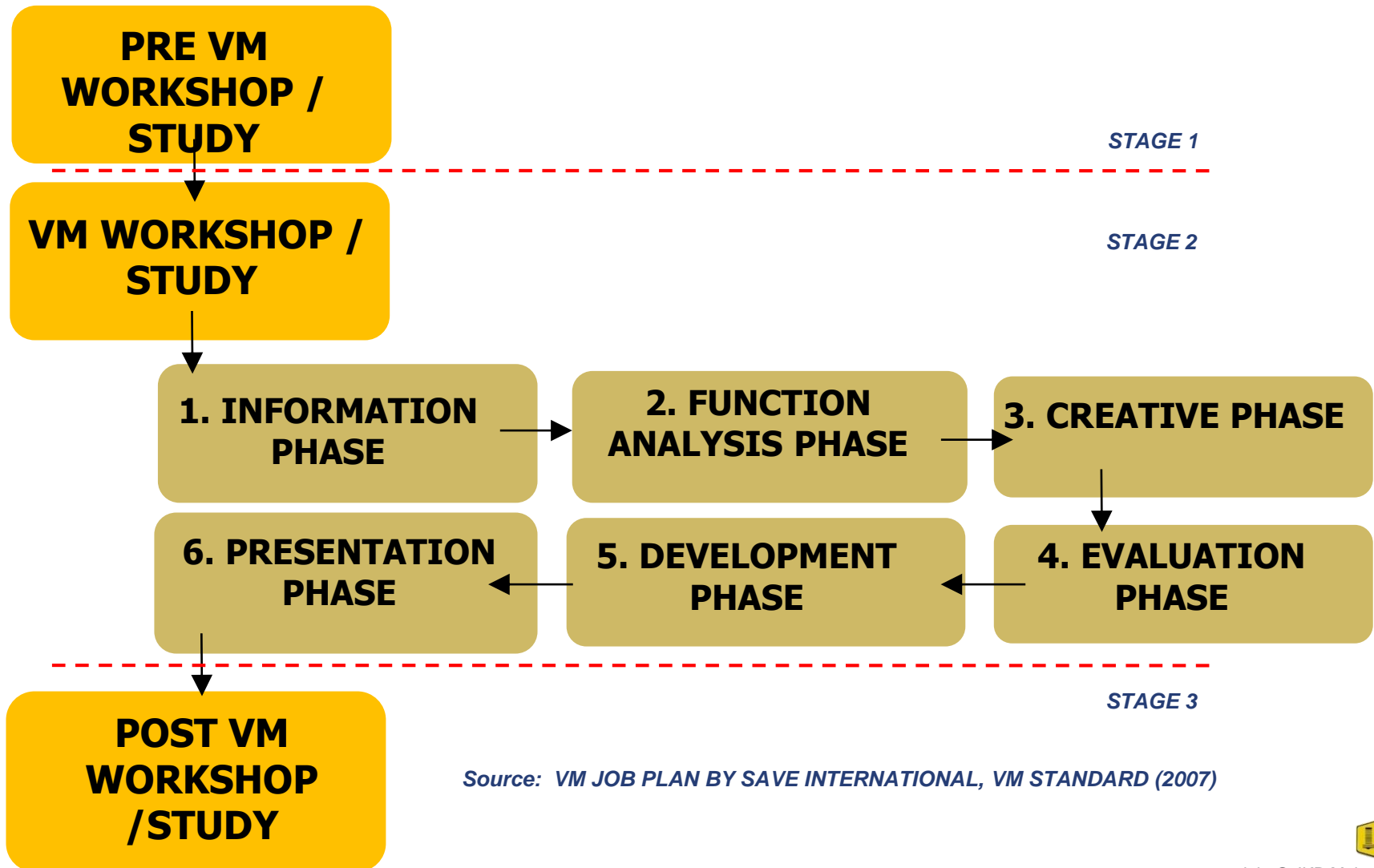
c) who does it

d) who needs to be told about it

VM Study Team Members



VM Job Plan (SAVE)



Source: VM JOB PLAN BY SAVE INTERNATIONAL, VM STANDARD (2007)

VM Study Process (UK)

O & D PHASE (PRE STUDY)

Identify value context;
Define study scope;
Gather data;
Identify & select team;
Develop agenda;
Study Logistics

WORKSHOP PHASE

Information sharing;
Function Analysis;
Create Solutions & innovations;
Evaluate solutions;
Present & validate;
Action Planning;
Prepare report;
Finalization & sign off

IMPLEMENTATION PHASE (POST STUDY)

Disseminate report;
Support Implementation;
Continuous Improvement

Source: Enhanced VM Process, Male & Kelly (2007)

VM Study Process (UK)

(1)- O & D (Orientation & Diagnosis) Phase

(2)-Implementation Phase

| Pre Study Information | Information | Creativity/ Innovation | Evaluation | Option/Idea Development | Action Planning | Workshop Report | Implementation |
|-----------------------|--------------------------------|------------------------|-------------------|-------------------------|---------------------|------------------|---------------------------|
| Information Gathering | Presentation and Team Building | Brain storming | First level Sort | Development | Present to sponsor | Prepare Report | Feedback Workshop |
| Information Synthesis | Information Gathering | | Refined Sort | | Plan to implement | Circulate Report | Prepare Final Action Plan |
| Agenda Production | Information Synthesis | | Select to Develop | | Prepare Action Plan | | Sign Off by Participants |
| | Function Logic Diagram | | | | Sign Off | | |
| | Function Analysis | | | | | | |
| | Process Analysis | | | | | | |
| | Target Functions | | | | | | |

(3)-Workshop Phase

Source: Revised Value Management Process, Kelly, Male & Graham (2004)



VM Study Process (EPU)

VM STUDY PROCESS SET BY EPU JPM (MALAYSIA)

FOR ALL VM STUDIES WHETHER VA / VE / VR

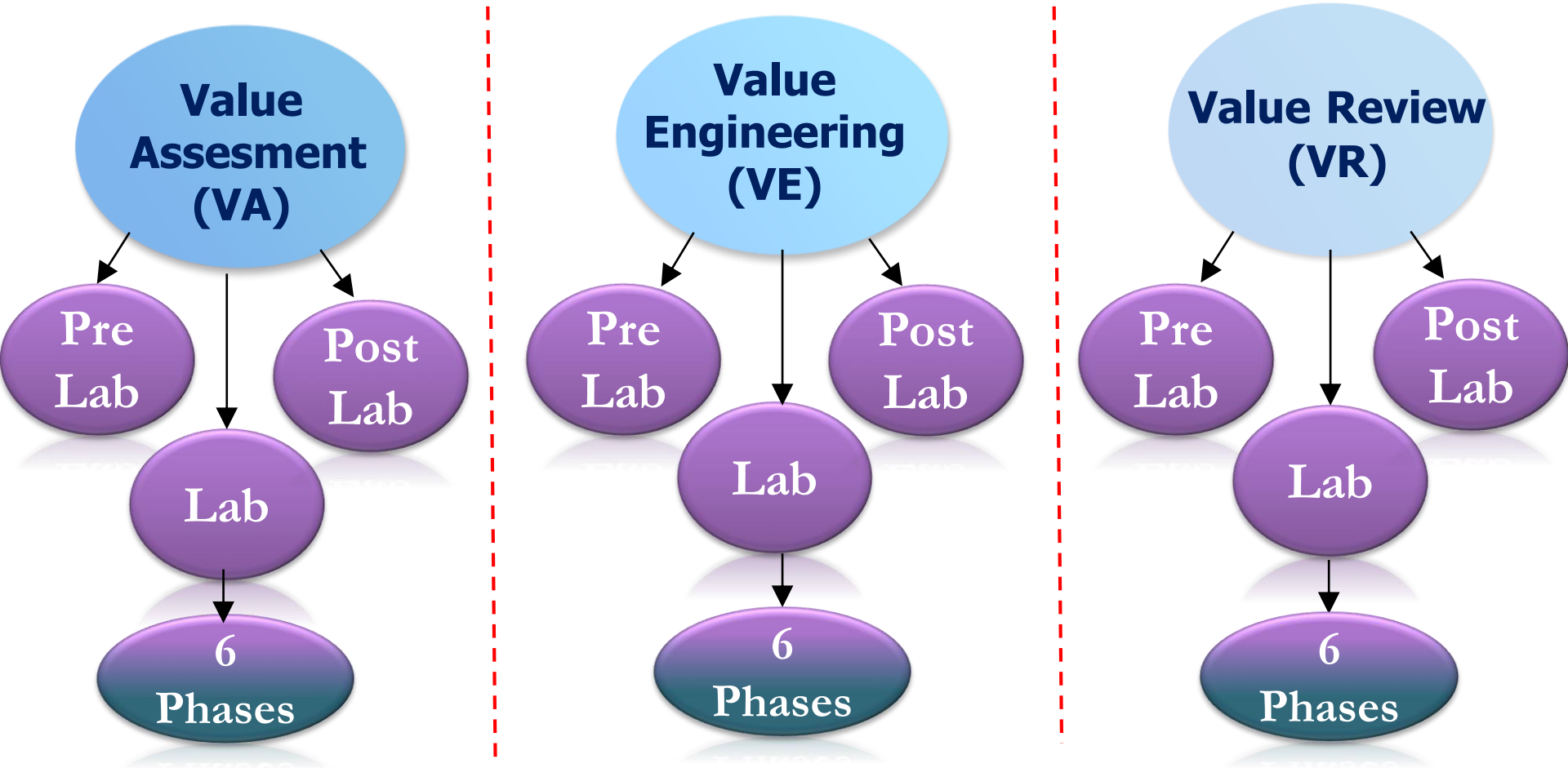
1 – PERINGKAT PRA LAB (PRELAB STAGE)

2 – PERINGKAT LAB (LAB STAGE)

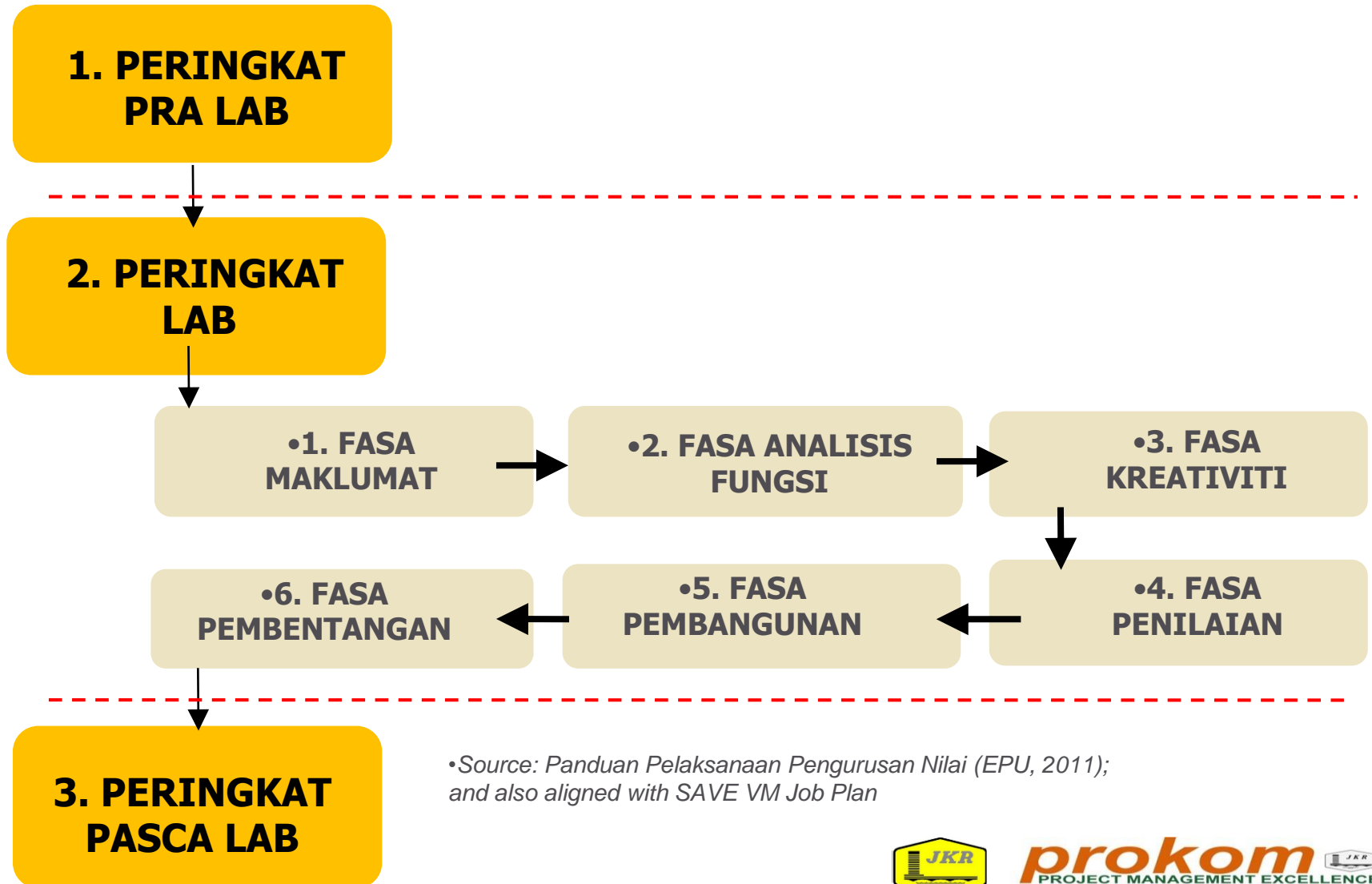
3 – PERINGKAT PASCA LAB (POST LAB STAGE)

(Sumber: Panduan Pelaksanaan Pengurusan Nilai, EPU - 2011)

VM Study Process (EPU)



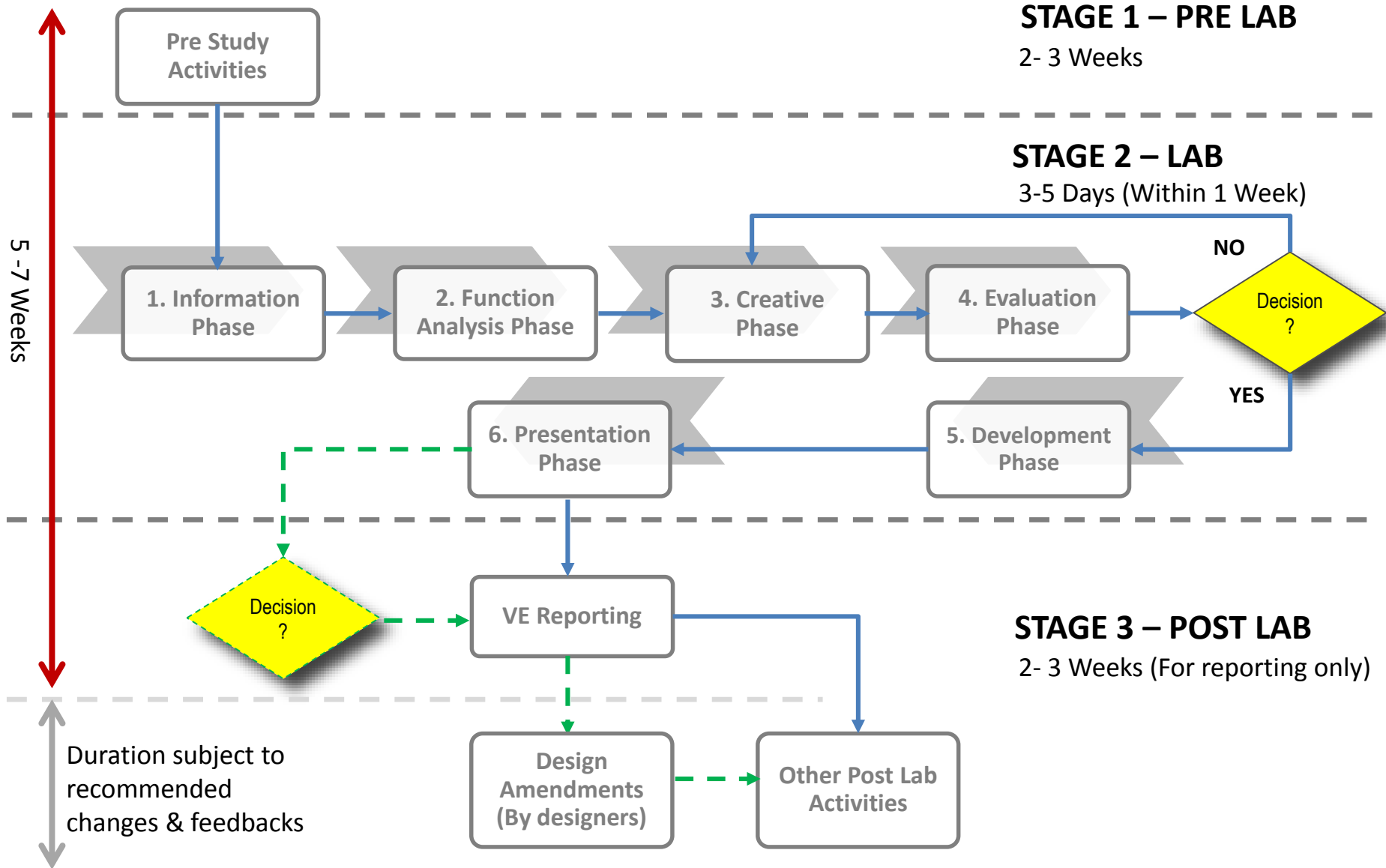
VM STUDY PROCESS (EPU)



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



VE STUDY PROCESS



•pre lab stage Tools & Techniques

TOOLS / TECHNIQUES

PURPOSE(S)

- VE Study Pre Requisite Form

Check project readiness for VE Study implementation

VE Study Pre Lab Checklist Form

Requirement checklist for implementing VE Study

- VE Lab Participant Identification
- (A.C.I.D. Test Form)

Determine the required composition of lab members;
Ensure right people for right roles & responsibilities

- Client Value System (CVS)
- (Tool - Paired Comparison)

Set priority of value objectives to be delivered;
Prioritize criteria for allocating resources and incorporate in design

- Function Analysis System Technique
 - (F.A.S.T. Diagram) – *Initial draft by Facilitator*
- Goals & Systems Modelling
 - – *Initial draft by Facilitator*

Represent the whole picture of required functions under study;
Guidance in aligning functions with objectives and project deliverables

Site visit

Understand the physical context and constraints

Similar Facility Walk Through

Provide basis of users' needs & requirements



•pre lab stage (cont'd)

•TOOLS / TECHNIQUES

- Meeting / Discussion
- Interviews / Questionnaires
- Cost Worth Index
- Drawings & Documents Analysis
- VE Study Model(s)
 - Cost Model
 - Life Cycle Cost
 - Space Model
 - Quality Model
- Post Occupancy Evaluation (POE)
- (of similar facility)

•PURPOSE(S)

- Interfacing with client / Project Manager / HOPT / Designers / HODT
- Facilitate on exploring project issues (evidences)
- Explore possible value problems to be resolved
- Identify indicative mismatches to be resolved
- Gather project background & basic information
- Identify indicative mismatches to be resolved
- Provide valuable information in improving value
- Provide basis for value study (Cost / LCC / Space/ Quality Models);
- Facilitate in selecting VE study scope & identifying indicative mismatches
- Provide valuable information to improve value (functional & operational performance; users' needs and requirements)



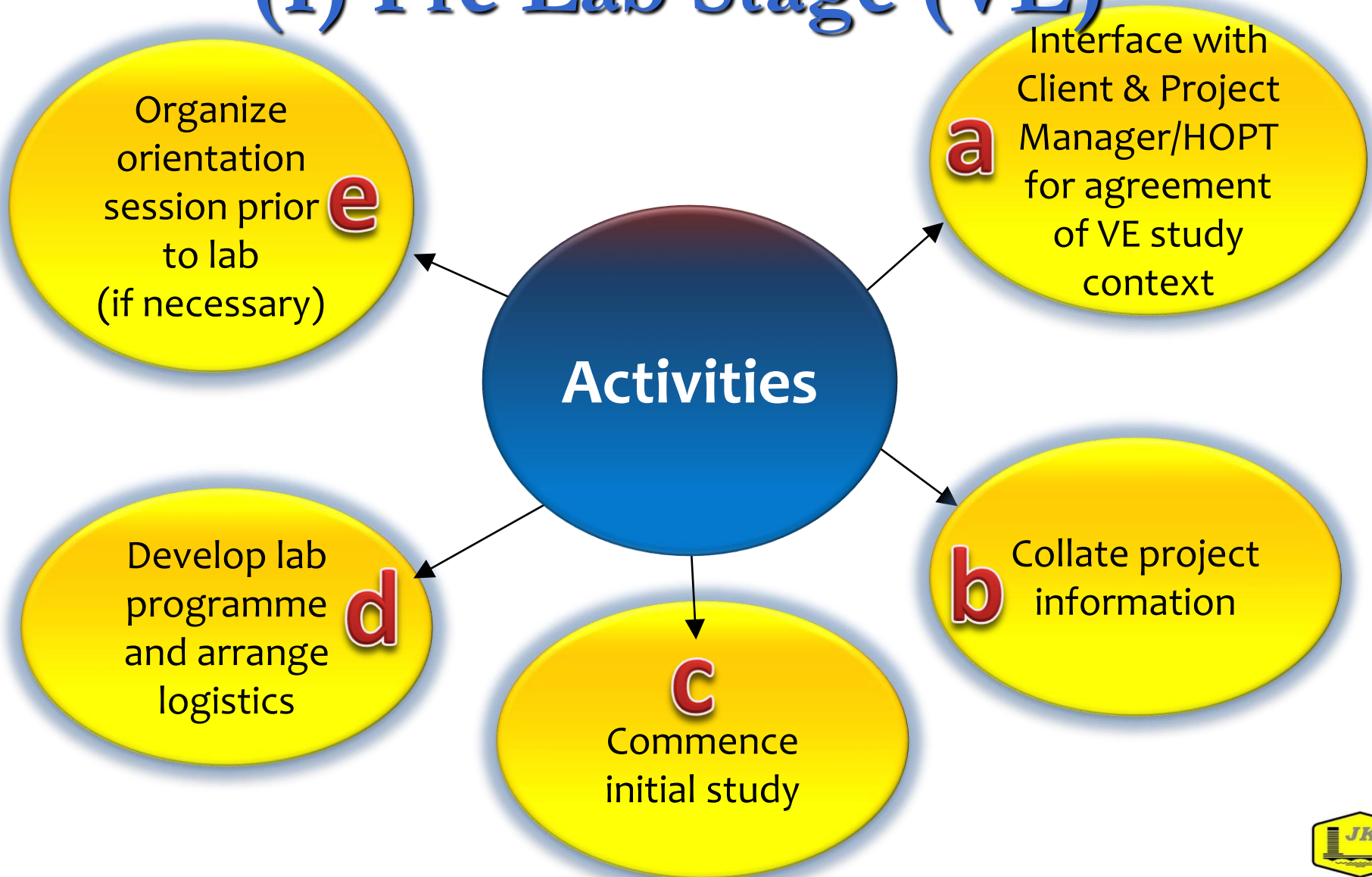
Pre Lab Stage (VE)...

**What are the
activities ?**



value management

(I) Pre Lab Stage (VE)



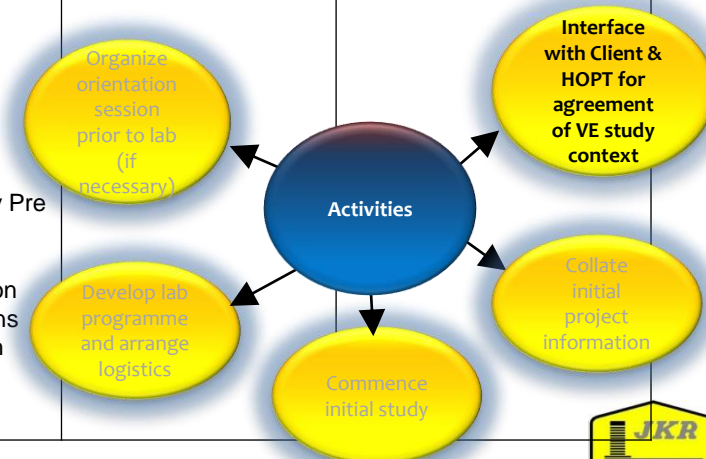


PRE LAB STAGE

FACILITATION EXERCISE OF PRE LAB STAGE

PRE LAB STAGE

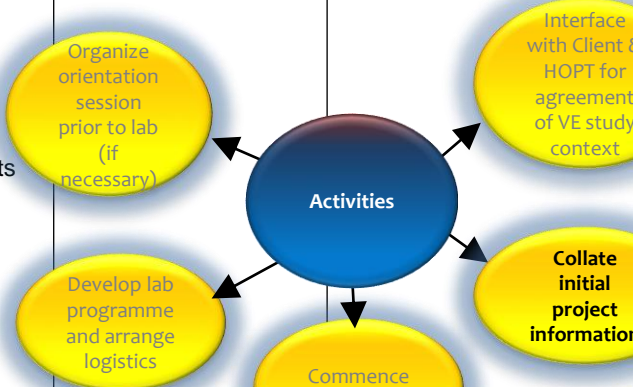
| | Stage Activities | Tasks | Time Allowed | Tip Notes |
|----------|--|---|--------------|--|
| A | Pre Lab Stage Activities | | | |
| a | <p>Interface with Client and Project Manager / HOPT (JKR)</p> <p><i>Note:</i> PM - Project Manager HOPT - Head of Project Team (JKR) HODT - Head of Design Team (JKR)</p> | <p>i. Upon receiving request for VE Study, you need to follow up with the Client / PM / HOPT (JKR) and arrange for an Initiation Meeting or discussion</p> <p>ii. During the meeting / discussion, you need to discuss and record the followings:</p> <ul style="list-style-type: none"> - Project information and context - Status of project implementation, to check for readiness and VE Study timeline (use VE Study Pre Requisite Form) - VE Study objectives and expected VE Study outputs / findings / deliverables - Issues, implication and constraints of VE Study - Compliance and deviations (if any) of VA Study - Requirement for further VE Study (if necessary) - Logistics - date, itinerary, venue, budget - Composition of lab participants (use A.C.I.D. Test - VE Lab Participant Identification Form) - List of requirements for Pre Lab and VE Lab (use VE Study Pre Lab Checklist Form). <p>iv. You are required to advise the Client / PM /HOPT (JKR) on any value issues to be resolved prior to lab such as deviations (scope and cost) from EPU for approval. In the event of such deviations approval from EPU is required.</p> | 2 to 3 hours | <p>Where required, depending on urgency of VE Lab, the Initiation Meeting may be combined with Pre Lab Meeting - [see Task c.ii]</p> |





PRE LAB STAGE

FACILITATION EXERCISE OF PRE LAB STAGE

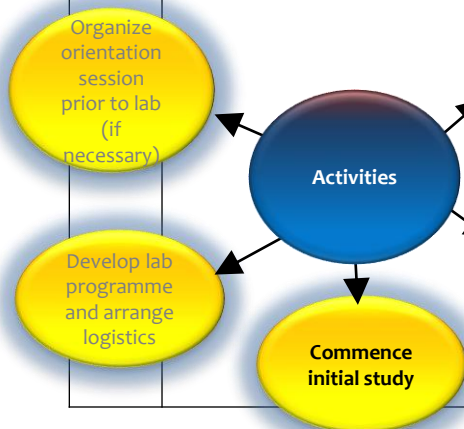
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| b | Collate project information | <p>i. You will follow up with Client / PM / HOPT (JKR) / designers / HODT (JKR) to provide information and documents as follows (use VE Study Pre Lab Checklist Form):</p> <ul style="list-style-type: none"> - Signed-off VA Lab Report (where applicable) - Client needs and requirements - Approved Project Brief including Schedule of Accommodation (SOA) and Gross Floor Area (GFA) for building project - Drawings (latest reviewed drawings) - Specifications - Technical brief - Technical report (traffic study, soil investigation, survey plan, feasibility study, EIA etc.) - Relevant statistical data - Approved project budget - Project Cost Estimate-PDA (latest reviewed cost) - Project Work Programme - Project Risk Management Plan (if any) - Relevant authorities requirement - Others as required <p>ii. You need to collect and compile information and documents (as listed above) for the purpose of pre study and lab.</p> | 1 - 2 weeks | <p>Ensure the latest information and documents are provided and submitted</p>  |
|---|-----------------------------|---|-------------|--|



PRE LAB STAGE

FACILITATION EXERCISE OF PRE LAB STAGE

| | | | | |
|---|------------------------|---|--|---|
| c | Commence initial study | <p>i. You shall commence initial study covering the followings:</p> <ul style="list-style-type: none"> - Study design proposal and quality requirements - Study project objectives and project outcomes - Study project functions and propose FAST Diagram - Identify and prioritize Client Value System (CVS) with client - Propose Space / Cost / Quality (or others) study model(s) - Check compliance or deviations (if any) of design proposal against VA recommendation - Any other initial study requirements <p>ii. You need to conduct Pre Lab Meeting or further discussion; to understand the project design and/or to resolve specific value issues (e.g. Scope/Cost deviation from VA - [See Task a.iv]) involving Client, PM / HOPT, designers / HODT (JKR), authorities and others</p> <p>iii. Wherever required, you need to visit project site together with Client, PM / HOPT, designers / HODT (JKR) and others</p> <p>iv. From initial study, you may identify possible value mismatches and/or potential value improvement which will be focused during lab</p> | <p>2 - 3 days of desk study (by Lead Facilitator); and half to 1 day (by Facilitation Team)</p> <p>Half to 1 day for meeting / discussion</p> <p>1-2 days for site visit (subject to location)</p> | <p>The initial study findings (by Lead Facilitator) will be shared with the Facilitation Team [See Task e.ii] - focusing on value issues [See Task a.iv]; identified value mismatches; and/or potential value improvement [See Task c.iv]</p> <p>Wherever required, Pre Lab Meeting may be combined with Initiation Meeting [See Task a. ii]; and it can also be repeated for in- depth study or to resolve specific issues</p> <p>Consider ample travel time to any remote site location</p> <p>Feel and understand the project and design in relation to the site conditions</p> |
|---|------------------------|---|--|---|

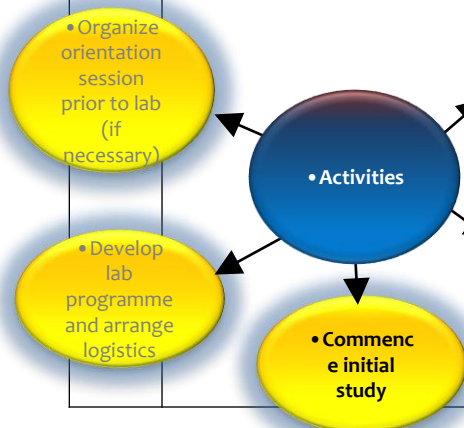




PRE LAB STAGE

•FACILITATION EXERCISE OF PRE LAB STAGE

| | | | | |
|---|------------------------|---|--|---|
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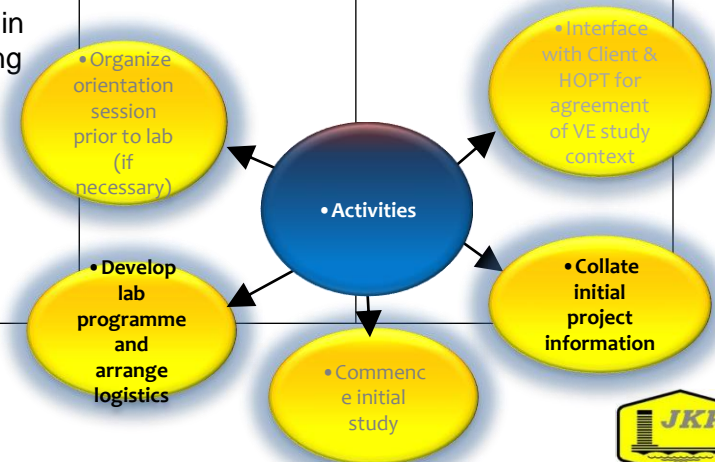




PRE LAB STAGE

•FACILITATION EXERCISE OF PRE LAB STAGE

| | | | | |
|---|---|---|------------|--|
| d | Develop lab programme and arrange logistics | <p>i. You will prepare the followings for lab execution:</p> <ul style="list-style-type: none"> - Develop lab agenda - Identify and appoint facilitation team - Identify lab tools and techniques - Identify and propose list of lab participants - Identify lab working groups and study scopes - Prepare lab kit / study materials (if necessary) - Set lab arrangement and requirement (room layout, equipment etc.) - (use VE Study Pre Lab Checklist Form) - Arrange travel logistics (ticket, accomodation etc.) <p>ii. You need to advise Client / PM / HOPT (JKR) in preparing materials, equipments and and arranging logistics for lab.</p> | 2 - 3 days | Keep close contact with client / PM / HOPT (JKR) |
|---|---|---|------------|--|

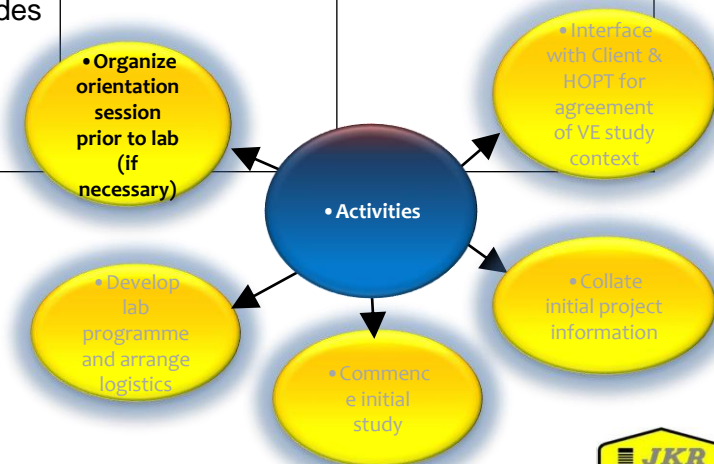




PRE LAB STAGE

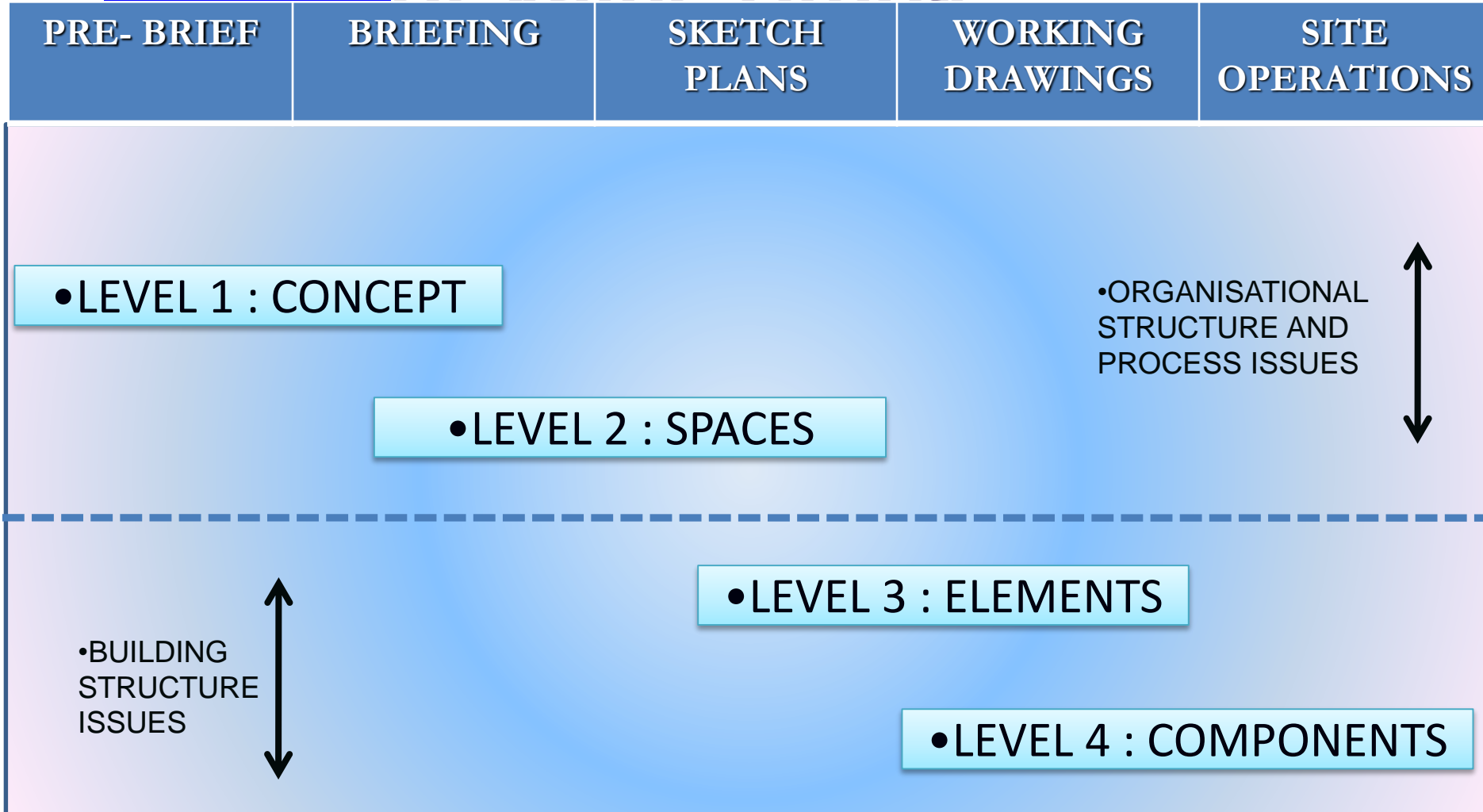
•FACILITATION EXERCISE OF PRE LAB STAGE

| | | | | |
|---|---|--|--|--|
| e | Organize orientation session (if necessary) | <p>i. Wherever necessary, you may conduct orientation sessions for:</p> <ul style="list-style-type: none"> - Facilitation team (a dedicated session) - you will share initial study findings, discuss and strategize lab execution with other team members - Project team / Lab participants (session may be conducted during Initiation Meeting / Pre Lab Meeting / Lab (Information Phase) - to use presentation slides for briefing on VE Study implementation. | <p>Half to 1 day</p> <p>30 minutes</p> | <p>VE Lab must be strategized according to the pre-determined VE Study Objectives and expected study outputs / findings [See Task a.iii]</p> |
|---|---|--|--|--|



• value management

• Levels of Value Study

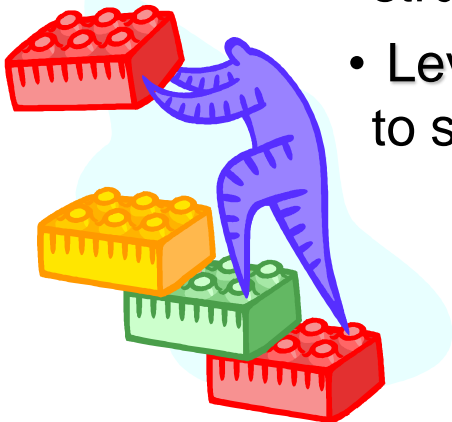


levels of function analysis

Function analysis on products, services, components, systems etc. is to determine the characteristic action performed by them.

The construction orientated function analysis levels are:

- Level 1 function – **Concept** – functions of the project or product as a whole especially when a built decision is made
- Level 2 function – **Space** – functions of spaces within the project to represent a picture of the client's requirements
- Level 3 function – **Elements** – functions of the building's structural form to fit in the space requirements
- Level 4 function – **Components** – functions of components to satisfy the requirements of the elements

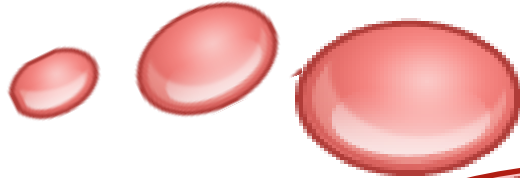


Source from: VM in Construction Projects -
Kelly, Male & Graham (2004)

•value management

•Pre Lab Stage (VE)

•PROJECT OBJECTIVES



•“IF THE PRE STUDY INFORMATION STAGE IS CONDUCTED PROPERLY, THE FACILITATOR WILL BE WELL BRIEFED REGARDING ANY HIDDEN AGENDAS & POLITICS BEHIND THE PROJECT”

• - [Steven male et al](#) -

•value management

•Pre Lab Stage (VE)

- Initial findings: trigger to investigation
- Value mismatches
- Cost dominant items
- Quality mismatches

• value management

Value Mismatch

A FUNCTION MISMATCH:

An identified function that is unnecessarily been provided or not provided which does not align with the desired mission or deliverable.

**USE FUNCTION
ANALYSIS OR
F.A.S.T.**

A COST MISMATCH:

A calculated cost that is unnecessarily priced above the identified worth – the least cost to perform the required function.

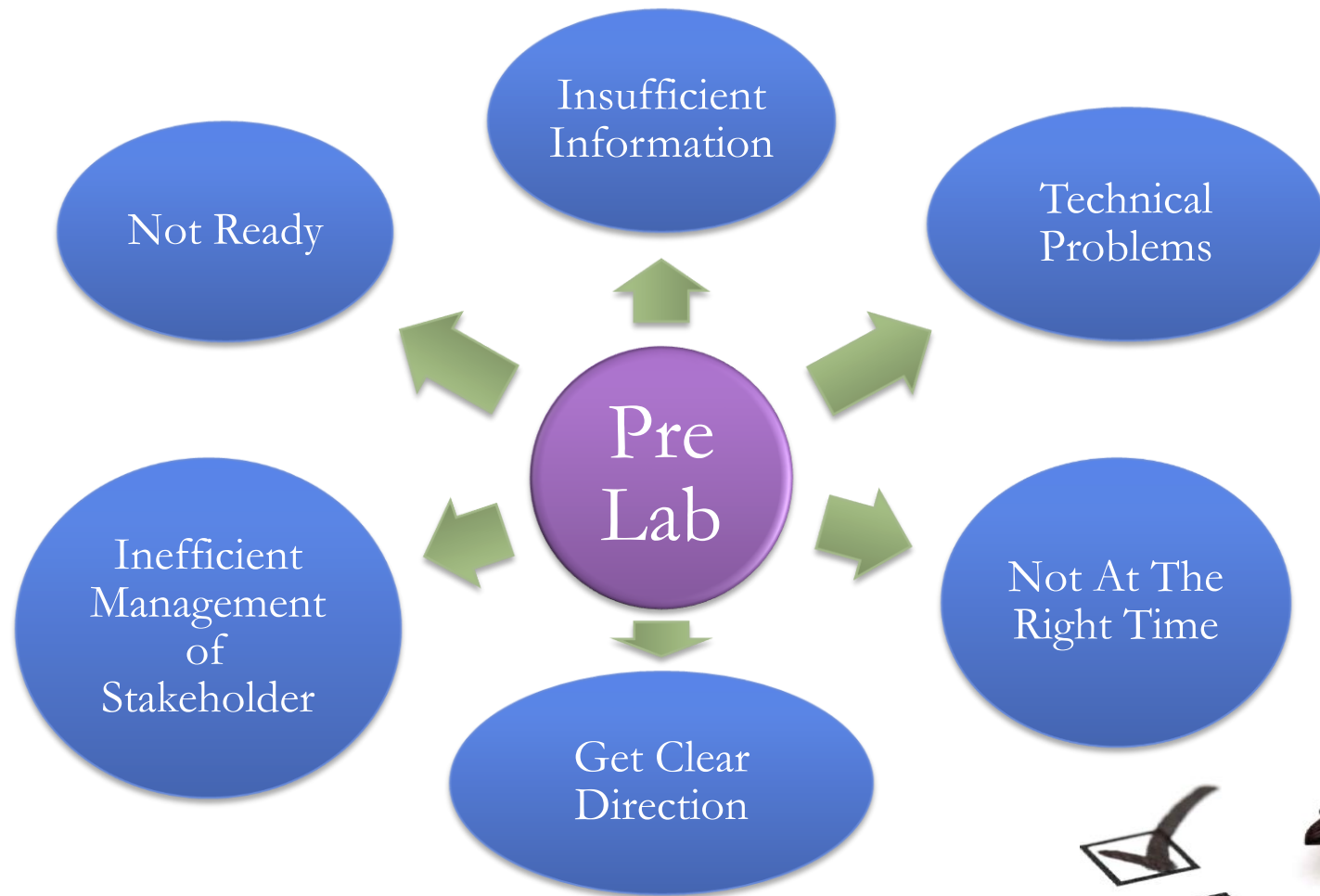
**USE COST / WORTH
INDEX**

A QUALITY MISMATCH:

Any deliverable that been provided does not align to the quality performance described or mentioned in the needs statement or project brief.

**USE QUALITY
MODELS OR STAR
DIAGRAM**

Pre Lab Challenges



(II) Lab Stage (VE)

Information Phase

Function Analysis Phase

Creativity Phase

Evaluation Phase

Development Phase

Presentation Phase

VM Workshop Process

International VM
Benchmarking
(UK / EU)

Information
(with Function Analysis)

Creativity

Evaluation

Option / Idea Development

Action Planning

SAVE International
Job Plan

Information Phase

Function Analysis Phase

Creative Phase

Evaluation Phase

Development Phase

Presentation Phase

VM Lab Process (EPU)

VM LAB PROCESS SET BY EPU JPM (MALAYSIA)

FOR ALL VM STUDIES WHETHER VA / VE / VR

- 1 – FASA MAKLUMAT (INFORMATION PHASE)**
- 2 – FASA ANALISIS FUNGSI (FUNCTION ANALYSIS PHASE)**
- 3 – FASA KREATIVITI (CREATIVITY PHASE)**
- 4 – FASA PENILAIAN (EVALUATION PHASE)**
- 5 – FASA PEMBANGUNAN (DEVELOPMENT PHASE)**
- 6 – FASA PEMBENTANGAN (PRESENTATION PHASE)**

(Sumber: Panduan Pelaksanaan Pengurusan Nilai, EPU - 2011)

Post Lab Stage...



What are the activities ?

POST LAB STAGE

PURPOSE :

- Prepare and submit VE study report
- Monitor and assess implementation on VE Study recommendations and findings
- Assess performance of VE Study implementation

TIME FRAME: 2 – 3 Weeks (for Reporting only)

MATERIALS:

TOOLS:

- VE Lab materials (templates, other documents)
- VE Lab Report Format
- Project work programme (Latest / Revised)
- Tender Table Documents / Contract Documents
- Tender Drawings / Contract Drawings
- Project Cost (Latest PDA / ATDA)
- VE Post Lab Action Plan Report
- VE Post Lab Compliance Report
- Documents reviews
- Interviews

POST LAB STAGE

POST LAB STAGE – VE REPORTING

| Code | Stage Activities | Tasks | Time Allowed | Tip Notes |
|----------|----------------------------------|--|--------------|-----------|
| C | Post Lab Stage Activities | | | |
| a | Document VE Study outputs | i. You need to consolidate VE Study outputs ii. Then, prepare VE Report iii. You will present VE Report (as required) iv. Then, obtain VE Study Report sign-off (as required) | 1-2 weeks | |
| b | Disseminate VE Study Report | i. You will submit VE Study Report to Client ii. Then, disseminate VE Report to relevant parties | 1-2 days | |

SAMPLES OF VE STUDY REPORTS

POST LAB STAGE

POST LAB STAGE - OTHER ACTIVITIES

| Code | Stage Activities | Tasks | Time Allowed | Tip Notes |
|----------|--|---|--------------|-----------|
| C | Post Lab Stage Activities | | | |
| c | Follow-up Agreed Action Plan | i. You shall monitor implementation of Action Plan ii. Then, update status of Action Plan iii. You will assess Action Plan compliance and propose improvement iv. Then, take necessary action to improve Action Plan | 1-2 days | |
| d | Monitor and assess implementation on VE Study recommendations and findings | i. You need to monitor recommended ideas and findings in project ii. Then, update implementation status of recommended ideas and other findings | 2-3 days | |
| e | Assess performance of VE Study implementation | i. You will assess overall performance of VE Study ii. Then, communicate assessment of VE Study performance and lessons learned iii. Finally, propose improvement of VE Study implementation | 2-3 days | |

VE POST LAB ACTION PLAN TEMPLATE



VALUE ENGINEERING

VE Post Lab Action Plan Report

Reference : JKR.VE.Post.01
Page No : 1
Issue No : 1
Revision No : 1
Date : AUGUST 2013

PROJECT :

VENUE (VE LAB) :

DATE (VE LAB):

| NO. | AGREED ACTION PLAN | OUTPUT | RESPONSIBILITY | TARGET COMPLETION DATE | ACTUAL COMPLETION DATE | STATUS | REMARKS |
|-----|--------------------|--------|----------------|------------------------------|------------------------------|--------|---------|
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PREPARED BY:

DATE:

SIGNATURE:

REVIEWED BY:

DATE:

SIGNATURE:



VE POST LAB COMPLIANCE TEMPLATE

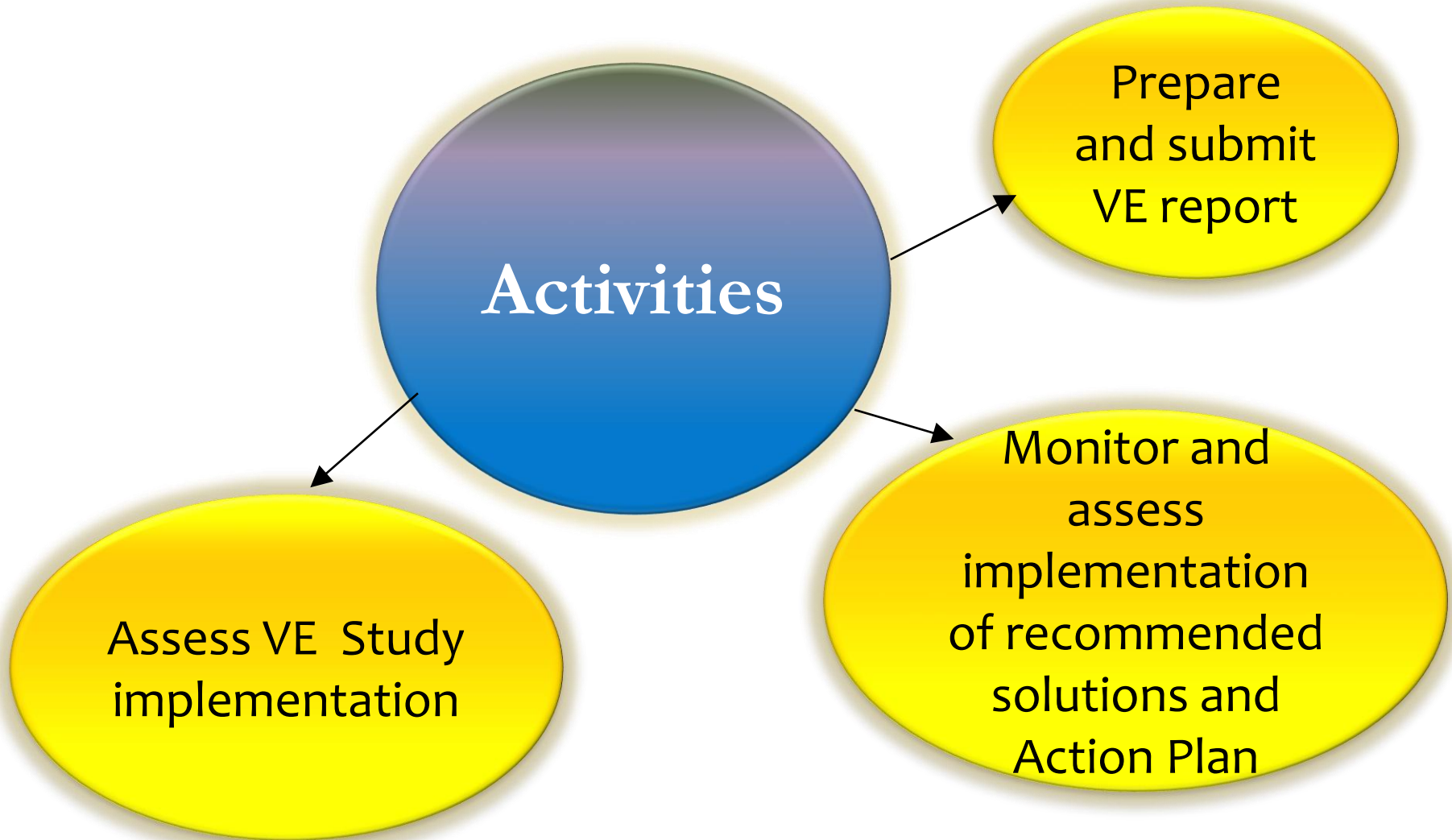
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|  | VALUE ENGINEERING VE Post Lab Compliance Report | Reference : JKR.VE.Post.02 Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013 |
| | | |

| | |
|-------------------------|-----------------------|
| PROJECT : | |
| VENUE (VE LAB) : | DATE (VE LAB): |

| NO. | RECOMMENDED IDEAS | SAVING / EXTRA | COMPLIANCE | | | REMARKS |
|-----|-------------------|-------------------|------------|---------|----|---------|
| | | | YES | PARTIAL | NO | |
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| PREPARED BY: | DATE: | SIGNATURE: |
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(III) Post Lab Stage (VE)



(III) Post Lab Stage (VE)

ACTIVITY

- Follow up agreed Action Plan

TECHNIQUE

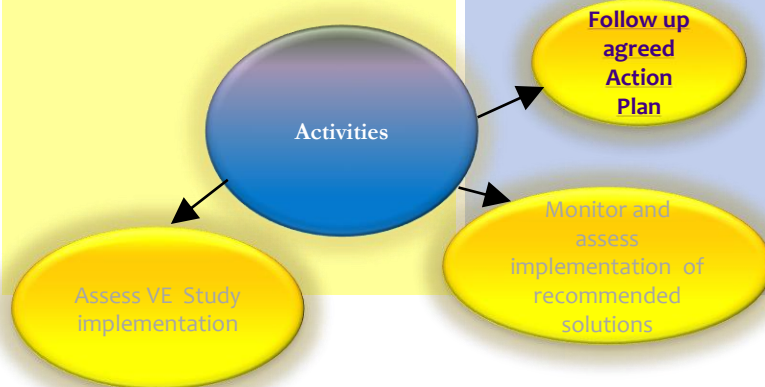
- Follow up status with HOPT and others as agreed in the Action Plan

OUTPUT

- Action Plan status report to client and HOPT

OUTCOME

- Timely and maximum implementation of VE recommendations



(III) Post Lab Stage (VE)

ACTIVITY

- Monitor and assess implementation of recommended solutions

TECHNIQUE

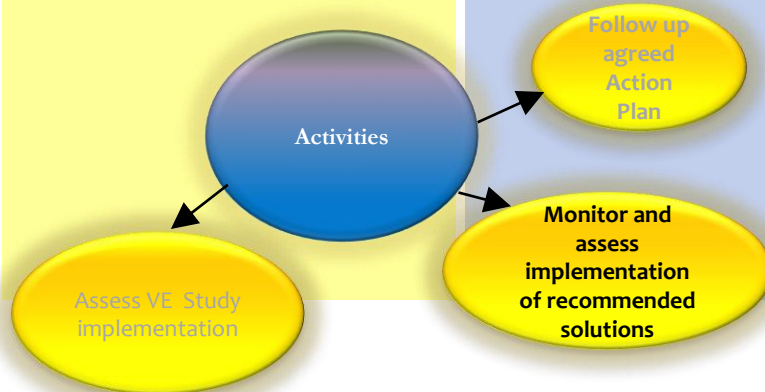
- Develop monitoring plan and monitor implementation

OUTPUT

- Monitoring Report to client and relevant parties

OUTCOME

- Fullfill VE Lab Recommendations



(III) Post Lab Stage (VE)

ACTIVITY

- Assess VE Study implementation

TECHNIQUE

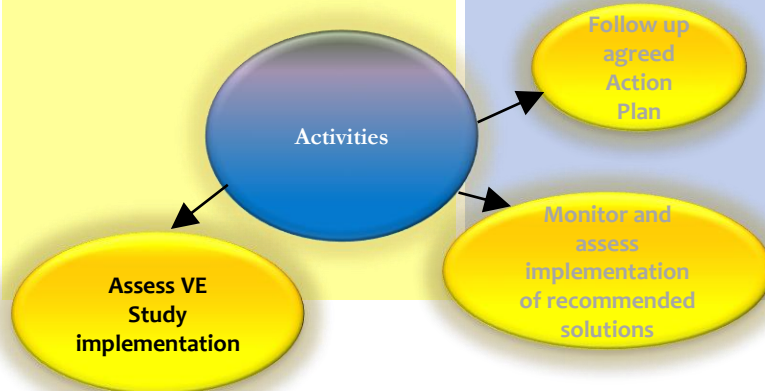
- Assess overall implementation of VE Study and report to client and relevant parties

OUTPUT

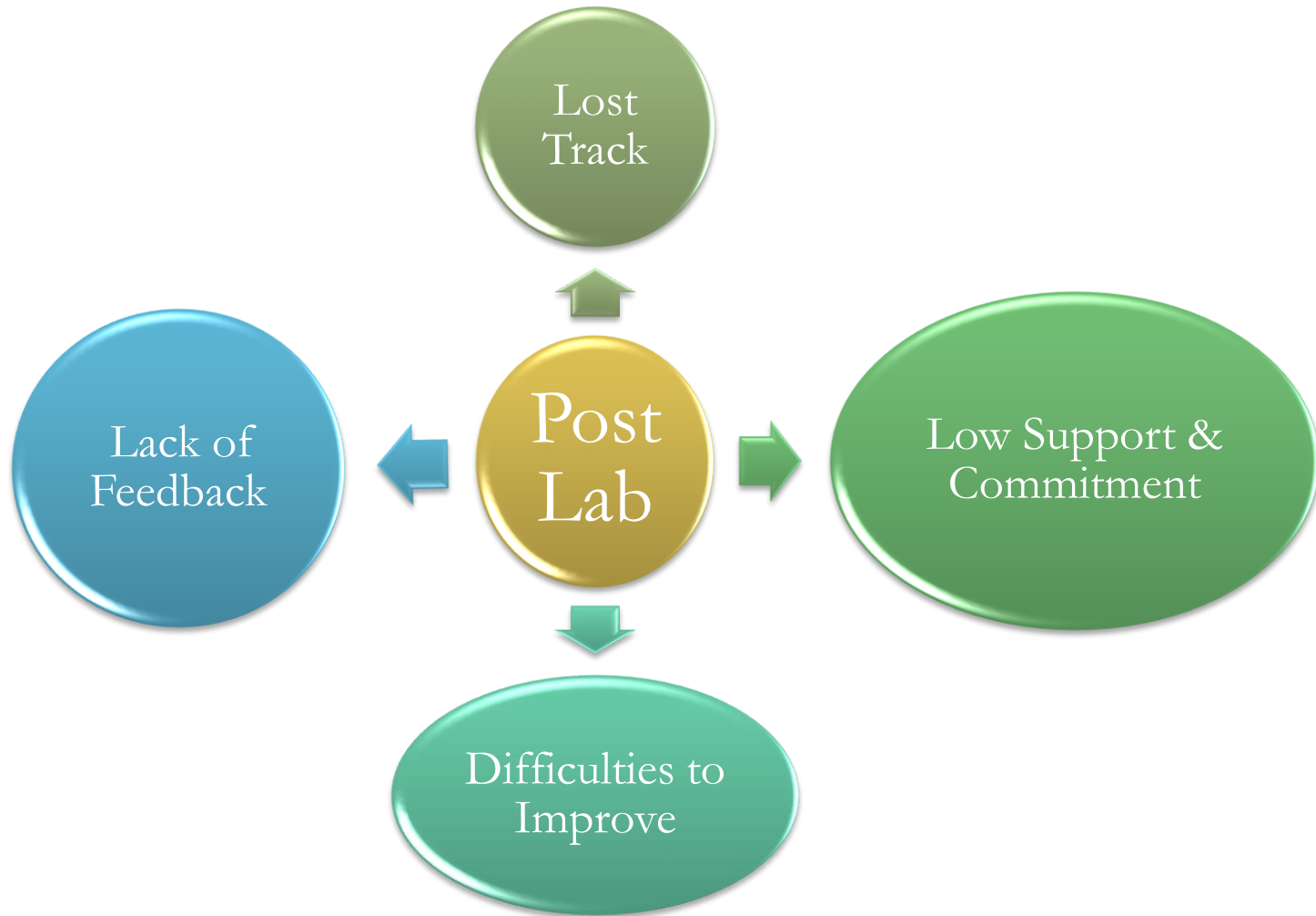
- VE Study implementation (close-out) report

OUTCOME

- Continuous improvement on VM Study implementation



Challenges of Post lab



VM Body of Knowledge



1

**VM Opportunities or
VM Interventions**



2

**VM Study Process
or VM Job Plan**



3

**VM Workshop or
Lab Process**

IN THE ESSENCE OF SHARING ...



THANK YOU

