



GARIS PANDUAN DAN PELAKSANAAN IVV SEKTOR AWAM

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Bahagian Perundingan ICT (BPI), MAMPU

10 MEI 2016 [Selasa]
B1, Kompleks B

- 1 Tujuan
- 2 Pengenalan
- 3 Latarbelakang
- 4 Program IVV Sektor Awam (PPSA)
- 5 Penemuan PPSA Fasa Pre-Engagement, Engagement and Post Engagement
- 6 PPSA – Lessons Learnt/Isu-isu
- 7 Garispanduan IVV
- 8 Penutup



Memberi penerangan berkaitan pelaksanaan dan Garis Panduan IVV di Sektor Awam

Latarbelakang IVV Sektor Awam

• EPU – PRE2 2009 RMK10|11

- Pengujian Perisian – Sumber baru pertumbuhan ekonomi
- Inisiatif MSTH dilaksanakan – M'sia destinasi pilihan Pengujian Perisian global
- Pengerusi SC MSTH

- **MSTB** ([Q-Portal](#), [Q-lab](#), [Q-Cap](#), [Q-Industry](#))
- Pelaksana inisiatif MSTH
- Q-Cap [INTAN](#)-CPRE, CTFL, CTAL
- Kerjasama *Univ MEMPHIS - Penyedia IVV Handbook
- Pelaksana PPSA 2014-2016
- Pgm Tahunan (SOFTEC, STST, TDC-Test Design Competition)

- Pelaksana klausa 2.1.4
- Akreditasikan Syarikat-syarikat IVV yang berkelayakan
- Meyediakan Standard “MS” yang berkaitan pengujian perisian
- Pengerusi TC MSTH
- Pengerusi SC PPSA

- Policy dan garispanduan pelaksanaan IVV
- Perolehan Kerajaan ([PK 2](#)) – Klausa 2.1.3 dan 2.1.4
- Kod Bidang IVV,
- Kaedah Perolehan IVV

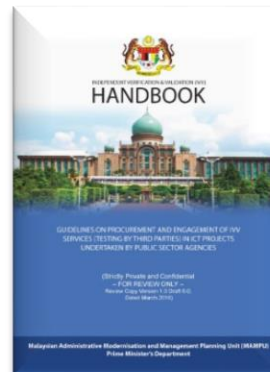
MSTB:

- Administer ISTQB accreditation and certification examination:
 - ✓ ISTQB Certified Tester scheme
- Administer IREB professional certification examination:
 - ✓ IREB Certified Professional Requirements Engineer (CPRE) scheme

- Pelaksana klausa 2.1.3 -Laksana IVV untuk Sektor Awam
- IVV Pra syarat kelulusan JTISA
- [MyTCoE](#)-Keeper IVV Handbook, Penyedia SOP dan [garispanduan](#) berkaitan pelaksanaan IVV

*Software Testing Excellence Program (STEP)

• 2014-2015



Definitions – International Standards

Independent verification and validation (IV&V).

*Verification and validation performed by an organisation that is **technically, managerially, and financially** independent of the development organization*

(ISO/IEC/IEEE 24765:2010 Systems and software engineering—Vocabulary)



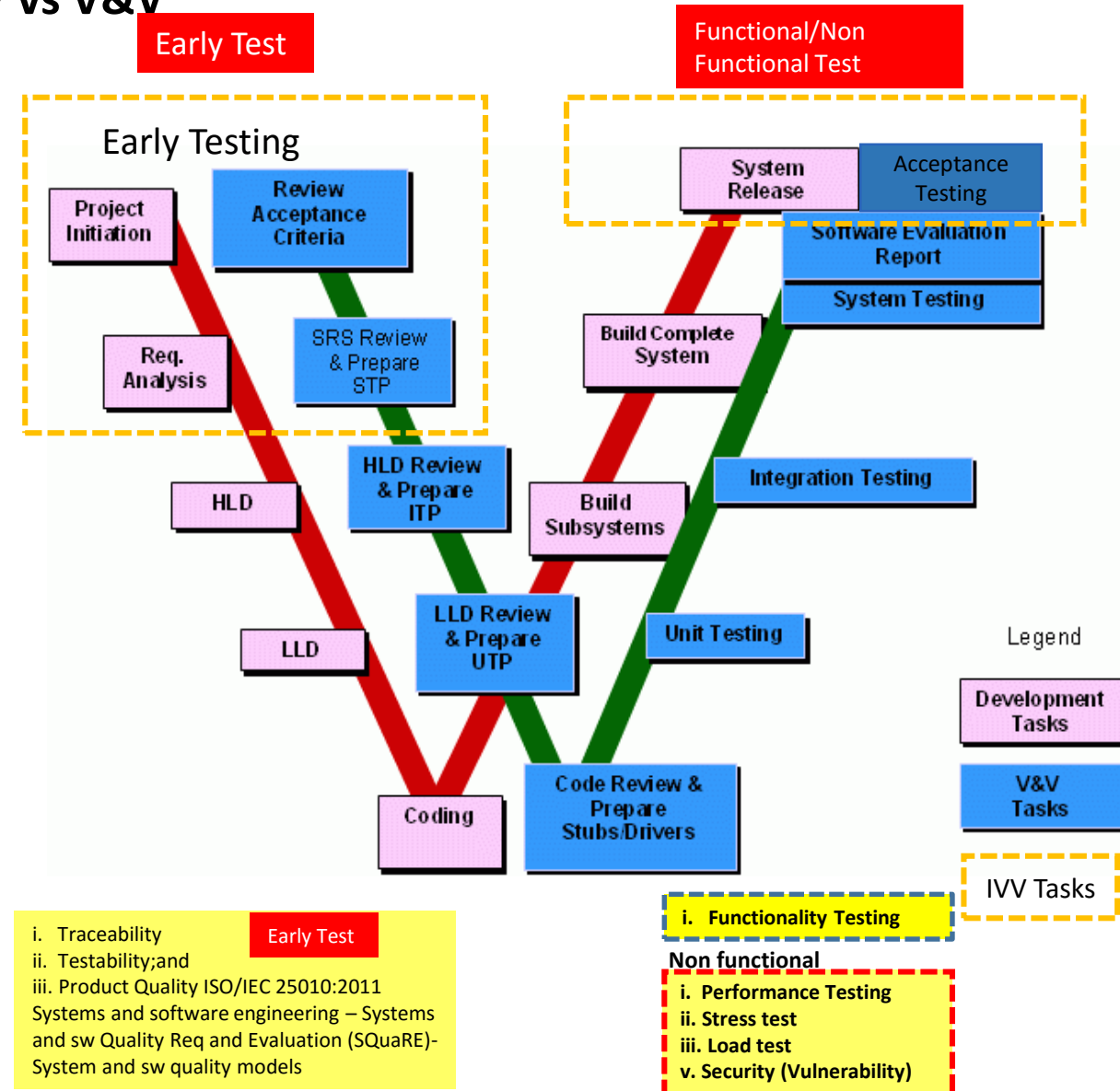
Perbezaan Independent Verification and Validation - IV&V vs V&V

V&V (Dalam Pasukan SD)

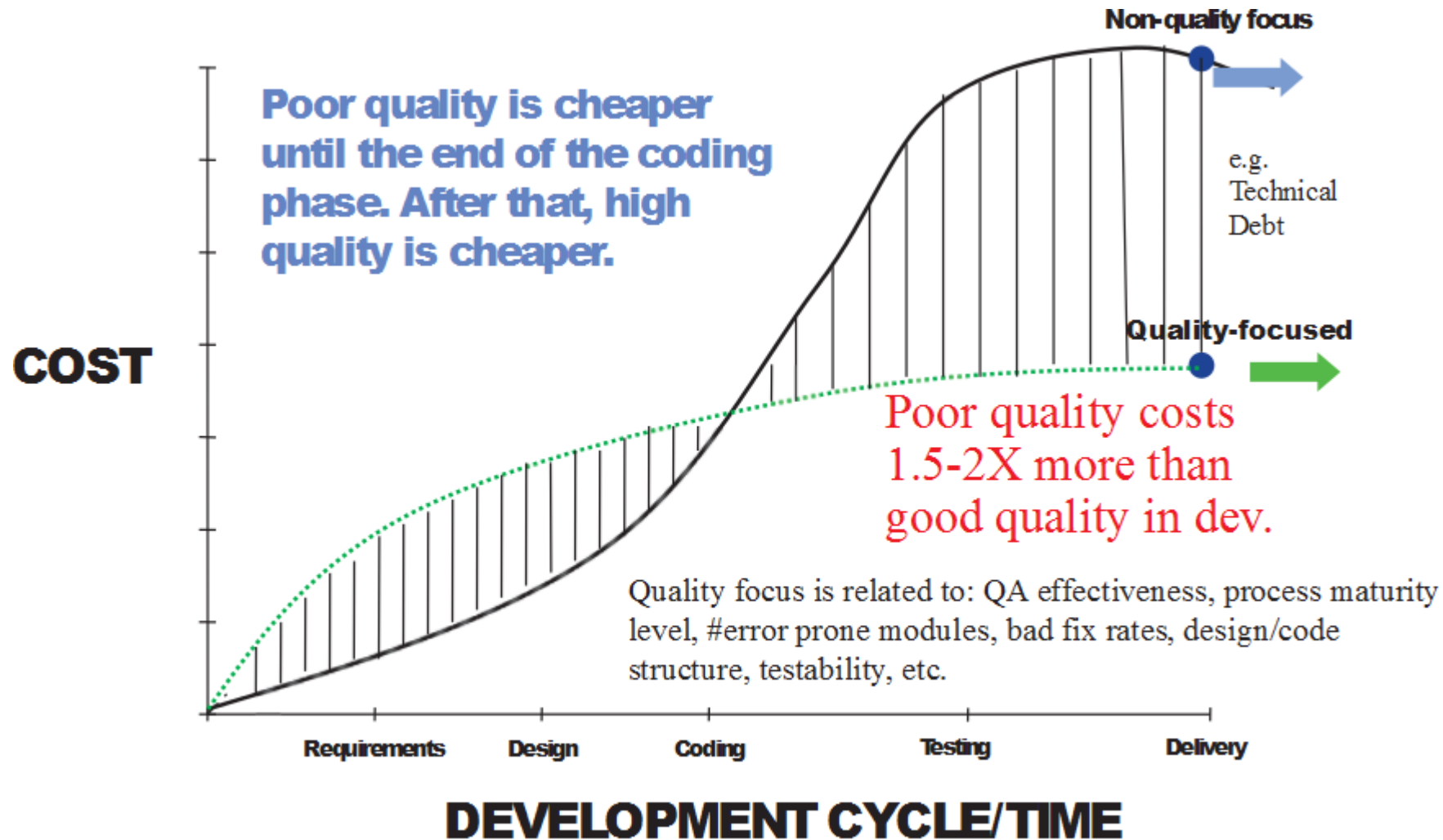
- Objektif utama adalah untuk mencari (dan membetulkan) *bugs* dalam perisian yang dibangunkan
- Ujian oleh pasukan BUKAN BEBAS kepada Pasukan Pembangunan (cth kerja pengujian dilaksanakan oleh satu syarikat dan melapor kepada Pejabat Pengurusan Projek yang sama (PMO)).

IV&V (Pasukan penguji bebas)

- Objektif utama adalah untuk mengukur "tahap keyakinan" pemilik projek sebelum deployment perisian, berdasarkan penilaian yang berkualiti. Jenis-jenis ujian boleh termasuk (tidak terhad):
 - Functionality Testing
 - Performance Testing
 - Stress test
 - Load test
 - Security (Vulnerability)
- Dilaksanakan oleh badan yg **BEBAS** dari **Pengurusan, Kewangan dan Teknikal** pembangunan sistem.



IMPAK KUALITI KEPADA KOS



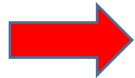
Adapted from Capers Jones, 2008

Isu dan Kemungkinan Punca Yang Mempengaruhi Kualiti Perisian

No	Isu Sistem	Punca Kemungkinan
1.	Fungsi sistem tidak menepati kehendak pengguna dan stakeholder	Keperluan pengguna dan stakeholder tidak dinyatakan secara tepat dan terperinci dan tidak dipersetujui
2.	Prestasi sistem yang kurang menyakinkan	Sistem tidak di uji secara komprehensif dan terperinci khususnya pada fasa analisa iaitu semasa spesikasi keperluan sistem
3.	Keyakinan pengguna terhadap sistem adalah rendah	Ujian penerimaan tidak dapat menunjukkan keupayaan sebenar sistem
4.	Dokumentasi sistem yang tidak seragam dan berkualiti rendah . Kesukaran urusan pengambil alihan penyelenggaraan sistem.	Dokumentasi yang diterima tidak tepat dan tidak disemak secara terperinci.
5.	Sistem yang terdedah kepada ancaman penceroboh	Pengujian keselamatan sistem tidak dilaksanakan secara holistik



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Pengujian Perisian Sektor Awam (PPSA)

Pelaksana – MSTB/EPU

Keterangan Program

Pengujian Perisian Sektor Awam (PPSA) – Program IVV untuk Sektor Awam

Objektif

1. Untuk **menggalakkan pelaksanaan IV & V** dalam Sektor Awam, seperti yang di sarankan dalam garis panduan Perolehan Kerajaan dikeluarkan oleh MOF
2. Untuk memupuk **amalan Jaminan Kualiti Perisian (SQA)** yang baik dalam budaya kualiti Sektor Awam
3. Mengenal pasti **isu-isu dan cabaran** dalam pelaksanaan IVV di Sektor Awam

Faedah kepada Agensi

1. **Tambah baik kualiti** sistem/aplikasi yang dibangunkan atau melalui perolehan aplikasi (COTS)
2. **Mengurangkan risiko** kegagalan projek
3. **Mengumpul *Lesson Learnt*** sebagai input untuk penambahbaikan pada masa hadapan (Amalan, prosedur dan lain-lain)

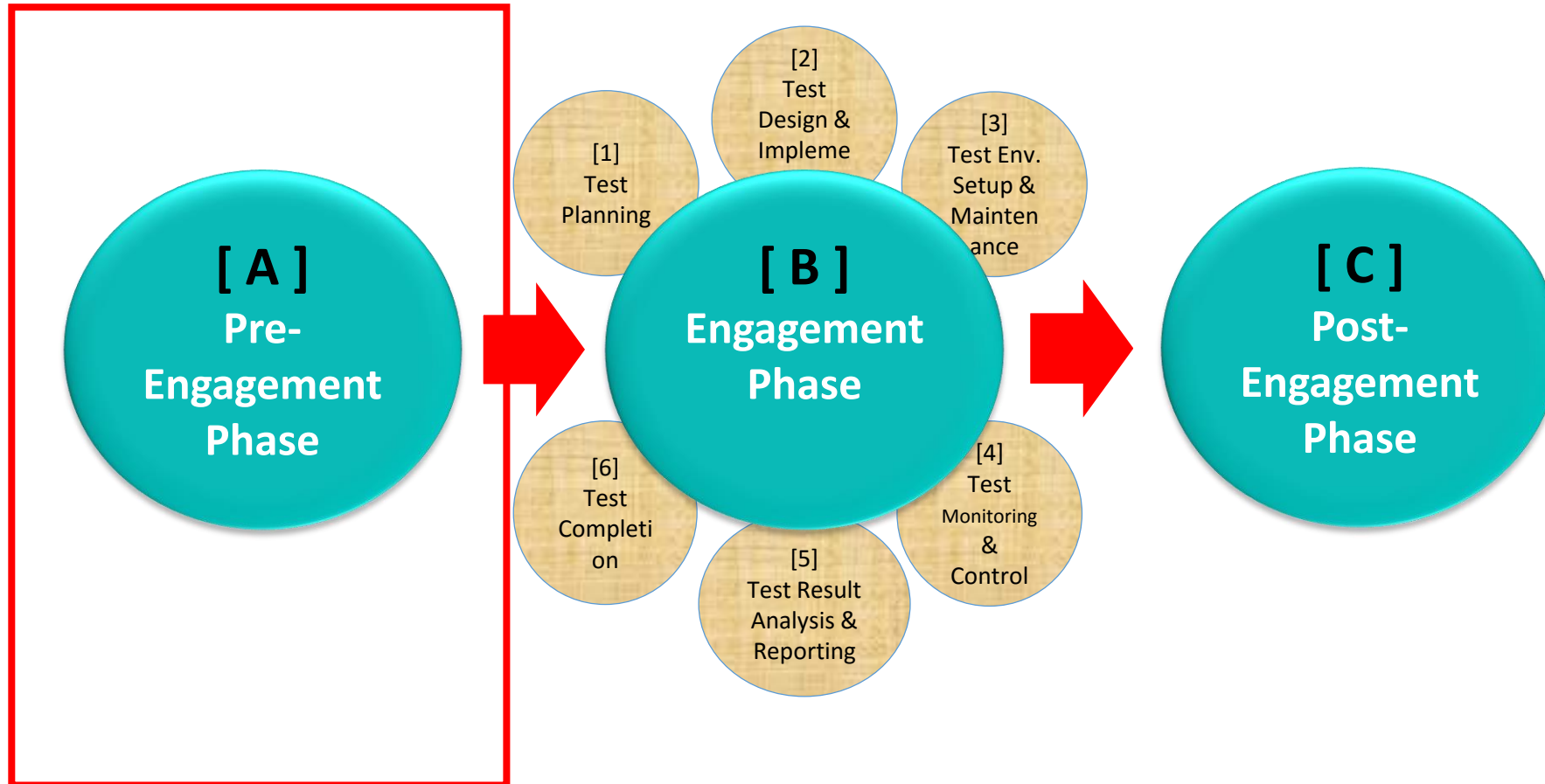
Pengujian Perisian Sektor Awam (PPSA)




	Agency	Projects	Status (Jan 2016)
1.	MAMPU	1Akses	Completed
2.	DOF	SIRIP onLine	Completed
3.	RoS	eRoses	Completed
4.	MAMPU	1GovAppStore	Completed
5.	JANM	1SPLN	Completed
6.	MATRADE	TPMS	Completed
7.	MoH	My.Pharma-C	WIP (Expected completion : June 2016)
8.	MoH	Quest3+	WIP (Expected completion : June 2016)

PPSA - Penemuan/ Lesson Learned

Pre-Engagement Phase



Penemuan Fasa Pre-Engagement

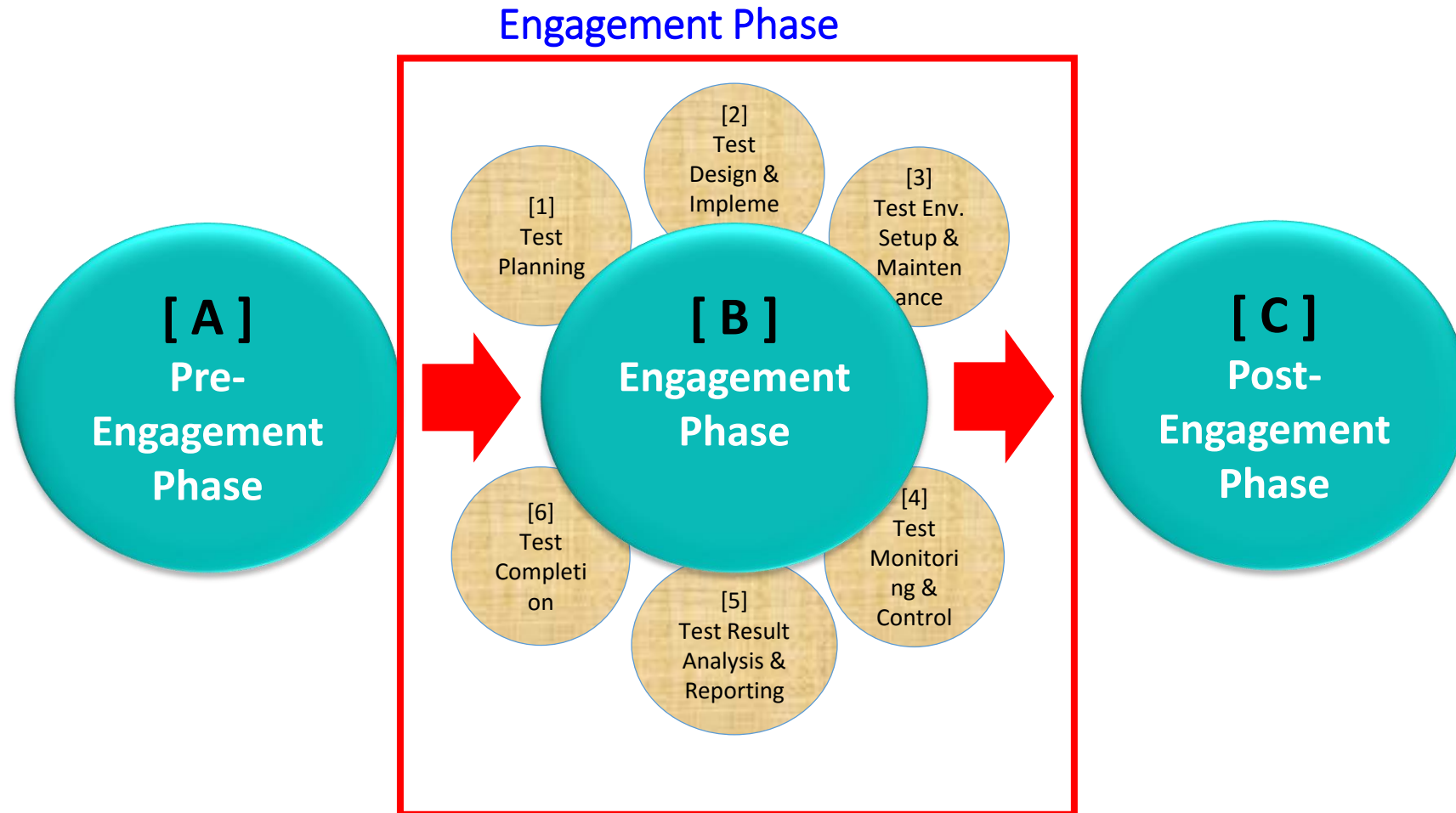


[A]
Pre-
Engagement
Phase

[A] Penemuan Fasa Pre-Engagement

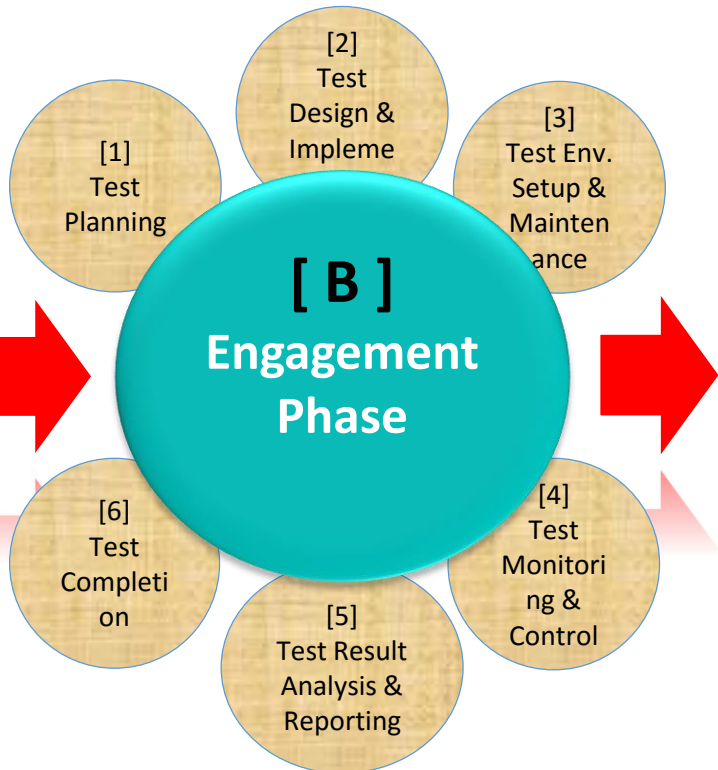
1. **Ketiadaan sebuah badan rujukan / pusat perundingan eg [MyTCoE](#)**
2. **MyTCoE adalah perlu;**
 - a. **Sebagai pusat rujukan teknikal dan bantu penyediaan skop awal IVV di Agensi sebelum permohonan ke JTISA**
 - b. **Perlu untuk melaksanakan kaedah yang seragam bagi Kementerian / Agensi untuk menyediakan / menawarkan tender dan menilai cadangan teknikal IVV**
 - c. **Bantu Agensi mengenal pasti / pembekal perkhidmatan projek dan peruntukan bajet untuk tender IVV dan / atau Pensijilan Produk (COTS)**
 - d. **Menyediakan perkhidmatan ujian perisian IVV dan / atau perunding Pensijilan Produk untuk menampung dan menangani keperluan segera Agensi dan keperluan jangka panjang terhadap perisian / sistem**
 - e. **Memperkenalkan dan menguatkuasakan tadbir urus, prosedur yang standard dan kaedah untuk pelaksanaan IVV di Agensi**
 - f. **Membantu Agensi dalam penyediaan dokumen pelan projek bersepadu – Integrated Project Planning IVV dan perisian pembangunan (menangani skop, jadual projek , kekangan , andaian risiko dan lain-lain) yang mengharmonikan aktiviti-aktiviti antara kedua-dua pembekal perkhidmatan IVV dan pembangunan perisian.**

Penemuan Semasa Fasa Engagement



Penemuan Semasa Fasa *Engagement*

Engagement Phase



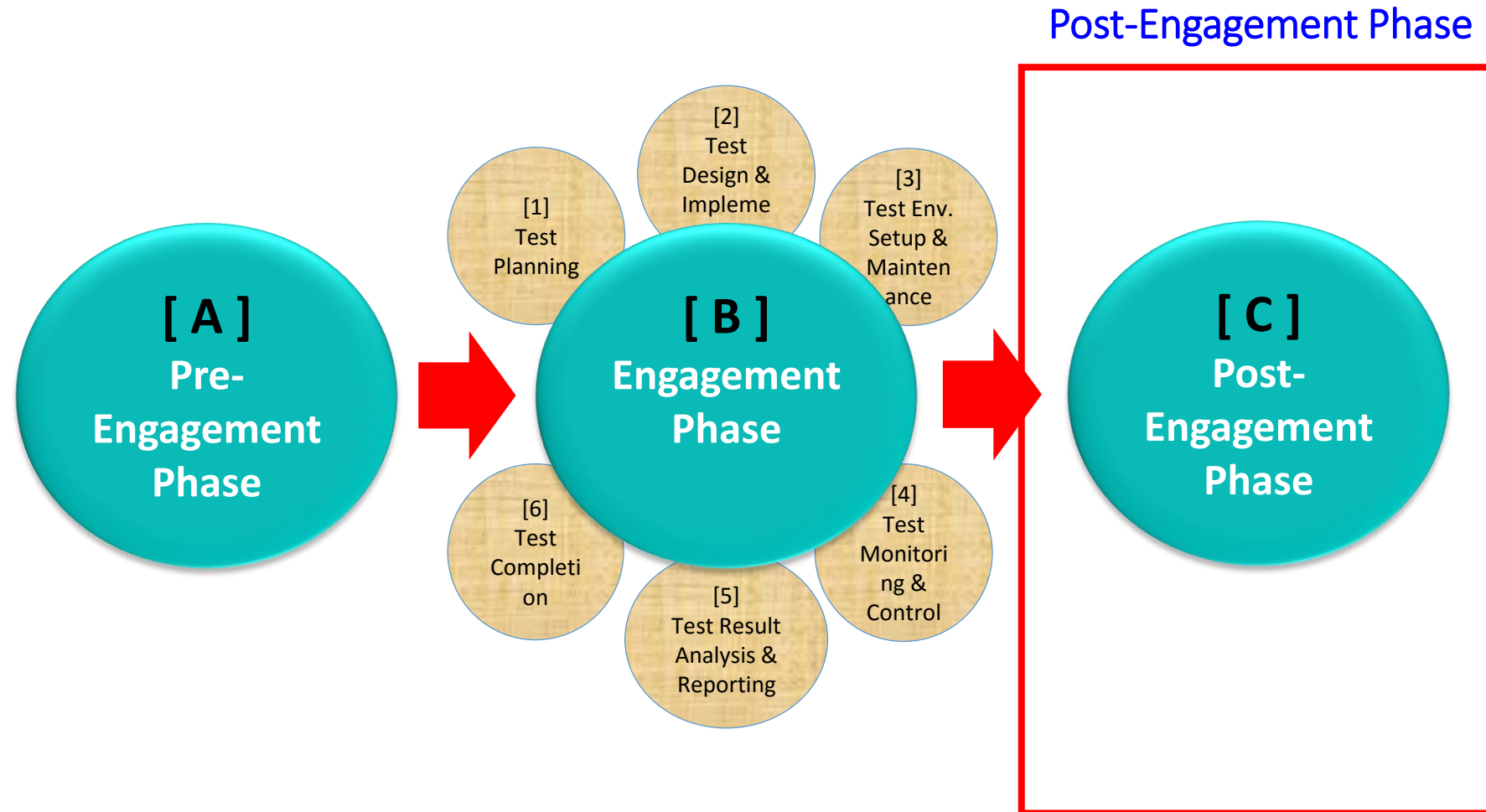
[B] Penemuan Semasa Engagement

1. **Tiada Pelan Projek Bersepadu (IPP)** bagi Pembangunan Perisian dan IVV , dan Agensi perlu menguruskan dua jadual projek berasingan. Ini menambahkan tugas PMO (yang tidak perlu) untuk penyelarasan aktiviti dan komunikasi.
2. Agensi **perlu mematuhi garis panduan projek IVV** dan **endorse semua serahan IVV** (cth Pelan Master Test Level (MLTP) dan Pelan Tahap Ujian, Testware , dan lain-lain) yang dibangunkan oleh pasukan IVV
3. **Tempoh ujian yang singkat** diperuntukkan bagi User Acceptance Test (UAT) dan Provisional Acceptance Test (PAT)
4. **Ujian *Non-Functional*** seperti ***Performance Testing, Load Testing, Stress Testing and Security Vulnerability Testing*** tidak dilaksanakan atau diuji hanya semasa PAT oleh kedua-dua wakil-dari agensi dan vendor pembangunan perisian yang dilantik. dan perkara ini hanya disedari semasa sesi Kick- Off IVV dengan agensi perintis
5. **Tiada teknik yang standard digunakan bagi menghasilkan spesifikasi keperluan** Kebiasaannya Agensi menerima dan meluluskan dokumen teknikal yang dikemukakan oleh vendor pembangunan perisian
6. Tiada **persekitaran ujian khusus untuk vendor IVV** untuk menguji SUT itu. Kebiasaannya IVV vendor ditawarkan untuk menguji SUT pada infrastruktur pembangunan aplikasi yang sama dan dikawal oleh pasukan pembangunan. Penyelesaian alternatif adalah untuk menguji SUT di Q -Lab
7. **Kegagalan Pengurusan Konfigurasi kerana tidak mempunyai dokumentasi teknikal** mengenai spesifikasi dan konfigurasi **Persekitaran Pembangunan, Persekitaran Pengujian dan Persekitaran Production**. Pasukan IVV membantu agensi perintis untuk mewujudkan dokumentasi teknikal mereka untuk sekurang- kurangnya persekitaran pengujian dan produksi.

Penemuan Semasa Fasa Engagement

Project	Incident(s)		
	Detected	Rejected	Accepted
A (1SPLN)	697	-	697
B (SIRIP)	412	13	399
C (TPMS)	351	70	281
D (Quest3+)	268	5	263
E (My.Pharma-C)	201	4	197
TOTAL	1,929	92	1,837

Penemuan Fasa Post Engagement

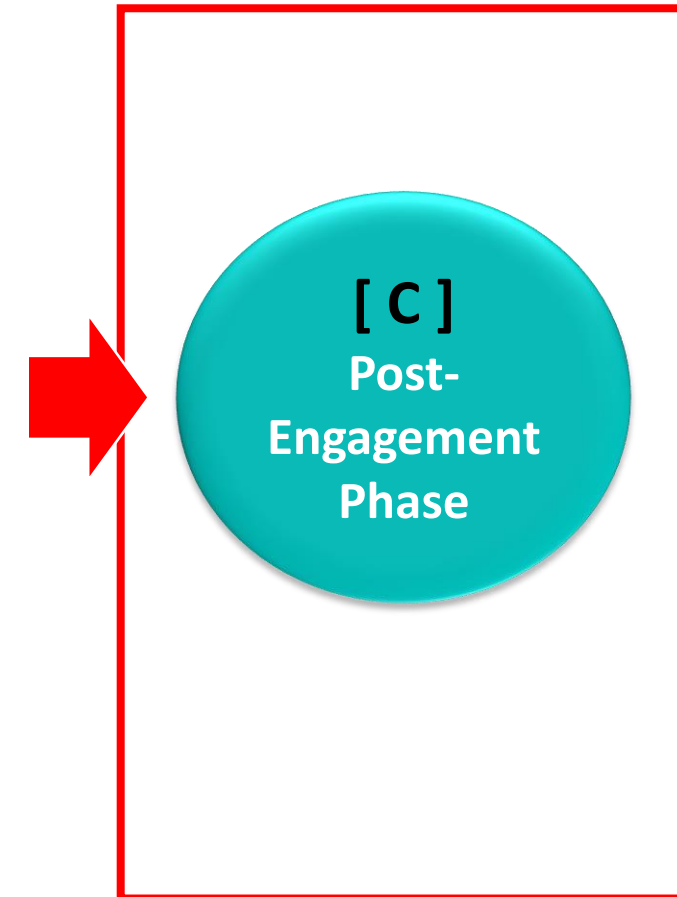


Penemuan Semasa Fasa Post Engagement

[C] Penemuan Post Engagement

1. Mesyuarat Triage adalah platform **mengesahkan status defect** (diterima atau ditolak) oleh Agensi dan seterusnya diperbetulkan oleh vendor pembangunan perisian.
2. Purata kos IVV SW Dev Kos termasuk TMO adalah 64.39 %
3. Semua **5 agensi baru** kepada IVV terutamanya untuk *Early Testing*, dan agensi-agensi tersebut **menghargai perkhidmatan IV&V**

Post-Engagement Phase



PPSA – Lessons Learnt/Issues

	Situasi Semada	Cadangan Penambahbaikan	
2.	PK 2 (sambungan..)	<ul style="list-style-type: none"> iv. Memperkenalkan Kod Bidang tertentu untuk penyediaan perkhidmatan IVV sebagai sebahagian daripada pra-kelayakan pembekal v. Termasuk arahan berkaitan bagi membolehkan penguatkuasaan penglibatan IVV dalam projek-projek ICT vi. Menjelaskan Klausula PK2 18 (iv) 	Dalam proses permohonan ke MoF
3.	Garis Panduan JTISA & Pengurusan Projek	<ul style="list-style-type: none"> i. Garis panduan dikemaskini untuk memenuhi penglibatan IVV ii. Merangkumi klausula penguatkuasaan 	
4.	Pekeliling Pengurusan Projek ICT (PPriSA)	<p>Kemas kini pada:</p> <ul style="list-style-type: none"> 1. Peranan SC & TC 2. Peranan CCB - pada masa ini tidak ditakrifkan 3. Peranan Kualiti Gate Keeper – ‘baharu’, belum ditakrifkan 4. Pengiktirafan IVV terhadap TMO – belum wujud 5. Penguatkuasaan garis panduan Pengurusan Projek 	

PPSA – Lessons Learnt/Issues

	Situasi Semasa	Cadangan Penambahbaikan	
5.	Penerangan skop kerja CIO	Jelaskan peranan CIO Agensi dalam projek-projek ICT (MAMPU)	
6.	Standard Operating Procedure (SOP)	i. Menyediakan SOP untuk penyediaan / menawarkan tender secara parallel (IVV & Pembangunan) ii. Menyediakan SOP untuk penyediaan / pengeluaran tender secara parallel (IVV dalam penyelenggaraan),eg; <input type="checkbox"/> Adakah Agensi membetulkan (fix) selepas ujian penyelenggaraan? <input type="checkbox"/> Adakah Agensi perlu mengeluarkan kontrak baharu untuk membetulkan (fix) ? <input type="checkbox"/> Berapa kali iterations ujian IVV?	
7.	IVV Handbook	i. Menambah skop IVV Handbook untuk menampung peringkat kelulusan bajet (iaitu RP) dengan merujuk kepada dokumen 'Baharu' dan kemaskini PK2 ii. Peranan MyTCoE bermula pada peringkat kelulusan bajet (Rolling Plan)	



Surat Pekeliling Perbendaharaan PK2 (Deraf klausa 2.1.3 & 2.1.4)

Pengesahan
MoF

PENAMBAHBAIKAN

Klausa 2.1.3

Bagi projek yang telah dikenalpasti kritikal dan memberi impak tinggi kepada Kerajaan, Agensi **HENDAKLAH** memperoleh khidmat Verifikasi dan Validasi dari pihak ketiga (*Independent Validation and Verification – IVV*) bagi meningkatkan keyakinan (*establish confident*) agensi terhadap sistem ICT. Agensi perlu merujuk dan mematuhi garis panduan di dalam Buku Pelaksanaan IVV (IVV Handbook-www.mytcoe.gov.my)

Klausa 2.1.4

Agensi **HENDAKLAH** memastikan pihak ketiga yang dilantik untuk memberikan perkhidmatan IVV telah mendapat pengiktirafan/akreditasi daripada Jabatan Standard Malaysia. Bagi pembangunan sistem yang melibatkan penggunaan/pengubahsuaian produk Commercial Off-The-Shelf (COTS), produk tersebut hendaklah mendapatkan persijilan kualiti perisian daripada badan pengiktirafan yang telah mendapat akreditasi daripada Jabatan Standard Malaysia atau setaraf.



Takrifan projek ICT yang kritikal dan berimpak tinggi

Pengesahan MoF

“Projek ICT yang **kritikal dan memberi impak tinggi**” merujuk kepada projek-projek ICT yang memenuhi satu atau lebih daripada kriteria berikut :

- (a) Projek ICT berisiko tinggi yang berpotensi mengancam nyawa; contoh: Amaran Tsunami, melibatkan persenjataan dan sistem kawalan trafik udara;
- (b) Project ICT yang boleh menjejaskan dan memudaratkan kesihatan awam; contoh: Sistem HIS, Sistem Farmasi, Sistem Maklumat CDC;
- (c) Projek ICT yang boleh mengancam keselamatan negara; Contoh: Sistem Imigresen, Sistem Pemantauan Maritim, Sistem Antinakotik
- (d) Projek ICT yang berpotensi menjejaskan ekonomi dan kewangan negara; Contoh: Sistem Cukai, Sistem Perakauanan, Sistem Kastam, 1GFMAS
- (e) projek ICT yang mempunyai **kompleksiti tinggi*** dan **merentasi agensi*** serta memberi impak langsung kepada awam dan rakyat. Sistem yang mempunyai hubungan integrasi dengan sistem-sistem lain; Contoh Sistem myldentity; Centralised Data ExSECange.

* mekanisme penilaian akan diwujudkan

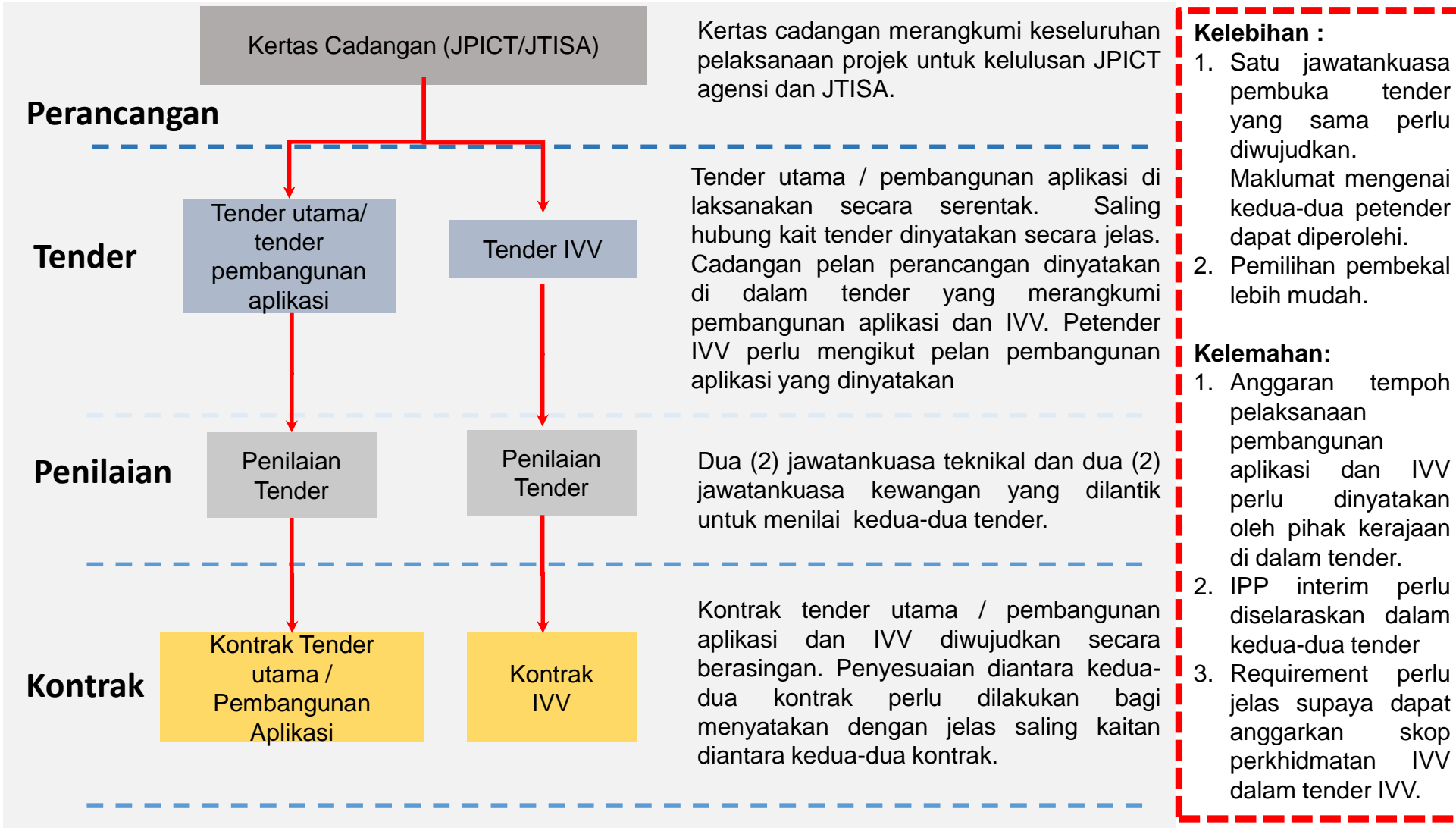
Perkara	Kaedah
1. Tender	<p>Bagi memastikan pihak ketiga (syarikat atau organisasi) yang dilantik untuk melaksanakan IVV, ianya hendaklah bebas dari pembangun aplikasi dari segi:</p> <ul style="list-style-type: none"> • Pengurusan • Teknikal • Kewangan <p>2 tender berasingan (pembangunan aplikasi dan perkhidmatan IVV)</p>
2. Penilaian Tender	Kedua-dua tender akan menggunakan prosedur tender sedia ada.
3. Kontrak	<p><u>2 Kontrak berbeza</u></p> <p>a. Pembangunan Aplikasi b. Perkhidmatan IVV</p>
4. Projek Plan	<p><u>Integrated Project Plan</u></p> <p>Penyesuaian antara kerja pembekal pembangunan aplikasi dan pembekal IVV, pendekatan berikut dicadangkan pada peringkat <i>pre-engagement</i>:</p> <ul style="list-style-type: none"> • Agensi hendaklah melakukan perancangan projek secara <i>high-level</i> yang merangkumi anggaran tempoh masa pembangunan sistem dan anggaran tempoh masa pelaksanaan IVV. • Agensi juga perlu menyatakan metodologi pembangunan projek yang akan digunakan. • Metodologi dan perancangan projek <i>high-level</i> perlu dinyatakan di dalam kedua-dua tender untuk membolehkan petender melakukan perancangan projek berdasarkan kerangka masa yang ditetapkan. • Dengan cara ini, IPP boleh diwujudkan dengan lebih mudah dan kos pembangunan sistem dapat dikira dengan lebih tepat.
5. Saiz Projek/ Kos Projek	<ul style="list-style-type: none"> • Penggunaan teknik Function Point (FP) adalah sesuai untuk menganggarkan sesuatu saiz sesuatu projek. • Anggaran perisian (saiz, kos, tempoh masa adalah perlu untuk memastikan pengiraan kos dan tempoh masa pembangunan perisian adalah munasabah).





Cadangan Kaedah Perolehan IVV

Dua Tender Berasingan (Serentak/ Berjukkan)





Tender Pembangunan Sistem

*Tender ini mempunyai kaitan secara teknikal dengan tender YYYY/YY/YYYY (perkhidmatan IVV) yang diiklankan oleh agensi ini pada XX/XX.XXXX. Sehubungan dengan itu, Petender (atau syarikat yang mempunyai kaitan dengan petender dari segi pengurusan dan pemilikan/syer) yang membida tender XXXXXX/XX/XXXX (pembangunan sistem) **TIDAK LAYAK** untuk membida tender ini. Kegagalan petender mematuhi klausa ini menyebabkan bidaan syarikat pada tender YYYY/YY/YYYY (perkhidmatan IVV) dan tender XXXX/XX/XXXX (pembangunan sistem) **TERBATAL.***

atau

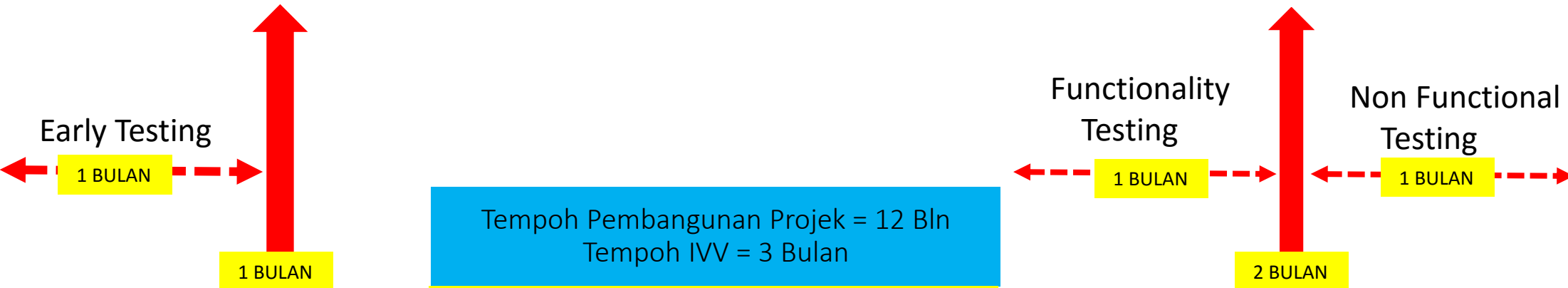
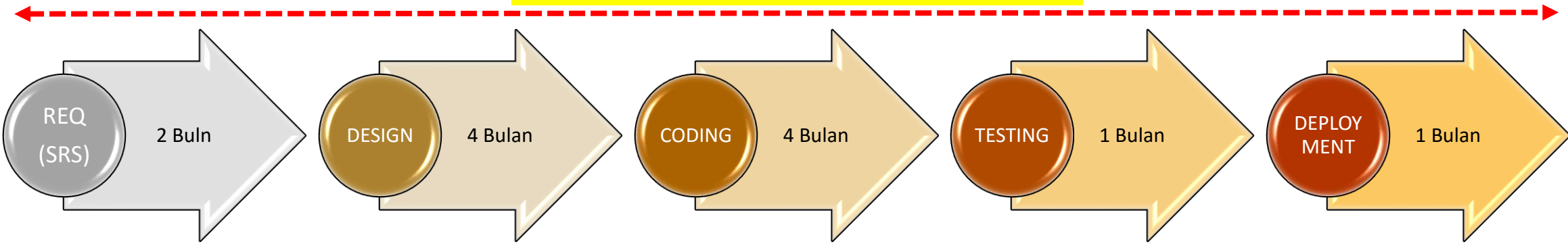
Tender IV&V

*Tender ini mempunyai kaitan secara teknikal dengan tender XXXX/XX/XXXX (pembangunan sistem) yang diiklankan oleh agensi ini pada XX/XX.XXXX. Sehubungan dengan itu, Petender (atau syarikat yang mempunyai kaitan dengan petender dari segi pengurusan dan pemilikan/syer) yang membida tender YYYY/YY/YYYY (perkhidmatan IVV) **TIDAK LAYAK** untuk membida tender ini. Kegagalan petender mematuhi klausa ini menyebabkan bidaan syarikat pada tender XXXX/XX/XXXX (pembangunan sistem) dan tender YYYY/YY/YYYY (perkhidmatan IVV) **TERBATAL.***

Anggaran Kos IVV



12 BULAN-tempoh pembangunan

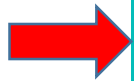


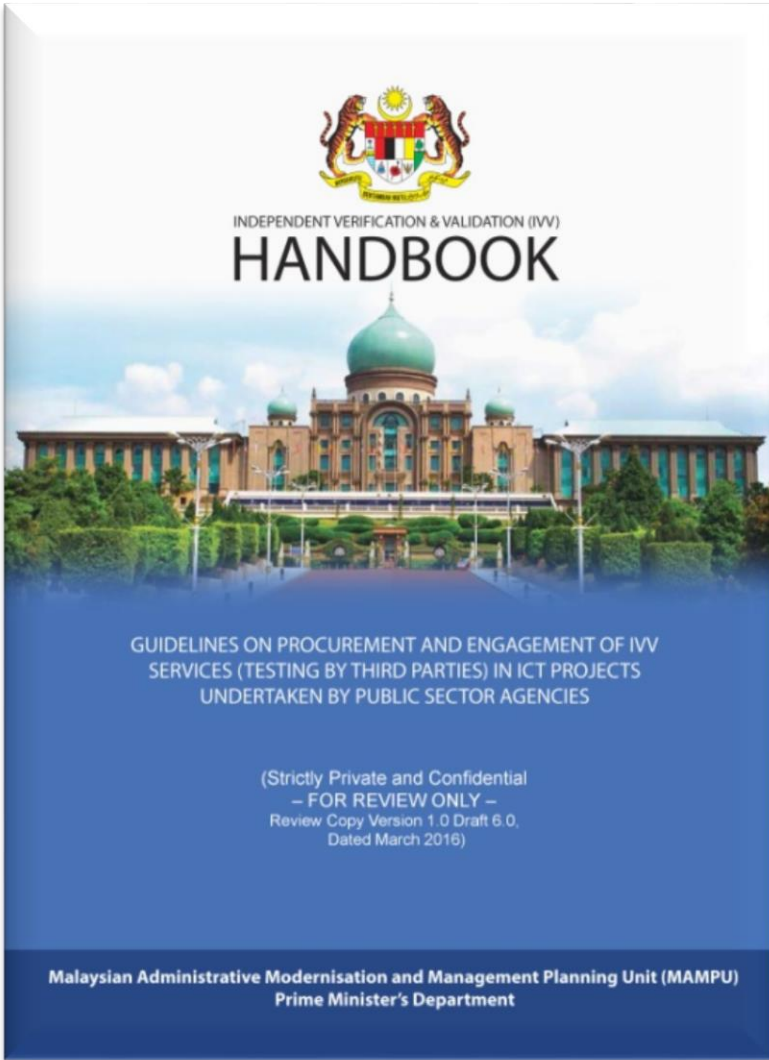
Function Point → Saiz Projek → Tempoh Projek → Kos Projek → Kos IVV

Pelan Tindakan

Program	Tindakan/ Peneraju	Tempoh Masa	Kos / Sumber	CSF	Indikator Prestasi
1. Penubuhan MyTCoE	MAMPU	Jun 15-Jun 16	EPU	<ul style="list-style-type: none"> • Kelulusan Pengurusan • Peruntukan Kewangan • Kepakaran Personel 	Jun 2016
2. Penyediaan IVV Handbook	EPU/MAMPU/MSTB	Sept 15- April 16	EPU		April 2016
3. Penyerahan IVV Handbook kepada MyTCoE	MSTB/EPU	Jun 16	EPU		Jun 2016
4. Program Kesedaran Agensi Fasa 1 <ul style="list-style-type: none"> • Penggunaan IVV Handbook • Pelaksanaan IVV (CIO,IT Manager) 	MSTB/ MAMPU/EPU	April-Dis 2016	EPU		Dis 2016
6. Perancangan Pelaksanaan IVV 2016 Sektor Awam <ul style="list-style-type: none"> • Aktiviti Penyediaan Bajet IVV (RP2) 	EPU/MAMPU	Sebelum 18 Mac 2016	EPU		Apr 2016
7. Pembangunan SOP IVV Handbook	MSTB	Jun-Ogos 2016	EPU		Ogo 2016
8. Pembangunan SOP MyTCoE	MAMPU	Jun-Ogos 2016	MAMPU		Jun-Ogo 2016
9. Penyelarasan Garispanduan: <ul style="list-style-type: none"> • PK 2 - Perolehan ICT • SPA 3 Bil 1/2015 (Permohonan Kelulusan Teknikal dan Pemantauan Projek ICT SA) • Garispanduan Pengurusan Projek (PPriSA) 	MAMPU	Jun-Ogos 2016	MAMPU		Jun-Ogo 2016
10. Mengubahsuai International Standard (ISO/IEC/IEEE) " berkaitan Pengujian Perisan kepada 'MS'-Malaysian Std'	JSM/MSTB	Jun 15- Jun 16	JSM		Jun-Dis 2016
11. Pewujudan Syarikat-syarikat akreditasi IVV	JSM/MSTB	Apr-Dis 2016	JSM		Jun 2016

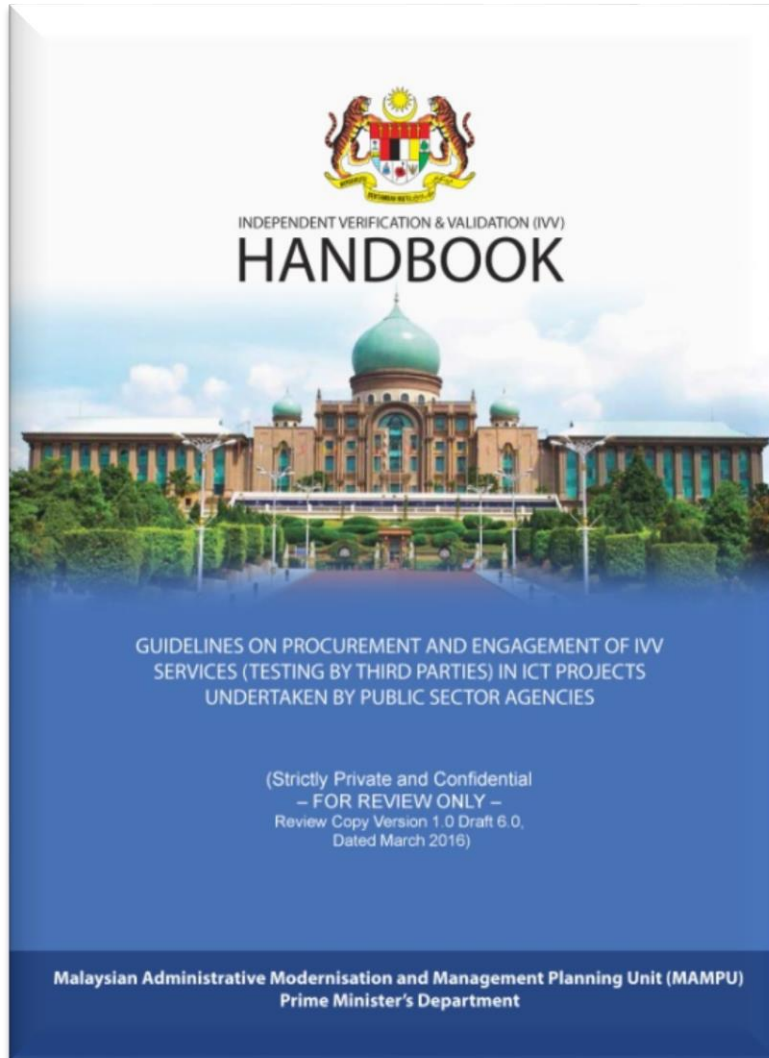
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IVV Handbook

Pengenalan - IVV Handbook



- **Dokumen rujukan** untuk agensi-agensi Sektor Awam di Malaysia
 - Panduan untuk **perolehan dan engagement IVV** untuk projek-projek ICT yang dilaksanakan oleh Agensi
 - Mengandungi prosedur minima yang boleh diterima pakai dan diikuti
 - Penambahbaikan dan inovasi boleh ditambah dari masa ke semasa.
- MSTB mengetuai pembangunan IVV Handbook, dengan kerjasama perunding dan Agensi utama sektor awam
 - Software Testing Excellence Program (STEP), University of Memphis, USA
 - MAMPU-EPU-MoF- JSM (Standards Malaysia)
 - PPSA Project 2014 - 2015
(Agencies: MATRADE, ROS, MoH (2), MAMPU (2), JAN, DoF)
- Aligns to the international standards and best practices
 - **ISO/IEC/IEEE 29119** standards for software testing
 - **ISO/IEC/IEEE 29148** standards for requirements engineering
 - **ISO/IEC 12207 and ISO/IEC 15288** for systems and software engineering LC
 - **ISO/IEC 20926** Software and systems engineering -- Software measurement

Ringkasan aktiviti utama pembangunan IVV Handbook

	Date/Period	Key activities
1.	12/8/2015	Handbook Table of Contents
2.	14/8-02/9/2015	Customisation of IVV Handbook
3.	11/9/2015	IVV Handbook workshop#1 for MyTCoE
4.	19/9-07/10/2015	Review Iteration 1 (IVV Handbook v2.0)
5.	09/10-15/10/2015	Review Iteration 2 (IVV Handbook v3.0)
6.	17/10 -27/11	Review Iteration 3 (IVV Handbook v4.0 until v4.3)
7.	26-27/10/2015	IVV Handbook v4.2 walkthrough#2 with Agency
8.	27/10-30/11/2015	Reformatting of IVV Handbook v4.2
9.	29/02/2016	Workshop#3 on IVV Handbook v5.0
10.	07/03/2016	Briefing#4 to Agencies on IVV Handbook v5.0
11.	30-31/03/2016	Workshop#5 on IVV Handbook v6.0
12.	26/04/2016	Submission IVV Handbook V1.0 to MAMPU

Tujuan IVV Handbook



Sebagai **rujukan** oleh Agensi dalam aktiviti pelaksanaan ICT yang memerlukan penglibatan pengujian perisian pihak ketiga iaitu Penyedia Perkhidmatan IVV



Menyediakan **proses dan garispanduan** yang diperlukan bagi pelaksanaan IVV dan diselaraskan dengan proses dan prosedur kerajaan yang berkaitan.



Membolehkan pegawai-pegawai **Agensi melantik dan bekerjasama secara efektif dengan Pembekal IVV**, di samping memastikan keperluan ICT Agensi tercapai dengan tahap kualiti tinggi

Punca kuasa IVV Handbook



Cadangan untuk mewujudkan Handbook IVV dibuat sebagai tindak balas lesson learnt dan maklum balas daripada stakeholder

- 2014, MSTH laksanakan *Pengujian Perisian Sektor Awam (PPSA)*
 - **keperluan dokumen standard** sebagai rujukan oleh semua agensi dalam melaksanakan IVV dalam projek-projek ICT masing-masing
- Software Testing Straight Talk (STST14) - peserta dari Sektor Awam.
 - Maklumbalas / dapatan yang diperolehi daripada perbincangan kumpulan kerja termasuk kekurangan pengetahuan, kompetensi dan lain-lain terhadap IV & V dalam sektor awam
 - Prof Jasbir Dhaliwal, Memphis Uni. menunjukkan buku panduan US IVV dan idea mempunyai dokumen yang serupa kemudiannya diilhamkan.
 - Pihak Kerajaan terima cadangan untuk mewujudkan IVV Handbook



Pembangunan IVV Handbook - kolaborasi dengan pakar-pakar antarabangsa

- JK Pemandu MSTH dilantik Software Testing Excellence Program (STEP), Uni Memphis untuk membangunkan Buku Panduan
- MSTB telah mengetuai pembangunan IVV Handbook

Kandungan IVV Handbook- Seksyen 1- Introduction

Tanggungjawab

- MyTCoE
- Agensi

Memberi gambaran keseluruhan dan latarbelakang IVV Handbook seperti berikut :

- Tujuan, Struktur dan kumpulan sasaran pembaca/pengguna IVV Handbook.**
- Ringkasan Eksekutif**
- Latarbelakang pendekatan IVV**
- Kelebihan melaksanakan IVV dan manfaat ekonomi**

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SECTION 1 INTRODUCTION

Overview

The IVV Handbook is the de-facto reference for the Malaysian public sector agencies (The Agency) to engage, manage and implement an Independent Verification and Validation (IVV) Provider (IVV Provider) to perform third party software testing for The Agency's ICT acquisition projects.

As the de-facto reference, this IVV Handbook defines:

- the expectations for staff of The Agency in performing evaluation and hiring IVV Provider, and executing the ICT project involving IVV,
- the IVV Provider performing (IVV) activities for The Agency,
- the Development Teams' role in an IVV Engagement and collaboration with the IVV Provider, and
- the procedures to be followed.

An Executive Summary in this section provides:

- an overview of the IVV Handbook objectives,
- the rationale and business needs for establishing this IVV Handbook,
- the current ICT acquisition landscape,
- the relevance and roles IVV play in the ICT acquisition project, and
- the economic benefits of IVV Engagement as further justification on the relevance of IVV for The Agency's ICT acquisition process.

Important Note



- Before starting an IVV hiring process, make sure to read this IVV Handbook in its entirety to familiarize yourself with its contents and useful information.
- This IVV Handbook or part of this IVV Handbook should not be distributed or published to other parties without the prior written consent of MyTCoE.

Contents of this Section

This section contains the following.

Section	Title	See page
1.1	Executive Summary	3
1.2	IVV Handbook – Purpose and Structure	7
1.3	Background and Economic Benefits	12

Why must I read this section?

This section provides the understanding of the business, and technical needs for employing IVV in The Agency's ICT acquisition project. Users of this IVV Handbook shall gain better understanding of the IVV process and the benefits it provides.

History of IVV

The history of IVV can be traced back to the Atlas Missile Program in the late 1950s that officially kicked off the U.S. Space Program, where several large software development vendors were found with tendency to give overly optimistic estimates of the software development status.

The Project Managers thus hired Independent software testers to:

- get a more accurate assessment,
- support the assertion that projects with independent testing and quality assurance perform much better than projects without.

Not covered in this IVV Handbook

- The IVV Handbook neither provides nor intent to replace IVV scholarly publications or best practices.
- The contents in this IVV Handbook shall be sufficient for The Agency to perform IVV Engagement.
- The examples provided in this IVV Handbook do not cover all business verticals, however the principles presented may be applicable to all verticals.

Assistance by MyTCoE

In the event Inconsistencies or errors are discovered, or assistance is required to implement the IVV Handbook, The Agency shall refer to MyTCoE for further clarifications and advice.

Kandungan IVV Handbook- Seksyen 2 - Introduction To IVV–Context And Definitions

- MyTCoE
- Agensi

Menerangkan istilah utama, konsep dan definisi. Kemudahan untuk cepat faham perkara berkaitan IVV seperti berikut :

- Stakeholders dalam pelaksanaan IVV** - Peranan dan tanggungjawab stakeholder dalam aktiviti- aktiviti IVV
- Definisi V&V dan IVV** - Takrif utama istilah yang bersesuaian untuk memahami V&V dan bagaimana istilah ini digunakan dalam IVV Handbook .
- Prinsip-prinsip** yang perlu difahami dalam pelaksanaan **IVV**
- 10 persoalan** yang perlu dipertimbangkan dalam melaksanakan **IVV**
- Fasa-fasa dan aktiviti** yang diperlukan untuk merancang penglibatan **IVV**.
- Peranan MyTCoE** sebagai pusat rujukan yang akan memberi nasihat berkaitan **IVV**.

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SECTION 2 INTRODUCTION TO IVV – CONTEXT AND DEFINITIONS

Overview

The overarching intent of this IVV Handbook is to:

- raise stakeholders awareness of testing and IVV through understanding of the IVV context and principles,
- promote the adoption of IVV by the Government agencies (The Agency),
- promote the adoption of IVV by the ICT Industry as a whole, and
- explain the importance of the foundational guiding principles towards understanding the IVV process, IVV Engagements, and why IVV is important.

To provide the necessary understanding of IVV, this Section provides the following:

- The introduction of the stakeholders and their roles and responsibilities in the IVV activities.
- Key definitions and terminology relevant towards understanding what V&V is and how these terminologies are used within this IVV Handbook.
- The answers to ten (10) important questions needed to be examined by the stakeholders when planning and/or participating in an IVV Engagement.
- The phases and activities that are needed to plan for in an IVV Engagement.
- The role of MyTCoE as the supporting unit that will provide advice and guidance for the IVV Engagements is also described in detail.

Contents of this Section

This section contains the following.

Section	Title	See page
2.1	IVV Stakeholders	17
2.2	Definition of V&V and IVV	21
2.3	Guiding Principles of IVV	27
2.4	IVV Phases and Activities	35
2.5	Planning for IVV Engagements	39

Important Note



Any tailoring of the IVV standards and procedures presented in this IVV Handbook should be reviewed and agreed to by MyTCoE.

Why must I read this Section?

All stakeholders involved in the IVV Engagement activities are advised to read this section before commencing any IVV activities. This IVV Handbook:

- describes the IVV phases both in the standard industry context as well as the government agency's context, and
- has been tailored to suit the Malaysian government agency's unique requirements and existing procedures.

IVV Definitions

The four foundational areas of definition of IVV covered in this section are:

- definition of V&V and IVV,
- guiding principles of IVV,
- IVV phases and activities (the IVV Process),
- roles and responsibilities of IVV stakeholders.

The four (4) stakeholders defined are:

- The Agency,
- IVV Provider,
- Development Team,
- MyTCoE.

In supporting and maintaining the IVV Engagement interpretation among the stakeholders, MyTCoE shall be the primary source of reference for contents of this IVV Handbook.

MyTCoE, as the bridge between the industry and the government agency's procurement process, shall be able to guide stakeholders throughout the IVV Engagement activities.

Please refer to Section 2.1.1 Malaysian Public Sector Testing Centre of Excellence (MyTCoE) on page 19 for details on MyTCoE.

Kandungan IVV Handbook- Seksyen 3 – Pre-Engagement Phase

- MyTCoE
- MAMPU (BSA)
- MOF
- Agensi

Seksyen ini memberikan panduan untuk melantik pembekal perkhidmatan IVV yang merangkumi perkara-perkara berikut:

- Menerangkan RFP sehingga Surat Anugerah dan aktiviti Kick-Off projek.** Tidak merangkumi dan tidak mengulas lanjut mengenai proses bajet (permohonan dan kelulusan). IVV Handbook hanya merujuk kepada pekeliling Kerajaan yang berkaitan untuk ini.
- Deraf prosedur dan kontrak IVV Engagement** dengan Pembekal IVV yang dipilih,
- Langkah-langkah dan sumber-sumber yang diperlukan** oleh Agensi bagi mendapatkan panduan daripada MyTCoE dan jawatankuasa yang berkaitan seperti JTISA,
- Peranan MyTCoE** dalam perlantikan perkhidmatan IVV,
- Peranan Pasukan Pembangunan** semasa proses Pre-Engagement IVV, bagi perolehan ICT Agensi.

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SECTION 3 PRE-ENGAGEMENT PHASE

Overview

This section provides guidance on the application and approval process of hiring an IVV Provider, as well as how to execute the IVV engagement tendering, evaluation, and award processes.

In addition to the above, this section:

- provides the steps and procedures on drafting and finalizing the IVV Engagement contract with the selected IVV Provider,
- defines the steps and resources needed by The Agency to solicit guidance from MyTCoE and related committees i.e. JTISA, to prepare and finalise the Requests For Proposals (RFPs),
- defines the role of MyTCoE in facilitating the IVV Engagement efforts, and
- defines the role of the Development Team in an IVV Pre-Engagement process, to enable the coordination of their efforts in the ICT acquisition project with The Agency.

Pre-requisites

Before proceeding with this section, please ensure the following documents have been read and understood.

No.	Document/Reference	Purpose
I.	Section 2.5.1 IVV Planning Key Considerations on page 40.	To understand the ten (10) questions that need to be answered before starting an IVV Pre-Engagement and Engagement.
II.	MOF: "Garis Panduan Mengenal Pengurusan Perolehan ICT Kerajaan" available from www.treasury.gov.my	To understand the Government procurement processes and directives.
III.	MOF: Kod Bidang	
IV.	MAMPU: "Garis Panduan Permohonan Kelulusan Teknikal dan Pemantauan Projek Teknologi Maklumat dan Komunikasi (ICT) Agensi Sektor Awam".	

Table continued on next page

No.	Document/Reference	Purpose
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Why must I read this Section?

This section of the Handbook has been designed to provide the foundations for The Agency to proceed with the application and approval for engaging an IVV Provider.

By understanding processes and activities involved to systematically hire an IVV Provider, The Agency will be better prepared in performing the hiring, and responding to the needs of the ICT acquisition in accordance with the Malaysian Government's procedures.

By the end of this section, the user of this IVV Handbook will also be able to:

- produce an RFP or tender document,
- respond to an RFP,
- begin an IVV Engagement for the organization.

Important note on Tailoring

The prescriptions outlined in this IVV Handbook are to be followed with minimum tailoring.

- Any tailoring of the IVV standards and procedures presented in this IVV Handbook should be reviewed and agreed to by MyTCoE.
- In the event of inconsistency or errors is discovered, or assistance is required to implement the IVV Handbook, The Agency shall refer to MyTCoE for further clarifications and actions.

Seksyen 4 – Engagement Phase

MyTCoE
Agensi

Memperincikan aktiviti yang terlibat dalam melaksanakan projek perolehan ICT yang melibatkan IVV seperti berikut;

- a) **Pejabat Pengurusan Projek (PMO) Agensi dan Pejabat Pengurusan Ujian Pembekal IVV (TMO)** utk IVV engagement
- b) **Model hubungan PMO-TMO** (iaitu **Standard, Kerjasama, atau Bersepadu**) yang boleh diguna pakai untuk menubuhkan organisasi projek perolehan ICT di agensi
- c) **Persekitaran ujian yang diperlukan** untuk aktiviti-aktiviti ujian IVV
- d) menjelaskan **klasifikasi perolehan empat (4) jenis kitaran hayat projek ICT** yang tipikal dalam sektor awam Malaysia, dan milestones Gate Kualiti
- e) **Maksud QS Perkhidmatan Pensijilan Produk** apabila produk Commercial-Off-The-Shelf (COTS) perisian tersebut akan dinilai,
- f) **Pendekatan sesuai untuk menamatkan IVV Engagement** dan untuk memaksimumkan pembelajaran dan pengetahuan yang diperoleh

SECTION 4 ENGAGEMENT PHASE

Overview

This Section provides guidance to The Agency on defining and planning of an ICT acquisition project in the Malaysian government sector, where an IVV Provider may be formally engaged to deliver the required IVV services.

To facilitate a successful IVV Engagement for the ICT acquisition project, various minimal conformance criteria are provided to guide The Agency from the start of the IVV Pre-Engagement phase, until the ending of the IVV Engagement during closure of the ICT acquisition project.

In addition to the above, this section also:

- (a) describes The Agency's Project Management Office (PMO) and the IVV Provider's Test Management Office (TMO), with their respective roles & resources in an ICT acquisition project involving IVV Engagement,
- (b) describes the PMO-TMO relationship models (i.e. Standard, Collaborative, or Integrated) that can be adopted to establish the overall ICT acquisition project organization for The Agency, i.e. having both PMO and TMO co-exist in synchronisation,
- (c) explains the classification of four (4) typical ICT acquisition projects lifecycles observed in the Malaysian public sector, and the Quality Gate milestones for these lifecycles,
- (d) highlights project and test management approaches,
- (e) outlines test environment needed for the IVV test activities,
- (f) describes the purpose of QS Product Certification services and Function Point Analysis (FPA) when Commercial-Off-The-Shelf (COTS) software products are to be evaluated,
- (g) explains the suitable approaches to end an IVV Engagement effectively, to maximize learning and knowledge gained.

Important Note



- The Agency must conform to the guidelines and criteria detailed in this Handbook when engaging an IVV Provider for its ICT acquisition project.
- If The Agency does not intend to conform to the guidelines and criteria, please request for tailoring as detailed in Section 3.3 Tailoring of IVV Engagement process on page 65.

Why must I read this Section?

This section of the Handbook has been designed to provide the guidance for The Agency to successfully incorporate and commence an IVV Engagement for its ICT acquisition project, and to synchronise the IVV test activities with the other stakeholders involved i.e. Development Team and MyTCoE.

By understanding the roles and responsibilities involved, the various ICT acquisition project lifecycles and the corresponding planning & coordination requirements, The Agency will be better prepared in controlling its ICT acquisition project with IVV Engagement.

By the end of this section, the user of this Handbook will also be able to:

- (a) understand the importance of achieving quality deliverables in Malaysian public sector's ICT acquisition projects,
- (b) increase understanding of the ICT acquisition project lifecycles,
- (c) understand the importance of QS Product Certification.

Important note on Tailoring

The prescriptions outlined in this IVV Handbook are to be followed with minimum tailoring.

- (a) Any tailoring of the IVV standards and procedures presented in this Handbook should be reviewed and agreed to by MyTCoE.
- (b) The tailoring of this Handbook must be declared, evaluated, and approved by MyTCoE since IVV Providers are encouraged to value-add to their existing service offerings, e.g., including risk mitigation and management services.
- (c) In the event of inconsistency or errors are discovered, or assistance is required to implement the IVV Handbook, The Agency shall refer to MyTCoE for further clarifications and actions.

Kandungan IVV Handbook

Seksyen 5 – Post-Engagement Phase

Seksyen ini menyediakan asas bagi aktiviti yang berlaku selepas IVV Engagement selesai :

- a) **Memperincikan aktiviti** yang terlibat dalam melaksanakan IVV dalam perolehan projek ICT. **Menerangkan pelbagai model pendekatan** pelaksanaan / kitaran hayat, dan aktiviti-aktiviti berkaitan yang akan dijalankan.
- b) **Aktiviti yang perlu** bagi agensi dapatkan daripada Pembekal IVV untuk **memastikan kualiti berterusan** diambilkira dalam produk ICT dan proses perolehan.
- c) Menggariskan bagaimana **MyTCoE boleh membantu** dalam mewujudkan persekitaran menyeluruh perolehan projek ICT yang berkualiti
- d) Menerangkan hasil / 'data report out' dan **aktiviti kajian Post- Engagement** disyorkan untuk memastikan usaha-usaha kualiti berterusan.

MyTCoE
Agensi

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SECTION 5 POST- ENGAGEMENT PHASE

Overview

This section of this IVV Handbook is designed to provide the foundations for activities taking place after the IVV Engagement is completed. This section:

- (a) defines the types of activities The Agency need to solicit from IVV Providers to ensure ongoing quality is infused in ICT products and procurement processes.
- (b) outlines how MyTCoE can help in creating an overall environment of ICT acquisition project quality in Malaysian public service.
- (c) describes the data report out and Post-Engagement review activities recommended to ensure ongoing quality efforts remain intact.

Contents of this Section

This section contains the following.

Section	Title	See page
5.1	Post-Engagement	119

Important Note



The Post-Engagement phase does not begin nor overlap with the previous phase i.e. the Engagement phase.

Key Takeaways

Each participant stakeholder in the IVV process shall learn the following from this Section:

The Agency



- Understand the Post-Engagement services that can be provided by the IVV Providers.
- Submit data report out to MyTCoE.

IVV Provider



Identify & recommend additional services to assist The Agency to continue to improve its ICT acquisition project activities through data/metrics-driven assessment, & lessons learned reviews.

Development Team



- Learn from the process in order to:
- Improve services during Warranty period,
- Improve delivery of quality developments.

Why must I read this section?

This section describes how The Agency may leverage the IVV Provider after the Engagement phase is complete, through:

- (a) reflecting on lessons learned,
- (b) analysing project data,
- (c) identifying continual improvements in IVV efforts,
- (d) maintaining a knowledge-base of lessons learned across agencies for future ICT acquisition planning and implementation,
- (e) monitoring quality-oriented ICT activities to ensure high-quality government systems are adopted.

Role of MyTCoE during Post-Engagement phase

MyTCoE ensures report out is completed by The Agency and that a Post-Engagement review is performed and documented.

MyTCoE will also foster the culture of identifying and implementing continual improvements throughout the entire Malaysian public sector with respect to IVV and decisions.

Kandungan IVV Handbook- Seksyen 6 – Advanced Additional Services

MyTCoE
Agensi

Menerangkan berkaitan **perkhidmatan tambahan** yang boleh disediakan oleh Pembekal IVV untuk Agensi. Ianya merupakan aktiviti yang mempunyai **nilai tambah** yang boleh dilaksanakan oleh Pembekal Perkhidmatan IVV semasa IVV Engagement atau sebagai perkhidmatan tambahan di luar IVV Engagement yang dinyatakan dalam Seksyen 4 - IVV Handbook.

Perkhidmatan yang mungkin terlibat berdasarkan keperluan projek;

- a) perkhidmatan penilaian risiko,
- b) perkhidmatan penilaian keselamatan, dan
- c) perkhidmatan ujian automasi.

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SECTION 6 ADVANCED ADDITIONAL SERVICES

Overview

This section of this IVV Handbook is designed to provide an outline of additional services that can be provided by the IVV Provider to The Agency. These are value-adding activities performed by the IVV Provider during an IVV Engagement or as an extra service beyond the IVV Engagement described in Section 4 of this IVV Handbook.

The value-adding activities include:

- (a) risk assessment services,
- (b) security assessment services, and
- (c) test automation services.

Contents of this Section

This section contains the following.

Section	Title	See page
6.1	Risk Assessment	126
6.2	Security Assessment	130
6.3	Test Automation	133

Key Takeaways

Each participant stakeholder in the IVV process shall learn the following from this Section:

The Agency



Understand the relevant additional services beyond the standard IVV Engagement that IVV Providers can provide.

IVV Provider



- Identify additional opportunities to help The Agency continue to assess their ICT acquisition projects.
- Improve quality through improved risk mitigation, enhanced security of ICTs, and economies gained with test automation activities.

Development Team



Learn about additional IVV activities to effectively interface with IVV Providers, where and when needed.

MyTCoE as the IVV oversight authority

As the oversight authority, MyTCoE provides the context and definitions for any IVV implementation in the Malaysian public sector, regardless of variations and degrees of complexity, scale, and criticality of the ICT projects.

Assistance by MyTCoE

In the event of inconsistency or errors is discovered, or assistance is required to implement this IVV Handbook, The Agency shall refer to MyTCoE for further clarifications and actions.

Overview IVV Handbook- Annexes

MyTCoE
Agensi
MAMPU(BSA)
MOF

Mengandungi rujukan tambahan. Menyediakan template minimum yang diperlukan untuk melaksanakan IVV *engagement*.

Annex A-Kategori Perkhidmatan IVV

Annex B-Purposes of Testing

Annex C-Pre Engagement Scoping Guide

Annex D-IVV Engagement Checklists

Annex E-QS Product Certification

Annex F-IVV Engagement Reporting Templates

Annex G-Measurement and Sizing

Annex H-Q-Lab

Annex I-Tender Clauses for IVV Engagement (BI,BM)

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IVV Handbook version 1.0 Draft 6.0

Annexes

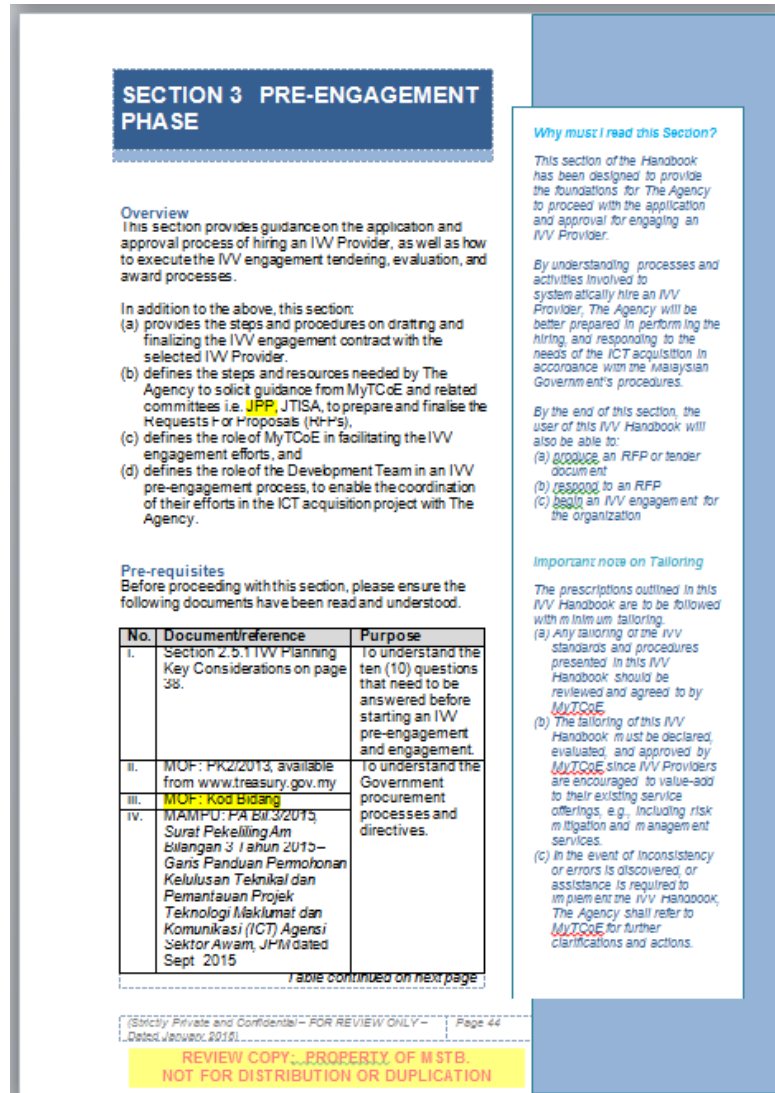
Document Version Control

Version	Date	Description
1.0	11/09/15	Review with agencies, MSTB, and MAMPU for input. Revisions made to update document based on input.
2.0	18/09/2015	Revised document provided and distributed for more input.
3.0	05/10/2015	MSTB and Agency input incorporated into revised document.
4.0	16/10/2015	Revisited document provided and distribute for more input.
4.1	19/10/2015	Corrected minor errors on cover page, formatted some pages, and amended Annex C.
4.2	30/10/2015	Updated formatting throughout document.

Table of Contents

Document Version Control	I
Table of Contents	I
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Annex B - Purposes of Testing	B-1
Annex C - IVV Pre-Engagement Scoping Guide	C-1
Annex D - IVV Engagement Checklists	D-1
Annex E - QS Product Certification	E-1
Annex F - IVV Engagement Reporting Templates	F-1
Annex G - Measurement and Sizing	G-1
G.1 Function Point (FP) – An Introduction	G-1
G.2 Early and Quick Function Point (E&Q FP) – An Introduction	G-3
G.3 Basic Concepts of E&Q FP for IFPUG Function Points	G-3
G.4 Conclusions	G-5
Annex H - Q-Lab	H-1
Annex I - Tender Clauses for IVV Engagement	I-1

Layout and Key Features



- User-friendly format improved after feedback
- Modular info (Sections, topics)
- 11pt Arial font
- Itemised/bulleted contents for easy reference

Layout and Key Features

IVV Handbook version 1.0, Draft 8.0 Section 4 – Engagement Phase

Section 4.2 IVV Provider – IVV Engagement Structure & TMO

+

I. In order to deliver effective IVV engagement, IVV Provider is to establish a well-defined and structured Test Management Office (TMO) that can demonstrate the following:

- (a) Public sector domain knowledge familiarity, and also having resources with relevant industry certifications in the appropriate subject matter, specifically in those related to testing, QA, and IVV
- (b) Experience in rigorous implementation & administration of well-defined IVV processes.
- (c) Systematic assessment of the project's end-to-end ICT acquisition process.
- (d) Ability to identify critical system functions that enable focus on high-value ICT areas.
- (e) Clear, consistent, and timely communication of IVV results for all areas addressed
- (f) Objective and effective management of the metrics and processes, for performance monitoring and control.
- (g) Strong management capabilities and interfaces with The Agency's staff and teams.

II. Figure 4.2 below shows the minimum setup of the IVV Provider's Test Management Office (TMO) that shall deliver the IVV services.

Important Note
Depending on the IVV engagement size and complexity:

- A role in the TMO may be fulfilled by one or more persons, or
- A person may assume one or more roles in the TMO.

Figure 4.2: IVV Provider – IVV Engagement Structure & TMO

Continued on the next page

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- Included key diagrams, with explanations
- Important facts are emphasised with icons and formatting
 - Important Notes in blue textboxes
- Page number format
- For softcopies, Table of Contents and all page numbers are hyperlinked
 - Easy to use/find info

Layout and Key Features

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IVV Handbook version 1.0 Draft 5.0 Annexes

CK-DR: Document Review Checklist

Instruction:
(a) Perform document reviews to verify that the technical documents and plans are consistent with project plans, requirements and guidelines established by the Technical Committee.

CK-DR : Document Review Checklist			
IVV Team Member:		Date:	
Project:			

#	Item	Description of Issue
1.	Is document written to appropriate detail?	
2.	Is document consistent with other documents?	
3.	Is material within document feasible as stated?	
4.	Are all required sections included in the document?	
5.	Are all sections in the proper order?	
6.	Is document in compliance with required statement of work?	
7.	Are all statements compatible and consistent?	
8.	Is the level of detail and presentation style consistent throughout the document?	
9.	Are all terms, acronyms and abbreviations defined?	
10.	Is the overall approach sound?	
11.	Is the document well researched and based on proven prototypes?	

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- Annexes

- compilation of additional/supporting information
 - guidelines
 - templates
 - General references etc.
- Formatted, with unique identifiers
- Can be updated/value-added to suit current and/or changing needs

Untuk mencapai keberkesanan pelaksanaan IVV, pihak kerajaan perlu memantapkan dari segi **polisi dan prosidur** yang berkaitan supaya pihak yang memberi perkhidmatan jelas bagaimana untuk melaksanakan IVV secara lebih efektif.

TERIMA KASIH



INDUSTRI PENGUJIAN PERISIAN



1

2009 - 2012

- Sumber pertumbuhan baru ekonomi
- [Penubuhan Malaysian Software Testing Hub \(MSTH\)](#)
- Penglibatan Sektor Awam dalam inisiatif MSTH

PELAKSANAAN IV&V DI SEKTOR AWAM



2

2013

- Pelaksanaan IV&V bagi projek kritikal & berimpak tinggi
- **Syarikat IVV yang di akreditasi oleh Jabatan Standard Malaysia**

PENUBUHAN MyTCoE



3

2015 -2020

- Penubuhan Pusat Kecemerlangan Pengujian Perisian Sektor Awam (MyTCoE)
- MAMPU sebagai Peneraju dalam Bidang Jaminan Kualiti Perisian (SQA)
- **MyTCoE mengawalselia Pelaksanaan IVV**
- **IVV Handbook – garispuandu perolehan pelaksanaan IVV**

PUNCA KUASA

- Pakej Rangsangan Ekonomi Kedua

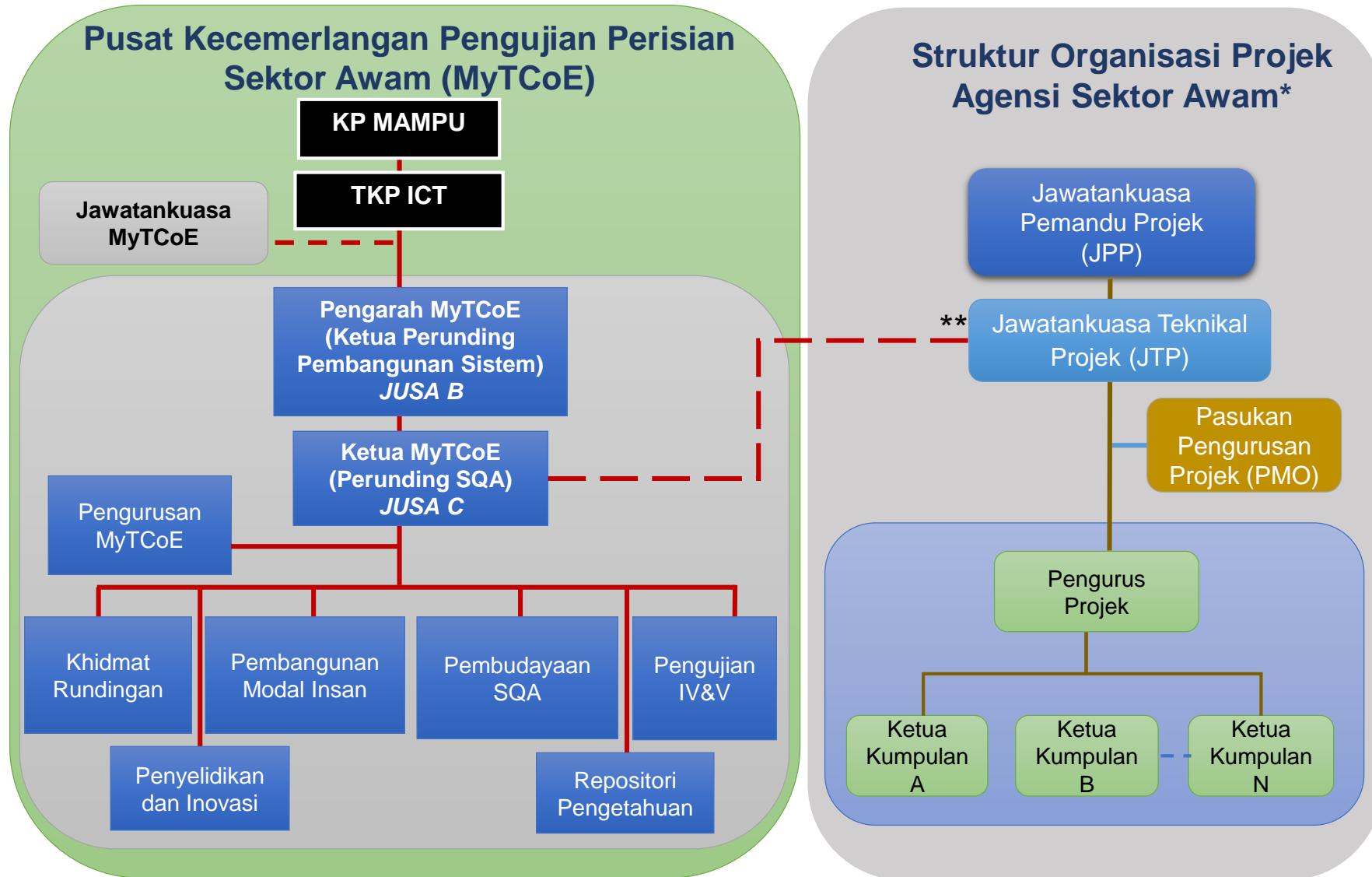
- [Pekeliling Perbendaharaan Malaysia PK 2.2/2013](#)
- Jawatankuasa Teknikal ICT Sektor Awam (JTISA)

- [Minit Mesyuarat Jawatankuasa PEMANDU MSTH Bil 1/2015](#)

RAKAN STRATEGIK



TADBIR URUS MyTCoE

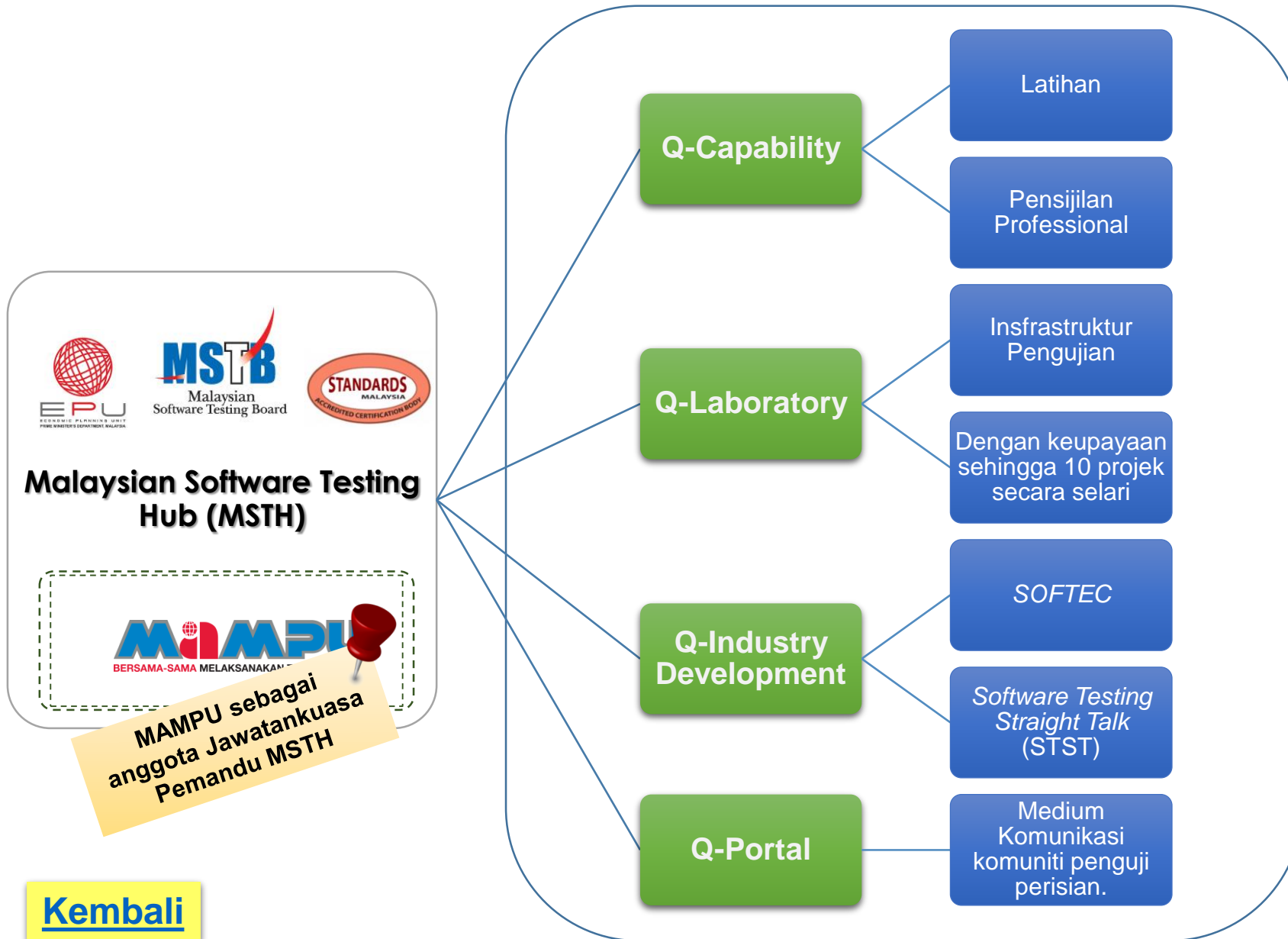


Nota : * Merujuk kepada Panduan Pelaksanaan Pengurusan Projek ICT Sektor Awam – PPriSA

** Ketua MyTCoE bertindak sebagai entiti bebas (independent) yang membentangkan Laporan Perundingan atau hasil Pengujaan (IV&V) kepada pemilik projek. Laporan Perundingan dan/atau hasil Pengujaan (IV&V) dibentangkan kepada JTP

[Kembali](#)

INISIATIF MALAYSIAN SOFTWARE TESTING HUB



[Kembali](#)

Introduction to MSTH



To establish a sustainable Software Testing **Ecosystem in Malaysia and transform the country into a preferred destination for Software Testing services**

- **A Public-Private Collaboration**
 - Public = GoM (EPU)
 - Private = MSTB
 - Initial Funding = PRE-2 (*Second Stimulus Package*)
- **Timeline**
 - April 2009 – Dec 2010 (PRE-2) – Proof of Concept
 - Jan 2011 – Dec 2015 (RMk-10) – National Initiative (*A new source for economic growth*)
 - Jan 2016 – Dec 2020 (RMk-11) – National Initiative (*A new source for economic growth*)

IVV Development history summary

Date/Period	Key activities
12/8/2015	Meeting with MAMPU on Handbook Table of Contents
14/8-02/9/2015	Customisation of IVV Handbook
11/9/2015	IVV Handbook workshop#1 for MyTCoE
19/9-07/10/2015	Review Iteration 1 (IVV Handbook v2.0)
09/10-15/10/2015	Review Iteration 2 (IVV Handbook v3.0)
17/10 -27/11	Review Iteration 3 (IVV Handbook v4.0 until v4.3)
26-27/10/2015	IVV Handbook v4.2 walkthrough#2 with Agency
27/10-30/11/2015	Reformatting of IVV Handbook v4.2
29/02/2016	Workshop#3 on IVV Handbook v5.0
07/03/2016	Briefing#4 to Agencies on IVV Handbook v5.0
30-31/03/2016	Workshop#5 on IVV Handbook v6.0
26/04/2016	Submission IVV Handbook V1.0 to MAMPU

Perolehan Kerajaan - PK 2

Pengesahan
MoF

ASAL

Klausu 2.1.3

Bagi projek yang kritikal dan memberi impak tinggi kepada Kerajaan, Agensi hendaklah mengenal pasti keperluan memperoleh khidmat jaminan kualiti/pengujian perisian ke atas perolehan aplikasi/sistem ICT dari pihak ketiga (Independent Validation and Verification – IVV) bagi memastikan projek tersebut memenuhi standard yang ditetapkan.

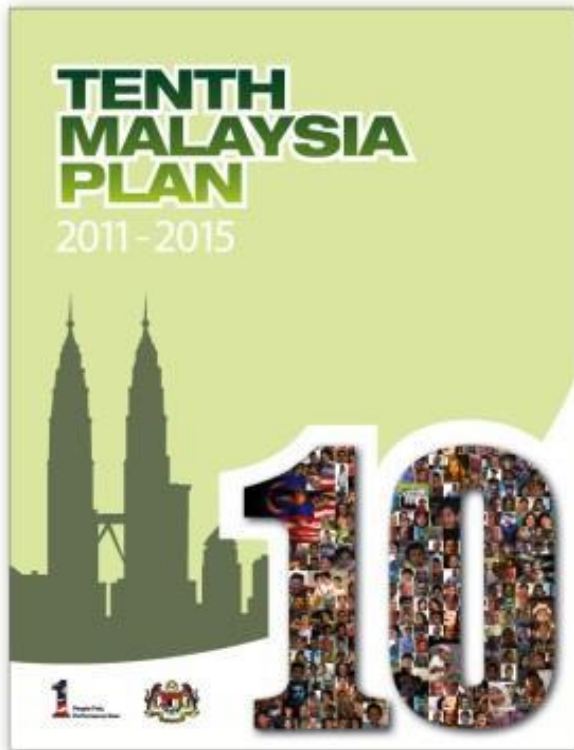
Klausu 2.1.4

Agensi hendaklah memastikan pihak ketiga tersebut sama ada individu atau syarikat mendapat pengiktirafan/ akreditasi dari Jabatan Standard Malaysia. Pihak ketiga yang dilantik hendaklah terlibat secara langsung dari peringkat mula pembangunan sistem hingga peringkat penyerahan kepada Kerajaan.

PENAMBAHBAIKAN

Bagi projek yang kritikal dan memberi impak tinggi kepada Kerajaan, Agensi perlu mengenal pasti keperluan memperoleh khidmat jaminan kualiti/pengujian perisian ke atas perolehan aplikasi/sistem ICT dari pihak ketiga (Independent Validation and Verification – IVV) bagi memastikan projek tersebut mencapai standard dan kualiti yang ditetapkan. Agensi perlu merujuk dan mematuhi garis panduan di dalam IVV Handbook (Guidelines on procurement and engagement of IVV services (Testing by Third Parties) in ICT Projects undertaken by public sector agencies). IVV Handbook-www.mytcoe.gov.my

Agensi hendaklah memastikan pihak ketiga yang dilantik untuk memberikan perkhidmatan IVV telah mendapat pengiktirafan/akreditasi daripada Jabatan Standard Malaysia. Bagi pembangunan sistem yang melibatkan penggunaan/pengubahsuaian produk Commercial Off-The-Shelf (COTS), produk tersebut hendaklah mendapatkan persijilan kualiti produk perisian daripada badan pengiktirafan yang telah mendapat akreditasi daripada Jabatan Standard Malaysia atau setaraf.



10th MALAYSIA PLAN (2011-2015)

“Malaysia needs to shift from being an average producer of general ICT products and services to a niche producer of selected ICT products and services, and progress from net importer to a net exporter”

- 10th Malaysia Plan Document

- 10th Malaysia Plan Document



Pelaksana IVV

- Bagi memastikan pihak ketiga (syarikat atau organisasi) yang dilantik untuk melaksanakan IVV, ianya hendaklah bebas dari pembangun aplikasi dari segi:
 - Pengurusan
 - Teknikal
 - Kewangan

Kaedah Perolehan

- Perkhidmatan pembangunan sistem dan IVV perlu dilaksanakan melalui dua(2) tender yang berasingan (untuk projek yang menggunakan pendekatan *out-sourcing*).

Klausa Tender (Contoh)





- Bagi memastikan pihak ketiga (syarikat atau organisasi) yang dilantik untuk melaksanakan IVV, ianya hendaklah bebas dari pembangun aplikasi dari segi:
 - a. Pengurusan
 - b. Teknikal
 - c. Kewangan
- Perkhidmatan pembangunan sistem dan IVV perlu dilaksanakan hendaklah melalui dua(2) tender yang berasingan (untuk projek yang menggunakan pendekatan *out-sourcing*).
- Contoh Klausa bagi kedua-dua Tender

