

Annex I – Tender Clauses for IV&V Engagement

The following Tender Clauses were developed during for the *Pengujian Perisian Sektor Awam* (PPSA) initiative, and shall be the key reference in defining the Tender Clauses in the two (2) Tender Documents to be developed by The Agency.

• PENGUJIAN PERISIAN SEKTOR AWAM (PPSA)
Proposed IV&V Requirements' for the Procurement Process
 (Dated 03 June 2014)

No	Requirement Statement	Justifications
1	<p><u>Scope of Testing</u></p> <p>All software testing specified in Testing Schedule shall be managed, designed, executed and completed systematically and comprehensively by the appointed tenderer. The Client shall also appoint an IV&V contractor to perform augment software testing services, including, but not limited to:</p> <ul style="list-style-type: none"> (i) Static testing: <ul style="list-style-type: none"> a. Early Testing (or reviews for testability of requirements and/or specifications documentation); (ii) Dynamic testing: <ul style="list-style-type: none"> a. Functional Testing; b. Performance Testing; c. Load Testing; d. Stress Testing; and e. Security Testing. <p>The augment software testing activities are not to replace nor duplicate the testing tasks that shall be performed by the appointed tenderer.</p> <p>The augment software testing shall lead towards the Client establishing its confidence to deploy the new system to production partially or fully thus, accepting the new system contractually.</p> <p>The Client or its appointed IV&V contractor shall also conduct reviews on the quality of the testing conducted by the appointed tenderer.</p> <p>In conducting the above activities, the Client and its appointed IV&V contractor shall allude to relevant international standards such as ISO/IEC/IEEE 29119, ISO/IEC/IEEE 29148, IEEE Std. 1028, etc.</p> <p><u>[Note to Agency]:</u> (1) Agency to ensure the Testing Schedule is defined/added into the tender</p>	<ul style="list-style-type: none"> 1. The appointed tenderer shall conduct all testing specified in Testing Schedule (and provide formal evidences as proof during reviews) for the systematic and comprehensive planning, designing, execution and completion of testing done. 2. To indicate (upfront) the involvement of an appointed IV&V contractor that will represent the interest of the Client from the perspective of quality (i.e. the process involved to deliver and also the deliverable itself) for the system/software to be delivered by the appointed tenderer.

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	<p>document. The Testing Schedule shall covers the below areas:</p> <ul style="list-style-type: none"> • Test levels (recommended for Unit Test, System Test, Integration Test, User Acceptance Test (UAT), Provisional Acceptance Test (PAT) and Final Acceptance Test (FAT). • Test types (recommended for functionality, security, conversion, backup/restore, performance, reliability, load, volume and stress testing). <p>(2) Change the term “appointed tenderer” to align with the main tender document.</p> <p>(3) Change the term “Client” to align with the main tender document, which refers to the agency itself.</p> <p>(4) Refer to <i>Diagram 1</i> for the IV&V activities against a typical government projects’ software development life cycle.</p>	
2	<p><u>Test Management and Reporting</u></p> <p>The appointed tenderer shall practice proper test management which include activities such as planning, scheduling, resourcing, designing, executing, registering, classifying, prioritizing, investigating, isolating, fixing, reporting, etc. for all tests it perform as specified in Testing Schedule.</p> <p>It shall practice the same for the incidents/findings raised by the Client or its appointed IV&V contractor as a result of the augment software testing, to ensure the new system meets the expectations and quality set by the project requirements.</p> <p>It shall provide records/evidences of its conduct of testing during reviews by the Clients or its appointed IV&V contractor.</p>	<p>The appointed tenderer shall obligate itself in professional and systematic test management for all testing it perform and defects it discovered in fulfilling the Testing Schedule, and also for all defects reported by the Client and/or its appointed IV&V contractor, until the reported defects are closed/rectified.</p> <p>It shall also obligate itself to ensuring proper records/evidences of testing are kept properly for review/audit.</p>
3	<p><u>Defect Fixing</u></p> <p>The appointed tenderer shall propose the Service Level Agreement (SLA) to fix the incidents/defects/bugs found by:</p> <ol style="list-style-type: none"> 1. Its own development/testing team, and 2. The Client or its appointed IV&V contractor <p>as the outcomes of:</p>	<p>The appointed tenderer shall obligate itself to:</p> <ul style="list-style-type: none"> • Propose the Service Level Agreement (SLA) to fix the incidents/defects/bugs identified by the Client or its appointed IV&V contractor. • Commit to the SLA it’s proposed so that the Client and its appointed

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	<ul style="list-style-type: none"> • the review on the quality of testing conducted by appointed tenderer, and also, • the augment software testing conducted by the appointed IV&V contractor. 	<p>IV&V contractor can plan and execute the activities required to confirm closure/rectification of the incidents/defects/bugs. This is also to ensure the overall project schedule can still be managed under situation where there are significant quality issues.</p>
4	<p><u>Collaboration with the appointed IV&V contractor</u></p> <p>The appointed tenderer shall provide relevant resources on a timely basis for discussions with the Client's appointed IV&V contractor to clarify project related and technical matters or issues arises during the project period, including, but not limited to:</p> <ul style="list-style-type: none"> • Project governance, plan & schedule • Requirements management • Sizing of new system • Change and defect management • Configuration management of System Under Test (SUT) • Traceability of requirements to system design and SUT 	<ul style="list-style-type: none"> • The appointed tenderer shall professionally collaborate with the appointed IV&V contractor (to address quality issues) during the project period. • To indicate (upfront) the involvement of an appointed IV&V contractor that will represent the interest of the Client from the perspective of quality (i.e. the process involved to deliver and also the deliverable itself) for the software to be delivered by the appointed tenderer.
5	<p><u>Test Environment</u></p> <p>The appointed tenderer shall provide (i.e. supply, set-up, configure, support, maintain) a dedicated test environment befitting the system under test (SUT) to fulfil the software testing activities (defined in the Testing Schedule) without interruption to the system development/construction or any defect investigation/rectification activities.</p> <p>The appointed tenderer shall documents the design and configurations of the test environment before performing the required software testing to fulfil the Testing Schedule.</p> <p>The appointed tenderer shall allow and grant access permission to the appointed IV&V contractor to perform an independent:</p> <ul style="list-style-type: none"> • Review of the design and configuration documentations of the test environment, • Review of the SUT initial installation and subsequent patches installations before commencement of testing cycle. • Execution of augment software testing. 	<p>To appointed tenderer shall provide a separate test environment at the Client's premise which mimics the production environment to execute software testing on the System Under Test (SUT), without interrupting the system construction or any defect rectification activities.</p> <p>The following are to be noted:</p> <ol style="list-style-type: none"> 1. Flexibility of the tenderer to propose the configuration of the test environment (i.e. logical or physical) is not impeded by this tender requirement. 2. The test environment will also be utilized by the Client and IV&V contractor. 3. Client needs this separate test environment continuously for as long as the system remains in production. 4. Client needs to ensure that the test environment is equally supported and maintain just like the production environment even after the project.

Diagram 1 shows the software testing activities against a typical Software Development Life Cycle (SDLC) for a government project. The diagram also shows the expected documentations and System Under Test (SUT) from the project to be the input for software testing activities.

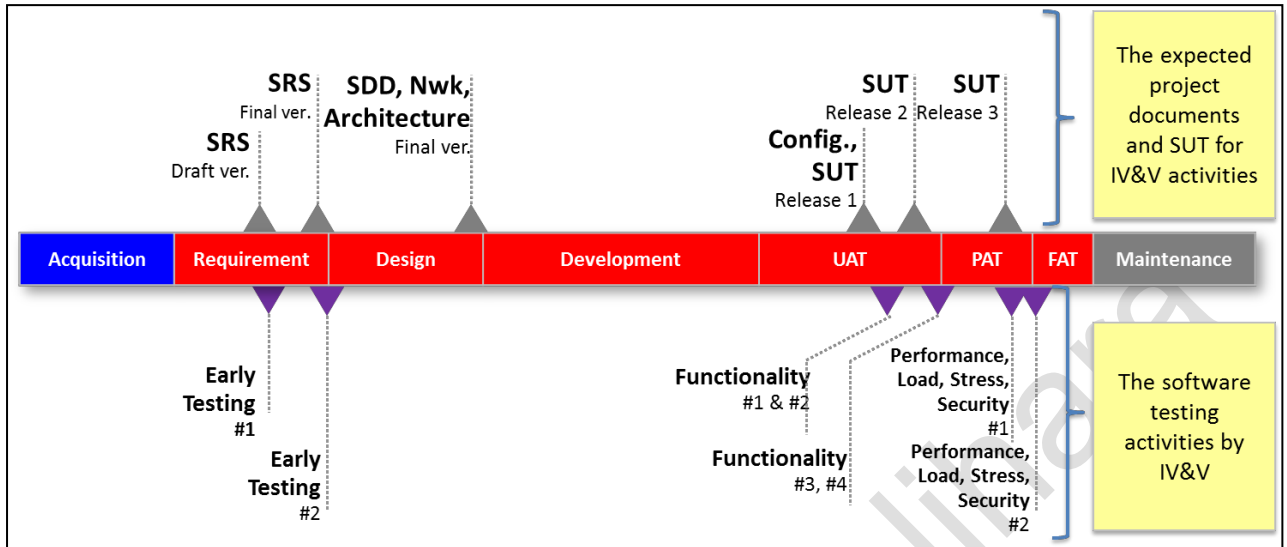


Diagram 1 – IV&V Software testing activities in accordance to a typical government project's SDLC.

Proposed translation to Bahasa Malaysia

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1	<p><u>Scope of Testing</u></p> <p>All software testing specified in Testing Schedule shall be managed, designed, executed and completed systematically and comprehensively by the appointed tenderer. The Client shall also appoint an IV&V contractor to perform augment software testing services, including, but not limited to:</p> <ul style="list-style-type: none"> (i) Static testing: <ul style="list-style-type: none"> a. Early Testing (or reviews for testability of requirements and/or specifications documentation); (ii) Dynamic testing: <ul style="list-style-type: none"> a. Functional Testing; b. Performance Testing; c. Load Testing; d. Stress Testing; and e. Security Testing. <p>The augment software testing activities are not to replace nor duplicate the testing tasks that shall be performed by the appointed tenderer.</p> <p>The augment software testing shall lead towards the Client establishing its confidence to deploy the new system to production partially or fully thus, accepting the new system contractually.</p> <p>The Client or its appointed IV&V contractor shall also conduct reviews on the quality of the testing conducted by the appointed tenderer.</p> <p>In conducting the above activities, the Client and its appointed IV&V contractor shall allude to relevant international standards such as ISO/IEC/IEEE 29119, ISO/IEC/IEEE 29148, IEEE Std. 1028, etc.</p>	<p><u>Skop Pengujian</u></p> <p>Semua pengujian perisian yang dinyatakan dalam Jadual Ujian hendaklah diuruskan, direka, dilaksanakan dan disempurnakan secara sistematik dan menyeluruh oleh kontraktor yang dilantik. KERAJAAN akan melantik pihak ke-tiga sebagai <i>Independent Validation & Verification (IV&V)</i> untuk melaksanakan pengujian perisian tambahan (bagi pihaknya), termasuk, tetapi tidak terhad kepada:</p> <ul style="list-style-type: none"> (i) Static testing: <ul style="list-style-type: none"> a. Early Testing (atau menilai kebolehubuhan (testability) terhadap keperluan sistem dan/atau dokumen spesifikasi); (ii) Dynamic testing: <ul style="list-style-type: none"> a. Functional Testing; b. Performance Testing; c. Load Testing; d. Stress Testing; and e. Security Testing. <p>Pengujian perisian tambahan oleh IV&V tidak bermaksud untuk mengambil alih tugas dan tanggungjawab kontraktor untuk melakukan pengujian sistem.</p> <p>Hasil pengujian perisian oleh IV&V ini bertujuan untuk menilai kesahihan ujian yang dilakukan oleh kontraktor, selain mewujudkan keyakinan kepada KERAJAAN untuk melancarkan (rollout) sistem yang dibangunkan, dan seterusnya menerima pakai (accept) mengikut terma perjanjian.</p> <p>KERAJAAN dan IV&V akan menjalankan pengujian perisian berdasarkan piawaian antarabangsa yang berkaitan seperti ISO/IEC/IEEE 29119, ISO/IEC/IEEE 29148, IEEE Std. 1028, dan lain-lain.</p>
2.	<p><u>Test Management and Reporting</u></p> <p>The appointed tenderer shall practice proper test management which include activities such as planning, scheduling, resourcing, designing, executing, registering, classifying, prioritizing, investigating, isolating, fixing, reporting, etc. for all tests it perform as specified in Testing Schedule.</p> <p>It shall practice the same for the</p>	<p><u>Pengurusan Ujian dan Laporan</u></p> <p>Kontraktor hendaklah mengamalkan pengurusan pengujian perisian yang betul yang merangkumi aktiviti seperti merancang, menjadual, mengurus sumber, merekabentuk, melaksana, mendaftar, mengkelas, mengutamakan, menyiasat, mengasing, menetap, melapor dan lain-lain untuk semua ujian yang dilaksanakan sebagaimana yang dinyatakan dalam Jadual</p>

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	<p>incidents/findings raised by the Client or its appointed IV&V contractor as a result of the augment software testing, to ensure the new system meets the expectations and quality set by the project requirements.</p> <p>It shall provide records/evidences of its conduct of testing during reviews by the Clients or its appointed IV&V contractor.</p>	<p>Ujian.</p> <p>Amalan yang sama perlu dilaksanakan untuk insiden/penemuan yang dibangkitkan oleh KERAJAAN atau IV&V, hasil daripada pengujian perisian tambahan untuk memastikan sistem baru memenuhi jangkaan dan kualiti yang ditetapkan oleh keperluan projek.</p> <p>Rekod dan bukti-bukti pelaksanaan pengujian perisian hendaklah dikemukakan semasa semakan oleh KERAJAAN atau IV&V.</p>
3.	<p><u>Defect Fixing</u></p> <p>The appointed tenderer shall propose the Service Level Agreement (SLA) to fix the incidents/defects/bugs found by:</p> <ol style="list-style-type: none"> 1. Its own development/testing team, and 2. The Client or its appointed IV&V contractor as the outcomes of: <ul style="list-style-type: none"> • the review on the quality of testing conducted by appointed tenderer, and also, • the augment software testing conducted by the appointed IV&V contractor. 	<p><u>Pembetulan Kecacatan (Defect)</u></p> <p>Kontraktor yang dilantik hendaklah mencadangkan Service Level Agreement (SLA) untuk membetulkan insiden/kecacatan (defect)/pepijat (bugs) ditemui oleh:</p> <ol style="list-style-type: none"> 6. Pasukan pembangunan sistem (programmer)/penguji (tester) sendiri, dan 7. KERAJAAN atau IV&V, hasil daripada: <ul style="list-style-type: none"> • penilaian ke atas kualiti pengujian yang dilakukan oleh kontraktor; dan • pengujian perisian tambahan yang dijalankan oleh IV&V.
4.	<p><u>Collaboration with the appointed IV&V contractor</u></p> <p>The appointed tenderer shall provide relevant resources on a timely basis for discussions with the Client's appointed IV&V contractor to clarify project related and technical matters or issues arises during the project period, including, but not limited to:</p> <ul style="list-style-type: none"> • Project governance, plan & schedule • Requirements management • Sizing of new system • Change and defect management • Configuration management of System Under Test (SUT) • Traceability of requirements to system design and SUT 	<p><u>Kerjasama dengan IV&V yang dilantik</u></p> <p>Kontraktor hendaklah menyediakan sumber-sumber yang relevan pada masa yang ditetapkan untuk perbincangan dengan IV&V untuk memperincikan hal berkaitan projek, atau perkara-perkara teknikal atau isu-isu yang timbul sepanjang tempoh projek itu, termasuk, tetapi tidak terhad kepada:</p> <ul style="list-style-type: none"> • Pemantauan projek dan jadual pelaksanaan • Pengurusan keperluan • Saiz sistem baru • Pengurusan perubahan dan kecacatan (defect) • Pengurusan konfigurasi System Under Test (SUT) • Mengenalpasti keperluan untuk rekabentuk sistem dan SUT
5.	<p><u>Test Environment</u></p> <p>The appointed tenderer shall provide (i.e. supply, set-up, configure, support, maintain) a dedicated test environment befitting the system under test (SUT) to fulfil the software</p>	<p><u>Persekitaran Pengujian</u></p> <p>Kontraktor yang dilantik hendaklah menyediakan (iaitu bekalan, set-up, konfigurasi, khidmat sokongan, dan penyelenggaraan) persekitaran pengujian</p>

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	<p>testing activities (defined in the Testing Schedule) without interruption to the system development/construction or any defect investigation/rectification activities.</p> <p>The appointed tenderer shall documents the design and configurations of the test environment before performing the required software testing to fulfil the Testing Schedule.</p> <p>The appointed tenderer shall allow and grant access permission to the appointed IV&V contractor to perform an independent:</p> <ul style="list-style-type: none"> • Review of the design and configuration documentations of the test environment, • Review of the SUT initial installation and subsequent patches installations before commencement of testing cycle. • Execution of augment software testing. 	<p>yang berdedikasi sesuai dengan System Under Test (SUT) untuk memenuhi aktiviti pengujian perisian (ditakrifkan dalam Jadual Ujian) tanpa gangguan kepada pembangunan/pembinaan sistem atau mana-mana aktiviti penyiasatan atau pembetulan kecacatan (defect).</p> <p>Kontraktor yang dilantik hendaklah mendokumenkan rekabentuk dan konfigurasi persekitaran pengujian sebelum melaksanakan pengujian perisian yang diperlukan untuk memenuhi Jadual Ujian.</p> <p>Kontraktor yang dilantik hendaklah membenarkan dan memberikan capaian kepada IV&V untuk bebas melaksanakan aktiviti berikut:</p> <ul style="list-style-type: none"> • Mengkaji rekabentuk dan dokumen konfigurasi persekitaran pengujian • Mengkaji butiran pemasangan dan penambahbaikan (patches) sebelum memulakan kitaran pengujian sistem. • Melaksanakan pengujian perisian tambahan.