



# Enterprise Project Management Office Independent Verification and Validation (IV&V) Policy and Process

## Introduction

The Maryland State Finance and Procurement Code Ann. § 3A-308, provides the Maryland Department of Information Technology's (DoIT) with a legislative mandate to provide oversight to Major IT Development Projects (MITDPs) in the State of Maryland.

Part of the Department's oversight efforts, is to determine whether an MITDP requires Independent Verification and Validation (IV&V) at any point during its lifecycle. However, an IV&V can also be requested by the agency that owns the project. In the event an agency does not want or feel IV&V is warranted, DoIT provides the final authority on if an IV&V is to be performed.

IV&V is the performance of an independent assessment of a project by a third party assessor who has no direct involvement with the development and implementation of the project in question. Independence is established by ensuring the following:

- Technical independence, where IV&V personnel are not involved in any stage of the software requirements, design or development
- Managerial independence, where IV&V responsibility is vested in an organization that is separate from the development and program management organizations. The independent selection of the artifacts to be examined and tested, the techniques to be used, the issues to be chosen, and the reporting to be made further affirm this independence.
- Contractual independence, where the IV&V contract is executed separately from the MITDP contract

The goal of an IV&V is to obtain recommendations from an independent assessor on ways the project can achieve previously defined goals and objectives, especially if there is reason to believe that the project is not on track from a cost, scope or duration perspective.

There are multiple benefits of having an IV&V performed on a project, some of which are:

- An objective system development appraisal
- A baselined set of testable requirements that match the user's needs
- Opportunity to identify problems early in the lifecycle
- Increased requirements and design visibility and traceability
- Development risk reduction
- Improved reliability
- The "watchdog effect" where greater care is taken because of the knowledge that project could be assessed
- Improved maintainability
- Better understanding of and response to risks
- Project risk, cost, and schedule effects are lessened
- Software quality and reliability are enhanced
- Management visibility into the software process is improved



- Proposed changes and their consequences can be quickly assessed

While not all these benefits are quantifiable, they may actually outweigh the benefits of the calculated Return on Investment (ROI).

### **DoIT IV&V Policy**

The Department of Information Technology maintains the following policy on IV&V's:

1. At its discretion, DoIT may initiate an IV&V at any point in the SDLC to obtain a 3<sup>rd</sup> party assessment of the MITDP
2. DoIT may initiate multiple IV&Vs for the same MITDP with up to one IV&V per year.
3. DoIT may initiate either a snapshot (i.e. point in time) IV&V or a lifecycle IV&V for an MITDP.
4. DoIT considers the IV&V information to be close-hold and thus will only share this information between DoIT and Agency for which the IV&V is being conducted.
5. An Agency may request that DoIT initiate an IV&V on their behalf, if it feels that the MITDP is at risk.
6. DoIT will initiate an IV&V based on the criteria in the IV&V Selection Framework (See below).
7. An Agency will budget and pay for the IV&V cost out of its project funds at the end of the year.
8. An Agency may request a copy of the IV&V report for its senior management on a need to know basis.
9. DoIT will follow the [records retention policy](#) for the IV&V findings report after the MITDP has completed.
10. DoIT will oversee the IV&V in accordance with IV&V objectives.
11. An Agency may provide justification for why an IV&V should not be required upon its determination, but DoIT retains the final authority to either grant the waiver or proceed with the IV&V process.

### **DoIT IV&V Process**

DoIT determines that an IV&V is needed for a project based on results from the **IV&V Selection Framework**, as seen in Appendix A: IV&V Selection Framework.

The entrance criteria and associated selection parameters are meant to be indicators, not hard and fast requirements. Actual selection of IV&V candidate projects are based on a number of factors from different perspectives, including the OPM, Procurement, Agency and project management, and DoIT management.

If it is concluded that an IV&V is needed, then the **DoIT IV&V Initiation Process** is followed, as seen in Appendix B: DoIT IV&V Initiation Process.

Agency determines at its own discretion that there is a need for an IV&V. Once done, the process outlined in



Appendix C: **Agency IV&V Initiation Process**, is followed.

### **IV&V Procurement Options**

After the decision to initiate an IV&V has been made, the next step is the solicitation and eventual procurement of IV&V services from qualified vendors. This is done through the Independent Assessment Services (IAS master contract).

DoIT has established an [Independent Assessment Services \(IAS\) master contract](#) as the primary vehicle for Agencies wishing to obtain the services of an IV&V Contractor. The objective of this Master Contract is to enable State government Agencies to procure IT assessment services in a timely and economical manner.

For non-MITDP efforts, DoIT Oversight will guide an Agency through this process after the agency has made DoIT aware of its decision to initiate an IV&V. This is the quickest process as the Master Contract only has pre-vetted IV&V contractors that have met the standards for IV&V methodology based on DoIT evaluation.

Alternatively, Agencies can release a Task Order Request for Proposal (TORFP) via the CATS+ Master Contract under Functional Area 10 or an RFP if necessary, to procure IV&V services.

### **IV&V Methodology**

As part of the bid to remain independent, the IV&V vendor will provide to DoIT and Agency management, the methodology to be used for an IV&V. This will include the aspects of the project to be assessed, parameters by which assessments will be done and the documents to be produced. A findings report will be the deliverable handed over at the end of the IV&V and will include all recommendations and corrective actions if any.

DoIT, in conjunction with the Agency/project leadership will make the final decision on how to respond to the findings report and determine if additional involvement by the assessor is required.



## Appendix A: IV&V Selection Framework

### IV&V Considerations/Selection:

<b>Entrance Criteria (IV&amp;V Discussion Triggers)</b>	
<ul style="list-style-type: none"> <li>• Major Budget/Cost</li> <li>• Organizational Project Management Maturity</li> <li>• Vendor Performance</li> <li>• Project Management Performance</li> <li>• Project Risk/ Issues Triggers</li> </ul>	<ul style="list-style-type: none"> <li>• Project Performance Issues</li> <li>• Project in transition from one SDLC Phase to another</li> <li>• Funding Issues</li> <li>• Agency concerns (IV&amp;Vs initiated by Agency)</li> </ul>
<b>Entrance Criteria</b>	<b>Selection Parameters</b>
<p><i>Note: These entrance criteria and associated selection parameters are meant to be indicators, not hard and fast requirements. Actual selection of IV&amp;V candidate projects is based on a number of factors from different perspectives, including the OPM, Procurement, Agency and project management, and DoIT management.</i></p>	<p><i>Note: If thresholds or triggers are hit, this should trigger a discussion of the project being a potential candidate for an IV&amp;V.</i></p>
Major Budget/Cost	<ul style="list-style-type: none"> <li>• Budget/Cost over \$10M</li> </ul>
Organizational Project Management Maturity	<ul style="list-style-type: none"> <li>• Agency performs very few MITDPs</li> <li>• Agency has performed poorly on prior MITDPs</li> </ul>
Vendor Performance	<ul style="list-style-type: none"> <li>• Demonstrated vendor performance is unsatisfactory as validated by:</li> <li>• OPM Oversight</li> <li>• Portfolio Reviews</li> </ul>
Project Management Performance	<ul style="list-style-type: none"> <li>• Inability to define/utilize project management processes</li> <li>• Inability to manage scope, cost or schedule</li> <li>• Repeated failure to mitigate known issues or risks</li> <li>• Lack of required documentation for the proposed methodology</li> </ul>
Project Risk/Issue Triggers	<ul style="list-style-type: none"> <li>• Major issues/risks are identified that may be beyond project team's ability to mitigate</li> <li>• Previously Failed Project</li> <li>• New System/Replacement System</li> </ul>
Project Performance Issues	<ul style="list-style-type: none"> <li>• Project is missing key milestones in terms of cost,</li> </ul>



	<p>schedule, or delivery of key functionality. For example:</p> <ul style="list-style-type: none"> <li>• Schedule Slippage &gt; 3 months</li> <li>• Cost overruns &gt; 10-15% of project)</li> <li>• Missed Major Project Milestone</li> <li>• Missed Certification Deadline</li> <li>• Change Request for Project Cost Increase</li> </ul>
Project in transition from one SDLC phase to another	<ul style="list-style-type: none"> <li>• Project is in transition between one phase and another, particularly from:</li> <li>• planning to requirements</li> <li>• requirements to design</li> <li>• design to development</li> <li>• testing to production</li> </ul>
Funding Issues	<ul style="list-style-type: none"> <li>• Mismatch between requirements and funding expectations</li> <li>• Serious discrepancies in cost and funds tracking.</li> </ul>
Results and Documentation (Recommended Action)	<ul style="list-style-type: none"> <li>• Project Strengths identified</li> <li>• Risk register created or updated to reflect assessment findings</li> <li>• List of corrective actions and recommendations from Assessor</li> </ul>
Exit Criteria	<ul style="list-style-type: none"> <li>• Findings presented to Management</li> <li>• Management decision on IV&amp;V recommendations</li> <li>• Project schedule, budget and scope changes updated to factor in corrective actions and recommendations</li> </ul>
<p><b><u>Selection Frequency:</u></b></p> <ul style="list-style-type: none"> <li>• <b>Schedule:</b> Each MITDP should be assessed to determine need for an IV&amp;V based on DoIT's oversight plans. Large projects over \$100M with significant risks should be assessed for the need of a Lifecycle IV&amp;V.</li> <li>• <b>As-Needed:</b> OPMs can initiate an IV&amp;V as needed throughout the course of conducting the Project Oversight.</li> </ul> <p><b><u>IV&amp;V Execution:</u></b></p> <ul style="list-style-type: none"> <li>• Any of the phases of SDLC.</li> </ul>	

## Appendix B: DoIT IV&V Initiation Process



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**Step 1: OPM performs assessment using IV&V framework (Appendix A).**

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- A. Review project documentation and status reports to determine overall project risks.
  1. Projects with “medium” to “high” risk factors may benefit from IV&V process, for example:
    - Project includes new technology
    - Project has high visibility
    - Agency is inexperienced with the MITDP process
    - Cost or schedule variance from original budget
    - Significant changes to the scope of the project that may impact the project delivery date
  2. Generally, projects meeting the following criteria should not be subjected to IV&V:
    - Less than 1 full fiscal year from start to finish
    - Project cost is less than \$1 million

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**Step 2: OPM meets with the DoIT IV&V Task Order Manager and DoIT Leadership to justify an IV&V request.**

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- A. Outline the risk factors of the project
- B. Identify the purpose, focus, and objectives that may qualify
- C. Recommend deliverables or artifacts needed to complete the IV&V type
- D. Approval from DoIT Leadership to initiate IV&V procurement
- E. Informs the agency of the IV&V

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**Step 3: The DoIT IV&V Task Order Manager initiates procurement of an IV&V Vendor.**

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- A. DoIT IV&V Task Order Manager will work with Agency responsible for the MITDP to refine the objectives of the IV&V
- B. Prepare and release a solicitation (See IV&V Procurement Options) to solicit IV&V services
- C. Select the best value proposal from the pool of responding IV&V Vendors

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**Step 4: DoIT IV&V Task Order Manager will work with DoIT Procurement to Award.**

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- A. DoIT IV&V Task Order Manager will work with the IV&V Vendor for kick-off activities and management of the contract
- B. DoIT IV&V Task Order Manager will keep the DoIT OPM informed as well as setting agency expectations and managing concerns or issues

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**Step 5: The DoIT IV&V Task Order Manager manages the IV&V through completion.**

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**Step 6: The IV&V Vendor completes a draft IV&V assessment.**

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**Step 7: The DoIT IV&V Task Order Manager reviews the draft IV&V assessment and works with the IV&V Vendor to complete the assessment.**

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**Step 8: The IV&V Vendor completes and presents the final IV&V assessment.**

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- A. Internal presentation - to DoIT IV&V Task Order Manager, DoIT OPM and DoIT Leadership.
  - B. Agency presentation - to the Agency Project Team.
  - C. A copy of the IV&V assessment report will be provided to the Agency. This is a close hold document, only in accordance with guidance with DoIT Legal.
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**Step 9: The DoIT OPM, DoIT IV&V Task Order Manager, and DoIT Leadership attend both assessment presentations.**

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**Step 10: The DoIT OPM, the DoIT IV&V Task Order Manager and DoIT Leadership determine whether or not to initiate a Corrective Action Plan (CAP) (or Transformative Enhancement, Assistance, and Mentoring [TEAM] under the IAS contract) consisting of specific remediation steps coupled with follow-through oversight by the IV&V Vendor.**

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- D. Carefully review the assessment to determine:
    - 1. Is a CAP/TEAM necessary to mitigate identified project risks?
    - 2. Will a CAP/TEAM add value to the project?
    - 3. Is there enough time left on project to make a CAP/TEAM feasible?
  - E. The DoIT IV&V Task Order Manager prepares a written recommendation in consultation with DoIT Oversight PM and IV&V Vendor.
  - F. The DoIT Oversight PM submits the recommendation to DoIT Leadership.
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**Step 11: The DoIT Leadership makes the final determination of whether or not to execute a CAP/TEAM.**

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- A. Review recommendation from the DoIT IV&V Task Order Manager and DoIT Oversight PM.
  - B. Notify IV&V Vendor of determination.
  - C. DoIT IV&V Task Order Manager will work with IV&V Vendor to move IV&V assessment to next stage including any contract related activities including contract modifications if necessary.
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**Step 12: If the decision is to execute a CAP/TEAM, the DoIT IV&V Task Order Manager notifies the Agency that it has determined that a CAP/TEAM is necessary.**

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- A. Notify Agency via email and phone call.
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**Step 13: DoIT IV&V Task Order Manager requests modification of contract with IV&V Vendor to provide CAP/TEAM development and oversight services.**

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**Step 14: IV&V Task Team(s), DoIT OPM, and Agency establish specific remediation steps to be performed in the CAP/TEAM.**

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**Step 15: DoIT OPM, DoIT IV&V Task Order Manager and IV&V Vendor monitor Agency progress in completing the CAP/TEAM.**

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**Step 16: DoIT OPM and DoIT IV&V Task Order Manager assess results of the CAP/TEAM and determine if additional action is necessary.**

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**Step 17: IV&V Team(s), working with the DoIT OPM, provides a report to DoIT Leadership summarizing the results of the CAP/TEAM and if necessary, makes further recommendations for action.**

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## **Appendix C: Agency IV &V Initiation Process**

<b>Step 1: Agency determines that an IV&amp;V is necessary for its MITDP or non-MITDP project.</b>
<b>Step 2: Agency reaches out to DoIT OPM to hold discussion on need for IV&amp;V including proposed objectives for the IV&amp;V.</b>
<b>Step 3: DoIT OPM holds conversation with DoIT IV&amp;V Task Order Manager concerning request for IV&amp;V.</b>
<b>Step 4: DoIT IV&amp;V Task Order Manager request approval from DoIT Leadership on moving forward with IV&amp;V</b>
<ul style="list-style-type: none"><li>A. DoIT IV&amp;V Task Order Manager works with Agency to determines funding source (MITDP Funds, Agency Funds or others)</li><li>B. DoIT IV&amp;V Task Order Manager works with DoIT OPM and Agency to determine objectives.</li><li>C. DoIT IV&amp;V Task Order Manager presents plan with expected funding to DoIT Leadership for approval.</li></ul>
<b>Step 5: If approved, go to DoIT IV&amp;V Initiation Process, Step 3 and continue.</b>



## Definitions

**VERIFICATION** - Project is adhering to project management disciplines, processes, planned and performed according to its project plans and that such adherence can be verified by an independent examination of project documents and other evidence.

**VALIDATION** - Project deliverables and project results meet the business and technical objectives established by the project sponsors, ensuring that the end product meets the documented performance outcomes and requirements of the project.

**INDEPENDENT** - Autonomous and impartial verification and validation assessment of a project's adherence to project management plans and compliance with business requirements. These independent assessments are performed by an entity that is not responsible for developing the product or performing the activity being evaluated.

**INDEPENDENT VERIFICATION AND VALIDATION** - The means of obtaining an independent and objective view of an MITDP with the intent of protecting the state of Maryland's interests, and is focused on the management of the project and its compliance with specified requirements through its development stages.