Florida Department of Management Services

Information Technology Independent Verification and Validation

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Work Plan and IV&V Methodology

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1 PCG IV&V WORK PLAN AND METHODOLOGY

Public Consulting Group (PCG) is one of the leading Independent Verification and Validation (IV&V) companies in the country with over 17 years of experience in performing true independent and well-executed IV&V programs. Our goal is to collaborate with our clients to implement projects on time, on budget, and to specifications. Our true independence model relies on technical, managerial, financial, and contractual independence and is performed in parallel with developmental efforts with the intent of protecting the customer’s interests.

We at PCG view IV&V as a systematic approach to ensure that the product (target system) is being built correctly and that the right application is being built. In order to perform an unbiased audit and objective assessment, the team establishes a relationship with program management and systems development teams in an effort to improve the quality of software and its development process without compromising the organizational independence.

While the IT industry is still relatively young, there is a wealth of information available to help ensure the success of any IT project. Collaborating with an experienced independent entity (such as PCG) is often valued as a cost effective method to deliver a successful project by proactively identifying risks and issues. Having resources who are active members in various organizations that develop and maintain Information Technology standards and best practices, PCG endorses their use whenever practical. This active involvement, along with the understanding and experience that PCG consultants possess, contribute significantly to the delivery of a quality product and overall project success.

Eclipse IV&V™: PCG’s approach to providing IV&V services is based on industry-standards, best practices, and experience providing IV&V services for over $5 billion of design, development and implementation (DD&I) projects. PCG has leveraged its knowledge of standards, best practices, and 17 years of IV&V experience to develop our trademarked framework—Eclipse IV&V™—the IV&V framework that delivers proven results. Eclipse IV&V™ is a collection of integrated processes, templates, checklists, best-in-class documents, and a training/certification program. It is built on standards and a set of core values designed to ensure the delivery of high quality IV&V services. Eclipse IV&V™ delivers results, which are ALWAYS in the best interests of our customers, so that the solutions they procure perform as expected, efficiently, and economically. Eclipse IV&V™ is scalable to enable appropriate adjustments for all projects, large and small. Just as each project is different, each IV&V engagement must be customized to ensure the “right amount” of IV&V is provided, and that the IV&V methodologies and tools provide the best value to the client.

Core Values: While the Core Values guide the culture and overall behavior of PCG IV&V engagements, the Eclipse IV&V™ Framework defines the relationship among actors within the IV&V project. The Eclipse IV&V™ Framework is used by PCG team to thoroughly evaluate and analyze IT products and services, and then provide constructive feedback and actionable recommendations to improve the implementation of a system and/or software product. The framework enables PCG to deliver IV&V services in a consistent and uniform manner built on the following three tenets:

1. Experienced Staff: PCG has built its reputation on hiring and retaining high quality people who have experience in successfully implementing, managing and accessing software development projects, and who understand the complexities of large scale public sector IT initiatives.
For the Florida Information Technology Projects under the Department of Management Services (DMS), the PCG IV&V team will include staff with sufficient experience on similar types of projects. In addition to development and IV&V experience, our core team will include team members with certifications specific to the project needs.

2. **Proven Tools:** PCG uses an array of software tools, guides, and checklists to assess the technical processes and components of IT systems effectively, and to manage the IV&V work efforts. Based on the context of the projects, PCG IV&V team will employ an integrated IV&V tool set that may include requirements, design and code analysis, configuration management, and test and metric tools. The objective of these tools is to enable more efficient and accurate verification and validation of the design, code, and test documentation. Other factors in selecting the right tool set will be based on organizational compatibility, tool effectiveness, solution constraints, costs, acquisition time requirements, and training requirements.

3. **Independent Verification and Validation Plan (IVVP):** At the center of each IV&V engagement, PCG produces an Independent Verification and Validation Plan tailored to specific requirements, customer expectations, and unique organizational environment of an IV&V project. The IV&V plan, the staff assigned to each engagement, and the tools leveraged in assessing project deliverables will be utilized throughout the project engagement.

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**PCG Core Methodology:**

The PCG IV&V Core Methodology is based upon industry standards and maintained through the successful delivery of PCG IV&V engagements. We understand that a methodology cannot be static, so having a configurable IV&V framework provides the flexibility to refine and to incorporate lessons learned on projects, or modifications to industry standards and best practices. Because PCG tailors its approach and methodology to be consistent with the needs of each project, we have the opportunity to progressively enhance our toolset as we deliver each engagement. The core components of the PCG IV&V methodology outlined in the figure below are delivered by technical personnel with current expertise in the business and application of technologies.

The PCG IV&V Core Methodology approach is customer-focused and strives to make any project to which PCG is assigned a successful engagement. The PCG IV&V team focuses on four key elements.

1. **Discovery** — PCG reviews a number of project documents from the original RFP to the DDI vendor’s proposal in response to that RFP, along with any plans or schedules that apply. We interview key project team members to gain an understanding of DDI vendor’s project organization as well as its communication and reporting processes.
2. **Research and Analysis** — PCG conducts research and analysis of current project processes in order to form conclusions regarding any potential impact(s) on project success. Our Quality Checklists, based on industry standards, are applied to validate that the approach taken includes sound practices.

3. **Clarification** — PCG seeks clarification, as needed, from key project team members on aspects of the organization and communication processes to ensure agreement and concurrence on the results of the discovery, research, and analysis.

4. **Delivery of Findings** — Our periodic reports document the results of discovery, research, analysis, and clarification. These reports present detailed findings including documentation of project strengths.

**Core Methodology Toolkit:** PCG applies the best tools for assessing the quality of the products and the effectiveness of the processes. These outcomes are produced by PCG consultants with knowledge and expertise in both application development, and process definition.

The Eclipse IV&V™ approach described above helps ensure proven processes are in place to ensure a smooth running project. Nevertheless, flawless execution requires more than process; it requires detailed content as well. As such, the Eclipse IV&V™ Toolkit includes a structured “how-to” methodology, which prescribes the steps necessary to perform assessments, complete with a master assessment guide and more detailed individual assessment guides and checklists. Our assessments are not limited to IT project deliverables, but extend to project management processes, work products, and any revisions as appropriate.

Our IV&V consultants are trained and certified on this methodology and understand how to use the guidelines, checklists, and other tools in order to provide the best value for the Florida Information Technology Project IV&V engagement. The Eclipse IV&V™ Toolkit guides and checklists will be utilized in the assessments of project deliverables and other IV&V Deliverables. Our toolkit includes the following templates that are customized for use in providing IV&V services:

- **IV&V Management Plan** – PCG develops a project plan in accordance with contract requirements, the Project Management Institute (PMI) Project Management Book of Knowledge (PMBOK), and customer IT standards. The plan details the PCG IV&V Procedures, Special Procedures and Checklists, and other appropriate tools. The IV&V Project Schedule and Plan is included as part of the Management Plan. This detailed schedule, developed in Microsoft Project, assigns resources and timelines to all IV&V tasks. The schedule is consistently aligned with the DDI vendor schedule to ensure the IV&V tasks are accomplished productively. Both the narrative Management Plan, and the Project Schedule and Plan are updated regularly as the project progresses.

- **Risk Tracking Log** – PCG actively practices risk management when delivering IV&V services by maintaining findings and recommendations in our straightforward Risk Tracking Log. The log, like the assessment reporting, categorizes our recommendations into the major DDI task areas. The primary strength of our risk tracking process is the development of actionable tasks to address each of our recommendations. The action items in our Risk Tracking Log are specific tasks that support mitigation of the risks. A corrective action plan is requested of any action items not completed upon implementation.

- **QA Process Reviews** – Each engagement has its own unique priorities, however, the PCG assessment process frames our findings within the major task areas typically contained in a
DDI project. These include Project Management, Quality Management, Training, Requirements Management, Operating Environment, Software Development, Testing, Data Management, and Operations Oversight. This ensures that all of the important activities of the DDI life cycle are addressed and reported within a uniform framework. The results of PCG's review of DDI vendor deliverables are reported by task area. Further, the procedures being practiced are reported within QA Process Reviews for each task area. The information for process reviews is gathered using interview guides.

- **Evaluation Process Guides** – PCG Team has developed procedures that contain a general framework for evaluation of the methods, inputs, outputs, and milestones for the DDI task areas that we evaluate. The PCG Evaluation Process Guides (EPGs) are based on IEEE, PMI, ITIL, and Software Engineering Institute concepts, and can be used with any life cycle methodology. PCG’s internal process improvement activities are also used as input to procedures.

- **Interview Guides** – The essence of IV&V is communication. PCG interacts frequently with vendor and agency stakeholders, often in scheduled interviews conducted as part of process assessments. In order to gather information effectively, PCG prepares Interview Guides that address the concepts, questions, and discussion items we wish to explore during these interviews. These are prepared in advance and transmitted to the interviewees. This approach has proven to be effective in putting stakeholders at ease with the expectations for information and results in well-documented information that supports our findings.

- **Deliverable Expectation Documents (DED)** – To ensure the IV&V deliverables meet stakeholder expectations, PCG submits Deliverable Expectation Documents (DED) for our contracted deliverables. PCG has a library of successfully used project documents, which are used to maximize efficiency and leverage lessons learned on previous engagements. Producing a DED ensures that there is a common understanding between the client and PCG regarding the scope and content of our deliverables. PCG encourages our clients to share the IV&V DEDs with the DDI vendor to facilitate understanding of the IV&V role on the project.

- **Checklists** – PCG uses established checklists that are based on IEEE standards and customized to contract requirements to guide both the document review process and to support the testing phases of a DDI project. For the document deliverable reviews, the Quality Checklists are distributed to the DDI vendor before the draft deliverable is submitted for review. This supports production of quality documents from the vendor and ensures that standards for the important DDI deliverables are understood before expending the effort to produce them. The results are a key component of the feedback provided to the client in the Deliverable Assessment Reports. The Gate Review Assessments and Checklists are presented as part of the Independent Verification Test Plan and are used to validate progression of the DDI test phases to ensure they are conducted in a sound and complete manner.

- **Deliverable Assessment Report (DAR)** – For each deliverable that is reviewed by IV&V, PCG produces a formal Deliverable Assessment Report (DAR). This report documents the requirements for the deliverable and gives an assessment of our IV&V findings based on review and the checklist results. The DAR includes specific comments, which are presented in a table configured to track the vendor response and client acceptance. This method has proven successful in facilitating discussion of the deliverable and quantifying the actions needed to finalize it.

- **Requirements Traceability** – To ensure requirements are fully understood and traceable, PCG analyzes the relevant sources such as the RFP, Statement of Work, business requirements documents, and applicable standards. A Requirements Traceability Matrix (RTM) is normally a required product of the DDI vendor tasks. The PCG team reviews this document and verifies its correctness and completeness. The RTM review results are presented within a DAR so that each finding is easy to track and address.
**Independent Verification Test (IVT) Plan** – PCG supports testing or test execution, as required, for each engagement. Our consultants apply review and analysis techniques to verify the results of testing and the defect management process. Our very effective approach to test support is development of an Independent Verification Test Plan that includes Gate Review Checklists detailing entry and exit criteria for each test phase. The Gate Review Checklists address the multiple test phase’s specific to the project, from test readiness to system acceptance. Development of an IVT supports the DDI Vendor test tasks by setting expectations early for progress through each of the phases.

**Implementation Readiness** – Because IV&V is focused on the success of the project, our tasks continue in preparation for the implementation phase. We conduct a readiness assessment after a detailed review and report of the DDI Vendor’s Operational Plan. The steps to move from the final pre-production test phase into live operations are examined for completeness and adequate resourcing. PCG includes operations oversight as one of the task areas examined throughout the project, so preparations for this final step are put in place along the way.

**Tailoring:** Based on our extensive expertise, we know that IV&V methodology goes beyond frameworks, procedures and methodologies as each target system development is unique and may need tailoring appropriate to the type of system being developed. The tailoring effort includes the definition of acceptable level of risks and identification of those software components that are considered critical.

**Review of Project Deliverables:** PCG will utilize the Eclipse IV&V™ technical assessment methodology in providing deliverable review assessment for all Florida Information Technology Project deliverables. While the particulars necessary to execute each of the deliverable review assessments varies, following this common methodology has proven successful time and again in ensuring all the pertinent facts are gathered, relevant stakeholders are consulted, there is a clear understanding about any findings resulting from the assessment, and that above all, the assessment is objective, accurate and will not result in surprises.

**PCG Deliverable Process:** The PCG standard methodology employs an integrated team effort with the customer in identifying the key aspects associated to deliverables for each project engagement. For the Florida DMS engagements, the PCG IV&V staff will collaborate with the customers to identify the content and structure of deliverables outlined in bullet 4 of Section 7 of the Draft Contract Document. We understand the portfolio of projects under Florida DMS engagements are unique and there may be situations where additional deliverables or revisions to previously submitted/approved deliverables are required.

PCG will use a four-step deliverable documentation approach/guideline:

1. **Deliverable Expectation Deliverable (DED)** – Prior to beginning work on any documents that PCG will be directly producing, PCG will meet with the appropriate Florida Information Technology Project management to discuss the format, content, etc. The goal of the DED is to ensure that a common understanding exists between the Florida Information Technology Project deliverables and PCG regarding the scope and content (depth and breadth) of the deliverable prior to PCG beginning work on the deliverable. In addition to the prerequisites identified in section 6 (Scope of Work), PCG will also outline applicable industry standards when possible as a guide for the DED and deliverables.

2. **Interim Work Products** – The results on group work sessions will be incorporated into Interim Work Products for internal Project Team reviews.

3. **Baseline Draft Deliverable** – PCG will produce a baseline draft deliverable for formal project review/comment prior to submission of the final deliverable.

4. **Final Deliverable** – The submission of the final deliverable will incorporate input from the Baseline Draft Deliverable review.

All baseline draft and final deliverable work products are subject to PCG’s internal Quality Assurance (QA) process using a Deliverable Review Checklist.