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March 28, 2023

The Honorable Ronald D. Kouchi
President of the Senate
  and Members of the Senate
Thirty-Second State Legislature
State Capitol, Room 409
Honolulu, Hawai'i 96813

The Honorable Scott K. Saiki
Speaker and Members of the
  House of Representatives
Thirty-Second State Legislature
State Capitol, Room 431
Honolulu, Hawai'i 96813

Aloha Senate President Kouchi, Speaker Saiki, and Members of the Legislature:

Pursuant to HRS section 27-43.6, which requires the Chief Information Officer to submit applicable independent verification and validation (IV&V) reports to the Legislature within ten days of receiving the report, please find attached the report the Office of Enterprise Technology Services received for the State of Hawai'i, Public Utilities Commission (PUC), Content and Document Management System Project.

In accordance with HRS section 93-16, this report may be viewed electronically at http://ets.hawaii.gov (see "Reports").

Sincerely,

Douglas Murdock (Mar 28, 2023 13:44 HST)

Douglas Murdock
Chief Information Officer
State of Hawai'i

Attachment

Content and Document Management System (CDMS) Project

Hawaii Public Utilities Commission (PUC)

IV&V Monthly Status Report - FINAL
For Reporting Period: **February 2023**

Draft Submitted: 3/10//2023

Final Submitted: 3/26/2023

PUBLIC CONSULTING GROUP

Solutions that Matter

Overview

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Executive Summary

The Project completed the first cycle of User Acceptance Testing (UAT) on February 24, 2023. The SI is making good progress addressing defects and PUC feedback, and after the two-week environment refresh, the Project plans to continue with Cycle 2 of UAT on March 13, 2023. With the volume of defects being higher than expected, PUC resources are finding it difficult to keep up with retesting the defects.

The PUC and IV&V share a concern over the lack of detailed test cases and documented results. Combined with a Requirements Traceability Matrix (RTM) that does not map requirements to test case results, the system could go live without being fully tested. The lack of a fully traceable RTM makes it difficult to determine if all contractual requirements have been implemented and tested. Consequently, the PUC may elect to extend UAT to assure all requirements have been met and/or go live with the expectation that the SI will implement missing functionality at no cost during the warranty period. PUC plans to make these decisions towards the end of March 2023.

As the Project nears go live, OCM is being led by the project PM and the PUC communications officer, both of whom have limited capacity. Insufficient OCM could lead to a lack of user buy-in due to confusion and frustration, and negative publicity. Going live with bad data (i.e., some duplicate accounts) and the need to subsequently work with, and clean the data could further reduce user adoption of the new system. The Project continues to assess how they might address these challenges.

Executive Summary

Feb '23	Category	IV&V Summary
L (green)	Project Management	PUC SMEs and staff were available for testing and completed Cycle 1 of UAT. Leadership continues to communicate the importance and priority of the CDMS project. The Project is managing schedule changes and balancing competing priorities, and does not anticipate any challenges during Training.
L (green)		The SI submitted Deliverable 6.1 Training Plan, which is under PUC review. Upon its initial review of this deliverable, the PUC found the document to be of higher quality and foresees approval in March 2023. Deliverables 5.1 Test Plan and 5.2 System and Integration Testing Results have not been approved as the PUC states these lack sufficient detail to confirm that all requirements have been tested.
M (yellow)		PUC resources are finding it difficult to retest the volume of defects that were fixed. There are about 5 weeks left in UAT and the PUC plans to finish retesting early March 2023. However, if PUC resources are unable to finish testing timely, there may be further impacts to the schedule.
L (green)		The PUC PM and PUC Technical SME continue to prioritize their work and focus on critical items. Additionally, the PUC hired an analyst to support the PUC PM with tasks and activities which helps alleviate the PM's overallocation.
M (yellow)		The Project reports Payment Processing will be ready for testing the 2nd week of UAT's Cycle 2. Much of the related functionality surrounding the payment gateway has been tested, which is working as expected. The Project does not anticipate any challenges during testing so long as it occurs as scheduled.

Executive Summary

Feb '23	Category	IV&V Summary
M **L**	Software Development	The PUC stated business analysis and discovery activities continue to occur during UAT, which indicates insufficient business analysis in previous project phases. The PUC and IVV are concerned this could be leading to the higher-than-expected number of enhancements and defects identified during UAT. The PUC continues to discover areas where process improvements could have occurred. At this stage of the Project, the System will go live with some areas not fully optimized. The PUC plans to communicate to users and stakeholders prior to go-live what these areas are and what will be addressed during M&O to improve system buy-in and facilitate effective organizational change management.

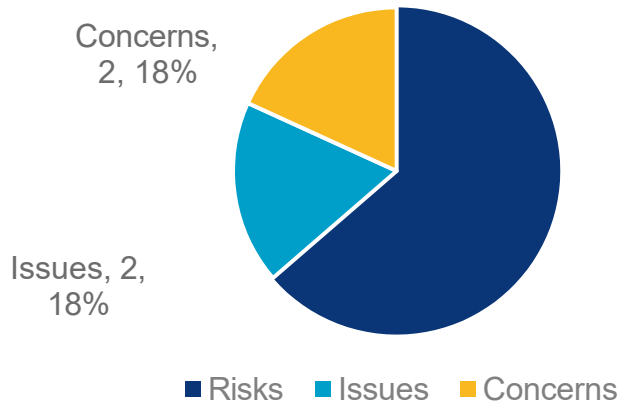| Feb '23	Category	IV&V Summary
L	Data Management	The Project currently plans to go-live with approximately 6,000 account records that need to be cleaned up after go-live. The duration of clean-up activities is unknown. However, the Project developed priority groups to address more critical data first while reserving less critical data for last.

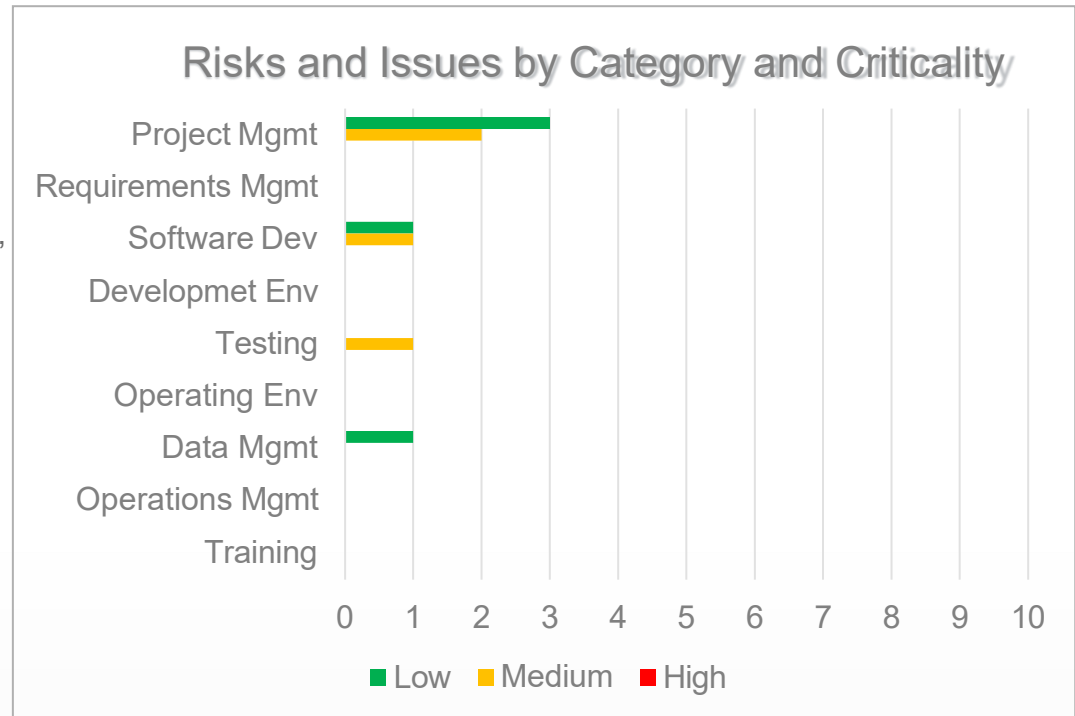| Feb '23	Category	IV&V Summary
M	Testing	The tests scripts the SI provided for system and user acceptance testing (UAT) were not comprehensive enough to assure full test coverage of the system. Given the significant number of defects (over 200) found in the first round of UAT, it remains unclear if SI system tests, prior to UAT, were comprehensive. Insufficient SI testing could increase the UAT level of effort if they are left with the additional burden of discovering defects missed by the SI, resulting in further Project delays.

Executive Summary

IV&V is monitoring eleven open findings. A preliminary concern (#22) about testing was closed and replaced with a related testing issue (#24). Overall, there are two issues, seven risks, and two new preliminary concerns. The two issues are related to Software Development and Testing, and are both rated Medium. Of the seven risks, two are rated Medium and fall under Project Management. Of the remaining 5 risks, three fall under Project Management, one under Data Management and one under Software Development. All are rated Low. The new preliminary concerns relate to Requirements Management and Training/OCM.

All Findings by Type

- Concerns, 2, 18%
- Risks, 7, 64%
- Issues, 2, 18%

Legend: Risks, Issues, Concerns

Risks and Issues by Category and Criticality

Categories (top to bottom):
- Project Mgmt
- Requirements Mgmt
- Software Dev
- Developmet Env
- Testing
- Operating Env
- Data Mgmt
- Operations Mgmt
- Training

Legend: Low, Medium, High

IV&V Findings and Recommendations

IV&V Findings and Recommendations

IV&V ID #14	Type: Risk Rating: Low	Status: In progress	Category: Project Management Date Opened: September 30, 2021

Title: Limited PUC resource availability could lead to schedule delays and incomplete system design.

Observation: Although the CDMS Project is a high priority at the PUC, resource limitations appear to exist throughout the life cycle of the Project. These constraints were communicated to the System Integrator (SI) early in the project for planning purposes.

Context: System development projects require coordination and engagement between the SI and the client in order to accurately document business needs, processes, user stories, business rules, and anything needed to build a system that meets the client's needs.

Impact: Schedule delays, increased project cost, implementation of a solution that that does not meet the PUC's needs

Updates

2/28/2023: PUC SMEs and staff were available for testing and completed Cycle 1 of UAT. Leadership continues to communicate the importance and priority of the CDMS project. The Project is managing schedule changes and balancing competing priorities, and does not anticipate any challenges during Training.

IV&V Findings and Recommendations

IV&V ID #14 (cont.)	Type: Risk Rating: Low	Status: In progress	Category: Project Management Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
The Project conduct detailed resource planning under the new schedule to avoid resource constraints.	Medium Term	In progress
PUC PM and SI PM develop a plan to address these constraint and work closely together throughout the project to plan important meetings based on resource availability.	Long Term	In progress
SI develop fully resourced work plan.	Short Term	Not started
PUC and SI review Sprint Plan and ceremonies to identify specific resources to help identify resource risk that can be addressed before sprint cycles begin.	Short Term	Complete
SI employ agile processes and methodologies so that progress can be made regardless of PUC resource availability.	Long Term	Complete

IV&V Findings and Recommendations

IV&V ID #15	Type: Risk Rating: Low	Status: In progress	Category: Project Management Date Opened: September 30, 2021

Title: Project deliverables and artifacts that lack sufficient detail could lead to project delays, misunderstandings, inefficient project execution, and rework.

Observation: Early SI submissions of project deliverables lacked sufficient detail.

Context: Project planning documentation such as the Project Plan, Risk Management Plan, Communication Plan and Change Management Plan, can be effective tools for projects of this size to increase stakeholder understanding of the goals, approach, steps, timelines, roles and responsibilities. Additionally, conceptual designs, requirements traceability matrices, and process maps can also provide important information for successfully developing a system that meets PUC's needs.

Impact: Failure to provide sufficient detail in project deliverables can lead to project team confusion, missteps, project delays, misunderstandings, inefficient project execution, and rework.

Updates

2/28/2023: The SI submitted Deliverable 6.1 Training Plan, which is under PUC review. Upon its initial review of this deliverable, the PUC found the document to be of higher quality and foresees approval in March 2023. Deliverables 5.1 Test Plan and 5.2 System and Integration Testing Results have not been approved as the PUC states these lack sufficient detail to confirm that all requirements have been tested. To mitigate project delays, the Project will continue moving forward as long as a Contingency approval is approved where the SI will agree to implement missing functionality, if found, shortly after go-live. However, if the Contingency is not approved prior to training, the Project will not begin training which could lead to a schedule impact.

IV&V Findings and Recommendations

IV&V ID #15 (cont.)	Type: Risk Rating: Low	Status: In progress	Category: Project Management Date Opened: September 30, 2021		
Recommendations/Action Items				**Period**	**Status**
Although DEDs were developed for all deliverables, the SI should involve PUC before providing the draft deliverable to obtain feedback and expedite review cycles.				Long term	In progress
The SI should perform additional QA of deliverables prior to submission				Long term	In progress

IV&V Findings and Recommendations

ID #16	Type: Risk Rating: Medium	Status: In progress	Category: Project Management Date Opened: September 30, 2021

Title: Adoption of an aggressive schedule can lead to poor system design, PUC stakeholder frustration, and stretch PUC resources beyond their capacity.

Observation: The project has an aggressive schedule with little slack given the volume of deliverables and artifacts, the availability of PUC resources, and the perceived cadence of project meetings and workshops.

Context: A schedule with flexibility and sufficient slack to accommodate project changes that impact the schedule such as resource availability, activities that take longer than anticipated, or missed dependencies, typically result in a project that is delivered on time. Projects with aggressive schedules tend to rush project activities to meet deadlines.

Impact: Rushed project activities can reduce document and system quality. When activities do not seem thorough, customer frustration can result. A rushed schedule can place unnecessary demand on PUC resources, especially if PUC resources are already fully utilized.

Updates

2/28/2023: The Project is currently conducting UAT and uncovered many defects. PUC resources are finding it difficult to retest the volume of defects that were fixed. There are about 5 weeks left in UAT and the PUC plans to finish retesting early March 2023. However, if PUC resources are unable to finish testing timely, there may be further impacts to the schedule. Additionally, PUC and IV&V remain concerned if the number of defects found in the remaining UAT weeks continue to be higher than PUC resources can handle, this also may impact the schedule.

IV&V Findings and Recommendations

IV&V ID #16 (cont.)	Type: Risk Rating: Medium	Status: In progress	Category: Project Management Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
Provide reports that communicate progress clearly such as a burndown chart and sprint metrics such as planned user stories, completed user stories, cancelled user stories, and new/added user stories so as to clearly demonstrate if the project is on track or not.	Medium term	Complete
Continue to provide UAT testing and QA testing metrics such as new defects, opened, ready for retest, and complete.	Medium Term	In progress

IV&V Findings and Recommendations

| IV&V ID #17 | Type: Issue

Rating: Medium | Status: In progress | Category: Software Development

Date Opened: September 30, 2021 |
|---|---|---|---|

Title: **Inefficient business analysis activities could lead to rework, schedule delays, SME frustration, and poor system design**

Observation: PUC and IV&V were concerned that many analysis outputs lacked sufficient quality and comprehensiveness. For example 1) PUC workshop attendees mentioned various workshops and meetings were not very useful, unorganized and unproductive; 2) The workshop cadence seemed slow and did not appear to achieve all intended goals of each workshop session; 3) Although not a contractual requirement, meeting notes from the workshops were not sent to meeting attendees which helps confirm the SI's understanding and shows visibility that the SI understands PUC's needs; 4) Although not explicitly required, PUC requested the SI to review the business documentation provided by a 3rd party prior to conducting the as-is workshops to save time and not start from a blank slate. Despite having access to and reviewing the existing business documentation, PUC observed many questions and time spent on areas that were already documented and PUC was not confident as to how much of the existing documentation was leveraged.

Context: Efficient business analysis processes promote effective communications resulting in productive meetings, good project documentation that provides clarity to complex topics, and overall, foster trust.

Impact: Inefficient analysis activities can negatively impact the Project. For example, 1) Project delays can occur if meetings do not meet intended goals and require additional clarification; 2) Rework and redesign can happen if accurate information was not solicited because participant expectations were not clear during the meeting; 3) Client buy-in and system acceptance may reduce.

Updates

2/28/2023: The PUC stated business analysis and discovery activities continue to occur during UAT, which indicates insufficient business analysis in previous project phases. The PUC and IVV are concerned this could be leading to the higher-than-expected number of enhancements and defects identified during UAT. The Project is challenged with managing and addressing all of the findings, which is slowing down PUC's ability conduct UAT activities timely. If the PUC is overwhelmed, this could lead to further schedule delays.

IV&V Findings and Recommendations

IV&V ID #17 (cont.)	Type: Issue Rating: Medium	Status: In progress	Category: Software Development Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
Institute continuous process improvement activities to refine the analysis processes and maximize their cadence without sacrificing quality.	Long term	In progress
Request the SI track their cadence/velocity to improve estimation of task durations to assure planned milestone due dates are realistic.	Long term	In progress

IV&V Findings and Recommendations

IV&V ID #18	Type: Risk	Status: In progress	Category: Software Development
	Rating: Low		Date Opened: October 28, 2021

Title: Lack of attention to process improvement can lead to a system that simply automates existing processes instead of improving them

Observation: The extent to which the Project intends to focus on process improvements remains unclear. Pain points do not seem comprehensively tracked or considered during design sessions or whether all stakeholders are aware of or are actively utilizing the pain points list. While IV&V recognizes that change is difficult, some stakeholders appear to be hesitant to let go of familiar processes during the design sessions. It remains unclear if PUC has assigned the role of change champion to drive organizational process improvements.

Context: IT Projects that assign change champions and prioritize process improvement have an increased likelihood of resulting in systems that meet the organization's future business needs and improve system acceptance.

Impact: Lack of attention to process improvement can lead to a final product that fails to provide maximum value to users. Tracking pain points can be an effective OCM strategy to promote user adoption and increase user buy-in by providing visibility into how the system can resolve their pain points. Also, identifying and implementing opportunities for process improvement avoids SME frustration and rework.

Updates

2/28/2023: The PUC continues to discover areas where process improvements could have occurred. At this stage of the Project, the System will go live with some areas not fully optimized. The PUC plans to communicate to users and stakeholders prior to go-live what these areas are and what will be addressed during M&O to improve system buy-in and facilitate effective organizational change management.

IV&V Findings and Recommendations

IV&V ID #18 (cont.)	Type: Risk Rating: Low	Status: In progress	Category: Software Development Date Opened: October 28, 2021

Recommendations/Action Items	Period	Status
Communicate to users and stakeholders areas where process improvement may not be optimized but may be addressed during M&O.	Medium Term	Not started
Identify a PUC process improvement resource to drive/coordinate organizational process improvement efforts and assure system related processes are optimized. This resource could attend design sessions and validate designs support process improvement.	Short term	Not started
Work closely with the SI to identify opportunities for process improvement and implement associated features in the system being careful not to overwhelm users with too much change.	Long term	In progress
Formally engage stakeholders in identifying and tracking pain point and out-of-scope requirements so they are not forgotten and can be revisited in future project phases or other organizational initiatives.	Long term	In progress

IV&V Findings and Recommendations

ID #19	Type: Risk	Status: In progress	Category: Project Management
	Rating: Low		Date Opened: November 30, 2021

Title: **Key PUC project resources performing multiple roles could lead to schedule delays and significant project disruption.**

Observation: IV&V has noted that at least two of the PUC project team members perform multiple roles and responsibilities on the project which may impact their ability to be successful if project demands increase.

In addition to serving as PUC's CDMS PM, this position also performs the following roles: Organizational Change Management lead, Process Improvement lead, Business Analyst Co-lead, User Acceptance Test (UAT) Co-lead, and Contract Administrator. In addition to performing ongoing operational responsibilities, the PUC CDMS Technical Lead is the Project IT Sponsor, Data SME, BA Co-Lead, and User Acceptance Test Co-Lead, and is heavily relied on for business analysis.

While these team members have indicated a strong commitment to project success, each has multiple competing priorities. The team members stated their support staff, including the new communications lead, will take on more responsibility to alleviate demands on their time. Also, the team members believe that the overall future workload will lessen.

It remains unclear if PUC staffing levels are appropriate for this project.

Context: Typically, Hybrid Agile projects require an increased level of customer engagement through all phases of the project. Overreliance on key resources can not only overtax and thereby reduce the effectiveness of these key individuals but also present a risk of significant project disruption in the event of their departure.

Impact: If the PUC PM and Technical SME are unable to transfer some responsibilities to other PUC resources, this could stretch them beyond their capacity which may lead to project delays and a decrease in quality in the project tasks they perform.

Updates

2/28/2023: The PUC PM and PUC Technical SME continue to prioritize their work and focus on critical items. Additionally, the PUC hired an analyst to support the PUC PM with tasks and activities which helps alleviate the PM's overallocation. Further, large activities such as data conversion cleansing and business process analysis, are winding down which is alleviating the demand on the PUC Technical SME.

IV&V Findings and Recommendations

IV&V ID #19 (con't)	Type: Risk Rating: Low	Status: In progress	Category: Software Management Date Opened: October 28, 2021

Recommendations/Action Items	Period	Status
Continue to focus on high priority and critical items	Medium term	In progress
Continue to leverage analyst to relieve the demand on the PUC PM	Medium term	In progress
The Project should plan for different contingencies depending on when the third PM becomes available.	Medium term	Complete
The Project should plan for different contingencies depending on the role of the original PM moving forward.	Medium term	Complete

IV&V Findings and Recommendations

ID #20	Type: Risk Rating: Low	Status: In progress	Category: Data Management Date Opened: March 31, 2022

Title: Data cleansing challenges could overwhelm PUC SMEs and could confuse users, reduce user buy-in, and/or lead to schedule delays if the Project went live with some bad data

Observation: IV&V is concerned with the poor quality of the legacy system data and whether PUC has the capacity to effectively cleanse their data. Further, if the project aims to meet data conversion milestones, the project may elect to go-live with some bad data to meet their planned go-live date.

Context: Typically, any bad data is addressed prior to go live to facilitate user adoption and to increase perceived system quality.

Impact: If all important data is not cleaned up prior to go-live, user adoption may be challenged, and user perception of the system may be diminished.

Updates

2/28/2023: The Project currently plans to go-live with approximately 6,000 account records that need to be cleaned up after go-live. The duration of clean-up activities is unknown. However, the Project developed priority groups to address more critical data first while reserving less critical data for last. Additionally, PUC and the SI may develop additional automation to clean-up the data before go-live to further reduce the number of account records needing manual cleaning.

IV&V Findings and Recommendations

IV&V ID #20 (cont.)	Type: Risk Rating: Low	Status: In progress	Category: Data Management Date Opened: March 31, 2022

Recommendations/Action Items	Period	Status
The Project determine how long it will take to complete the post go live cleanup activities and if possible, complete after go-live is complete, but prior to production users using the system.	Medium term	In progress
Communicate to users and stakeholders the expected bad data and provide timelines and processes for fixing the bad data.	Medium term	Not started
Develop additional automation / pre-go-live strategies to clean data	Medium term	Not started

IV&V Findings and Recommendations

IV&V ID #21	Type: Risk Rating: Medium	Status: In progress	Category: Project Management Date Opened: May 31, 2022

Title: Delays in establishing card-not-present payment gateway could lead to schedule delays and increased cost

Observation: The Project elected to pause most activities for almost 3 months to procure a card-not-present payment processing vendor. Originally, the Project was planning on forego a public solicitation for these services, but the State Procurement Office required it. The SI stated the pause will be a no cost change order. .

Context: The Project has had past difficulties accurately estimating the procurement of the card-not-resent service vendor and it is unclear how accurate these new estimates are.

Impact: Updated: If PUC is unable to secure a new payment processing vendor by the beginning of January 2023, the Project may be delayed. Original: If the PUC is unable to process payments on August 14th, 2022, the Project may be further delayed. Given the SI will not charge the customer for the initial 3-month delay, the budget impact could be minimal. However, the SI stated if payment processing is not available by 8/14, there is a $10,000 a week fee for the additional schedule extension. PUC stated they are confident they can complete this procurement before the 8/14 deadline but if the Project is unable to meet these deadlines, the Project stated they have alternative plans.

Updates

2/28/2023: The Project reports Payment Processing will be ready for testing the 2nd week of UAT's Cycle 2. Much of the related functionality surrounding the payment gateway has been tested, which is working as expected. The Project does not anticipate any challenges during testing so long as it occurs as scheduled.

IV&V Findings and Recommendations

IV&V ID #21 (cont.)	Type: Risk Rating: Medium	Status: In progress	Category: Project Management Date Opened: May 31, 2022	

Recommendations/Action Items	Period	Status
Closely monitor procurement for any signs of delay	Medium term	In Progress
Develop mitigation strategies if procurement activities appear unfavorable	Medium term	In progress

IV&V Findings and Recommendations

IV&V ID #24	Type: Issue	Status: New	Category: Testing
	Rating: Medium		Date Opened: February 28, 2023

Title: Insufficient testing could lead to unexpected delays, increased burden on PUC testers, and reduced user buy-in.

Observation: The tests scripts the SI provided for system and user acceptance testing (UAT) were not comprehensive enough to assure full test coverage of the system. Given the significant number of defects (over 200) found in the first round of UAT, it remains unclear if SI system tests, prior to UAT, were comprehensive. The SI has yet to revise their test scripts to PUCs satisfaction. PUC has stated it appears SI regression testing efforts may be insufficient.

Context: One of the goals of testing is to reduce the number of defects found in subsequent project phases. For example, prior to UAT, system test should be conducted to minimize the number of defect introduced into the UAT environment so that UAT users can concentrate on determining if the system meet their needs instead of defects that should have been caught earlier.

Impact: Insufficient SI testing could increase the UAT level of effort if they are left with the additional burden of discovering defects missed by the SI, resulting in further Project delays. Further, overall impressions of the system and the improvements it will bring could be overshadowed by negative opinions voiced by PUC testers and thereby reduce user buy-in. If testing is not completed in a timely manner and/or if the SI is unable to assure each requirement has been fully met and comprehensively tested, system go-live could be delayed.

Updates
2/28/2023: n/a

IV&V Findings and Recommendations

IV&V ID #24 (cont.)	Type: Issue Rating: Medium	Status: New	Category: Testing Date Opened: February 28, 2023

Recommendations/Action Items	Period	Status
As UAT is the last phase before production and there are not major implications to further delays, extend UAT as long as necessary to ensure the system is ready for go-live to PUC's satisfaction.	Medium term	In Progress

IV&V Preliminary Concerns

(These are not findings, rather, these are observations based on limited information at the time of reporting and require further discovery, research and clarification.)

IV&V Preliminary Concerns

IV&V ID #22	Type: PC Rating: n/a	Status: Closed	Category: Testing Date Opened: 1/31/2023

Title: Inadequate System Test activities could lead to unidentified testing gaps and leaked defects into future project phases

Observation: The Project conducted and exited System Test without fully reviewing all test scripts and results, and without confirming all tests traced back to all requirements.

Context: The goal of System Test is typically for the Project to confirm the product is free of defects and meets all required functionality before moving to User Acceptance Testing.

Impact: If the System Test phase did not test all required functionality completely, defects and missing functionality could leak to both the UAT and Production environments.

Updates

2/28/2023: Closed and replaced with Issue #24. The SI did not provide a Requirements Traceability Matrix (RTM) mapping that satisfied PUCs need to validate all requirements have been met via successfully testing. Instead, PUC agreed to take on the responsibility of validating all requirements have been met. While, PUC may not have enough time to complete this by go-live and the SI agreed to implement missed functionality during the warranty phase. However, if the there are defects and missed functionality that PUC does not want to introduce into the Production environment, PUC may elect to postpone go-live until satisfied.

IV&V Preliminary Concerns

IV&V ID #23	Type: PC Rating: n/a	Status: New	Category: Training / OCM Date Opened: February 28, 2023

Title: Lack of PUC OCM resources could hinder OCM effectiveness

Observation: PUC has stated they have limited capacity to perform comprehensive OCM activities. OCM is currently being led by the project PM with assistance from the PUC communications officer, both of which have limited capacity.

Context: A major goal of OCM is to ensure an organizational adopts new systems and processes without causing negative impacts.

Impact: Insufficient OCM can lead to user confusion, frustration and a lack of user buy-in. This could lead to a flurry of activities the week of go-live to address user concerns and confusion as they struggle to adapt to the new system and new processes. This could weigh heavily on project leadership and PUC support staff the week of go-live.

Updates

2/28/2023: n/a

IV&V Preliminary Concerns

IV&V ID #25	Type: PC Rating: n/a	Status: New	Category: Testing Date Opened: 1/31/2023

Title: Insufficient requirements traceability could lead to missed requirements, rework, and budget/schedule impacts

Observation: The Requirements Traceability Matrix delivered by the SI lacks sufficient detail to fully map test scripts back to individual requirements, rather, the SI has elected to only map test scripts back to requirement categories. The SI has stated they will not provide this level of details that is typical of an industry standard RTM despite multiple requests from PUC.

Context: IEEE states: Requirements are the most important part of any software projects. Many software projects were failed due to incomplete requirements and lack of user involvements. It is very important to define all requirements at the beginning of any new project so that all members of the team can easily find what goals they should be striving toward. Requirement Traceability Matrix (RTM) is a document that contains all requirements presented by the customer or development team at the end of the life-cycle. The main purpose of creating Requirement Traceability Matrix is to check that all test cases are covered and should not be missed any functionality while testing."

Impact: Failure to trace test cases/scripts back to individual requirements could lead to a system has not been fully tested to assure all system requirements have been met.

Updates

2/28/2023: n/a

IV&V Scope and Approach

IV&V Scope

- In accordance with PCG's contract for the CDMS Project at the PUC, the subject areas that are within the scope of IV&V activities include:

  - Project Management
  - Requirements Management
  - Software Development
  - Development Environment
  - System and Acceptance Testing

  - Operating Environment
  - Data Management
  - Operations Oversight
  - Training

- As the CDMS IV&V project progresses, PCG's activities will focus on areas that represent highest risk to the Hawaii PUC.

IV&V Approach and Methodology

- What is Independent Verification and Validation (IV&V)?

  - Oversight by an independent third party that assesses the project against industry standards to provide an unbiased view to stakeholders
  - The goal of IV&V is to help the State get the solution they want based on requirements and have it built according to best practices
  - IV&V helps improve design visibility and traceability and identifies (potential) problems early
  - IV&V objectively identifies risks and communicates to project leadership for risk management

- PCG IV&V Methodology

  - Consists of a 4-part process made up of the following areas:
    1. **Discovery** – Discovery consists of reviewing documentation, work products and deliverables, interviewing project team members, and determining applicable standards, best practices and tools
    2. **Research and Analysis** – Research and analysis is conducted in order to form an objective opinion.
    3. **Clarification** – Clarification from project team members is sought to ensure agreement and concurrence of facts between the State, the Vendor, and PCG.
    4. **Delivery of Findings** – Findings, observations, and risk assessments are documented in this monthly report and the accompanying Findings and Recommendations log. These documents are then shared with project leadership on both the State and Vendor side for them to consider and take appropriate action on.

  Note: This report is a point-in-time document with findings accurate as of the last day in the reporting period.

IV&V Engagement Status

IV&V Engagement Status

IV&V Engagement Area	Dec 22	Jan 23	Feb 23	Comments
IV&V Budget	🟢	🟢	🟢	The IV&V engagement is deliverables-based and PUC is not at risk of being over budget.
IV&V Schedule	🟢	🟢	🟢	The IV&V engagement aligns with the SI schedule.
IV&V Deliverables	🟢	🟢	🟢	There are no known risks to upcoming IV&V deliverables.
IV&V Staffing	🟢	🟢	🟢	The IV&V team maintains the proposed team and there are no foreseeable changes.
IV&V Scope	🟢	🟢	🟢	The IV&V project continues to operate within the scope of its engagement.

Engagement Status Legend		
🟢 The engagement area is within acceptable parameters.	🟡 The engagement area is somewhat outside acceptable parameters.	🔴 The engagement area poses a significant risk to the IV&V project quality and requires immediate attention.

Appendices

Appendix A – IV&V Criticality Ratings

See definitions of Criticality Ratings below:

Criticality Rating	Definition
H	A high rating is assigned if there is a possibility of substantial impact to product quality, scope, cost, or schedule. A major disruption is likely and the consequences would be unacceptable. A different approach is required. Mitigation strategies should be evaluated and acted upon immediately.
M	A medium rating is assigned if there is a possibility of moderate impact to product quality, scope, cost, or schedule. Some disruption is likely and a different approach may be required. Mitigation strategies should be evaluated and implemented as soon as feasible.
L	A low rating is assigned if there is a possibility of slight impact to product quality, scope, cost, or schedule. Minimal disruption is likely and some oversight is most likely needed to ensure that the risk remains low. Mitigation strategies should be considered for implementation when possible.

Appendix B – IV&V Inputs

Meetings attended during the reporting period:	Artifacts reviewed during the reporting period:
Weekly check-ins with PUC	PUC 5.1 Test Plan Meetings and Reviews
Monthly check-ins with PP	PUC 5.2 Test Plan Results
Weekly PM Meetings	PUC 6.1 Training Plan
CDMS – Risk Management Meeting	
UAT working / planning sessions	

Appendix C – Upcoming IV&V Activities

Anticipated meetings to attend next period	Anticipated artifacts to review next period
Weekly check-ins with PUC	PUC 6.1 Training Plan
Monthly check-ins with PP	
Weekly PM Meetings	
CDMS – Risk Management Meeting	
Deliverable Review Sessions	
UAT sessions	

Appendix D – Recommendation Periods

Period	Definition
Short Term	These are recommendations that should be completed within the month and/or require less than a month to complete
Medium Term	These are recommendations that should be completed within 2-6 months and/or require 2-6 months to complete
Long Term	These are recommendations that should be completed within 6 months to a year and/or require > 6 months to complete.

Public Consulting Group

Solutions that Matter