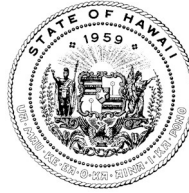


JOSH GREEN, M.D.
GOVERNOR



DEPT. COMM. NO. 37
DOUGLAS MURDOCK
CHIEF INFORMATION
OFFICER

OFFICE OF ENTERPRISE TECHNOLOGY SERVICES

P.O. BOX 119, HONOLULU, HAWAII 96810-0119
Ph: (808) 586-6000 | Fax: (808) 586-1922
ETS.HAWAII.GOV

May 26, 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 (May 26, 2023 14:32 HST)

Douglas Murdock
Chief Information Officer
State of Hawai'i

Attachment



Content and Document Management System (CDMS) Project

Hawaii Public Utilities Commission (PUC)

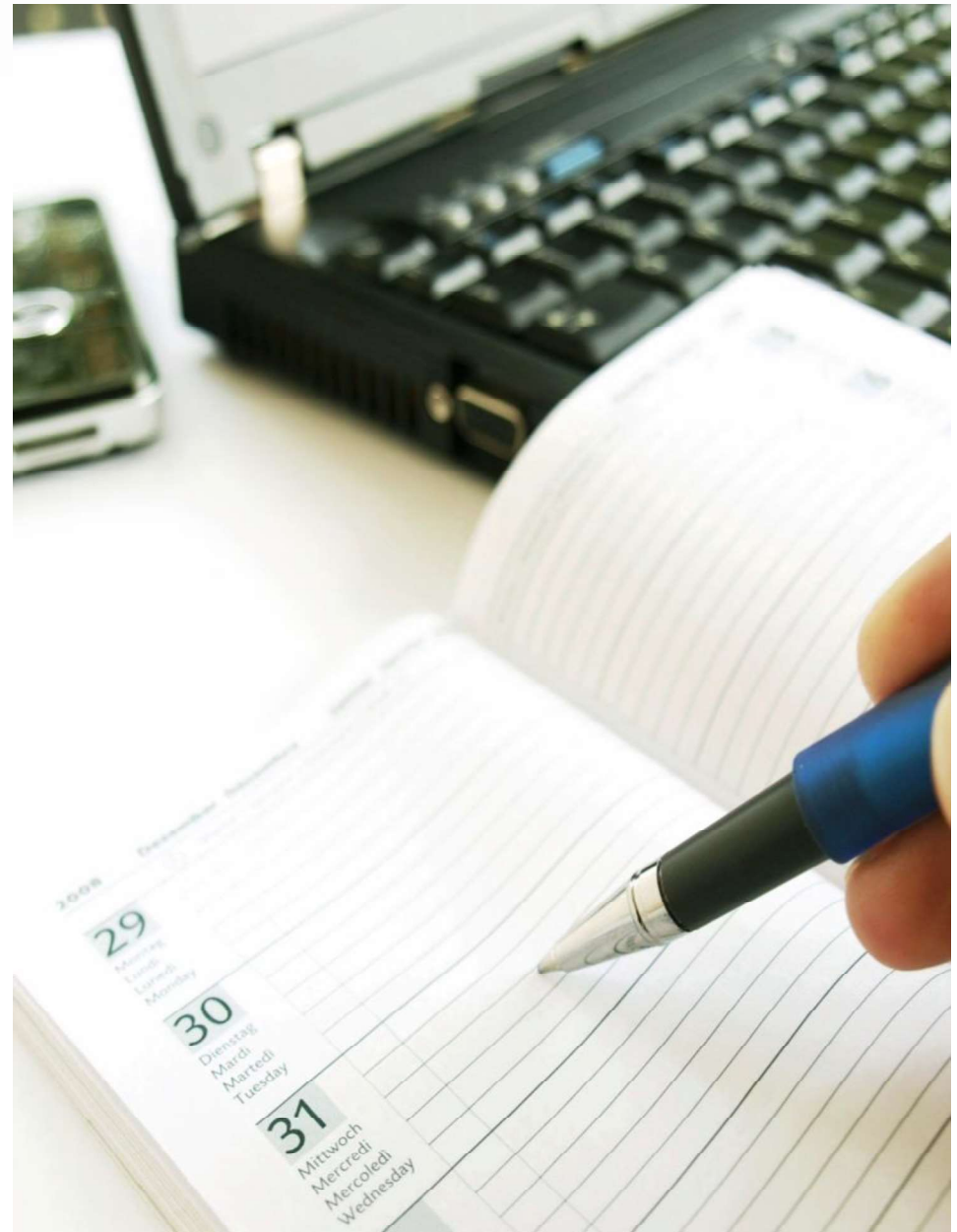
IV&V Monthly Status Report - FINAL
For Reporting Period: **April 2023**

Draft Submitted: 5/5/2023

Final Submitted: 5/25/2023

Overview

- Executive Summary
- IV&V Findings and Recommendations
- IV&V Preliminary Concerns
- IV&V Scope and Approach
- IV&V Engagement Status
- Appendices
 - A – IV&V Criticality Ratings
 - B – IV&V Inputs
 - C – Upcoming IV&V Activities



Executive Summary

The Project rescheduled its go-live date from May 15, 2023, to June 19, 2023. User Acceptance Testing (UAT) identified over 1000 issues that required resolution. Insufficient testing contributed to the delay, and insufficient business analysis during the discovery phase compounded the situation. Although the delay will impact the project budget, the Project team believes that the new go-live date will mitigate project risks by allowing the team to complete testing activities, resolve system issues, and plan for training. Code will be frozen on May 8, 2023, and training is scheduled to begin on May 15, 2023.

As the Project approaches its go-live date, PUC may not receive a fully traceable Requirements Traceability Matrix (RTM) to objectively verify that all contractual requirements have been met. Although PUC's own validation efforts have raised confidence that most requirements have been fulfilled, it remains uncertain whether these efforts will be enough to guarantee contract compliance.



Executive Summary

Mar '23	Category	IV&V Summary
L	Project Management	PUC SMEs and staff were accessible throughout the User Acceptance Testing (UAT) phase. In preparation for the Training phase, the Project Manager consulted with the users to ensure optimal attendance by vetting proposed dates and times before sending out invitations.
L		PUC approved Deliverables 5.1, Test Plan & Schedule, and 5.2, System & Integration Testing and Test Results. However, Deliverable 5.3, UAT Test Results, is not yet ready for delivery. PUC also signed off on Deliverables 6.1 and 6.2, Training Deliverables.
M		The Project's go-live date has been postponed by five weeks. This extension will allow the team to continue testing and to refine the system, plan for training, and perform OCM activities. The Project team believes that the new timeline will be sufficient to complete most activities needed for a successful implementation that meets PUC's needs. However, PUC will incur additional project costs of about \$59,400 due to this schedule change.
L		Key PUC resources have more time performing project activities as part of the 5-week delay including ensuring quality of the system through thorough internal testing. Since the SI is not planning on providing a full traceability in their delivered RTM , PUC resources are attempting to trace requirements and test the system to assure all contractual requirements have been met.
M		The Fiscal Team discovered that the payment processing functionality was missing some reporting functionality. As a result, the Project prioritized the implementation of these changes immediately after the go-live date to minimize any inconvenience.




Executive Summary


Mar '23	Category	IV&V Summary
M	Software Development	It was recently discovered that there was a misunderstanding of PUC expectations around how payment processing data would be ported from the external payment system to the new system. Thorough analysis activities seek to assure that these kinds of surprises do not occur, especially this close to go-live. PUC is likely to accept the risk of sub-optimal system processes and potential workarounds given their desire to meet their go-live date.
L		IV&V has recommended that the Project increase communications and OCM efforts around preparing and informing users of processes that are sub-optimal and remind them that the system will be enhanced during the maintenance and operations (M&O) phase. PUC is in the process of preparing such communications, including a "What You Should Know" document and a WordPress site for user communications in this regard.


Mar '23	Category	IV&V Summary
L	Data Management	PUC is planning to assist with data clean up the weekend before go-live to address duplicates and other potential data quality issues. The SI has provided PUC with tools to assist in this effort.



Executive Summary

Mar '23	Category	IV&V Summary
	Testing	The Project has elected to delay go-live to allow more time for important project activities that are needed prior to go-live, primarily system validation and testing. This issue has been the prime contributor to the delay of go-live and the recent budget increase of about \$59,400.

Mar '23	Category	IV&V Summary
	Requirements	The SI is not providing full traceability in their delivered RTM, PUC resources are attempting to trace requirements to test results to assure all contractual requirements have been met. Although PUC's own validation efforts have raised confidence that most requirements have been fulfilled, it remains uncertain whether these efforts will be enough to guarantee contract compliance.

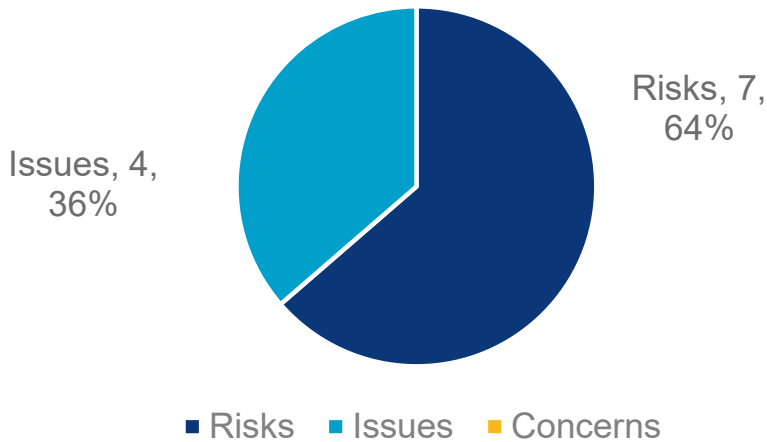
Mar '23	Category	IV&V Summary
	Training (OCM)	PUC is in the process of preparing communications informing users of processes that are sub-optimal and remind them that the system will be enhanced during the maintenance and operations (M&O) phase. For example PUC is sending a "What You Should Know" document and a WordPress site for user communications.



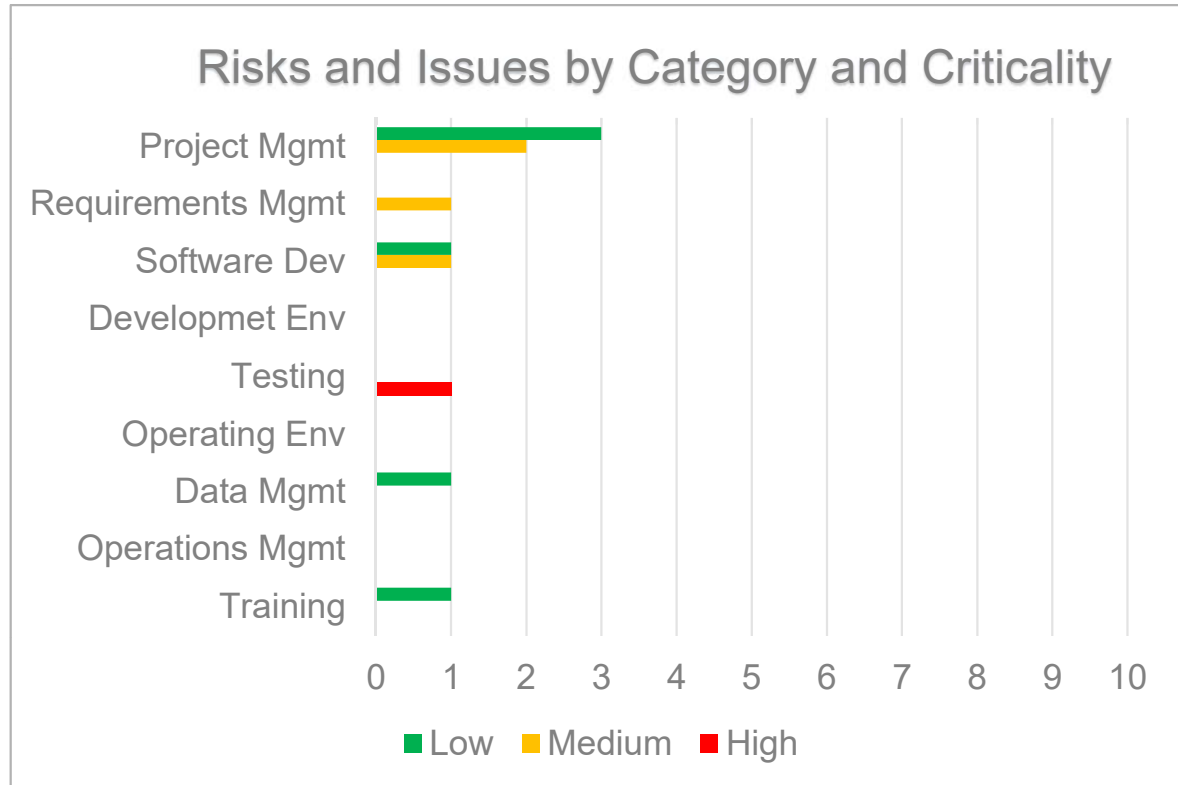
Executive Summary

IV&V is monitoring eleven open findings. One risk (#25 – RTM) is now an issue. Overall, there are four issues and seven risks. The issues are related to Software Development, Testing, Project Management and Requirements Management. Testing is High and the other three are Medium. Of the 7 risks, one is rated Medium and falls under Project Management, and the remaining six are low risks with three in Project Management and one each in Data Management Software Development and Training/OCM.

All Findings by Type



Risks and Issues by Category and Criticality





IV&V Findings and Recommendations

IV&V Findings and Recommendations

IV&V ID #14	Type: Risk	Status: In progress	Category: Project Management
	Rating: Low		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

4/30/23: PUC SMEs and staff were accessible throughout the UAT phase. In preparation for the Training phase, the Project Manager consulted with the users to ensure optimal attendance by vetting proposed dates and times before sending out invitations.



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
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
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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

4/30/2023: PUC approved Deliverables 5.1, Test Plan & Schedule, and 5.2, System & Integration Testing and Test Results. However, Deliverable 5.3, UAT Test Results, is not yet ready for delivery. PUC also signed off on Deliverables 6.1, Training Plan and 6.2, Training Curriculum, however, PUC has expressed concerns they have not seen many training materials necessary to conduct training



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: Issue	Status: In progress	Category: Project Management
	Rating: Medium		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

4/30/2023: The Project's go-live date has been postponed by five weeks, moving from May 15, 2023, to June 19, 2023. This extension will allow the team to continue test and refine the system, plan for training, and perform OCM activities. While some payment processing reporting functionality may not be ready by the new go-live date, PUC reported that this will not significantly impact their business. The Project team believes that the new timeline will be sufficient to complete most activities needed for a successful implementation that meets PUC's needs. However, PUC will incur additional project costs of about \$59,400 due to this schedule slippage.



IV&V Findings and Recommendations

IV&V ID #16 (cont.)	Type: Issue Rating: Medium	Status: In progress	Category: Project Management Date Opened: September 30, 2021	
Recommendations/Action Items			Period	Status
PUC could consider delaying the May 15, 2023 go-live date to provide more time to complete all Project activities satisfactorily. PUC reported no significant business impact if go-live is further delayed.			Medium term	Complete
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
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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

4/30/2023: IVV remains concerned that insufficient business analyses will continue to impact the project. It was recently discovered that there was a misunderstanding of PUC expectations around how payment processing data would be ported from the external payment system to the new system. Thorough analysis activities seek to assure that these kinds of surprises do not occur, especially this close to go-live. PUC is likely to accept the risk of sub-optimal system processes and potential workarounds given their desire to meet their go-live date. Insufficient business analysis is a likely contributor to multiple project delays the project has seen, including the recent 5-week (\$59,400) delay of go-live.

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
PUC could consider delaying the May 15, 2023 go-live date to provide more time to complete all Project activities satisfactorily. PUC reported no significant business impact if go-live is further delayed.			Short term	Complete
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 Rating: Low	Status: In progress	Category: Software Development Date Opened: October 28, 2021
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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

4/30/2023: PUC is in the process of preparing communications informing users of processes that are sub-optimal and to remind them that the system will be enhanced during the maintenance and operations (M&O) phase. For example, PUC is sending a "What You Should Know" document and a WordPress site for user communications.



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 process improvement that may not be optimized upon go-live but may be addressed during M&O.			Medium Term	In progress
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

Rating: Low

Status: In progress

Category: Project Management

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

4/30/2023: With the recent 5-week delay of go-live, PUC resources had more time performing project activities including ensuring quality of the system through thorough internal testing. Since the SI did not provide full traceability in their delivered RTM, PUC resources are attempting to trace requirements and test the system to assure all contractual requirements have been met.



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
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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

4/30/2023: PUC is planning to assist with data clean up the weekend before go-live to address duplicates and other potential data quality issues. The SI has provided PUC with tools to assist in this effort.



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
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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-present service vendor and it is unclear how accurate these new estimates are.

Impact: 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

4/30/2023: During testing, the Fiscal Team discovered that payment processing was missing some reporting functionality. PUC noted that this issue would only affect the two weeks between the go-live date and the end of the fiscal year, resulting in the need for manual merging of data from two systems. As a result, the Project prioritized the implementation of these changes immediately after the go-live date to minimize any inconvenience.



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
PUC consider requesting the vendor to address the missing functionality prior to go-live to prevent any inconvenience			Medium term	Not started
PUC could consider delaying the May 15, 2023 go-live date to provide more time to complete all Project activities satisfactorily. PUC reported no significant business impact if go-live is further delayed.			Medium term	Complete
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

ID #23	Type: Risk Rating: Low	Status: New	Category: Training (OCM) Date Opened: February 28, 2023
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Title: Lack of PUC OCM resources could hinder OCM effectiveness

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

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

Impact: Insufficient OCM can lead to user dissatisfaction and a lack of buy-in. The need to address user concerns and confusion as they struggle to adapt to the new system/ processes could weigh heavily on project leadership and PUC staff the week of go-live.

Updates

4/30/2023: PUC is in the process of preparing communications informing users of processes that are sub-optimal and remind them that the system will be enhanced during the maintenance and operations (M&O) phase. For example, PUC is sending a "What You Should Know" document and a WordPress site for user communications.



IV&V Findings and Recommendations

IV&V ID #23 (cont.)	Type: Risk Rating: Low	Status: New	Category: Training (OCM) Date Opened: February 28, 2023	
Recommendations/Action Items			Period	Status
PUC could consider pushing the May 15, 2023 go-live date further out to provide more time to complete all OCM activities satisfactorily.			Medium term	Complete
PUC strategically plan to implement select OCM activities that will provide the greatest OCM benefit.			Medium term	In progress
Focus efforts towards public portal users given the greater risk of bad press if communications are insufficient.			Medium term	Not started



IV&V Findings and Recommendations

IV&V ID #24	Type: Issue Rating: High	Status: In progress	Category: Testing Date Opened: February 28, 2023
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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

4/30/2023: The Project has elected to delay go-live to allow more time for important project activities that are needed prior to go-live, primarily system validation and testing. Insufficient testing continues to negatively impact the Project and has been the prime contributor to the delay of go-live and the recent budget increase (\$59,400).



IV&V Findings and Recommendations

IV&V ID #24 (cont.)	Type: Issue Rating: High	Status: New	Category: Testing Date Opened: February 28, 2023	
Recommendations/Action Items			Period	Status
As UAT is the last phase before production extend UAT as long as necessary to ensure the system is ready for go-live to PUC's satisfaction.			Medium term	In Progress
PUC and the SI perform significant ad-hoc testing			Medium term	In progress
PUC could consider pushing the May 15, 2023 go-live date further out to provide more time to complete all Project activities satisfactorily. PUC reported no significant business impact if go-live is further delayed.			Medium term	Complete



IV&V Findings and Recommendations

IV&V ID #25	Type: Issue Rating: Medium	Status: In progress	Category: Requirements Date Opened: February 28, 2023
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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

4/30/2023: The SI is not planning on providing full traceability in their delivered RTM, therefore PUC resources are attempting to trace requirements to test results to assure all contractual requirements have been met. Although PUC's own validation efforts have raised confidence that most requirements have been fulfilled, it remains uncertain whether these efforts will be enough to guarantee contract compliance.



IV&V Findings and Recommendations

IV&V ID #25 (cont.)	Type: Issue Rating: Medium	Status: In progress	Category: Requirements Date Opened: February 28, 2023	
Recommendations/Action Items			Period	Status
PUC Request the SI deliver a finalized fully traceable RTM that meets industry standards			Short term	Not started
If the PUC and SI come to an agreement, suggest the SI collaborate on ways to mitigate this risk			Short term	Not started





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

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.






The background is a solid blue color with a pattern of light blue squares and lines. Some squares are solid, while others are outlined. The lines connect some of the squares, creating a network-like structure. The overall aesthetic is clean and modern.

IV&V Engagement Status

IV&V Engagement Status

IV&V Engagement Area	Feb 23	Mar 23	Apr 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.

The background is a solid blue color with various decorative elements. On the left side, there are several overlapping squares and rounded rectangles, some with white outlines and others with semi-transparent blue fills. On the right side, there are more squares and rounded rectangles, some with white outlines and others with semi-transparent blue fills, arranged in a way that suggests a flow or connection. The word "Appendices" is centered in the middle of the page in a bold, orange font.

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	Requirements Traceability Matrix (RTM)
Monthly check-ins with PP	
Weekly PM Meetings	
CDMS – Risk Management Meeting	
UAT working / planning sessions	
Defect/Issue Meetings	



Appendix C – Upcoming IV&V Activities

Anticipated meetings to attend next period	Anticipated artifacts to review next period
Weekly check-ins with PUC	Training Materials
Monthly check-ins with PP	5.3 UAT Test Results
Weekly PM Meetings	
CDMS – Risk Management Meeting	
Deliverable Review Sessions	
Training Sessions	
Go/No Go Meetings	



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.





Solutions that Matter