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GOVERNOR

DOUGLAS MURDOCK
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September 15, 2020

The Honorable Ronald D. Kouchi,
President, and
Members of The Senate
Twenty-Ninth State Legislature
Hawaii State Capitol, Room 409
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki,
Speaker, and
Members of The House of Representatives
Twenty-Ninth State Legislature
Hawaii State Capitol, Room 431
Honolulu, Hawaii 96813

Dear 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 Hawaii Department of Health Hawaii BHA Integrated Case 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 (Sep 15, 2020 11:37 HST)

DOUGLAS MURDOCK
Chief Information Officer
State of Hawai'i

Attachment (2)

Hawaii BHA Integrated Case Management System Project – *Phase 3*

Final IV&V Report for the period of

August 1 – August 31, 2020

Final submitted: September 8, 2020

PUBLIC CONSULTING GROUP

Solutions that Matter

Agenda

Executive Summary

IV&V Findings & Recommendations

Appendices

- A – Rating Scales
- B – Inputs
- C – Project Trends

Executive Summary

The Project deployed a mid sprint release to production in August. Like last month's reporting, issues continue to persist with release deployments and the need to perform regression testing for all releases is still being advocated by IV&V.

The RSM Team continued to provide essential support during August alleviating some of the bandwidth concerns expressed by DOH to meet crucial project needs. IV&V continues to recommend that BHA seek additional state technical resources to help support on-going development work.

The Project continues to make good progress on the planning and execution of all three iterations for Release 3.10 as well as the Help Desk and Semantic Layer/Business Intelligence workstreams. IV&V notes there has been a higher than expected volume of M&O User Story Points for R3.10.

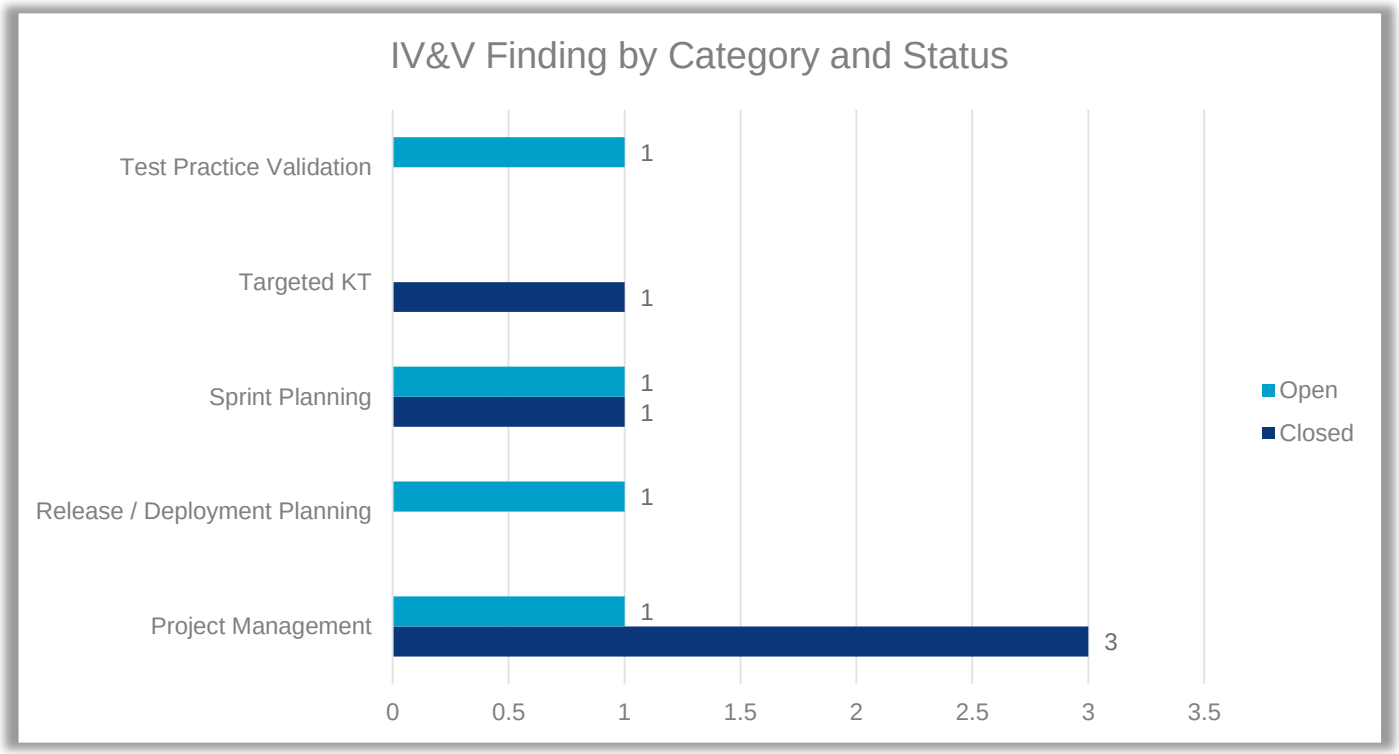
Jun	Jul	Aug	Category	IV&V Observations
G	Y	Y	**Sprint Planning**	There were no substantive changes for this category which remains Yellow (medium) for the August reporting period. The BHA Technical Team's bandwidth is still a concern and the need for BHA to continue to pursue additional skilled technical MS Dynamics resources to permanently fill their technical support needs and increased volume of work is still recommended. IV&V will continue to monitor this risk moving forward.
G	G	G	**User Story (US) Validation**	IV&V reports no active findings for User Story (US) Validation category which remains Green (low) for the August reporting period. IV&V will continue to monitor the US development and validation process in upcoming reporting periods.
G	G	Y	**Test Practice Validation**	IV&V has changed the criticality rating for this category to a Yellow (medium) for the August reporting period. The Project Team's decision to no longer perform regression testing for Mid-Sprint Deployments is not a best practice and is not recommended by IV&V. Production issues could potentially be avoided if adequate time is dedicated to performing regression testing. IV&V acknowledges that the Project Team is re-evaluating testing best practices.

Executive Summary

Jun	Jul	Aug	Category	IV&V Observations
Y	Y	Y	**Release / Deployment Planning**	The criticality rating for this category remains Yellow (medium) for the August reporting period. IV&V observed after the Mid-Sprint production deployment on 8/21/20 that a necessary updated software plug was not deployed. Non-production environment differences continue to be a concern. IV&V acknowledges that the Project Team is re-evaluating deployment best practices.
G	G	G	**OJT and KT Sessions**	The criticality rating for the OJT and KT Sessions category remains Green (low) for the August reporting period with no active findings.
G	G	G	**Targeted KT**	IV&V closed the associated KT finding for this category as no additional KT gaps have been identified by DOH. The Targeted KT criticality rating will remain a Green (low) for the August reporting period.
G	G	G	**Project Performance Metrics**	IV&V has discontinued the Project Performance Metrics reporting until the next agile release R3.11.
G	G	G	**Organizational Maturity Assessment**	The criticality rating for the Organization Maturity Assessment (OMA) will remain Green (low) up through the completion of R3.10 when the next agile release will be implemented.
Y	Y	Y	**Project Management**	The criticality rating for the Project Management category remains Yellow (medium) for the month of August. DDD has developed a Resource Plan to address the preliminary concern reported by IV&V last month to have resources available to assist with user adoption, training, and overall OCM activities. The COVID-19 risk remains Yellow (medium) for the August reporting period despite the issuance of an Oahu Stay-at-Home/Work-from-Home order and potential budget actions by the Governor. Although BHA submitted its IAPDU to DHS on July 1st, CMS approval of the BHA IAPDU is still pending which places the project at risk. Two new preliminary findings were added to address concerns associated with PII/PHI data and project access to activity logs.

Executive Summary

As of the August 2020 reporting period, there are a total of four open findings – one Medium Issue and three Medium Risks spread across the Sprint Planning, Release / Deployment Planning, Test Practice Validation, Targeted Knowledge Transfer, and Project Management assessment areas.



IV&V Findings & Recommendations

IV&V Findings & Recommendations

Assessment Categories

Throughout this project, IV&V will verify and validate activities performed in the following process areas:

- Sprint Planning
- User Story Validation
- Test Practice Validation
- Release / Deployment Planning
- On-the-Job Training (OJT) and Knowledge Transfer (KT) Sessions
- Targeted Knowledge Transfer (KT)
- Project Performance Metrics
- Organizational Maturity Assessment
- Project Management

IV&V Findings & Recommendations

Sprint Planning

#	Key Findings	Criticality Rating
8	**Medium Risk - The BHA Technical Team bandwidth may not be adequate to meet the needs of the project, which could compromise project productivity**. There were no substantive changes to this finding during the month of August. IV&V will continue to monitor this risk moving forward.	M

Recommendations	Status
• The Project should investigate mechanisms of increasing the bandwidth of the BHA Technical Team, either by adding resources through new hires, or vendor contracts.	In progress
• The Project should assess, where possible, if there are responsibilities of the BHA Technical Team that can be reassigned to other project staff.	In progress
• The Project should evaluate where process inefficiencies can be addressed and streamlined to possibly free up the BHA Technical Team's availability.	In progress
• The Project should consider the formation of a first level M&O resource team to triage/address production defects in a timely manner, without disrupting new development work.	In progress

IV&V Findings & Recommendations

Test Practice Validation

#	Key Findings	Criticality Rating
2	*Escalate from Low Issue to Medium Issue* – **As a result of regression testing not being consistently performed, production releases are breaking and/or deprecating existing functionality in the production environment**. The Project Team decided not to perform regression testing for Mid Sprint Deployments based on the time required to perform the testing versus the perceived benefit. This continues to conflict with best practices and is not recommended by IV&V. The Test Team has previously reported that full regression testing requires approximately a day to execute. However, the Project Team may spend more time resolving production issues attributed to a Mid Sprint Deployment than it would take to perform regression testing. The Project discovered a high exposure defect that resulted in not all claim lines being generated by the system for a significant number of historical invoices. Initial investigation indicates that approximately 15% of claim lines are affected. The Project has determined there were three causes attributing to this defect, two of which have already been resolved and the last will be pushed to production M&O as soon as possible. The Project is considering expanding testing practices in non-production environments to include revenue neutrality testing. The development of automated regression testing is planned to occur during Release 3.10 and then utilized for Release 3.11 forward. However, with the State hiring freeze, it is becoming highly unlikely that staffing for this effort will be available to support the planned timeframe. IV&V is raising the criticality of this finding to Medium and will continue to monitor progress.	M

Recommendations	Status
• Updating the regression test scripts to ensure consistency with system configuration.	Completed
• Modifying release schedules to allow for regression testing timeframes.	In Progress
• Planning releases by functionality type to avoid unnecessary repetitive work being performed in any given section of the solution.	Completed

IV&V Findings & Recommendations

Test Practice Validation (cont'd)

Recommendations	Status
• Performing regression testing after every release, or possibly every other release, or potentially tying regression tests to full solution upgrade releases. In addition, consider alternating the DDD and CAMHD scripts every other release.	Completed
• Modifying regression test scripts to start AFTER case creation, limiting the time it takes to execute.	Completed
• Modify the deployment scripts based on information gained from previous release deployments.	Completed
• Pursuing additional formal training in AzureDevOps for test automation at the earliest possible juncture and commence efforts to automate at least the 2 primary regression test scripts.	Open
• Consulting with RSM to determine how the 'interim testing processes' can be improved until such time that automated testing is available for repeatable and complete industry standard regression testing.	Completed
• Implementing 'hard' code freeze dates as well as test environment deployment dates to ensure that testing and deployment activities are not rushed.	In Progress

IV&V Findings & Recommendations

Release / Deployment Planning

#	Key Findings	Criticality Rating
5	**Medium Risk - Due to the project not following a detailed deployment script, the project may continue to experience defects related to deployment activities.** With the assistance of RSM, the Team completed an M&O Mid Sprint production deployment on 8/21/2020. It was discovered afterwards that an updated software plug was mistakenly not deployed in the production environment. The updated plug had been deployed in DEV but was not deployed in DEV2. Environment differences continue to be a concern. To address this, the Project has just completed a Microsoft Solutions upgrade to the DEV and Test environments.	M

Recommendations	Status
• IVV recommends documenting deployment scripts for both the patch method and the full solution upgrade method. The script(s) should be in the form of a step-by-step procedure that walks through from start to finish of the deployment process and involve several technical staff to ensure staff availability to accomplish these tasks when primary deployment personnel are unavailable.	Completed
• Standardize the content of all developer deployment task notes, with a goal of eliminating any potential ambiguity to the Deployment Team, resulting in a cleaner and more repeatable set of deployment processes and instructions.	Completed

IV&V Findings & Recommendations

Release / Deployment Planning (cont'd)

Recommendations	Status
• As appropriate, consult with RSM on best practices that BHA could employ to support deployment.	In Progress
• Look at implementing 'hard' code freeze dates as well as test environment deployment dates to ensure that testing and deployment activities are not rushed.	In Progress
• Request the assistance of the RSM Solution Architect in reviewing and correcting issues associated with consistency of the configurations across environments, ensuring that the test environment is capable of testing ALL functions of any given release without the need for using multiple test environments.	In Progress
• Request the assistance of the RSM Solution Architect in review of deployment scripts as a double check for accuracy and completeness prior to commencing deployment activities.	In Progress
• Ensure an operational and fully functional test environment is available to effectively conduct end-to-end regression testing prior to deploying a release to production.	In Progress
• The Project Team should consider evaluating potential changes to improve/enhance existing processes and communications to address current release/deployment shortfalls.	Open
• IV&V recommends performing a Root Cause Analysis in collaboration with RSM for the continued concerns surrounding environment differences.	***New***

IV&V Findings & Recommendations

Targeted KT

#	Key Findings	Criticality Rating
3	***Closed Low Risk* – Usage of open source JavaScript framework for development and ongoing maintenance of Calculator 3.0 requires BHA to take a proactive approach to support and security**. IV&V is unaware of any additional KT gaps being identified by DOH, and as such, is closing this finding.	**Closed**

Recommendations	Status
• IV&V recommends BHA work to establish a reliable and repeatable process for keeping abreast of communal updates and support opportunities for a new suite of tools.	Completed
• IV&V recommends BHA continue to hold targeted KT sessions with RSM on maintaining Calculator 3.0 via a suite of tools, and determine what additional skillsets, training, and/or resources are needed to support BHA's long-term ownership of Calculator 3.0.	**Completed**

IV&V Findings & Recommendations

Project Management

#	Key Findings	Criticality Rating
10	**Medium Risk -The COVID-19 pandemic and the related "stay at home" order could hinder project activities and negatively impact the project schedule and budget.** On 8/25/2020, the new Stay At Home / Work From Home order for Oahu was issued due to the ongoing Coronavirus Pandemic challenges. The initial order is for 2 weeks, starting on 8/27/2020. IV&V notes that the project continues to move forward with staff working remotely. IV&V notes there may be potential budget actions by the Governor which may affect the project.	M

Recommendations	Status
• IV&V recommends BHA to ramp up efforts to setup, train, and assist stakeholders on remote work devices and tools and make every effort to help them to become highly functional with remote access technology (e.g. MS Teams/Skype).	Completed
• IV&V recommends the project and DOH create a detailed, documented risk mitigation strategy and plan that is reviewed regularly and revised to address the current state of the COVID-19 threat and related impacts over the next 6 to 12 months.	In Progress
• IV&V recommends updates to the OCM Plan to include any new activities or updates to planned activities to aid the organization through this COVID-19 situation in the short and long term.	Open

IV&V Findings & Recommendations

Project Management (cont'd)

#	Key Findings	Criticality Rating
12	**Preliminary Concern – DDD Project staffing shortages may have a continued negative effect on user adoption, training, and overall OCM activities**. DDD has drafted a plan to identify their priority resource needs and options for filling those needs. The plan includes resource for a variety of disciplines beyond OCM such as Training, Report Writing, Help Desk and deployment work to support the current application as well as staffing needs for future system application functionality.	N/A

Recommendations	Status
• IV&V recommends that DOH pursue the addition of an OCM resource(s) to re-enforce and manage the effect of new business processes on staff members and who would facilitate with user adoption and training on the system to ensure it is being utilized as intended.	In Progress
• Develop a plan to identify, prioritize, and track DDD resource needs which need to be filled.	In Progress

IV&V Findings & Recommendations

Project Management (cont'd)

#	Key Findings	Criticality Rating
13	***New Preliminary Concern*** **– PII/PHI data in non-production environments.** IV&V has been made aware that PII/PHI data currently exist in a non-production environment to meet project needs. Generally this is not a good security practice as the presence of PII/PHI data in non-production environments increases the potential for theft, loss or exposure thus increasing the organization's risk. Failure to secure PII/PHI data leaves the organization open to highly targeted social engineering attacks, heavy regulatory fines, and loss of client trust and loyalty.	N/A

Recommendations	Status
• IV&V recommends if production data is necessary in any non-production environment that DOH establishes a plan for effectively managing the security of the PII/PHI data, including the potential masking of data.	***New***
• IV&V recommends if production data is necessary in non-production environments that the Project consider employing Audit Logging for security purposes.	***New***

IV&V Findings & Recommendations

Project Management (cont'd)

#	Key Findings	Criticality Rating
14	***New Preliminary Concern*** **– Project unable to access activity logs.** The Project recently deployed audit log functionality into production whereby these logs can be accessed and exported as needed. However, IV&V was made aware access to activity logging for users with just view permissions will not be available from Microsoft in the public sector environment until the end of September 2020. The unavailability of these specific activity logs could potentially hamper the investigation of future security events until implemented.	N/A

Recommendations	Status
• IV&V recommends that DHS continues to collaborate with Microsoft until the activity logging feature is available in the public sector environment.	***New***

IV&V Findings & Recommendations

Project Performance Metrics

Metric	Description	IV&V Observations	IV&V Updates
Velocity	• Review and validate the velocity data as reported by the project • Verify the project is on pace to hit the total target number of US/USP for Phase 3	N/A	IV&V has suspended the Velocity Metrics reporting for the R3.10 & R3.11 scrum-waterfall releases. This metrics reporting will commence at the next agile release.

IV&V Findings & Recommendations

Project Performance Metrics (cont'd.)

Metric	Description	IV&V Observations	IV&V Updates
US Point Estimates vs Actuals	• Verify the project is tracking US Point estimates and actual data • Determine the delta between estimates and actuals • Based on the delta (if any) investigate the potential root cause for the delta	N/A	IV&V has suspended the US Point Estimates vs Actuals Metrics reporting for the R3.10 & R3.11 scrum-waterfall releases. This metrics reporting will commence at the next agile release.

IV&V Findings & Recommendations

Project Performance Metrics (cont'd.)

Metric	Description	IV&V Observations	IV&V Updates
Defect Metrics	Understand and track the following: • Defects by category (bug fixes) • US Points assigned to defects in a release vs US Points assigned to planned US in a release	N/A	IV&V has suspended the Defects Metrics reporting for the R3.10 & R3.11 scrum-waterfall releases. This metrics reporting will commence at the next agile release.

IV&V Findings & Recommendations

Organizational Maturity Assessment

Measure	IV&V Observations
The Organizational Maturity Assessment (OMA) is updated on a bi-monthly basis. The next OMA will be planned for the next agile release which is after the R3.10 & R3.11 scrum-waterfall releases.	

Appendix A: IV&V Rating Scales

Appendix A
IV&V Rating Scales

This appendix provides the details of each finding and recommendation identified by IV&V. Project stakeholders are encouraged to review the findings and recommendations log details as needed.

- See Findings and Recommendations Log (provided under separate cover)
- IV&V Assessment Category Rating Definitions

G	The assessment category is under control and the current scope can be delivered within the current schedule. The assessment category's risks and issues have been identified, and mitigation activities are effective. The overall impact of risk and issues is minimal. The assessment category is proceeding according to plan (< 30 days late).
Y	The assessment category is under control but also actively addressing resource, schedule or scope challenges that have arisen. There is a clear plan to get back on track. The assessment category's risk and/or issues have been identified, and further mitigation is required to facilitate forward progress. The known impact of potential risks and known issues are likely to jeopardize the assessment category. Schedule issues are emerging (> 30 days but < 60 days late). Project Leadership attention is required to ensure the assessment category is under control.
R	The assessment category is not under control as there are serious problems with resources, schedule, or scope. A plan to get back on track is needed. The assessment category's risks and issues pose significant challenges and require immediate mitigation and/or escalation. The project's ability to complete critical tasks and/or meet the project's objectives is compromised and is preventing the project from progressing forward. Significant schedule issues exist (> 60 days late). Milestone and task completion dates will need to be re-planned. Executive management and/or project sponsorship attention is required to bring the assessment category under control.

Appendix A
Criticality Ratings

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 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: Inputs

Appendix B
Inputs

This appendix identifies the artifacts and activities that serve as the basis for the IV&V observations.

Meetings attended during the August 2020 reporting period:

1. Daily Scrum Meetings (selected)
2. Twice Weekly RSM Issues Meeting
3. Weekly BHA-ITS Project Status Meeting
4. Bi-Weekly Check-in: CAMHD
5. Bi-Weekly Check-in: DDD
6. BHA IAPDU Planning Meeting
7. IV&V Draft IV&V Status Review Meeting with DOH
8. IV&V Draft IV&V Status Review Meeting with RSM and DOH
9. Semantics Layer Meeting
10. INSPIRE Release 3.10 Iteration 2 Demo

Artifacts reviewed during the August 2020 reporting period:

1. Daily Scrum Notes (selected)
2. Twice Weekly Issues Meeting Notes (selected)
3. Mid-Sprint Deployment Planning – Release Notes

Eclipse IV&V® Base Standards and Checklists

Document

Appendix C: Project Trends

Appendix C
Project Trends

Trend: Overall Project Health										
Process Area	2019		2020							
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
User Story Validation	N/A									
Test Practice Validation	N/A									
Sprint Planning	N/A									
Release / Deployment Planning	N/A									
OJT and KT Sessions	N/A									
Targeted KT	N/A									
Project Performance Metrics	N/A									
Organizational Maturity Metrics	N/A									
General Project Management	N/A	N/A								
Total Open Findings	N/A	**3**	**7**	**5**	**6**	**6**	**6**	**6**	**6**	**7**
Issue - high	N/A	0	1	1	0	0	0	0	0	0
Issue - medium	N/A	0	0	0	1	1	0	0	0	1
Issue - low	N/A	0	0	0	0	0	1	1	1	0
Risk - high	N/A	0	0	0	1	1	1	0	1	0
Risk - medium	N/A	0	0	1	1	0	0	2	2	3
Risk - low	N/A	0	1	1	3	4	3	2	1	0
Preliminary Concern	N/A	3	5	2	0	0	1	1	1	3

Solutions that Matter

ID No	Identified Date	Title	Updates	Observation	Significance	Recommendation	Process Area	Finding Type	Priority	Status	Closure Reason	Risk Owner
1.000	12/31/2019	Detailed investigation into the project's sprint planning processes and adoption of generally accepted agile best practices.	01/31/2020 - IV&V is closing this concern, and will be tracking items related to Definition of Done, roadmap, resourcing, and backlog grooming in new, separate findings.	IV&V is currently investigating the following topics as they relate to Sprint Planning and the project's overall approach to agile software development: - IV&V acknowledges that the project is now planning three sprints outs, however, it appears that only a "high-level" sprint planning roadmap has been produced, and it is unclear exactly how the project is targeting features for each release through the end of Mod 4. - IV&V is not aware of how the project is currently defining "done" for Mod 3 and Mod 4 Additionally, in the January 2020 reporting period, IV&V will seek additional information and visibility into the project's processes specific to prioritizing requests and how user stories in TFS are tagged to features, as well as the realignment of project development and configuration resources to complete the scope of Release 3.5.	While having a high level roadmap is good, the project should be able to identify what feature enhancements will be targeted for each planned release. This roadmap will help the project manage scope and productivity. Relatedly, the "definition done" is an important artifact to ensure that the project is successful. Otherwise, the project will struggle to prioritize requests/enhancements and manage scope.	As much as possible, the project should identify what feature enhancements will be targeted for each Release and should clearly map out the roadmap out through the last Phase 3 release in September 2020. Additionally, the project should clearly define "Done" to ensure the project team is working towards the same goal and increase opportunities for success. Having a clear "definition of done" will help provide the project with guidance on how to stay within scope.	Sprint Planning	Concern	N/A	Closed	Due to multiple new items being tracked at a more granular level, this item has been closed.	V Ramesh
2.000	12/31/2019	As a result of regression testing not being consistently performed, production releases are both breaking and deprecating existing functionality in the production environment.	08/31/2020 - . The Project Team decided not to perform regression testing for Mid Sprint Deployments based on the time required to perform the testing versus the perceived benefit. This continues to conflict with best practices and is not recommended by IV&V. The Test Team has previously reported that full regression testing requires approximately a day to execute. However, the Project Team may spend more time resolving production issues attributed to a Mid Sprint Deployment than it would take to perform regression testing. The Project discovered a high exposure defect that resulted in not all claim lines being generated by the system for a significant number of historical invoices. Initial investigation indicates that approximately 15% of claim lines are affected. The Project has determined there were three causes attributing to this defect, two of which have already been resolved and the last will be pushed to production M&O	R3.3 introduced a defect that deprecated features in production specific to Integrated Support and Life Trajectory functionality. DDD has informed IV&V that there are other examples of functionality being deprecated after a release, some of which are still being investigated. As of this report, IV&V has not evaluated the project's root cause analysis (RCA) process used to determine why such functionality was deprecated but will discuss further with BHA in January 2020.	Thorough vetting and validation of regression test cases is necessary to prevent both defects and the deprecation of production functionality when a release is pushed live. When defects occur in production, the project should follow a defined and repeatable process for determining the root cause of the problem.	To address regression testing, the Project should continue to pursue and/or consider: 1. Updating the regression test scripts to ensure consistency with system configuration - Completed 2. Modifying release schedules to allow for regression testing timeframes - In Progress 3. Grouping releasees by functionality type to avoid unnecessary repetitive work being performed in any given section of the solution - Completed 4. Performing regression testing after every release, or possibly every other release, or potentially tying regression tests to full solution upgrade releases. In addition, consider alternating the DDD and CAMHD scripts every other release - Completed 5. Modifying regression test scripts to start AFTER case creation, limiting the time it takes to execute - Completed 6. Modifying the deployment scripts based on information gained from previous release deployments - Completed 7. Pursuing additional formal training in AzureDevOps for test automation at the earliest possible juncture and commence efforts to automate at least the 2 primary regression test scripts.	Test Practice Validation	Issue	Medium	Open		D Macdonald

3.000	12/31/2019	Usage of open source JavaScript framework for development and ongoing maintenance of Calculator 3.0 requires BHA to take a proactive approach to support and security.	08/31/2020 - IV&V is unaware of any additional KT gaps being identified by DOH, and as such, is closing this finding. 07/31/2020 - The Project resolved the majority of the outstanding Calculator 3.0 defects during July which was implemented in the mid-sprint release on 7/17/2020. The final Calculator 3.0 Knowledge Transfer session was conducted on 7/17/2020. IV&V recommends BHA to identify and communicate any additional KT gaps to RSM during the month of August. If no additional needs are identified, IV&V will close this finding. 06/30/2020 - The project continued to focus attention on the Calculator 3.0 defects during the month of June. RSM conducted another Calculator 3.0 Knowledge Transfer session on 6/26/2020 and scheduled a final session for 7/17/2020. 05/31/2020 - The project continued to focus attention on the Calculator 3.0	IV&V learned in December 2019 that the Calculator 3.0 functionality is built in Vue.JS, an open source JavaScript framework. As this framework is relatively new, the open source support community is small. IV&V's concerns include: - The availability of reliable support for Vue.JS - The project's understanding of any known vulnerabilities with Vue.JS, and development of a process to remain current on vulnerabilities discovered by the support community. - The RSM lead for Calculator 3.0 went on extended parental leave in December 2019 IV&V acknowledges that BHA has downloaded Vue.JS to start getting familiar with it.	Open source tools and frameworks offer organizations great opportunities to build and configure customized solutions at lower costs than through software purchase or licensing. However, open source tools and frameworks often do not come with support models, other than those offered through the tool's community. Because of this, the organization bears the weight of seeking out reliable help and support, as well as much take a proactive approach to security and identifying any vulnerabilities in the tools.	IV&V recommends BHA work to establish a reliable and repeatable process for keeping abreast of communal updates and support opportunities for a new suite of tools - Completed IV&V recommends BHA continue to hold targeted KT sessions with RSM on maintaining Calculator 3.0 via a suite of tools, and determine what additional skillsets, training, and/or resources are needed to support BHA's long-term ownership of Calculator 3.0 - Completed	Targeted KT	Risk	Low	Closed	RSM has successfully held several KT sessions for this technology and functionality, and DOH staff have stated that it was well received.	D Macdonald
5.000	1/31/2020	Due to the project not following a detailed deployment script, the project may continue to experience defects related to deployment activities.	08/31/2020 - With the assistance of RSM, the Team completed an M&O Mid Sprint production deployment on 8/21/2020. It was discovered afterwards that an updated software plug was mistakenly not deployed in the production environment. The updated plug had been deployed in DEV but was not deployed in DEV2. Environment differences continue to be a concern. To address this, the Project has just completed a Microsoft Solutions upgrade to the DEV and Test environments. 07/31/2020 - With the assistance of RSM, the Team completed an M&O mid-sprint production deployment on 7/17/2020 which consisted largely of ISP Cloning and Calculator 3.0 functionality. While the targeted functionality is performing well, a few deployment challenges were observed before and after deployment. A single test environment is still not available for staff to test all functionality of all releases. After deployment, CAMHD staff discovered that unfinished code	There have been several defects pushed to production with Phase 3 releases. Some of the defects introduced to production have been narrowed down to environmental promotional activities. In these instances, the DEV and TEST environments were not in sync with the production environment (missing business rules, missing components, missing dependencies, etc.). IVV is aware that DOH staff shadowed RSM staff for all deployment releases during Phase 2 with RSM providing instruction and DOH staff physically executing the tasks and activities via keyboard. For Phase 3, it is unclear whether a complete, up to date, and documented deployment script, or deployment notes, are being utilized by BHA for deployment activities.	A complete, up to date, and documented deployment script is needed to ensure the repeatability and stability of DOH's production deployments. Since there are currently two deployment types (patches and full solution upgrades), two scripts may be warranted. An embedded process and documented script will help ensure that mistakes are minimized, and that functionality is not mistakenly deprecated when deployments take place.	IVV recommends performing a Root Cause Analysis in collaboration with RSM for the continued concerns surrounding environment differences. IVV recommends documenting deployment scripts for both the patch method and the full solution upgrade method. The script(s) should be in the form of a step-by-step procedure that walks through from start to finish of the deployment process, and involve several technical staff to ensure staff availability to accomplish these tasks when primary deployment personnel are unavailable - Completed Standardize the content of all developer deployment task notes, with a goal of eliminating any potential ambiguity to the Deployment Team, resulting in a cleaner and more repeatable set of deployment processes and instructions - Completed As appropriate, consult with RSM on best practices that BHA could employ to support deployment - In Progress Allow for complete functionality testing in pre-production environments before deploying code to production - In Progress Request the assistance of the RSM Solution Architect in reviewing and correcting issues associated with consistency of the configurations	Release / Deployment Planning	Risk	Medium	Open		D Macdonald

6.000	1/31/2020	The project lacks a documented 'Definition of Done", which could challenge the project's ability to fully achieve the goals of Phase 3.	02/29/2020 - The project created and documented the Phase 3 Definition of Done and socialized it in February. IV&V recommends the project continually review and update the Definition of Done, adjusting as/if necessary. IV&V will continue to monitor the project's adherence to Definition of Done and progress against it but is closing out this concern as of the February report.	BHA does not have a documented 'Definition of Done' (DOD) for the BHA Top 100 User Stories of for Phase 3. Because of this, it is unclear how proposed functionality/features are prioritized for each sprint, and throughout Phase 3.	The 'Definition of Done" document guides the Project's vision, business, and technical goals that are important inputs for stakeholders to develop a Roadmap for Phase 3. Without the 'Definition of Done' document, the project is likely to struggle to prioritize proposed functionality/features which may be equally important but are at odds with each other.	Project is currently in the process of creating the Definition of Done. IV&V recommends that the project create this document and socialize this with project team before end of Feb 2020 IV&V recommends that the project consider the items from the prioritized list, available resources and define "Done" as a percentage of the identified priority list with room for flexibility to add any other features/enhancements that will be identified during Phase 3.	Project Management	Concern	N/A	Closed	Definition of Done completed and socialized.	V Ramesh
7.000	1/31/2020	The lack of consistent backlog grooming could result in the project backlog having obsolete, non-estimated, and poorly defined user stories.	06/30/2020 - IV&V has observed for another month that the project continues to groom the backlog. As a result, we are closing this finding. 05/31/2020 - The project team has determined the backlog grooming effort has caught up, as details for release 3.9 are completed and 3.10 is near completion. IV&V will keep this finding open for an additional month to validate that the backlog continues to be groomed as new stories and defects are identified. Efforts to keep the backlog groomed should take place each month so that release planning efforts are not delayed. 04/30/2020 - The project reported that 97% of the original backlog has been estimated at this time. That said, CAMHD has determined that there are several older, and possibly no longer necessary user stories in the backlog that are candidates for deletion. IV&V will keep this finding open and will re-assess it for impact during the month of May.	The backlog of defects, requests, and user stories continues to grow. Currently, there are approximately 429 defects and requests, of which almost 200 have a status of 'New'. IVV notes that a large percentage of the backlogged work items do not have user story points estimated. Many of the items listed in the backlog are old, and some may have had needs or requirements change over time or may now be obsolete. IV&V notes that DDD and CAMHD have initiated this effort and agreed to prioritize grooming the backlog by the end of February.	A comprehensive, up-to-date backlog is a primary tenet of agile software development. If a backlog is carrying work items that may not ever be completed for any reason, they should be removed from the backlog to ensure its viability.	IVV recommends that CAMHD and DDD groom the backlog to bring it as current and accurate as possible. This should include deprecating items no longer needed, and fully defining those items that are not yet fully defined, readying them for configuration or developer resources. To the extent feasible, BHA should involve RSM SMEs in this process, if only for the interim to get "caught up" on grooming efforts. (Closed) VV recommends that the project consider utilizing an age-based methodology for the deprecation of 'older' user stories in the backlog that may no longer be applicable or needed by the Product Owners and developing a process for periodic cleansing of the backlog using the same methodology. (Closed)	Project Management	Risk	Low	Closed	The project has demonstrated they are consistently grooming the backlog.	D Macdonald

8.000	1/31/2020	The BHA Technical Team bandwidth may not be sufficient to meet the needs of the project, which could compromise project productivity.	08/31/2020 - There were no substantive changes to this finding during August. IVV will continue to monitor. 07/31/2020 - For Release 3.10, BHA continues to rely on the RSM Technical Team for Solution Architect and Technical Team support. While this is clearly a positive move to increase bandwidth of the BHA Technical Architect and team for the short term, the volume of work for this team continues to exceed existing capacity and may be contributing to ongoing deployment and code promotion issues. IV&V is raising the rating for this risk from low to medium and will continue to monitor this finding for the month of August. 06/30/2020 - No change during this reporting period. Release 3.10 is being managed by RSM as a water-scrum-fall release, which is helping to limit the impact of minimal bandwidth for the DOH Solution Architect. IV&V will	The BHA Technical Team plays a role that is critical to project success. Currently, the responsibilities associated with the BHA Technical Team have expanded beyond their collective available bandwidth. IV&V notes that BHA began addressing this bandwidth issue, which includes increased collaboration with key RSM resources, and are working to potentially change the structure of the Technical Team.	The BHA Technical Team leads the efforts of all technical DOH staff on the project. As such, the Team's time is both extremely valuable and scarce. If the Team's expected workload exceeds bandwidth, the project could experience bottlenecks. Optimization of the BHA Technical Team's time is to the benefit of the project and plays a critical role in the project's ability to hit performance targets and achieve the Phase 3 definition of done.	IVV recommends the Project investigate mechanisms of increasing the bandwidth of the Solution Architect, either by bringing in additional resources through new hires, or through existing vendor contracts. Additionally, the project should assess, where possible, if there are responsibilities of the Solution Architect that can be reassigned to other project staff. Further, the Project should evaluate where process inefficiencies can be addressed and streamlined to possibly free up the Solution Architect's availability.	Sprint Planning	Risk	Med	Open		D Macdonald
9.000	1/31/2020	The lack of a Product Roadmap that provides direction on the top product features to be delivered in the near term (next 3 months), midterm, and long term could have an adverse impact on the Project's scope and schedule.	02/29/2020 - In February, the project further defined the Phase 3 Product Roadmap and aligned it with the Phase 3 Definition of Done. IV&V recommends the project continually review and update both the Product Roadmap and Definition of Done, adjusting as necessary. IV&V will continue to monitor the project's adherence to the Product Roadmap and progress against it but is closing out this concern as of the February	BHA does not have a single, definitive Product Roadmap for Phase 3 that addresses the functionalities, features, and / or enhancements to be built in order to fully address BHA's business needs. IV&V met with RSM and BHA on this topic in January, and notes that the project is actively working to address this concern.	A Roadmap is a tool that guides an agile project on what functionalities/features are targeted to be built and released and when users can have access to these functionalities. Without a defined Roadmap the project may not be able to effectively scope the top features to be released within Phase 3 and ensure the correct resources are available to accomplish the goal of each sprint and the Phase.	IV&V understands that the Project is in the process of creating a Short Term; Mid Term, and Long Term Roadmap. IV&V recommends the Project complete this by the end of February 2020 to understand if there are any constraints (resources, budget) that may hinder the project from releasing the needed functionalities/features targeted for Phase 3 as documented in the Definition of Done.	Project Management	Concern	N/A	Closed	Product Roadmap aligned with Definition of Done	V Ramesh

10.000	3/31/2020	The COVID-19 pandemic and the related "stay at home" order could hinder project activities and negatively impact the project schedule and budget.	08/31/2020 - On 8/25/2020, the new Stay At Home / Work From Home order for Oahu was issued due to the ongoing Coronavirus Pandemic challenges. The initial order is for 2 weeks, starting on 8/27/2020. IV&V notes that the project continues to move forward with staff working remotely. IV&V notes there may be potential budget actions by the Governor which may affect the project. 07/31/2020 - The project continues to move forward with staff working remotely. While completed user story points came short of planned expectations for Iteration 1 of R3.10, it is expected that pace will pick back up for Iterations 2 and 3. IV&V will continue to monitor in August. 06/30/2020 - The State's 'Safer at Home' orders ended on June 30th. IV&V notes that although staff are still remote, the project has continued to manage meeting monthly release schedules. As such, IV&V is reducing this risk to a Medium priority.	On 3/23/2020, the Governor issued a "stay at home, work from home order" that has reduced state departments ability to be fully functional as the large majority of state workers will be required to work from home/remotely at least until the end of April and some offices may be completely shut down until that time as well. Unclear if the order will extend beyond that date.	DOH stakeholder participation in key activities could be significantly hindered, not only by required remote work by DOH and SI staff, but also by the flood of activities that could occur as the department could become overwhelmed processing and providing services due to the resulting economic impacts to citizens. Some stakeholders may be unable (due to stricter shutdown policies) or unwilling to perform these activities during this chaotic time. Planned SI on-site visits will also likely be changed to remote which could reduce the effectiveness of their project activities. Going forward most if not all project activities will more than likely be conducted remotely until this crisis passes.	- IV&V recommends BHA to ramp up efforts to setup, train, and assist stakeholders on remote work devices and tools and make every effort to help them to become highly functional with remote access technology (e.g. MS Teams/Skype) - Completed - IV&V recommends the project and DOH create a detailed, documented risk mitigation strategy and plan that is reviewed regularly and revised to address the current state of the COVID-19 threat and related impacts over the next 6 to 12 months - In Progress - IV&V recommends updates to the OCM Plan to include any new activities or updates to planned activities to aid the organization through this COVID-19 situation in the short and long term - Open	Project Management	Risk	Medium	Open		Darren
11.000	5/31/2020	The lack of design reviews for complex user stories has resulted in the promotion of incomplete solutions into production.	07/31/2020 - The Project continues to to spend additional time on the designs of complex user stories during June to ensure requirements and user story components were fully captured in design sessions. This process change has proven successful, and as such, IV&V recommends closing this concern. 06/30/2020 - IV&V acknowledges the Project Team continued to spend additional time on the designs of complex user stories during June to ensure requirements and user story components were fully captured in design sessions. IV&V will continue to	There were a couple incidents during May where the code promoted to production did not fully meet all requirements of associated user stories for CAMHD Progress Notes. The components that were developed and implemented were functional, however the effort was complicated by additional requirements being added during development that necessitated additional changes to the design. IV&V will continue to monitor the design review activity for large user stories moving forward	If all requirements within a functional design are not met, users could experience the inability to complete required processes, resulting in incomplete data collection and potential issues in service delivery.	IV&V recommends (and DOH has commenced) conducting technical design reviews for complex user stories prior to development to ensure designs are complete and all requirements associated with the design are met. IV&V observed this activity has been implemented by DOH in the month of May.		Concern		Closed	This process change to spend extra time on the design of complex user stories to ensure that all requirements are represented has proven to be successful.	
12.000	7/31/2020	DDD Project staffing shortages may have a continued negative effect on user adoption, training, overall OCM activities.	8/31/2020 - DDD has drafted a plan to identify their priority resource needs and options for filling those needs. The plan includes resource for a variety of disciplines beyond OCM such as Training, Report Writing, Help Desk and deployment work to support the current application as well as staffing needs for future system application functionality.	The user adoption and training efforts are hampered based on staffing shortages. DDD has stated that its users have been found to not be utilizing the system to its fullest extent in terms of system workflow, provide their insights and input, follow up, etc. DDD has defined the need for a full time resource to coordinate these activities, however the planned position was cut due to budget shortfalls.	The significance and impact of OCM can never be understated. It is clearly a best practice that best that all staff utilize the solution in the same manner. Variations in how the system is utilized by its users is likely to cause variations in data collection and analytical efforts using the data collected.	IV&V recommends that DOH pursue the addition of an OCM resource(s) to re-enforce and manage the effect of new business processes on staff members and who would facilitate with user adoption and training on the system to ensure it is being utilized as intended - In Progress Develop a plan to identify, prioritize, and track DDD resource needs which need to be filled - In Progress		Concern				

13.000	8/31/2020	PII/PHI data in non-production environments		IV&V has been made aware that PII/PHI data currently exist in a non-production environment to meet project needs. Generally this is not a good security practice as the presence of PII/PHI data in non-production environments increases the potential for theft, loss or exposure thus increasing the organization's risk. Failure to secure PII/PHI data leaves the organization open to highly targeted social engineering attacks, heavy regulatory fines, and loss of client trust and loyalty.	Failure to secure PII/PHI data leaves the organization open to highly targeted social engineering attacks, heavy regulatory fines, and loss of client trust and loyalty.	IV&V recommends if production data is necessary in any non-production environment that DOH establishes a plan for effectively managing the security of the PII/PHI data, including the potential masking of data - New IV&V recommends if production data is necessary in non-production environments that the Project consider employing Audit Logging for security purposes - New	Project Management	Concern				
14.000	8/31/2020	Project not able to access Activity Logs		The Project recently deployed audit log functionality into production whereby these logs can be accessed and exported as needed. However, IV&V was made aware access to activity logging for users with just view permissions will not be available from Microsoft in the public sector environment until the end of September 2020. The unavailability of these specific activity logs could potentially hamper the investigation of future security events until implemented.	The unavailability of activity logs may hamper the investigation of future security breaches.	IV&V recommends that DHS continues to collaborate with Microsoft until the activity logging feature is available in the public sector environment.		Concern				