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March 12, 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 (Mar 12, 2020)

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
February 1 – February 29, 2020*

Final submitted: March 12, 2020

Agenda

Executive Summary

IV&V Findings & Recommendations

Appendices

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



Executive Summary

The project successfully pushed Release 3.5 into production in February, despite facing deployment-related problems, as well as issues caused by Microsoft defects. The project employed function-based testing in lieu of regression testing, as automated regression testing is not yet available for the project. Going forward, the project plans to employ different pre-deployment testing approaches for CAMHD and DDD and continues to pursue automated regression testing.

The project made progress in February by further defining “Done” and building out the Product Roadmap. Both are positive steps to better understand the project’s progress and fulfillment of the goals of Phase 3. Despite this progress, the project did not fully complete the backlog grooming effort. It is IV&V’s understanding that there may still be an opportunity to get additional support from RSM on this effort.

As reported in January, the project was planning to increase the involvement of key RSM resources to help BHA with certain problem areas, including architecture, backlog management, and deployment activities. It is IV&V’s understanding that while RSM increased their presence in February, much of that time was focused on Phase 3 and Phase 4 planning.

Dec	Jan	Feb	Category	IV&V Observations
G	Y	G	Sprint Planning	IV&V reduced the rating of the Sprint Planning category to Green (low) for the February reporting period, maintaining one active finding in the category. The BHA Technical Team continued to face bandwidth challenges during this period and as a result, opportunities to obtain additional RSM support in the areas of solution design, testing, and grooming the backlog were discussed.
G	G	G	User Story (US) Validation	IV&V continues to rate the User Story (US) Validation category at a Green (low) for the February reporting period and has no active findings in this category. IV&V continues to work with the project to understand the US development and validation process and will continue to monitor RSM’s increased involvement in this category in the future.



Executive Summary

Dec	Jan	Feb	Category	IV&V Observations
G	Y	Y	Test Practice Validation	IV&V continues to rate the Test Practice Validation category at Yellow (medium) for the February reporting period, maintaining one active finding. Pre-deployment function-based testing occurred prior to pushing the 3.5 release to production, which served as a “modified” regression testing of sorts. Going forward, CAMHD and DDD plan to employ different approaches to pre-deployment testing, which IV&V will monitor.
G	G	Y	Release / Deployment Planning	IV&V has escalated the rating of the Release / Deployment Planning category to Yellow (medium). Again in February, issues related to deployment activities were noted. Root cause is suspected to lie in inconsistencies in the deployment task notes component of the deployment checklists. BHA agrees that determining a process to increase the consistency and details of the deployment notes is needed. Additionally, BHA continued to experience problems with Microsoft in terms of the level, and quality of customer service and communication. IV&V notes that several problems caused by Microsoft were experienced with release 3.5.
G	G	G	OJT and KT Sessions	IV&V continues to rate the OJT and KT Sessions category at Green (low) for the February reporting period and has no active findings in this category. In late February, RSM SME’s held a Solution Architecture focused “Masters Class” for select BHA resources which was received very positively by BHA. Additionally, RSM will be putting together a skills matrix for BHA to help identify strengths, gaps, and training needs specific to long-term maintenance and support of the solution.
G	G	G	Targeted KT	IV&V continues to rate the Targeted KT category at Green (low) for the February reporting period and maintains one active concern in this category. Specific to Calculator 3.0 knowledge transfer, IV&V is not aware of any additional sessions held in February but notes that additional RSM SMEs are likely to get involved in the coming months. IV&V will continue to follow up on this in March and will attend sessions held.



Executive Summary

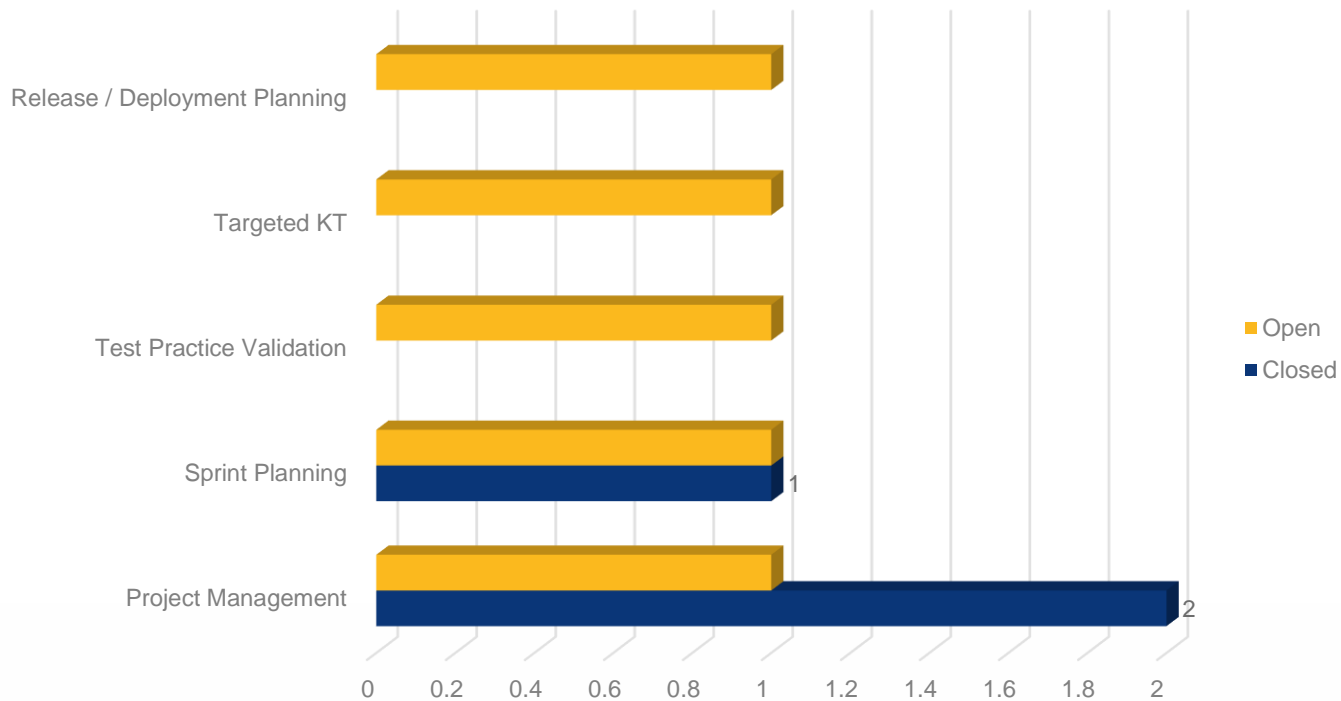
Dec	Jan	Feb	Category	IV&V Observations
G	G	G	Project Performance Metrics	IV&V continues to rate the Project Performance Metrics category Green (low) for the February reporting period. The project continues to meet velocity expectations and with a more defined Product Roadmap and Definition of Done, the project is more capable to understand and measure progress towards achieving the desired scope of Phase 3. IV&V will continue to explore the project's defect management process in March in order to better understand how defects are tied to a release or event.
G	G	G	Organizational Maturity Assessment	IV&V continues to rate the Organization Maturity Assessment at Green (low) for the February reporting period. As this category is reported on bi-monthly, the next detailed update will be provided in the March 2020 report.
-	G	G	Project Management	IV&V continues to rate the Project Management category at Green (low) for the February reporting period and maintains one active concern in the category. IV&V closed concerns related to Definition of Done and the Product Roadmap as notable progress was made and socialized by the project. Now, with a better Definition of Done and a more detailed Product Roadmap, the project is positioned to understand and track Phase 3 success. IV&V notes that while progress was made to groom the product backlog, additional work is needed, which may include greater involvement and/or advisory services from RSM.



Executive Summary

As of the February 2020 reporting period, IV&V has two (2) open preliminary concerns, one Medium Issue, one Medium Risk, and one Low Risk spread across the Sprint Planning, Release / Deployment Planning, Test Practice Validation, Targeted Knowledge Transfer, and Project Management assessment areas.

IV&V Findings by Status



The background is a solid blue color with several decorative elements. There are several light blue rounded rectangles of various sizes scattered across the page. Some of these rectangles have a thin white outline, while others are solid light blue. The overall aesthetic is clean and modern.

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 Management
- Project Performance Metrics
- Organizational Maturity Assessment



IV&V Findings & Recommendations

Sprint Planning


#	Key Findings	Criticality Rating
8	<p>Low Risk – The BHA Technical Team bandwidth may not be sufficient to meet the needs of the project, which could compromise project productivity. IV&V observed the BHA Technical Team continues to experience a lack of bandwidth. Moving forward, the project has discussed ramping up additional RSM resources to assist the Technical Team with their tasks and activities, as well as continued knowledge transfer. IV&V will continue to monitor this finding as more details are made available. IV&V maintains this is a low risk to the project, as of the February reporting period.</p>	

Recommendations	Status
<ul style="list-style-type: none"> The Project should investigate mechanisms of increasing the bandwidth of the BHA Technical Team, either by adding resources through new hires, or existing vendor contracts. 	In progress
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> The Project should evaluate where process inefficiencies can be addressed and streamlined to possibly free up the BHA Technical Team’s availability. 	In progress



IV&V Findings & Recommendations

Test Practice Validation

#	Key Findings	Criticality Rating
2	<p>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. Release 3.5 was promoted to production during February. In lieu of full industry standard regression testing, the deployment team performed testing by major function in the SIT2 and UAT environments after the 3.5 patch was applied, prior to the Production promotion. With automated regression testing not yet being available to the team, IV&V notes that this is the same ‘interim pre-deployment testing process’ that the Deployment Team has been used since release 3.1. This approach proved successful for release 3.5. Going forward, DDD and CAMHD plan to take different approaches. DDD prefers regression testing to consist of a subset of the end to end processes, starting after Case Creation and continuing to the point where Service Authorizations are sent to Conduent. CAMHD prefers regression testing to consist of function-based testing, focusing on the highest risk functional areas affected by a particular release. The team will work to insert these interim processes into the Project’s activities going forward. IVV is encouraged by the steps being taken by BHA and believes this is a good interim approach to addressing the current regression testing issues. IV&V will continue to monitor in the March reporting period to verify this approach is still effective with release 3.6.</p> <p>IV&V has reduced this issue to a Medium rating due to the success of this approach observed in February. IV&V will, however, continue to monitor the project’s ‘interim’ regression testing process, as well as the project’s progress towards starting automated regression testing.</p>	

IV&V Findings & Recommendations


Test Practice Validation (cont'd)

Recommendations	Status
<p>To address regression testing, the Project should continue to pursue and/or consider:</p> <ol style="list-style-type: none">1. Updating the regression test scripts to ensure consistency with system configuration.2. Modifying release schedules to allow for regression testing timeframes3. Grouping releases by functionality type to avoid unnecessary repetitive work being performed in any given section of the solution.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.5. Modifying regression test scripts to start AFTER case creation, limiting the time it takes to execute.6. Potentially modifying the deployment scripts based on information gained from any or all of the steps listed above.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.8. Consult 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.	In Progress



IV&V Findings & Recommendations

Release / Deployment Planning

#	Key Findings	Criticality Rating
5	<p>Escalated to Medium Risk - Due to the project not following a detailed deployment script, the project may continue to experience defects related to deployment activities. 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, BHA uses a base deployment script, which is further modified by developer 'Deployment Task Notes' in AzureDevOps. These notes are not always consistently written and could potentially be the root cause of these anomalies when being compiled for a release.</p> <p>A complete, up to date, and documented deployment script inclusive of standardized developer deployment task notes 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), use of two scripts and the respective developer deployment task notes 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.</p>	

IV&V Findings & Recommendations

Release / Deployment Planning

Recommendations	Status
<ul style="list-style-type: none">• 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.	Not started
<ul style="list-style-type: none">• 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.	<i>New</i>
<ul style="list-style-type: none">• As appropriate, consult with RSM on best practices that BHA could employ to support deployment.	In Progress



IV&V Findings & Recommendations

Targeted KT

#	Key Findings	Criticality Rating
3	<p>Preliminary Concern – 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.</p> <p>There is no substantive change to this finding in the February reporting period, as the project focused its attention for the month to Calculator 3.0 User Stories and bug fixes, as opposed to Knowledge Transfer. IV&V is unaware if the next KT session for Calculator 3.0 having been scheduled. IV&V learned that the original RSM lead on Calculator 3.0 will be returning to work in April and is expected to resume her role in knowledge transfer to BHA. Additionally, IV&V learned that a key RSM resource will be made available to BHA on a 50% basis March – May, which could lend additional support to the project in key areas such as sprint planning, US validation, solution architecture, and release planning.</p>	N/A

Recommendations	Status
<ul style="list-style-type: none">IV&V recommends BHA work to establish a reliable and repeatable process for keeping abreast of communal updates and support opportunities for the Vue.JS framework.	Open
<ul style="list-style-type: none">IV&V recommends BHA continue to hold targeted KT sessions with RSM on maintaining Calculator 3.0 via a suite of tools including Vue.JS, and determine what additional skillsets, training, and/or resources are needed to support BHA’s long-term ownership of Calculator 3.0.	In progress



IV&V Findings & Recommendations

Project Management

#	Key Findings	Criticality Rating
6	Closed Preliminary Concern - The project lacks a documented 'Definition of Done', which could challenge the project's ability to fully achieve the goals of Phase 3. 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.	<i>Closed</i>

Recommendations	Status
<ul style="list-style-type: none"> 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. 	Complete
<ul style="list-style-type: none"> 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. 	Complete



IV&V Findings & Recommendations

Project Management (cont'd.)

#	Key Findings	Criticality Rating
7	<p>Preliminary Concern - The lack of consistent backlog grooming could result in the project backlog having obsolete, non-estimated, and poorly defined user stories. IVV validates that the backlog grooming effort is still in progress. The project anticipates the grooming process should be completed by March 16. It is still anticipated that RSM resources could support BHA in this effort to some degree. IV&V will continue to track this concern in order to monitor progress made in March, including any changes that may be made to the current approach.</p>	N/A

Recommendations	Status
<ul style="list-style-type: none"> CAMHD and DDD should prioritize grooming the backlog to bring it as current and accurate as possible. This should include removing items no longer needed, and ensuring all items are 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. 	In Progress



IV&V Findings & Recommendations

Project Management (cont'd.)

#	Key Findings	Criticality Rating
9	<p><i>Closed Preliminary Concern</i> - 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. 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 report.</p>	<i>Closed</i>

Recommendations	Status
<ul style="list-style-type: none"> IV&V recommends the Project complete the short-term, mid-term, and long-term Roadmap by the end of February 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. 	Complete



IV&V Findings & Recommendations

Project Performance Metrics

Metric	Description	IV&V Observations	IV&V Updates
Velocity	<ul style="list-style-type: none"> 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 	<p>February - During Sprint Planning for Release 3.5, available velocity was calculated as 78 US Points (USP), out of which Calc 3.0 was estimated at 10 USP. This is consistent with the velocity planned for previous releases (70 to 78 USP).</p> <p>Release 3.5 was completed on 2/13/2020 with a total of 63 USP released to Production instead of the targeted 78 due to various issues encountered during deployment. It was reported that workflows were taking longer time to run, and that Individual Budgets were not kicking in right away and required a browser refresh. It was noted in the Release 3.5 Retrospective notes that the team felt the Thursday deployment / preparation seemed rushed due to other project priorities and discussions coming up and taking time away from the technical prep for deployment.</p> <p>The project pushed an off-cycle release on 02/20/2020 (5 bug fixes totaling 8 USP, and 1 User Story @ 2 USP). The following fixes were deployed:</p> <ul style="list-style-type: none"> Fixed the Progress Note creation form to default the Diagnosis field to the Primary Diagnosis on the Customer's Essential Health record" Fixed the missing fields on the Exception Review form Fixed the script error that was appearing upon changing the Service Rate field via on the Service Authorization record" 	<p>February – The project is in the process of estimating the User Stories in the Backlog. BHA resources are working in sequential order to estimate stories targeting those items tagged with 3.5, 3.6, 3.7, 3.8, etc.</p> <p>In the month of February, the project also refined the Roadmap and created a "Definition of Done". IV&V recommends that after completion of the estimation of Backlog stories, the project should look at the estimated User Stories and available resources to understand if the required resources/skillset are available to align development and releases as captured in the Roadmap.</p>



IV&V Findings & Recommendations

Project Performance Metrics (cont'd.)

Metric	Description	IV&V Observations	IV&V Updates
US Point Estimates vs Actuals	<ul style="list-style-type: none"> 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 	<p>February - The Project Scrum Master closely tracks the USP on a daily basis. IV&V has no concerns regarding this.</p>	<p>February – No new update Currently, estimates take into account the BHA time for code review, etc., however, the project is not getting the actuals from the BHA team and the PM does not have insights into the number of hours other BHA SME's contribute to the sprint/release. The project is discussing how best to capture BHA resource time to include in actuals and plans to begin tracking in the March/April timeframe.</p>



IV&V Findings & Recommendations

Project Performance Metrics (cont'd.)

Metric	Description	IV&V Observations	IV&V Updates
Defect Metrics	<ul style="list-style-type: none"> Understand and track the following: Defects by category (bug fixes) Average number of defects per release US Points assigned to defects in a release vs US Points assigned to planned US in a release 	<p>February – Release 3.5 resulted in (11) new issues introduced on the BHA side (i.e., there were additional issues caused directly by Microsoft that are not included in this write up). These BHA issues were resolved via a mid-sprint push.</p> <p>Release 3.5 was comprised of 63 User Story Points released to production.</p> <ul style="list-style-type: none"> 45 User Story Points (71% of the total) were associated with planned user stories 18 User Story Points (29% of the total) were associated with defects. <p>IVV notes that some of the “planned” items were production Bugs that were identified through previous releases and prioritized as part of the 3.5 backlog along with Requests that became User Stories.</p>	<p>February – After Release 3.5 was pushed to production in February, new issues were identified. In addition to Microsoft errors related to SharePoint and Flow, eleven (11) other issues were introduced on the BHA side. The BHA specific problem areas included ‘exception review, ‘Flow imports’, and ‘service script errors.’ These were resolved by BHA with a mid-sprint push. Because some limited regression testing was performed, root cause is suspected to be deployment script related.</p>



IV&V Findings & Recommendations

Organizational Maturity Assessment

Measure	IV&V Observations
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The Organizational Maturity Assessment is updated on a bi-monthly basis and will next be reported on in the March 2020 IV&V report.



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 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 February 2020 reporting period:

1. Daily Scrum meetings (selected)
2. Twice Weekly RSM Issues Meeting
3. Sprint Planning for Release 3.4
4. Weekly CCB Meeting
5. Weekly BHA-ITS Project Status Meeting
6. Weekly Change Planning for Dev
7. Phase 3 Deployment Planning Meeting
8. Bi-Weekly Check-in: CAMHD
9. Bi-Weekly Check-in: DDD
10. BHA IAPDU planning meeting
11. Regression testing meeting (BHA and DataHouse)
12. Reporting Metrics Discussion
13. Phase 4 Scoping Meeting
14. BHA Organizational Maturity working sessions

Eclipse IV&V® Base Standards and Checklists



Document

Artifacts reviewed during the February 2020 reporting period:

1. Daily Scrum Notes (selected)
2. Twice Weekly Issues Meeting Notes (selected)
3. Updated Mod 3 and Mod 4 timeline
4. IV&V Statement of Work and Schedule of Deliverables v1.5
5. Release Notes – R3.5 and Off-Cycle release



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	Sep
User Story Validation	N/A	Green	Yellow	Green						
Test Practice Validation	N/A	Green	Green	Green						
Sprint Planning	N/A	Green	Yellow	Yellow						
Release / Deployment Planning	N/A	Green	Green	Yellow						
OJT and KT Sessions	N/A	Green	Green	Green						
Targeted KT	N/A	Green	Green	Green						
Project Performance Metrics	N/A	Green	Green	Green						
Organizational Maturity Metrics	N/A	Green	Green	Green						
General Project Management	N/A	N/A	Green	Green						
Total Open Findings	N/A	3	7	5						
Issue - high	N/A	0	1	1						
Issue - medium	N/A	0	0	0						
Issue - low	N/A	0	0	0						
Risk - high	N/A	0	0	0						
Risk - medium	N/A	0	0	1						
Risk - low	N/A	0	1	1						
Preliminary Concern	N/A	3	5	2						





Solutions that Matter

ID	Identified Date	Summary	Observation	Significance	Recommendation	Updates	Process Area	Type	Priority	Status	Closure Reason	Iteration	Risk Owner
1	12/31/19	Detailed investigation into the project's sprint planning processes and adoption of generally accepted agile best practices.	<p>IV&V is currently investigating the following topics as they relate to Sprint Planning and the project's overall approach to agile software development:</p> <ul style="list-style-type: none"> - 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 <p>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.</p>	<p>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.</p>	<p>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.</p> <p>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.</p>	<p>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.</p>	Sprint Planning	Concern	N/A	Closed	Due to multiple new items being tracked at a more granular level, this item has been closed.	General	V Ramesh
2	12/31/19	As a result of regression testing not being consistently performed, production releases are both breaking and deprecating existing functionality in the production environment.	<p>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.</p>	<p>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.</p>	<p>To address regression testing, the Project should continue to pursue and/or consider:</p> <ol style="list-style-type: none"> 1. Updating the regression test scripts to ensure consistency with system configuration. 2. Modifying release schedules to allow for regression testing timeframes 3. Grouping releases by functionality type to avoid unnecessary repetitive work being performed in any given section of the solution. 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. 5. Modifying regression test scripts to start AFTER case creation, limiting the time it takes to execute. 6. Potentially modifying the deployment scripts based on information gained from any or all of the steps listed above. 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. 8. Consult 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. 	<p>02/29/2020 - Release 3.5 was promoted to production during February. In lieu of full industry standard regression testing, the deployment team performed testing by major function in the SIT2 and UAT environments after the 3.5 patch was applied, prior to the Production promotion. With automated regression testing not yet being available to the team, IV&V notes that this is the same 'interim pre-deployment testing process' that the Deployment Team has been used since release 3.1. This approach proved successful for release 3.5.</p> <p>Going forward, DDD and CAMHD plan to take different approaches. DDD prefers regression testing to consist of a subset of the end to end processes, starting after Case Creation and continuing to the point where Service Authorizations are sent to Conduent. CAMHD prefers regression testing to consist of function-based testing, focusing on the highest risk functional areas affected by a particular release. The team will work to insert these interim processes into the Project's activities going forward. IVV is encouraged by the steps being taken by BHA and believes this is a good interim approach to addressing the current regression testing issues. IV&V will continue to monitor in the March reporting period to verify this approach is still effective with release 3.6.</p> <p>IV&V has reduced this issue to a Medium rating due to the success of this approach observed in February. IV&V will, however, continue to monitor the project's 'interim' regression testing process, as well as the project's progress towards starting automated regression testing.</p> <p>01/31/2020 - IVV validates that there have been several incidents of defects being introduced into production in three of the four Phase 3 releases to date, as well as in a mid-sprint production push for defect resolution. IVV has also validated that Regression Test scripts have not been fully executed since Phase 2. While most of the defects had negligible effect on production users, the issue related to the Integrated Support Worksheet did have business impact to DDD users, due to the production push missing a business rule. Per CAMHD, the regression test scripts take several days to execute. However since the collaborative testing approach was introduced in Phase 2, the time needed for full regression testing has not been permitted in the sprint schedule. Other contributing factors could be due to the fact that the TEST environment had been behind on patches (which was addressed during January 2020). IVV notes the regression test scripts are not up to date due to the changes made since Phase 2. While root cause is not yet identified, the project is evaluating several options to ensure this issue does not re-occur. IV&V notes that BHA began investigating the opportunity to implement an automated testing suite and is hopeful that this could become a reality in the coming months. To address regression testing, the Project should continue to pursue and/or consider:</p> <ol style="list-style-type: none"> 1. Updating the regression test scripts to ensure consistency with system configuration 	Test Practice Validation	Issue	Med	Open		General	D Macdonald
3	12/31/19	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.	<p>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:</p> <ul style="list-style-type: none"> - 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 <p>IV&V acknowledges that BHA has downloaded Vue.JS to start getting familiar with it.</p>	<p>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.</p>	<p>IV&V recommends BHA research and determine the long-term sustainability of Vue.JS for Calculator 3.0 and work to establish a reliable and repeatable process for keeping abreast of communal updates and support opportunities. Additionally, IV&V recommends BHA continue to hold targeted KT sessions with RSM on maintaining Calculator 3.0 using Vue.JS, and determine what additional skillsets, training, and/or resources are needed to support BHA's long-term ownership of Calculator 3.0.</p>	<p>02/29/2020 - There is no substantive change to this finding in the February reporting period, as the project focused its attention for the month to Calculator 3.0 User Stories and bug fixes, as opposed to Knowledge Transfer. IV&V is unaware if the next KT session for Calculator 3.0 having been scheduled. IV&V learned that the original RSM lead on Calculator 3.0 will be returning to work in April and is expected to resume her role in knowledge transfer to BHA. Additionally, IV&V learned that a key RSM resource will be made available to BHA on a 50% basis March - May, which could lend additional support to the project in key areas such as sprint planning, US validation, solution architecture, and release planning.</p> <p>1/31/2020 - IVV attended a Knowledge Transfer session on the Calculator 3.0 application in late January. Discussion topics included code review, managing code branches, updating web resources, and known defects. The session was technical in nature and aimed specifically at a developer audience. DOH had three (3) developers in attendance and all in attendance appeared to grasp the concepts presented. The SI indicated that there will need to be 'several' more KT sessions on the Calculator 3.0 application in Vue.JS. It remains unclear at this juncture whether BHA has the capacity (resources, bandwidth, skillsets) to maintain the tool, which will be a determined through the execution of the KT sessions.</p>	Targeted KT	Concern	N/A	Open		General	D Macdonald

FINAL BHA IVV Findings Log - February 2020 Reporting Period

ID	Identified Date	Summary	Observation	Significance	Recommendation	Updates	Process Area	Type	Priority	Status	Closure Reason	Iteration	Risk Owner
5	01/31/20	Due to the project not following a detailed deployment script, the project may continue to experience defects related to deployment activities.	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 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. 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.	02/29/2020 - 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, BHA uses a base deployment script, which is further modified by developer 'Deployment Task Notes' in AzureDevOps. These notes are not always consistently written and could potentially be the root cause of these anomalies when being compiled for a release. A complete, up to date, and documented deployment script inclusive of standardized developer deployment task notes 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), use of two scripts and the respective	Release / Deployment Planning	Risk	Med	Open		General	D Macdonald
6	01/31/20	The project lacks a documented 'Definition of Done', which could challenge the project's ability to fully achieve the goals of Phase 3.	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.	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.	Project Management	Concern	N/A	Closed	Definition of Done completed and socialized.	General	V Ramesh
7	01/31/20	The lack of consistent backlog grooming could result in the project backlog having obsolete, non-estimated, and poorly defined user stories.	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.	02/28/2020 - IVV validates that the backlog grooming effort is still in progress. The project anticipates the grooming process should be completed by March 16. It is still anticipated that RSM resources could support BHA in this effort to some degree. IV&V will continue to track this concern in order to monitor progress made in March, including any changes that may be made to the current approach. 1/31/2020 - IVV is aware that the RSM Solution Architect is being made more available than typical in February and possibly March, and that BHA is looking to take advantage of his skills and experience to assist in user story point estimations and design criteria. This should help ensure that needed items in the backlog can actually be acted upon when developer resources are available to execute.	Project Management	Concern	N/A	Open		General	D Macdonald
8	01/31/20	The BHA Technical Team bandwidth may not be sufficient to meet the needs of the project, which could compromise project productivity.	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.	02/28/2020 - IV&V observed the BHA Technical Team continues to experience a lack of bandwidth. Moving forward, the project has discussed ramping up additional RSM resources to assist the Technical Team with their tasks and activities, as well as continued knowledge transfer. IV&V will continue to monitor this finding as more details are made available.	Sprint Planning	Risk	Low	Open		General	D Macdonald
9	01/31/20	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.	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.	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 report.	Project Management	Concern	N/A	Closed	Product Roadmap aligned with Definition of Done	General	V Ramesh