November 16, 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  
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
October 1 – October 31, 2020

Final submitted: November 9, 2020
Agenda

Executive Summary
IV&V Findings & Recommendations

Appendices

• A – Rating Scales
• B – Inputs
• C – Project Trends
Executive Summary

The Project Team deployed the Help Desk functionality into production in October. In addition, they successfully conducted Revenue Neutrality, System Integration, User Acceptance, Performance, and Regression Testing as well as End-User Training for Release 3.10 in support of the production promotion planned in early November.

The RSM Team continued to provide essential support during October, 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 has made good progress to address the quality concerns raised by IV&V in the previous reporting period by successfully completing comprehensive pre-production testing and revising submitted design documents to increase the level of detail and improve upon the quality of these deliverables.

<table>
<thead>
<tr>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Category</th>
<th>IV&amp;V Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>G</td>
<td>Y</td>
<td>Sprint Planning</td>
<td>There were no substantive changes for this category which remains Yellow (medium criticality) for the October reporting period. The BHA Technical Team’s bandwidth is still a concern and the need for BHA to continue to pursue skilled technical MS Dynamics resources to permanently fill their technical support needs and increased volume of work is still recommended. IV&amp;V will continue to monitor this risk moving forward.</td>
</tr>
<tr>
<td>G</td>
<td>G</td>
<td>G</td>
<td>User Story (US) Validation</td>
<td>IV&amp;V reports no active findings for User Story (US) Validation category which remains Green (low criticality) for the October reporting period. IV&amp;V will continue to monitor the US development and validation process in upcoming reporting periods.</td>
</tr>
<tr>
<td>G</td>
<td>Y</td>
<td>Y</td>
<td>Test Practice Validation</td>
<td>The project successfully completed regression testing for R3.10 in October and has demonstrated their commitment to continue this testing in future releases. The criticality rating for this category remains a Yellow (medium) for the October reporting period. IV&amp;V will continue to monitor this issue for upcoming releases.</td>
</tr>
</tbody>
</table>
### Executive Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>IV&amp;V Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Release / Deployment Planning</strong></td>
<td>The criticality rating for this category remains Yellow (medium) for the October reporting period. The Project Team has collaborated to develop a detailed Production Deployment Guide for R3.10 and is in the process of rehearsing some of the primary activities to help ensure a smooth production release in early November. IV&amp;V will continue to monitor this finding in November.</td>
</tr>
<tr>
<td><strong>OJT and KT Sessions</strong></td>
<td>The criticality rating for the OJT and KT Sessions category remains Green (low) for the October reporting period with no active findings.</td>
</tr>
<tr>
<td><strong>Targeted KT</strong></td>
<td>The Targeted KT criticality rating remains Green (low) for the October reporting period. BHA intends to obtain Semantics Reporting and IDM tools knowledge transfer sessions from RSM. IV&amp;V will continue to monitor this need moving forward.</td>
</tr>
<tr>
<td><strong>Project Performance Metrics</strong></td>
<td>IV&amp;V has discontinued the Project Performance Metrics reporting until the next agile release R3.11.</td>
</tr>
<tr>
<td><strong>Organizational Maturity Assessment</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td>The criticality rating for the Project Management category remains Yellow (medium) in October. DDD is in pursuit of an interactive training toolset to address their OCM/Training priority resource needs. The Project Team continues to fare well despite the COVID-19 pandemic. Although BHA submitted its IAPDU to DHS on July 1st, CMS approval of the BHA IAPDU is still pending. IV&amp;V has documented a new preliminary concern regarding competing demands being placed on CAMHD Leadership to plan for leveraging the solution to other divisions.</td>
</tr>
</tbody>
</table>
As of the October 2020 reporting period, there are a total of five open findings – two Medium Issues 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

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td><strong>Medium Risk</strong> - 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 October. IV&amp;V will continue to monitor.</td>
<td>M</td>
</tr>
</tbody>
</table>

### Recommendations

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

### Test Practice Validation

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td><strong>Medium Issue</strong> – As a result of regression testing not being consistently performed, production releases are breaking and/or deprecating existing functionality in the production environment. The Help Desk functionality was successfully deployed to production in October and R3.10 is planned for production promotion in early November. Regression Testing for R3.10 was successfully completed on 10/30/2020. IV&amp;V will continue to monitor this issue for upcoming releases.</td>
<td>M</td>
</tr>
</tbody>
</table>

### Recommendations

| Recommendations                                                                                                                                                                                                 | Status       |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| • Updating the regression test scripts to ensure consistency with system configuration.                                                                                                                         | Completed    |
| • Modifying release schedules to allow for regression testing timeframes.                                                                                                                                         | Completed    |
| • Planning releases by functionality type to avoid unnecessary repetitive work being performed in any given section of the solution.                                                                            | Completed    |
## Test Practice Validation (cont’d)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 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.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• Modifying regression test scripts to start AFTER case creation, limiting the time it takes to execute.</td>
<td>Completed</td>
</tr>
<tr>
<td>• Modify the deployment scripts based on information gained from previous release deployments.</td>
<td>Completed</td>
</tr>
<tr>
<td>• 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.</td>
<td>Open</td>
</tr>
<tr>
<td>• 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.</td>
<td>Completed</td>
</tr>
<tr>
<td>• Implementing 'hard' code freeze dates as well as test environment deployment dates to ensure that testing and deployment activities are not rushed.</td>
<td>Completed</td>
</tr>
</tbody>
</table>
# IV&V Findings & Recommendations

## Release / Deployment Planning

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><strong>Medium Risk - Due to the project not following a detailed deployment script, the project may continue to experience defects related to deployment activities.</strong> The RSM and DOH Teams have collaborated to develop a detailed Production Deployment Guide for R3.10 and are in the process of rehearsing some of the primary activities to help ensure a smooth production release in early November. IV&amp;V will continue to monitor this finding in November.</td>
<td>M</td>
</tr>
</tbody>
</table>

## Recommendations

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 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.</td>
<td>Completed</td>
</tr>
<tr>
<td>• 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.</td>
<td>Completed</td>
</tr>
</tbody>
</table>
## IV&V Findings & Recommendations
### Release / Deployment Planning (cont’d)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>• As appropriate, consult with RSM on best practices that BHA could employ to support deployment.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• Look at implementing 'hard' code freeze dates as well as test environment deployment dates to ensure that testing and deployment activities are not rushed.</td>
<td>Completed</td>
</tr>
<tr>
<td>• 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.</td>
<td>Completed</td>
</tr>
<tr>
<td>• 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.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• 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.</td>
<td>Completed</td>
</tr>
<tr>
<td>• The Project Team should consider evaluating potential changes to improve/enhance existing processes and communications to address current release/deployment shortfalls.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• IV&amp;V recommends performing a Root Cause Analysis in collaboration with RSM for the continued concerns surrounding environment differences.</td>
<td>Completed</td>
</tr>
</tbody>
</table>
### IV&V Findings & Recommendations

**Targeted KT**

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td><em>Preliminary Concern – Usage of Semantics and IDM for development and ongoing maintenance of the system requires BHA to take a proactive approach to learn and support these tools.</em> The project intends to obtain more targeted knowledge transfer for both the Semantics Reporting and IDM tools and will be planning and scheduling these sessions with the RSM team in the near future. IV&amp;V will continue to monitor this concern.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
**IV&V Findings & Recommendations**

**Project Management**

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td><strong>Medium Risk - The COVID-19 pandemic and the related &quot;stay at home&quot; order could hinder project activities and negatively impact the project schedule and budget.</strong> The State of Hawaii authorized the re-initiation transpacific travel during the month of October. As noted by the volume of efforts completed for R3.10 and the Help Desk efforts, coupled with the in-process efforts for the IDM and Semantic Layer sub-projects, the project continues to maintain its ability to operate effectively with staff working remotely. IV&amp;V continues to note that key project staff continue to have increases in participation of non-project activities to support the COVID-19 crisis. IV&amp;V continues to note that there may also be future potential budget actions by the Governor which may affect the project, including staff furloughs.</td>
<td>M</td>
</tr>
</tbody>
</table>

**Recommendations**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>• IV&amp;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).</td>
<td>Completed</td>
</tr>
<tr>
<td>• IV&amp;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.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• IV&amp;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.</td>
<td>Open</td>
</tr>
</tbody>
</table>
## IV&V Findings & Recommendations

### Project Management (cont’d)

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td><strong>Medium Issue – Due to multiple quality concerns, the project may continue to face impactful system defects.</strong> The Project Teams continue to address quality for R3.10. Revenue Neutrality testing was successfully performed, and all defects identified have been addressed. With R3.10 planned for implementation in early November, the Teams are in the process of testing activities that span System Integration, User Acceptance, Performance, and Regression Testing. DDD has completed their planning of Revenue Neutrality Testing in October which they plan to execute in November. IV&amp;V will continue to monitor and provide an assessment of the testing activities when completed. IV&amp;V also notes that the design deliverables for the Help Desk, IDM, and Semantic Layer efforts have been revised to meet the needs and quality standards of DOH.</td>
<td>M</td>
</tr>
</tbody>
</table>

### Recommendations

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perform revenue neutrality fiscal balance testing on a quarterly basis to ensure revenues are as expected.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• Perform typical project testing including System Integration, User Acceptance, Performance, and Regression Testing.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• Assign dedicated resources to provide oversight of CAMHD Fiscal Processes.</td>
<td>In Progress</td>
</tr>
<tr>
<td>• BHA and RSM to collaborate on the necessary revisions to the submitted design deliverables to increase level of detail and quality.</td>
<td>Completed</td>
</tr>
<tr>
<td>• Monitor implemented improvements for effectiveness.</td>
<td>In Progress</td>
</tr>
</tbody>
</table>
### IV&V Findings & Recommendations

#### Project Management (cont’d)

<table>
<thead>
<tr>
<th>#</th>
<th>Key Findings</th>
<th>Criticality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td><strong>Preliminary Concern</strong> – DDD Project staffing shortages may have a continued negative effect on user adoption, training, and overall OCM activities.** To assist in OCM activities, DDD has submitted a draft Agreement of Services to procure an interactive training toolset for onboarding new staff members and providers and to provide refresher training to existing staff members. The tool will include services to develop training materials from the Inspire system design documentation. DDD is also looking to procure a Report Writing resource which is currently under review. IV&amp;V will continue to monitor this finding.</td>
<td>N/A</td>
</tr>
<tr>
<td>13</td>
<td><strong>Preliminary Concern</strong> – PII/PHI data in non-production environments.** DOH is still in process of establishing a plan for managing PHI/PII data. IV&amp;V will continue to monitor this finding.</td>
<td>N/A</td>
</tr>
<tr>
<td>14</td>
<td><strong>Preliminary Concern</strong> – Project unable to access activity logs.** Microsoft’s implementation of the optional components of the logging features remain scheduled for 10/31/2020. IV&amp;V will continue to monitor the implementation of these features in the DOH production environments during November.</td>
<td>N/A</td>
</tr>
<tr>
<td>17</td>
<td><strong>New Preliminary Concern</strong> – The bandwidth of CAMHD Leadership is being hampered by planning tasks and activities for assessing project expansion to other divisions.** CAMHD has been provided with an approval to commence planning efforts for expansion of the project for ADAD and AMHD &amp; HSH. CAMHD Leadership currently spends 25% of their available time dedicated to this planning effort.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
## IV&V Findings & Recommendations

### Project Performance Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
<th>IV&amp;V Observations</th>
<th>IV&amp;V Updates</th>
</tr>
</thead>
</table>
| 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.)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
<th>IV&amp;V Observations</th>
<th>IV&amp;V Updates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US Point Estimates vs Actuals</strong></td>
<td>• Verify the project is tracking US Point estimates and actual data</td>
<td></td>
<td>IV&amp;V has suspended the US Point Estimates vs Actuals Metrics reporting for the R3.10 &amp; R3.11 scrum-waterfall releases. This metrics reporting will commence at the next agile release.</td>
</tr>
<tr>
<td></td>
<td>• Determine the delta between estimates and actuals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Based on the delta (if any) investigate the potential root cause for the delta</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## IV&V Findings & Recommendations

### Project Performance Metrics (cont’d.)

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

### Organizational Maturity Assessment

<table>
<thead>
<tr>
<th>Measure</th>
<th>IV&amp;V Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 &amp; R3.11 scrum-waterfall releases.</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>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 (&lt; 30 days late).</td>
</tr>
<tr>
<td>Y</td>
<td>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 ( &gt; 30 days but &lt; 60 days late). Project Leadership attention is required to ensure the assessment category is under control.</td>
</tr>
<tr>
<td>R</td>
<td>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 (&gt; 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.</td>
</tr>
</tbody>
</table>
## Appendix A

### Finding Criticality Ratings

<table>
<thead>
<tr>
<th>Criticality Rating</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>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.</td>
</tr>
<tr>
<td>M</td>
<td>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.</td>
</tr>
<tr>
<td>L</td>
<td>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.</td>
</tr>
</tbody>
</table>
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 October 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. INSPIRE CEDS Testing (#4)
10. Go-Live Readiness Assessment (GLRA) #1/2
11. Documentation and Artifacts Discussion Meeting
12. UAT – Helpdesk Tool 1

Artifacts reviewed during the October 2020 reporting period:
1. Daily Scrum Notes (selected)
2. Twice Weekly Issues Meeting Notes (selected)
4. Help Desk Design Document
5. IDM Design Document
6. Phase 3 Performance Testing Plan and Results

Eclipse IV&V® Base Standards and Checklists
Appendix C: Project Trends
# Appendix C

## Project Trends

### Trend: Overall Project Health

<table>
<thead>
<tr>
<th>Process Area</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Story Validation</td>
<td></td>
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<tr>
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<td>Identified</td>
<td>Date Reported</td>
<td>Description</td>
<td>Issue Area</td>
<td>Finding Type</td>
<td>Priority</td>
<td>Status</td>
<td>Closure Reason</td>
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<tr>
<td>1.000</td>
<td>10/31/2019</td>
<td>Detailed investigation into the project’s sprint planning processes and adoption of generally accepted agile best practices.</td>
<td>10/31/2020</td>
<td>IV &amp; V is closing this concern, and will be recording items related to Definition of Done, roadmap, resourcing, and backlog grooming in new, separate findings.</td>
<td>Sprint Planning</td>
<td>Concern</td>
<td>N/A</td>
<td>Closed</td>
<td>Due to multiple new items being tracked at a more granular level, this item has been closed.</td>
</tr>
</tbody>
</table>

**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 out, 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. Notably, the "definition done" is an important artifact to ensure that the project is successful. Otherwise, the project will struggle to prioritize requirements/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 also help provide the project with guidance on how to stay within scope.

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<tr>
<th>#</th>
<th>Identified Date</th>
<th>Identified</th>
<th>Date Reported</th>
<th>Description</th>
<th>Issue Area</th>
<th>Finding Type</th>
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<th>Closure Reason</th>
<th>Risk Owner</th>
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</thead>
<tbody>
<tr>
<td>2.000</td>
<td>12/31/2019</td>
<td>As a result of regression testing not being consistently performed, production releases are both breaking and deprecating existing functionality in the production environment.</td>
<td>10/31/2020</td>
<td>- The Help Desk functionality was successfully deployed to production in October and R3.10 is a planned for production promotion in early November. Regression testing for R3.10 was successfully completed on 10/30/2020. IV &amp; V will continue to monitor this issue for upcoming releases.</td>
<td>Sprint Planning</td>
<td>Concern</td>
<td>N/A</td>
<td>Closed</td>
<td></td>
<td>V Ramesh</td>
</tr>
</tbody>
</table>

**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 in the downstream testing environments - Completed
3. Grouping releases 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 - In Progress
5. Modifying regression test scripts to start after the core testing is complete, 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

**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 also help provide the project with guidance on how to stay within scope.**

**Regression Test Practice**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Type</th>
<th>Status</th>
<th>Problem</th>
<th>Possible Solution</th>
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</thead>
<tbody>
<tr>
<td>Help Desk functionality</td>
<td>- The Help Desk functionality was successfully deployed to production in October and R3.10 is a planned for production promotion in early November. Regression testing for R3.10 was successfully completed on 10/30/2020. IV &amp; V will continue to monitor this issue for upcoming releases.</td>
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<td></td>
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</tbody>
</table>
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.

Given the nature of the JavaScript framework, any additional requirements should be identified early in the project planning phase.

Due to the project not following a proactive approach to support and security, IVV recommends BHA to identify and communicate any additional requirements to RSM during the month of August. If no additional needs are identified, IVV will close this finding.

As a result of this finding, IVV has recommended the following:
- The availability of reliable support for Vue.JS
- The project's understanding of any known vulnerabilities with Vue.JS
- Development of a process to remain current on vulnerabilities discovered by the support community.

The RSM responsible for Calculator 3.0 went on extended parental leave in December 2019. IVV 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.

As appropriate, consult with RSM on best practices that BHA could employ to support BHA's long-term ownership of Calculator 3.0.

Targeted KT: Release / Deployment Planning

Targeted KT: Release / Deployment Planning

Risk: Medium

Closed

RSM has successfully held several KT sessions for this technology and functionality, and DOH staff have stated that it was well received.
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 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.

The 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 in 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 its impact during the month of May.

03/31/2020 - IV&V validates that the backlog grooming effort has made great progress, however it is still in progress. The revised

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’. IV&V 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 indicated 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.

IV&V 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, IV&V should involve RSM SMEs in this process, if only for the interim to get “caught up” on grooming efforts. [Closed]

IV&V 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
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 address BHA's business needs. IV&V recommends the Project update and align the Product Roadmap with the Phase 3 Definition of Done before the end of February to ensure the correct resources are available to achieve 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.
10.000  1/31/2020  The COVID-19 pandemic and the related “stay at home” order could hinder project activities and negatively impact the project schedule and budget.

10/31/2020 - The COVID-19 pandemic and related “stay at home” order have forced the re-creation of a transpacific travel during the month of October. As noted by the volume of efforts completed for R3.10 and the Help Desk efforts, coupled with the in-process efforts for the IDM and Semantics layer sub-projects, the project continues to maintain its ability to operate effectively with staff working remotely. IV&V continues to note that key project staff continue to have increases in participation of non-project activities to support the COVID-19 crisis. IV&V continues to note that there may also be future potential budget actions by the Governor which may affect the project, including staff furloughs.

09/30/2020 - The Reopening Framework provides a cautious approach to re-opening the economy. Regardless of any Executive Orders to date, the project continues to operate effectively.

11.000  1/31/2020  The lack of design reviews for complex user stories has resulted in the promotion of incomplete solutions into production.

There were a couple incidents during May where the code promoted to production did not fully meet all requirements of associated user stories for CCHHD 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.

12.000  7/31/2020  DDD/Project staffing shortages may have a continued negative effect on user adoption, training, and overall OCM activities.

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.

On 7/31/2020, 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.

12.000  7/31/2020  The user adoption and training efforts are hampered by requirements of associated user stories for CCHHD 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.

The user adoption and training efforts are hampered based on staffing shortages. DDD has stated that if 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. To assist in OCM activities, DDD has defined the need for an interactive training tool to support Inspire.

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 the user is likely to cause variations in data collection and analytical efforts using the data collected.
Due to multiple quality concerns, the project may continue to face impactful system defects.

10/31/2020 - The Project Teams continue to address quality for R3.10. Revenue Neutrality testing was successfully performed, and all defects identified have been addressed. With R3.10 planned for implementation in early November, the teams are in the process of testing activities that span System Integration, User Acceptance, Performance, and Regression Testing. DDO has completed their planning of Revenue Neutrality Testing in October which they plan to execute in November. IV&V will continue to monitor and provide an assessment of the testing activities when completed.

IV&V also notes that the design deliverables for the Help Desk, DMD, and Semantic Layer efforts have been revised to meet the needs and quality standards of DOH.

System defects identified in August that affected claims were due to multi-faceted quality issues were individually addressed during this reporting period. IV&V notes that there is one remaining defect still being evaluated that affects a limited number of claims. Overall, the Project Team has responded with a commitment to increase project quality and is in the process of identifying improvers to associated testing processes. These currently include: Performing Revenue Neutrality Testing to ensure expected revenue streams are largely unchanged from one period to the next. Conducting System Integration Testing, User Acceptance Testing, Performance Testing, and Regression Testing for Release 3.10.

IV&V will continue to monitor the testing efforts throughout the balance of Release 3.10 and validates that enhanced quality processes, including industry-standard regression testing, continue for Agile Release 3.11 forward. Finally, IV&V reviewed and provided feedback on the Help Desk and Semantic Layer design documents per request and found that both documents lacked design details.

The identified quality issues have negatively affected DOH billing processes and DDO has stated these are the most impactful defects discovered to date.

To address quality issues, the Project should continue to pursue and/or consider:
1. Perform revenue neutrality fiscal balance testing on a quarterly basis to ensure revenues are as expected.
2. Performing typical project testing including System Integration, User Acceptance, Performance, and Regression Testing.
3. Assigning a dedicated resource to provide oversight of CAMHD Fiscal Processes.
4. BHA and RSM to collaborate on the necessary revisions to the submitted design documents to increase level of detail and quality.

IV&V has been made aware that PII/PHI data currently exist in a non-production environment to meet project needs. Generally, this is 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.

10/31/2020 - The Project Teams continue to monitor this preliminary data security concern. IV&V will continue to monitor this concern and is in the process of establishing a plan to manage this data. When completed, this plan will include reducing the volume of PII/PHI data that is required for project activities. IV&V will continue to monitor this preliminary data security concern.

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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.

10/31/2020 - DOH reported that Microsoft’s implementation of the logging features in the DOH non-production environments during November.

IV&V has been made aware that PII/PHI data currently exist in a non-production environment to meet project needs. Generally, this is 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.

10/31/2020 - DOH recognizes this concern and is in the process of establishing a plan to manage this data. When completed, this plan will include reducing the volume of PII/PHI data that is required for project activities. IV&V will continue to monitor this preliminary data security concern.
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Targeted KT Concern</th>
<th>Project Management Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/3/2020</td>
<td>Usage of Semantics and IDM for development and ongoing maintenance of the system requires BH to take a proactive approach to support of these tools.</td>
<td></td>
<td>Darren Macdonald</td>
</tr>
<tr>
<td>10/31/2020</td>
<td>The project intends to obtain more targeted knowledge transfer for both the Semantics Reporting and IDM tools and will be planning and scheduling these sessions with the RSM team in the near future. IV&amp;V will continue to monitor this concern.</td>
<td></td>
<td></td>
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<tr>
<td>10/27/2020</td>
<td>The bandwidth of CAMHD leadership is being hampered by planning tasks and activities for assessing project expansion to other divisions.</td>
<td>CAMHD has been provided with an approval to commence planning efforts for expansion of the project for ADAE and AMHD &amp; HSR. CAMHD Leadership currently spends 25% of their available time dedicated to this planning effort.</td>
<td>Darren Macdonald</td>
</tr>
</tbody>
</table>