STATE OF HAWAIʻI | *KA MOKUʻĀINA O HAWAIʻI*
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | *KA ʻOIHANA LOIHELU A LAWELAWE LAULĀ*

OFFICE OF ENTERPRISE TECHNOLOGY SERVICES | *KEʻENA HOʻOLANA ʻENEHANA*
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

March 14, 2025

The Honorable Ronald D. Kouchi
President of the Senate
and Members of the Senate
Thirty-Third State Legislature
State Capitol, Room 409
Honolulu, Hawaiʻi 96813

The Honorable Nadine K. Nakamura
Speaker and Members of the
House of Representatives
Thirty-Third State Legislature
State Capitol, Room 431
Honolulu, Hawaiʻi 96813

Aloha Senate President Kouchi, House Speaker Nakamura, 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 Hawaiʻi, Department of Human Services, Systems Modernization Project.

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

Sincerely,

Christine M. Sakuda
Chief Information Officer
State of Hawaiʻi

Attachments (2)

Hawaii Department of Human Services Systems Modernization Project

Final IV&V Status Report
for Reporting Period: February 1 – 28, 2025

Submitted: March 14, 2025

PUBLIC CONSULTING GROUP

Solutions that Matter

Overview

Executive Summary

Executive Summary

DHS finalized and approved the BES revised project schedule. The Pilot Implementation is planned to start on 7/13/2026, with the Statewide Implementation planned for 10/19/2026. Several months were added to the project schedule to allow the project team to complete development and fully test the BES solution, driving towards delivery of a quality product before starting the Pilot. The ASI also developed and presented an Improvement Plan to DHS to remediate some of the challenges faced by the Project Team. Extending the schedule and implementing actions outlined in the Improvement Plan are positive developments. IV&V maintains cautious optimism, recognizing that the outcomes of some Improvement Plan activities and the accuracy of revised estimates may not manifest in the short term. Key areas of performance that will be continuously reviewed are:

- Testing: The remaining defects raised during User Acceptance Testing (UAT) for BES 1.0 continue to be resolved by the ASI.

- Schedule: The initial review of the revised schedule has identified several tasks with inaccurate estimates, prompting concerns about the overall accuracy of the estimates. IV&V also remains concerned about the schedule's level of detail, which may obscure delays in tasks affecting project critical path.

- Security: Good progress has been made in addressing documentation requirements. However, ongoing delays in remediating security vulnerabilities add risk to the project, potentially impacting development and the overall project schedule.

- Contractual Alignment: The ASI continues to struggle with providing DHS visibility into which contractual requirements have been met by completed functionality and which still need to be developed. The ASI is addressing issues with requirements to enable the creation of a Requirements Traceability Matrix (RTM) to meet this critical need for DHS.

- Legislation: The project team, including IV&V, is monitoring changes at the federal level, including potential changes to the BESSD programs and budget reductions that may impact DHS and the BES project.

The BES Project team has a revised schedule, updated the Software Development Methodology employed from Agile to Waterfall, and made other process improvements. Now, it is a matter of executing the plan to include early risk identification, define and execute mitigation plans, and address issues as they are identified.

Dec	Jan	Feb	Category	IV&V Observations
H	H	H	Project Management	The Project Schedule was approved by DHS and set as the baseline. During the first project review of the schedule, several task's planned complete dates were changed including one task reported to have a 44-day change - raising concerns on the overall stability of the schedule, critical path impacts and estimates of the tasks as the schedule was developed.

Executive Summary

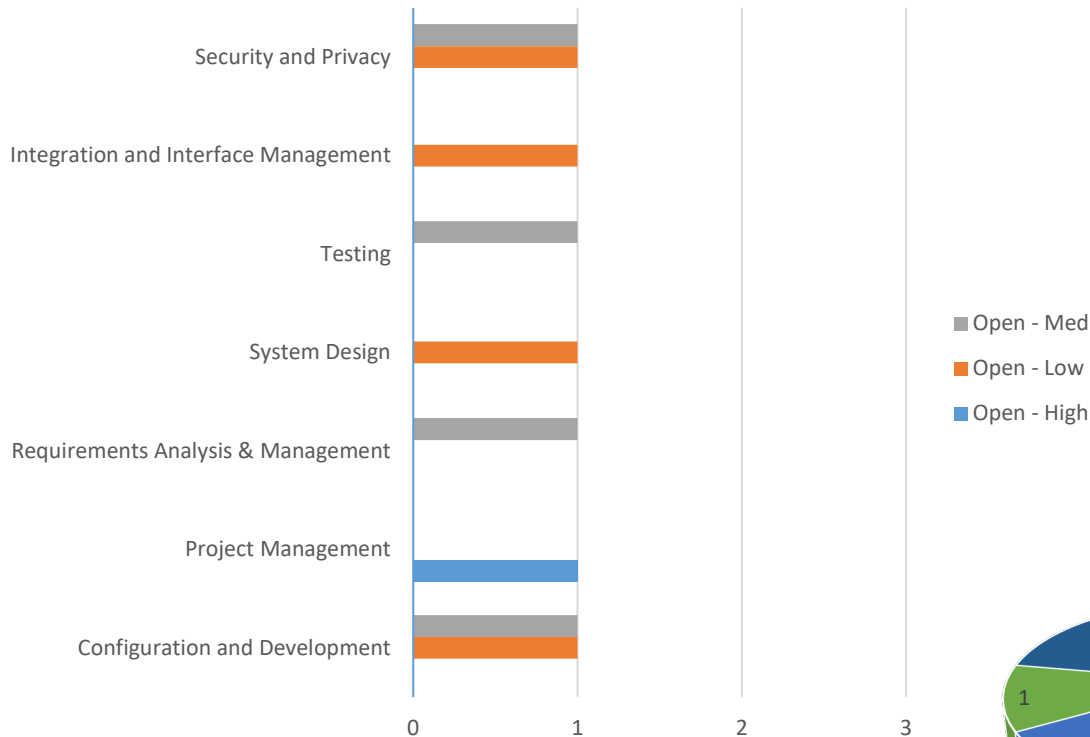| Dec	Jan	Feb	Category	IV&V Observations
L	L	L	System Design	To avoid potential project delays, the ASI switched from MongoDB to GCP Cloud Firestore for the Secure Enclave's non-relational database component, continuing the infrastructure build-out.
M	M	M	Configuration and Development	The ASI reported progress in constructing their configuration management database within ServiceNow by importing multiple configuration items (CIs). They also submitted an Improvement Plan to DHS, addressing software development challenges through team reorganization, rigorous practices, thorough testing, peer reviews, and adding senior skilled resources.
L	L	L	Integration and Interface Management	The ASI focused on developing comprehensive test scripts in preparation for interface testing cycles.
H	M	M	Testing	As of the February 26th status report, UAT defects are being actively resolved by the vendor, with 147 ready to be retested by DHS. System Integration Testing (SIT) is scheduled to commence in mid-June.
H	M	M	Security and Privacy	The ASI and DHS are collaboratively working on the NIST 800-53R5 Security Policies for the BES System, with 12 drafts ready for internal review.
M	M	M	Requirements Analysis & Management	The project team met on 2/20/2025 and identified several action items for the ASI to resolve. Once these actions are complete, DHS and IV&V can evaluate to determine if the RTM can provide its intended purpose of tracing of all contract requirements through final DHS acceptance testing.

IV&V Findings and Recommendations

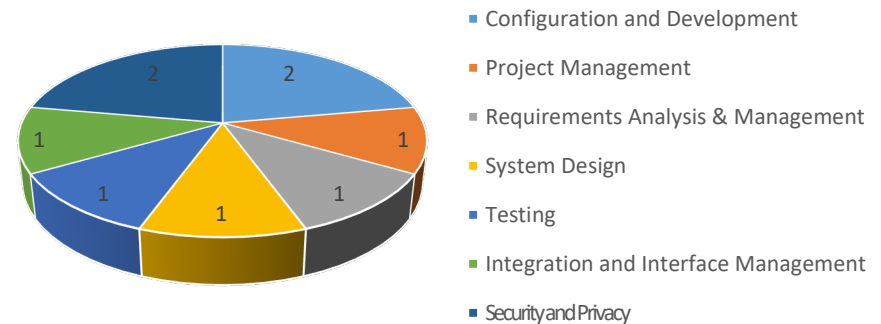# IV&V Findings and Recommendations

As of the February 2025 reporting period, PCG is tracking 9 open findings (5 risks, 4 issues) and has retired a total of 81 findings. Of the 9 open findings, 1 is High, 5 are Medium, and 3 are Low.
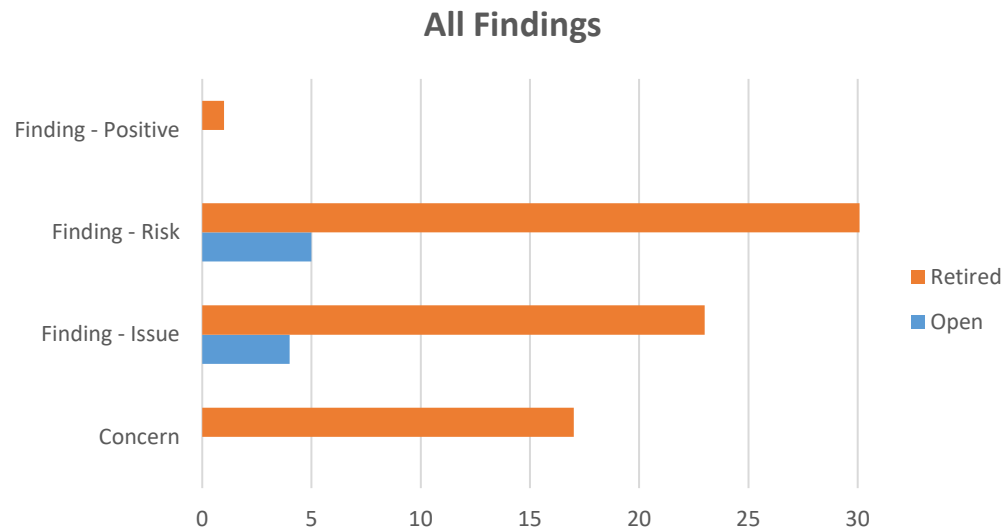
Open Risks & Issues

Legend:
- ■ Open - Med
- ■ Open - Low
- ■ Open - High

Open Risks & Issues by Category

Legend:
- ■ Configuration and Development
- ■ Project Management
- ■ Requirements Analysis & Management
- ■ System Design
- ■ Testing
- ■ Integration and Interface Management
- ■ Security and Privacy

IV&V Findings and Recommendations

The following figure provides a breakdown of the 90 IV&V findings (positive, risks, issues, concerns) by status (open, retired).

All Findings

IV&V Findings and Recommendations

Findings Opened During the Reporting Period

#	Finding	Category
106	**Medium Risk. Critical and high vulnerability and configuration scan findings are not remediated within the documented timeframes, potentially impacting the project schedule and causing delays.** **Observation:** The BES system does not currently remediate critical vulnerabilities and compliance issues within 15 days, and high vulnerabilities are not remediated within 30 days as required by the BES Vulnerability Management Procedures document. **Significance:** The BES system faces elevated cybersecurity, operational, financial, and compliance risks if vulnerabilities are not remediated within the required timeframe. Prompt corrective actions are necessary to ensure timely vulnerability resolution and safeguard the BES system environment prior to going live. Un-remediated critical and high Nessus compliance scans can significantly hinder system development efforts by introducing security risks, compliance failures, and operational roadblocks. This lack of remediation of system configuration findings increases technical debt, disrupts development workflows, and diverts resources from core project objectives.	Security and Privacy

Recommendations	Progress
• Rate Configuration scan result failures and how they impact the security of the BES system (Critical, High, Medium, and Low) instead of simple pass/failure results. In January 2025, 82 critical and High-finding POAMs were listed due to the Tenable configuration scan results. The POAMs for configuration scans are now listed as "failed"; due to the binary nature of the scan engine and does not rate the criticality of the system configuration on the business operation of how the hosts are used.	New
• Update the BES Vulnerability Management Procedures document with the Jira ticketing process and workflow from vulnerability and configuration scan remediation with who owns each step.	New
• Implement an escalation process to involve senior leadership if deadlines are missed.	New

IV&V Findings and Recommendations

Findings Retired During the Reporting Period

#	Finding	Category
	None	

IV&V Findings and Recommendations

Preliminary Concerns Investigated and Retired During the Reporting Period

#	Finding	Category
	None	

IV&V Findings and Recommendations

Project Management

#	Key Findings	Criticality Rating
74	**Issue – A BES Project schedule based on inaccurate estimations diminishes effective planning and resource management, which could result in late deliverables, cost increases, and a late go-live.** The ASI received final approval from DHS on the revised schedule, which was baselined and shared to project team on 2/12/2025. The first schedule review for the re-baselined schedule was held on 2/26/2025, with several tasks showing a delayed finish date and others with earlier completion dates; with one significant change of 44 days. Although none of these changes directly added risk to the schedule, IV&V remains concerned that underestimated tasks could start to impact the critical path and delay implementation dates.	H

Recommendations	Progress
• Monitor, evaluate and revise scheduling estimates for accuracy based on the project teams past performance and resources available to do the remaining work.	In Process
• Any work required to address findings from Root Cause Analysis should be included in the revised schedule to validate completion for DHS.	In Process
• Elaborate the schedule to include the detailed work and tasks required behind milestones, allowing better tracking and visibility of possible issues and delays at the task level.	In Process

IV&V Findings and Recommendations

System Design

#	Key Findings	Criticality Rating
73	**Risk – The planned BES infrastructure is complex which could be difficult to implement and maintain and could lead to schedule/cost impacts.** The project continues to build out of some infrastructure components for the Secure Enclave. The ASI recently elected to switch from MongoDB to GCP Cloud Firestore (which is already IRS 1075 Assured Workloads compliant) for the Secure Enclave non-relational database component. This to avoid potential project delays.	L

Recommendations	Progress
• ASI develop a process to closely monitor cloud and other product changes (software updates/new releases), manage changes, and regression test once updates are applied.	In Process
• The project team work to establish strong governance over the utilization and maintenance of various tools/components.	In Process
• ASI allot time in the schedule to conduct proof of concepts to assure infrastructure components work as expected.	In Process
• ASI maintain a detailed schedule for DevOps implementation tasks to avoid unexpected delays that could delay project milestones and the critical path.	In Process

IV&V Findings and Recommendations

Configuration and Development

#	Key Findings	Criticality Rating
70	**Risk – Insufficient configuration management could lead to development confusion and reduce the effectiveness of defect resolution.** The ASI has reported progress in constructing their configuration management database within ServiceNow, having recently imported multiple configuration items (CIs).	L

Recommendations	Progress
• ASI adhere to plans for configuration management as documented in BI-6 DDI Plan, Section 5.2 and clarify details and/or any changes with DHS.	In Process
• ASI validate plans for configuration management with DHS and agree on a meaningful set of configuration items or settings they will track.	In Process

IV&V Findings and Recommendations

Configuration and Development

#	Key Findings	Criticality Rating
80	**Issue – Development delays have negatively impacted the project schedule and delayed go-live.** The ASI recently submitted an Improvement Plan to DHS that included improvements to address their software development challenges. They have reported ongoing improvements because of their • reorganization of the development team, • implementing more rigorous software development and release practices, • thorough unit testing and peer reviews, and • the addition of senior skilled resources.	M

Recommendations	Progress
• ASI effectively track and regularly provide DHS (potentially via the weekly DDI status meeting) with an accurate velocity (e.g., story points per day/week/month) and assure that the current velocity is accurately and consistently reflected in the project schedule.	Closed
• ASI provides DHS with the time needed to effectively evaluate the software demonstrations (demos) and elicit productive design discussions with DHS attendees during each demo.	In Process
• ASI regularly reports estimated story points for the total remaining project work to reach go-live and presents a dynamic burn-down chart to track the progress.	In Process

IV&V Findings and Recommendations

Integration and Interface Management

#	Key Findings	Criticality Rating
93	**Risk – Due to the lack of physical and technical (Transport Layer) testing of the interfaces and data transfer failure, conditions may exist with data format, boundaries, and dependencies. These failures may result in intermittent and hard-to-isolate problems or errors.** The remaining interface test scripts are being prepared to ensure comprehensive testing of all interfaces, including the retesting of previously performed tests to validate accuracy and maintain up-to-date results.	L

Recommendations	Progress
• API interfaces should be tested for failure conditions during connection and transfer operations.	In Process
• FTP and file interfaces should be tested for data and file integrity.	In Process
• Test data fields for system impacts resulting from data that is poorly formatted, out of range, or other unexpected data transmission errors.	In Process

IV&V Findings and Recommendations

Testing

#	Key Findings	Criticality Rating
83	**Issue – Gaps in test coverage and slower-than-expected progress in testing may result in schedule delays if subsequent test phases uncover a higher volume of defects and user feedback than initially anticipated.** As of the February 26th status report, the vendor is actively resolving UAT defects. Currently, 147 defects (34 high, 82 medium, 31 low) are ready for UAT testing, while 63 defects are in progress. Looking ahead, System Integration testing (SIT) is scheduled to commence in mid-June. Any development delays may delay testing and potentially push back the go-live date, impacting the project schedule.	M

Recommendations	Progress
• DHS and ASI revisit the testing approach to prioritize completion of remaining test activities and conduct comprehensive System Integration testing (SIT) to minimize defect leakage to User Acceptance Testing (UAT).	In Progress
• ASI assesses the potential impact of the large number of unresolved defects on future development efforts, ensuring a more robust and efficient development process.	In Progress
• ASI develop and implement a revised testing approach to improve the completeness and thoroughness of future testing cycles.	In Progress

IV&V Findings and Recommendations

Security and Privacy

#	Key Findings	Criticality Rating
82	**Issue – The lack of technical documentation may lead to incorrect implementation statements or delay the System Security Plan (SSP).** The ASI and DHS have been collaboratively working on the NIST 800-53R5 Security Policies per the NIST 800-53R5 control family that will be used for the BES System. Drafts for each policy have been created, with 12 ready for internal review. DHS has reviewed several of the policies and provided additional instruction as to how they should be structured. The ASI has dropped MongoDB from the Secure Enclave after evaluating IRS Publication 1075 compliant alternatives and is converting to Google Firestore. Considering that a majority of the documentation and artifacts are completed or nearing completion and the extended schedule, IV&V has changed the criticality of this issue to low.	L

Recommendations	Progress
• Collaborate and communicate with SSP authors about when reliable and correct documentation will be available.	In Process
• Include the Secure Enclave within the work breakdown structure along with the known tasks related to the IRS Assessment to continue receiving FTI in BES.	In Process

IV&V Findings and Recommendations

Requirements Analysis & Management

#	Key Findings	Criticality Rating
94	**Risk - The lack of an effective way to validate BES requirements could lead to project delays and unfulfilled user needs if DHS later identifies unmet contractual requirements.** The ASI continues to work on delivering an RTM that DHS can use. The key outstanding items from the Mid-Month project team meeting on 2/20/25 between ASI and IV&V include: • Use Cases and Requirements in Jira need to be updated as they have the incorrect status. • There are Use Cases in Jira which have been obsoleted but still have active requirements that need to be updated. • There are Epics in Jira which are completed but need to be updated to the correct status. The ASI stated fixing these key outstanding items will them to produce a comprehensive and usable RTM.	M

Recommendations	Progress
• Develop a document that provides DHS with a feasible and effective way to map contract requirements to passed test cases, and, per the BI-19 (Complete and Final Test Plan),"Maps the implementation, functional and technical requirements to the test cases and test scripts".	In Process
• Ensure test scripts thoroughly and comprehensively test the system to assure each requirement has been fully met.	In Process
• Develop a deliverable that provides an audit trail for changes to the requirements from the contract such as obsoleted requirements, when that decision was made, and the change requests.	New

IV&V Status

IV&V Engagement Status

IV&V Engagement Area	Dec	Jan	Feb	Comments
IV&V Budget	🟢	🟢	🟢	
IV&V Schedule	🟢	🟢	🟢	
IV&V Deliverables	🟢	🟢	🟢	PCG submitted the final January IV&V Monthly Status Report.
IV&V Staffing	🟢	🟢	🟢	
IV&V Scope	🟢	🟢	🟢	

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

IV&V Activities

- IV&V activities in the February reporting period:
  - Completed – January Monthly Status Report
  - Ongoing – Review the BES Project Artifacts and Deliverables
  - Ongoing – Attend BES Project meetings, (see [Additional Inputs](#) pages for details)
  - Ongoing – Review available ASI contracts and contract amendment documentation
- Planned IV&V activities for the March reporting period:
  - Ongoing – Observe BES Design and Development sessions as scheduled
  - Ongoing – Observe Bi-Weekly Project Status meetings
  - Ongoing – Observe Weekly M&O Project Status meetings
  - Ongoing – Observe Weekly Architecture meetings
  - Ongoing – Observe Weekly Security meetings
  - Ongoing – Monthly IV&V findings meetings with the ASI
  - Ongoing – Monthly IV&V Draft Report Review with DHS, ETS and ASI
  - Ongoing – Participate in Bi-Weekly DHS and IV&V Touch Base meetings
  - Ongoing – Review BES artifacts and deliverables

Deliverables Reviewed

Deliverable Name	Deliverable Date	Version
BI-05 Project Schedule	2/12/2025 2/26/2025	N/A
CR2024-019 - BES 1.0 Display Deleted Records History Enhancements	2/21/2025	V0.2
BI-17 Validated Results of Data Conversion Testing	2/25/2025	V0.1
CR2024-024 - BES 1.0 Interview Enhancements	2/25/2025	V0.2
CR2024-025 - BES 1.0 Other Enhancements	2/26/2025	V0.2

Additional Inputs – Artifacts

Artifact Name	Artifact Date	Version
BES 2023 Design Kanban board	N/A	N/A
FNS Handbook 901	01/2020	V2.4
NIST Special Publication 800-53 Security and Privacy Controls for Information Systems and Organizations	12/20/2020	Rev.5
SNAP_System_Integrity_Review_Tool	Sept 2022	N/A
Interface Dashboard – Confluence page	N/A	N/A
BES 2023 Implementation Planning – Confluence page	N/A	N/A
R0.12 Epic Assignment	N/A	N/A
R0.12 Epic and Sprint Demo Recordings	N/A	N/A
ADA dashboard	N/A	N/A
Jira Requirements Details	N/A	N/A
Jira Testing Lists	N/A	N/A
UAT Testing Dashboard	N/A	N/A
Waterfall Methodology Plan	N/A	N/A

Additional Inputs

Meetings and/or Sessions Attended/Observed:

1. IV&V Team Meeting – 2/3/2025, 2/6/2025, 2/10/2025, 2/13/2025, 2/18/2025, 2/20/2025, 2/24/2025, 2/26/2026, 2/27/2025
2. IV&V/ASI January Pre-draft Review – 2/6/2025
3. HI DHS BES January Draft IV&V Report Review – 2/14/2025
4. Bi-Weekly DHS BES PMO/IV&V Check-in – 2/13/2025, 2/28/2025
5. Bi-Weekly DHS and IV&V Touch Base – 2/4/2025
6. Weekly BES Infrastructure meeting – 2/7/2025, 2/14/2025, 2/21/2025, 2/28/2025
7. Weekly Client BES 2023 Project Status Meeting – 2/5/2025, 2/12/2025, 2/26/2025
8. Security Touchpoint – 2/5/2025, 2/12/2025, 2/19/2025, 2/26/2025
9. (External) Bi-Weekly Client BES Implementation Schedule Review Meeting – 2/12/2025, 2/26/2025
10. (Externa(l) Weekly Interfaces Touchpoint – 2/3/2025, 2/102/2025, 2/24/2025
11. (External) Bi-weekly BES CCB Meeting – 2/5/2025, 2/19/2025
14. eWorld/IV&V Mid-Month Check-in – 2/20/2025
15. (External) BES: FNS Connect – 2/6/2025
17. IV&V and DHS PMO Review Findings for December – 2/6/2025
18. (External) JAD Day 3 CR2024-013 DHS Application Packet - Multiple Correspondence – 2/6/2025
19. (External) CR2024-015 Limit BES Automatic Data Population from SSP Response Review Meeting – 2/13/2025
20. (External) BI-05 Project Schedule Response Review Meeting - cont'd – 2/3/2025
21. (External) Pre-Design CR2024-017 Correspondence Enhancements – 2/6/2025
22. (External) JAD CR2024-026 BES-SSP/PAIS Implementation Meeting – 2/19/2025
23. (External) BES Batch Job Schedule Day 2 – 2/24/2025
24. (External) CR2024-014, CR2024-020, CR2024-021 Response Review Meeting – 2/25/2025
25. (External) Final Approval for CR2024-017 BES 1.0 Correspondence Enhancements – 2/27/2025

Appendices

Appendix A – IV&V 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 evaluated and implemented as soon as feasible.
L	A low rating is assigned if there is a possibility of slight impact to product quality, scope, cost, or schedule. Minimal disruption is likely, and some oversight is most likely needed to ensure that the risk remains low. Mitigation strategies should be considered for implementation when possible.

Appendix B – Findings Log

- The complete Findings Log for the BES Project is provided in a separate file.

Appendix C – Acronyms and Glossary

Acronym	Definition
APD	Advance Planning Document
ASI	Application System Integrator
BES	Benefits Eligibility Solution
CCWIS	Comprehensive Child Welfare Information System
CM	Configuration Management
CMMI	Capability Maturity Model Integration
CMS	Center for Medicare and Medicaid Services
CR	Change Request
DDI	Design, Development and Implementation
DED	Deliverable Expectation Document
DHS	Hawaii Department of Human Services
DLV	Deliverable
E&E	Eligibility and Enrollment
EA	Enterprise Architecture
ECM	Enterprise Content Management (FileNet and DataCap)
ESI	Enterprise System Integrator (Platform Vendor)
ETS	State of Hawaii Office of Enterprise Technology Services
FIPS	Federal Information Processing Standard
HIPAA	Health Information Portability and Accountability Act of 1996
IDM	Identity and Access Management (from KOLEA to State Hub)
IEEE	Institute of Electrical and Electronics Engineers
IES	Integrated Eligibility Solution
ITIL	Information Technology Infrastructure Library

Appendix C – Acronyms and Glossary

Acronym	Definition
IV&V	Independent Verification and Validation
KOLEA	Kauhale On-Line Eligibility Assistance
M&O	Maintenance & Operations
MEELC	Medicaid Eligibility and Enrollment Life Cycle
MEET	Medicaid Eligibility and Enrollment Toolkit
MOU	Memorandum of Understanding
MQD	Hawaii Department of Human Services MedQuest Division
NIST	National Institute of Standards and Technology
OE	Operating Environment
OIT	Department of Human Services Office of Information Technology
PIP	Performance/Process Improvement Plan
PMBOK®	Project Management Body of Knowledge
PMI	Project Management Institute
PMO	Project/Program Management Office
PMP	Project Management Plan
QA	Quality Assurance
QM	Quality Management
RFP	Request for Proposal
ROM	Rough Order of Magnitude
RMP	Requirements Management Plan
RTM	Requirements Traceability Matrix
SEI	Software Engineering Institute
SLA	Service-Level Agreement
SME	Subject Matter Expert

Appendix C – Acronyms and Glossary

Acronym	Definition
SOA	Service Oriented Architecture
SOW	Statement of Work, Scope of Work
VVP	Software Verification and Validation Plan
XLC	Expedited Life Cycle

Appendix D – Background Information

Systems Modernization Project

The DHS Enterprise Program Roadmap includes contracting with three separate vendors with the following high-level scope:

- ESI or Platform Vendor – responsible for the shared technology and services required for multiple Application vendors to implement and support functionality that leverages the DHS Enterprise Platform.

- ASI or ASI Vendor – responsible for the DDI of the Benefits Eligibility Solution (BES Project) enhancing the currently implemented Medicaid E&E Solution (KOLEA) and providing support for the combined Solutions.

- CCWIS Vendor – responsible for the DDI of the CCWIS Solution to meet the needs of child welfare services and adult protective services (CCWIS Project) and providing support for the Solution.

Systems Modernization IV&V Project

IV&V performs objective assessments of the design, development/configuration and implementation (DDI) of DHS' System Modernization Projects. DHS has identified three high-risk areas where IV&V services are required:

- Transition of M&O from DHS' incumbent vendor to the ESI and ASI vendors

- BES DDI

- CCWIS DDI

On the BES DDI Project, IV&V is responsible for:

- Evaluating efforts performed by the Project (processes, methods, activities) for consistency with federal requirements and industry best practices and standards

- Reviewing or validating the work effort performed and deliverables produced by the ASI vendor as well as that of DHS to ensure alignment with project requirements

- Anticipating project risks, monitoring project issues and risks, and recommending potential risk mitigation strategies and issue resolutions throughout the Project's life cycle

- Developing and providing independent project oversight reports to DHS, ASI vendors, State of Hawaii Office of Enterprise Technology Services (ETS) and DHS' Federal partners

Appendix D – Background Information

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

- Oversight by an independent third party that assesses the Project against industry standards to provide an unbiased view to stakeholders

- The goal of IV&V is to help the State get the solution they want based on requirements and have it built according to best practices

- IV&V helps improve design visibility and traceability and identifies (potential) problems early

- IV&V objectively identifies risks and communicates to project leadership for risk management

PCG's Eclipse IV&V® Technical Assessment Methodology

- Consists of a 4-part process made up of the following areas:

  1. **Discovery** – Discovery consists of reviewing documentation, work products and deliverables, interviewing project team members, and determining applicable standards, best practices and tools.

  2. **Research and Analysis** – Research and analysis is conducted in order to form an objective opinion.

  3. **Clarification** – Clarification from project team members is sought to ensure agreement and concurrence of facts between the State, the Vendor, and PCG.

  4. **Delivery of Findings** – Findings, observations, and risk assessments are documented in this monthly report and the accompanying Findings and Recommendations log. These documents are then shared with project leadership on both the State and Vendor side for them to consider and take appropriate action on.

IV&V Assessment Categories for the BES Project

- Project Management
- Requirements Analysis & Management
- System Design
- Configuration and Development
- Integration and Interface Management
- Data Management and Conversion

- Security and Privacy
- Testing
- OCM and Knowledge Transfer
- Pilot Test Deployment
- Deployment

Solutions that Matter

ID	Title	Reporter	Finding Type	Identified Date	Category	Observation	Significance	Recommendation	Event Horizon	Impact	Probability	Analyst Priority	Finding Status	Status Update	Client Comments	Vendor Comments
106	Critical and high vulnerability and configuration scan findings are not remediated within the documented timeframes.	Heath, Dustin	Finding - Risk	2/28/2025	Security and Privacy	The BES system does not currently remediate critical vulnerabilities and compliance issues within 15 days, and high vulnerabilities are not remediated within 30 days as required by the BES Vulnerability Management Procedures document.	The BES system faces elevated cybersecurity, operational, financial, and compliance risks if vulnerabilities are not remediated within the required timeframe. Prompt corrective actions are necessary to ensure timely vulnerability resolution and safeguard the BES system environment prior to going live. Un-remediated critical and high Nessus compliance scans can significantly hinder system development efforts by introducing security risks, compliance failures, and operational roadblocks. This lack of remediation of system configuration findings increases technical debt, disrupts development workflows, and diverts resources from core project objectives.	NEW Rate Configuration scan result failures and how they impact the security of the BES system (Critical, High, Medium, and Low) instead of simple pass/failure results. In January 2025, 82 critical and high-finding POAMs were listed due to the Tenable configuration scan results. The POAMs for configuration scans are now listed as "failed"; due to the binary nature of the scan engine and does not rate the criticality of the system configuration on the business operation of how the hosts are used. Update the BES Vulnerability Management Procedures document with the Jira ticketing process and workflow from vulnerability and configuration scan remediation with who owns each step. Implement an escalation process to involve senior leadership if deadlines are missed. NOT STARTED	30 days prior to the IRS assessment or the next third-party assessment.	3		3 Med	Open			
94	The lack of an effective way to validate BES requirements could lead to project delays and unfulfilled user needs if DHS later identifies unmet contractual requirements.	Morrill, Scott	Finding - Risk	4/25/2024	Requirements Analysis & Management	The Requirements Traceability Matrix (RTM) (BI-21) plays a vital role in ensuring the system's compliance with contractual commitments by associating each requirement with passed test case(s). However, the approved project schedule shows the RTM completed on 6/26/24, which falls after the Core SIT exit decision on 5/10/24. The ASI provided the BI-22a System Integrity Review Tool (SIRT) to DHS on April 26, 2024, but withdrew the deliverable due to DHS concerns. This BI-22a deliverable may help DHS validate requirements.	It is unclear to DHS and IVV how the ASI will trace requirement coverage for SIT completion. DHS may be unable to make an informed decision on SIT exit criteria. This could lead to DHS starting Final Acceptance Testing (FAT) and then realizing that not all requirements have been fully met, resulting in delays.	IN PROGRESS • Develop a document that provides DHS with a feasible and effective way to map contract requirements to passed test cases, and, per the BI-19 (Complete and Final Test Plan),"Maps the implementation, functional and technical requirements to the test cases and test scripts". • Ensure test scripts thoroughly and comprehensively test the system to assure each requirement has been fully met. • Develop a deliverable that provides an audit trail for changes to the requirements from the contract such as obsoleted requirements, when that decision was made, and the change requests.	5/10/2024	3		3 Med	Open	2/26/2024 - The ASI continues to work on delivering an RTM that DHS can use. The key outstanding items from the Mid-Month project team meeting on 2/20/25 between ASI and IV&V include: Use Cases and Requirements in Jira need to be updated as they have the incorrect status. There are Use Cases in Jira which have been completed but still have active requirements that need to be updated. There are Epics in Jira which are completed but need to be updated to the correct status. The ASI stated fixing these key outstanding items with them to produce a comprehensive and usable RTM. 1/31/2025 - At the CCB meeting on 1/21/2025, the ASI shared their progress on addressing issues with the functional requirements in Jira. This effort is a pre-requisite to providing a comprehensive and accurate set of Requirements Traceability Matrix (RTM) reports. The ASI plans to review the current RTM reports at the next CCB meeting on 2/5/2025, which may provide DHS with clarity on requirements coverage per the current BES contract. 12/31/2024 - The ASI hosted a meeting to review usage of the RTM, but all attendees agreed more work was needed to provide a usable report for both the ASI and DHS to validate requirement coverage. The ASI plans to share a revised RTM at the next CCB meeting. 11/30/2024 - Both DHS and IVV share the same concern that the current set of RTM reports does not provide the functionality needed to validate that contractual requirements have been developed and tested in the current BES solution. IVV reached out to the ASI requesting a demonstration of how the RTM validates that contractual requirements have been met. A meeting is scheduled for December 5th with DHS, the ASI, and IVV. 10/31/2024 - This finding will be reevaluated by the IVV team after the project team completes the replanning and determines the approach, requirements/functionality, and schedule for the Pilot and Statewide rollout. 09/30/2024 - The ASI did demonstrate some progress in providing a set of RTM reports that match	9/9/2024 Include information on interim version provided prior to FAT. 7/12/2024 I'm not sure if this is worth noting but eWorldES did deliver an "interim" BI-21 RTM to satisfy the requirement criteria for entering into BES 1.0 FAT. 06/14/2024 The BI-21 RTM deliverable has been reviewed and discussed multiple times at the bi-weekly CCB meeting. Draft reports of the BI-21
93	Due to the lack of physical and technical testing of the interfaces and data transfer failure, conditions may exist with data format, boundaries, and dependencies. These failures may result in intermittent and hard-to-isolate problems or errors	Reynolds, Mark Evan	Finding - Risk	4/29/2024	Integration and Interface Management	Aside from the functional testing accomplished during epic testing, specific data flow testing is usually part of an interface definition.	This testing is essential before initial deployment to prevent unexpected and difficult-to-resolve issues, such as scrambled or missing data – or the system may have a fault or exception. Since the Project has not established and tested the fault scenarios, we do not know how the system may react.	In Process * API interfaces should be tested for failure conditions during connection and transfer operations. * FTP and file interfaces should be tested for data and file integrity. * Test data fields for system impacts resulting from data that is poorly formatted, out of range, or other unexpected data transmission errors. Removed * [Not applicable—No transactional interfaces, therefore no race conditions] API interfaces do not require race condition testing. * [Redundant with other recommendations] Testing for format, length, and other physical formatting errors in interface records and files is covered under existing test cases.	2024 2nd Qtr	3		2 Low	Open	2/26/2025—The remaining interface test scripts are being prepared to ensure comprehensive testing of all interfaces, including the retesting of previously performed tests to validate accuracy and maintain up-to-date results. 1/30/2025—Interface technical testing will occur during SIT and UAT, depending on the interface partner's resource availability. Interfaces requiring technical testing during this project phase are EDRS, HYCF, DOH, DPS, PARIS, BEER, IRS, IVR, HANA, DoTax, FNS, ACF, ECF, and EDM. IVV will continue to monitor them. 12/31/2024—The initial set of testing was successful. Test planning and execution for the other interfaces should be integrated into the recast schedule discussions. Successful results, including graceful rejection of invalid interface data (such as misnamed SFTP files or short fields/truncated files), are recommended prior to commencement of SIT testing. 10/31/2024—This finding will be reevaluated by the IVV team after the project team completes the replanning and determines the approach, requirements/functionality, and schedule for the Pilot and Statewide rollout. 09/30/2024—The 7 interfaces used in the planned Pilot release, BES1.0, have been completed. However, the other 12 releases required for the statewide release, BES1.1, will be required with the revised approach to merge. This testing is being kept open at a low priority until all 19 interfaces are completed. 08/22/2024—All tests except those related to the Wells Fargo Lockbox interface have been completed. These seven tests require initiating a new service ticket with Wells Fargo. Tests are expected to be completed before the beginning of the Pilot phase. 06/28/2024—The ASI has prepared the test scripts for the 12 interfaces included in the Pilot release. This first round of test scripts reside in the Jira tool and are being executed to be complete by mid-July. The Office of Information Technology (OIT) will be required to provide special case file alterations. 05/23/2024—The ASI and DHS continue to define the interface test	06/14/2024 As mentioned at the May pre-meet, a technical interface team plan does exist to address PCG's recommendations for this finding.5/11/2024 As mentioned at the pre-meet, a technical interface team plan does exist to address PCG's recommendations for this finding.	
83	Gaps in test coverage and slower-than-expected progress in testing may result in schedule delays if subsequent test phases uncover a higher volume of defects and user feedback than initially anticipated.	Kalsi, Neetu	Finding - Issue	6/2/2023	Testing	After examining the Project's R11 QA Dashboards, R11 Traceability Dashboards, and Test Repository, gaps in testing coverage may exist and the progress of testing might be lagging. Concerning testing coverage, it appears that not all epics and use cases in R11 have associated test cases or are testing the correct use cases. In terms of progress, some test cases remain unexecuted, and not all defects have been resolved as the project commences System Integration Testing (SIT). The ASI has plans to complete the INT exit criteria by June 16, 2023, about 2 weeks after SIT begins.	Identifying defects early is vital for effective testing, as it is more efficient and cost-effective to address issues during the early testing stages. If there is slow progress or incomplete testing in the early stages, it can result in more defects leaking into subsequent testing phases, necessitating more extensive and rigorous testing efforts. Insufficient testing coverage or slower than-anticipated progress throughout the project lifecycle increases the risk of encountering significant delays, extensions, or the introduction of defects into the production environment during the final testing stage, known as Final Acceptance Testing (FAT).	OPEN - DHS and ASI revisit the testing approach to prioritize completion of remaining test activities and conduct comprehensive System Integration testing (SIT) to minimize defect leakage to User Acceptance Testing (UAT). - ASI assesses the potential impact of the large number of unresolved defects on future development efforts, ensuring a more robust and efficient development process - ASI develop and implement a revised testing approach to improve the completeness and thoroughness of future testing cycles. CLOSED - The ASI should determine the root cause of the failure to identify simple defects in INT and SIT and implement effective improvement processes to confirm early testing is adequate before entering UAT/FAT (Closed 4/30/2024) - ASI utilize the two-week FAT testing pause to address and resolve outstanding SIT defects and apply the fixes in the FAT environment, ensuring that these defects do not recur when FAT resumes, optimizing testing efficiency and reducing potential defect rediscovery. (Closed 10/30/2024) NOT COMPLETED - The Project team reviews the SIT exit criteria and revises them as needed to ensure UAT/FAT begins with the best system possible. (3/31/2024) - DHS should request that the ASI develop a Corrective Action Plan to address the failure of prior test phases (Unit, INT) to capture defects that rolled into SIT (09/26/2024)	UAT	4		4 Med	Open	2/26/2025 -As of the February 26th status report, the vendor is actively resolving UAT defects. Currently, 147 defects (34 high, 82 medium, 31 low) are ready for UAT testing, while 63 defects are in progress. Looking ahead, System Integration testing (SIT) is scheduled to commence in mid-June. Any development delays may delay testing and potentially push back the go-live date, impacting the project schedule. 1/29/2025- As of January 27, 2025, there are 131 defects ready to be retested from the previous UAT. According to the revised schedule shared by ASI, the next UAT is scheduled to start in mid-January 2026. The priority of this finding has been downgraded from High to Medium. IVV is still waiting for the Root cause analysis (RCA) report and details of the methodology shift from Agile to Waterfall to fully comprehend the implications for the testing process. 12/27/2024- The ASI is testing UAT defects that have been resolved, in advance of any DHS testing. IVV awaits the RCA report and the details of the possible Design, Development, and Implementation (DDI) change from Agile to Waterfall to understand the changes to the testing process that the ASI is proposing. 11/26/2024- The recent UAT testing cycle ended, but did not complete, on November 15, 2024, with a total of 95 failed test cases in the real-time environment and 137 failed test cases in the time travel environment. There was a total of 279 unresolved defects, which raised concerns about the overall stability and reliability of the system. The IVV team is concerned that introducing new functionality on top of the current unstable system may lead to project delays or failure. While ASI has committed to resolving the outstanding defects, the IVV team has added a recommendation on the testing approach. 10/31/2024 – As of October 30, 2024, DHS testers identified a total of 1618 defects with 373 defects still unresolved, comprising 123 High Severity, 177 Medium Severity, and 73 low severity defects. The ASI resolved and moved to UAT 175 defects during the	3/13/2025 Our eWorld Test Lead is inquiring what is needed to close this issue? 2/13/2025 Per Hemant (eW Test Lead): "... there is no change in the testing process for R0.13 as far as waterfall methodology is concerned." We are notplanning to have any phased in functionalities with R0.13. 12/11/2024 Please revisit the first two recommendations as these should reflect an "In Process"
82	The lack of technical documentation may lead to incorrect implementation statements or delay the System Security Plan	Heath, Dustin	Finding - Issue	4/27/2023	Security and Privacy	In April, the ASI/DHS system security plan (SSP) authors began writing implementation statements. Currently, the technical documentation supporting the SSP is unavailable, outdated, or in a draft form. During April, decisions on what tools support the SSP controls are still being decided on. Implementation statements are currently being written from the perspective of how the system should be designed from the SSP author's perspective instead of how the system is actually designed. The SSP authors need to know and use documentation such as System Architecture and Design, network topology, dataflow, ports and protocols, tools used for logging, etc.	Once the system architecture and design have been completed, the SSP authors may need to edit or rewrite implementation statements. A full draft of the SSP is scheduled to be published August 15th , 2023, and the final SSP (ready for federal partner review) is scheduled for September 15, 2023. The SSP is a large technical document with hundreds of controls and control enhancements, and each one requires an implementation statement of how the control or enhancement has been met.	In Progress - Collaborate and communicate with SSP authors about when reliable and correct documentation will be available. - Include the Secure Enclave within the work breakdown structure along with the known tasks related to the IRS Assessment to continue receiving FTI in BES. COMPLETE - Determine when the infrastructure design baseline will be completed. (06/30/2024) - Perform a full review of all draft SSP controls for content and accuracy prior to the start of the Independent Security Controls Assessment of BES and submission of the SSP package to federal regulators. This will allow the SSP authors to update controls with changes from Design through Implementation. (9/26/2024) - Begin monthly Plan of Action and Milestone update meetings between DHS Security and the ASI Security teams to inform each other of progress and updates made against each POAM. (10/31/2024) CLOSED - Moved to Risk #106 IV&V recommends prioritizing the 82 Critical and High finding POAMs as a result of the Tenable Nessus Configuration scans. Implementing the security configurations later in development may cause the system to become unfunctional, and require additional development time to fix.	Prior to the start of the third-party assessment.	2		2 Low	Open	2/28/2025—The ASI and DHS have been collaboratively working on the NIST 800-53R5 Security Policies per the NIST 800-53R5 control family that will be used for the BES System. Drafts for each policy have been created, with 12 ready for internal review. DHS has reviewed several of the policies and provided additional instruction as to how they should be structured. The ASI has dropped MongoDB from the Secure Enclave after evaluating IRS Publication 1075 compliant alternatives and is converting to Google Firestore. Considering that a majority of the documentation and artifacts are completed or nearing completion and the extended schedule, IV&V has changed the criticality of this issue to low. 1/27/2025 – The ASI has rewritten most of the System Security Plan (SSP) responses to meet the requirements of NIST 800-53. They also have worked on writing new security policies for BES. Of the 19 policies to be written at the BES Division level, 6 have been turned over to DHS for review and approval, and 7 have been written and go through internal review before submission to DHS. DHS is determining the process to review and approve division-level policies. BES currently has 190 open Critical and High-finding POAMs; 82 are from Tenable Nessus Configuration scans. The 82 critical and high Nessus Configuration findings should be prioritized, reviewed, or implemented immediately. Once the remediations from the configuration scans are implemented, the system may break down and require additional development to run in a more secure environment. Due to the current progress and the schedule sent for review in mid-January, there is significantly more time to complete the remaining task. Therefore, this issue has been lowered to a medium finding. 12/31/2024 - The ASI resolved the critical and high POAMs related to patching of "Spring Boot". Additionally, six security policies were completed by the ASI and sent to DHS for final editing and approval. The availability of DHS resources to complete	3/13/2025 We pointed out the following project schedule tasks as it relates to Secure Enclave. (email showed snip of project schedule with security enclave called out)Also, mentioned is the work tied to Epic 278 in Jira:[BES-329] 278b Secure Enclave - Jira for the following project schedule task:At a minimum, the progress should change from "Not Started" to "In Process". I would like to sync up further to discuss recommendation #2 or if you have specific information you would like to see on the

ID	Title	Reporter	Finding Type	Identified Date	Category	Observation	Significance	Recommendation	Event Horizon	Impact	Probability	Analyst Priority	Finding Status	Status Update	Client Comments	Vendor Comments
80	Development delays have negatively impacted the project schedule and delayed go-live.	Fors, Michael	Finding - Issue	6/30/2022	Configuration and Development	ASI had previously reported development activities have been slowed as they have been unable to achieve and/or maintain their expected development velocity...	If the ASI is unable to achieve a velocity that enables them to meet planned milestones, schedule delays may lead to a delayed system go-live date...	OPEN • ASI regularly report estimated story points for the total remaining project work to reach go-live...	Immediate	3		3 Med	Open	2/28/2025 - The ASI recently submitted an Improvement Plan to DHS...	2/13/2025 Perhaps for the next MSR we should review the outstanding recommendations... 09/09/2024 Vic confirmed that 50 developers have been added to project. 05/11/2024 As discussed at pre-meet...	
74	A BES Project schedule based on inaccurate estimations diminishes effective planning and resource management, which could result in late deliverables, cost increases, and a late go-live.	Molina, Brad	Finding - Issue	11/29/2021	Project Management	DHS and the ASI have tried multiple times to rework the schedule with results that have not yielded improvement...	If estimates for project schedule activities are not accurate, this can lead to constant schedule changes, resources not being available when needed...	OPEN - Monitor, evaluate and revise scheduling estimates for accuracy based on the project teams past performance...	Immediate	3		4 High	Open	2/28/2025 - The ASI received final approval from DHS on the revised schedule...	3/13/2025 The updated project schedule was reviewed by DHS and stakeholders...
73	The planned BES infrastructure is complex which could be difficult to implement and lead to schedule/cost impacts.	Fors, Michael	Finding - Risk	10/28/2021	System Design	Current ASI infrastructure plans include a significant number of sophisticated components that make up a large public cloud infrastructure...	If the level of effort to implement and manage the complexities of the BES infrastructure is not accurately accounted for and staffed by the ASI...	• ASI develop a process to closely monitor cloud and other product changes...	Next several months	2		2 Low	Open	2/28/2025 - The project continues to build out of some infrastructure components for the Secure Enclave...	2/13/2025 Perhaps for the next MSR we should review the outstanding recommendations... 11/17/2023 - Again, why is DR being referenced here?... 10/31/2023 - Vic - westill do notunderstand why this remains. 10/11/2023
70	Insufficient configuration management could lead to development confusion and reduce the effectiveness of defect resolution	Fors, Michael	Finding - Risk	8/23/2021	Configuration and Development	The BI-6 DDI Plan Deliverable, Section 5.2 establishes the framework for the Configuration Management Plan, however, it remains unclear if sufficient progress has been made...	Configuration Management is a set of processes and procedures that ensures the BES is understood and works correctly...	OPEN • ASI adhere to plans for configuration management as documented in BI-6 DDI Plan, Section 5.2 and clarify details...	ASAP	2		2 Low	Open	2/28/2025 - The ASI has reported progress in constructing their configuration management database within ServiceNow...	9/9/2024 Still in progress. Plan to update Configuration Management Plan list of items... 10/31/2023 - Vic - We provided a listing, working on a plan to implement.