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June 21, 2024

The Honorable Ronald D. Kouchi  
President of the Senate  
and Members of the Senate  
Thirty-Second State Legislature  
State Capitol, Room 409  
Honolulu, Hawai'i 96813

The Honorable Scott K. Saiki  
Speaker and Members of the  
House of Representatives  
Thirty-Second State Legislature  
State Capitol, Room 431  
Honolulu, Hawai'i 96813

Aloha Senate President Kouchi, Speaker Saiki, and Members of the Legislature:

Pursuant to HRS section 27-43.6, which requires the Chief Information Officer to submit applicable independent verification and validation (IV&V) reports to the Legislature within ten days of receiving the report, please find attached the report the Office of Enterprise Technology Services received for the State of Hawai'i, 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,

Tom Ku  
Acting Chief Information Officer  
State of Hawai'i

Attachments (2)



# Hawaii Department of Human Services Systems Modernization Project

Final IV&V Status Report  
for Reporting Period: May 1 – 31, 2024

*Submitted: June 17, 2024*

# Overview

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- [Executive Summary](#)
- [IV&V Findings and Recommendations](#)
- [IV&V Engagement Status](#)
- [Appendices](#)
  - [A – IV&V Criticality Ratings](#)
  - [B – Risk Identification Report](#)
  - [C – Acronyms and Glossary](#)
  - [D – Background Information](#)



Solutions that Matter

# Executive Summary




The background is a solid blue color. It features several abstract geometric shapes, including squares and rounded rectangles, in various shades of blue and white. Some shapes are solid, while others are outlined. They are scattered across the page, with a higher concentration on the left side and some on the right side.

# Executive Summary



In May 2024, the ASI released a revised project schedule that consolidated three releases into two, extended System Integration Testing (SIT), and pushed out the BES Pilot eight weeks. The ASI and DHS are considering actions in the following areas:

- **System Integration Testing (SIT).** A high number of defects (3 critical, 22 high, and 114 medium), indicating code quality concerns were identified during SIT. These defects need to be resolved before Final User Acceptance Testing (FAT), which is scheduled to start on June 24th.
- **Development.** For data conversion, the remaining items to be mapped has been stagnant. It is important for all data elements to be fully mapped to the BES applications to ensure thorough SIT and FAT is performed. Progress is being made for interface development; however, the testing approach and test plans are not complete.
- **Security.** Findings from the third-party assessment will require a remediation plan to address risk that could impact BES access to critical data, such as the National Directory of New Hires (NDNH).

Mar	Apr	May	Category	IV&V Observations
			Project Management	The revised project schedule consolidated three releases into two and extended SIT. The new schedule seeks to simplify release management and limit the number of Epics starting testing cycles late.

# Executive Summary



Mar	Apr	May	Category	IV&V Observations
M	M	M	System Design	The ASI will continue with live Sprint Demos for the remainder of the project. This will support strong collaboration with DHS on remaining designs. The Self-Service Portal development will follow the Waterfall methodology, so no sprints or demos will occur.
M	M	M	Configuration and Development	Although the ASI revised their Velocity metric for reporting development efficiency, they plan to introduce a Burn Down Chart, as recommended by DHS and IV&V. This new chart will provide a clear view of the progress towards completing remaining work for each release.
H	H	M	Integration and Interface Management	DHS and the ASI started to develop technical testing approaches for interfaces and plan to discuss the details in June.
H	H	H	Testing	The revised project schedule added more time for SIT, yet DHS and IV&V remain concerned about the high defect counts at the end of May, which could affect the Project's ability to start FAT in June.
H	H	H	Security and Privacy	In May, DHS, the ASI, and the IV&V third-party assessment team discussed the possible need to retest security controls due to the assessment findings. The retest results could impact BES access to (NDNH) data.

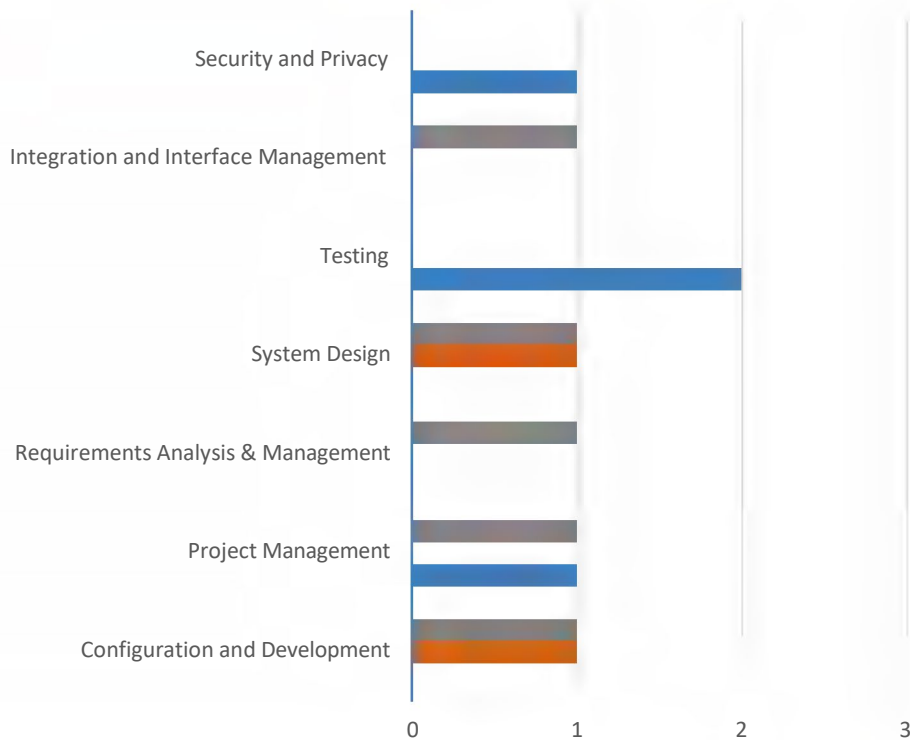
# IV&V Findings and Recommendations

# IV&V Findings and Recommendations

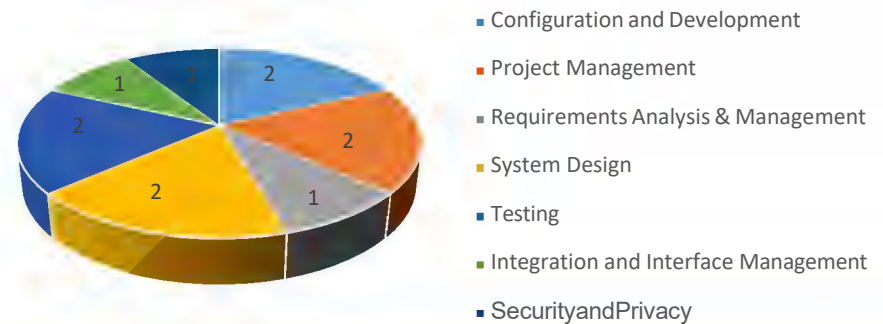


As of the May 2024 reporting period, PCG is tracking 11 open findings (5 risks, 6 issues) and has retired a total of 75 findings. Of the 11 open findings, 4 are High, 5 are Medium, and 2 are Low.

## Open Risks & Issues



## Open Risks & Issues by Category

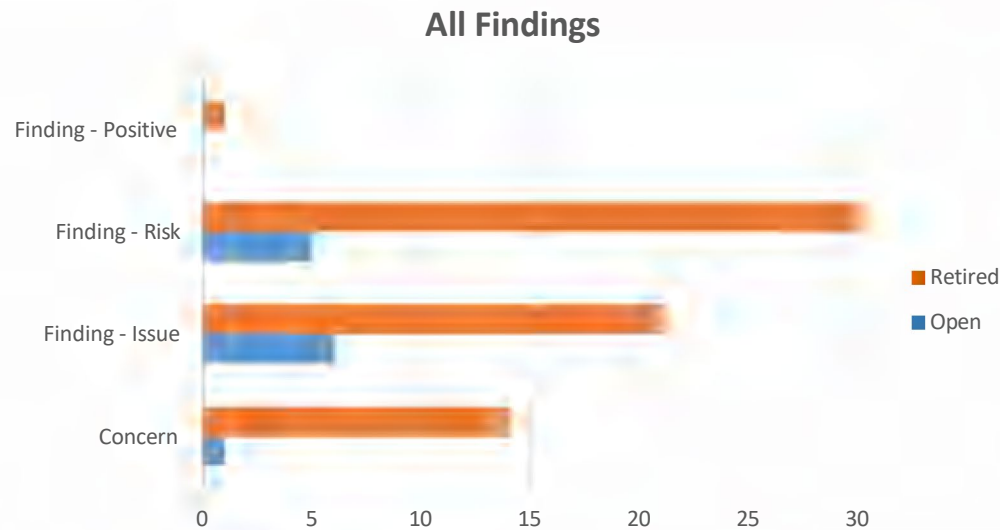




# IV&V Findings and Recommendations



The following figure provides a breakdown of the 85 IV&V findings (positive, risks, issues, concerns) by status (open, retired).



# IV&V Findings and Recommendations



## Findings Retired During the Reporting Period

#	Finding	Category
N/A		

# IV&V Findings and Recommendations




## Preliminary Concerns Investigated During the Reporting Period

#	Finding	Category
95	<p><b>A lack of documented negative tests (e.g., invalid inputs, boundary testing, and deviations from the normal flow) may lead to an inability to confirm this testing occurred.</b></p> <p>The ASI provided IV&amp;V with high-level negative test documentation for eight areas (invalid personal information, missing required information, duplicate applications, system time-out handling, unsupported browser or device, concurrency issue, boundary conditions testing, performance under load) executed by the QA team. IV&amp;V will review the Jira negative testing results and assess for risks to the Project.</p>	Testing

# IV&V Findings and Recommendations



## Project Management

#	Key Findings	Criticality Rating
74	<p><b>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.</b></p> <p>The ASI released a revised schedule that may reduce DHS/IV&amp;V concerns. The draft schedule was under review at the end of this reporting period. The revised schedule has three key deliverables (Requirements, Traceability Matrix (RTM), System Integrity Review Tool (SIRT), and Validated Results of Data Conversion Testing) scheduled from June 7 – 14, which could be a resourcing challenge for DHS. IV&amp;V shared the DHS resourcing challenge with the ASI on May 31st and the ASI responded immediately that they would address it at the next Schedule Review Meeting on June 5, 2024. IV&amp;V will continue to monitor the project team’s ability to meet this schedule and for any new or re-introduced risks that could impact the go-live dates.</p>	

Recommendations	Progress
<ul style="list-style-type: none"> <li>Monitor, evaluate and revise scheduling estimates for accuracy based on the project teams past performance and resources available to do the remaining work.</li> </ul>	In Process
<ul style="list-style-type: none"> <li>ASI conducts a Root Cause Analysis (RCA) with DHS and IV&amp;V to determine why the BES Project continues to experience schedule delays.</li> </ul>	Not Started
<ul style="list-style-type: none"> <li>ASI Project Management works with the development teams to evaluate the accuracy of Velocity and adjust accordingly to reduce risk in the revised BES project schedule.</li> </ul>	In Process

# IV&V Findings and Recommendations



## Project Management

#	Key Findings	Criticality Rating
88	<p><b>Risk – Implementing a Core Solution for go-live carries inherent risks that may impact overall Project success and reduce user adoption.</b></p> <p>No material update in this reporting period.</p>	M

Recommendations	Progress
<ul style="list-style-type: none"><li>• Increase OCM efforts to effectively manage user, general public, and legislative expectations for BES version at go-live.</li></ul>	In process
<ul style="list-style-type: none"><li>• Prioritize feedback from users and FNS to ensure the solution meets their core needs and so users are clear on what features they are, and are not, getting.</li></ul>	In process
<ul style="list-style-type: none"><li>• Actively monitor, assess, and address potential challenges throughout the development process including code quality, cutting scope to meet development milestones, insufficient user validation of demonstrated functionality, and fully defined workarounds to accommodate for the missing functionality.</li></ul>	In process
<ul style="list-style-type: none"><li>• DHS carefully assesses whether the advantages of a timely release outweigh the advantages of going live with a system that provides more comprehensive functionality, requires fewer workarounds, and increases user satisfaction.</li></ul>	In process
<ul style="list-style-type: none"><li>• Actively monitor tester and pilot feedback and track users' biggest pain points. Pain points can then be prioritized based on negative impact and project leadership can decide if fixing or changing poor designs can be implemented prior to go-live.</li></ul>	Not Started

# IV&V Findings and Recommendations



## System Design

#	Key Findings	Criticality Rating
86	<p><b>Issue – Limited collaboration between the ASI and DHS in the design process could lead to BES usability issues and functionality gaps in the application, not meeting critical business needs for DHS and State clients.</b></p> <p>The ASI plans to continue live Sprint Demos for the remaining Epic design work, providing a venue to increase collaboration with DHS. The SSP development will follow the Waterfall methodology, so no sprints or demos will occur.</p>	M

Recommendations	Progress
<ul style="list-style-type: none"><li>• Include a wide enough audience in all design and demo sessions to validate FNS and DHS functional and technical requirements and system usability.</li></ul>	Completed
<ul style="list-style-type: none"><li>• Perform Sprint and Epic demos in alignment with development Sprint completion (demo functionality/requirements as they are developed) to get early feedback on work products.</li></ul>	In Process
<ul style="list-style-type: none"><li>• Perform comprehensive (demo all requirements) review during Epic demos, not just the items that were added/updated, allowing DHS to provide early feedback on possible issues/gaps that might not be apparent when focusing on specific functionality.</li></ul>	Completed

# IV&V Findings and Recommendations



## System Design


#	Key Findings	Criticality Rating
73	<p><b>Risk – The planned BES infrastructure is complex which could be difficult to implement and maintain and could lead to schedule/cost impacts.</b></p> <p>No material update in this reporting period.</p>	

Recommendations	Progress
<ul style="list-style-type: none"><li>• 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.</li></ul>	In process
<ul style="list-style-type: none"><li>• The project team work to establish strong governance over the utilization and maintenance of various tools/components.</li></ul>	In process
<ul style="list-style-type: none"><li>• ASI allot time in the schedule to conduct proof of concepts to assure infrastructure components work as expected.</li></ul>	In process
<ul style="list-style-type: none"><li>• ASI maintain a detailed schedule for DevOps implementation tasks to avoid unexpected delays that could delay project milestones and the critical path.</li></ul>	In process

# IV&V Findings and Recommendations



## Configuration and Development

#	Key Findings	Criticality Rating
70	<p><b>Risk – Insufficient configuration management could lead to development confusion and reduce the effectiveness of defect resolution.</b></p> <p>IV&amp;V has yet to receive a detailed, comprehensive list of configuration items the ASI will be tracking.</p>	
Recommendations		Progress
<ul style="list-style-type: none"><li>• 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.</li></ul>		In process
<ul style="list-style-type: none"><li>• ASI validate plans for configuration management with DHS and agree on a meaningful set of configuration items or settings they will track.</li></ul>		In process
<ul style="list-style-type: none"><li>• DHS and ASI work to clarify/solidify plans for the potential use of configuration management tools and DHS work to fund and procure a CM tool, as required, to avoid any negative impacts to the Project.</li></ul>		In process



# IV&V Findings and Recommendations



## Configuration and Development

#	Key Findings	Criticality Rating
80	<p><b>Issue – Development delays could negatively impact the project schedule and delay go-live.</b></p> <p>The ASI adjusted how they calculate velocity to provide greater transparency on the level of progress they're making. The ASI is elevating the planned story points per sprint to motivate developers to be more productive even though the planned goal may not be realistic or achievable. While this approach may benefit the development team, it obfuscates their true productivity and whether the team is getting better at estimating (a key Agile methodology objective). IV&amp;V recommends that the ASI work to improve their estimates to provide realistic timelines, avoiding continual re-baselining of schedule and providing stability in dates for DHS tasks. The ASI may wish to consider whether they keep their developer “stretch” story point goals separate from what's reported to the customer, executive stakeholders, and project leadership. IV&amp;V recommends the ASI enhance their executive reporting by providing a clear perspective on their productivity/velocity and remaining work (e.g. via Burn-down charts).</p>	M

Recommendations	Progress
<ul style="list-style-type: none"><li>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.</li></ul>	In process
<ul style="list-style-type: none"><li>The ASI should provide DHS with the time needed to effectively evaluate the software demonstrations (demos) and elicit productive design discussions with DHS attendees during each demo.</li></ul>	In process
<ul style="list-style-type: none"><li>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.</li></ul>	Not started
<ul style="list-style-type: none"><li>The ASI should consider enhancing the depth of developer unit testing.</li></ul>	Not Started

# IV&V Findings and Recommendations



## Integration and Interface Management


#	Key Findings	Criticality Rating
93	<p><b>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.</b></p> <p>The ASI and DHS continue to define the interface test approaches. Technical interface testing details, including the Transport Layer, are planned to be discussed in June.</p>	M

Recommendations	Progress
• API interfaces should be tested for failure conditions during connection and transfer operations.	Not Started
• FTP and file interfaces should be tested for data and file integrity.	Not Started
• Test data fields for system impacts resulting from data that is poorly formatted, out of range, or other unexpected data transmission errors.	Not Started

# IV&V Findings and Recommendations



## Testing

#	Key Findings	Criticality Rating
83	<p><b>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.</b></p> <p>On 5/9/2024, 43% (352 out of 818) of the defects identified during SIT were unresolved. Of those, there were 2 critical severity defects and 19 high severity defects. By the end of this reporting period, the percentage of unresolved defects decreased to 28% (226 unresolved out of 818 defects).</p> <p>IV&amp;V will monitor whether the SIT date extension, introduced as part of May's revised project schedule, improve defect resolution totals entering FAT.</p> <p>IV&amp;V is concerned that defects not detected in Integration Testing (INT) continue to leak into SIT, including critical and high-severity defects in numbers remaining consistently above SIT exit thresholds. This defect leakage could delay FAT completion, delay the go-live date, and/or result in incorrect benefit issuance.</p>	

Recommendations	Progress
<ul style="list-style-type: none"> <li>Monitor INT/SIT closely for both breadth and depth of testing to ensure the system is adequately tested.</li> </ul>	In process
<ul style="list-style-type: none"> <li>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.</li> </ul>	In process

Independent Verification & Validation Monthly Report: May 2024

# IV&V Findings and Recommendations



## Testing

#	Key Findings	Criticality Rating
89	<p><b>Issue – The current mitigation approach to complete the development of the remaining Epics is condensed and aggressive and may increase the likelihood of schedule delays, quality issues, and a higher volume of testing defects.</b></p> <p>The risk of a schedule delay was realized when the ASI published a revised project schedule (under DHS review as of 5/30/2024) that extends design, development and SIT execution and pushes the start of FAT from 5/13/2024 to 6/24/2024. IV&amp;V will evaluate performance to the revised schedule (which removes the overlap of remaining pilot development and test execution efforts) to determine whether these actions will help to avoid further schedule delays.</p>	

Recommendations	Progress
<ul style="list-style-type: none"><li>Develop Contingency Plans if the mitigation plan continues to see slippage affecting INT and SIT.</li></ul>	In process
<ul style="list-style-type: none"><li>The ASI provides comprehensive INT results and SIT scenarios for incomplete Epics to DHS for review/approval ahead of SIT execution.</li></ul>	In process
<ul style="list-style-type: none"><li>The ASI release a detailed schedule of events, including development completion, INT start, SIT start for each epic covered in the mitigation plan.</li></ul>	Complete
<ul style="list-style-type: none"><li>The ASI should evaluate if Epics entering SIT late might require retesting functionality that had already been tested</li></ul>	Complete

# IV&V Findings and Recommendations



## Security and Privacy

#	Key Findings	Criticality Rating
82	<p><b>Issue – The lack of technical documentation may lead to incorrect implementation statements or delay the System Security Plan (SSP).</b></p> <p>Throughout May, DHS and the ASI continued to author, update, and locate policies cited in the SSP. Additionally, the ASI is authoring procedure-related documentation needed for the Independent Security Assessment. The ASI is nearing the completion of the design of the Secure Enclave, which will house sensitive data, including federal tax information.</p>	

Recommendations	Progress
<ul style="list-style-type: none"><li>Determine when the infrastructure design baseline will be completed.</li></ul>	In process
<ul style="list-style-type: none"><li>Determine when documentation will be created, updated, and available for the SSP authors.</li></ul>	In process
<ul style="list-style-type: none"><li>Collaborate and communicate with SSP authors about when reliable and correct documentation will be available.</li></ul>	In process
<ul style="list-style-type: none"><li>Perform a full review of all SSP controls for content and accuracy that have been written as drafts 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.</li></ul>	In process

# IV&V Findings and Recommendations



## Requirements Analysis & Management

#	Key Findings	Criticality Rating
94	<p><b>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 application requirements.</b></p> <p>In the revised schedule, the ASI provides the BI-21 Requirements Traceability Matrix (RTM) for review on 6/7/24 (before FAT entry). The updated SIRT will be provided at the same time. Although the RTM is being provided ahead of schedule in response to DHS' request, DHS now faces reviewing 2 major project deliverables (BI-21 RTM and BI-22a SIRT) during the same 7-day (6/7-14/2024) period.</p> <p>If the revised schedule does not allow enough time for DHS to review these deliverables or the RTM does not fully support DHS' ability to validate the BES system requirements, FAT entry and go-live may be delayed. IV&amp;V shared this concern about the review overlap with the ASI on May 31 and the ASI immediately responded that they would address it.</p>	M
Recommendations		Progress
<ul style="list-style-type: none"><li>Develop a document that provides DHS with a feasible and effective way to map requirements to passed test cases, and, per the BI-19 (Complete and Final Test Plan), "Maps the functional and technical requirements to the test cases and test scripts".</li><li>Ensure test scripts thoroughly and comprehensively test the system to assure each requirement has been fully met.</li></ul>		In Process  In Process



# IV&V Status

# IV&V Engagement Status



IV&V Engagement Area	Mar	Apr	May	Comments
IV&V Budget				
IV&V Schedule				
IV&V Deliverables				PCG submitted the final April IV&V Monthly Status Report.
IV&V Staffing				
IV&V Scope				DHS has extended the IV&V contract to April 2025.

## 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 in the May reporting period:
  - Completed – April Monthly Status Report
  - Ongoing – Review the BES Project Artifacts and Deliverables
  - Ongoing – Attend BES Project meetings, (see [Additional Inputs](#) pages for details)
  - Reviewed available ASI contracts and contract amendments documentation
- Planned IV&V activities for the June 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-5 Project Schedule - BES 2023 Primary	05/09/2024, 05/13/2024, 05/28/2024	N/A
BI-5 Project Schedule - BES 2023 DDI	05/09/2024, 05/13/2024, 05/28/2024	N/A

# 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
UAT Testing Dashboard	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



## Meetings and/or Sessions Attended/Observed:




1. IV&V Team Meeting – 5/1/2024, 5/2/2024, 5/6/2024, 5/9/2024, 5/13/2024, 5/16/2024, 5/23/2024, 5/28/2024, 5/30/2024
2. IV&V March 2024 Pre-Draft MSR Findings Review – 5/9/2024
3. HI DHS BES January Draft IV&V Report Review – 5/14/2024
4. Bi-Weekly DHS and IV&V Touch Base – 5/14/2024
5. Weekly BES Infrastructure meeting – 5/3/2024, 5/10/2024, 5/17/2024, 5/24/2024, 5/31/2024
6. DHS/IV&V Check-in – 5/9/2024, 5/23/2024
7. Weekly Client BES 2023 Project Status Meeting – 5/8/2024, 5/15/2024, 5/22/2024, 5/29/2024
8. Security Touchpoint – 5/1/2024, 5/8/2024, 5/15/2024, 5/22/2024, 5/29/2024
9. (External) Weekly Interfaces Touchpoint – 5/6/2024, 5/13/2024, 5/20/2024
10. (External) Readiness - Working Group Meeting – 5/7/2024, 5/14/2024, 5/21/2024, 5/28/2024
11. (External) Bi-Weekly Client BES 2023 Schedule Review/Status – 5/10/2024, 5/22/2024, 5/23/2024
12. (External) Bi-weekly BES CCB Meeting – 5/1/2024, 5/15/2024, 5/29/2024
13. (External) BES: FNS Connect – 5/9/2024
14. (External) C!A Current Weekly Checkpoint– 5/28/2024
15. eWorld/IV&V Mid Month Check-in – 5/20/2024
16. (External) BES M&O Project Status Meeting – 5/6/2024, 5/13/2024, 5/20/2024, 5/28/2024
17. (External - Epic Demo) Epic 238 Claim Setup and Maintenance – 5/3/2024
18. (External) BES Data Conversion - Source to Target Mapping Review – 5/16/2024, 5/23/2024, 5/28/2024, 5/30/2024
19. IV&V/DHS BES 1.0 FAT preparation discussion – 5/24/2024



# 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

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

# Appendix C – Acronyms and Glossary



<b>Acronym</b>	<b>Definition</b>
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



<b>Acronym</b>	<b>Definition</b>
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

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<b>Acronym</b>	<b>Definition</b>
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
- Security and Privacy
- Testing
- OCM and Knowledge Transfer
- Pilot Test Deployment
- Deployment



**Solutions that Matter**

ID	Title	Reporter	Finding Type	Identified Date	Category	Description	Significance	Recommendation	Exit Horizon	Impact	Probability	Priority	Status	Findings	Status Update	Client Comments	Vendor Comments
93	Lack of documented negative test results (e.g., invalid inputs, boundary testing, and deviations from the normal flow) may lead to an inability to uncover this testing occurred.	Hackett, Donna	Concern	4/30/2024	Testing	The ASI test lead confirmed that while negative and alternate path testing is not formally documented in SIT, error path testing will occur during ad hoc and end-to-end testing after SIT. The test lead also confirmed that documentation (other than defect logging) will not be generated during ad hoc testing.	Without supporting documentation of planned negative tests and testing outcomes, it will be unclear whether a full range of testing has been completed to ensure the application's overall quality and robustness. This could result in defect leakage into FAT, possibly causing delays to FAT and Go-Live.	Since the ASI cannot perform negative and alternate path testing for all test cases, DHS should be involved in determining the subset of tests that should be covered.	5/2/2024	0	Low	Open	5/31/2024 - The ASI provided IVV with high-level negative test documentation for eight areas (invalid personal information, missing required information, duplicate applications, system time-out handling, unsupported browser or device, concurrency issue, boundary conditions testing, performance under load) executed by the QA team. IVV will review the Jira negative testing results and assess for risks to the Project.			6/14/2024 IVV has access to all test results via Jira. We have made a concerted effort to maintain transparency throughout the project. Additionally, there was a meeting held specifically to demonstrate how to review tests and test results.  5/11/2024 Here is the negative testing documentation that the QA team executed: Invalid Personal Information Test Case: Enter invalid personal information (such as incorrect social security number, wrong date of birth, or	
94	The lack of an effective way to validate BES requirements could lead to project delays and unmet user needs if DHS later identifies unmet application requirements.	Hackett, Donna	Finding & Risk	4/29/2024	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 cases). However, the approved project schedule shows the RTM completed on 6/24/24, which falls after the Core SIT end decision on 5/1/2024. The ASI provided the BI-21 System Integrity Review Tool (SIRT) to DHS on April 26, 2024, but withdrew the deliverable due to DHS concerns. This BI-21a deliverable may help DHS validate requirements.	It is unclear to DHS and IVV how the ASI will trace requirement coverage for major requirements to passed test cases, and per the BI-19 (Complete and Final Test Plan), "Maps the 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 document that provides DHS with a feasible and effective way to map requirements to passed test cases, and per the BI-19 (Complete and Final Test Plan), "Maps the 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.	5/20/2024	3	Medium	Open	5/31/2024 - In the revised schedule, the ASI provides the BI-21 Requirements Traceability Matrix (RTM) for review on 6/12/24 (before FAT entry). The updated SIRT will be provided at the same time. Although the RTM is being provided ahead of schedule in response to DHS' request, DHS now faces reviewing 2 major project deliverables (BI-21 RTM and BI-21a SIRT) during the same 7-day (6/7-14/2024) period. If the revised schedule does not allow enough time for DHS to review these deliverables or the RTM does not fully support DHS' ability to validate the BES system requirements, FAT entry and go-live may be delayed. IVV shared this concern about the review overlap with the ASI on May 31 and the ASI immediately responded that they would address it.		06/14/2024 The BI-21 RTM deliverable has been reviewed and discussed multiple times at the bi-weekly C&M meeting. Draft reports of the BI-21 have also been provided and reviewed. Please refer to the Jira entry steve.assman.net/wiki/Spaces/PWAS/pages/89530208/C&M-Meeting for more details. I wanted to address the email sent by PGC at 4:47 pm on May 31st, stating their concern regarding the deliverable timing. I responded within the hour, suggesting that we could look at adjusting the dates.		
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	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.	Not Started 1. API interfaces should be tested for failure conditions during connection and transfer operations. 3. FTP and file interfaces should be tested for data and file integrity. 4. Test data fields for system impacts resulting from data that is poorly formatted, out of range, or other unexpected data transmission errors. Removed 2. [n/a, no transactional interfaces therefore no race conditions] API interfaces should be tested for race conditions. 5. [redundant with #4] Interface records and files should be tested for format, length, or other physical formatting errors.	2024 2nd Qtr	4	2	Medium	Open	05/23/2024 - The ASI and DHS continue to define the interface test approaches. Technical interface testing details, including the Transport Layer, are planned to be discussed in June.		06/14/2024 As mentioned in the May pre-meet, a technical interface team plan does exist to address PGC's recommendations for this finding 5/11/2024  As mentioned in the pre-meet, a technical interface team plan does exist to address PGC's recommendations for this finding.	
89	The current approach to complete development of the remaining epics is condensed and aggressive and may increase the likelihood of schedule delays, quality issues, and higher volume of testing defects.	Hackett, Donna	Finding & Issue	12/21/2023	Testing	Ten of the Epics scheduled for completion before Release 0.12 SIT will not be ready. To avoid SIT delays, the current approach is to begin SIT without the 10 Epics and test them as they are completed. Additionally, Release 0.12 development that was extended two weeks from the scheduled end date has been extended for another ten business days.	Overlapping development and testing introduces potential quality issues. Insufficient INT may create gaps in SIT, leading to further quality issues. This may increase the risk of significant delays or introduce defects into the production environment.	OPEN - Develop Contingency Plans if the mitigation plan continues to see slippage affecting INT and SIT. The ASI provides comprehensive INT results and SIT scenarios for incomplete Epics to DHS for review/approval ahead of SIT execution. CLOSED - The plan to complete BES implementation does not include over-lapping testing phases (5/24/2024). The ASI should evaluate if Epics entering SIT may require re-testing functionality that had already been tested. (closed 0501402024) - The ASI release a detailed schedule of events, including development completion, INT start, and SIT start for each epic covered in the mitigation plan. (closed 0601402024) CANCELLED - Develop a Risk Mitigation Plan to address challenges of managing multiple test environments, multiple code bases and versioning within and across Releases.	Now	4	5	High	Open	5/31/2024 - The risk of a schedule delay was realized when the ASI published a revised project schedule (under DHS review as of 5/30/2024) that extended design, development and SIT execution and pushed the start of FAT from 5/13/2024 to 6/24/2024. IVV will evaluate performance to the revised schedule (which removes the overlap of remaining pilot development and test execution efforts) to determine whether these actions will help to avoid further schedule delays. 4/30/2024 - The eight Epics expected to enter SIT in a phased approach are delayed and have not done so by the end of April. SIT is scheduled to start for these Epics on May 23, 2024. Of 348 executed core correspondence SIT tests, 177 (51%) failed, with the Eligibility Client Correspondence type comprising 83% of those failures. The high proportion of failed SIT correspondence tests supports IVV's ongoing concern that overlapping testing phases and BES releases compromise test execution quality. IVV is also concerned that the high number of SIT defects detected with a single correspondence type indicates its complexity and increases the risk that FAT testers (the final testers before Go-Live) are at risk of encountering similarly high defect counts that diminish their enthusiasm for the testing process and their advocacy of the application to other end users. 3/31/2024 - On 3/15/2024, DHS and the ASI agreed to enter SIT for BES 1.0 without meeting the criteria for a complete test script package documented in BI-19 Complete and Final Test Plan. IVV is concerned that starting SIT without the complete and approved SIT Test Script package may lead to schedule delays. The updated schedule reflects an overlap of BES 1.0 SIT and SIT efforts, which could result in resource constraints. Testing also overlaps across releases (BES 1.0 and BES 1.1) which adds complexity and risk when maintaining and coordinating code across multiple test environments. 2/22/2024 - During the February 21, 2024, Weekly Project Status Meeting and February 28, 2024, BES		06/14/2024 Why is this still red? This could be in yellow for monitoring after discussions in April (March reports). In addition, the items listed should be done. All SIT tests have been reviewed and approved by DHS. There is no retesting needed based on the epics being phased in 04/10/2024 - eWorld's used and followed the same SIT entry criteria as documented in the BI-19 for BES 1.0. There were no amendments to the BI-19 needed as a result of the "go" decision. An exception was made by DHS for	

ID	Finding	Identified	Reporter	Type	Category	Description	Significance	Recommendation	Event Horizon	Impact	Probability	Analyst	Finding Status	Update	Client Comments	Vendor Comments
88	Implementing a Core Solution for go-live carries inherent risks that may impact overall project success and reduce user adoption.	11/30/2023	Fare, Michael	Finding - Risk	Project Management	The project has elected to implement a Core Solution at go-live to meet their stated timeline. This version is generally referred to as Agile software development or a Minimum Viable Product (MVP), which is a simplified version of a product that 1) offers functionality that meets the core needs of users, 2) can accelerate the timeline for go-live, and 3) allows the project to get real-world feedback from users to refine/future product development.	Going live with a limited version of a software product entails inherent risks, such as potential challenges in securing user buy-in. This can result in limited user adoption, user dissatisfaction, and negative publicity, particularly considering the financial investment made for the delivery of limited functionality. A compressed timeline may compromise the quality of designs, user interface sophistication, and lead to an uptick in software bugs and suboptimal code. Further, this approach may expose the project to regulatory compliance risks, such as last-minute objections from regulatory bodies like FNS, which could find certain system elements non-compliant with their standards and delay the go-live date. Mismatch between stakeholder expectations and the Core Solution may lead to dissatisfaction or a lack of support for the project and could negatively impact future project funding requests. Implementing a limited Core Solution typically requires the customer to implement multiple workarounds until automated features can be built into the system. Users could become impatient if these features are further delayed when bug fixes and other features take precedence. Others may lose confidence that the features or system improvements will ever be implemented. Going live with a solution that is missing functionality that stakeholders were expecting typically requires an increase in OCM efforts both by the ASI and DHS staff to temper stakeholders' reactions to a system with limited functionality.	• Increase OCM efforts to effectively manage user, general public, and legislative expectations for the Core Solution approach. • Prioritize feedback from users and FNS to ensure the Core Solution meets their core needs and so users are clear on what features they are, and are not getting in the released product. • Actively monitor, assess, and address potential challenges throughout the core solution development process including code quality, coding scope to meet development milestones, insufficient user validation of demonstrated functionality, and fully defined workarounds to accommodate for the missing functionality. • DHS carefully assesses whether the advantages of a timely release outweigh the advantages of going live with a system that provides more comprehensive functionality, requires fewer workarounds, and increases user satisfaction and buy-in. • Actively monitor tester and pilot feedback and track users' biggest pain points. Pain points can then be prioritized based on negative impact and project leadership can decide if fixing or changing poor designs can be implemented prior to go-live.	New	3	3	Med	Open	4/30/2024 - No material update. 6/30/24 - The ASI's Go to Green plan and project schedule were approved by DHS. Per the Go to Green plan, some required BES functionality will be implemented post-FAT. This may create unexplained workarounds and rework as the full impact of this approach becomes known through testing and training. 02/29/24 - The ASI drafted a Go-to-Green plan that includes an October 2024 Go-Live date, with several features to be released after FNS. Implementing the functionality of a core solution not tested in a real-world pilot environment may lead to unexpected issues and bugs. IVV remains concerned that user expectations will not be fully met as the go-live system will be missing functionality that could be important to many users. 02/22/23 - The ASI recently transitioned the OCM leadership role to a new resource. OCM activities will be crucial in reducing the risk associated with implementing the Core Solution and effectively managing user, public, and legislative expectations. The ASI has stated they do not expect this transition to negatively impact the project and have noted some potential improvements. 12/13/23 - Delays in some planned activities (e.g., epic demos, interface designs) and the development of the secure enclave are causing milestones to be missed. IVV remains concerned about potential quality impacts due to the need to accelerate efforts to compensate for missed milestones. Delays in some planned activities (e.g., epic demos, interface designs) and the development of the secure enclave is causing milestones to be missed. IVV remains concerned about potential quality impacts due to the need to accelerate efforts to compensate for missed milestones.	4/30/2024 - "Some required BES functionality will be implemented after Pilot." "What does this mean? I think I know the intent and perhaps update as such?" "Per the Go to Green plan, the ASI plans to implement required functionality to negatively impact the project and have noted some potential improvements in multiple releases (Pilot/Statewide/Statewide)." "12/15/2023 - Above already addressed by DHS/ Joe Campos. Eric's recommendations reflect "in Progress" or "In Process."	
85	Limited collaboration between the ASI and DHS in the design process could lead to BSF usability issues and functional gaps in the application, not meeting critical business needs for DHS and State users.	8/1/2023	Molina, Brad	Finding - Issue	System Design	During the UAT process for release 11, there has been a high level of concerns raised by the DHS testers regarding the usability of the BES system, challenges with the user interface, missing functionality, and basic screen layout issues that would not be expected in a modern application. Based on defect reporting from the UAT process, a large majority of the defects are related to "design errors". Although the Release 11 UAT cycle was testing a partially built system, a significant amount of design defects were attributable to functionality errors for Release 11.	A significant amount of money and DHS resources time have been invested in the BES solution, with the expectation that the new system will at minimum provide all functionality found in current applications - but really should provide additional capabilities, greatly enhanced user interfaces, and overall improved usability from current systems. Should the solution fall short of expectations, there may be challenges in DHS staff adoption; lack of confidence in the solution providing the accurate information needed to provide benefits to HI citizens; reduction in ability for DHS to provide the same level of needed services to clients, resulting in bad publicity for DHS and the state.	OPEN - Perform Sprint and Epic demos in alignment with development sprint completion (demo functionality/requirements as they are developed) to get early feedback on work products. CLOSED - ASI and DHS re-evaluate the effectiveness of the recorded Sprint review process to ensure that designs align with DHS expectations. (closed 3/12/2024). Include a wide enough audience in all design and demo sessions to validate FNS and DHS functional and technical requirements and system usability. (closed 6/14/2024). Perform comprehensive (demo all requirements) review during Epic demos, not just the items that were added/updated, allowing DHS to provide early feedback on possible future gaps that might not be apparent when focusing on specific functionality. (closed 6/14/2024)	Now	4	3	Med	Open	05/29/2024 - The ASI plans to continue live Sprint Demos for the remaining Epic design work, providing a venue to increase collaboration with DHS. The SJP development will follow the Waterfall methodology, so no sprints or demos will occur. 04/25/24 - DHS and ASI formed a design team for reviewing to conducting four live sprint demos in support of Epic 209. The project to enable timely, efficient collaboration. 03/31/2024 - Due to a high number of questions and concerns from DHS during the demo 209. (Approvals and Supervision), the ASI committed to hosting another demo to address all the feedback. Changes raised late in the design process could require code changes, potentially causing schedule delays or the resulting solution not meeting the business need. DHS staff attending Epic demos should be prepared with an understanding of the agreed-upon designs and policy requirements relevant to the Epic so that feedback is efficient and on point. 02/29/2024 - One demo (Epic Demo 11) was held in February as the ASI focused on developing a Go-to-Green Plan for the Project. DHS also raised concerns in leadership meetings regarding a gap in design where eligibility is not forced to run when critical benefit data is modified on a case - which could also point to a gap in collaboration on key design decisions. 02/15/2024 - DHS viewed Sprint demos for Epic 247 and 248 on January 8, 2024, where several concerns/issues were raised, resulting in necessary bug fixes. User experience issues that should have been raised during the sprint demos were brought up during the Epic Demos for Epic 240 (regulation agreement), that the ASI is not considering at this time. As of the end of January, the ASI was developing a Go-to-Green Plan to mitigate several delays, including demos. 12/15/2023 - DHS opened a new high-severity project risk, which then escalated to an issue, on December 4, 2023, since the sprint and epic demos will not be completed by the end of the Release 11.2024 phase. IVV shares this concern, as issues discovered during 5/31/2024 - On 5/9/2024, 43% (152 out of 318) of the defects identified during SIT were unresolved. Of those, there were 2 critical severity defects and 12 high severity defects. Critical and high severity defects represented the percentage of unresolved defects decreased to 28% (22 unresolved out of 81.8 defects). IVV will monitor whether the SIT date extension, introduced as part of the new project schedule, impacts defect resolution tools entering FAT. IVV is concerned that defects not detected in integration testing (INT) continue to leak into SIT, including critical and high-severity defects in numbers remaining consistently above SIT exit thresholds. The defect leakage could delay FAT completion, delay the go-live date, and/or result in incorrect benefits issuance. 4/30/2024 - Defects not detected during INT that leaked into SIT were comprised of low-level errors such as a button not being displayed, missing punctuation, duplicate fields, and data elements being out of order on a screen. The rising number of unresolved defects (see below) creates a risk that SIT exit could be delayed. The potential of additional defect leakage into FAT could delay FAT completion, delay the go-live date, and/or result in a BES solution that does not meet customer/client needs. Statistics as of the end of April: 166/170 (98%) of SIT core and interface test cases executed, and 348/256 (88%) of core correspondence test cases executed. A total of 415 SIT defects (1 Critical, 29 High, 189 Medium, 197 Low severity) were unresolved. 3/31/2024 - DHS and the ASI entered into BES 1.0 SIT on 3/15/2024 without approved test scripts for several Epics that will be phased into SIT after testing begins. The phased introduction of test scripts can negatively impact testing and reduce the time available to identify and fix defects within scheduled timeframes. IVV review of test scripts shows that quality could be improved by adding additional details or steps to the test scripts to verify test coverage. 2/23/2024 - Entry into Release 12 SIT is delayed, the ASI is currently 5/31/2024 - Throughout May, DHS and the ASI continued to author, update, and locate policies cited in the SJP. Additionally, the ASI is authoring procedure-related documentation needed for the Independent Security Assessment. The ASI is nearing the completion of the design of the Secure Enclave, which will house sensitive data, including federal tax information. 4/30/2024 - This risk is now realized, resulting in a finding type change from a risk to an issue. DHS and the ASI continue to work on documents the security assessment team requested. Some of these documents have not been written yet or are in draft form. The Security Assessment Team requested approximately 100 documents and received two documents and six lists of system inventory. Each document requested is related to implementation responses in the System Security Plan (SSP) regarding how each security or privacy control is met. Failure to provide these documents to the assessment team will result in an assessment finding and a corresponding Plan of Action and Milestone (POAM) for remediation. A large number of findings or a small number of critical or high findings may result in a federal agency not providing access to their data used in determining eligibility status. 03/30/2024 - During March, the DHS/ASI security teams focused on documentation and the Testable Issues scan on the base BES Production environment (without the Secure Enclave). The Secure Enclave is not included in the BES 1.0 Core Release and will not be part of Pilot. Therefore, the upcoming third party security assessment will not include the Secure Enclave. Security documents (e.g., data flow, network diagrams, Plan of Actions and Milestones (POAMs), and procedural documents such as Change Management procedures) may not be complete for the third party assessment starting in April, which may result in potential findings or POAMs for remediation if not available. Additionally, DHS reported that several DHS Security and Privacy policies were not updated in		
83	Gaps in test coverage and lower-than-expected progress in testing may result in schedule delay. If subsequent test phase uncovers a higher volume of defects and user feedback than initially anticipated.	6/2/2023	Hackett, Donna	Finding - Issue	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 defects, extensions, or the introduction of delays into the production environment during the final testing stage, known as Final Acceptance Testing (FAT).	OPEN - DHS and ASI monitor INT/SIT closely for both breadth and depth of testing to ensure the system is adequately tested. -DHS should review the ASI develop a Corrective Action Plan to address the failure of prior test phases (Unit, INT) to capture defects that rolled into SIT. CLOSED - The ASI should determine the root cause of the failure to identify simple fixes in the INT and SIT and implement effective improvement processes to confirm early testing is adequate before entering UAT/FAT (Closed 4/30/2024) NOT COMPLETE - 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)	UAT	4	4	High	Open	5/31/2024 - On 5/9/2024, 43% (152 out of 318) of the defects identified during SIT were unresolved. Of those, there were 2 critical severity defects and 12 high severity defects. Critical and high severity defects represented the percentage of unresolved defects decreased to 28% (22 unresolved out of 81.8 defects). IVV will monitor whether the SIT date extension, introduced as part of the new project schedule, impacts defect resolution tools entering FAT. 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82	The lack of technical documentation may lead to incorrect implementation statements or delay the System Security Plan	4/27/2023	Heath, Dustin	Finding - Issue	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. The 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 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.	- Determine when the infrastructure design baseline will be completed. - Determine when documentation will be completed, updated, and available for the SSP authors. - Collaborate and communicate with SSP authors about when tables and correct documentation will be available. - Perform a full review of all SSP controls for content and accuracy that have been written as drafts prior to the start of the third-party assessment and submission of the SSP package to federal regulators. This will allow the SSP authors to update controls with changes from Design through implementation.	Prior to the start of the third-party assessment.	4	5	High	Open	5/31/2024 - Entry into Release 12 SIT is delayed, the ASI is currently 5/31/2024 - Throughout May, DHS and the ASI continued to author, update, and locate policies cited in the SJP. Additionally, the ASI is authoring procedure-related documentation needed for the Independent Security Assessment. The ASI is nearing the completion of the design of the Secure Enclave, which will house sensitive data, including federal tax information. 4/30/2024 - This risk is now realized, resulting in a finding type change from a risk to an issue. DHS and the ASI continue to work on documents the security assessment team requested. Some of these documents have not been written yet or are in draft form. The Security Assessment Team requested approximately 100 documents and received two documents and six lists of system inventory. Each document requested is related to implementation responses in the System Security Plan (SSP) regarding how each security or privacy control is met. Failure to provide these documents to the assessment team will result in an assessment finding and a corresponding Plan of Action and Milestone (POAM) for remediation. A large number of findings or a small number of critical or high findings may result in a federal agency not providing access to their data used in determining eligibility status. 03/30/2024 - During March, the DHS/ASI security teams focused on documentation and the Testable Issues scan on the base BES Production environment (without the Secure Enclave). The Secure Enclave is not included in the BES 1.0 Core Release and will not be part of Pilot. Therefore, the upcoming third party security assessment will not include the Secure Enclave. Security documents (e.g., data flow, network diagrams, Plan of Actions and Milestones (POAMs), and procedural documents such as Change Management procedures) may not be complete for the third party assessment starting in April, which may result in potential findings or POAMs for remediation if not available. Additionally, DHS reported that several DHS Security and Privacy policies were not updated in		

ID	Finding	Reporter	Type	Identified Date	Category	Description	Significance	Recommendation	Event Horizon	Impact	Probability	Analyst	Finding Status	Status Update	Client Comments	Vendor Comments	
60	Development delays have negatively impact the project schedule and delay 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. Previously, the development team was challenged with accurately estimating development task level of effort (i.e., story points) and the project has been challenged with producing a project schedule that accurately reflects realistic timelines (see Finding #61). The ASi continues to be challenged with finding qualified resources in a timely manner.	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. Failure to achieve a level of accuracy in estimating development tasks could lead to a project schedule that is flawed and unrealistic. Previously, DHS had indicated, and IVV agreed, that some of these delays were due to some ASi BAU lacking the expertise required to create optimal designs and system specifications that developers could consume without requiring extensive clarification from the ASi BAU/SA team. DHS and IVV observed instances where ASi BAU/SA have presented less than optimal designs and left to DHS (who may lack software or UI design expertise) to improve, which has contributed to unproductive design sessions (see Finding #61). It remains unclear if scope creep has contributed to these delays.	<p><b>OPEN</b> - Request the 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. ASi provide DHS with the time needed to effectively evaluate the software.</p> <p><b>Demonstrations (demo) and elicited productive design discussions with DHS attendees during each item.</b> ASi regularly report and share story points for the total remaining project work to reach go-live and presents a dynamic burn-down chart to track the progress. ASi consider taking steps to increase thoroughness of development of developer, including: ASi provide increasing structure and accountability around developer unit testing to reduce the number of bugs/defects; ASi recommend the ASi enhance their executive reporting by providing a clear perspective on their productivity/velocity and remaining work (e.g., via Burn-down charts).</p> <p><b>COMPLETE CLOSED</b> - DHS request the ASi strategically add the right project team resources to effectively increase velocity. Note that adding additional junior resources may not be as effective as staffing additional expert level development, analysis, and other resources that can lead and mentor junior resources. ASi reviews the development process and identifies and mitigates the challenges preventing them from incorporating elite demo activities into the project schedule. (9/29/23 - ASi will not be doing this, with DHS approval)</p>	Immediate	3	3	Med	Open	05/31/24 - The ASi adjusted how they calculate velocity to provide greater transparency on the level of progress they're making. The ASi is elevating planned story points per sprint to motivate developers to be more productive even though the planned goal may not be realistic or achievable. While this approach may benefit the development team, it obscures their true productivity and whether the team is getting better at estimating (a key agile methodology objective). IVV recommends that the ASi work to improve their estimates to provide realistic timelines, including continued re-baselining of schedule and providing stability in dates for DHS tasks. The ASi may wish to consider whether they keep their developer "sprint" story point goals separate from what's reported to the customer, executive stakeholders, and project leadership. IVV recommends the ASi enhance their executive reporting by providing a clear perspective on their productivity/velocity and remaining work (e.g., via Burn-down charts).	05/31/24 - The ASi reported a decline in velocity, as the last 5 sprints show significant drops in actual vs. planned completed work. The ASi has reported that the lack of productivity resulted from many bugs, leading to rework. IVV remains concerned that inadequate unit testing might contribute to this issue, potentially causing avoidable rework and increased technical debt, thereby impeding overall productivity. In the most recent sprint (#21), the development team completed 36 out of 63 story points, resulting in a 43% shortfall. Continued shortfalls will increase the likelihood of development delay affecting the go-live. 05/31/24 - To address this issue, the ASi reported they built the revised BES Project Schedule with some slack/float time. IVV is researching Data Conversion and the impact, if any, it had on the most recent Schedule delay. The conversion team has some remaining data elements to map. They reported that the full scope of "data cleansing" may not be complete before converting the data. IVV is continuing to		05/11/2024 As discussed at pre-meet, the development team has been primarily focused on fixing BES 1.0 defects. DDI work for BES 1.1 and 1.2 are forthcoming.
74	A BES Project schedule based on inaccurate estimations diminishes effective planning and resource management, which could result in late deliveries, 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. Concerns with the structure, estimating practices, and ability to manage the schedule persist. The use of multiple tools to track resources obfuscate resource management. Previous IVV findings focused on specific schedule components such as resource management and critical path analysis, all of which were addressed and closed.	If estimates for project schedule activities are not accurate, this can lead to constant schedule changes, resources not being available when needed, rushed activities, and general frustration which can lead to schedule delays, low quality output, scope changes, and budget issues.	<p><b>OPEN</b> - Monitor, evaluate and revise scheduling estimates for accuracy based on the project teams past performance and resources available to do the remaining work. ASi conduct a Root Cause Analysis (RCA) with DHS and IVV to determine why the BES project continues to experience schedule delays. ASi Project Management works with the Development teams to evaluate the accuracy of velocity and adjust accordingly to reduce risk in the revised BES project schedule. <b>NOT COMPLETED</b> - ASi provide details on how velocity measures were used to calculate the remaining development work.</p> <p><b>COMPLETE DHS and the ASi agree to a revised schedule against which project deliverables can be managed.</b> (2/28/2023 - completed) ASi host a weekly meeting with DHS and IVV to review all changes to the project schedules (Primary and DDI). (8/31/2023 - completed) CLOSED ASi plan and execute Epic development so that Epic demos can occur earlier in the release schedule and allow time for possible revisions. (12/31/2023 - no done) ASi request by DHS, add key milestones to the project schedule, such as Sprint and Epic demos, to show key progress towards completion of epics. (6/29/23) ASi says that they will not do this. Confirm current assumption that a delay with the current go-live date will not result in major implications. (6/29/23) Leverage velocity and burn down charts to adjust development tasks estimates if needed. (4/30/2023 - ASi using first) Using the available tools, review the current estimates to complete each activity compared to past actual hours (12/31/2023 - new ASi - Not Started) Update as necessary and provide the DHS/ASi Project Managers with reports and data that accurately reflect the DHS/ASi resource needs along with over/under allocations of staff for the duration of the Project (1/31/2023 - new ASi - Not Started) Develop mitigation and contingency plans that are tracked/managed by DHS/ASi on all tasks that are behind.</p> <p>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. *The project team work to establish strong governance over the utilization and maintenance of the various system tools/components. *ASi allow time in the schedule to conduct proof of concept to assess infrastructure components work as expected. *ASi maintain a detailed schedule for DevOps implementation tasks to avoid unexpected delays that could delay project milestones and the critical path.</p>	Immediate	3	4	High	Open	05/30/2024 - The ASi released a revised schedule that may reduce DHS/IVV concerns. The schedule was revised to reflect the current status of this reporting period. The revised schedule has three key deliverables (Requirements, Traceability Matrix (RTM), System Integrity Review Tool (SIRT), and validated Results of Data Conversion) scheduled from June 7 - 14, which could be a resourcing challenge for DHS. IVV shared the DHS resourcing challenge with the ASi on May 31st and the ASi responded immediately that they would address it at the next Schedule Review Meeting on June 5, 2024. IVV will continue to monitor the project team's ability to meet this schedule and for any new or re-introduced risks that could impact the go-live date. 4/30/2024 - Several tasks have been delayed in the project schedule - some (i.e., data conversion) more than 20 days. Additionally, the HANA/BES integration (Epic 209), scheduled to enter SIT on April 15, is in development at the end of the month. IVV is concerned that the under-estimated level of effort on tasks in an aggressive schedule could impact go-live dates. 3/31/2024 - The BES Project Schedule that aligns with the Go-to-Green plan was published by the ASi during this reporting period. The overlap of Integration Testing (INT) and SIT, and adding functionality into SIT after it has started may lead to more delays as seen in prior schedules. 2/29/2024 - The project has experienced many delays, the most recent of which was a four-week delay announced the end of January and the draft Go-to-Green Plan is still being another six months. 1/31/2024 - At the start of January, a 4-week schedule delay to SIT was reported by the ASi to avoid an overlap of INT and SIT. On January 31, 2024, the ASi reported that SIT would not start as planned. The project status report indicated "Red" in most categories and the ASi reported they were developing a Go-to-Green Plan. Further delays may be imminent. IVV has raised the criticality rating of this finding to "High". 12/31/2023 - Items 10 epics for release 0.1.2	6/14/2024 An email stating the concern regarding the deliverable timing was sent by PCE at 4:47 pm on May 31st. I responded within the hour stating we will look at adjust the date at the schedule review meeting, which we did. I do not think this should be identified in May's report. Meetings were still underway to adjust the updated schedule. 5/11/2024 As mentioned at pre-meeting, there are very few variance explanations on the current schedule, and		
73	The planned BES infrastructure is complex which could be difficult to implement and leads 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 complex cloud infrastructure. Further, the Project Team has yet to finalize components that will make up the BES infrastructure and the additional costs and time to configure, test, and implement the planned complex environment remain unclear.	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, the project could be met with unexpected costs and schedule delays. Delay in finalizing the components being implemented could exacerbate this risk and lead to further delays. Complex platforms often present system maintenance and operations challenges as system changes can hold the increased potential for system failure (i.e., due to the significant number of "moving parts") and increase the level of time and effort to resolve infrastructure and application-level bugs. Further, some components remain in an immature state compared to their legacy counterparts. For example, the project recently experienced a system failure because Google Cloud failed to clearly communicate a change that led to failure in another component (i.e., Nexus). Google Cloud is generally viewed as a less mature product offering, compared to their rivals (Amazon Web Services, Microsoft Azure). IVV remains concerned that this could lead to failures at critical points in the project (including post-go live production failures) that could be difficult to resolve and lead to project disruption. If DHS intends to eventually reduce M&O outsourcing costs turning over M&O tasks to State employees, they could face challenges supporting tools they may not be familiar with in a complex infrastructure environment.	<p>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. *The project team work to establish strong governance over the utilization and maintenance of the various system tools/components. *ASi allow time in the schedule to conduct proof of concept to assess infrastructure components work as expected. *ASi maintain a detailed schedule for DevOps implementation tasks to avoid unexpected delays that could delay project milestones and the critical path.</p>	Next several months	2	2	Low	Open	5/31/24 - remains unclear how infrastructure complexity will impact DR testing and execution. 4/30/24 - No material update in this reporting period. 3/31/24 - During a recent Change Request (CR) meeting the ASi presented DHS with a for-cost-change request (CR) to the design of the Secure Enclave (the addition of roles). In the CR, it was clear that DHS and the ASi were not in agreement regarding the funding of this change request. 1/23/24 - No material update in the reporting period. 1/23/24 - No material update in the reporting period. IVV continues to monitor this finding. 12/31/23 - No material update in the reporting period. IVV continues to monitor this finding. 11/30/23 - Some components of the BES system infrastructure have yet to be finalized and tested. It remains unclear how or if the added complexity will impact project schedules and budgets going forward. The ASi has reported they are close to finalizing the Secure Enclave infrastructure to house F1I data. The ASi appears to be making progress on DR plans and designs. 10/10/23 - The ASi continues to have productive discussions with DHS during their weekly Architecture calls. The ASi has yet to finalize their plans and technical architecture for conducting Disaster Recovery (DR). The cloud technology being implemented offers some benefit and can simplify some elements of DR. However, it remains unclear if the complex infrastructure (with the multitude of components being employed) will impact their ability to test and perform DR. 9/29/23 - The ASi has experienced turnover of their Enterprise Architect position; this does not appear to have had a material impact on the overall infrastructure build. The ASi continues to make progress in the build-out of their infrastructure and is confident that the automation they've implemented will simplify many maintenance tasks. Given that, they remain confident they will be able to meet infrastructure milestones without hindering development. The ASi has also stated that maintaining the system post-go-	11/17/2023 Agree why DR being referenced here? Per the current project schedule, the DR plan is scheduled to be submitted at the end of the year. Reminder: Pilot Go-Live is April 2024. 10/31/2023 - We - would do this remains. 10/11/2023 Please reference your updates on finding #82 Security and Privacy which documents the work being done for the Secure Enclave.		
70	Insufficient configuration management could lead to development confusion or reduce the effectiveness of defect resolution	Fors, Michael	Finding - Risk	8/23/2021	Configuration and Development	The B-4 DDI Plan Deliverable, Section 5.2 establishes the framework for the Configuration Management Plan. However, it remains unclear if sufficient progress has been made toward establishing CM processes and governance, including selecting CM tools (e.g., CMDB), and building out the CM infrastructure. The project's Security Plan has yet to be finalized which may include additional requirements or decisions that could impact CM. The project currently relies on GitHub for tracking of some configurations.	Configuration Management is a set of processes and procedures that ensures the BES is understood and works correctly. The BES solution includes tools that may provide a level of automation for Configuration Management that may reduce errors and should provide the project team with accurate, dynamic and timely information on some of the configuration items. However, it is critical that DHS/ASi agree to the full list of items that are included in the configuration plan along with the details regarding the management of the configuration items, reporting and audit features.	<p><b>OPEN</b> - ASi adhere to plans for configuration management as documented in the B-4 DDI Plan, Section 5.2 and clarify details and/or any changes with DHS. ASi validate plans for configuration management with DHS and agree on a meaningful set of configuration items or settings they will track. *DHS and ASi work to clarify job roles/plans for the potential use of configuration management tools. <b>COMPLETED</b> - Identify the DHS POC for the Configuration Management Activities that would provide oversight of configuration management activities and assure defined CM steps and plans are being followed, are effective, and are achieving DHS objectives for CM. 7/31/2022</p>	ASAP	2	2	Low	Open	5/31/24 - IVV has yet to receive a detailed, comprehensive list of configuration items the ASi will be tracking. 4/30/24 - IVV has yet to receive a detailed, comprehensive list of configuration items the ASi will be tracking. 3/31/24 - Responsibility for the Configuration Management Plan (CMP) needed to the ASi (previously, the DHS Security Contractor was updating the CMP for related security controls). The ASi is resuming this scope of work at a time when its resources are stretched and may lead to CMP and configuration management quality challenges. 2/29/24 - No material update in this reporting period. 1/23/24 - No material update in the reporting period. 12/31/23 - The project will utilize the DHS contractor currently assisting with security activities to update the Configuration Management Plan (CMP). The scope of work that the DHS contractor is responsible for is unclear to IVV. 11/30/23 - The ASi has yet to provide a detailed list of configuration items to DHS and IVV. IVV has restated this request to the ASi so that the level of detail is clear. 10/26/23 - The ASi provided broad information on the configuration items being tracked but have yet to provide detailed configuration items for IVV review. The ASi has deprioritized some configuration management activities, which it intends to perform in preparation for Maintenance and Operation (M and O). 9/28/23 - The ASi gained DHS approval on the items that will be tracked and monitored as part of configuration management. IVV requested the list last month and is waiting on the ASi to engage them. 8/31/23 - No material update. 7/31/23 - No material update. 6/30/23 - No material update. 5/31/2023 - The ASi continues to make progress with its utilization of the ServiceNow Configuration Management (CM) tool. They have recently performed an initial import of Google Cloud Platform server details into the ServiceNow Configuration Management Database. *** Continued work. Setup in ServiceNow, will be building up instances. Ongoing support and main.	10/31/2023 - Vic - We provided a listing, working on a plan to implement. MR - Broad categories. Vic - we are working on this will become more important and we will get ahead of the M&O plan. 10/11/2023 IVV requested the list last month and is waiting on the ASi to respond. Please see the following list of configuration management items that are/will be managed in ServiceNow: *** am/will be managed in ServiceNow Incident Response Change/Configuration Management		