

CONFIGURATION MANAGEMENT PLAN

Integrated Procurement System

U.S. Election Commission

CONFIGURATION MANAGEMENT PLAN

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1.0 CONFIGURATION CONTROL

Configuration management and control activities include requesting, evaluating, approving/disapproving, and implementing changes to baseline configuration items (CI's). CI's may be work-in-progress or final deliverables. This configuration management plan applies to CI's identified during the integration and testing, installation and deployment, and operations and maintenance phases. Effective configuration management depends on placing products under control at the right time and on establishing mechanisms for controlling changes to the products. Placing a product under formal configuration control too early in its development cycle can render the tracking of changes an unnecessary and cumbersome exercise before the product stabilizes. Placing it under control too late reduces management ability to effectively oversee the development process, permits uncontrolled changes, may disrupt other parts of the project if different versions of hardware and software products are used, and can negate quality and configuration control efforts.

This section discusses the systematic justification, evaluation, coordination, approval or disapproval of proposed changes, and the implementation of all approved changes to the IPS system.

1.1 Change Control Board (CCB)

The Change Control Board (CCB) serves as the decision-making body for the project. The board will review and approve all changes to the system products placed under formal configuration control. The Change Control Coordinator leads the CCB. The IPS CCB team members will consist of the following project personnel:

- ~~///~~ IPS QA Manager
- ~~///~~ IPS Team Leads
- ~~///~~ IV&V Team Leads
- ~~///~~ IPS Configuration Manager

1.1.1 Roles and Responsibilities

The CCB maintains configuration control during the project. All project team members take active role in configuration control activities regardless of their assigned CCB participation level. The roles and responsibilities of the CCB members are listed in the following table.

Role	Responsibilities
Change Control Coordinator	<ul style="list-style-type: none"> ?? Develops and maintains IPS Configuration Management Plan ?? Establishes version control of work products ?? Receives and logs proposed changes to IPS work products into the change control database ?? Conducts CCB meetings to discuss proposed changes ?? Coordinate the presentation of potential problems to the CCB ?? Logs decisions of the CCB in the change management database ?? Monitors proposed changes to completions and resolution
IPS QA Manager	<ul style="list-style-type: none"> ?? Schedules and convenes CCB meetings ?? Chairs CCB meetings ?? Provides final decision making authority for resolution of CCB requests
IPS Team Leads	<ul style="list-style-type: none"> ?? Identify potential problems with IPS work products ?? Provide proposed changes to Change Control Coordinator ?? Participate in CCB meetings ?? Review proposed CCB changes to determine impact on work products ?? Determine resolution and schedule for the proposed change
IV&V Teams Leads	<ul style="list-style-type: none"> ?? Participate in CCB meetings ?? Review proposed CCB changes to determine impact on IPS SDM processes ?? Evaluate proposed resolution and schedule for the proposed change
IPS Configuration Manager	<ul style="list-style-type: none"> ?? Participate in CCB meetings ?? Identify potential problems with IPS work products ?? Review proposed CCB changes to determine impact on IPS work products and system environment ?? Recommend resolution and schedule for the proposed change

1.2 Configuration Items (CI's)

CI's are the products that are to be placed under configuration control. The following will be categorized as CI's:

- ✍ Management documentation that support the planning and development of IPS (e.g., *Needs Statement, Project Management Plan, CBA, etc.*)
- ✍ Technical documentation or baselines describing the system (e.g., *IPS Detail Functional Requirements document, System Specifications, System Decision Paper, Data Requirements document, etc.*)
- ✍ Software components (e.g., *computer programs, operating systems, support tools, etc.*)
- ✍ Data and database components (*i.e., files and records that exist apart from software, which access the contents of a database such as the Physical Database Design document*)
- ✍ IPS Network components
- ✍ Related IPS Hardware components (e.g. *computer workstations, peripherals, servers and routers*)
- ✍ IPS Operations Manual

1.3 Baseline Identification

A baseline is a collection of information that describes the technical characteristics of each CI. Baselines serve as technical control points in the system lifecycle. The baselines provide the point of reference for the evaluation of proposed changes to these technical characteristics. The baseline and approved changes or modifications provide a current description of the system. The IPS project team will baseline all project documentation and infrastructure components that fall under the CI categories listed at the applicable point in the project phase. These baselines will provide the basis for tracking to the pertinent point in the project.

1.3.1 Functional Baseline

The functional or requirements baseline is the outcome of the system analysis and provides the base characteristics for subsequent project phases that include design, build, evaluate and operate. The IPS FRD will serve as the requirements baseline. The IPS team will work with OPC during the project Initiation and Planning and Requirement Definition phases to identify and resolve any gaps between its existing business processes and requirements. This activity will take the form of a Business Process and Information Requirements Assessment. This assessment will provide the "as-is" processes and current system environment in accordance with the scope of the IPS project. The FRD will be updated to include any gaps identified.

1.3.1.1 Functional Documentation

The following documents to be developed during the Project Initiation and Planning and Requirement Definition phases will comprise the functional baseline:

- ~~///~~ IPS Project Schedule
- ~~///~~ IPS Project Work Breakdown Structure
- ~~///~~ Data Requirements Document
- ~~///~~ Object Definition Document
- ~~///~~ Data Analysis Document
- ~~///~~ Database Design Document
- ~~///~~ System Decision Paper

1.3.1.2 Infrastructure

IPS will be developed using a customized procurement package as its baseline framework. The infrastructure and system requirements for this package will form the functional baseline for the software. The IPS team will track all software changes made to the installed product through each phase of the project. In addition the System Specification document will provide the baseline for the USEC system environment.

1.3.2 Design Baseline

The design baseline is the outcome of the Design phase and will provide the baseline characteristics for subsequent project phases that include build, evaluate and operate. The IPS team will conduct business process modeling workshops to define the “to-be” processes. These workshops provide input for the detailed designs and new procedures guides. The Design phase will include product documentation for the acquired COTS package and system interfaces. The test team will begin to develop criteria for the user acceptance tests during this phase.

1.3.2.1 Design Documentation

The documents developed during the Design phase will comprise the Design Baseline documentation are as follows:

- ~~///~~ Detailed Form Designs
- ~~///~~ Detailed Report Designs
- ~~///~~ Detailed Conversion Design
- ~~///~~ Detailed Interface Designs
- ~~///~~ User Acceptance Test Strategy

1.3.2.2 Infrastructure

The IPS team will establish a configuration environment during the Design phase that will contain the COTS setup and control tables. This configuration environment will serve as the baseline for systems development. The IPS team

must migrate any changes made to this environment to the other project environment in order to maintain systems and data integrity.

1.3.3 Development Baseline

The development baseline is the output of the Build phase and will provide the software characteristics and framework for subsequent project phases that include evaluate and operate. During this phase, the project team will configure and customize the COTS software. The IPS development team will generate any necessary code for the interfaces, conversion, and reports. The team will make appropriate modifications to the delivered COTS application menu layout, panels and online system. OPC will create an Organizational Change Plan to define user operations for the new system. The plan will be used to develop procedure guides and related reference materials during the Evaluate phase. The team will also develop training materials and documentation for end-user training.

1.3.3.1 Development Documentation

Documents developed during the Build Phase which provide this baseline include:

- ~~☒~~ Organizational Change Plan
- ~~☒~~ Training materials and documentation

1.3.3.2 Infrastructure

The configured COTS package and its components provide the development baseline for the software. The team will use this baseline to conduct string, integration, and user acceptance testing.

1.3.4 Product Baseline

The product baseline is established during the Evaluate phase. The product baseline's major component is the end system product as configured and built by the IPS development team. This includes the following:

- ~~☒~~ Software and configured COTS package
- ~~☒~~ Design and specification documentation
- ~~☒~~ Manuals (user, operations, maintenance, etc.)
- ~~☒~~ Installation and conversion procedures

2.0 CHANGE CONTROL PROCESS

This section describes how requests for change or problem reports are initiated, processed, and completed. This section also outlines the configuration management audit process, measurement and problem tracking and resolution strategies. It is the responsibility of each team member and user to identify and document potential document or system changes via the IPS change management control process and database tracking tools.

2.1 Change Classifications

The Change Control Team will determine change classifications and assign the change to a team member based on level of severity and impact. The team will consider the criticality of the change in the assignment of the priority. The criteria for assigning level of priority will be standardized for all IPS project work products. The IPS change control classifications and priorities are presented in blocks 13 and 14 of the Request For Change form provided at the end of this document.

Criteria for Establishing Change Classifications:

- ?? Temporary – Change is required in short term in order to achieve workaround
- Permanent – Change is required to accommodate change in either project scope or user requirements

Criteria for Setting Change Priorities:

- Routine – Change is normal part of system development activities
- Urgent – Change has critical impact on work product, schedules or deliverables
- Emergency – Change is unplanned, unforeseen and impacts project's critical path

2.2 Change Control Forms

The change control form provides a reporting tool for all project team members and system users to report a requested change to the system or its documentation. The IPS project team will utilize the Request for Change (RFC) and the Document Change Control (DCC) forms to document changes. The Change Control Coordinator receives these forms and tracks them in the change control database. Samples of these forms are provided in the last section of this document.

2.3 Problem Resolution Tracking

The IPS team change control and problem resolution process is as follows:

1. IPS team member or user identifies potential problem with work product (document or system).

2. Team member provides description of potential problem to Change Control Coordinator or completes an RFC form or DCC form where appropriate.
3. Change Control Coordinator logs problem in the IPS change management database. The database assigns a unique change control tracking number to the potential problem. The Change Control Coordinator logs the following information in the change management database.
 - ?Request Date
 - ?Title
 - ?Priority
 - ?Description
 - ?Status
 - ?Configuration Item (e.g. *FHA Subsidiary Ledger Phase II Project Plan*)
 - ?Person reporting problem
 - ?Person responsible
 - ?Resolution due date
4. Change Control Coordinator evaluates the proposed change to determine a resolution and the impact.
5. Change Control Coordinator submits to the CCB the potential change or problem, proposed resolution, and the potential impact.
6. CCB reviews all proposed system changes. The CCB assesses impact, confirms the proposed change, approves or disapproves the change request, and confirms the resolution.
7. Change Control Coordinator notifies the responsible team member or team lead of the outcome of the change control request. This notification serves as an information copy to the impacted team member on the status of the change request. It contains the:
 - ?Description
 - ?Resolution
 - ?Resolution due date
 - ?Steps needed to resolve the problem
9. Project management team provides guidance to IPS Team with regard to the resolution of the work product problem.
10. When the IPS team completes the approved change to the system or documentation, the team member notifies the Change Control Coordinator with the date of completion and a brief description of the resolution.
11. As each team member completes a task, the Change Control Coordinator changes the task status to “closed” and logs the “completion date” in the change management database. When the team completes all tasks, the

Change Control Coordinator logs the change request status as closed and enters the completion date.

The Change Control Coordinator monitors all issues to ensure resolution and completion and resolution. The Change Control Coordinator reports the completion of all changes to the IPS Project Manager and the CCB.

2.4 Measurements

The Change Control Coordinator will monitor the CM activities throughout the project lifecycle. The Coordinator will track the percentage of changes to CI's at each phase as well as time to effect a solution. The Change Control Coordinator will provide a performance measurement report to the project management team. This report will help the management team determine the success of each project phase, process effectiveness and identify areas for improvement. The IPS management team will capture these performance measures in the IPS management lessons learned report. Improvements made based on these performance measures will be used as a baseline for configuration management during future project phases.

2.5 Configuration Status Accounting (CSA)

The IPS change management database will facilitate the CSA. The Change Control Coordinator will generate reports from the database to summarize the changes made during each project phase. The Coordinator will determine the percentage of CI's that required changes during each phase and will provide a comparison of those percentages in a management report. This formal tracking will provide trace-ability to project phases. The IPS project team can also use the baseline CI report to map design characteristics to the functional baseline to assure that all requirements are met during design. The IPS development team will map its work to the functional baseline to confirm that the new system will meet the needs of the users.

2.6 Configuration Management Libraries

The IPS project maintains one Configuration Management library. The Configuration Management Library (CML) contains physical and electronic repositories for all the CI's (hardware, software, and documentation) that support the IPS project. The library contains:

- ~~///~~ Hard copies of project deliverables and certain work products
- ~~///~~ Electronic copies of project deliverables and work products

The electronic library must provide the IPS project with the capability to record, store, update and trace system-related documentation such as change request

forms, design packages, and version description documents. The electronic CM Library will also implement and maintain documented check-in and check-out procedures and maintain historical versions of hardware, software, and documentation items.

2.7 Release Management

The project team will develop a detailed release strategy during the design and build phase of the project. This release strategy will provide guidelines for moving software releases into production.

2.7.1 Object Migration

During the project lifecycle, the team will use an object migration database and procedures to move objects from the source environment and database to their target environment and database after an approved change. The order in which the following steps occur, as well as the time frame they occur in, may vary considerably depending on the nature of the migration. Adequate time may be required to allow time to review the request, create appropriate scripts, and schedule downtime if required. There are three steps to follow to control the object migration changes.

These steps are:

- ~~///~~ Create object migration request on a change request form
- ~~///~~ Perform and track migration
- ~~///~~ Verify migration

The CCB will review and approve or disapprove the object migration request following the same procedures as a change control request. If the CCB approves an object migration request, it becomes the responsibility of the infrastructure team to migrate the objects between environments.

2.7.2 Other Software Migration

Not all software will follow the object migration such as the interface to the Department's central accounting system. The Office of Procurement and Contracting will use PVCS and USEC's standard release management support software, to control the management of this software. PVCS establishes a version control system for the project team and provides the tool to move software between environments. The CCB will review and approve or disapprove the other software migration requests following the same procedures as the object migration request. If the CCB approves the request, it becomes the responsibility of the infrastructure team to migrate the software between environments.

2.8 Configuration Audits

The IPS development team will conduct two primary formal configuration audits: a Functional Configuration Audit (FCA) and a Physical Configuration Audit (PCA). The FCA will be comprised of a Software FCA and a Hardware FCA. The PCA will be comprised of a Preliminary PCA, a Software PCA and a hardware PCA. The IPS configuration management team will conduct the configuration audits team just prior to the Integrate and Test System phase of the SDM. The IPS configuration management team will consist of the following personnel:

- ?? QA Manager
- ?? Development Team Project Leader
- ?? IV&V Team Leader
- ?? IPS Configuration Manager
- ?? IPS Change Control Coordinator

2.8.1 Functional Configuration Audit

Software FCA. In performing the Software FCA the configuration team will examine and evaluate the as-coded system software against its design or deliverable documentation. This involves verification of correct documentation to support use of IPS in the designed system environment

Hardware FCA. In performing the hardware FCA the configuration team will examine the test procedures and test results used to perform integration testing of the total integrated procurement system (hardware and software) against the system specifications and the contract statement of work. The hardware FCA is a prerequisite for performing the hardware PCA.

2.8.2 Physical Configuration Audit

Software PCA. The Software PCA will be conducted by examining the as-coded total system software against its design or technical documentation. This involves comparison of source code documents with actual coding on applicable media. The IPS configuration manager and IV&V team will lead this audit since it requires the use of engineers skilled in applicable software languages and conventions for documenting and utilizing software products and possess a familiarity with applicable specifications and standards.

Hardware PCA. In performing the Hardware PCA the IPS configuration management team will evaluate the built IPS system against its design documentation. The PCA requires the evaluators to possess thorough familiarity with standard industry practices.

2.9 Tools

The IPS change management database will serve as the central location for all related CM issues to the project. This database will contain:

- ~~///~~ Configuration inventory for infrastructure components
- ~~///~~ Change control issues
- ~~///~~ Configuration management audit reports
- ~~///~~ Object migration database

The Change Control Coordinator will generate reports from this database to track inventory and provide status of change control issues.

In addition, the Polytron Version Control System will be used to log configuration items in and out of the CM library.

3.0 TRAINING APPROACH

CM training for the IPS team members will focus on CM awareness, roles and responsibilities of all team members and the specific functions of those assigned the responsibility for performing CM activities. Those team members assigned responsibility for CM activities will develop and define the requirements of the IPS team CM process. In addition, this team will establish the teams data measurement, analysis and reporting methodologies. The IPS team's configuration manager will conduct an informal session with the project team to review the IPS CM guidelines and educate the team on the CM process. During this session, the coordinator will discuss the following:

- ?? The CCB and its roles and responsibilities
- ?? Roles and responsibilities of all team members in the CM process
- ?? CM tools and procedures
- ?? CM process audit requirements
- ?? Data measurement, analysis and reporting requirements

The Change Control Coordinator will also meet with business users to discuss the CM process and roles and responsibilities. The coordinator will hold these sessions early in the project lifecycle.

Appendix A - Request For Change (RFC) Form

Purpose:

The Request for Change Form (RFC Form) provides the means for proposing, describing, and justifying changes. An RFC is prepared when there is a perceived need to update or enhance a CI. The RFC, together with the IPS team knowledge management database, provides a time-based record of events and actions associated with changes during the project's lifecycle. The RFC provides a record that links change actions from the identification of a problem or issue to completion of the change. The RFC becomes a part of the audit trail. Similarly, the Document Change Control Notice ensures that the IPS team track and manage appropriate modifications made to all documentation affected by changes to CI's.

Scope:

Completing the RFC and DCC involves actions by the originators, Technical Lead, PM and the Configuration Control Board. The control of change is the prime consideration in configuration management. This control is imposed on all CI's. It governs the actions taken by all project activities and ensures that personnel are aware of all of the effects of a proposed change before the change is authorized for implementation. The Change Control Coordinator generates the RFC by completing the form (next page).

REQUEST FOR CHANGE			
INFORMATION PROVIDED BY TECHNICAL LEAD			
1. RFC No.	2. Date Request Logged	3. CI Contact Person	
4. Number(s) and Name(s) of CI(s) Affected			
5. List CI Document(s) Affected			
6. CCB Response Date			
INFORMATION PROVIDED BY ORIGINATOR			
7. Name	8. Phone No.	9. Date	
10. Description of Proposed Change			
11. Reason for Change		12. Technical Lead/Supervisor and Review Date	
13. Proposed Classification of Change — Temporary — Permanent	14. Proposed Priority — Routine — Urgent — Emergency		
15. Impact if Approved			
16. Impact if Not Approved			
CCB ACTION			
17. Investigative Findings			
18. Approved Classification — Temporary — Permanent			
Condition of Change — Extend — Install By — Remove By			
19. Approved Priority — Routine — Urgent — Emergency			
20. Disposition — Accept — Reject — Defer — Rework — Customer Authorization Required			

21. Authorizing Signatures	22. Date
Project Manager/QA Manager	
Team Leader.	
IV&V Team Leader	
IPS Configuration Manager.	

Appendix B - Document Change Control Form

Purpose

The Document Change Control (DCC) form is used to ensure that appropriate modifications are made to all documentation affected by changes to CI's.

Procedure

1. CI control document corrections or updates are attached to the DCC. When the changes are extensive, the document(s) are reissued with the document identification number modified to reflect the new version.
2. Redlined document change page(s) are attached to the DCC. Each change page must fully describe all changes to be made on that page.
3. The project manager or designated task leader retains all DCC forms. Each time a document change is authorized, the details of the change are added to that document's DCC. Thus, the DCC form becomes a cumulative history of changes to the document, and an audit trail of document changes is maintained.

DOCUMENT CHANGE CONTROL FORM

1. DCC NO.	2. DATE PREPARED	3. PERSON RESPONSIBLE FOR DOCUMENT		
4. CI IDENTIFICATION NO.		5. CI NAME		
6. DOCUMENT IDENTIFICATION NO.		7. DOCUMENT NAME		
8. CHANGE SEQUENCE NUMBER	9. PAGES AFFECTED AND TYPE OF CHANGE ACTION	10. RELATED RFC NOS.	11. DATE OF CHANGE	