Operator Manual

Summary Description:

The purpose of the Operator Manual is to clearly describe the automated system or application that will be operating in the production environment and to provide the operations and support staff with the information necessary to effectively handle routine production processing, ongoing maintenance, and identified problems/issues. The Operator Manual describes the operational system and its stakeholders, as well as the roles and responsibilities for ongoing operations and maintenance of the system. It describes the sources of software components and other assets, how the architecture was implemented, the use of the architecture and assets, and how it is to be maintained. The Operator Manual provides documented procedures for performing tasks associated with equipment administration, network administration, application administration, and system administration, as well as data and database administration.

Status:

Mandatory – All new system development projects and any automated systems undergoing new major architectural design or functional changes (including GOTS and/or COTS integrations) must prepare some form of an Operator Manual, as appropriate. The actual content of the Operator Manual will be dependent on the specific circumstances of the automated system or application, and should be tailored to address the specific operational scenario(s). If various operational sites are involved, site-specific versions of the Operator Manual may be necessary or appropriate. The Operator Manual is tightly coupled with the Version Description Document (VDD) as part of the product baseline (PBL) for configuration management.

Timeframe:

The Operator Manual is generally initiated during the Development Phase. The Operator Manual should be placed under configuration control and subsequently updated during the Implementation & Testing Phase, as necessary and appropriate. If an automated system is developed in multiple builds or releases, an Operator Manual will likely be required for each major release. The Operator Manual, in conjunction with an associated Version Description Document (VDD), serves as the primary input to the Operational Readiness Review (ORR), and serves as the basis for sustaining support during the Operations & Maintenance Phase. The Operator Manual should be actively monitored and regularly reviewed and updated throughout the Operations & Maintenance Phase.

Responsible Reviewing Component:

OIS/PMSG, in conjunction with OIS/TMG, is the CMS component that has the primary decision authority over the need for the Operator Manual, requirements for its creation, and acceptance of the end product in meeting the information needs.

Primary Information Exchange Partners:

The following are the primary stakeholders who have an interest in the content of the Operator Manual:

Project Owner/Manager
System Owner/Manager
System Developer
System Maintainer
OIS/EDG
OIS/TMG
IT Infrastructure Implementation Agent or Contractor
Configuration (or Change) Control Board (CCB)

Government Responsibilities:

The Project Owner/Manager is responsible for ensuring that an Operator Manual is available for the automated system or application that will be operating in the production environment. The Project Owner/Manager is responsible for working with their designated Component Lead, as well as with OIS/TMG, OIS/EDG, the System Owner/Manager and System Maintainer to determine the level of detail required in the Operator Manual to adequately support the automated system or application in the production environment. If a system is being developed in-house without outside contractor resources, then the government developers are responsible for the contractor responsibilities described below.

Contractor Responsibilities:

The contractor serving as System Developer prepares the Operator Manual based on the system design documented in the System Design Document (SDD), as well as based on available information documented in the Interface Control Document (ICD), Database Design Document, Release Plan, Version Description Document (VDD), and Implementation Plan, if such documents exist. The System Developer may have to collaborate with the System Maintainer and/or the IT Infrastructure Implementation Agent or Contractor to complete various sections of the Operator Manual. The Operator Manual is a configuration item that the System Maintainer is responsible for actively monitoring and updating during the Operations & Maintenance Phase, as appropriate. An informal review of the developed or updated Operator Manual should be conducted at the contractor's site prior to delivery of the Operator Manual to CMS for formal review. If the system is being developed in multiple builds or releases, the System Developer should identify the portion of the system that is included in the specific build or release covered by a particular version of the Operator Manual. The Operator Manual shall be provided to CMS in both hardcopy and softcopy.

Content:

The following represents the basic outline of a standard Operator Manual:

Title Page
Revision Chart
Table of Contents
List of Figures
List of Tables
1. Introduction
2. Referenced Documents
3. System Overview
- **3.1 Functional System Overview**
- **3.2 Physical System Overview**
- **3.3 Processing Overview**
- **3.4 Communications Overview**
- **3.5 Security & Privacy Overview**

4. Site Profile(s)
5. Equipment Administration
6. Network Administration
7. Application Administration
- **7.1 User/Group Access Procedures**
- **7.2 Startup/Shutdown Procedures**
- **7.3 Escalation Procedures**

8. System Administration
- **8.1 Operations Sequence**
- **8.2 Operations Procedures**
  - **8.2.1 Input/Output Procedures**
  - **8.2.2 Diagnostic and Problem-Handling Procedures**
- **8.3 Backup Procedures**
- **8.4 Restart/Recovery Procedures**
- **8.5 Monitoring Procedures**
- **8.6 Maintenance Procedures**

9. Data & Database Administration
- **9.1 Data Administration Procedures**
- **9.2 Database Administration Procedures**

10. Configuration Management
Appendices
Glossary

See Operator Manual Content (PDF - 33 KB) for a detailed description of the expected content for each of the major components of the Operator Manual.

Guidance:

If you need additional assistance and guidance in the preparation of an Operator Manual for your automated system or application, contact your designated Component Lead, who will put you in touch with a representative from OIS to assist you.

Review Process:

The team that was involved in drafting the Operator Manual should conduct a review of the document prior to the Operational Readiness Review (ORR). The purpose of this

incremental review process is to identify any defects or issues prior to baselining in an effort to achieve final agreement and acceptance of the document by the stakeholders during the ORR. Subsequent reviews may be required for changes made to the Operator Manual during the Operations & Maintenance Phase. Such reviews may be accomplished by a Configuration (or Change) Control Board (CCB).

Date Created/Modified:

April 2005/May 2005

Operator Manual Content

The following is an outline and description for each of the major components of the Operator Manual:

Title Page
Revision Chart
Table of Contents
List of Figures
List of Tables

1. Introduction

[Provide full identifying information for the automated system, application, or situation for which the Operator Manual applies, including as applicable, identifications number(s), title(s)/name(s), abbreviation(s)/acronym(s), version number(s), and release number(s). Also identify the type(s) of computer operation involved (e.g., desktop, mainframe, client/server, Web-based, online and/or batch transaction processing and/or decision support). Summarize the purpose of the document, the scope of activities that resulted in its development, its relationship to other relevant documents (e.g., the System Security Plan (SSP) and/or Information Security (IS) Risk Assessment (RA), System Design Document (SDD), Interface Control Document (ICD), Database Design Document, Data Conversion Plan, Release Plan, Version Description Document (VDD), Implementation Plan, Test Plan, User Manual, etc., if they exist), the intended audience for the document, and expected evolution of the document. Also describe any security or privacy considerations associated with use of the Operator Manual.]

2. Referenced Documents

[Provide identifying information for all documents used to arrive at and/or referenced within the Operator Manual (e.g., related and/or companion documents, prerequisite documents, relevant technical documentation, etc.). At a minimum, the current Version Description Document (VDD) should be identified as a referenced, companion document.]

3. System Overview

[Provide a brief description of the system, including its purpose and uses. Describe the relevant benefits, objectives and goals as precisely as possible. Include a high-level context diagram(s) for the system and subsystems.]

3.1. Functional System Overview

[Briefly describe the high-level capabilities and operation of the system (i.e., what the system does (and doesn't do, if necessary)). Identify the codes and names of reports and data display screens, and provide summary descriptions for each.]

3.2. Physical System Overview

[Provide a brief description of the system architecture and the major system components essential to the operation of the system in the production environment. Provide identifying and descriptive information for all hardware and software components, including purpose/operation of each component and the amount of memory and auxiliary storage needed, as appropriate. For online transaction-based

processing, provide an inventory of all software components that must be loaded for the software system to be operational. Identify software necessary to resume operation of the system in case of emergency. Identify all permanent files and databases that are referenced, created, or updated by the system, including retention schedule and disposition. Include any charts, diagrams, and/or graphics as necessary to depict system organization and operational interrelationships. Appropriate information for inclusion may be obtained from the System Design Document (SDD), Implementation Plan and through reference to the appropriate sections of the corresponding Version Description Document (VDD). Content may be provided via appropriate appendices.]

3.3. Processing Overview

[Provide information that is applicable to the processing of the system. Identify the state(s) and mode(s) of operation. Identify the types of inputs/access that can be made to the software and the software's response to each type. Provide a flow chart depicting how the information moves from the application to the database. Identify any system restrictions, waivers of operational standards, service level agreements (SLAs), and information oriented toward specific support areas (e.g., interfaces with other systems). If any portion of the system is run in batch mode, provide an inventory of all runs showing the software components, the job control batch file names, run jobs, and purpose of each run. If sets of runs are grouped by time periods or cycles, each set of required integrated operations should be described by frequency (i.e., daily, weekly, etc.). If runs may be grouped logically by organizational level, the groups of runs that can be performed by each organizational level (e.g., headquarters processing, field activity processing, etc.) should be described according to the logical groupings. Identify any reports and other outputs that are generated by the software runs, including security and privacy considerations for each.]

3.4. Communications Overview

[Describe the layout of the network and the telecommunications equipment. Provide a general description of the communications functions and processes of the software, including a diagram of the communications network used in the system.]

3.5. Security & Privacy Overview

[Describe the security and privacy considerations associated with operation and maintenance of the system. Appropriate information may be obtained by including or referencing information provided in the System Security Plan (SSP) and/or Information Security (IS) Risk Assessment (RA).]

4. Site Profile(s)

[Identify all of the operational sites involved and their relationship to one another. Provide the official address(es) of the operational site(s), along with the name(s) and phone number(s) of associated support staff for each site.]

5. Equipment Administration

[Identify who provides administrative support for the system hardware and peripheral devices, indicating each function to be performed and the scope of the function(s), if necessary. This includes administration of server hardware and printers, operating system maintenance, and desktop/client installation, configuration, and imaging. Provide

point-of-contact information (i.e., names and phone numbers) as appropriate. Provide procedures necessary for powering on/off the computer equipment, and for installing hardware upgrades and operating system patches, as appropriate. Include procedures necessary to initiate operation of the system hardware and peripheral devices, such as equipment setup, pre-operation, booting, and commands typically used during system hardware initiation. Provide a complete description of the existing server directories and drive mappings. Also describe procedures for creating new server directories and drive mappings. Include procedures necessary to terminate system hardware operation. In addition, provide procedures necessary to operate all relevant off-line equipment. Describe diagnostics features, tools, and procedures that may be utilized to identify and troubleshoot malfunctions, including error message syntax and hierarchy for fault isolation.]

6. Network Administration

[Identify who provides network (LAN/WAN) and operating system access. Describe the procedures for granting such access (e.g., describe the process for obtaining network and operating system IDs and passwords). Describe procedures for establishing connectivity and for maintaining and monitoring the network and telecommunications. Provide point-of-contact information (i.e., names and phone numbers) as appropriate.]

7. Application Administration

[Provide information necessary to support administration of the software application.]

7.1. User/Group Access Procedures

[Identify who provides application access and describe the procedures for granting access. Identify who adds/deletes users/application groups to the application and who is responsible for setting the permissions for users of the application. Describe the procedures for creating/deleting user groups, logins and password accounts and for setting user permissions (e.g., granting or restricting access to certain files). Also describe the roles that are granted to each group or individual user(s).]

7.2. Startup/Shutdown Procedures

[Identify who has responsibility to start and stop the software application. Include a rationale for stopping the application, and the steps to take to restart the application after identified problems are corrected.]

7.3. Escalation Procedures

[Describe procedures for providing assistance and addressing problems reported by end-users during operation of the software application. Describe the formal escalation procedures to be followed in response to priority user problem resolution requests, including roles and responsibilities and associated point-of-contact information (names and phone numbers).]

8. System Administration

[Provide information necessary to support administration of the system. Identify who is responsible for system administration activities; include names, phone numbers, and duties of responsible individuals, as appropriate.]

8.1. Operations Sequence

[Provide a schedule of acceptable phasing of the system software into a logical series of operations, including any data/database refreshes. A run may be phased to permit manual or semiautomatic checking of intermediate results, to provide the user with intermediate results for specific purposes, or to permit a logical break if higher priority jobs are submitted. An example of the minimum division for most systems would be edit, file update, and report preparation. If the system is a batch system, provide the execution schedule, which shows, at a minimum, the following:

- Job dependencies (include resource and peripheral requirements)
- Day of week/month/date for execution
- Time of day or night (if significant)
- Estimated run time in computer units and factors that may affect it
- Required turnaround time]

8.2. Operations Procedures

[Provide detailed instructions for each identified state and mode of operation. If applicable, provide detailed information needed to execute system runs or to perform manual operations. Address any associated security and privacy considerations, procedures for taking check points, and procedures for monitoring, deleting, and prioritizing print jobs. For each identified run, provide the information described in the following sub-paragraphs, as appropriate and applicable.]

8.2.1. Input/Output Procedures

[Describe the input and output media (e.g., form, magnetic disk) relevant to the identified modes of operation and provide procedures for reading and writing on these media. Briefly describe the operating system control language, and list procedures for interactive messages and replies. Describe all operator job control inputs (e.g., for initiating/starting the run, selecting run execution options, activating an online or transaction-based system, and running the system through remote devices, if appropriate). Identify the report names/identifiers, distribution requirements, and any identifying numbers expected to be output from the run. Describe reports to be produced from the system run by other than standard means.]

8.2.2. Diagnostic and Problem-Handling Procedures

[Describe the diagnostic or error-detection features of the system software, the purpose of the diagnostic features, and the setup and execution procedures for any software diagnostic procedures. Identify potential problems that may occur in any step of operation. Identify the error codes and messages or other indications that accompany those potential problems, and describe the automatic and manual procedures to be followed for each occurrence. Include the following, as applicable:

- Validation, evaluation and troubleshooting techniques
- Conditions requiring computer system shutdown
- Procedures for on-line intervention or abortion
- Instructions for initiating restart or recovery procedures for the run
- Procedures for recording information concerning a malfunction]

8.3. Backup Procedures

[Describe procedures for regularly scheduled backups of the entire network, including program and data storage. Describe procedures for creating, storing, maintaining, and securing backups and associated logs. Describe daily and weekly backup schedules and procedures, including cartridge labeling, tracking, and rotation instructions. Describe the location, schedule, and procedures for off-site storage. Cross-reference applicable instructions with procedures in the CMS Contingency Plan.]

8.4. Restart/Recovery Procedures

[Provide procedures for restart/recovery in the event of a system failure. Describe any other applicable procedures or measures to ensure continuity of operations in the event of emergencies (e.g., procedures for switch over to a redundant computer system).]

8.5. Monitoring Procedures

[Describe tools and procedures for monitoring system usage, performance, and activity during operations. Identify the hours of peak demand. Describe available indicators, interpretation of those indicators, and routine and special monitoring procedures to be followed. Provide instructions for conducting and documenting troubleshooting activities. Include procedures for the setup and monitoring of the operating system and application audit trails. Describe any licensing agreements and procedures for ensuring that all licenses are current.]

8.6. Maintenance Procedures

[Describe procedures for maintaining the file system. Provide system maintenance schedules, as appropriate. Describe procedures for installing and testing system updates and for moving/installing the system updates to the operational environment. Include procedures for creating and updating maintenance reports.]

9. Data & Database Administration

[Provide information necessary for data and database administration of the system.]

9.1. Data Administration Procedures

[If data input is required at production time, identify who is responsible for the source data, the format of the data, data validation requirements, and disposition of input source and created data.]

9.2. Database Administration Procedures

[Describe who provides database access and the procedures for granting access. Identify the person(s) responsible for making changes to the database, adding/deleting groups and users to the database, setting permissions for users of the database, re-indexing the database after changes have been made, packing/compressing the database, database reporting, and performing database backups/restores. Provide the procedures necessary for adding/deleting database groups and users; for setting permissions; for re-indexing the database after changes have been made; for packing/compressing the database; for data entry, modifying, and deleting information from the database, and for performing backups/restores of the database. Identify the database reports that are to be generated, including the timeframes, due dates, distribution, and storage of the reports.]

10. Configuration Management

[Describe the configuration management procedures that will be followed and the interactions that will occur for configuration control, change control, and configuration status account reporting for maintaining the configuration information for the hardware and software actually installed. This information may be copied from the Implementation Plan and modified as necessary and appropriate to address configuration management during operations and maintenance support, if different from that followed during implementation. Describe procedures for maintaining a property inventory at the operational sites(s). Include procedures for maintaining floor plans showing the location of all installed equipment and instructions for how to add/delete/modify the plans.]

Appendices

[Utilize appendices to facilitate ease of use and maintenance of the Operator Manual document. Each appendix should be referenced in the main body of the document where that information would normally have been provided.]

Glossary

[Provide clear and concise definitions for terms used in the Operator Manual that may be unfamiliar to readers of the document.]