USAID | DELIVER PROJECT

HEALTH COMMODITY MANAGEMENT INFORMATION SYSTEM (HCMIS)

SYSTEM TEST PLAN

FOR FACILITY EDITION

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CONTENTS

1 INTRODUCTION

This System Test Plan (STP) addresses and provides guidance for the System testing activities to be performed on HCMIS FE System. It is designed to capture and convey the overall structure and objectives of the HCMIS FE System Test and Evaluation activities.

1.1 Purpose

The purpose of this document is to describe the plan for testing the HCMIS FE system against the functional requirements as defined in the HCMIS FE System Requirements Document (SRD) and to make sure that the HCMIS FE system project complies with the definition of the HCMIS FE system requirements. Moreover the objective of the system testing is to discover potential defects in the HCMIS FE system. Defects could include nonconformance with the stated requirements or unexpected and undesired side effects of the system operation.

1.2 Approach

This section describes the approach or methods to be utilized for system testing.

1.2.1 Process Overview

The following diagram represents the overall flow of the system testing process:

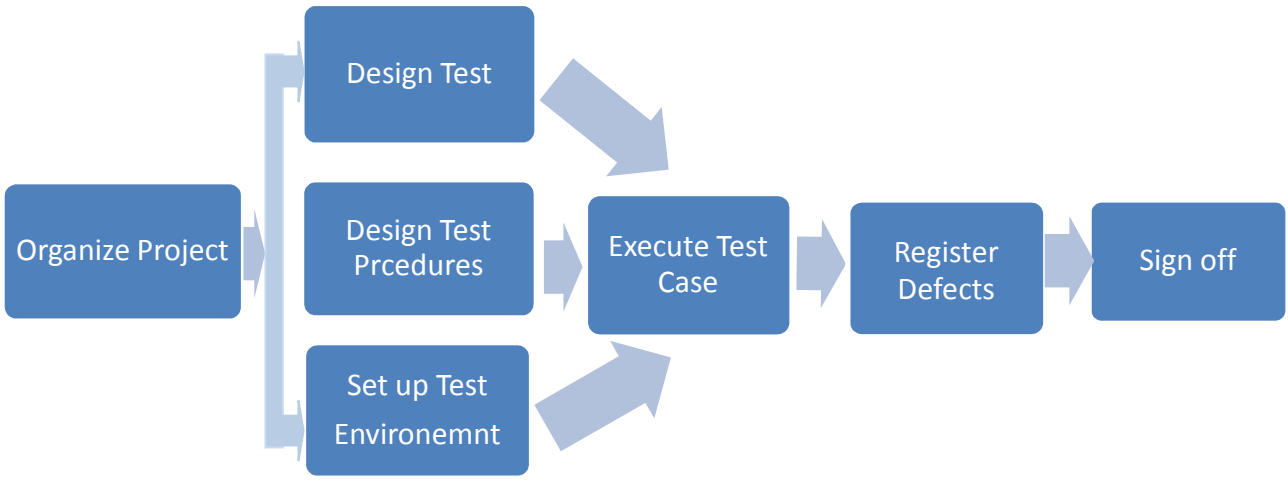

Figure 1: Test Process Flow

The diagram above outlines the Test Process approach that will be followed.

a. **Organize Project** involves creating a System Test Plan, Schedule & Test Approach, and assigning responsibilities.

b. **Design Test** involves identifying Test Cycles, Test Cases, Entrance & Exit Criteria, Expected Results, etc. In general, test conditions/expected results will be identified by the Test Team in conjunction with the Development Team. The Test Team will then identify Test Cases and the Data required. The Test conditions are derived from the HCMIS FE Specifications Document.

c. **Design Test Procedures** includes setting up procedures such as Error Management systems and Status reporting.

d. **Set up Test Environment** includes requesting/building hardware, software and data set-ups.

e. **Execute Test Cases –** The tests (Test Cases) will be executed to ensure the quality.

f. **Log Defects -** Log defects as they are found from executing Test Cases.

g. **Signoff** - Signoff happens when all pre-defined exit criteria have been achieved.

1.3 Document Organization

In this system test plan document the document is divided into 5 chapters these chapters are:

Chapter 1: Introduction – States the Purpose, Approach, Document Organization and Intended Audience of HCMIS FE system test plan.

Chapter 2: Testing Overview – In this chapter Quality Assurance Approach, organization, Test Tools, In Scope, Out of Scope, Test Case Specification, Test Case Identification, Test Case Pass/Fail Criteria, Defect Classification, Testing Schedule, and Training Needs will be stated.

Chapter 3: Test Environment – Describes and defines the Overview of test environment, Test Environment Management and Components of the HCMIS FE System Test.

Chapter 4: Test Execution Guidelines – chapter four to the system test plan include: Entrance, Exit, Process, Roles and Responsibilities, and Deliverables

Chapter 5: Additional Section – Addresses the Definitions, Acronyms, and Abbreviations and also Acknowledgments to the document.

1.4 Intended Audience

The target audience for this system test plan document consists of the following groups:

- Test team
- Development team
- Project Manager/PM
- Quality Assurance

2 TESTING OVERVIEW

The purpose of the system test as a whole is to detect faults that can only be exposed by testing the entire integrated system or some major part of it. In this document, the system testing is mainly concerned with areas that include but not limited to the functionality of the system, its security and input/output validation.

2.1 Quality Assurance

2.1.1 Primary Objective

A primary objective of HCMIS FE system testing is to: assure that the HCMIS FE meets functional and non-functional requirements (including quality requirements). The metrics for each quality requirement is meant to satisfy the use case scenarios and maintain the quality of the product. At the end of the project development life cycle, the stakeholders should find the HCMIS FE project meeting or exceeding all their expectations.

2.1.2 Secondary Objective

The secondary objective of HCMIS FE system testing will be to: identify and expose all issues and associated risks, communicate all known issues to the project team, and ensure that all issues are addressed in an appropriate manner before release.

2.2 Organization

On the following defines the organizational chart and categories of personnel who participate in testing management and the test process.

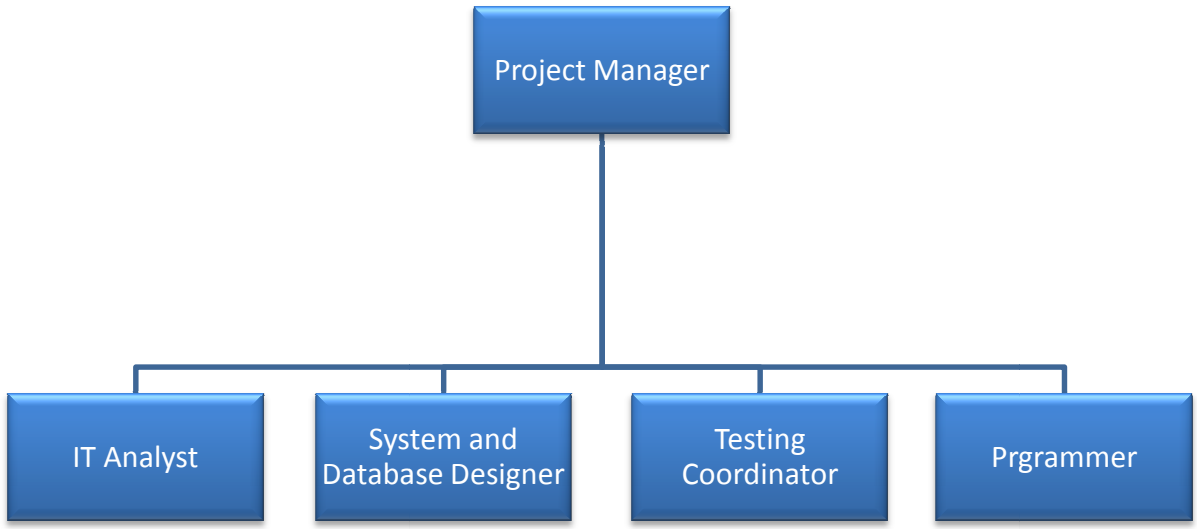

Figure 2 : Personnel structure for the system test process

2.3 In Scope

The following table lists all the functionalities that the system test will include.

Table 1: HCMIS FE System Functionalities to be tested

Function/Requirement	Requirements Reference(s)
Managing user accounts	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Managing system setting	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Editing pipeline information	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Adding/editing/deleting supplies list	✓ HCMIS FE Software Document ✓ Detailed Function Requirements
Adding/edition/deleting drugs' information	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Customizing drug list	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Maintain separate logical stores for different programs in the same warehouse	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements

Generating pick list including the location, item name, batch number and expiry date of items to be issued	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Handling loss/adjustment	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Managing pick face replacement	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Handling inventory control	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Controlling receive transaction activity log	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Controlling issue transaction activity log	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Controlling loss/adjustment log	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Controlling inventory log information	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Handling database backup and restore	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Exporting data to PFSA in PDA, Server and Excel formats	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Generating reports regarding the stock status, over stock items, stock out items, issue by receiving unit, expired products, near expiry products, and storage status	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements
Generating summary reports that include summary chart, stock expiry status and cost summary.	✓ HCMIS FE Software Document ✓ Detailed Functional Requirements

2.4 Out of Scope

It is the intent that all of the individual test cases contained in this system test plan will be performed. However, if time does not permit, some of the low priority test cases may be dropped.

2.5 Test Case Specifications

A test case document is derived from the functional requirement document and system documents. It provides specifications for the construction of test cases and includes list(s) of test case areas,

inputs, actions, predicted results, actual result and test objectives for each of the components to be tested. The template that will be used for designing Test case is showing below.

Table 2: Test Case Template

Test Case ID: -	Test Case Name:-	
Test objectives:		
Prerequisite Tests:		Date Tested:
Post requisite Tests:		Tested By:
Business requirement document id:		Time Taken:
Procedure to Perform Test		
• List of procedures		
Action	**Expected Result Criteria**	**Actual Result**

2.6 Test Case Identification

The following table describes how the test case will be identified and how each will be classified.

Table 3: List of Test Cases Identified

Test Case Id	ST
STC1	N, X
STC2	X
STC3	X
STC4	X
STC5	X
STC6	X
STC7	X
STC8	X
STC9	X
STC10	X
STC11	X
STC12	X
STC13	X
STC14	X
STC15	X

STC16	X
STC17	X
STC18	X
STC19	X
STC20	X
STC21	X
STC22	X
STC23	X
STC24	X
STC25	X
STC26	X
STC27	X
STC28	X
STC29	E

N = Stages entry criteria

E = Stages exit criteria

X = to be run in the stage

2.7 Test Case Pass/Fail Criteria

The entrance criteria for each phase of the system testing must be met before the next phase can commence. The formal approval will be granted by the Project Manager.

The Project Manager will retain the decision as to whether the total and/or criticality of any or all detected incidents/defects warrant the delay of the HCMIS FE system.

2.8 Defect Classification

All defects should be recorded using the BugNet Issue Tracker free web based application facilitating a collaborative work among test team and developers. Defects are classified as Bugs in the BugNet Issue Tracker application. Test teams are also requested to daily send defect reports to the developer. Developers will update the defect list and notify the requestor after the defect has been resolved.

Besides, debugging should be based on high, medium and low priorities. These priorities are set by the test team and are based on how critical the test script is in terms of dependency and the functionality of the system.

2.9 Testing Schedule and Training Needs

For the successful implementation of the system testing, the effort to be exerted by the Test Team is inevitable. In order to provide complete and proper testing, the test team should be familiar with the purpose and functionality of HCMIS FE. To this effect, comprehensive training needs to be organized.

Moreover, the testing schedule is depicted in Table 4.

Table 4: Testing Schedule

Number of Days	Tasks
0 (already completed before System Test)	• Successful completion HCMIS FE system • Test case document ready
1	• Project team meeting
2	• Setup testing environment
3	• Conduction testing
2	• Prepare report

3 TEST ENVIRONMENT

In order to successfully and reproducibly conduct the system test the following provisions and preconditions have to be established.

3.1 Overview

The following sections provide a description about system test environment and what are the required hardware and software to conduct system test. The test environment provides the hardware, software, and facilities needed to support the proper execution of the test. The resources that are available at USAID-DELIVER Project shall be enough for system testing. Moreover, the system test environment will be used for the stand alone PC configuration with Windows XP operating system and running SQL server 2008 Express Edition and also .NET framework 4.0. The HCMIS FE system will be tested in accordance with the project team test schedule defined in section 2.9

3.2 Test Environment Management

Test environment will be established to perform system test on HCMIS FE system. In addition to this, the test environment will be separate from the development environment and identical to the operational or production environment.

To establish the operational test environment, the following steps will be taken.

- **Review and expand technical environment** – The purpose of this step is to ensure that adequate computer hardware and the appropriate system software has been installed and is available through the testing phase.
- **Inspect the test environment** – The purpose of this step is to ensure that an effective test environment has been established for the testing phase. The system developer, , and project manager will review the test environments to make certain that HCMIS FE needed to support the testing are available and operating properly.
- **Prepare system software to support testing** - The purpose of this step is to ensure that the system software in the test environment is ready for the testing effort. The HCMIS FE

will confirm proper operation of the following types of system software: operating systems and utilities software.

3.3 Components

The following section in system test plan will define the required hardware and software.

3.3.1 Hardware

The testing effort requires a standalone desktop computer with 2.4 GHz Pentium IV Processor, 512MB RAM, and 20GB Hard Disk.

3.3.2 Software

In addition to the hardware requirements, the HCMIS FE demands following software.

- **Operating System**: Windows XP Service Pack 3
- **Database**: SQL Server 2008 Express Edition
- **Framework**: .Net Framework 4.0

4 TEST EXECUTION GUIDELINES

This section describes the general criteria by which testing commences, temporarily stopped, resumed and completed within test cases.

4.1 Entrance

The Entrance criteria should be fulfilled before system test can commence. The entrance criteria for HCMIS FE system are:

- All developed code must be Multi-Unit tested. Multi-Unit testing must be completed and signed off by development team.
- System Test plans must be signed off by IT Analyst and Test Manager.
- All human resource must be assigned and in place.
- All test hardware and environments must be in place, and free for system test use.

4.2 Exit

Exit criteria for the HCMIS FE system test case:

- All critical and high priority errors from system test must be fixed and tested.
- All system tests executed.
- The test report has been delivered and approved by the project manager and test manager.

4.3 Process

4.3.1 Establishing the Test Environment

All system testing will be performed on hardware and software requirements that are specified on Chapter 3 of this document.

4.3.2 Executing Test Scripts

Test scripts will be executed by qualified test team members not directly involved in developments of the HCMIS FE system. Tests will be performed in the environment established for the testing purpose. Specific test results will be indicated within the test script itself, but a test log may be

attached to the fulfilled test script if needed to document any comments, deviations from the test procedures, or anomalies discovered during the testing.

All formal comments during the test execution will be documented in test log and included as part of the test report. Software problem reports generated during the execution of the testing will be processed in accordance with the configuration management plan

4.3.3 Suspension and Resumption of Tests

Testing activities will be suspended whenever the system demonstrates a critical fault or an application failure. Critical faults are those that prohibit further execution of the test script. An application failure presents results that are inconsistent with the results expected by the test script. If an application failure occurs, testing will continue (if possible) to identify other failures (if any). Testing will be resumed only after the design or implementation error is corrected.

4.3.4 Test Reports

Reports of test results will be documented in a final test report

4.4 Roles and responsibilities

The following describes the major roles and responsibilities of the test personnel.

A. **Testing Team**: they are responsible for performing individual test procedures as assigned, document the results of each test and complete test report forms when problems are observed. Moreover, the test team members will develop the test design specifications, procedures, scenarios, cases, and scripts that are essential for the testing. Besides, the test team members ensure that all observations are provided to the Testing Coordinator. In addition to this, the Test Team Members are responsible for the setting up HCMIS FE system test environment.

B. **Developers**: the developers are mandated to regularly review testing progress with the Testing Coordinator and take action whenever the system demonstrates a critical defect or application failure.

4.5 Deliverables

The following items must be delivered before testing begins:

- HCMIS FE Software Requirements Document (SRD)
- System Test Plan
- Test Case
- System Input Data
- Software to be Tested (i.e. HCMIS FE Facility Edition)

Moreover, the items indicated below must be delivered when the testing is complete:

- System Test Report
- System Test Output Data
- Problem Report (as needed)

5 ADDITIONAL SECTIONS

5.1 Definitions and Abbreviations

This document may contain terms, acronyms, and abbreviations that are unfamiliar to the reader. A dictionary of these terms, acronyms, and abbreviations can be found in the next sections.

5.1.1 Abbreviation

- HCMIS FE - Health Commodity Management Information System Facility Edition
- PDA - Personal Digital Assistant
- PFSA - Pharmaceutical Fund and Supply Agency
- PM - Project Manager
- QA - Quality Assurance
- SRD - Software Requirements Document
- STC – System Test Case
- STP - System Test Plan

5.1.2 Definitions

Pass/Fail Criteria: Decision rules used to determine whether a software item or software feature passes or fails a test.

System Testing: Testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.

Test Environment Management: The process required to setup or coordinates all the necessary hardware and software for testing purpose.

Test: An activity in which a system or component is executed under specified conditions, the results are observed or recorded, and an evaluation is made of some aspects of the system or component.

Test Case Specification: A document specifying inputs, predicted results, and a set of execution condition for test item.

Test Case Identification: An identification that is used to identify each test case and also to indicate classification of each test case.

Test Plan: A document describing the scope, approach, resources, and schedule of intended testing activities. It identifies test items, the features to be tested, the testing tasks, who will do each task, and any risks requiring contingency planning.

Test Procedure: A document containing a set of associated instruction and specifying a sequence of actions for the execution of a test.

Test Report: A document summarizing testing activities and results. It also contains an evaluation of the corresponding test items.

Testing:(1) The process of operation a system or component under specified conditions, observing or recoding the results, and making an evaluation of some aspect of the system or component. (2) The process of analyzing a software item to detect the differences between existing and required conditions (i.e., bugs) and to evaluate the features of the software items.

5.2 References and related document

- Health Commodity Management Information System (HCMIS) Software Document for Facility

6 APPENDIX

System Test Report Template

Test Case ID	Date Tested	Tester	Pass/Fail	Severity of Defect	Summary of Defect	Closed prior to Production Release?	Comments
						<Yes> or <No>	

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