Mercury Tours and Company
Mercury Tours

Testing Strategy
Version 1.0

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1.   Introduction

This document is a consolidation of all key activities, processes and tools to support the Testing Phase of the Mercury Tours. Its purpose is to help communicate, in one document, all of the activities which take place during testing of the project and help to ensure a well coordinated, communicated and executed the test.

1.0 About the Mercury Tours, Inc.
The Mercury Tours is a tour business enterprise that serves that serves the group and individuals from all over the world. Mercury Tours was established to cater to the growing demand for a tour organizer who tailor makes an itinerary as required by the tourist. Mercury Tours highly value our customers and strive to provide a unique customer satisfaction. Mercury Tours dedicated and experienced staff ensures to plan a tour package that highlight culture, history, adventure, entertainment and relaxation. Every activity of our itinerary is planned to perfection and we present a tour program that specifically meets your interests.

2. Goals and Objectives

The goal of the test phase is to help ensure that the system operates in accordance with the functionality defined within the Use Cases (and requirement documents if needed) and adequately supports the detailed business processes defined in the Use Cases.

Specifically, the objective of this test document is to exercise the system and to test and validate the following:

- Business functionality (as defined in the Use Cases)
- Technical modifications, interfaces and enhancements.
- Security and Privileges(Profiles)
- System performance
- Training Requirements and Change Management implications

3.   Scope

The scope of this test is limited to testing of Mercury Tours project as described by the High Level Requirement Document.

Testing will cover the following different modules of the Mercury Tours:
End-to-End Integrated Business Processes supported by more than 1600 Business Function Test Cases*:

Module	Expected Number of Test Cases to be Executed
• Home Page	400 estimated
• Sign On	100 estimated
• Register	100 estimated
• Destination	300 estimated
• Non-Functional	100 estimated (other scenarios not covered)
• Flights	200 estimated
• Hotels	200 estimated
• Cruises	100 estimated
• Vacations	100 estimated
• Specials	100 estimated

*NOTE - As a result of the test process, it is expected that the final number of Business Scenarios will vary from this number.

4. Roles and Responsibilities

The roles and responsibilities of the project team members may change to align to the new task at hand as necessary. However, during this phase of the project, the expectation is that the Project Manager assumes more of a leadership role. The other team members of the Mercury Tours project will continue to provide key support for this process in the required area and continued construction of required interfaces, enhancements, conversions and networks.

In preparation for testing, the test lead will be assigned for iterations of each test scenario. For each scenario, the lead will identify and coordinate the creation, assembly and management of:
- Business Scenario cross-walk (Walkthrough with Business Users)
- Detailed (daily) activity list/plan
- Required test data (if applicable)
- Training of Business Users in support of Business Scenarios
- Tracking of actual results
- Logging and tracking/resolution of issues

Business User
A non-Mercury Tours employee will serves as an independent observer/assessor of the system during the testing. The user will be from the Mercury Tours.

While acting as a Business User, the person represents Mercury Tours with the same functional specialty and provides input from that perspective (the college student candidates). The Business User should be someone close enough to the working level to understand details and real impacts.

Trainer
A person trained to instruct the Mercury Tours will be made available by Mercury Tours.

Site Implementation Team Lead
A site-specific Mercury Tours employee will be serving as a point of contact for deployment coordination at that site.

Responsibilities include monitoring, reporting and coordinating the execution of: infrastructure, data conversion, training logistics, and site-specific cut-over testing.

Testing Scenario– Key Responsibility Matrix

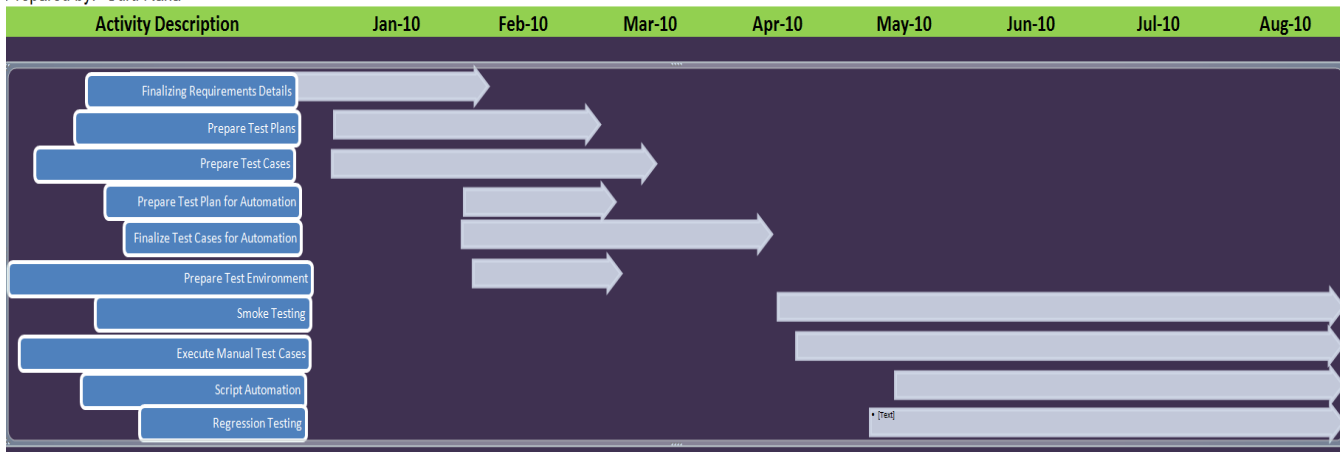| Do what?	Who will lead it?	Business User?	Test Team?
Design Test Scenario and expected results (Test Cases)		N/A	Mercury Test Team
Maintain a regular Business Scenario cross-walk (walkthrough with the Business Users)	Kelly D. Smith/Mandan Kerr/Guru Rana	Suchu Thapa	Mercury Test Team
Create detailed (daily) activity list/plan	Kelly+Mandan/Guru	N/A	Mercury Test Team
Identify required Test data	Jeff Randall	Suchu Thapa	Mercury Test Team
Execute Business Test Scenario	Guru/Tim	N/A	Mercury Test Team
Change/Mod/Enhance Configuration (as appropriate)	Kelly D. Smith/Mandan	Suchu Thapa	Mercury Test Team
Validate / Document Overall Cycle Test Results	Guru Rana	N/A	Mercury Test Team
Write Test Plans	Guru Rana		Mercury Test Team
Document Actual Results / Issues	Guru Rana	N/A	Mercury Test Team
Develop Training Material	Kelly/Jason	Suchu Thapa	Mercury Test Team

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Project Timeline

Testing Activities Time Line
Prepared by: Guru Rana

Activity Description	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10
Finalizing Requirements Details								
Prepare Test Plans								
Prepare Test Cases								
Prepare Test Plan for Automation								
Finalize Test Cases for Automation								
Prepare Test Environment								
Smoke Testing								
Execute Manual Test Cases								
Script Automation								
Regression Testing					[Text]			

Timeline for Testing

5.   Concept of Operations

The Mercury Tours Test for the project may consist of multiple phases. The following different types of testing will be done for the Mercury Tours:

1. Unit Testing (Done by the developers)
2. Smoke Testing
3. Functional Testing
4. Regression Testing
5. Pre-System Testing
6. System Testing
7. Beta Testing
8. User Acceptance Testing (UAT)
9. Stress Testing
10. Load Testing

Brief Description:

1. **Unit Testing**

   The developers test their module to check if individual units of source code are fit for use. A unit is the smallest testable part of an application. In procedural programming a unit may be an individual function or procedure.
   Ideally, each test case is independent from the others: substitutes like method stubs, mock objects[1], fakes and test harnesses can be used to assist testing a module in isolation. Unit tests are typically written and run by software developers to ensure that code meets its design and behaves as intended. Its implementation can vary from being very manual (pencil and paper) to being formalized as part of build automation.

2. Smoke Testing

   A quick high level test that the major functions of a piece of software work. Originated in the hardware testing practice of turning on a new piece of hardware for the first time and considering it a success if it does not catch on fire.

3. Functional Testing

   This test will confirm that all the functionalities mentioned in the requirement document are working correctly as designed. From the tester's perspective, this test will be carried out from Unit Testing to all the way to the production.

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4. Regression Testing

This is a repeated test to check whether the application is working as intended after a bug fix or after adding a new functionality in the application.

5. Pre-System Testing:

As the developers finish writing their code for Mercury Tours or are about to finish, the Mercury Test Team will create a test environment where the testers will test to check whether there is any major break down in the application. This test will also test the integration of components. Any critical defects (or high level defects in some cases) will be resolved immediately before it goes to System Testing environment. This testing will help create a cleaner application in the System Test environment.

6. **System Testing**

This activity will test Mercury Tours in the Test Environment upon the completion of pre-system testing, Mercury will create System Testing environment where the all the functionalities will be tested as per Use Cases. All the Test Cases will be executed and the defects will be logged as found. This environment will be environment for Mercury Test Team and will not be available for Mercury Tours Test Team. Once the System Test meets the exit criteria, then the system will be ready for Beta Testing.

7. **Beta Testing**

Upon completion of the requirements, development and system testing phase, Mercury will create a Beta Testing environment (the Beta site). The Beta site will be created within the Mercury network but will be available to the Mercury. The Beta site will be a scaled down version of the planned production environment and as such will not have all of the security and redundancy that a production environment would normally have. It will also not have the same performance as a production environment, but the performance will be adequate considering the minimal number of users accessing it. The network configuration and software codebase will be identical to the planned production environment. Mercury anticipates using the Beta site to continue our own internal testing, and the Mercury or any of its designees will have full access to test any or all of the features. Mercury will create a test bed of data that the Mercury can use in their testing. These data will not be a full representation of the production site, but will allow a tester to complete an application and choose from a small subset of the member institutions, for example. A couple of supplemental forms will be available, and the epayment testing will use test credit cards and create test transactions. The Beta site is not intended for stress testing. If any problems are

discovered, a mutually agreed upon process of reporting and tracking defects will be used. Mercury will use an iterative approach, fixing issues and releasing new code to be retested by the tester who reported the problem until the issue is resolved to the tester's satisfaction. The Beta site will be available starting in January 2007, and will continue for two months.

8.   **Acceptance Testing (UAT)**

After Beta testing is completed, Mercury will create a User Acceptance testing environment (the UAT site). The UAT site will be created within the production network environment in the AT&T Data Center and be fully available to the Mercury. The UAT site will be on the production hardware, and will have all the security features of our standard production environment. Redundancy will be added before going live. Performance will be identical to that in production. Mercury will work with the Mercury to create a full test bed of data for all Member Institutions including the Supplemental Forms. The UAT site is intended to verify the final configuration of the site and the data, and will be the basis for the production environment. Each Member Institution, or the Mercury on their behalf, should verify that their configuration is correct, including any supplemental forms, exports and printing. Epayment testing will use live cards and create live transactions that can be refunded. Mercury will use the same approach for reporting problems as the Beta site, although it is anticipated that all defects will be fixed before the UAT site goes up. The Mercury will confirm in writing that the UAT site performs to their satisfaction before going live. The UAT site will be available starting in April 2007 and will continue until the Common App goes live in the summer of 2007.

9. **Stress Testing:**

After the Beta Testing is complete, Mercury Test Team will perform this testing which will determine the stability of Mercury Tours. Any available tool with Mercury (Microsoft Application Center Test) will be used to run tests, validate and analyze the results.

This testing will be conducted to evaluate a system or component at or beyond the limits of its specified requirements to determine the load under which it fails and how. Often this is performance testing using a very high level of simulated load.

10. **Load Testing:**

Load testing will be carried out by putting a computer, peripheral, server, network or application to a work level approaching the limits of its specifications. This testing will be done under controlled lab conditions to compare the capabilities of

different systems to accurately measure the capabilities of a single system. This testing will be as per realistic and close environment that Mercury will be having.

The above three different types of testing will be done in three cycles:

1. Cycle 0
2. Cycle 1
3. Cycle 2

Testing will formally begin in March 15, 2010 and will take place at Mercury Tours and Company in Arlington, Virginia.

The QA Team will execute all scenarios at the Mercury Tours.

Specific details of content and purpose of each of the testing are as follows:

TEST PREPARATION

Prior to the start of Cycle 0 testing, key preparation activities will be conducted in order to properly prepare for the testing. Key activities include:

- Project Team will get the tools for logging defects.
- The Project build team is ready.
- Business Scenario Test Cases are ready.
- The data for testing are ready for all scenarios.
- Define Security and Privileges requirements
- For automation, QTP scripts should be ready

The timeline below identifies these key items to complete prior to October 19, 2006.

Cycle 0

Dependencies: Test Cases completion; QA Environment Up
Focus: Test preparation - project team preparation and logistical planning:

- System Configuration (Done by the deployment team)
- QA Environment should be ready
- Load QA "Box"
- Load Test Data
- Refine Test Cases
- Dry-Run Cycle
- Fix Errors
- Reload

Cycle 1

Dependencies: Interfaces/Conversions; Site Connectivity
Focus: Business scenario – Business-User testing:

- Execute Test Scenarios
- Document Test Results
- Fix Errors
- Reload
- Run multiple iterations as necessary

Cycle 2

Dependencies: Reports/Security/Privileges, External Assessment Plan
Focus: Security, Reports and External Process testing – Business-User and Technical lead testing:

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- Execute Test Scenarios
- Test security/privileges
- Begin development of training and end user material
- Document Test Results
- Fix Errors

Upon the completion of Cycle 2 testing, detailed results will be summarized and presented for review to Mercury Management, which should be scheduled for the appropriate date decided by the Mercury Management.

6.   Exit Criteria for Test Readiness Reviews

The following are criteria for Test Readiness Reviews, which will be held prior to the start of each cycle.

Cycle 0:
- QA environment up
- Test room facilities up
- Master data identified and loaded
- Test Cases complete and initial conditions identified
- Project team briefed on scenarios and test Cases
- Scenario responsible individual identified
- Security and privileges requirements identified and in place
- Test Strategy signed off by the Test Manager
- Test scenario checklists ready and signed off by the Test Manager.

Cycle 1:
- Cycle 0 defects fixed
- QA "box" reloaded
- Test Cases, initial conditions, and test scenario checklists updated
- Business Users identified and trained
- Security and privileges requirements identified and in place
- Test teams organized
- Site test facilities up

Cycle 2:
- Cycle 1 errors fixed
- QA "box" reloaded
- Test Cases, initial conditions, and test scenario checklists updated
- Reports, printers, security and privileges checked out and ready
- Site test facilities up
- Required connectivity available
- Criteria for acceptable performance established

7. Project Team and Business-User Training

The project team and Business-Users will be trained on core aspects to support the Test process. Specifically, this training will include:

- Business Scenarios (Test Cases) – process
- Test Plans
- Issue Tracking and Management

Project team and Business-User training will be conducted just prior to the launch of each Cycle of testing, beginning with Cycle 1 testing. Issue Tracking and Management and basic navigation training will be provided for the aggregate team. Training on items specific to the unique business process being tested (Business Scenario process, Test Plan and associated Business Function Cases) will be conducted and coordinated by the individual test leads for that team as part of the testing process.

8. Logistics

As stated, a testing area will be established within Mercury Tours to support the testing process. The hours of support will be extended to 7:00am – 10:00pm or as required.

For the purposes of testing process documentation, the test scenarios are broken into four end-to-end processes:

- Planning
- Execution
- Closeout/Support Processes
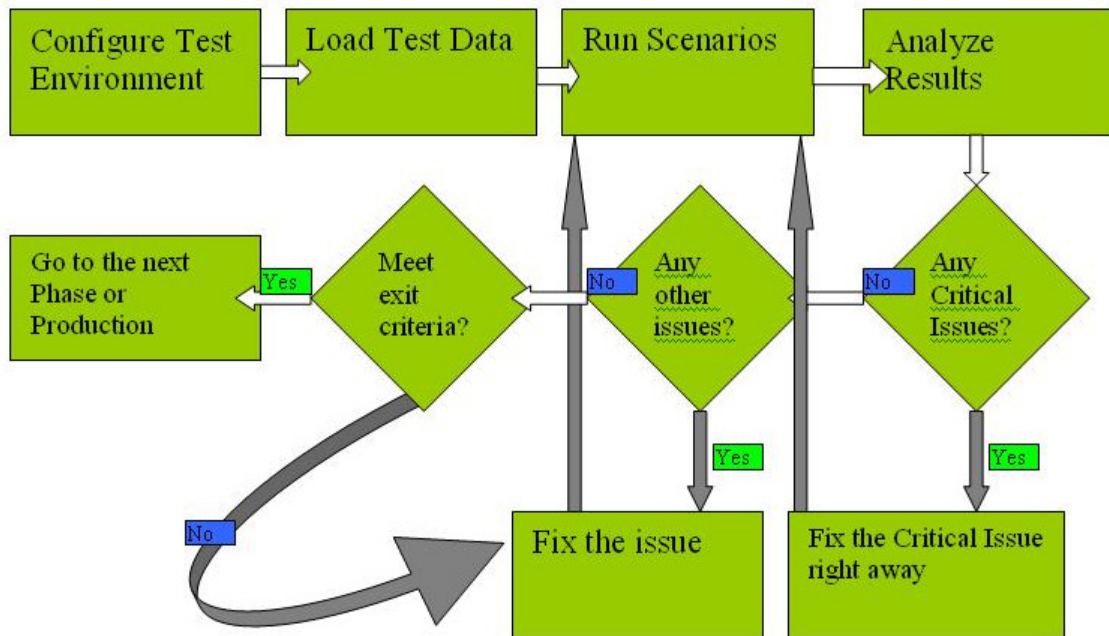- Support Activities

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9. Communication

Team communication will continue to be supported via tools such as Outlook. In addition, weekly phone conferences between the Mercury Tours and Mercury Tours Test Team will take place as needed.

10.   Test Process Flow

The process flow above identifies the process by which the Test (per Business Scenario) will be conducted.

11.   Overall Completion Criteria for Testing

A critical aspect of monitoring the progress and acceptance of the end result of Testing for the Version 1.0 will be a clear understanding and agreement on completion criteria. One key aspect of this is the successful identification and resolution of issues/defects. Issues/defects are categorized as follows:

CRITICAL

> Causes system to crash or does not support critical functional requirements tied to Key Performance Parameters. No acceptable work-around. Unable to demonstrate completed business scenario.

HIGH

> Causes significant system degradation or a difficult work-around to support critical functional requirements tied to Key performance Parameters. Business scenario can be completed with difficulty.

MEDIUM

> Causes moderate system degradation or a work-around to support critical functional requirements tied to Key performance Parameters. Business scenario can be completed with moderate to minor impact to business process.

LOW

> Causes minor system degradation or minor work-around to support critical functional requirements tied to Key performance Parameters. Business scenario can be completed with minor to no impact to business process.

Completion criteria for **Pre-System Test** have been established as following:

- ☑ Each business Test Case exercised and
- ☑ Each required conversion, interface and enhancement completed
- ☑ No CRITICAL unresolved issues/defects, may allow HIGH if necessary, but have an action plan.
- ☑ Action plans exist for remaining HIGH, MEDIUM and LOW issues/defects
- ☑ Security and Privileges(Profiles) established and tested

Completion criteria for **System Test** have been established as following:

- ☑ Each business Test Case exercised and
- ☑ Each required conversion, interface and enhancement completed
- ☑ No CRITICAL, HIGH and MEDIUM unresolved issues/defects remain
- ☑ Action plans exist for remaining LOW issues/defects
- ☑ Security and Privileges (Profiles) established and tested

Completion criteria for **Beta Test** have been established as following:

- ☑ Each business Test Case exercised and
- ☑ Each required conversion, interface and enhancement completed
- ☑ No CRITICAL, HIGH, MEDIUM and LOW unresolved issues/defects remain
- ☑ Security and Privileges (Profiles) established and tested

Test Team POC
Available to address any issues during the cycle testing. All test and audit functions are under the guidance of Kelly D. Smith: (703)234-5951

Item	POC	Phone
Technical Infrastructure -Firewall/Network	Tresa Wise	(703)234-5951
Scenario Running	Guru Rana	(703)234-5910
Role Assignment	Kelly D. Smith	(703)234-5951
Test Cases	Guru/Tan/Pandi	(703)234-5910
Data Related jobs	Jeff Randall	(703)234-5951
General Questions	Kelly D. Smith	(703)234-5951
Issue Tracking	Kelly D. Smith/Guru Rana	(703)234-5951

Business Users
A non-Mercury Tours employee who serves as an independent observer/assessor of the system during testing.

While acting as a Business User, the person represents others with the same functional specialty and provides input from that perspective. Input includes functional issues, any other business requirements and other documentation, and overall assessment of the system.

Business Users will be assigned to scenarios and testing sessions based on their skill set at Mercury Tours.

Changes

Changes to any of the testing documents will be done at the end of each testing cycle. The only exception to this will be in the event of a change request event or change that is needed.

Test Scenarios

A test scenario is a string of business processes, which lead to an expected outcome.

Changes to the Test Scenarios must be submitted by the test team member to the Test Team Manager for signoff.

Communications

Communications between the entire Test Team and Mercury Tours POC is critical during testing. There may be many activities going on at one time and all resources will be called upon to assist in the successful execution of all testing cycles.

It is everyone's responsibility to review the issues database for progress on issues related to testing.

Daily Test Conference Call

Weekly conference call will be held upon discussion with Mercury Tours POC and Mercury Tours QA Team.

Testing Tool:

The following tools should be provided to the QA Team prior to commencement of testing:

1. **Defect Logging and Tracking tool**: Quality Center or ClearQuest, or Bugzilla
2. **QTP (Quick Test Professional):** For Functional and Regression Testing
3. **LoadRunner:** For Load Testing.

Testing Documents and Materials

At a minimum, the following documents and materials will be provided to carry out testing:

- Test Scenario: A test scenario is a set of to-be processes carried out in order to obtain a desired result.
- Scenario Process Flow: A scenario process flow depicts the set of the to-be processes carried out and how they relate to each other within a given test scenario.
- Test Case: A test Case has been developed for different scenario for each Use Case.
- Wall Charts: Wall Charts are provided for the testing room and outline rules of engagement, issue severity levels.
- Check List: A check list will be available for each Scenario Captain to ensure testing procedures are followed. Once the test scenario has been fully tested, the Test Lead will finalize the check list and sign off the scenario as being complete.