

# Test Plan and Cases (TPC)

## Data Mining of Digital Library Usage Data

### Team 07

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# Version History

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2/21/05	Bo Lee	1.5	<ul style="list-style-type: none"><li>• Revised Section 3</li></ul>
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# Introduction

## 1.1 Purpose of the Test Plan

The Test Plan & Case provides the description for test cases that are used to verify successful implementation of system capabilities and correspondence to System Requirements. These test cases check a normal, abnormal, or boundary case of each use case of Data Mining of Digital Library Usage Data system.

## 1.2 References

“Data Mining of Digital Library Usage Data” Project Description

[http://sunset.usc.edu/classes/cs577a\\_2004/projects/description/project7.htm](http://sunset.usc.edu/classes/cs577a_2004/projects/description/project7.htm)

MBASE Guidelines version 2.4.2

[http://sunset.usc.edu/classes/cs577b\\_2005/guidelines/MBASE\\_Guidelines\\_v2.4.2.pdf](http://sunset.usc.edu/classes/cs577b_2005/guidelines/MBASE_Guidelines_v2.4.2.pdf)

MBASE Electronic Process Guide

<http://cse.usc.edu/research/MBASE/EPG>

Dr. Bollen, Johan presentations

[http://www.cs.odu.edu/~jbollen/presentations/facstaff\\_02\\_28\\_03.pdf](http://www.cs.odu.edu/~jbollen/presentations/facstaff_02_28_03.pdf)

<http://www.cs.odu.edu/~jbollen/presentations/ecdl02.pdf>

<http://www.cs.odu.edu/~jbollen/presentations/aisti04.pdf>

Team website

<http://seacliff.usc.edu/~team7b/>

## 1.3 Change Summary

Version	Changes Made
1.0	Initial draft.
2.0	Section 3 Test Identification has been revised Section 4 Resources has been added. Section 5 Test Completion Criteria has been added.

## **2. Environment Preparation**

### **2.1 Hardware preparation**

An apple workstation with Mac OS X installed will be used to run test cases described in this document. The workstation will be provided by the client.

### **2.2 Software preparation**

The system should be installed in the testing workstation.

### **2.3 Other pre-test preparations**

Input data should be requested from system's maintainer.

### 3. Test Identification

#### 3.1 TI-01 Usage data import test

The purpose of this test is to make sure that the system is able to parse usage log file of defined format and store the retrieval records into the database. Also this test should check the ability of the system to detect malformed retrieval records in the supplied input file and provide error report.

##### 3.1.1 Test Level

Software item level – this test is applied to Import usage data component.

**Comment [BL1]:** Divid it to TCs and classify them . done

##### 3.1.2 Test Class

Functionality test

**Comment [BL2]:** In which doc? done

##### 3.1.3 Requirements Traceability

SR-1 (SSRD 3.2.1): Import usage data from log files  
 IR-1(SSRD 4.1.1): Manage usage data

### 3.1.4 Test Cases

#### 3.1.4.1 TC-01 Well formed usage data import

This test is to check the functionality of the system for use case UC-01 Import Usage Data (SSAD 2.3.1.1) that is to import and parse well formed usage data log file and save the retrieval records into the database.

Table 1- TC-01 Well formed usage data import

<b>Test Case Number</b>	TC-01 Well formed usage data import
<b>Test Item</b>	Functionality of the system to parse well formed usage data log file and save the retrieval records into the database. (UC-01 Import Usage Data (SSAD 2.3.1.1) )
<b>Pre-conditions</b>	The usage log file has to be present on the local hard drive of the workstation the system is running on.
<b>Post-conditions</b>	System’s usage data SQL table contains all retrieval records that are present in the input usage log file. System presents a successful import report with number of records reported
<b>Input Specifications</b>	<ul style="list-style-type: none"> <li>Log file containing retrieval event of the following format: format: user id, item id, time, session id.</li> <li>User specified log file name and its location</li> </ul>
<b>Expected Output Specifications</b>	<ul style="list-style-type: none"> <li>A set of SQL records in the Usage data table representing the retrieval events contained in input log file</li> <li>Successful import report specifying how many retrieval events were imported.</li> </ul>
<b>Pass/Fail Criteria</b>	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>The system should store the input data to database without any data corruption/loss.</li> <li>All inputs and outputs are required for an acceptable test.</li> <li>Given the input file of the specified format there should be no processing errors</li> <li>Import report for this process indicates the exact number of retrieval records which were successfully parsed and stored in DB.</li> </ul> <p>Otherwise, “Fail”.</p>
<b>Assumptions and Constraints</b>	<ul style="list-style-type: none"> <li>Input log file is assumed to be of reasonable size – up to 1GB.</li> </ul>
<b>Dependencies</b>	TC-02 Usage data removal test, TC-03 Analysis Report Generation Test
<b>Traceability</b>	OCD 4.5.3 SSRD 2.3

Comment [BL3]: Criteria?

## **3.2 TI-02 Usage data removal test**

### **3.2.1 Test Level**

Software item level – this test verifies Remove usage data component.

### **3.2.2 Test Class**

Functionality test

### **3.2.3 Requirements Traceability**

SR-2 (SSRD 3.2.1): Remove usage data imported from the specified log file

IR-1(SSRD 4.1.1): Manage usage data

### 3.2.4 Test Cases

#### 3.2.4.1 TC-02 Usage Data Removal Test Case

This test is to check the functionality of the system for UC-02 Remove usage data (SSAD 2.3.1.2) that removes retrieval records previously imported from a log

Table 2 - TC-02 Usage data removal test case.

<b>Test Case Number</b>	TC-02 Usage data removal test case.
<b>Test Item</b>	Functionality of the system that removes retrieval records previously imported from a log file (UC-02 Remove usage data (SSAD 2.3.1.2))
<b>Pre-conditions</b>	One or more usage log files imported into the system User specified name of a log file from a list of previously imported files.
<b>Post-conditions</b>	System’s usage data SQL table does not contain any records associated with the log file name that was selected for removal System presents a successful removal report specifying which log file was removed.
<b>Input Specifications</b>	<ul style="list-style-type: none"> <li>Name of a log file selected in the list of files that were previously imported</li> </ul>
<b>Expected Output Specifications</b>	<ul style="list-style-type: none"> <li>Successful removal message specifying name of the file that was removed</li> </ul>
<b>Pass/Fail Criteria</b>	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>All records associated with the specified filename should be removed from the DB.</li> <li>All inputs and outputs are required for an acceptable test</li> <li>Given selection of the file from the list there should be no processing errors.</li> <li>Removal report for this process indicates which log file has been removed.</li> </ul> <p>Otherwise, “Fail”.</p>
<b>Assumptions and Constraints</b>	Assumes that the usage data was imported properly.
<b>Dependencies</b>	TC-01 Well formed usage data import
<b>Traceability</b>	OCD 4.5.3 SSRD 2.3

Comment [BL4]: Criteria?

### 3.3 TI-03 Analysis Report Generation Test

The purpose of this test case is to ensure that the system is able to generate analysis report which contains the collection structure tree and usage statistics for each item in that tree from log data file, and that the report is not altered in any way during generation.

#### 3.3.1 Test Level

Software item level

#### 3.3.2 Test Class

Functionality Test

#### 3.3.3 Requirements Traceability

SR-3 (SSRD 3.2.1): Relationship generation

SR-4 (SSRD 3.2.1): Generate collection structure tree

SR-5 (SSRD 3.2.1): Graph node statistics

IR-2 (SSRD 4.1.1): IR-2: Generate new analysis report

### 3.3.4 Test Cases

#### 3.3.4.1 TC-03-01 Analysis Report Generation Test– Accessing DB data

This test is to check the functionality of the system for use case UC-03 Generate analysis report (SSAD 2.3.1.3) and to ensure the integrity in accessing and retrieving data from the database to generate analysis report.

**Table 3 - TC-03-01 Analysis Report Generation test - Accessing DB Data**

Test Case Number	TC-03-01 Analysis Report Generation test – Accessing DB data.
Test Item	Functionality of UC-03 Generate analysis report (SSAD 2.3.1.3) The integrity in accessing and retrieving data from the database to generate analysis report.
Pre-conditions	UC-01 Import Usage Data (SSAD 2.3.1.1) must be done. System’s database contains representation of all well-formatted retrieval records from the result of successful UC-01 Import Usage Data.
Post-conditions	System database contains representation of collection structure tree and usage statistics for each item in that tree.
Input Specifications	<ul style="list-style-type: none"> <li>• Name: IS-01 log data information.</li> <li>• Purpose: Initial input to invoke the view of “generating report”.</li> <li>• Description: Real information that is extracted from log data files and stored in tables in the system database.</li> <li>• Source: log data files used in UC-01 Import Usage Data.</li> <li>• Method: Accessing the database by using SQL queries.</li> <li>• Input data control: <ul style="list-style-type: none"> <li>■ IC-01 Valid data stored in DB</li> <li>■ IC-02 No data stored in DB</li> <li>■ IC-03 Data corrupted while being stored in DB.</li> </ul> </li> </ul>
Expected Output Specifications	<ul style="list-style-type: none"> <li>• IC-1: Bringing up the screen for options for generating analysis reports.</li> <li>• IC-2: Status message saying that there’s no data to use, prompting “import log file” dialog.</li> <li>• IC-3: Status message saying that data might be corrupted, prompting “Proceed OK/CANCEL” dialog, On OK, the same output as IC-1 with the data as it is; On CANCEL, no action is taken.</li> </ul>

<p>Pass/Fail Criteria</p>	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>• Input data brings expected output as stated in Expected Output Specification.</li> <li>• Allowing no system break. External hardware failure may occur but no system break or crash caused by functionality failure allowed.</li> <li>• Minor severity of processing error might be allowable; minor severity of processing error would include crash of dialog boxes that can be brought up by invoking again.</li> <li>• When freezing or unexpected crash occurs, retesting should be done.</li> </ul> <p>Otherwise, “Fail”</p>
<p>Assumptions and Constraints</p>	<p>Database is operating.</p>
<p>Dependencies</p>	<p>TC-01 Importing Log data Test                  TC-03-02 Analysis Report Generation test – Report Generation options                  TC-04 Removing Analysis Reports Test</p>
<p>Traceability</p>	<p>OCD 4.5.3                  SSAD 2.3.1.1                  SSAD 2.3.1.3</p>

### 3.3.4.2 TC-03-02 Analysis Report Generation Test – Report Generation options

This test is to check the functionality of the system for UC-03 Generate analysis report (SSAD 2.3.1.3) and to ensure the data validity for generating analysis report and the integrity of report generation parameters.

**Table 4 - TC-03-02 Analysis Report Generation test – Report Generation options**

Test Case Number	TC-03-02 Analysis Report Generation test – Report Generation options
Test Item	Functionality of UC-03 Generate analysis report (SSAD 2.3.1.3) The data validity for generating analysis report and the integrity of report generation parameters.
Pre-conditions	<ul style="list-style-type: none"> <li>• UC-01 Import Usage Data (SSAD 2.3.1.1) must be done.</li> <li>• System’s database contains representation of all well-formatted retrieval records from the result of successful UC-01 Import Usage Data.</li> <li>• Test case TC-03-01 has been done successfully and resulted in “Pass” with the IC-01 or IC-03 with OK.</li> </ul>
Post-conditions	System database contains representation of collection structure tree and usage statistics for each item in that tree.
Input Specifications	<ul style="list-style-type: none"> <li>• Name: IS-02 Data range             <ul style="list-style-type: none"> <li>• Purpose: Setting the range of data to be used.</li> <li>• Description: Setting data range in the form that provides options for report generation.</li> <li>• Source: user input to the prepared form.</li> <li>• Event Sequence: after “generate report” function is invoked by the user, and the form for report generation options is brought up.</li> <li>• Input Data Control:                 <ul style="list-style-type: none"> <li>■ IC-04: Valid range without any corrupted data</li> <li>■ IC-05 Invalid range</li> <li>■ IC-06 No selection</li> <li>■ IC-07 1 log data record(1 tuple in DB) selected.</li> <li>■ IC-08 Less than 10 records selected.</li> <li>■ IC-09 More than 300000 records selected: Mau select all of the records. (300000 is the most possible number of nodes that the system can handle. Since the number of records is less than the number of nodes, it is still less than the capability of the system.)</li> <li>■ IC-10: Incompatible data type in the selected range.</li> </ul> </li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Name: IS-03: Algorithm parameters             <ul style="list-style-type: none"> <li>• Purpose: To input parameters for analysis algorithm.</li> <li>• Description: The parameters for initiating analysis of the data in the range, the degree of centrality, whether to permit duplicates in data or not.</li> <li>• Source: user input to the prepared form.</li> <li>• Event: This input goes with the range selection input after “generate report” function is invoked by the user, and the form for report generation options is brought up.</li> <li>• Input Data Control:                 <ul style="list-style-type: none"> <li>■ IC-11: Valid values for all the parameters</li> <li>■ IC-12 Not selecting any parameter.</li> <li>■ IC-13 Not selecting one of the parameters.</li> <li>■ IC-14 Selecting enabling duplicates while there is no duplicated data in range</li> </ul> </li> </ul> </li> </ul>
<p>Expected Output Specifications</p>	<ul style="list-style-type: none"> <li>• IC-04/IC-07/IC-08/IC-09 &amp; IC-11/IC-14: Option screen closes and starts analyzing the data and stores collection structure tree and usage statistics for each item in that tree in the DB displaying usage analysis report in the main screen.</li> <li>• IC-04/IC-07/IC-08/IC-09 &amp; IC-12/IC-13: Message box requesting to choose parameters for algorithm. The option screen remains open with previously inputted data.</li> <li>• IC-05/IC-06 &amp; IC-11/IC-12/IC-13/IC-14 : Message box requesting to select a valid range.</li> <li>• IC-10 &amp; IC-11/IC-12/IC-13/IC-14: Alert message box saying “Data type incompatible. Do you want to proceed without incorrect data? OK/Cancel” On OK Analyze and generate reports using only those data of correct type. On Cancel let use select another range of data.</li> </ul>
<p>Pass/Fail Criteria</p>	<p>The test case is “Pass” if all the following conditions are met: Otherwise, “Fail”</p> <ul style="list-style-type: none"> <li>• A report per processing this use case accurately stored in DB and displayed.</li> <li>• All the report generated by this use-case are accumulated in DB.</li> <li>• A report is generated according to the analysis parameters.</li> <li>• Minimum number of alternatives of input and output condition that yield an acceptable test result is 1.</li> <li>• Allowing no system break. External hardware failure may occur but no system break or crash caused by functionality failure allowed.</li> <li>• Minor severity of processing error might be allowable; minor severity of processing error would include crash of dialog boxes that can be brought up by invoking again.</li> <li>• When freezing or unexpected crash occurs, retesting should be done.</li> </ul>

Assumptions and Constraints	<ul style="list-style-type: none"> <li>• Due to limitation in the user interface, options for the algorithm may be different from IC-11 through IC-14.</li> <li>• Database is operating</li> </ul>
Dependencies	TC-01 Importing Log data Test TC-03-01 Analysis Report Generation test – Accessing DB data TC-04 Removing Analysis Reports Test
Traceability	OCD 4.5.3 SSAD 2.3.1.1 SSAD 2.3.1.3

### 3.3.4.3 TC-03-03 Analysis Report Generation test – Algorithm Verification

This test is to check the functionality of the system for UC-03 Generate analysis report (SSAD 2.3.1.3) and to ensure the algorithm is working as desired.

Table 5 - TC-03-03 Analysis Report Generation test – Algorithm Verification

Test Case Number	TC-03-03 Analysis Report Generation test – Algorithm Verification
Test Item	Functionality of UC-03 Generate analysis report (SSAD 2.3.1.3) Verifying algorithm by comparing the generated analysis report to human-generated analysis report.
Pre-conditions	<ul style="list-style-type: none"> <li>UC-01 Import Usage Data (SSAD 2.3.1.1) must be done.</li> <li>System’s database contains representation of all well-formatted retrieval records from the result of successful UC-01 Import Usage Data.</li> <li>Test case TC-03-01 has been done successfully and resulted in “Pass” with the IC-01 or IC-03 with OK.</li> </ul>
Post-conditions	System database contains correct representation of collection structure tree and usage statistics for each item in that tree.
Input Specifications	<ul style="list-style-type: none"> <li>Human-generated analysis report.</li> <li>User selected “pre-designed” data range, and algorithm parameters that are used for human generated analysis report.</li> </ul>
Expected Output Specifications	Data range and algorithm parameter selection screen closes and starts analyzing the data and stores collection structure tree and usage statistics for each item in that tree in the DB displaying usage analysis report in the main screen.
Pass/Fail Criteria	The test case is passed if the system generated result analysis report is exactly same to verified human-generated analysis report, otherwise, it is failed.
Assumptions and Constraints	<ul style="list-style-type: none"> <li>Human-generated analysis reports can not deal with many records. The assumption is if the algorithm works fine with the small amount of data, it will do with the large amount of data.</li> <li>Database is operating</li> </ul>
Dependencies	TC-01 Importing Log data Test TC-03-01 Analysis Report Generation test – Accessing DB data TC-03-02 Analysis Report Generation test – Report Generation options TC-04 Removing Analysis Reports Test
Traceability	OCD 4.5.3 SSAD 2.3.1.1 SSAD 2.3.1.3

## 3.4 TI-04 Analysis Report Removal Test

The purpose of this test case is to ensure that the system is able to remove analysis report of user's selection from DB completely.

### 3.4.1 Test Level

Software item level

### 3.4.2 Test Class

Functionality Test

### 3.4.3 Requirements Traceability

IR-4 (SSRD 4.1.1): Manage analysis reports

### 3.4.4 Test Cases

#### 3.4.4.1 TC-04 Removing Analysis Report Test

This test case specifies how the UC-04 Remove Analysis Report (SSAD 2.3.1.4) is tested and what criteria are applied to it to ensure that the report with the information related to it is deleted from the DB.

**Table 6 - Test Case Number TC-04 Removing Analysis Report Test**

Test Case Number	TC-04 Removing Analysis Report Test
Test Item	Functionality of UC-04 Remove Analysis Report (SSAD 2.3.1.4) The data integrity in database that the removing data command from user input removes all the associated data from the database and keep the data integrity in the database.
Pre-conditions	<ul style="list-style-type: none"> <li>UC-03 Generate analysis report must have been done one or more times.</li> <li>System database contains representation of collection structure tree and usage statistics for each item in that tree(that is analysis report)</li> <li>The list of Analysis Reports stored in DB should be available.</li> </ul>
Post-conditions	System database does not contain any information related to the report ID the user selected to remove.
Input Specifications	<ul style="list-style-type: none"> <li>Name: IS-01 Report ID</li> <li>Purpose: To point and select out the report to remove.</li> </ul>

	<ul style="list-style-type: none"> <li>• Description: User selects id of the analysis report to be deleted and pressed remove button</li> <li>• Source: user input</li> <li>• Method: By selecting a report ID in the list of report IDs stored in DB.</li> <li>• Input Data Control:             <ul style="list-style-type: none"> <li>■ IC-01 Selecting one report ID</li> <li>■ IC-02 Selecting two or more report IDs with mouse.</li> <li>■ IC-03 Selecting two or more report IDs with alt or shift key.</li> <li>■ IC-04 Selecting no report ID and click “Delete”</li> <li>■ IC-05 Selecting one report ID and clicking “Delete” several times in the very short period of time (almost at the same time)</li> </ul> </li> </ul>
<p><b>Expected Output Specifications</b></p>	<ul style="list-style-type: none"> <li>• IC-01, IC-02, IC-03, IC-05 and clicking “Delete”: Message box saying “Are you sure to delete those reports: [report ID]+? OK/CANCEL” On OK, the selected reports are removed from the DB and the list. The list shows the reports IDs left in DB. On CANCEL, cancel the selection of reports ID.</li> <li>• IC-04: Message box saying “No Report ID is selected, please select Report ID(s) to delete OK”</li> </ul>
<p><b>Pass/Fail Criteria</b></p>	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The information related to the deleted report(s) should be completely removed from the DB.</li> <li>• On cancel in the confirmation of deletion dialog box, no data should be removed or affected.</li> <li>• Allowing no system break. External hardware failure may occur but no system break or crash caused by functionality failure allowed.</li> <li>• Minor severity of processing error might be allowable; minor severity of processing error would include crash of dialog boxes that can be brought up by invoking again.</li> <li>• When freezing or unexpected crash occurs, retesting should be done.</li> </ul> <p>Otherwise, “Fail”.</p>
<p><b>Assumptions and Constraints</b></p>	<p>It is assumed that the user can recognize a report only by its report ID.</p>
<p><b>Dependencies</b></p>	<p>TC-03 Analysis Report Generation Test</p>
<p><b>Traceability</b></p>	<p>OCD 4.5.3 SSAD 2.3.1.3 SSAD 2.3.1.4</p>

## 3.5 TI-05 Open Analysis Report Test

This test will verify the function opening and showing analysis report. Analysis reports which are stored in the database are retrieved and listed in browse dialog. The test is focused on verifying if analysis reports are properly listed and if a selected report is properly visualized on the 3d hyperbolic interactive view.

### 3.5.1 Test Level

System qualification level

### 3.5.2 Test Class

Functionality test

### 3.5.3 Requirements Traceability

- SR-6 (SSRD 3.2.1): Visualization
- IR-4 (SSRD 4.1.1): Manage analysis reports

### 3.5.4 Test Cases

#### 3.5.4.1 TC-05-01 Open Analysis Report Test – No report

This test case is to check the functionality of UC-05 Open analysis report (SSAD 2.3.1.5) when there is no previously generated report.

**Table 7 - TC-05-01 Open Analysis Report Test – No report**

Test Case Number	TC-05-01 Open Analysis Report Test – No report
Test Item	Test item is to open and show an empty list on a dialog which is designed to allow users to select a generated analysis report.
Pre-conditions	<ul style="list-style-type: none"> <li>• Usage Log Analysis System is loaded and active on user’s machine.</li> <li>• There is NO generated analysis report available in the system.</li> </ul>
Post-conditions	N/A
Input Specifications	Users select a menu item in the Log Analysis System
Expected Output Specifications	<ul style="list-style-type: none"> <li>• The system launches the dialog</li> <li>• The dialog shows an empty list (which is designed to displayed generated reports)</li> </ul>
Pass/Fail Criteria	<ul style="list-style-type: none"> <li>• The test case is passed if the dialog is loading and displaying no reports in the list. Otherwise, the test case is failed.</li> </ul>
Assumptions and Constraints	It is assumed that the system database is operational.
Dependencies	N/A
Traceability	SSRD 3.2.1 IR-6, SSRD 4.1.1 IR-4, SSAD 2.3.1.5

### 3.5.4.2 TC-05-02 Open Analysis Report Test – With report(s)

This test case is to check the functionality of UC-05 Open analysis report (SSAD 2.3.1.5) when there are one or more previously generated reports.

**Table 8 - TC-05-02 Open Analysis Report Test – with report(s)**

Test Case Number	TC-05-02 Open Analysis Report Test – with report(s)
Test Item	Test item is to open a dialog showing a list of generated analysis reports
Pre-conditions	<ul style="list-style-type: none"> <li>• Usage Log Analysis System is loaded and active on user’s machine.</li> <li>• There is at least one generated analysis report available in the system.</li> </ul>
Post-conditions	N/A
Input Specifications	Users select a menu item in the Log Analysis System
Expected Output Specifications	<ul style="list-style-type: none"> <li>• The system launches the dialog</li> <li>• The dialog shows the list of generated analysis reports on the dialog</li> <li>• And the names of listed reports are the same as they are stored into the database.</li> </ul>
Pass/Fail Criteria	<ul style="list-style-type: none"> <li>• The test case is passed if the dialog is loading and displaying a list of generated reports AND the names of listed reports are the same as they are stored into the database. Otherwise, the test case is failed.</li> </ul>
Assumptions and Constraints	It is assumed that the system database is operational.
Dependencies	TC-05-03 Open Analysis Report – Visualization
Traceability	SSRD 3.2.1 SR-6, SSRD 4.1.1 IR-4, SSAD 2.3.1.5

### 3.5.4.3 TC-05-03 Open Analysis Report – Visualization

This test case is to check the functionality of UC-05 Open analysis report (SSAD 2.3.1.5) which is to open and visualize an analysis report.

**Table 9 - TC-05-03 Open Analysis Report - Visualization**

Test Case Number	TC-05-03 Open Analysis Report - Visualization
Test Item	Test item is to open and visualize an analysis report from a list of reports generated and stored in database
Pre-conditions	<ul style="list-style-type: none"> <li>• Usage Log Analysis System is loaded and active on user’s machine.</li> <li>• There is at least one generated analysis report available in the system.</li> </ul>
Post-conditions	N/A
Input Specifications	<ul style="list-style-type: none"> <li>• Users select and open a report in the dialog showing generated reports</li> </ul>
Expected Output Specifications	<ul style="list-style-type: none"> <li>• The system closes the dialog</li> <li>• The analysis report is shown in main screen displaying 3D network of nodes.</li> </ul>
Pass/Fail Criteria	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The dialog is closed</li> <li>• Main screen shows the network of nodes in 3d hyperbolic interactive view and the root node is focused</li> <li>• The side panel on the left of the application displays Usage statistics of the root node</li> </ul> <p>Otherwise, “Fail”.</p>
Assumptions and Constraints	It is assumed that the system database is operational. The selected report is properly stored in the database.
Dependencies	TC-05-02 Open Analysis Report Test –No report TC-05-02 Open Analysis Report Test – with report(s)
Traceability	SSRD 4.1.1 IR-4 SSRD 3.2.1 SR-6, SSAD 2.3.1.5, SSAD 2.2.5

## 3.6 TI-06 Browse Analysis Report Test

This test will verify the function allowing users to interact with the visualization of the analysis report. The analysis report is stored in the database and visualized in the 3d hyperbolic interactive view. In order to perform this test, an analysis report must be opened and displayed in the main screen. It is also required that test case TC-05-03 must be passed before performing this test.

### 3.6.1 Test Level

System qualification level

### 3.6.2 Test Class

Functionality test

### 3.6.3 Requirements Traceability

- SR-6: Visualization
- IR-5: Visualize analysis report

### 3.6.4 Test Cases

#### 3.6.4.1 TC-06-01 Browse Analysis Report Test – 3D view with left mouse drag

This test case is to check the functionality of UC-05 Browse analysis report (SSAD 2.3.1.6) when a user drags with the left mouse button pressed in the 3D hyperbolic interactive view.

**Table 10 - TC-06-01 Browse Analysis Report Test – 3D view with left mouse drag**

Test Case Number	TC-06-01 Browse Analysis Report Test – 3D view with left mouse drag
Test Item	Test the 3d hyperbolic interactive view when users perform a left-mouse drag.
Pre-conditions	<ul style="list-style-type: none"> <li>Usage Log Analysis System is loaded and active on user’s machine.</li> <li>An analysis report is opened and displayed properly in 3d hyperbolic interactive view</li> </ul>
Post-conditions	N/A
Input Specifications	Users drag with pressed left-mouse in the 3d hyperbolic interactive view
Expected Output Specifications	<ul style="list-style-type: none"> <li>The system pans the view to focus on the nodes residing on the left of the selected node.</li> </ul>
Pass/Fail Criteria	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>The system moves the view to focus on the left-side nodes if these nodes are available.</li> <li>The system does not move the view to focus on the left-side nodes if there are no more nodes available on the left.</li> </ul> <p>Otherwise, “Fail”.</p>
Assumptions and Constraints	It is assumed that the system database is operational.
Dependencies	TC-06-02 Browse Analysis Report Test – 3D view with right mouse drag TC-06-03 Browse Analysis Report Test – Usage Statistics.
Traceability	SSRD 3.2.1 SR-6, SSRD 4.1.1 IR-5, SSAD 2.3.1.6

**Comment [BL5]:** User activities logged?

### 3.6.4.2 TC-06-02 Browse Analysis Report Test– 3D view with right mouse drag

This test case is to check the functionality of UC-05 Browse analysis report (SSAD 2.3.1.6) when a user drags with the right mouse button pressed in the 3D hyperbolic interactive view.

**Table 11 - TC-06-02 Browse Analysis Report Test – 3D view with right mouse drag**

Test Case Number	TC-06-02 Browse Analysis Report Test – 3D view with right mouse drag
Test Item	Test the 3d hyperbolic interactive view when users perform a right-mouse drag.
Pre-conditions	<ul style="list-style-type: none"> <li>Usage Log Analysis System is loaded and active on user’s machine.</li> <li>An analysis report is opened and displayed properly in 3d hyperbolic interactive view</li> </ul>
Post-conditions	N/A
Input Specifications	Users drag with pressed right-mouse in the 3d hyperbolic interactive view
Expected Output Specifications	<ul style="list-style-type: none"> <li>The system rotates the view to focus on the nodes residing on the right of the selected node.</li> </ul>
Pass/Fail Criteria	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>The system moves the view to focus on the right-side nodes if these nodes are available.</li> <li>The system does not move the view to focus on the right-side nodes if there are no nodes available on the right.</li> </ul> <p>Otherwise, “Fail”.</p>
Assumptions and Constraints	It is assumed that the system database is operational.
Dependencies	TC-05-03 Open Analysis Report - Visualization
Traceability	SSRD 3.2.1 SR-6, SSRD 4.1.1 IR-5, SSAD 2.3.1.6

### 3.6.4.3 TC-06-03 Browse Analysis Report Test – Usage statistics

This test case is to check the functionality of UC-05 Browse analysis report (SSAD 2.3.1.6) when a user selects a node in the 3D hyperbolic interactive view, and to ensure that the system displays the correct usage statistics.

Table 12 - TC-06-03 Browse Analysis Report Test – Usage statistics

Test Case Number	TC-06-03 Browse Analysis Report Test – Usage statistics
Test Item	Test 3d hyperbolic interactive view when users select a node. This test case also verifies if the usage statistics are displayed correctly
Pre-conditions	<ul style="list-style-type: none"> <li>Usage Log Analysis System is loaded and active on user’s machine.</li> <li>An analysis report is opened and displayed properly in 3d hyperbolic interactive view</li> </ul>
Post-conditions	N/A
Input Specifications	Users select a node in the 3d hyperbolic interactive view
Expected Output Specifications	<ul style="list-style-type: none"> <li>The system moves the view to focus on the selected node.</li> <li>Usage statistics of the selected node is displayed in side panel.</li> </ul>
Pass/Fail Criteria	<p>The test case is “Pass” if all the following conditions are met:</p> <ul style="list-style-type: none"> <li>The selected node is focused or centered</li> <li>Usage statistics are displayed including Name of the node, Rating of the node and the number of retrievals performed by the library users.</li> </ul> <p>Otherwise, “Fail”.</p>
Assumptions and Constraints	It is assumed that the system database is operational.
Dependencies	TC-05-03 Open Analysis Report - Visualization
Traceability	SSRD 3.2.1 SR-6, SSRD 4.1.1 IR-5, SSAD 2.3.1.6, SSAD 2.2.5

## 4. Resources

### 4.1 Responsibilities

Test execution will be performed by the development team for internal test and the IV&Vers for independent test using the test cases described in this document. For internal test, the developers other than the author(s) of the software module will test the module. For independent test, each three IV&Ver will be assigned to two of the test identifiers. The client may present during the test.

The resolution of test incidents will be performed by the corresponding software developer(s).

If more test cases are necessary, any tester can make one or more test cases and update this document accordingly.

### 4.2 Staffing and Training Needs

The developer(s) of the software module(s) must be present at the time of the internal test. The IV&Vers needs to have looked over the software modules in order to be familiar with its capabilities. The corresponding developers should be in contact with the IV&Vers who are testing the modules. No special staffing or training needs are necessary to perform the tests.

### 4.3 Schedule for Testing Activities

The scheduled dates for testing are given in the tables in the next page. We will have three unit testing during the Construction Iteration #1, and two times of integration testing and two more unit testing during the Construction Iteration #2. (LCP 2.2.2)

Construction Iteration #1

Table 13 - Construction Iteration #1 schedule for testing activities

Test#	Date	Test Description	Test Identifier & Name	Required Participants
Unit Test #1	03/10/05 - 03/11/05	Testing for Usage log import implementation	TI-01 Well formed usage data import	Maxim Krivokon
Unit Test #2	03/10/05 - 03/11/05	Testing for the log analysis process (the generation of item relationships and graph clustering.	TI-03 Analysis Report Generation Test	Bo Lee Genesan Kim
Unit Test #2	03/10/05 - 03/11/05	Testing for high level visualization that was implemented using H3viewer and Open Motif.	TI-05 Open Analysis Report TI-06 Browse Analysis Report	Vu Nguyen
Integration Test #1	03/21/05-03/26/05	Testing of the high capabilities of the. All the three high level component developed earlier are tested together to check if it satisfies and work according to the requirement.	TI-01 Well formed usage data import TI-03 Analysis Report Generation Test TI-05 Open Analysis Report TI-06 Browse Analysis Report	All the developers & IV&Vers

Construction Iteration #2

Table 14 - Construction Iteration #2 Schedule for testing activities

Test#	Date	Test Description	Test Identifier & Name	Required Participants
Unit Test #4	03/31/05	Testing for Remove Usage Data	TC-02 Usage data removal test case.	Maxim Krivokon
Unit Test #5	03/31/05	Testing for Remove Analysis Report function.	TC-04 Removing Analysis Report Test	Bo Lee Genesan Kim
Integration Test #2	04/08/05– 04/11/05	Testing of all the capabilities of the system that has already been developed by development team.	TI-01 Well formed usage data import TC-02 Usage data removal test case. TI-03 Analysis Report Generation Test TC-04 Removing Analysis Report Test TI-05 Open Analysis Report TI-06 Browse Analysis Report	All the developers & IV&Vers

#### 4.4 Other resource allocations

None

## 5. Test Completion Criteria

For each test case, testing will be repeatedly performed until the test case gets the “Pass” result. Rework and resolution should be done accordingly. It is supposed that all of the project requirements are tested with these test cases. Therefore, when all of the test cases pass for every test identifier, this will indicate that that project requirements have been met.

In addition, the following statements should also be satisfied in part of the testing.

- All the test incident reports (Test Description and Results Section 5) must be cleared.
- An details about the execution of tests must be recorded in Section 6 Test Log of the Test Description and Results document.
- The test overview must be written into Section 7 Test Summary of the Test Description and Results.