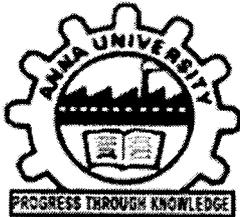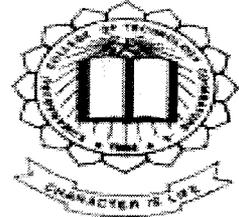P - 2696

P- 2.696

MOBILE END USER TESTING

By

P.ASHOK PRABU

Register No.: 71206621007

Of

Kumaraguru College of Technology

A PROJECT REPORT

Submitted to the

FACUTLY OF INFORMATION AND COMMUNICATION ENGINEERING

In partial fulfillment of the requirements

For the award of the degree

of

MASTER OF COMPUTER APPLICATIONS

ANNA UNIVERSITY
CHENNAI 600 025

July, 2009

BONAFIDE CERTIFICATE

Certified that this project report titled **"Mobile End User Testing"** is the bonafide work of **Mr. P. AshokPrabu** (Register Number: 71206621007) who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

SUPERVISOR

HEAD OF THE DEPARTMENT

Submitted to Project and Viva Examination held on $\underline{6 - 07 - 2009}$

INTERNAL EXAMINER

EXTERNAL EXAMINER

accenture

May 08, 2009

KCT,
Coimbatore

This is to certify that P. Ashok Prabu has completed an internship with Accenture Services Pvt. Ltd., The period of internship was from January 5, 2009 to May 8, 2009.

During this period, the intern has been working on a project entitled as "Mobile End User Testing".

We found the intern's conduct good.

Yours Sincerely

Shailendra K Dasika
India HR Services Centre
Accenture Services Pvt. Ltd

ABSTRACT

The "**Mobile End User Testing**" application enables the client to test their mobiles by the some of its own employees, not the developers, and others before they reach the market. These persons are called Internal End Users. Once these users give their feedback about the mobiles given to them, they are validated and the needed changes are taken care before the mobile goes for official release. The project is largely sub-divided into two parts:

- **Client Application**
- **Management Application**

The Client application interacts with the tester in order to perform the testing. The Management application is the administrative part of the system where actors can have varied access and privilege rights to monitor the testing activities done by the tester at the client side.

The Existing system consists of 2 Databases and uses JMS (Java Messaging Service) technology for communication between the Management and Tester application. The communication between the two applications was asynchronous which led to some serious issues. The newly proposed system eradicates this problem by using a common database, and MVC pattern for decoupling the existing system for enhanced changes to be done.

The proposed project consist of the following modules

- **Devices** module contains the list of test units, accessories and sim cards available for the project.
- **Sites** module is used for assigning sites for a particular project, view or edit sites and to generate site reports.
- **Data Management** module standard static global data that is used across the entire project such as countries, operators, languages etc.
- **Templates** module consist of all the basic communication templates required for the management to interact with the testers.
- **News** involves the publication of the project news at the tester's page.
- **Help** module enables the listing of the help features both at the management and at the client side.
- **Rewards** module is used for assigning the gifts based on the tester points.

ACKNOWLEDGEMENT

"Gratitude is a lively sense of future favors" – I strongly feel it's my duty to thank to those Unselfish souls who helped me in my venture.

I take this opportunity to express my sincere word of gratitude and indebtedness to **Professor R.Annamalai, Vice Principal – Kumaraguru College of Technology, Coimbatore** for permitting me to undertake this project.

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It's always a pleasure and privileges to be associated with a prestigious outstanding esteemed organization **"Accenture Services Pvt Ltd"**, Chennai. I am very happy and grateful to be a part of **Accenture.**

My hearty thanks to my Project manager **Mr. Balakrishnan Anantharaman, of Accenture Services Pvt Ltd**, for their valuable guidance throughout the project. Also, I am grateful to my parents and friends for their valuable support and encouragement.

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LIST OF ABBREVATIONS

MEUT – Mobile End User Testing

GTM - Global Team Member

TTL - True Test Leader

SC - Site Coordinator

UI – User Interface

GPS – Global positioning System

JSP – Java Server Pages

MVC – Model View Controller

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CHAPTER 1

1 INTRODUCTION

1.1 ORGANIZATION PROFILE

Accenture is a global management consulting, technology services and outsourcing company. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them to become high performers in business. With 178,000 people in 49 countries, the company generated net revenues of US$19.70 billion for the fiscal year ended Aug. 31, 2007.

1.1.1 Accenture Service Private Ltd

Our "high performance business" strategy builds on our expertise in consulting, technology and outsourcing to help clients to perform at the highest levels, so they can create sustainable value for their customers and shareholders. Using our industry knowledge, service-offering expertise and technology capabilities, we identify new business and technology trends and develop solutions to help clients around the world:

- Enter new markets.
- Increase revenues in existing markets.
- Improve operational performance.
- Deliver their products and services more effectively and efficiently.

We have extensive relationships with the world's leading companies and governments and work with organizations of all sizes—including 94 of the Fortune Global 100 and more than two-thirds of the Fortune Global 500.

Among the many strengths that distinguish Accenture in the marketplace are our:
- Extensive industry expertise.
- Broad and evolving service offerings.
- Expertise in business transformation outsourcing.

- History of technology innovation and implementation, including our research and development capabilities, on which we spend approximately $300 million annually.

Our Core Values have shaped the culture and defined the character of our company, guiding how we behave and make decisions:

- *Stewardship*: Building a heritage for future generations, acting with an owner mentality, developing people everywhere we are, and meeting our commitments to all internal and external stakeholders.

- *Best People*: Attracting and developing the best talent for our business, stretching our people and developing a "can do" attitude.

- *Client Value Creation*: Improving our clients' business performance, creating long-term, win-win relationships and focusing on execution excellence.

- *One Global Network*: Mobilizing the power of teaming to deliver consistently exceptional service to our clients anywhere in the world.

- *Respect for the Individual*: Valuing diversity, ensuring an interesting and inclusive environment, and treating people as we would like to be treated ourselves.

- *Integrity*: Inspiring trust by taking responsibility, acting ethically, and encouraging honest and open debate.

1.1.2 Services

Accenture provides services by helping our Clients around the world to achieve high performance.

The services are

- By Industry
- By subject

Industry

- Aerospace and Defense
- Airline
- Automotive
- Chemicals

- Communications
- Consumer Goods and Services
- Energy
- Financial Services
- Industrial Equipment
- Media and Entertainment
- Public Service (Government)

Subject

- Consulting

    We help our clients create value and architect change through our unique spectrum of management consulting services

- Technology

    Discover the services Accenture delivers to help companies use technology to move to a higher level of performance.

1.2 PROBLEM DEFINITION

The telecommunication client of Accenture manufactures mobile instruments which consist of different models. Most of the models manufactured from the client company are GPS enabled.

It becomes a tedious job to maintain the information of all the End users and Site Coordinators because they are situated across various geographic locations across the globe, in order to report the test results, the management has to prepare and maintain different types of questions. So that the testers can fill the questions, reports and the reminders to fill the questions must also be given. The Global Team Member and True Test Leader, who are the main users, need to prepare different type of reports regarding project, site, approved questions, questions pending for approval and type of questions.

The preparation of questions and tracking of issues that are raised in the project are difficult to address and track. Thus the Mobile End User Testing is to be developed addresses all the issues that are notified above.

CHAPTER 2

2 SYSTEM ANALYSIS

2.1 EXISTING SYSTEM ARCHITECTURE

In the Existing system, the mobile instruments manufactured by the client are tested by in-house people which lead to few defects unrevealed and also the maintenance of the entire testing activity was manual which was time consuming and all the reports were also prepared manually. It caused a work overload to Global Team Member or True Test Leader to maintain the reports apart from their regular routine.

The questionnaires prepared were also not effective and was not properly categorized. The projects which are added newly were difficult to maintain and issues raised were difficult to track and resolve.

Problems in existing system

- Two separate databases. One for Management application and one for Client application.
- Synchronization issues between client and Management application.
- Data not reflected properly. Time consuming process.
- Errors go unreported due to in house testing.
- Over head due to repeated testing.
- Generation of reports is difficult, since various excel sheets are to be verified.

2.2 PROPOSED SYSTEM ARCHITECTURE

The proposed system would automate all of the manual processes described which would help reduce the overhead incurred by the team leaders and managers and make the whole process simple and efficient. The proposed system will have computerized data entry screens and processes can be carried out based on inputs from those screens. A set of reports would be provided to ease out the end users task of having to consolidate data to be sent across to the top management.

Advantages of the Proposed System

- Easy to use and simple.
- New modules can be added with ease without any modifications to the existing system.
- Flexible and Scalable.
- Data available on demand.
- Retrieval of data and reports will be much simpler.

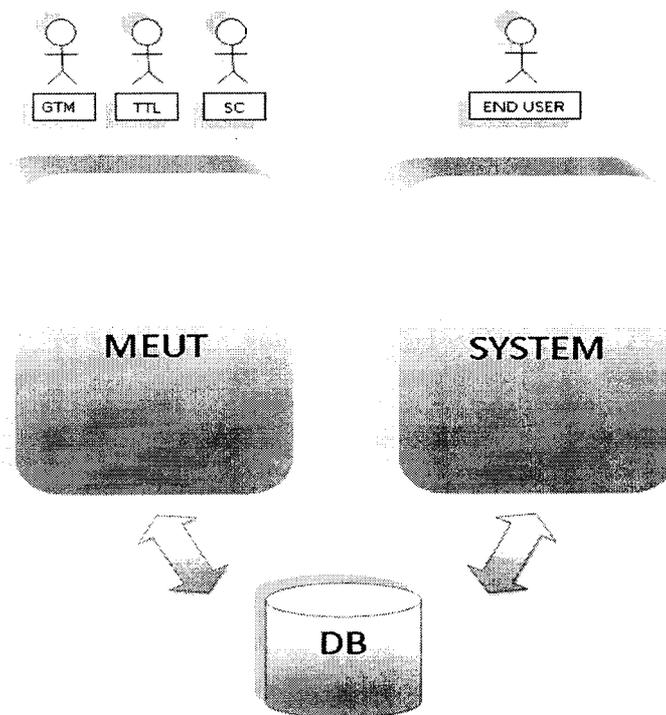Fig 2-1 Proposed System (MEUT)

2.3 FEASIBILITY ANALYSIS

Feasibility analysis is the measure of how beneficial or practical the development of the System will be to the project. Once the problem is explained information is gathered about the system to test whether the system is e technically, financially and operationally feasible. Thus, feasibility study is carried out in three phases as follows:

2.3.1 Technical Feasibility

Technical Feasibility is the measure of practicality of a specific technical solution and the availability of technical resources and expertise. It centers on the existing computer system (hardware, software, etc.) and to what extent it can support the new addition.

The proposed system is to be developed using BEA's Web Logic Portal 10.0 and Oracle 10g which are some of the leading technologies in the market. These technological resources are easily available and the company/project does not need to acquire any development licenses.

2.3.2 Operational Feasibility

Operational Feasibility asks if the system will work when it is developed and installed. It checks for the support of the management, the current business methods, user's involvement and their attitude towards the proposed system, etc.

The proposed system has found encouraging support from the global team members, true test leaders, site coordinators and the top management as it will be of great use to them. The GTM and SC of the project are also committed to have the system operational as it will save time and reduce their workload. Also since the GTM and SC can have easy access to tester's information, sim cards and other accessories, to keep track of questions and the responses from the testers, they are very much in favor of implementing the system. The current processes followed in the project would be depicted in the system as it is.

2.3.3 Economic Feasibility

Economic Feasibility is the measure of the cost-effectiveness of the proposed system. The investment to be made in the proposed system must prove a good investment to the project by returning benefits equal to or exceeding the costs incurred in developing the system.

The proposed benefits of the system will outweigh the costs to be incurred during system developed since the system does not require procurement of

additional hardware facilities it is economically feasible. In addition capability of the system to incorporate future enhancement will improve the performance to suit the future need of the company/project.

2.4 USER INTERFACE REQUIREMENTS

The User Interfaces are designed using JSP. The interfaces would be designed in a user friendly manner with less complexity so that it proves to be easy for the users to navigate through the system. The UI screen in divided into 4 parts namely header, left, right and middle pane. All the modules are available as tabs so that the user can easily navigate through the pages.

2.4.1 Functional Requirements

Functional Requirements are those that refer to the functionality of the system, i.e., what services it will provide to the user.

- **Devices** module contains the list of test units, accessories and sim cards available for the project. It also allows the user to assign these test units, accessories and sim cards to the required tester.
- **Sites** module is used for assigning sites for a particular project, view or edit sites and to generate site reports.
- **Data Management** module standard static global data that is used across the entire project such as countries, operators, languages etc.
- **Templates** module consist of all the basic communication templates required for the management to interact with the testers.
- **News** involves the publication of the project news at the tester's page.
- **Help** module enables the listing of the help features both at the management and at the client side.
- **Rewards** module is used for assigning the gifts based on the tester points.

2.4.2 Non Functional (System) Requirements

Non-functional (supplementary) requirements pertain to other information needed to produce the correct system and are detailed separately.

Usability

- The application is expected to be user friendly. The user must be able to operate the application with ease.

- This application is developed with user friendly interface screens.

- This application automates the sales activities and they are updated for admin view.

Reliability

- The application is expected to operate as close to 100 percent reliability.

- The application must have no defects that can interface with normal operation.

Performance

- The application is accepted to respond to the users request(s) with minimum time.

Security

The server on which the MEUT resides will have its own security to prevent unauthorized write/delete access. There is no restriction on read access. The use of email by an Author or Reviewer is on the client systems and thus is external to the system.

The PC on which the client resides will have its own security. Only the end user will have physical access to the machine and to test it. There is special security feature called "CAPTCHA" built into the registration form to provide the developer with the hacker protection to create the fake registration.

Security Requirements:

The system being a document-sensitive application will have the following main security concerns:

- **Authentication**

   Since workflow involves approvals and decision-making in a business environment, it is very important to authenticate who the participants are in

the workflow. Only those individuals who are designated to perform tasks must be allowed to participate at any step of the workflow process.

- **Confidentiality**

  The privacy of information entered by workflow participants must be respected. The information should not be accessible to unauthorized users.

- **Integrity**

  The information should not be manipulated or changed in anyway, so that its integrity is maintained.

- **Non-Repudiation**

  Since workflow involves crucial activities users should not be able to disown their actions.

- **Access rights**

  The users would be able to access and work on the information as per the defined rights.

2.5 USERS OF THE SYSTEM

User Name	Description
Global Team Member(GTM)	An internal user who coordinates the entire true testing activity. Has full control and access to the system.
True Test Leader(TTL)	Manages and coordinates the site coordinators. He can create projects and can edit only his own projects.
Site Coordinator(SC)	Coordinates the testing activity, testers, and test units at a particular site.
End User	Client's external person who performs the testing and reports the result by filling questions.

CHAPTER 3

3 DEVELOPMENT ENVIRONMENT

3.1 HARDWARE REQUIREMENTS

Main Processor — INTEL PENTIUM IV or ABOVE

RAM — 2 GB or ABOVE

Hard Disk Capacity — 40 GB or ABOVE

3.2 SOFTWARE REQUIREMENTS

The software support required for deployment is:

Operating System — Windows XP

Web Server — Bea Web Logic server version 10

Database — Oracle 10g

Software for Development — J2EE

Browser — Any Web browser

3.3 TOOLS USED

Development — BEA Web logic portal 10.0

Data storage — Oracle SQL developer

Testing — Mercury Quality Center

3.4 PROGRAMMING ENVIRONMENT

3.4.1 J2EE

Java 2 Enterprise Edition covers the overall development framework under Java. Most web-based applications and portals are developed using J2EE as it provides dynamic web-applications in an efficient manner. This application is developed using the Apache framework of J2EE. The front end (J2EE) is developed using Web logic portal 10.0.

3.4.1.1 JSP

A Java Server Page (JSP) file is nothing more than another way to view a servlet. The concept of a JSP file is to allow us to see a Java servlet as an HTML page. This view eliminates all of the ugly print () statements that normally show up

in Java code. The JSP file is pre-processed into a .java file, and then compiled into a .class.

3.4.2 MVC ARCHITECTURE

Model-View-Controller architecture is all about dividing application components into three different categories Model, View and the Controller.
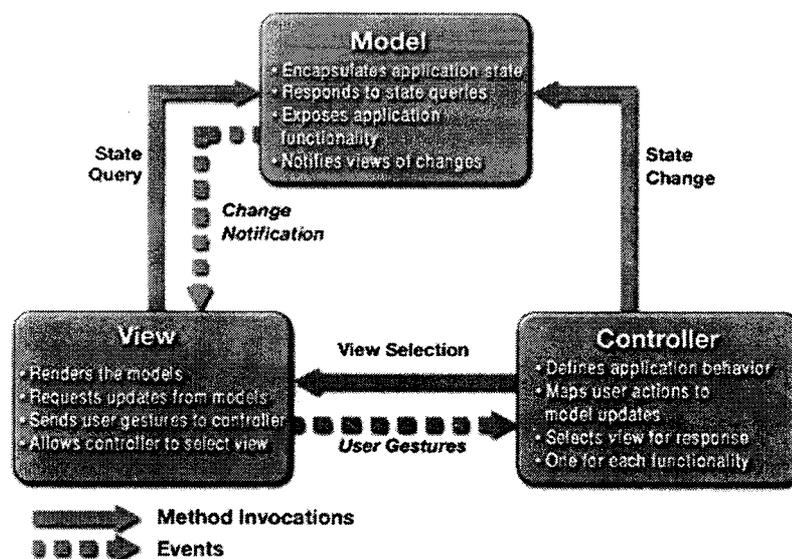

Fig 3-1 MVC Architecture

Components of the MVC architecture have unique responsibility and each component is independent of the other component. Changes in one component will have no or less impact on other component.

Responsibilities of the components are:

- **Model**: Model is responsible for providing the data from the database and saving the data into the data store. All the business logic are implemented in the Model. Data entered by the user through View are check in the model before saving into the database. Data access, Data validation and the data saving logic are part of Model.

- **View**: View represents the user view of the application and is responsible for taking the input from the user, dispatching the request to the controller

and then receiving response from the controller and displaying the result to the user. HTML, JSP's, Custom Tag Libraries and Resources files are the part of view component.

- **Controller**: Controller is intermediary between Model and View. Controller is responsible for receiving the request from client. Once request is received from client it executes the appropriate business logic from the Model and then produces the output to the user using the View component. Page flow and XML are the part of Controller.

3.4.3 OVERVIEW OF WEBLOGIC PORTAL 10.0

BEA Web Logic Portal 10.0 provides enterprise portal infrastructure for streamlined portal development. This framework includes a rich, graphical environment for developing portals as well as browser-based assembly tools for business experts. Web Logic Portal simplifies the production and management of custom-fit portals, allowing you to leverage a shared services environment to roll out changes with minimal complexity and effort.

Web Logic Portal is the outward-facing component of BEA Web Logic Platform that lets you provide a user interface to integrate your applications. Web Logic Portal lets you surface application data and functionality from heterogeneous environments into an integrated, dynamic, and customizable Web-based portal user interface that can simultaneously support your customers, partners, and employees on multiple devices. Web Logic Portal handles the infrastructure so that you can focus your development efforts on what is most important — your applications.

In addition to a powerful portal framework and its J2EE security foundation, Web Logic Portal provides many business services, such as content management, communities, personalization, search, and user management.

Web Logic Portal provides a virtual content repository that lets you federate external content management systems into a single management interface. You can then build portals using content in those external resources. Web Logic Portal also provides a BEA content repository for creating and managing content.

Web Logic Portal includes

- Portal Concepts
- Web Logic Portal Framework

- Web Logic Portal Business Services
- The Portal Life Cycle

Developing portals with Web Logic Portal is an iterative process characterized by four phases:

- Architecture,
- Development,
- Staging (assemble/deploy),
- Production (management of your portal).

Each phase in the portal life cycle involves specific tasks and tools. The Web Logic Portal documentation maps to the portal life cycle and provides a context-rich environment for learning about building portal applications.

3.4.4 OVERVIEW OF ORACLE 10g

Oracle10G is an RDBMS (Relational Database Management System). The Oracle database architecture can be described in terms of logical and physical structures. The advantage of separating the logical and physical structure is that the physical storage structure can be changed without affecting the logical structure.

CHAPTER 4

4   SYSTEM DESIGN AND DEVELOPMENT

System Design is the most creative and challenging phase in the development of a software system. Design implies to a description of the final system and the process by which it is developed.

4.1   PROCESS MODEL

4.1.1   USE CASE DIAGRAM
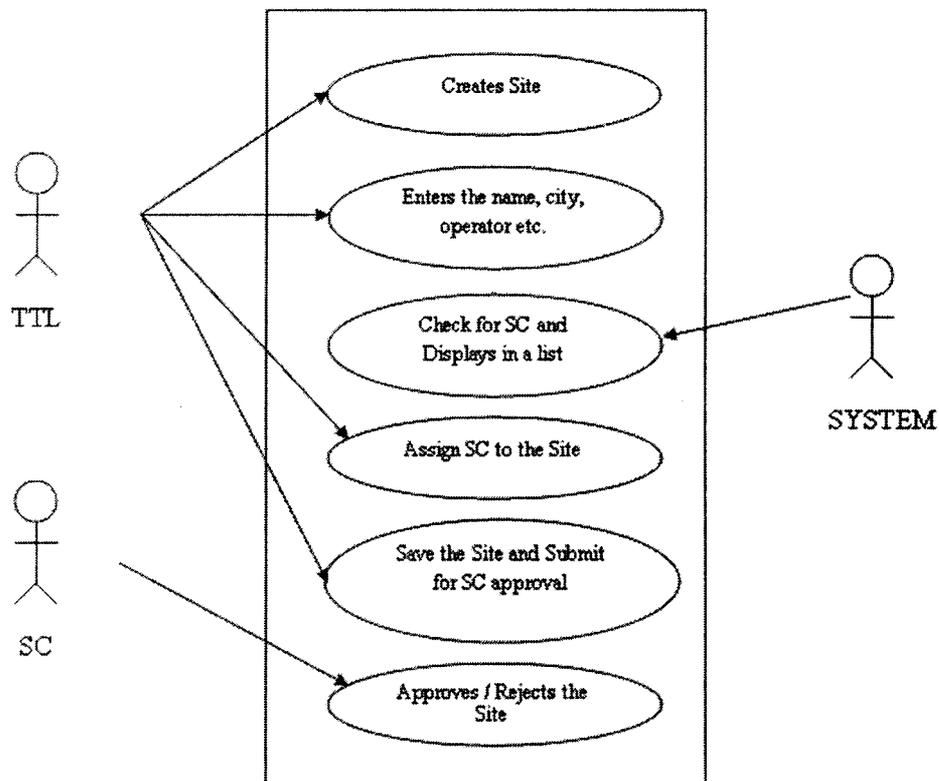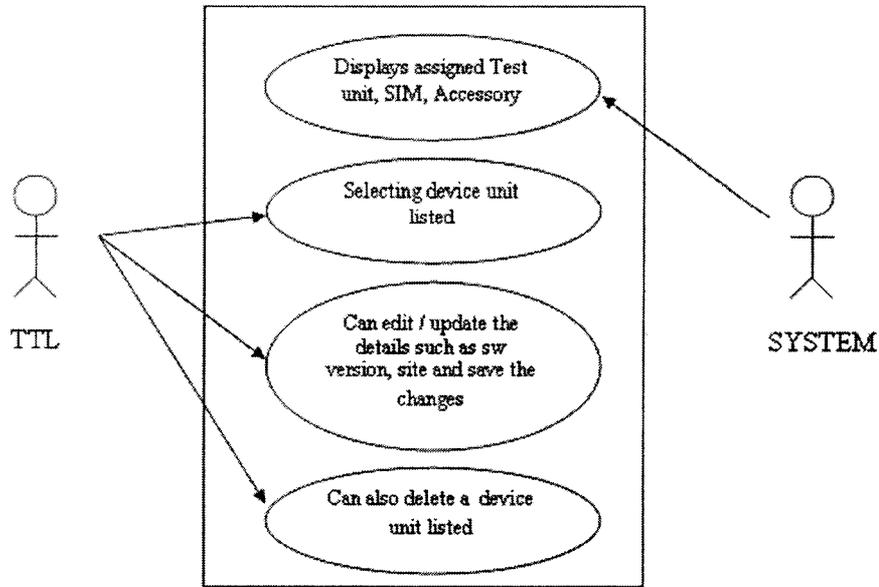
4.1.1.1   Use-Case: Site Module

Fig 4-1 Use-Case: Site Module

4.1.1.2 Use-Case: Device Module

Display Device Units :
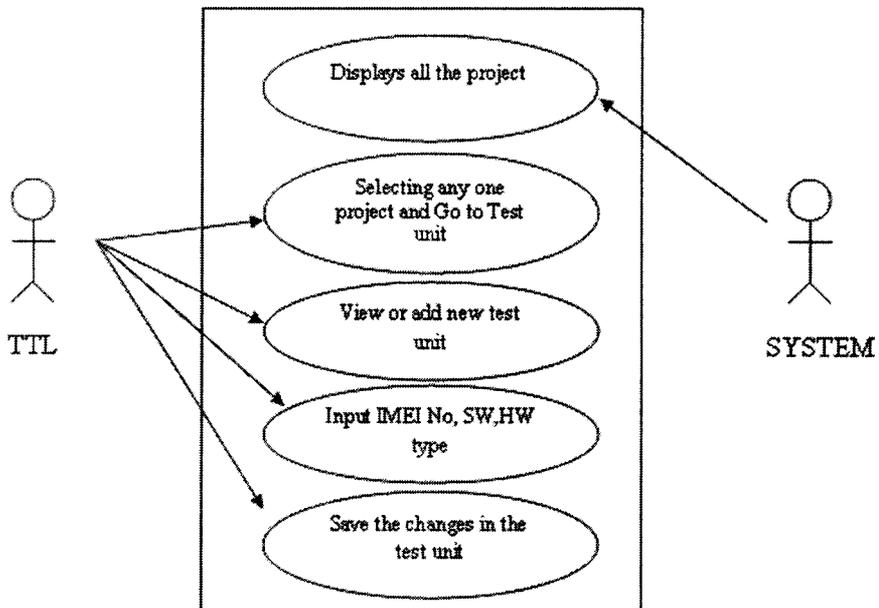

ADD Device Units:

Fig 4.2 Use-Case: Device Module

4.1.1.3 Use-Case: Rewards Module
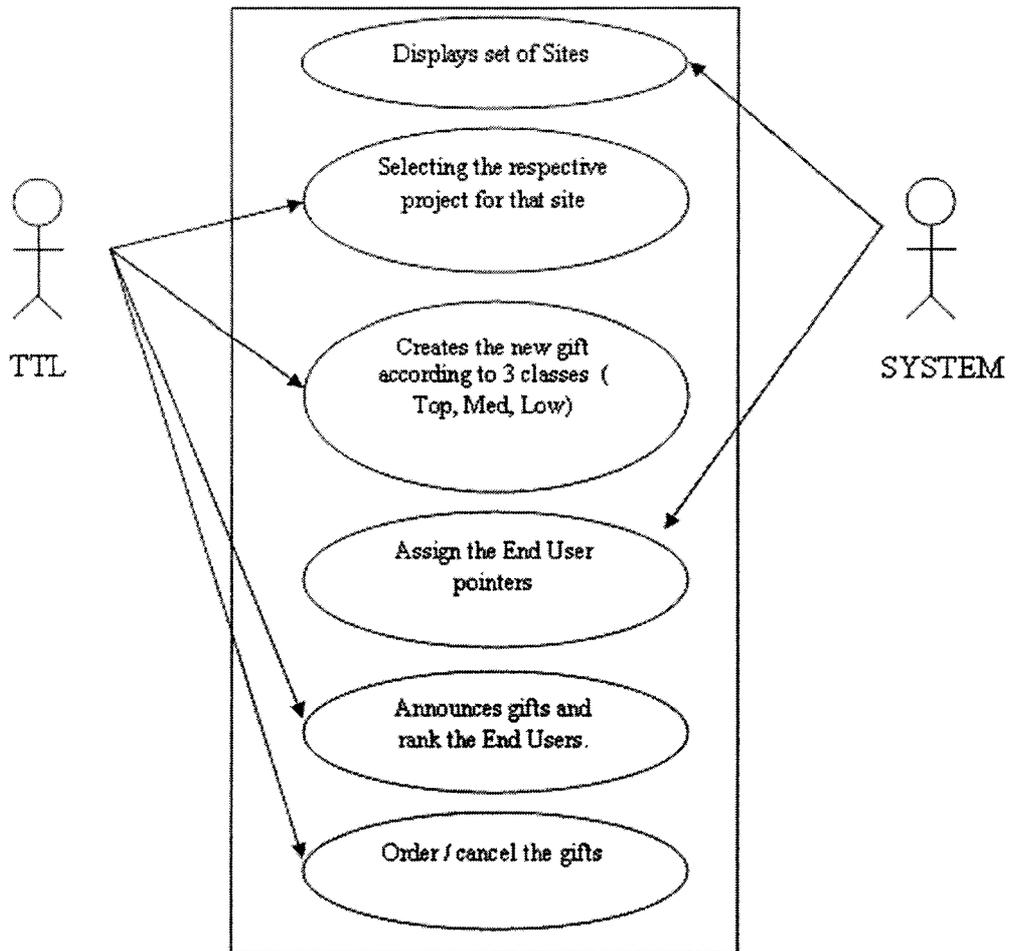

Fig 4.3 Use-Case: Rewards Module

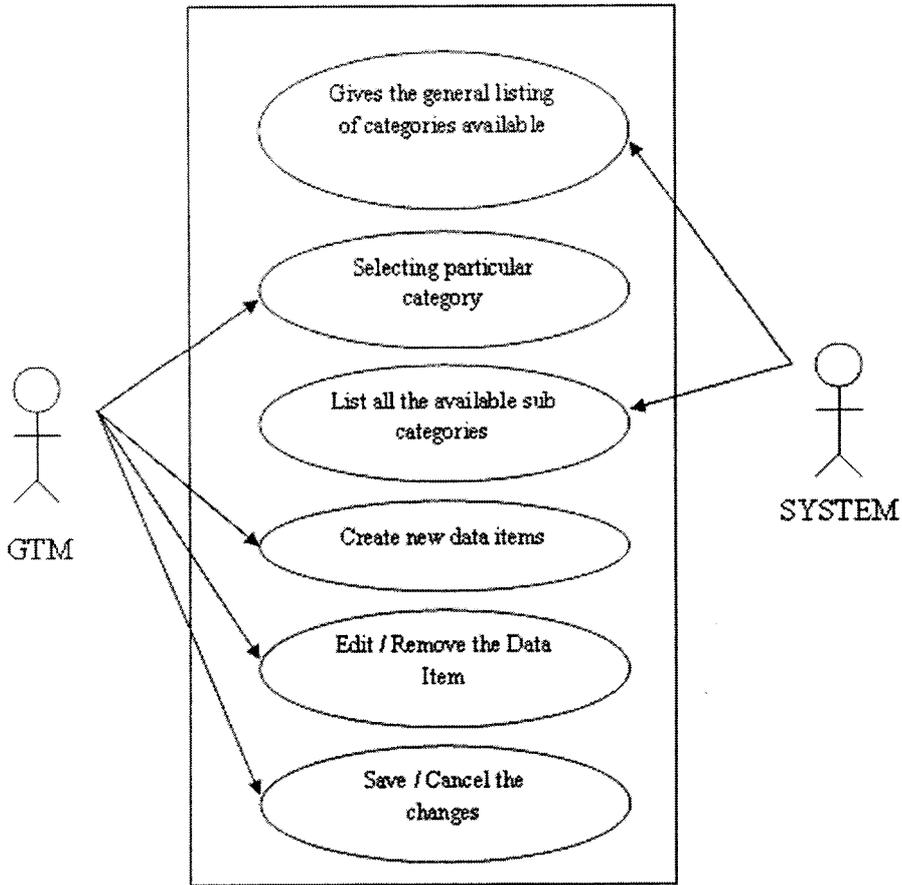### 4.1.1.4   Use-Case: Data Module

Fig 4.4 Use-Case: Data Module

4.1.1.5   Use-Case: Help Module
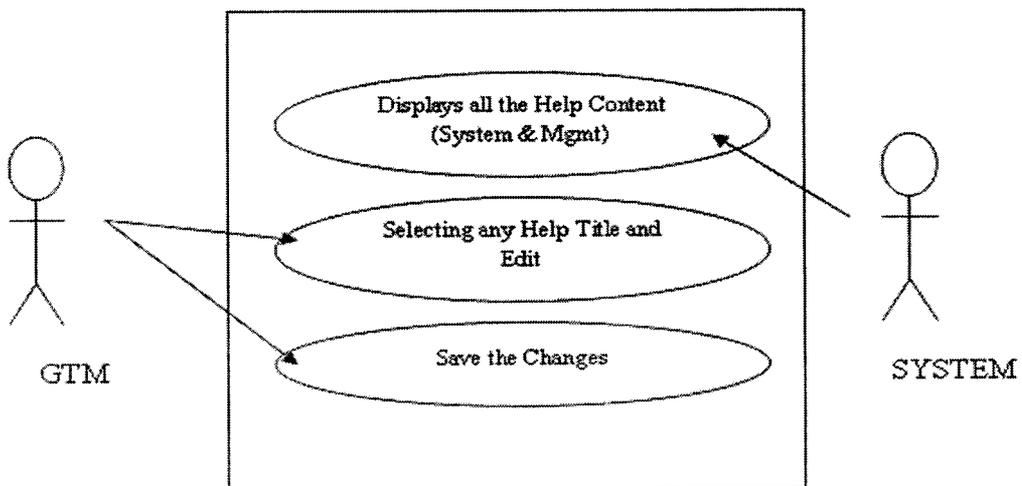
Fig 4.5 Use-Case: Help Module

4.1.1.6 Use-Case: News Module
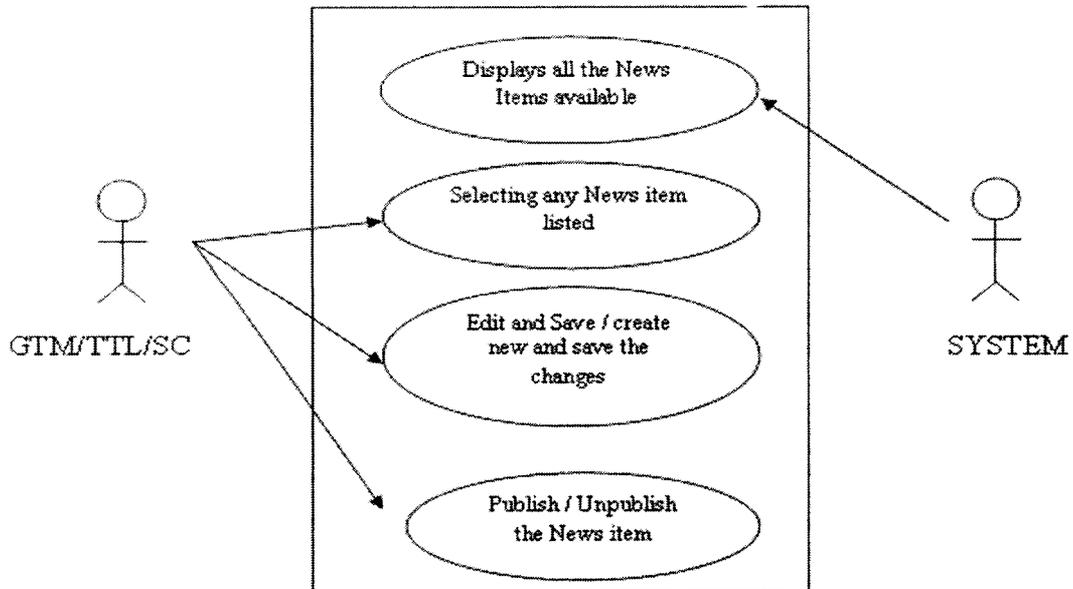
Fig 4.6 Use-Case: News Module

4.1.1.7 Use-Case: Template Module
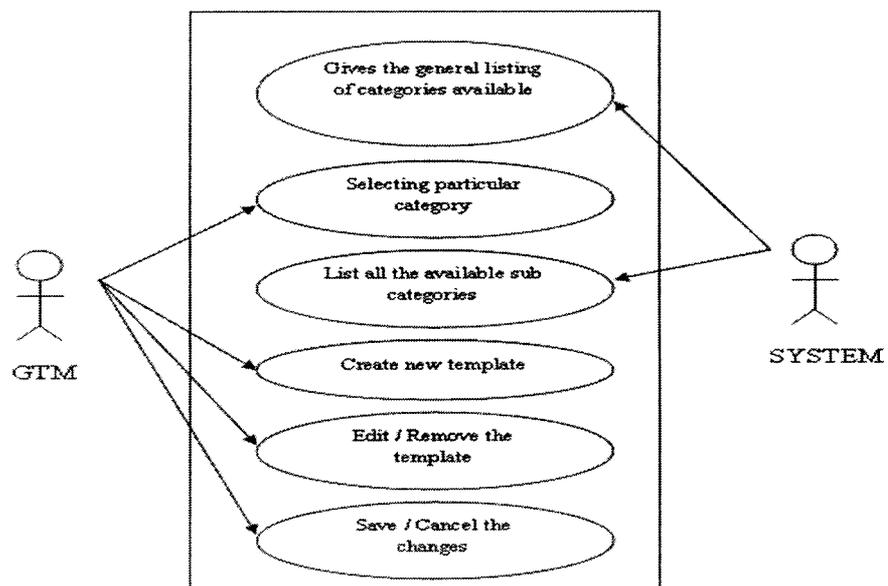
Fig 4.7 Use-Case: Template Module

4.1.2   FLOW DIAGRAM

The flow diagrams are graphical representation depicting information regarding the flow of control and the action that is triggered when navigating from one page to another page. As we use the J2EE framework the flow diagram consists of JSP's and actions that correspond to them.
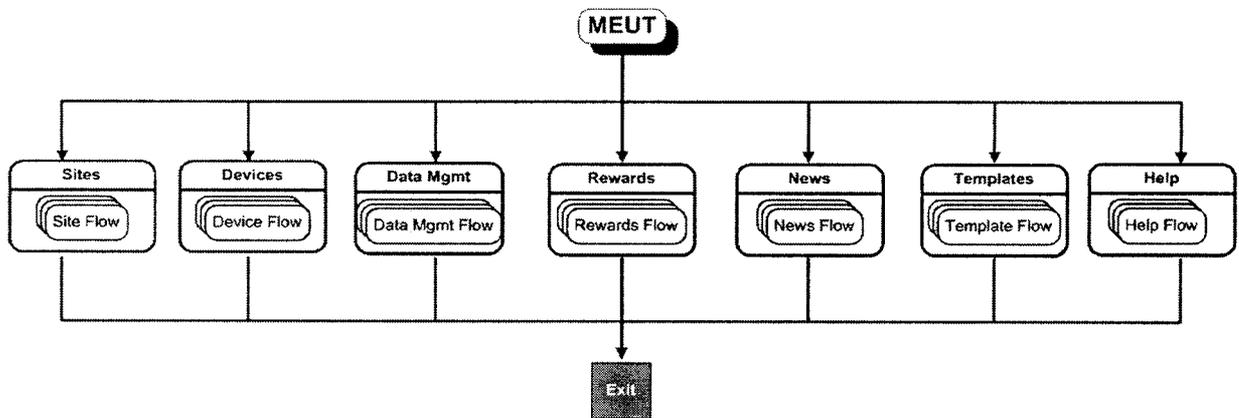
Fig 4-8 Flow Diagram

4.1.2.1   Flow Diagram: Site Module

Sites module is used for assigning sites for a particular project, view or edit
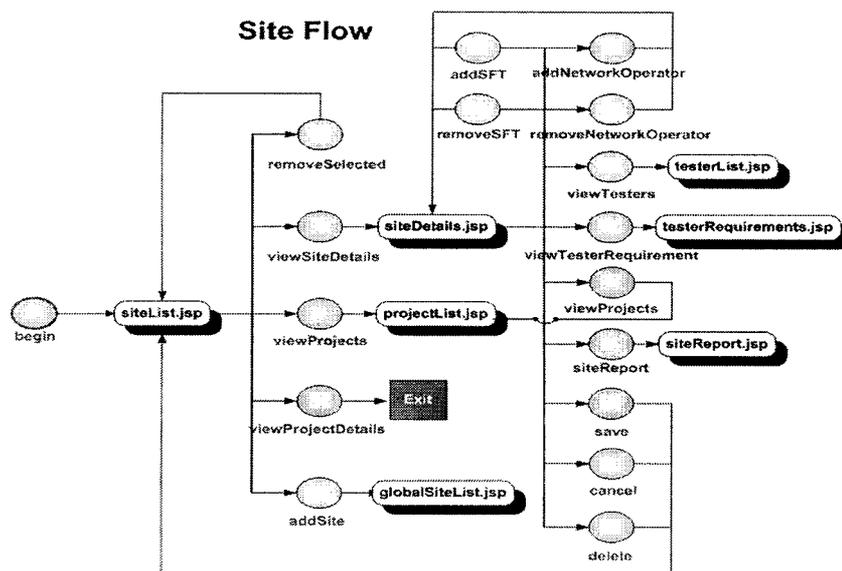
Fig 4-9 Site Module Flow diagram

sites and to generate site reports. The sites can be viewed or edited according to the type of the user. Site reports can also be generated.

4.1.2.2   Flow Diagram: Device Module

Devices module contains the list of test units, accessories and sim cards available for the project. It also allows the user to assign these test units, accessories and sim cards to the required tester. Only the True Test Leader (TTL) can view or edit sim cards, test units and accessories. The user can delete sim cards, test units and accessories from a particular project. But if the above mentioned items are assigned to someone then it can't be deleted.
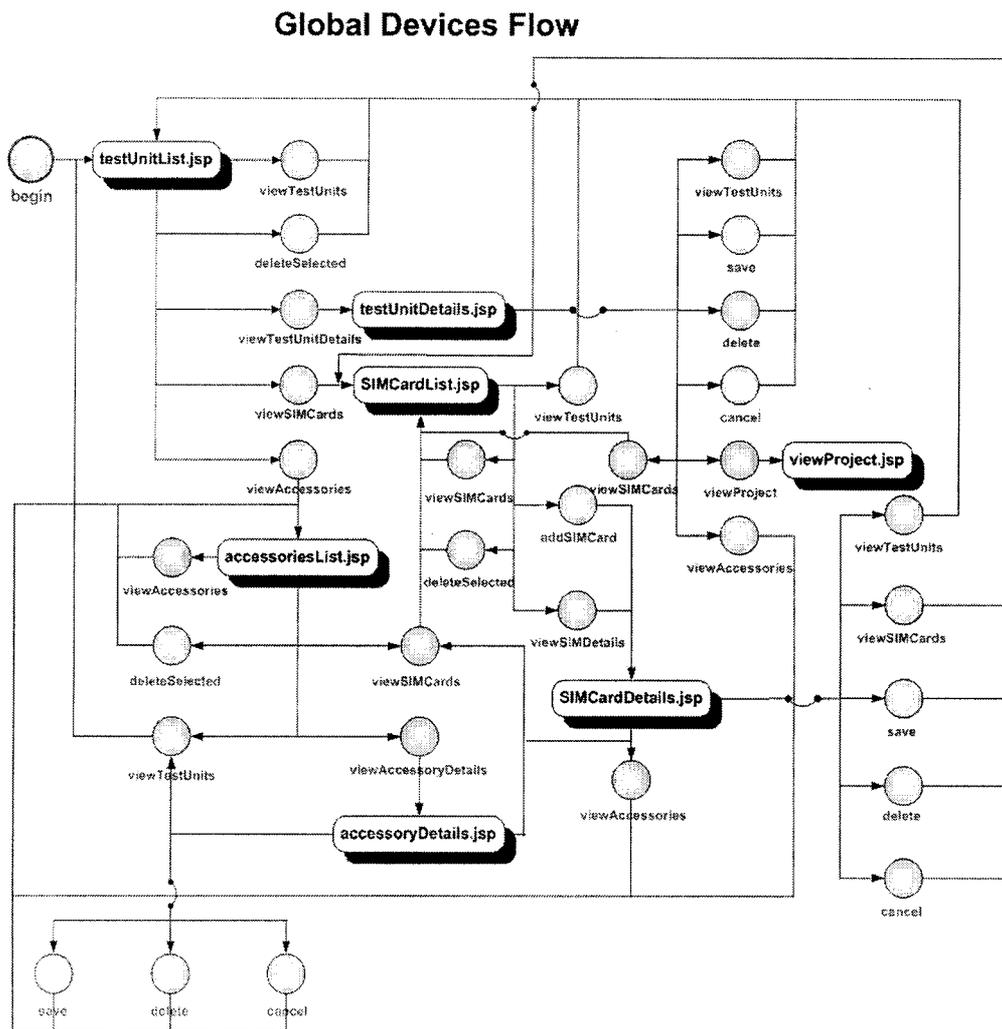
Fig 4-10 Device Module Flow diagram

4.2   DATABASE DESIGN

A database is a collection of inter-related data stored with minimum redundancy to serve many users quickly and efficiently. The general objective of database design is to make the data access easy, inexpensive and flexible to the user. An elegantly designed database can play a strong foundation for the whole system.

The details about the relevant data for the system are first identified. According to their relationship, tables are designed through the following method. The data type for each data item in the table is decided. The tables are then normalized.

The tables are normalized so that they can provide better response time, have data integrity, avoid redundancy and be secure.

4.2.1   TABLE STRUCTURE

Design Conventions Used

- Appropriate words that describe the table should be used.
- Words used to describe the table should be separated with an Underscore '_'.
- No special character other than an underscore is used in formulating a table name.
- No number should be used anywhere in the table name string.

Table Name: SITE

Description: Holds details regarding sites.

Primary Key: site_id

Foreign Key: country_id,city_id,region_id

Field Name	Data type	Required
Site_names	VARCHAR2(256 Bytes)	
Shipment_rules	VARCHAR2(1024 Bytes)	
Flashing_address	VARCHAR2(1024 Bytes)	
Tester_response_time	NUMBER	
Createdby_id	NUMBER	
Changedby_id	NUMBER	
Timestamp	DATE	
Site_id	NUMBER	NOT NULL
City_id	NUMBER	
Country_id	NUMBER	
Region_id	NUMBER	
version_id	NUMBER	

Table Name: DEVICE_UNIT

Description: Holds the details of the Device units

Primary Key: test_unit_id

Foreign Key: sw_version_id, hw_version_id, hw_type_id

Field Name	Data type	Required
status	CHAR(20)	
imei	VARCHAR2(30)	NOT NULL
sw_version_id	NUMBER	
hw_version_id	NUMBER	
test_unit_id	NUMBER	NOT NULL
pla_status	CHAR(1)	
status_date	DATE	
hw_type_id	NUMBER	
version_id	NUMBER	
family_id	NUMBER	
sw_version_update	NUMBER	

Table Name: NEWS

Description: Holds the details of published/unpublished news

Primary Key: news_id

Foreign Key: project_id, site_id

Field Name	Data type	Required
news_id	NUMBERPS(38,0)	NOTNULL
title	VARCHAR2(256)	
status	VARCHAR2(256)	
creation_date	DATE	
published_date	DATE	
project_id	NUMBERPS(38,0)	
site_id	NUMBER	
visibility	VARCHAR2(256)	
expiry_date	DATE	
description	CLOB	
createdby_id	NUMBER	
type	VARCHAR2(256)	
mgmt_upload_path	VARCHAR2(256)	
mgmt_download_path	VARCHAR2(256)	
news_image_id	VARCHAR2(256)	
image_name	VARCHAR2(256)	

Table Name: HELP

Description: Holds the details of Help contents

Primary Key: help_id

Field Name	Data type	Required
help_id	NUMBERPS(38,0)	NOTNULL
type	VARCHAR2(256)	
code	VARCHAR2(256)	
page_title	VARCHAR2(256)	
description	VARCHAR2(256)	
editedby_id	NUMBERPS(38,0)	
timestamp	CHAR(10)	

Table Name: ATTRIBUTES

Description: Holds the details of Data management tab

Primary Key: attribute_id

Field Name	Data type	Required
attribute_id	NUMBER	NOTNULL
attribute_type	CHAR(20)	
attribute_name	VARCHAR2(256)	

Table Name: TEMPLATE_IMAGES

Description: Holds the details of templates tab

Primary Key: image_id

Field Name	Data type	Required
image_id	NUMBER	NOTNULL
name	VARCHAR2(50)	
type	VARCHAR2(50)	
image_size	NUMBER	
mgmt_upload_path	VARCHAR2(256)	
download_url	VARCHAR2(256)	

Table Name: REWARDS

Description: Holds the details of Help contents

Primary Key: reward_id

Field Name	Data type	Required
title	VARCHAR2(256)	
class	VARCHAR2(256)	
teaser	CLOB	
description	CLOB	
hide	VARCHAR2(256)	
picture_1_name	VARCHAR2(256)	
picture_2_name	VARCHAR2(256)	
reward_id	NUMBER	NOTNULL
portal_file_id1	NUMBERPS(38,0)	
portal_file_id2	NUMBERPS(38,0)	
project_site_rel_id	NUMBER	

Table Name: PROJECT_SITE_REL

Description: This Table defines the relation between Project and site tables

Primary Key: project_site_rel_id

Foreign Key: project_id, site_id

Fields	Data type	Required
project_site_rel_id	NUMBER	NOT NULL
project_id	NUMBER	
site_id	NUMBER	
gift_budget	VARCHAR2(1024)	
number_of_testers	NUMBER	
status	CHAR(10)	
rejection_reason	CLOB	
version_id	NUMBER	
approvedBy_id	NUMBERPS(38,0)	
timestamp_approved	DATE	
reward_status	VARCHAR2(256)	
number_of_testers_ttl	NUMBER	

Table Name: PROJECT_SITE_OP_REL

Description: This table links the PROJECT_SITE_REL and OPERATOR table.

Primarv Key: project_site_rel_id, operator_id

Foreign Key: project_site_rel_id, operator_id

Fields	Data type	Required
project_site_rel_id	NUMBER	NOT NULL
operator_id	NUMBER	NOT NULL
version_id	NUMBER	

Table Name: PERSON_SITE_REL

Description: This table gives the relation between person and site (is_site_coordinator)

Primary Key: role, person_id, site_id

Foreign Key: person_id, site_id

Fields	Data type	Required
site_id	NUMBER	NOT NULL
person_id	NUMBER	NOT NULL
role	CHAR(2)	NOT NULL
version_id	NUMBER	

Table Name: OPERATOR_SITE_REL

Description: This table gives the relation between operator and site

Primary Key: site_id ,operator_id

Foreign Key: site_id ,operator_id

Fields	Data type	Required
operator_id	NUMBER	NOT NULL
site_id	NUMBER	NOT NULL
version_id	NUMBER	

Table Name: TEST_UNIT

Description: This table contains the test unit details

Primary Key: test_unit_id

Foreign Key: project_site_rel_id,person_id

Fields	Data type	Required
test_unit_id	NUMBER	NOT NULL
person_id	NUMBER	
project_site_rel_id	NUMBER	
createdby_id	NUMBER	
changedby_id	NUMBER	
timestamp	DATE	
version_id	NUMBER	

Table Name: ACCESSORY_UNIT

Description: Table for ACCESSORY_UNIT

Primary Key: test_unit_id

Foreign Key: test_unit_id

Fields	Data type	Required
test_unit_id	NUMBER	NOT NULL
status	CHAR(20)	
accessory_id	VARCHAR2(50)	
status_date	DATE	
version_id	NUMBER	

Table Name: TESTER_TEXTS

Description: Table for TESTER_TEXTS

Primary Key: tester_text_id

Fields	Data type	Required
tester_text_id	NUMBER	NOT NULL
type	VARCHAR2(20)	
text	VARCHAR2(100)	

Table Name: TEASER_INFO

Description: Table of TEASER_INFO

Primary Key: teaser_info_id

Fields	Data type	Required
teaser_info_id	NUMBER	NOT NULL
header	VARCHAR2(20)	
body_text	VARCHAR2(100)	
link	VARCHAR2(256)	
image	VARCHAR2(512)	
downloadUrl	VARCHAR2(256)	

Table Name USER_REWARD_REL

Description: Table of USER_REWARD_REL

Primary Key: user_reward_rel_id

Foreign Key: reward_id

Fields	Data type	Required
user_reward_rel_id	NUMBER	NOT NULL
person_id	NUMBER	
reward_id	NUMBER	
status	CHAR(10)	
ordered_date	DATE	
handled_date	DATE	

Table Name: ACCESSORY

Description: The ACCESSORY table gives entire description about the Accessory profile.

Primary Key: accessory_id

Foreign Key: person_id, project_site_rel_id,, salesname_id, category_id

Fields	Data type	Required
accessory_id	NUMBER	NOT NULL
person_id	NUMBER	
accessory_type	VARCHAR2(256)	
project_site_rel_id	NUMBER	
free_text_info	VARCHAR2(1024)	
status	CHAR(20)	
createdby_id	NUMBER	
changedby_id	NUMBER	
timestamp	DATE	
salesname_id	NUMBER	
category_id	CHAR(10)	
serial_number	VARCHAR2(50)	
version_id	NUMBER	

Table Name: SIM_CARD

Description: This table stores the information about the SIM CARD and gives all the details of the SIM CARD

Primary Key: sim_card_id

Foreign Key: project_id, person_id, operator_id, site_id

Fields	Data type	Required
sim_card_id	NUMBER	NOT NULL
phone number	VARCHAR2(256)	
project_id	NUMBER	
person_id	NUMBER	
operator_id	NUMBER	
site_id	NUMBER	
free_text_info	VARCHAR(1024)	
status	CHAR(20)	
createdby_id	CHAR(20)	
changedby_id	CHAR(20)	
timestamp	DATE	
identifier	VARCHAR2(50)	
version_id	NUMBER	

4.2.2 DATABASE ER DIAGRAM
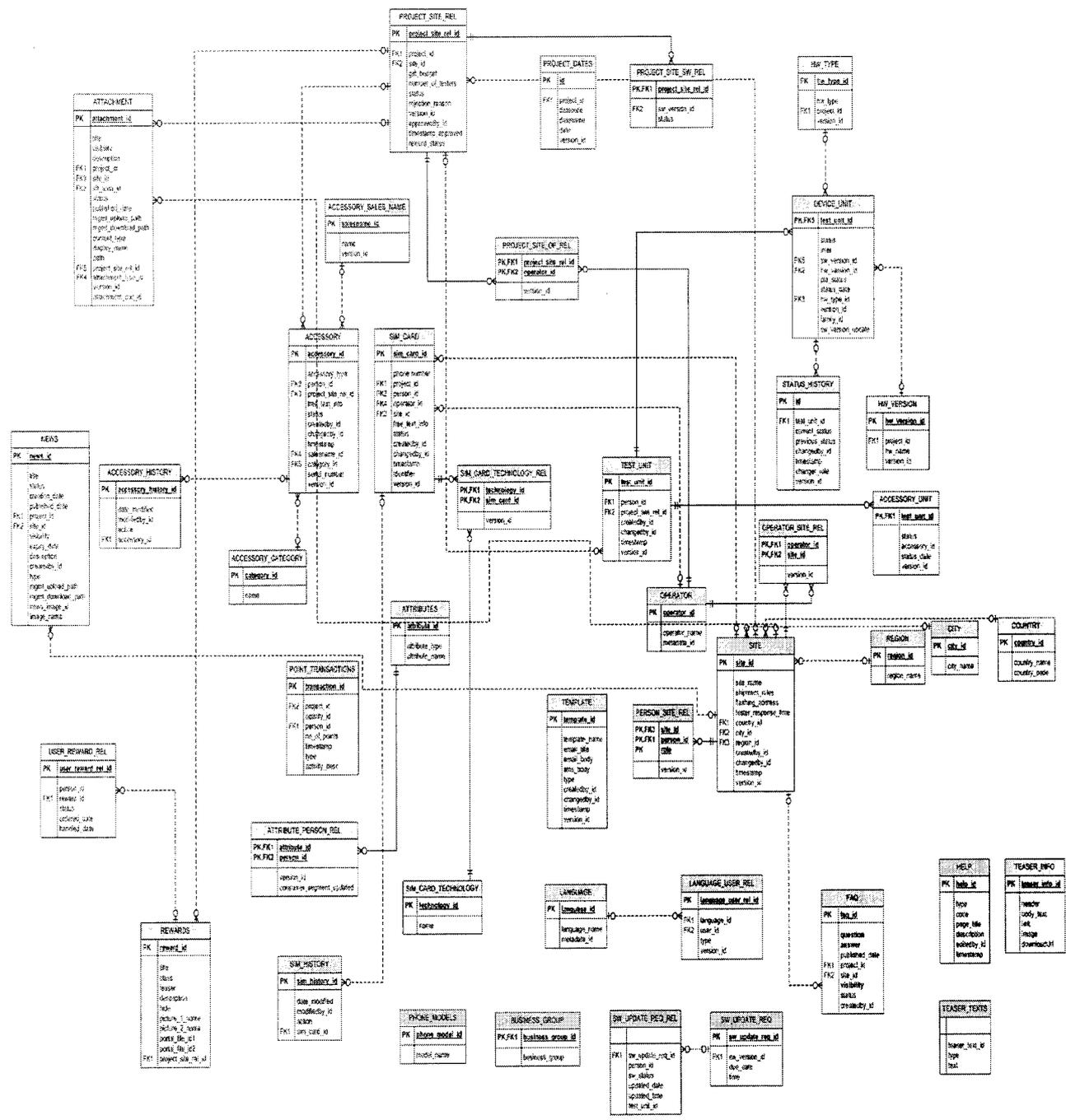
Fig 4-11 E.R Diagram

CHAPTER 5

5   IMPLEMENTATION

System Implementation is the part of the software engineering life cycle, where, the design artifacts are converted to a working application. Coding is done in this stage using an apt framework and programming language, which would solve the specific problem the best way. Once the design is coded into a working application, it has to be verified, validated and tested in detail. The tested product if successful is deployed in the user environment.

5.1   SYSTEM VERIFICATION

System Verification answers the question "am I building the product right?" It includes the review of interim work steps and interim deliverables during a project to ensure they are acceptable. Verification also determines if the system is consistent, adheres to standards, uses reliable techniques and prudent practices, and performs the selected functions in the correct manner. In data access, it verifies whether the right data is being accessed, in terms of the right place and in the right way.

5.2   SYSTEM VALIDATION

Validation answers the question "am I building the right product?" This checks whether the developer is moving towards the right product, whether the development is moving towards the actual intended product that was agreed upon in the beginning. Validation also determines if the system complies with the requirements and performs functions for which it is intended and meets the organization's goals and user needs. It is traditional and is performed at the end of the project. In data access, it checks whether we are accessing the right data, in terms of data required to satisfy the requirement.

CHAPTER 6

6 TESTING

Testing is a critical element of software quality and assurance and represents the ultimate review of specification design and coding. It is a vital activity that has to be enforced in the development of a system. This could be done in parallel during all the phases of system development. The feedback received from these tests can be used for further enhancement of the system under consideration. The testing phase conducts test using the Software Requirement Specification as a reference and with the goal to see whether the system satisfies the specified requirements.

The main types of tests carried out on Mobile End User Testing are:

- Unit Test
- Integration Test
- System Test

6.1 UNIT TESTING

Module or Unit Testing is the process of testing all the program units that make up a system. Unit testing focuses on an individual module thus allowing one to uncover all the errors made logically and while coding in the module.

In Mobile End User Testing each page is tested separately as a unit. Initially the flow of control and data through that page is checked. When considering a module as a unit, the flow of data and control through the whole module is tested. The result is stored in the test plan. In a page, each control is further tested in unit testing. The process is done in all the pages of the system. Once the errors are rectified, the testing procedure is repeated with same test cases to ensure this hasn't produced new errors. Hence this is a continuous process.

6.1.1 UNIT TEST PLAN

Test Execution Procedure:

- Test cases are prepared according to design / specifications.
- Each Test case and the items under test are documented in detail in a set format.
- The input and the initial values are then filled in the Unit Test Plan (UTP) as per each test case & theoretical values evaluated ,reviewed and executed.

Test Case

Sl No	Test Case	Test Procedure	Pre-condition	Expected result	Status
1	Fields-Invalid Input	Give some Invalid integer input as '$^a','as3','@#12',' -345'	None	It should give customized error message such as "You have entered some wrong data "	Passed
2	Field-Valid Input	Give Some Valid Integer Input as '123'	None	Should accept the given input	Passed
3	Field -Invalid Input	Give some Invalid Character as 'aq1','as@','@%' and null values.	None	It should give customized error message such as "You have entered some wrong data "	Passed
4	Field-Valid Input	Give Some Valid Character Input as 'asd'	None	Should accept the given input	Passed
5	Field- NULL Input	Give null values as input	None	It should give customized error message such as "You have entered some wrong data "	Passed
6	Link-Click – Invalid Input	Click the appropriate link when the jsp page has invalid inputs	None	It should give customized error message such as " You have entered some wrong data "	Passed
7	Link-Click – Valid Input	Click the appropriate link when the jsp page has valid inputs	None	Records are added to table or file	Passed

6.2 INTEGRATION TESTING

Integration testing tests the process of integrating the various modules to form the completed system. Integration starts with a set of units each individually tested in isolation and ends when the entire application has been built. Integration testing verifies that the combined units function together correctly. It facilitates in finding problem that occur at interface or communication between the individual parts.

Mobile End User Testing follows top-down integration testing. Modules were linked to the main menu in a sequence as required in the real time operating mode of the system. Menu items were created as and when required for the integration. This process is continued from the page level to module level, finally to the system level. In the final stage, the whole system is taken together and tested for integration. A change in one place should be reflected through out the system. Regression testing is done after each change made into the software. This tests if the change has affected any part of Mobile End User Testing negatively after the change was made. The whole set of test cases need to be run again to do the regression testing.

Also in Mobile End User Testing the integration testing is carried out by simultaneously logging on to the tester's portal to verify whether all the changes related to tester's information are properly reflected and the status change of test units and testers are done perfectly.

6.2.1 INTEGRATION TEST PLAN

The Integration Test Plan entail the development of a document which instructs a tester what tests to perform in order to integrate and test already existing individual code modules.

The objectives of the Integration Test Plan activity are:

- To develop a plan which specifies the necessary steps needed to integrate individual modules and test the integration.

Integration testing involves test cases designed to validate that end-to-end processes are properly working together. It's a logical extension of unit testing and is performed to establish whether the components interact with each other according to the specification.

Integration testing is accomplished through the execution of predefined business flows, or scenarios, that emulate how the system will run the business.

Purpose and Scope of Integration Test:

Integration is a systematic approach to build the complete software structure specified in the design from unit-tested modules. While doing integration, tests are conducted to find defects associated with interfacing. Integration testing validates the interfaces within the application i.e., among different modules being integrated. The external interfaces of the modules with other systems in the business environment are tested.

The integration plan describes the sequence of integration, overhead software test environment and resources required. The integration environment include: Physical characteristics of the hardware, Communications software, System software, Mode of usage (e.g., stand-alone) and any other software or supplies to support integration. If necessary, the level of security that must be provided for the test facilities, system software, and proprietary components such as software, data, and hardware are also to be specified. If there are common procedures to be adopted across test cases to check results (for instance, comparing two output files), they have to be identified.

Test Cases

Sl No.	Test Case	Test Procedure	Pre-Condition	Expected Result	Status
1	Data - Insertion_Valid	Insert Data	None	The data inserted should be available in all modules	Passed
2	Data - Insertion_Invalid	Does not insert value on any of the fields	None	Should Display Appropriate Error Message	Passed
3	Data - Updating_Valid	Update Data	None	Data should get updated in Database and should be reflected in all modules.	Passed
4	Data - Updating_Invalid	Enter Inappropriate value	None	Should Display Appropriate Error Message	Passed

5	Delete - Data_Valid	Delete Data	None	Deleted data should get deleted from Database and should be reflected in all modules.	Passed
6	Delete- Data__InValid	Delete Data without selection	None	Should Display Appropriate Error Message	Passed
7	Login - Valid_Input	Give valid Username, password, etc.,	None	Should connect with the server and display welcome message.	Passed
8	Login - InValid_Input	Give Invalid Username, Password,	None	Should Display Appropriate Error Message.	Passed

6.3 SYSTEM TESTING

System testing is actually a serious of different tests, whose primary purpose is to fully exercise the computer-based system. This helps in verifying that all the system elements have been properly integrated and perform the allocated functions. It verifies the entire product after having integrated all software and hardware components, and validates it according to the original project requirement. The system testing takes into consideration the hardware, and the software.

6.3.1 SECURITY TESTING

Security testing is important in system testing. The system in no way shall be accessible to unauthorized users. Testing is done to ensure that a user with respective rights can only view the various modules and reports presented by Mobile End User Testing. If users try to perform something beyond his assigned rights corresponding messages should be displayed. The Mobile End User Testing in such cases displays a error message.

Another security issue involves the sensitive data in the system. The system is highly secure with authentication fixed at various levels of the hierarchy.

One more level of security is concerned with user rights. Each user is applied rights module wise, page wise and individual control wise. . The menus can be configured to roles. Users can also be configured to roles. Menu items are assigned to users

dynamically based on the roles assigned to menu items as well as users. A match is done before displaying the menu to the user.

6.3.2 STRESS TESTING

Stress Testing executes a system in a manner that demands resources in abnormal quantity, frequency or volume. Mobile End User Testing was stress tested by all employees in the project and accessing simultaneously to various modules in the system.

6.4 TESTING TOOL-MERCURY QUALITY CENTER
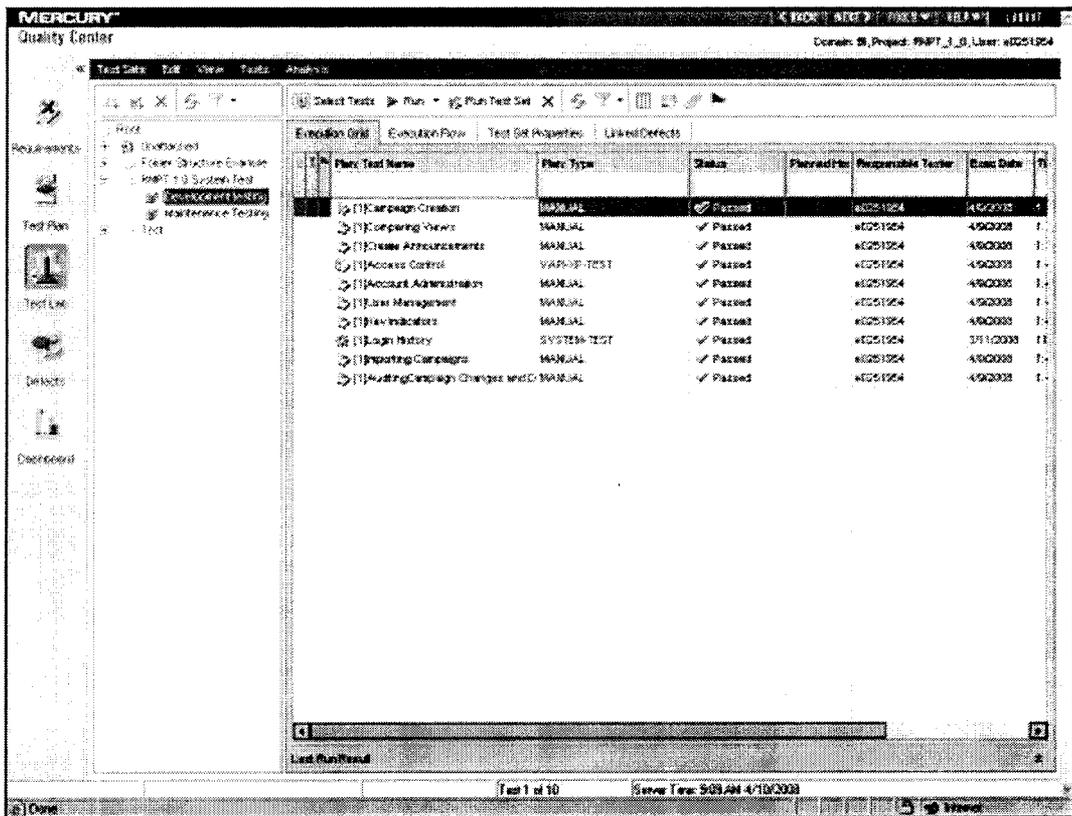
Fig 6-1 Mercury Quality Center

CHAPTER 7

7   CONCLUSION

The Mobile End User Testing enables the project team to get rid of a very tedious and time consuming process which has been followed so far. By automating the entire process and report generation process the team lead and managers are spared of a cumbersome and repetitive task. It also eliminates the possibility of any error or defects in manufacturing of mobiles.

When fully deployed, the Mobile End User Testing provides a uniform interface for conducting queries and generating reports on demand.

The information in the system should be maintained up to date with periodic updates. The security feature of the system allows only team leads and managers to make updates to important and sensitive data. It prevents unauthorized access to important data.

Thus the Mobile End User Testing increases the efficiency, performance of the team leads, managers, and testers by enabling them to spend more time on testing. The reports provided to the top management are error free and leads to improved decision making.

CHAPTER 8

8 FUTURE ENHANCEMENT

The following features listed below if introduced could benefit the users of the system.

- Attachments of documents regarding the project to be sent to testers would be made available.

- Tester Acceptance for testing a particular product feature which enables to specialize the tester more in that product.

- Tester points system is enhanced with project credit and debits points feature

- A Discussion forum for the available testers would be made available.

- User roles of the system would be enhanced.

APPENDIX 1

SAMPLE SCREENS

Login page

Login

Mobile End User Testing Application

MOE Account   Environment

[   ]   [--Select Environement-- ▾] Go
                   → Forgot your password?

Welcome to Mobile End User Testing

MEUT is for capturing the valuable feedback from the end-user.

A systematic approach for end-user level validation and verification in different special fous testing areas for MEUT products enhances manageability of the overall flow of feedback and better visibility to the value chain and cost structure

You can login by typing your MOE Account and your password into the according fields on the top of this page and clicking 'Go'.

Best regards

Your MEUT team.

Home Page
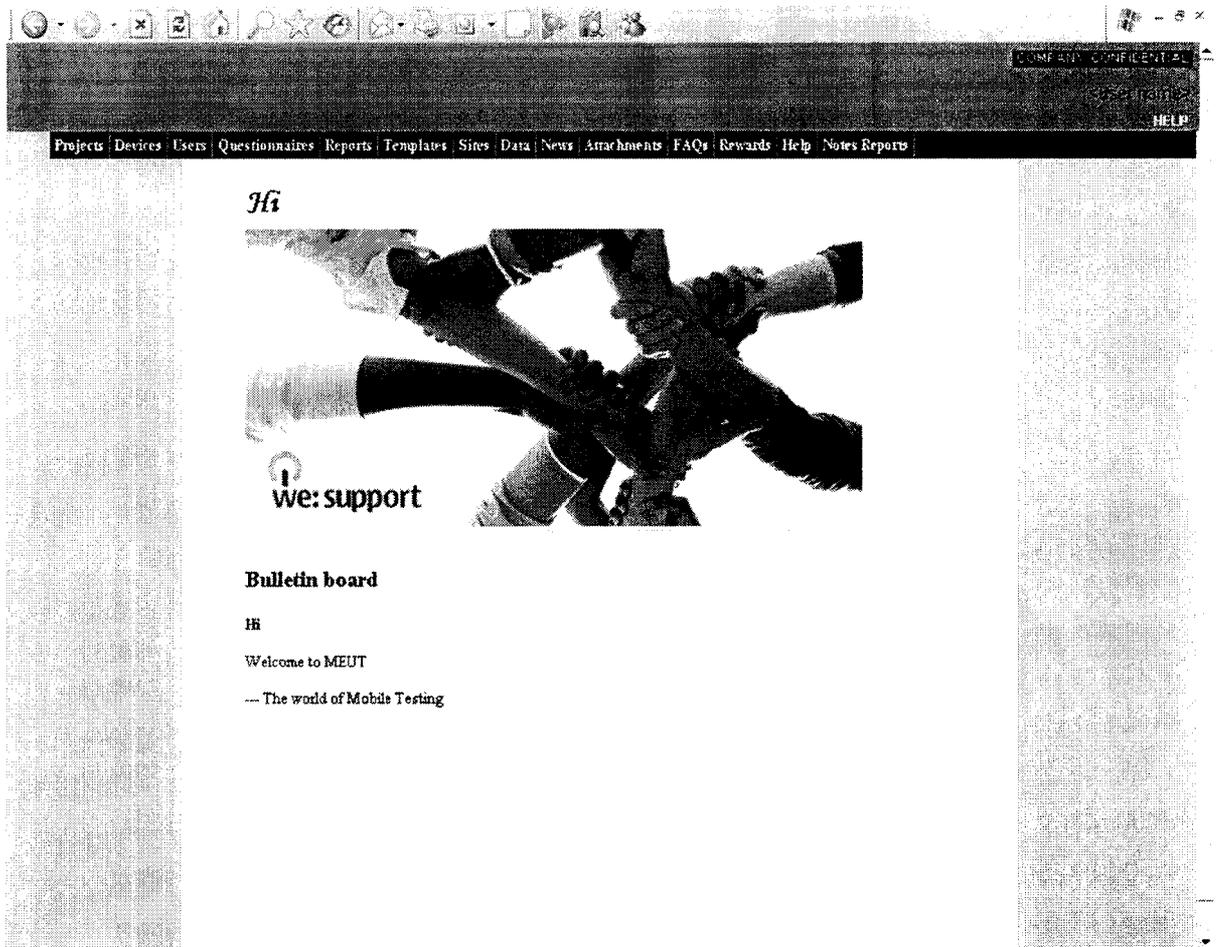
Devices home page

Devices details page

Test Units
SIM Cards
Accessories

Devices

000000000000009

Sales name:	AAaprojl
IMEI:	000000000000009
Project:	AAaprojl
Site:	AAasit
Status:	Sent To Tester
HW revision:	HVer1
SW revision:	New Software Version, ODI
User:	AAateste, AAateste

Save
Save & Exit
Cancel
Delete
Change History

Add device

Templates home page

All Templates
Contact
SW Update
HW Swap
HW Recall
Invite Testers
System Templates
Gift Announcement
Gift Cancellation
Mobile Device Client Update Template
Pc Client Update Template
Web Service Update Template

Communication Templates

New Template

Template Name	Type	Created
*Name:	BASIC	19.03.2009
0007	BASIC	18.03.2009
1template1	GIFT ANNOUNCEMENT	17.03.2009
99	GIFT ANNOUNCEMENT	07.03.2009
Arun_Contact	BASIC	03.03.2009
Arun_Gift Cancel	GIFT CANCELLATION	03.03.2009
Basic Template	BASIC	12.01.2009
Bbbbbbbbbbbbbbb	BASIC	04.12.2008
Contact Html Test	BASIC	20.02.2009
Cxrvvds	SOFTWARE UPDATE	20.02.2009
G Cancellation	GIFT CANCELLATION	18.12.2008
Gift	GIFT CANCELLATION	20.02.2009
Gift Announcement	GIFT ANNOUNCEMENT	20.02.2009
Gift Announcement111	GIFT ANNOUNCEMENT	18.03.2009
Gift Cacel 111	GIFT CANCELLATION	18.03.2009
Gift Cancellation	GIFT CANCELLATION	30.10.2008
Gift Cancellation 1	GIFT CANCELLATION	06.12.2008
Hardware Recall Template	HARDWARE RECALL	04.12.2008
Hardware Swap Template	HARDWARE SWAP	
Hfghgfhfgh	GIFT ANNOUNCEMENT	05.12.2008
Hhhhhhhhhhhrrrr	HARDWARE RECALL	08.12.2008
Hhhhhhhhhhssssssss	HARDWARE SWAP	04.12.2008
Hi Template	BASIC	18.03.2009
Hi Template 2	BASIC	18.03.2009
Hw Recall Template4/3/09	HARDWARE RECALL	04.03.2009

Add new Template

Sites home page

Home | Projects | Devices | Users | Questionnaires | Reports | Templates | | Data | News | Attachments | FAQs | Rewards | Help | Notes Reports

All Sites
My Sites

Sites

Add Site
Delete Selected

	SITE NAME	REGION	CITY	SITE COORDINATOR
☐	A Chennai	Australia	Zurich	AAAAAAA,BBBBBBBB; A,A; AAAAS,AAASC; AAascl,AAascl;
☐	AA	APAC	Southwood	-
☐	AAAAA	sakari region 2	New Delhi	AAAAS,AAASC;
☐	AAAAAAAAAAAAAA	Australia	Vancouver	AAAAAAA,BBBBBBBB;
☐	AAAAAtestsitereward	Australia	Zurich	AAascl,AAascl;
☐	AAAAshok	sakari region	Vancouver	AAAprabu,AAAshokkkk;
☐	aaaasssss	China	Warsaw	AAAAAAA,BBBBBBBB;
☐	AAaMumbaiii	Australia	Sydney	AAasc,AAasc;
☐	AAAsamplesite	sakari region 2	Salo	AAAprabu,AAAshokkkk;
☐	AAasi	Australia	Turku	AAasc2,AAasc2;
☐	AAasit	MEA	San Francisco	AAascl,AAascl;
☐	AAasite	APAC	Stockholm	AAasc,AAasc;
☐	aaasite	sakari region 2	Mumbai	-
☐	Aalborg	Europe	Aalborg	Subramanian,Puvi, Sc,Sakari; Bakb,Dhayalan, Msc,Andavsc; LLLLLLL,AAAAAAAAA;
☐	adsasd	Australia	Vancouver	-
☐	AIndia	sakari region	Mumbai	P,A;
☐	Ajax	North America	Ajax	Tolani,Kanchan; Msc,Andavsc; scuserl,scuserf;
☐	Akctnew	sakari region	New Delhi	Arun,Ashok;
☐	Andromeda	APAC	Mumbai	AAasc,AAasc;

Data-tester home page contents

Home | Projects | Devices | Users | Questionnaires | Reports | Templates | Sites | News | Attachments | FAQs | Rewards | Help | Notes Reports

Home Content
Tester Home Page
  Default Texts
  Teaser Boxes
Business Groups
Countries
Device Families
Disability
Educations
Fault Symptom Codes
New Idea Codes
Html email images
Interests
Languages
Operators
Phone models
Platforms
Points
Programs
Prmts identification types
Regions
Series
Sim Card Technologies
SFT Areas
Sw Streams
Tags
Technologies
Tester Experience Levels

Tester Home Page

Default Texts

Please, define default texts for the Tester Application Home Page Sections.

My Projects: you have currently no projects test you have currently no
The maximum number of characters you can enter is 85 (with spaces).

My Devices: you have currently no projects test you have currently no
The maximum number of characters you can enter is 85 (with spaces).

News Feeds: you have currently no projects test you!
The maximum number of characters you can enter is 40 (with spaces)

Save Changes   Cancel Changes

Teaser box

Teaser Boxes

* Header: Teaser 1

The maximum number of characters you can enter is 20 (with spaces).

* Body Text:

Teaser 1. This is the first teaser.

The maximum number of characters you can enter is 95 (with spaces).

* Link URL: http://kct.ac.in

Picture: [   ] Browse...

Picture Dimensions are optimized for 135 X 70 pixels.
View current image   9KB   Remove

Save Changes   Cancel Changes   Remove

* Header: Teaser 2

The maximum number of characters you can enter is 20 (with spaces).

* Body Text:

Teaser 2. This is the second teaser.

The maximum number of characters you can enter is 95 (with spaces).

* Link URL: http://wwww.ssss.com

Picture: [   ] Browse...

Picture Dimensions are optimized for 135 X 70 pixels.

Html E-mail images

Home | Projects | Devices | Users | Questionnaires | Reports | Templates | Sites | News | Attachments | FAQs | Rewards | Help | Notes Reports

Home Content
Tester Home Page
Business Groups
Countries
Device Families
Disability
Educations
Fault Symptom Codes
New Idea Codes
Html email images
  Header images
  Body images
  Signature images
Interests
Languages
Operators
Phone models
Platforms
Prints
Programs
Prob Identification types
Regions
Series
Sim Card Technologies
SFT Areas
Sw Streams
Tags
Technologies
Tester Experience Levels

Html email images

Image: [_____] [Browse...] Add New

Please use only approved images. File size must be less than 200 KB.

ID	Name	Size	
34	balloon_notitle.jpg	56 KB	remove
86	balloon_invitation_eng.jpg	72 KB	remove
87	ballooon_pilots_eng.jpg	74 KB	remove
90	arrow_hwrecall_eng.gif	13 KB	remove
91	arrow_hwswap_eng.gif	13 KB	remove
92	arrow_swupdate_eng.gif	13 KB	remove
93	gifts_announce.jpg	21 KB	remove
94	gifts-cancellation.jpg	19 KB	remove

Data tab - Project points

Home Projects Devices Users Questionnaires Reports Templates Sites | News Attachments FAQs Rewards Help Notes Reports

Home Content
Tester Home Page
Business Groups
Countries
Device Families
Disability
Educations
Fault Symptom Codes
New Idea Codes
Html email images
Interests
Languages
Operators
Phone models
Platforms
Points
Programs
Proto identification types
Regions
Series
Sim Card Technologies
SFT Areas
Sw Streams
Tags
Technologies
Tester Experience Levels

Default Activities and Points

Activity	New Value	Current	Max Per Project	Current Max per project
Fill Questionnaire (type SFT)	50	50		
Fill Questionnaire (type FIR)	100	100		
Fill Questionnaire (type SUR)	45	45		
Fill Questionnaire (type UER)	95	95		
Fill Questionnaire (type ADHOC)	10	10		
Fill Questionnaire (type BASIC)	100	100		
Idea report relevant	25	25	3	3
SW update within 24 h	15	15		
SW update within 48 h	5	5		
SW update within 72 h	9	9		
Error report, entry state	5	5	3	3

Save

News Tab home

Home | Projects | Devices | Users | Questionnaires | Reports | Templates | Sites | Data | Attachments | FAQs | Rewards | Help | Notes Reports

News Visibility
Any

Project
Any

Site
Any

Filter By Status
Any

News

Add New

Page 1 of 1

NEWS TITLE	PROJECT NAME	SITE NAME	CREATION DATE	PUBLISHED DATE	EXPIRY DATE	STATUS
000Newscheck drinks 56511	Drinks	-	24-02-2009	11-03-2009	11-03-2009	Published
Again Expiry date check - site nes	-	Espoo / Karaportti	07-01-2009	07-01-2009	07-01-2009	Published
Arun Test	Arun Test	-	28-11-2008	28-11-2008	23-03-2009	Published
arunddd	1st sns	-	05-03-2009	05-03-2009	17-03-2009	Published
asdsdss	kct	-	25-02-2009	25-02-2009	28-02-2009	Published
bangalore multi project 1	multi project 1	Bangalore	19-11-2008	-	30-11-2008	Unpublished
bangalore news	-	Bangalore	19-11-2008	19-11-2008	30-11-2008	Published
dadasdad	-	-	09-12-2008	09-12-2008	31-12-2008	Published
dfdffgfgfgfgfgfgfgfg	sad	-	07-03-2009	-	12-03-2009	Unpublished
Expiry date ceck	-	Mumbai	07-01-2009	07-01-2009	31-01-2009	Published
FDPtest	-	-	25-11-2008	25-11-2008	30-11-2008	Published
fdptestagain	-	-	03-12-2008	09-02-2009	28-02-2009	Published
fdsfsds	First project	Oslo	21-11-2008	21-11-2008	26-11-2008	Published
fileupload_news	Project Y	-	13-01-2009	09-02-2009	13-01-2009	Published
frfrfrfrfr	-	-	08-12-2008	18-12-2008	08-12-2008	Published
Global news 1	-	-	19-11-2008	19-11-2008	31-12-2008	Published

Reward tab home page

Gifts page

REPORTS IDENTIFICATION

- Site Testers Report
- Site Report
- Project Report
- Questions category Report

Questionnaires Questionnaires	Target	All Projects	IPL
	F I R/SUR/UE /SFT/ADHOC		
	Requested	0	0
	Completed	0	0
	Response %	0%	0%
Report Summary			
	Questionnaire submitted		
	First Impressions Reports	0	0
	Start-Up Reports	0	0
	User Experience Reports	0	0
	Special Focus Testing Reports	0	0
	Ad Hoc Reports	0	0
	Other reports		
	Error Reports	0	0
	Improvement Idea Reports	0	0
	Questionnaires submitted per TRUE Tester		
	First Impressions Reports	0	0
	Start-Up Reports	0	0
	User Experience Reports	0	0
	Special Focus Testing Reports	0	0
	Ad Hoc Reports	0	0
	Other reports per TRUE Tester		
SW/HW Activities	Test Units		
	Delivered to Site	0	1
	Assigned to Testers	0	1
	Assigned Test Unit(s) %	0%	0%
	HW Recalls		
	Requested	0	0
	Completed	0	0
	Recall %	0%	0%
	SW Updates		
	Requested	0	0
	Completed	0	0
	Update %	0%	0%
Users			
	User Status for Inactive	0	0
	Invited to a project	0	0
	Accepted to a invitation / Assigned to a project	0	0
	Rejected invitation	0	0
	Rejected invitation for all future projects	0	0
	Blacklisted	4	0

APPENDIX 2

REFERENCES

1. J2EE contents for the web based applications

   Available: http://java.sun.com/javaee/technologies/webapps/-j2ee

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   Available: http://www.sun.com/books/java_series.html

3. "Mastering BEA Web Logic Server: best practices for building and deploying " by Greg Nyberg, Robert Patrick, Paul Bauer Schmidt, Jeff McDaniel, Raja Mukherjee

4. "Oracle Database 10g: DBA handbook" by Kevin Loney, Bob Bryla