**Dental Clinic Services System**

Progress 2

Traceability Record

By

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Miss Pattama Longani

**Traceability Record**

**Revision Table**

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| DCSS - Traceability Record- ver 0.2 | Add Bi-directional metrics System | Draft | 10/20/2014 | Adviser | Kanokwan&Worapun |
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| DCSS - Traceability Record- ver 1.0 | Double check | Release | 10/22/2014 | Adviser | Kanokwan&Worapun |
| DCSS - Traceability Record- ver 1.0 | Correct all document | Release | 11/12/2014 | Adviser | Kanokwan&Worapun |

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# Chapter One: Introduction

## 1. Introduction

### 1.1 Objectives

Dental clinic service system consists of a web application and a mobile application which supports iOS7. The system supports English language for people who are patients, officers, or dentists of dental clinics. Furthermore, it offers some features for visitors who would like to gain information about the clinic. This system will reduce officers’ work and help patients save their time. Patients can find information about the dental clinic and personal information using the mobile application as well as the web application. For the visitor who wants to have a dental treatment from the clinic, he/she can make an appointment with a dentist through the application, and the dentist can use the system for checking patients’ appointment schedule. Dental clinic services system integrates the services that are provided by most dental clinics into the web application and the mobile application. By combining all the services into one, the system provides more convenience to dental clinic users as well as staff.

### 1.2 Purpose

The purpose of the traceability record document is to show relation of the project. The traceability is linked between user requirements to system requirement specification, use case, activity diagram, sequence diagram and user interface design.

## 1.2 Project Scope

The objective of this software design is to specify the requirements that the system should fulfill, which are as follows:

* Dental clinic services system provides an application that is accessible via web browser on a computer and also on a mobile phone.
* Dental clinic services system on mobile phone support iOS.
* Dental clinic services system supports English language only.
* Dental clinic services system provides features for dental clinics’ registered user whose are patients, officers and dentists.
* Dental clinic services system assists managing appointments of patients and dentists using the web application and the mobile application.
* Dental clinic services system provides a user authentication for each patient and dentist through dental clinic officers.
* Dental clinic services system provide features for generate QR code to patients from both web application and mobile application
* Dental clinic services system provide features for managing the queue of dental clinic
* Dental clinic services system assists following up treatment between dentist and patient
* Dental clinic services system provide the feature for promoting the clinic also managing those promotion and information
* Dental clinic services system help visitor and patient to predict the cost of dental care

## 1.3 User Classes and Characteristics

* The system divides users into three groups. Information and characteristics of each group are listed below.
* **Visitor**

This group of user no needs to register to the system to use the services on the website or to use their mobile phone. Visitor is able to:

* Visitor can view dental clinic information and promotion
* Visitor can select dental treatment to estimate the cost
* **Patient**

This group of user needs to be registered to the system at the dental clinic. They will get patientID and password from the clinic to use the services on the website or to use their mobile phone. Patients use their patientID to login. Patients are able to:

* Patient can view their QR code.
* Patient can view follow up question.
* Patient can answer to follow up question.
* Patient can view dental clinic information and promotion.
* Patient can select dental treatment to estimate the cost.
* **Officer**

This group of users has the highest privilege in the system. They are given access to management functions for maintaining the system. Officers are able to:

* Officer can add patient to a queue and reset queue.
* Officer can add information and promotion into the website.
* Officer can edit information and promotion from the website.
* Officer can delete information and promotion from the website.
* Officer can add dental treatment and cost into the website.
* Officer can edit dental treatment and cost from the website.
* Officer can delete dental treatment and cost from the website.
* Officer can view all dental treatment.

**Dentist**

This group of user needs to be registered to the system at the dental clinic. They will register their account at the clinic. Dentist uses their dentistID and password to login to the system to use the services. Dentists are able to:

* Dentist can view their follow up question.
* Dentist can post question to follow up their patient

## 1.4 Operation Environment

Dental clinic services system uses web service technology and iOS technology. All the characters must have the Internet connection. Patients who want to use the mobile application must use a smartphone which supports iOS7.

## 1.5 Acronyms and Definitions Acronyms

|  |  |
| --- | --- |
| **Acronyms** | **Stands for** |
| Registered User | Patient, Dentist, and Officer |
| Non-registered User | Visitor |
| PSR | Project Status Report |
| PM | Project Management |
| PMP | Project Management Plan |
| URS | User Requirement Specification |
| SRS | Software Requirement Specification |
| VSE | Very Small Entity |
| QR code | Quick Response Code |
| UC | Use Case |
| AD | Activity Diagram |
| UI | User Interface |
| UTC | Unit Test Case |
| STC | System Test Case |
| CD | Class Diagram |
| SD | Sequence Diagram |

# Chapter Two: Bi-directional metrics System

## 2. Bi-directional metrics System

### 2.1 Bi-directional metrics System: Requirement Specifications and User Requirement Specification

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| No. | System requirement specification | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | SRS-61 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | SRS-62 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | SRS-63 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | SRS-64 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | SRS-65 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | SRS-66 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | SRS-67 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | SRS-68 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | SRS-69 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System requirement specification | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 10 | SRS-70 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | SRS-71 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | SRS-72 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | SRS-73 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | SRS-74 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | SRS-75 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | SRS-76 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | SRS-77 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | SRS-78 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | SRS-79 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | SRS-80 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | SRS-81 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | SRS-82 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| 23 | SRS-83 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | SRS-84 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 | SRS-85 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26 | SRS-86 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 | SRS-87 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 | SRS-88 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29 | SRS-89 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 | SRS-90 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 | SRS-91 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32 | SRS-92 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33 | SRS-93 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34 | SRS-94 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35 | SRS-95 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| No. | System requirement specification | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 36 | SRS-96 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 | SRS-97 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38 | SRS-98 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 | SRS-99 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 | SRS-100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41 | SRS-101 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42 | SRS-102 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 43 | SRS-103 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 44 | SRS-104 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 45 | SRS-105 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 46 | SRS-106 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 47 | SRS-107 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 48 | SRS-108 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System requirement specification | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 49 | SRS-109 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 50 | SRS-110 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 51 | SRS-111 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 52 | SRS-112 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 53 | SRS-113 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 54 | SRS-114 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 55 | SRS-115 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 56 | SRS-116 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 57 | SRS-117 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 58 | SRS-118 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 59 | SRS-119 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 | SRS-120 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 61 | SRS-121 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.2 Bi-directional metrics: Use Case and User Requirement Specification

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| No. | Use case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | UC-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | UC-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | UC-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | UC-29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | UC-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | UC-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | UC-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | UC-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | UC-34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | UC-35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | UC-36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | UC-37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| No. | Use Case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 13 | UC-38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | UC-39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | UC-40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | UC-41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | UC-42 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | UC-43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | UC-44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | UC-45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | UC-46 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | UC-47 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | UC-48 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.3 Bi-directional metrics: Activity Diagram and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Activity Diagram | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | AD-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | AD-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | AD-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | AD-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | AD-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | AD-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | AD-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | AD-29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | AD-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | AD-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | AD-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | AD-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | Activity Diagram | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 13 | AD-34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | AD-35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | AD-36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | AD-37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | AD-38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.4 Bi-directional metrics: Class Diagram and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Class Diagram | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | CD-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | CD-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | CD-03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | CD-04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | CD-05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | CD-06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | CD-07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | CD-08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | CD-09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | CD-10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | CD-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | Class Diagram | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 12 | CD-12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.5 Bi-directional metrics: Sequence Diagram and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Sequence Diagram | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | SD-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | SD-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | SD-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | SD-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | SD-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | SD-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | SD-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | SD-29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | SD-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | SD-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | SD-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | Sequence Diagram | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 13 | SD-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | SD-34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | SD-35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | SD-36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | SD-37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | SD-38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | SD-39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | SD-40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.6 Bi-directional metrics: User Interface Design and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | User Interface Design | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | UI-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | UI-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | UI-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | UI-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | UI-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | UI-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | UI-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | UI-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | UI-29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | UI-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | UI-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | UI-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | User Interface Design | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 13 | UI-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | UI-34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | UI-35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | UI-36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | UI-37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | UI-38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | UI-39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | UI-40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | UI-41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | UI-42 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | UI-43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.7 Bi-directional metrics: System Test Case and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | System Test Case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | STC-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | STC-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | STC 34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | STC -35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | STC -36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | STC -37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | STC -38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | STC -39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | STC -40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | STC -41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | STC -42 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | STC -43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System Test Case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 13 | STC -44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | STC -45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | STC -46 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | STC -47 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | STC -48 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | STC-49 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | STC-50 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | STC-51 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | STC-52 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | STC-53 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | STC-54 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.8 Bi-directional metrics: Unit Test Case and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Unit Test Case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 1 | UTC-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | UTC-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | UTC-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | UTC-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | UTC 29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | UTC-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | UTC-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | UTC-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | UTC-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | UTC-34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | UTC-35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | UTC-36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | Unit Test Case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 13 | UTC-37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | UTC-38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | UTC-39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | UTC-40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | UTC-41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | UTC-42 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | UTC-43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | UTC-44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | UTC-45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | UTC-46 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | UTC-47 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | UTC-48 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Unit Test Case | URS-26 | URS-27 | URS-28 | URS-29 | URS-30 | URS-31 | URS-32 | URS-33 | URS-34 | URS-35 | URS-36 | URS-37 | URS-38 | URS-39 | URS-40 | URS-41 | URS-42 | URS-43 | URS-44 | URS-45 | URS-46 | URS-47 | URS-48 |
| 25 | UTC-49 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26 | UTC-50 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 | UTC-51 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 | UTC-52 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29 | UTC-53 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 | UTC-54 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 | UTC-55 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

# Chapter Three: Traceability record

## 3. Traceability record

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| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-26 | SRS-01  SRS-38  SRS-61  SRS-109 | AD-22 | UC-26 | SD-22 | STC-32 | UI-38 | UTC-55 | CD-10  CD-11  CD-12 |
| URS-27 | SRS-01  SRS-38  SRS-62  SRS-110 | AD-23 | UC-27 | SD-37 | STC-33 | UI-21 | UTC-31 | CD-04  CD-05  CD-06 |
| URS-28 | SRS-01  SRS-111  SRS-112  SRS-113  SRS-114  SRS-115  SRS-116  SRS-117  SRS-118  SRS-119 | AD-24 | UC-28 | SD-38 | STC-34 | UI-26  UI-27  UI-28 | UTC-46  UTC-47 | CD-07  CD-08  CD-09 |
| URS-29 | SRS-01  SRS-117  SRS-120  SRS-121 | AD-25 | UC-29 | SD-39 | STC-35 | UI-29 | UTC-48 | CD-07  CD-08  CD-09 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-30 | SRS-01  SRS-63  SRS-67  SRS-68  SRS-70  SRS-71 | AD-26 | UC-30 | SD-23 | STC-36 | UI-22 | UTC-32 | CD-01  CD-02  CD-03 |
| URS-31 | SRS-01  SRS-59  SRS-63  SRS-64  SRS-67  SRS-68  SRS-70  SRS-71  SRS-72  SRS-73  SRS-104  SRS-105  SRS-106  SRS-107 | AD-27 | UC-31 | SD-24 | STC-37 | UI-23 | UTC-33  UTC-34  UTC-35 | CD-01  CD-02  CD-03 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-32 | SRS-01  SRS-67  SRS-70  SRS-100  SRS-101  SRS-103 | AD-28 | UC-32 | SD-23 | STC-38 | UI-24 | UTC-30 | CD-04  CD-05  CD-06 |
| URS-33 | SRS-01  SRS-59  SRS-67  SRS-69  SRS-70  SRS-73  SRS-100  SRS-101  SRS-102  SRS-103  SRS-104  SRS-105  SRS-106  SRS-107 | AD-29 | UC-33 | SD-24 | STC-39 | UI-25 | UTC-28  UTC-29 | CD-04  CD-05  CD-06 |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-34 | SRS-01  SRS-65  SRS-67  SRS-70  SRS-74  SRS-75 | AD-30 | UC-34 | SD-33 | STC-40 | UI-39  UI-40 | UTC-54 | CD-10  CD-11  CD-12 |
| URS-35 | SRS-01  SRS-59  SRS-67  SRS-69  SRS-70  SRS-73  SRS-100  SRS-101  SRS-102  SRS-103  SRS-104  SRS-105  SRS-106  SRS-107 | AD-31 | UC-35 | SD-34 | STC-41 | UI-41 | UTC-52  UTC-53 | CD-10  CD-11  CD-12 |
| URS-36 | SRS-01  SRS-76  SRS-77  SRS-78  SRS-90  SRS-52 | AD-32 | UC-36 | SD-25 | STC-42 | UI-36 | UTC-27 | CD-04  CD-05  CD-06 |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-37 | SRS-01  SRS-76  SRS-80  SRS-81 | AD-33 | UC-37 | SD-35 | STC-43 | UI-43 | UTC-51 | CD-10  CD-11  CD-12 |
| URS-38 | SRS-01  SRS-59  SRS-76  SRS-82  SRS-83  SRS-87 | AD-34 | UC-38 | SD-26 | STC-44 | UI-30 | UTC-41  UTC-45 | CD-07  CD-08  CD-09 |
| URS-39 | SRS-01  SRS-59  SRS-76  SRS-77  SRS-85  SRS-87 | AD-35 | UC-39 | SD-27 | STC-45 | UI-31  UI-32 | UTC-42  UTC-43  UTC-45 | CD-07  CD-08  CD-09 |
| URS-40 | SRS-01  SRS-76  SRS-84  SRS-86  SRS-87 | AD-36 | UC-40 | SD-28 | STC-46 | UI-32 | UTC-44  UTC-45 | CD-07  CD-08  CD-09 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-41 | SRS-01  SRS-76  SRS-80 | AD-37 | UC-41 | SD-25 | STC-47 | UI-36 |  |  |
| URS-42 | SRS-01  SRS-88  SRS-90  SRS-91  SRS-92  SRS-93 | AD-38 | UC-42 | SD-29 | STC-48 | UI-37 | UTC-25  UTC-26 | CD-04  CD-05  CD-06 |
| URS-43 | SRS-01  SRS-89  SRS-90  SRS-92  SRS-93  SRS-94 | AD-39 | UC-43 | SD-36 | STC-49 | UI-42 | UTC-49  UTC-50 | CD-10  CD-11  CD-12 |
| URS-44 | SRS-01  SRS-59  SRS-79  SRS-90  SRS-95  SRS-96  SRS-108 | AD-40 | UC-44 | SD-29 | STC-50 | UI-37 |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** | **CD** |
| URS-45 | SRS-01  SRS-59  SRS-79  SRS-90  SRS-95  SRS-96  SRS-108 | AD-41 | UC-45 | SD-30 | STC-51 | UI-33 | UTC-36 | CD-07  CD-08  CD-09 |
| URS-46 | SRS-01  SRS-59  SRS-90  SRS-97  SRS-99  SRS-108 | AD-42 | UC-46 | SD-31 | STC-52 | UI-34  UI-35 | UTC-37  UTC-38 | CD-07  CD-08  CD-09 |
| URS-47 | SRS-01  SRS-90  SRS-96  SRS-98  SRS-108 | AD-43 | UC-47 | SD-32 | STC-53 | UI-35 | UTC-39 | CD-07  CD-08  CD-09 |
| URS-48 | SRS-01  SRS-108 | AD-44 | UC-48 | SD-40 | STC-54 | UI-35 | UTC-40 | CD-07  CD-08  CD-09 |

# Chapter Four: Appendix

## 4. Appendix

### 4.1 User Requirement Specification

## Feature 4: Patient identification using QR code

URS-26: Patient can view their QR code from mobile application

URS-27: Patient can view their QR code from website

URS-28: Officer can add patient to a queue

URS-29: Officer can reset queue

## Feature 5: Dental care consulting and following up

* URS-30: Dentist can view his/her patient follow up message as a list
* URS-31: Dentist can post question to follow up his/her patient
* URS-32: Patient can view follow up massage that his/her dentist asked in the

websiteas a list

* URS-33: Patient can answer follow up massage that his/her dentist asked in the

websiteas a list

* URS-34: Patient can view follow up massage that his/her dentist asked in mobile

applicationas a list

* URS-35: Patient can answer view follow up massage that his/her dentist asked in

mobile applicationas a list

## Feature 6: A dental clinic information and promotion

* URS-36: Patient can view the dental clinic information and promotion in the
* website
* URS-37: Patient can view the dental clinic information and promotion in mobile
* application
* URS-38: Officer can add the information and promotion to the database
* URS-39: Officer can edit the dental clinic information and promotion in the database
* URS-40: Officer can delete the dental clinic information and promotion from the database
* URS-41: Visitor can view the dental clinic information and promotion

## Feature 7: Cost estimation of dental treatments

* URS-42: Patient can select the dental treatment to estimate the cost by his/herself
* in the website
* URS-43: Patient can select the dental treatment to estimate the cost by his/herself
* in the mobile application
* URS-44: Visitor can select the dental treatment to estimate the cost by his/herself
* in the website
* URS-45: Officer can add dental treatment information including the detail and
* cost into the database
* URS-46: Officer can edit dental treatment information including the detail and
* cost in the database
* URS-47: Officer can delete dental treatment information from the database
* URS-48: Officer can view dental treatment information as a list

### 4.2 System Requirement Specification

**SRS-61:** System shall generate the patient’s QR code in mobile application

**SRS-62:** System shall provide the patient’s QR code in the website

**SRS-63:** System shall provide the dent follow up page in the website

**SRS-64:** System shall provide the follow up form in the dentist follow up page in the website

**SRS-65:** System shall provide the follow up page in the mobile application

**SRS-66:** System shall provide the follow up form in the follow up page in the mobile application

**SRS-67:** System shall retrieve the patient’s message data from followup table including the answer message from the database

**SRS-68:** System shall provide the patient’s message data as a list from followup table display in the dentist follow up page in the website

**SRS-69:** System shall add the patient’s message data including question and answer into the followup table in the database

**SRS-70:** System shall retrieve the dentist’s message data including question from followup table in the database

**SRS-71:** System shall provide the dentist’s message data as a list from followup table in the database display in the dentist follow up page in the website

**SRS-72:** System shall add the dentist’s message data into the followup table including question and answer into the database

**SRS-73:** System shall update follow up table in the database

**SRS-74:** System shall provide the patient’s follow up message data as a list from followup table in the database display in the follow up page in the mobile application

**SRS-75:** System shall provide the dentist’s follow up message data as a list from followup table in the database display in the follow up page in the mobile application

**SRS-76:** System shall retrieve the dental clinic information data and promotion’s data from information table including the description from the database

**SRS-77:** System shall provide the dental information’s data or promotion’s data from information table in the edit information and promotion form

**SRS-78:** System shall provide the dental clinic promotion’s data and information’s data from information table display in the information and promotion page in the website

**SRS-79:** System shall provide the create dental treatment page

**SRS-80:** System shall provide the dental clinic promotion’s data and information’s data in the information and promotion page in mobile application

**SRS-81:** System shall provide the dental clinic information and promotion page in the mobile application

**SRS-82:** System shall provide the create information and promotion page

**SRS-83:** System shall add dental clinic information’s data or promotion’s data into the information table in the database including dental information description

**SRS-84:** System shall update information and promotion table in the database

**SRS-85:** System shall edit dental clinic information’s data or promotion’s data in information and promotion table in the database

**SRS-86:** System shall delete dental clinic information’s data or promotion’s data from information and promotion table in the database

**SRS-87:** System shall provide the dental information and promotion as a list from the information table in the database display in all information and promotion page

**SRS-88:** System shall provide the cost estimation page in website

**SRS-89:** System shall provide the cost estimation page in mobile application

**SRS-90:** System shall retrieve the dental treatments’ data including dental treatment name, description and cost from treatment table in the database

**SRS-91:** System shall provide the dental treatment data as a list from the treatment table in the database to display in the cost estimation page

**SRS-92:** System shall calculate the dental treatment cost

**SRS-93:** System shall provide the totally cost of dental treatment that the user selected

**SRS-94:** System shall provide the dental treatment data as a list from treatment table in the database in the cost estimation page in mobile application

**SRS-95:** System shall add the dental treatment information data including dental treatment name, description and cost into the information table in the database

**SRS-96:** System shall update the treatment table in the database

**SRS-97:** System shall edit dental treatment information’s data in the treatment table in the database

**SRS-98:** System shall delete dental clinic information’s data from the treatment table in the database

**SRS-99:** System shall provide the dental treatment‘s data including dental treatment name, description and cost from treatment table in the database in the dental treatment edit form

**SRS-100:** System shall provide the patient follow up page in the website

**SRS-101:** System shall provide the follow up form in the patient follow up page in the website

**SRS-102:** System shall provide the patient’s message data as a list from followup table in the database display in the patient follow up page in the website

**SRS-103:** System shall provide the dentist’s message data as a list from followup table in the database display in the patient follow up page in the website

**SRS-104:** System shall return true if the question is already save

**SRS-105:** System shall return false if the question is not saved yet

**SRS-106:** System shall return true if the answer is already save

**SRS-107:** System shall return false if the answer is not saved yet

**SRS-108:** System shall provide the dental treatment data as a list from treatment table in the database display in all dental treatment page

**SRS-109:** System shall provide the patients’ information from patient table in the database including patient name, last name, age, gender, treatment, address, email ,telephone number and QR code display in view information page in mobile application

**SRS-110:** System shall provide the patients’ information from patient table in the database including patient name, last name, age, gender, treatment, address, email ,telephone number and QR code display in view information page in the website

**SRS-111:** System shall provide page for checking an appointment date and time

**SRS-112:** System shall check time of input patientID and return the time of appointment

**SRS-113:** System shall check time of input patientID and return “Not today” for not match date

**SRS-114:** System shall check time of input patientID and return “No appointment” for the patientID that are not appointed

**SRS-115:** System shall check time of input patientID and return “You’re missed” for the patientID that are late

**SRS-116**: System shall provide check time result page

**SRS-117:** System shall provide the add queue page to add patient to a queue

**SRS-118:** System shall add patient into a queue

**SRS-119:** System shall shift patient to a next queue

**SRS-120:** System shall provide the page for reset a queue

**SRS-121:** System shall set all queue to be empty

**4.3 Use Case**

**UC-26:** View patients’ information and QR code(mobile)

**UC-27:** View patients’ information and QR code(in website)

**UC-28:** Add patient to a queue

**UC-29:** Reset queue

**UC-30:** Display his/her follow up message

**UC-31:** Post the question for following up with his/her patient

**UC-32:** Display follow up message

**UC-33:** Answer follow up question

**UC-34:** Display follow up message (mobile application)

**UC-35:** Answer follow up question (mobile application)

**UC-36:** Display dental clinic informationand promotion(website**)**

**UC-37:** Display dental clinic information and promotion (mobile application)

**UC-38:** Add dental clinic information

**UC-39:** Edit dental clinic information

**UC-40:** Delete dental clinic information

**UC-41:** Display dental clinic informationand promotion(website**)**

**UC-42:** Estimate the dental treatment cost (website)

**UC-43:** Estimate the dental treatment cost (mobile application)

**UC-44:** Estimate the dental treatment cost (website)

**UC-45:** Add dental treatment

**UC-46:** Edit dental treatment

**UC-47:** Delete dental treatment

**UC-48:** View dental treatment information

### 4.4 Activity Diagram

**AD-22:** Display patients’ information and QR code in website

**AD-23:** Display patients’ information and QR code in mobile application

**AD-24:** Add patient to a queue

**AD-25:** Reset queue

**AD-26:** Display his/her follow up message

**AD-27:** Post the question for following up with his/her patient

**AD-28:** Display follow up message

**AD-29:** Answer follow up question

**AD-30:** Display follow up message

**AD-31:** Answer follow up question in mobile application

**AD-32:** Display dental clinic informationand promotion in website

**AD-33:** Display dental clinic informationand promotion in mobile application

**AD-34:** Add dental clinic information

**AD-35:** Edit dental clinic information

**AD-36:** Delete dental clinic information

**AD-37:** Display dental clinic information and promotion(website**)**

**AD-38:** Estimate the dental treatment cost in website

**AD-39:** Estimate the dental treatment cost in mobile application

**AD-40:** Estimate the dental treatment cost (website)

**AD-41:** Add dental treatment

**AD-42:** Edit dental treatment

**AD-43:** Delete dental treatment

**AD-44:** Delete dental treatment

### 4.5 Class Diagram

CD-01: Dentist\_Model

**CD-02:** Dentist\_Controller

**CD-03:** Dentist\_manage

CD-04: Patient\_Model

CD-05: Patient\_Controller

CD-06: Patient\_manage

CD-07: Officer\_Model

CD-08: Officer\_manage

CD-09: Officer\_Controller

CD-10: PatientMobile\_Controller

CD-11: PatientMobile\_manage

CD-12: PatientMobile\_Model

### 4.6 Sequence Diagram

**SD-22:** Use QR code to identify him/herself

**SD-23:** View follows up page

**SD-24:** Reply follows up message

**SD-25:** View dental clinic information and promotion

**SD-26:** Add dental clinic information and promotion

**SD-27:** Edit dental clinic information and promotion

**SD-28:** Delete dental clinic information and promotion

**SD-29:** Cost estimation of dental treatments

**SD-30:** Add dental treatment

**SD-31:** Edit dental treatment

**SD-32:** Delete dental treatment

**SD-33:** View the follow message in mobile application

**SD-34:** Reply the message the follow message in mobile application

**SD-35:** View dental clinic information and promotion in the mobile application

**SD-36:** Estimate the cost of dental treatment in mobile application

**SD-37:** Patient can view their QR code from website

**SD-38:** Officer can add patient to a queue

**SD-39:** Officer can reset queue

**SD-40:** Officer can view dental treatment information as a list

### 4.7 User Interface Design

**UI-21:** View the QR code and patient’s information in the website

**UI-22:** Display patient follow up as a list

**UI-23:** Dentist input the follow up message

**UI-24:** Display dentist’s follow as a list

**UI-25:** Patient input reply message from dentist follow up

**UI-26:** Officer add patient appointment queue

**UI-27:** Check patient appointment queue

**UI-28:** Display patient appointment queue

**UI-29:** Reset patient appointment queue

**UI-30:** Officer add dental clinic information or promotion

**UI-31:** Officer edit dental clinic information or promotion

**UI-32:** Display all dental clinic information and promotion as a list

**UI-33:** Officer add dental treatment

**UI-34:** Officer edit dental treatment

**UI-35:** Display all dental treatment as a list

**UI-36:** Display information and promotion

**UI-37:** Estimate the dental treatment cost

**UI-38:** View the QR code and patient’s information in mobile application

**UI-39:** View dentist follow up message in mobile application

**UI-40:** Selects the dentist message to answer

**UI-41:** Input answer into the follow up form

**UI-42:** Estimate the dental treatment cost

**UI-43:** View the dental clinic information and promotion

### 4.8 System Test Case

**STC-32:** Patient can view their QR code from mobile application

**STC-33:** Patient can view their QR code from website

**STC-34:** Officer can add patient to a queue

**STC-35:** Reset queue

**STC-36:** Dentist can view his/her patient follow up message as a list

**STC-37:** Dentist can post question to follow up his/her patient

**STC-38:** Patient can view follow up massage that his/her dentist asked in the website as a list

**STC-39:** Patient can answer follow up massage that his/her dentist asked in the website as a list

**STC-40:** Patient can view follow up massage that his/her dentist asked in mobile application as a list

**STC-41:** Patient can answer view follow up massage that his/her dentist asked in mobile application as a list

**STC-42:** Patient can view the dental clinic information and promotion in the website

**STC-43:** Patient can view the dental clinic information and promotion in mobile application

**STC-44:** Officer can add the information to the database

**STC-45:** Officer can edit the dental clinic information in the database

**STC-46:** Officer can delete the dental clinic information from the database

**STC-47:** Visitor can view the dental clinic information and promotion

**STC-48:** Patient can select the dental treatment to estimate the cost by him/herself

**STC-49:** Patient can select the dental treatment to estimate the cost by him/herself in the mobile application

**STC-50:** Visitor can select the dental treatment to estimate the cost by him/herself in the website

**STC-51:** Officer can add dental treatment information including the detail and cost into the database

**STC-52:** Officer can edit dental treatment information including the detail and cost in the database

**STC-53:** Officer can delete dental treatment information including the detail and cost in the database

**STC-54:** Officer can view dental treatment information as a list

### 4.9 Unit Test Case

**UTC-25:** testp\_getAllTreatment

**UTC-26:** testp\_calculate

**UTC-27:** testp\_get\_information

**UTC-28:** testp\_viewFollowUpByQid

**UTC-29:** testp\_answer\_data

**UTC-30:** testp\_view\_follow\_up

**UTC-31:** testp\_view\_detail

**UTC-32:** testd\_get\_p\_db

**UTC-33:** testd\_follow\_up

**UTC-34:** testd\_follow\_up\_data

**UTC-35:** testd\_getAllReply

**UTC-36:** testo\_addDentalTreatment

**UTC-37**: testo\_editDentalTreatment

**UTC-38:** testo\_editDentalTreatment\_data

**UTC-39:** testo\_deleteDentalTreatment

**UTC-40:** testo\_get\_treatment

**UTC-41:** testo\_add\_information

**UTC-42:** testo\_edit\_info

**UTC-43:** testo\_edit\_info\_data

**UTC-44:** testo\_delete\_info

**UTC-45:** testo\_get\_information

**UTC-46:** testo\_check\_time

**UTC-47:** testo\_add\_queue

**UTC-48:** testo\_reset\_queue

**UTC-49:** testpMobile\_getAllTreatment

**UTC-50:** testpMobile\_calculate

**UTC-51**: testpMobile\_get\_information

**UTC-52:** testpMobile\_viewFollowUpByQid

**UTC-53:** testpMobile\_answer\_data

**UTC-54:** testpMobile\_view\_follow\_up

**UTC-55:** testpMobile\_view\_detail