Wireless Sensor-based Application for Managing Theme Park

Traceability Record

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**Document History**

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PC = PabhaweeChuacharoen , NC = Dr. NopponChoosri

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# Chapter One | Introduction

## Purpose

The purpose of the traceability record is to ensure that all requirements defined for a system are tested in the test protocols. The traceability record is a tool both for the validation team, to ensure that requirements are not lost during the validation project, and for auditors, to review the validation documentation.

## 1.2. Project Scope

Wireless sensor-based application for managing theme park is a web application for accumulating and displaying data that were collected from the guests via environmental sensors e.g. temperature sensor, accelerometer sensor, pulse sensor, and RFID technology with the help of Arduino microcontroller. To provide a report on visiting statistics and a unique selling-point, sensors, Wi-Fi module and RFID reader will be attached to the arduino in order to collect data from theme park's guest, then sent them to web server, which the data will be handled and displayed

# Chapter Two | Traceability Record Table

## 2.1 Table: URS – SRS – UC – AD – UI

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | URS | Description | SRS | UC | AD | UI |
| 1 | URS-01 | Ticket sellers can register guest into the system. | SRS-01, SRS-02, SRS-03, SRS-04  SRS-05, SRS-06, SRS-07, SRS-08, SRS-09, SRS-10, SRS-11, | UC-01 | AD-01 | UI-01,UI-02 |
| 2 | URS-02 | Ticket seller can view guest information from the system | SRS-12 | UC-02 | AD-02 | UI-01, UI-03 |
| 3 | URS-03 | Ticket seller can edit guest information from the system | SRS-05, SRS-06, SRS-07, SRS-08, SRS-09, SRS-10, SRS-13, SRS-14, SRS-15, | UC-03 | AD-03 | UI-03, UI-04 |
| 4 | URS-04 | Ticket seller can delete guest information from the system | SRS-16, SRS-17, SRS-18 | UC-04 | AD-04 | UI-03 |
| 5 | URS-05 | Admin can view attraction information from the system | SRS-19 | UC-05 | AD-05 | UI-01, UI-06 |
| 6 | URS-06 | Admin can add attraction information into the system | SRS-04,SRS-20, SRS-21, SRS-22 ,SRS-23, SRS-24, SRS-25, SRS-26, SRS-27, SRS-28, SRS-29 | UC-06 | AD-06 | UI-01, UI-05 |
| 7 | URS-07 | Admin can edit attraction information from the system | SRS-04,SRS-21, SRS-22 ,SRS-23, SRS-24, SRS-25, SRS-26, SRS-27, SRS-28, SRS-29, SRS-30, SRS-31, SRS-32 | UC-07 | AD-07 | UI-06,UI-07 |
| 8 | URS-08 | Admin can delete attraction information from the system | SRS-16, SRS-17, SRS-33 | UC-08 | AD-08 | UI-06 |
| 9 | URS-09 | Guest can enter the entrance gate by representing RFID tag at RFID reader | SRS-34, SRS-35, SRS-36, SRS-37 | UC-09 | AD-09 |  |
| 10 | URS-10 | Guest can exit the exit gate by representing RFID tag at RFID reader | SRS-34, SRS-35, SRS-36, SRS-37 | UC-10 | AD-10 |  |
| 11 | URS-11 | Guest can get through attraction entrance by representing RFID tag at RFID reader | SRS-34, SRS-35, SRS-36, SRS-37 | UC-11 | AD-11 |  |
| 12 | URS-12 | Admin can view a report on numbers of guest visiting the theme park within one week range | SRS-38, SRS-39 | UC-12 | AD-12 |  |
| 13 | URS-13 | Admin can view a report on numbers of guest attending each ride within one week range | SRS-38, SRS-39, SRS-40 | UC-13 | AD-13 | UI-01 |

## 

## 2.2 User Requirement Specification (URS) – Software Requirement Specification (SRS)

| **SRS** | **URS** | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **01** | **02** | **03** | **04** | **05** | **06** | **07** | **08** | **09** | **10** | **11** | **12** | **13** |
|  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  | **X** |  | **X** |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  | **X** |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  | **X** |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  | **X** |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  | **X** |  |  |  |  |  |  |  |  |  |  |
|  | **X** |  | **X** |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  | **X** |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | **X** | **X** | **X** |  |  |
|  |  |  |  |  |  |  |  |  | **X** | **X** | **X** |  |  |
|  |  |  |  |  |  |  |  |  | **X** | **X** | **X** |  |  |
|  |  |  |  |  |  |  |  |  | **X** | **X** | **X** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  | **X** | **X** |
|  |  |  |  |  |  |  |  |  |  |  |  | **X** | **X** |
|  |  |  |  |  |  |  |  |  |  |  |  |  | **X** |

## 2.3 Table: URS – SD – Class

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | URS | Description | SD | Class |
| 1 | URS-01 | Ticket sellers can register guest into the system. | SD-01 | Class-02, Class-05,Class-06, Class-10 |
| 2 | URS-02 | Ticket seller can view guest information from the system | SD-02 | Class-02, Class-05, Class-12 |
| 3 | URS-03 | Ticket seller can edit guest information from the system | SD-03 | Class-02 , Class-05, Class-11 |
| 4 | URS-04 | Ticket seller can delete guest information from the system | SD-04 | Class-02, Class-05 |
| 5 | URS-05 | Admin can view attraction information from the system | SD-05 | Class-01, Class-04, Class-09 |
| 6 | URS-06 | Admin can add attraction information into the system | SD-06 | Class-01, Class-04, Class-07 |
| 7 | URS-07 | Admin can edit attraction information from the system | SD-07 | Class-01, Class-04, Class-08 |
| 8 | URS-08 | Admin can delete attraction information from the system | SD-08 | Class-01, Class-04 |
| 9 | URS-09 | Guest can enter the entrance gate by representing RFID tag at RFID reader | SD-09 | Class-06, Class-13 |
| 10 | URS-10 | Guest can exit the exit gate by representing RFID tag at RFID reader | SD-10 | Class-06, Class-13 |
| 11 | URS-11 | Guest can get through attraction entrance by representing RFID tag at RFID reader | SD-11 | Class-06, Class-13 |
| 12 | URS-12 | Admin can view a report on numbers of guest visiting the theme park within one week range | SD-12 | Class-13, Class-14, Class-15 |
| 13 | URS-13 | Admin can view a report on numbers of guest attending each ride within one week range | SD-13 | Class-13, Class-14, Class-15 |

Chapter Three | Appendix

## *User Requirement Specification*

URS-01: Ticket sellers can register guest into the system.

URS-02: Ticket seller can view guest information from the system.

URS-03: Ticket seller can edit guest information from the system.

URS-04: Ticket seller can delete guest information from the system.

URS-05: Admin can view attraction information from the system.

URS-06: Admin can add attraction information into the system.

URS-07: Admin can edit attraction information from the system.

URS-08: Admin can delete attraction information from the system.

URS-09: Guest can enter the entrance gate by representing RFID tag at RFID reader.

URS-10: Guest can exit the exit gate by representing RFID tag at RFID reader.

URS-11: Guest can get through attraction entrance by representing RFID tag at RFID reader.

URS-12: Admin can view a report on numbers of guest visiting the theme park within one week range.

URS-13: Admin can view a report on numbers of guest attending each ride within one week range.

## *Software Requirement Specification*

SRS-01: System shall provide the registration form that require email, password and confirm password from guest.

SRS-02: System shall provide the submit button for guest to submit the registration form.

SRS-03: System shall provide the error message “Field Vacant” when email or password or confirm password field is empty.

SRS-04: System shall provide the error message “Password does not match” when password and confirm password field are not match.

SRS-05: System shall provide the success message “Account Successfully Created” when the registration success.

SRS-06: System shall add the guest’s information into the system.

SRS-07: System shall provide the login form that requires email, password from guest.

SRS-08: System shall provide the log in button for guest to submit the login form.

SRS-09: System shall provide the error message “Please enter your email” when email field is empty.

SRS-10: System shall provide the error message “Please enter your password” when password field is empty.

SRS-11: System shall provide the error message “Email or Password does not match” when the email or password does not match with database.

SRS-12: System shall provide the log out button for guest to log out from the system.

SRS-13: System shall provide the UI to display the guest information with include email.

SRS-13: System shall provide the edit button for each guest.

SRS-14: System shall provide the form for ticket seller to edit the information.

SRS-15: System shall save the updated guest’s information into the system.

SRS-16: System shall provide the delete button.

SRS-17: System shall provide the confirm dialog box with the message “Are you sure you want to delete this record?”.

SRS-18: System shall delete the guest’s information from the system.

SRS-19: System shall provide a table to display attraction’s information.

SRS-20: System shall provide a user interface for the admin to fill in attraction’s registration form.

SRS-21: System shall validate the name, description and height limit field.

SRS-22: System shall provide the error message “Please fill out this field” when the attraction name field is empty.

SRS-23: System shall provide the error message “Please fill out this field” when the description field is empty.

SRS-24: System shall provide the error message “Please fill out this field” when the height limit field is empty.

SRS-25: System shall provide the error message “Name must be 5-30 characters in length "when length of the attraction name field is exceeding 30 or less than 5 characters.

SRS-26: System shall provide the error message “Description must be 5-60 characters in length" when length of the description field is exceeding 60 or less than 5 characters.

SRS-27: System shall provide the error message “Please enter the number" when the input in the height limit field is not numeric.

SRS-28: System shall provide the error message “Height limit must not be more than 3 digits “when the input in the height limit field is exceed 3 digits.

SRS-29: System shall add the inputted attraction’s information into the system

SRS-30: System shall provide the edit button for each attraction.

SRS-31: System shall provide the form for admin to edit the attraction information.

SRS-32: System shall save the updated information into the system.

SRS-33: System shall delete the attraction's information into the system.

SRS-34: System shall provide the RFID reader.

SRS-35: System shall read the UID from the guest's RFID tag.

SRS-36: System shall send the UID to the web application.

SRS-37: System shall store the UID into the database.

SRS-38: System shall provide a line chart to display the information.

SRS-39: System shall display the message "The activity record is empty".

SRS-40: System shall provide the user interface for users to select an attraction.

## *Use Case*

UC-01: Ticket sellers can register guest into the system.

UC-02: Ticket seller can view guest information from the system.

UC-03: Ticket seller can edit guest information from the system.

UC-04: Ticket seller can delete guest information from the system.

UC-05: Admin can view attraction information from the system.

UC-06: Admin can add attraction information into the system.

UC-07: Admin can edit attraction information from the system.

UC-08: Admin can delete attraction information from the system.

UC-09: Guest can enter the entrance gate by representing RFID tag at RFID reader.

UC-10: Guest can exit the exit gate by representing RFID tag at RFID reader.

UC-11: Guest can get through attraction entrance by representing RFID tag at RFID reader.

UC-12: Admin can view a report on numbers of guest visiting the theme park within one week range.

UC-13: Admin can view a report on numbers of guest attending each ride within one week range.

## *Activity Diagram*

AD-01: Ticket sellers can register guest into the system.

AD-02: Ticket seller can view guest information from the system.

AD-03: Ticket seller can edit guest information from the system.

AD-04: Ticket seller can delete guest information from the system.

AD-05: Admin can view attraction information from the system.

AD-06: Admin can add attraction information into the system.

AD-07: Admin can edit attraction information from the system.

AD-08: Admin can delete attraction information from the system.

AD-09: Guest can enter the entrance gate by representing RFID tag at RFID reader.

AD-10: Guest can exit the exit gate by representing RFID tag at RFID reader.

AD-11: Guest can get through attraction entrance by representing RFID tag at RFID reader.

AD-12: Admin can view a report on numbers of guest visiting the theme park within one week range.

AD-13: Admin can view a report on numbers of guest attending each ride within one week range.