**SERIS**

Solar Energy Research Institute Singapore



Cloud Based Real-time Analytical Monitoring of Photovoltaic Systems

Use Case Model Survey (UCMS)

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| Filing Reference | SE25PT7SERIS/TECH/ANALYSIS/UCMS/WORK IN PROGRESS/TUCMS.doc |
| Document Title | Use Case Model Survey |
| Version | 1.0 |
| Author | Kaung Myat Bo |
| Date Created |  |

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| **Approved by:** | | |
| Name | Designation | Date |
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| **Authorized by:** | | |
| Name | Designation | Date |
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**Revision History**

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| **Revision** | **Date** | **Author** | **Description** |
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| **For Internal use** | | **Date** | **Department** |
| Authorized By |  |  |  |
| Released By |  |  |  |

Table of Contents

[1 Use case diagrams 5](#_Toc534234176)

[1.1 Overall Use Cases Diagram 5](#_Toc534234177)

[2 Actors 6](#_Toc534234178)

[2.1 Station 6](#_Toc534234179)

[2.2 System User 6](#_Toc534234180)

[2.3 Admin 6](#_Toc534234181)

[2.4 Scheduler 6](#_Toc534234182)

[3 Use cases 6](#_Toc534234183)

[3.1 Maintain users 6](#_Toc534234184)

[3.2 Maintain stations 6](#_Toc534234185)

[3.3 Close error report 6](#_Toc534234186)

[3.4 View/select user(s) 7](#_Toc534234187)

[3.5 View/Select station(s) 7](#_Toc534234188)

[3.6 View/Select error report 7](#_Toc534234189)

[3.7 Add persona 7](#_Toc534234190)

[3.8 Send data 7](#_Toc534234191)

[3.9 Upload batch data 7](#_Toc534234192)

[3.10 Login 7](#_Toc534234193)

[3.11 Forget password 8](#_Toc534234194)

[3.12 Reset password 8](#_Toc534234195)

[3.13 Monitor station data 8](#_Toc534234196)

[3.14 Monitor station health 8](#_Toc534234197)

[3.15 Submit error report 8](#_Toc534234198)

[3.16 Download history data 8](#_Toc534234199)

[3.17 View station history information 8](#_Toc534234200)

[3.18 Submit download request 8](#_Toc534234201)

[3.19 Generate download file 8](#_Toc534234202)

[3.20 Clean old fast-data 9](#_Toc534234203)

# Use case diagrams

## Overall Use Cases Diagram



Figure 1 Overall Use Cases

# Actors

All Actors in the system are contained in this package. This is both as a way to organize the model, making it easier to understand, and to provide a way to manage the actors in a single configuration item. If different individuals are responsible for different actors and their related artifacts, the actors should be organized into their own packages and placed under separate configuration control.

## Station

This actor represents PV station which is responsible for sending sensor data as well as health statistics to the cloud service.

## System User

This actor represents the different type of users(personas) who will monitor the assigned real time data and device health statistics, which will be sent from various stations, in rich user interfaces.

## Admin

This actor represents the root user who can create and maintain users, roles, stations information. This user will have other accesses that the system user has.

## Scheduler

This actor represents an application component which will trigger the respective use cases at the specific time.

# Use cases

**The following use cases, from 3.1 – 3.7, are for the admin user.**

## Maintain users

The aim of this use case is to enable the **admin** to create, update and view user information. This use case is extended in View/Select user use case.

## Maintain stations

The aim of this use case is to enable the **admin** to create, update, view and activate/deactivate the existing station in the system. This use case in extended in View/Select station use case.

## Close error report

This use case allows the **admin** to close the error reports raised by the system user.

## View/select user(s)

The aim of this abstract use case is to enable the **admin** to search the users by name and then able to view a list of users as a search result. The admin is also able to select one of the users to see the detailed information of the user. For creating, modifying and activation/deactivation of a user can be done by triggering Maintain Users use case from this use case.

## View/Select station(s)

The aim of this abstract use case is to enable the **admin** to search the stations by name and then able to view a list of stations as a search result. The admin is also able to select one of the stations to see the detailed information of the station. For creating, modifying and activation/deactivation of a station can be done by triggering Maintain Stations use case from this use case.

## View/Select error report

The aim of this use case is for the admin to search the error reports by reference number or station name and report status(open/close).

## Add persona

The aim of this use case is for the admin to create a new persona if the required persona is not present in the system.

**The following use cases, from 3.8 to 3.9, are for Station.**

## Send data

The aim of this use case is for the stations to send sensor data to the system in JSON format. Types of data sent by the station are the followings:

* Fast data (sent every 1 second)
* Slow data (sent every 1 minute)
* Health data (sent every 1 minute)

## Upload batch data

The aim of this use case is for the station to upload a batch of slow data in a day at the end of the day. Data can be lost every 1-minute request and the lost data can be gotten from this batch data and store it in the system.

**The following use cases, from 3.10 to 3.9, are for System User and Admin.**

## Login

The aim of this use case is to enable users to log-in to the system using a unique email address and password. Associated with each username is a system access level which is used to determine the system functions and records that can be accessed.

## Forget password

The aim of this use case is to enable the user to request a one-time reset password link to reset a new password when they forget their own password.

## Reset password

The aim of this use case is to enable the user to reset a new password by using one-time reset password link.

## Monitor station data

The aim of this use case is to enable the user to monitor the real time station sensor data (fast data) on rich user interface.

## Monitor station health

The aim of this use case is to enable the user to monitor the real time station health.

## Submit error report

The aim of this use case is to allow the user to submit the report to the admin if the station has any error.

## Download history data

The aim of this use case is to enable the user to download the slow data from the system for other purposes. The user shall download the data in zip file and data will be prepared in CSV format based on the date range and selected parameters.

## View station history information

The aim of this use case is to enable the user to view history record of the stations. The user shall view the history record in various Rich User Interfaces.

## Submit download request

The aim of this use case is for the user to submit a download request. The instance download of the data must not be done as the system will have a lot of data and system will need time for generate csv files to be downloaded.

**The following use cases, from 3.19 to 3.20, are for Scheduler.**

## Generate download file

The aim of this use case is for the system scheduler to prepare CSV files for requested download data for each station. The output CSV files will be compressed into zip file and available for download.

## Clean old fast-data

The aim of this use case is for the system scheduler to clean/remove fast-data which were created 2 days before current day.