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# Introduction

## Purpose

The purpose of this SRS document is to provide the software functional requirements and other non-functional requirements for the SafeHome project, which is the final project of their CS350 course, carried out by team 2 (consisted with Youngseok Kim and Seokju Hong).

## Intended Audience and Reading Suggestions

Main reader of this document is supposed to be CS350 team 2 members, Youngseok Kim and Seokju Hong, who will implement whole component of the SafeHome. This document is written to help understand whole project clearly, reduce the gap of both’s idea on the project, and encourage collaboration. Another target reader of this document is teaching assistants and professor of CS350, which was held in 2015 spring semester, to evaluate team 2’s work on SRS.

Followings are the brief summary of each chapters.

1. “Chapter 1: Introduction” provides overview of the SafeHome project: the goal of the project, the purpose of this document, the scope of this project, and the outstanding issues.
2. “Chapter 2: Assumptions” provides assumptions used over the SafeHome project design.
3. “Chapter 3: System features” provides brief summary of to-be-implemented features of the SafeHome project, and analysis on assumptions, constraints, use-cases, acceptance criteria of each features.
4. “Chapter 4: Functional requirements” provides the functional requirements of the project, followed by to-be-implemented features with priority.
5. “Chapter 5: Non-functional requirements” provides any requirements other than functional requirements, such as performance requirements, process requirements, quality requirements, and security requirements.
6. Glossary, references, Who-Did-What table and any other information that is needed to understand whole document will be written on appendixes.

## Scope

The goal of this project is to implement home security and surveillance system and software “SafeHome” in an innovative tiny box. Members of team 2 are expected to write documents, make analyze models, and implement the SafeHome project.

The system is expected to serve many features and functions to alarm and prevent possible risks and accidents, such as fire over the house, or any other safety issues or accidents. For example, for fire incident over house, sensors like carbon monoxide sensor or temperature sensor will measure the environment of the house and if SafeHome system decides that fire incident happens in the house, it will alarm whole house, call 119, and send messages to registered contact.

The system serves surveillance system too. To prevent robbery or trespass of strangers, this system includes observation system based on CCTV. If unidentified one approaches to house and tries to enter the house, the system will alarm over the house, call 112, and send messages to registered contacts. Also, it will try to manipulate the door lock components to secure properties of household.

This system also serves web-based dashboards and API’s to let user observe status of the house and control security system of the SafeHome box. A user may want to look over his or her home and see whether things are in good state. Some user may not want to use specific features because of any reasons. To cover those overview/manipulation use cases, the SafeHome project basically serves web-based dashboards. And for more improvements on interfaces, it will also provide API of the dashboard app.

There are many features and functions that will be implemented at the version 1.0, however, as this is a software project, it evolves. More possible risk-preventing features and improvements are expected to be implemented in the software product line.

### Mandated Time Constraints

Phase I: Write SRS documents by Apr. 26

Phase II: Design analysis model by TBA.

Phase III: Construct design model by TBA

Phase IV: Construct and deploy project by TBA

## Outstanding Issues

None to date(Refer last updated date)

# Assumptions

The following are assumptions made in this design:

1. SafeHome box is connected to the internet.
2. SafeHome is expected to update via internet when some security patches are available.
3. Operating temperature of the device is expected to be from -10 degree Celsius to 50 degree Celsius.
4. SafeHome is expected to be connected to the power outlet properly.
5. SafeHome is expected to run 1~2 days even after power outage happens.
6. SafeHome uses safe encrypted communication and if related security issues happen, related patches will be automatically applied.
7. SafeHome console is expected to be durable even with free falling with 2 meter height.
8. Assumes there’s no critical sensor error: monthly sensor check service will be held and broken sensors are changed as soon as possible.

# System Features

## Fire extinguishing system

### General description

When fire accident happens, or some factors that can cause fire are detected by the SafeHome system’s sensors, the SafeHome system have to deal with those cases. For example, suppose someone turned on gas burner and did not turned off for a long time. The SafeHome box have to detect it with its gas sensor, and turn it off. Or, for the another case, if a fire break out at the house, the SafeHome system have to activate spring cooler and any other possible actuators to cease fires, and help people in the house to escape from the house. Like these examples, fire extinguishing system component serves features related to fire breaking out: helping evacuation, ceasing fire, and any possible actions that it can perform.

### Use cases

#### Gas leak alert

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use case Number | 3.1.2.1 | Feature Number | 3.1 | Frequency of Use | Every minute |
| Created date | 4/25/2015 | Author | Seokju Hong | Owner | Seokju Hong |
| Updated date | 4/25/2015 | Updated by | Seokju Hong | Revision # | 0 |
| Primary actor | SafeHome sensor system, User | | | | |
| Title | Gas leak alert | | | | |
| Preconditions | User’s contact information is registered to SafeHome system.  User has set the configuration to use “Gas leak alert”  Gas leaks from LPG hose and SafeHome sensor detects high level of LPG gas | | | | |
| Postconditions | Gas leak stop and ppm of LPG gas is lower than threshold value. | | | | |
| Main success scenario | 1. SafeHome system records log to SafeHome dashboard system and set status value as “Warning” 2. SafeHome actuator tries to control valve to lower the concentration of LPG. 3. LPG concentration decreases, and ppm value is lower than threshold value. 4. SafeHome system records log to SafeHome dashboard system and set status value as “OK” | | | | |
| Exceptions | 3a. SafeHome fails to lower the concentration of LPG for 5 minutes(timeout)   * 2a1. The SafeHome system sends message to registered contact that lowering gas level failed. * 2a2. The SafeHome system powers ventilating system on to lower gas level. | | | | |

## Door security system

### General description

### Use cases

## Garage security system

## Window security system

## CCTV system

## Web-based monitoring dashboard system

# Functional Requirements

## Requirement Notes/Legends

Priority of data in field :

|  |  |
| --- | --- |
| R | Required |
| O | Optional |
| SM | System Maintained (value cannot be changed) |
| C | Conditionally required |

## Fire extinguishing system

### ASDF use-cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Feature Number |  | Requirement Number |  | R/O/SM/C |  |
| Created date |  | Author |  | | |
| Updated date |  | Updated by |  | | |
| Requirement |  | | | | |
| Description |  | | | | |

# Non-functional Requirements

## Performance Requirements

## Process Requirements

### Standard Requirements

* + - 1. Platform constraints
      2. Coding style constraints
      3. and many many more

## Management Requirements

## Software Quality Requirements

## Security Requirements

### Access Permission

### Privacy

# Change Log

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Source** | **Author** | **Change** |
| 2013/03/11 | Course Preparation | Il-Chul Moon | Initial template development |
|  |  |  |  |
|  |  |  |  |