SAFEHOME PROJECT

TEAM 5
Sumin Han, Joonhoo Oh
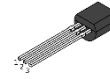
WHAT IS SAFEHOME?

Record/Play/Control(zoom, pan)

Camera

Arm/Disarm/Travel

Mode

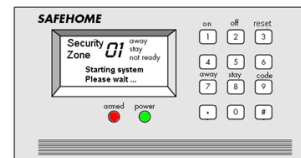Motion/Window/Fire/CO/Water/Doggie

Sensor

Appliances/Lightning/HVAC

Electronics

Automated System for Home Surveillance and Management

accessed via Control Panel and Internet

SafeHome: Control Software

SAFEHOME

Security Zone *01* away stay not ready

Starting system
Please wait ...
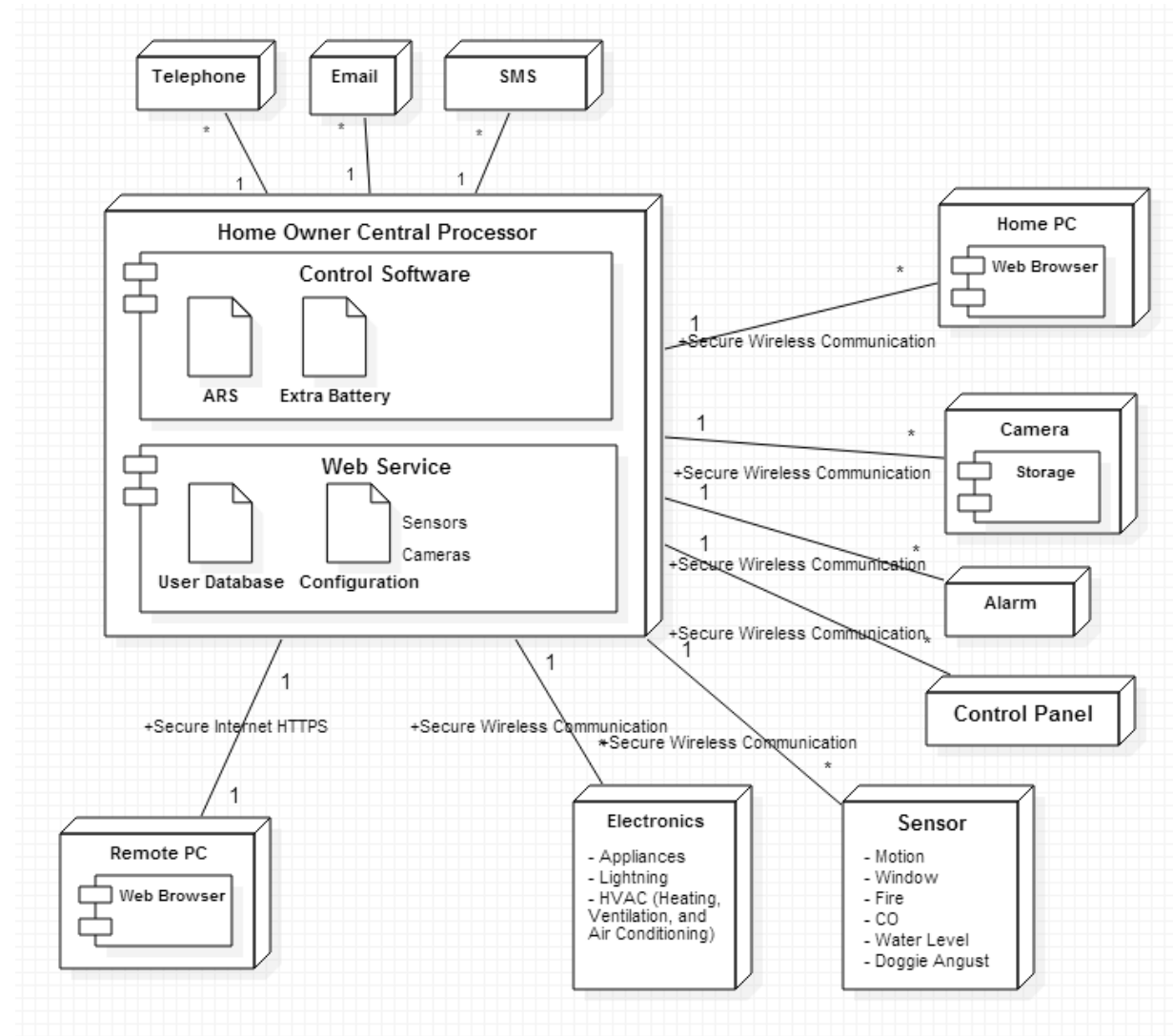
armed   power

SafeHome: Web Service

User Manage   Statistics/Logs/Report

DEPLOYMENT DIAGRAM

Assumptions

- No concurrent user access
  - Control Panel / Web Page : exclusive
  - One Control Panel Installed
  - Control Panel > Web Page
- Internet connection and SafeHome service is always available
- All device communicate using IEEE 802.11x

INFORMATION

- Password Type
  - CP: 4 digit number
  - Web: plain more than 8 characters
- Password Wrong
  - 5 times wrong → SMS to Home Owner
- Password Encryption
  - SHA-2 (one direction hash)
- Web: HTTPS protocol
  - RSA key for SSH Authentication
- Format of Video
  - MPEG2
- Time Limit of Video
  - Max 1 hour

- Precondition to Record
  - Motion/Window sensors
  - Intruder/Possible Intruder/Intrude Trial detection
- Sensor
  - Read/Enable/Disable
- Camera
  - Record/Play/Control - Zoom in/out, Pan
- Arm Mode
  - Disarm(home)/Arm(away)/Overnight Travel/Extended Travel

SECURITY ZONE

- Camera
  - Window + Door (Essential)
  - Cover as much as possible
- Sensors
  - Motion/Window/Fire/CO/Water/Doggie
  - Fulfill their purposes
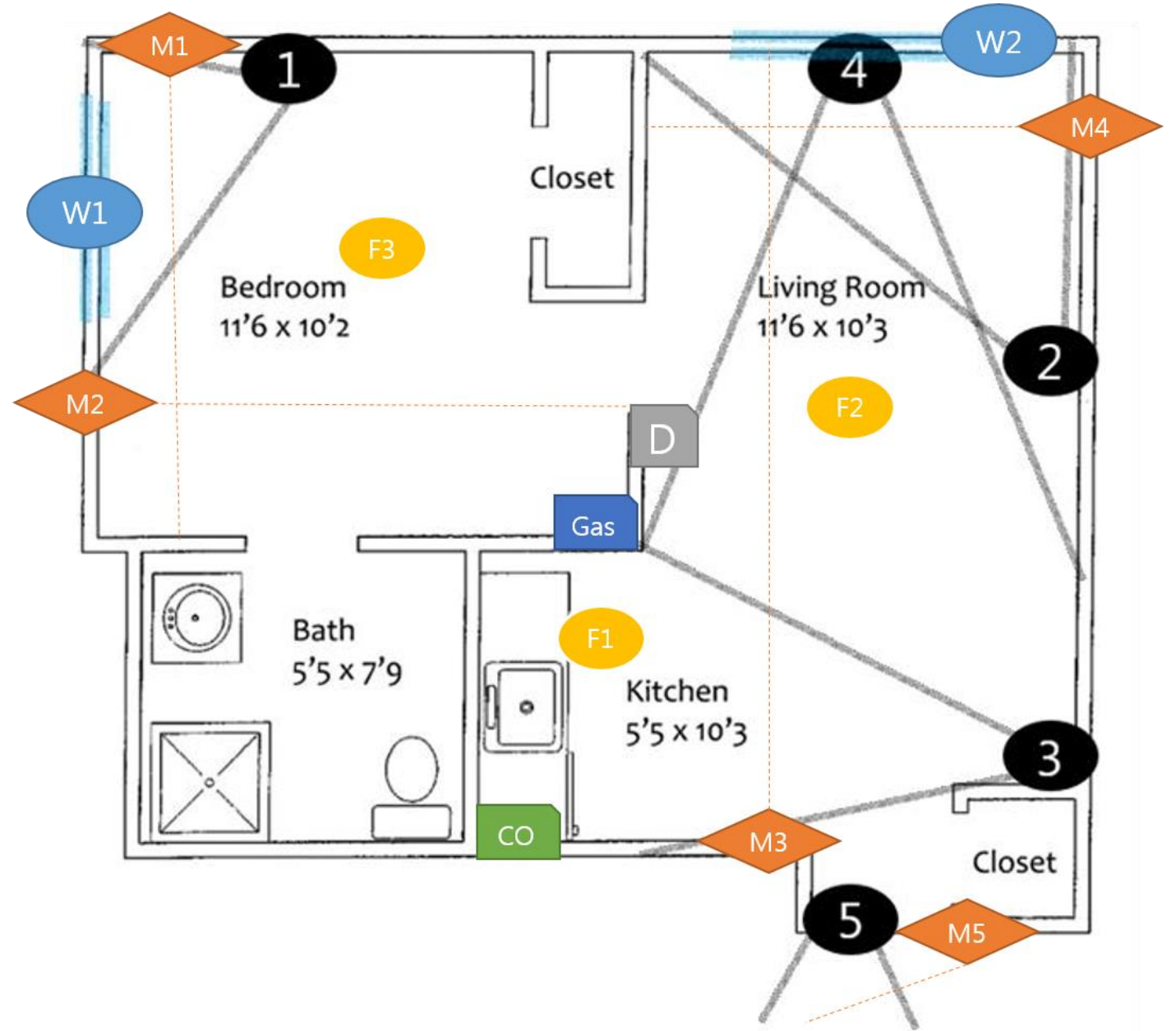
PROCESS MODEL - WATERFALL
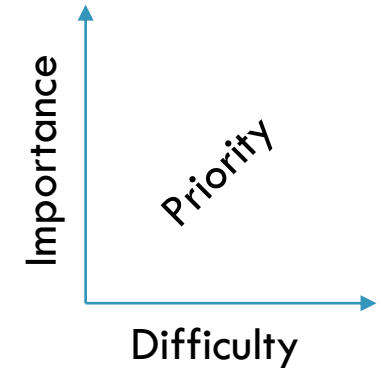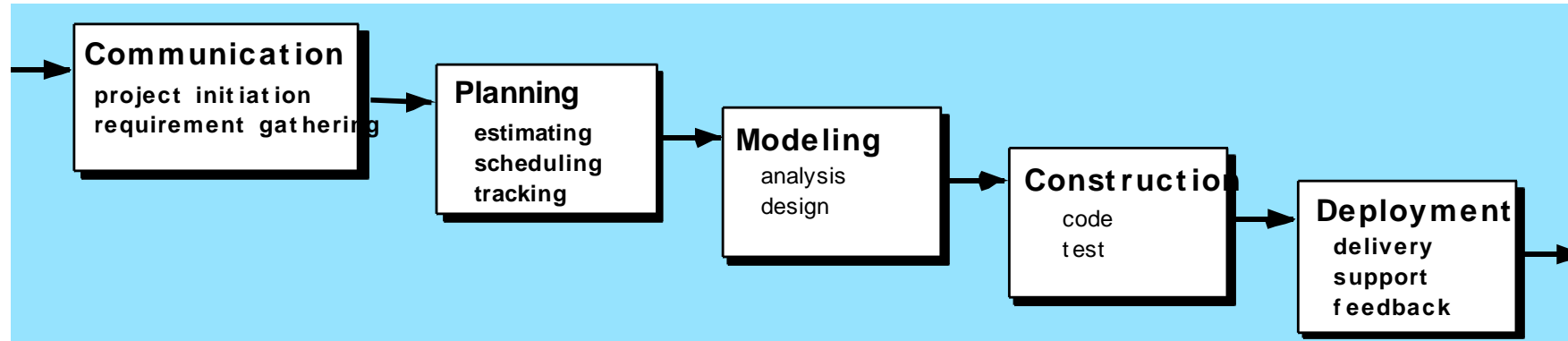
- Primary Development (Higher Priority, Essential Functionality, Important, Short-time) - Skeleton
- Secondary Development (Lower Priority, but still essential)
- Additional Development (Inessential, Non-functional)

USE-CASE OVERVIEW

1. Boot
- Boot-up/Shutdown
- Initialization, finish of sensors and camera

2. Configure
- Setting of sensors, cameras, and other options

3. User Management
- Login/Logout
- User logs/User create/User edit
- Finding ID/password

4. Arm/Disarm
- Arm/disarm
- Overnight/exteded travel mode
- Auto-arm

5. Intruder Prevention System
- Intruder/Intrude trial/possible intruder

6. Home Management
- Sensor alarms
- Control of Appliances/Lightning/HVAC

7. Home Surveillance
- Camera overview/control/record/play

* Non-Functional
- Session timeout, multiple access control, weekly report, backup, file system, documentation

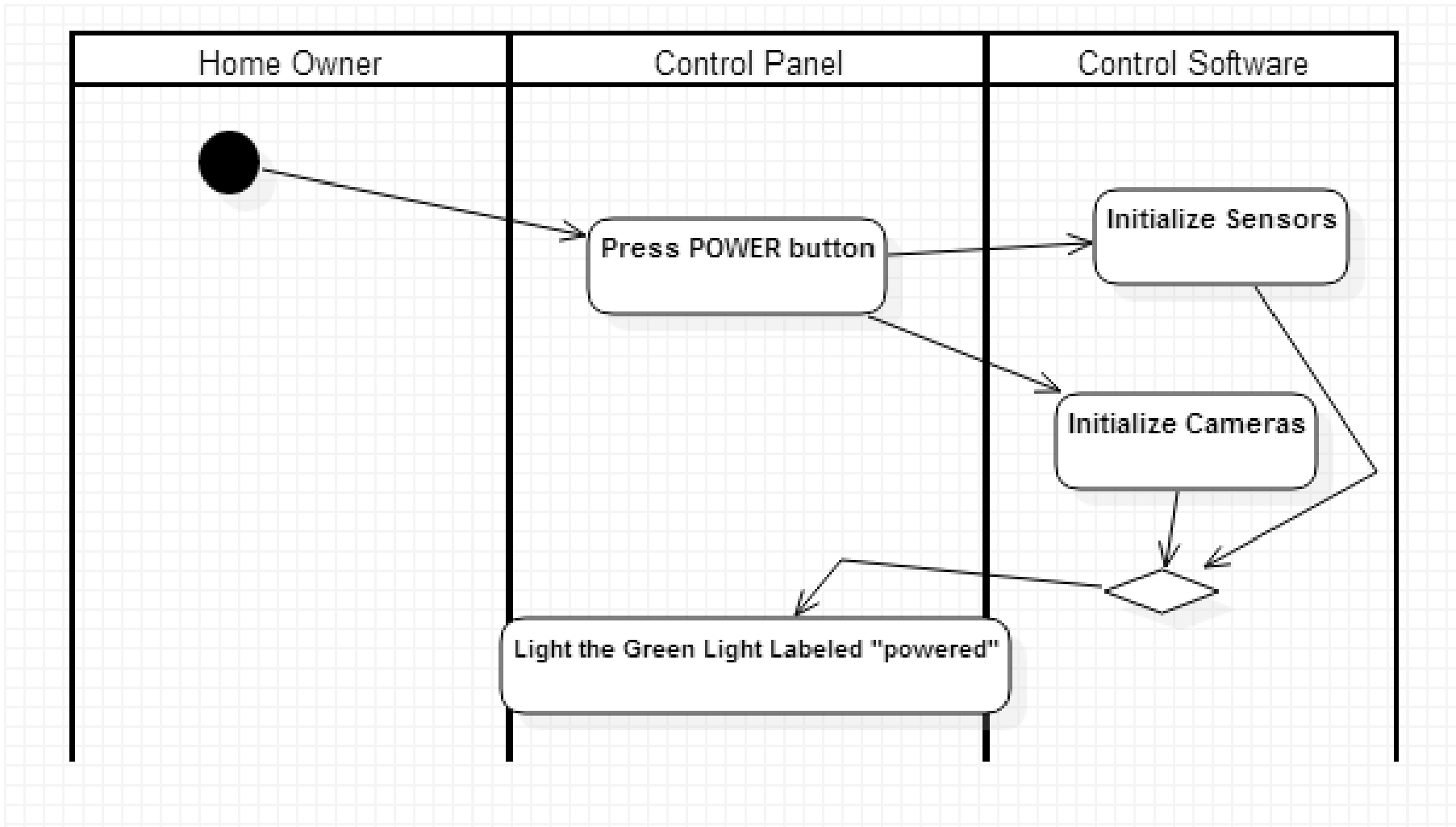# 1. BOOT UP

1.1. Boot-up (CP)

1.2. Shutdown (CP)

1.3. Initialize Sensors
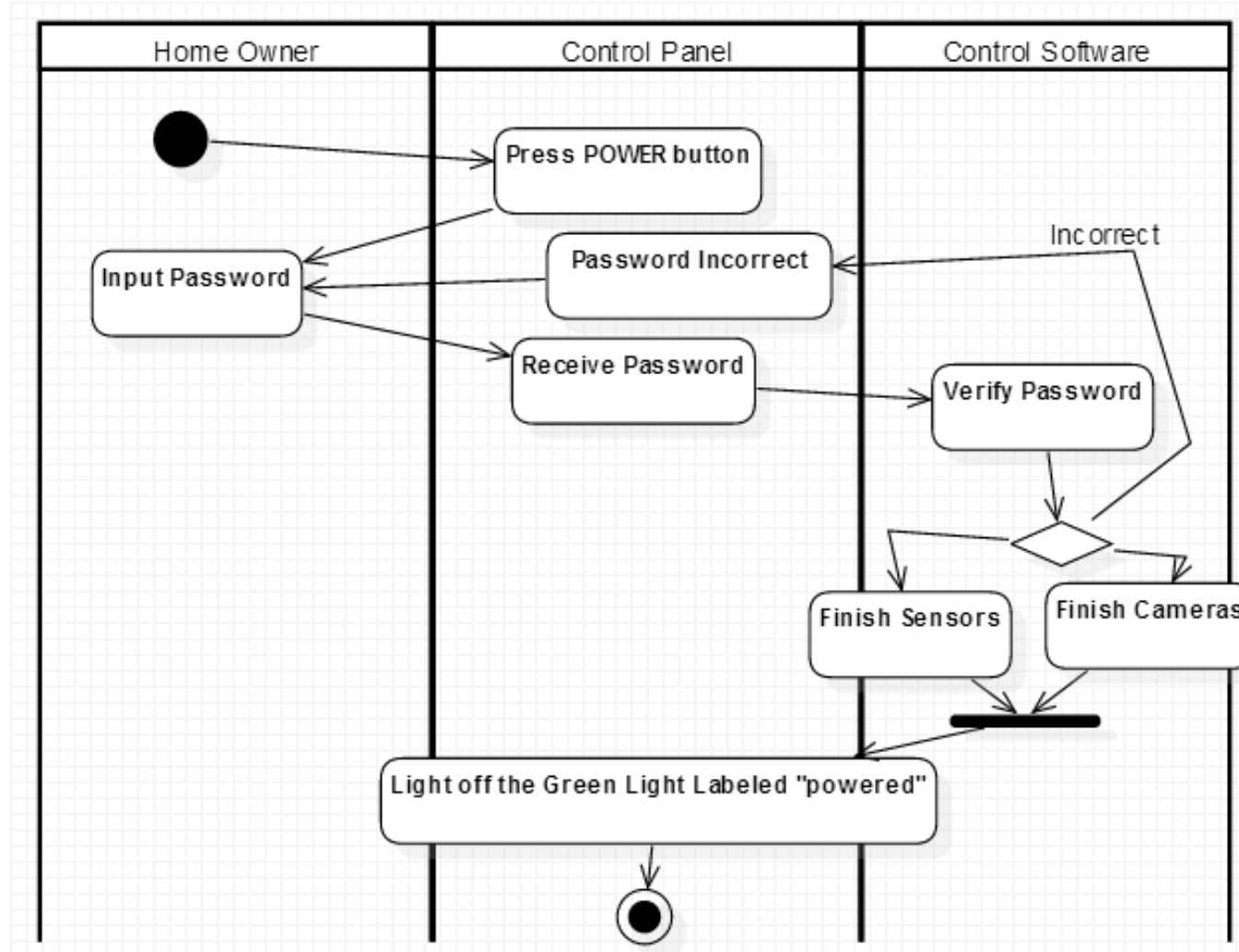
1.4. Initialize Cameras

1.5. Finish Sensors

1.6. Finish Cameras

1.1. BOOT-UP (CP)

1.2. SHUTDOWN (CP)

2. CONFIGURE

2.1. Setting Main (Web)

2.2. Setting Sensors (Web)
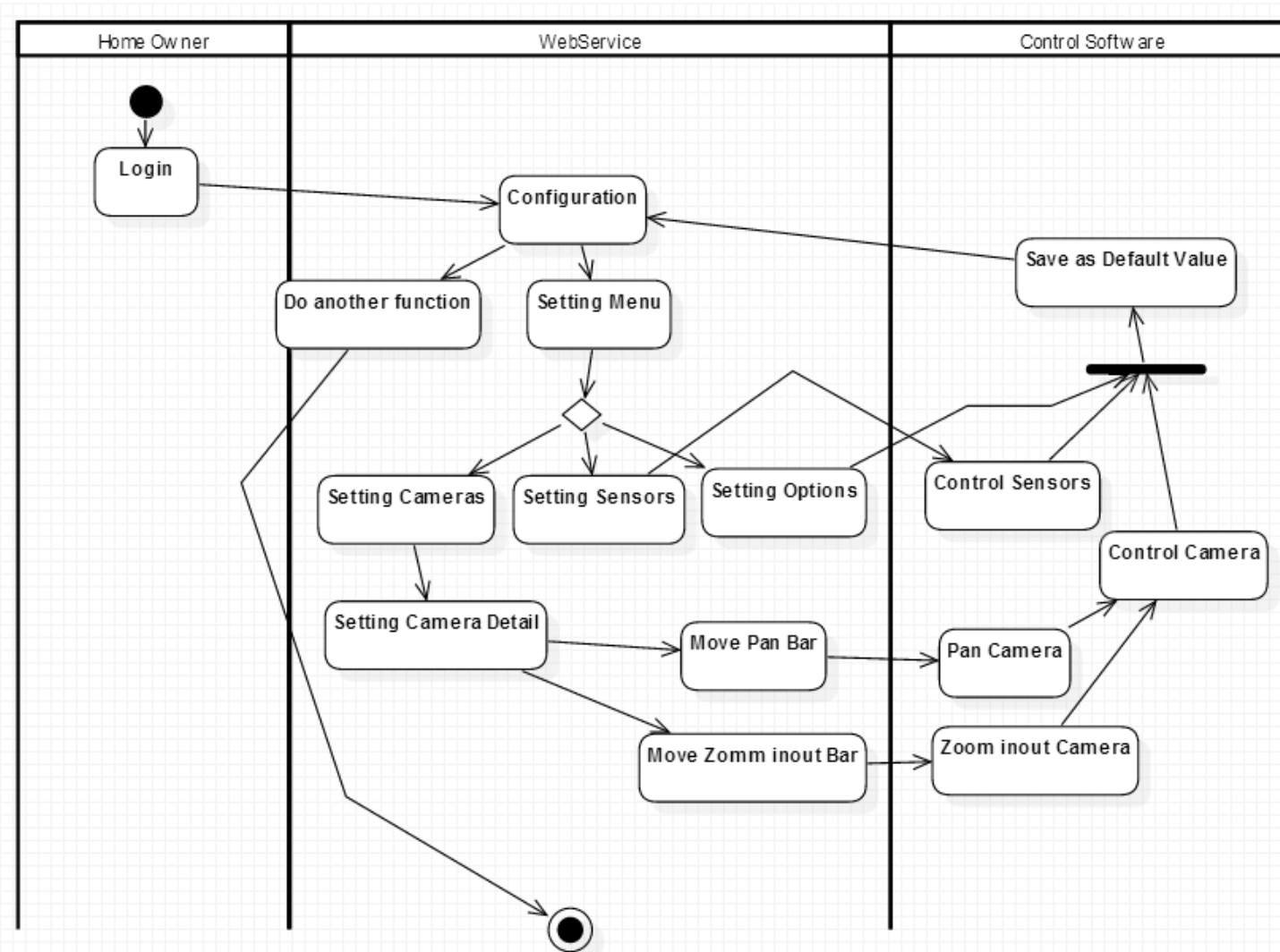
2.3. Setting Cameras (Web)

2.4. Setting Cameras Detail (Web)
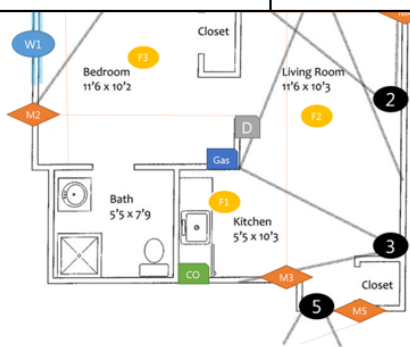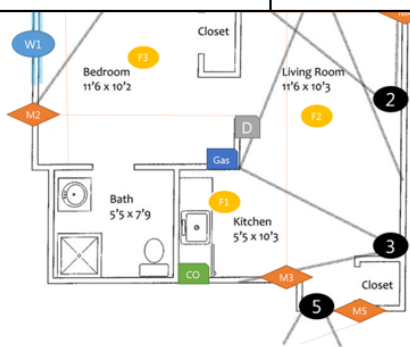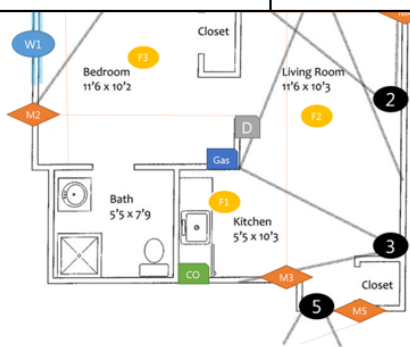
2.5. Setting Options (Web)

2.6. Weekly Mail Report → Non-functional

2.7. Self-Diagnosis → Non-functional

2. CONFIGURE

Home Owner	WebService	Control Software

- Login
- Configuration
- Save as Default Value
- Do another function
- Setting Menu
- Setting Cameras
- Setting Sensors
- Setting Options
- Control Sensors
- Control Camera
- Setting Camera Detail
- Move Pan Bar
- Pan Camera
- Move Zomm inout Bar
- Zoom inout Camera

2.1. SETTINGS MAIN

User	Surveillance	Sensor Data	Settings

Sensor Setting	Detail

F1	ON		W1	ON
F2	ON		M1	ON
F3	ON			

Camera Setting	Detail

Weekly Mail Report	ON

Self-Diagnosis	RUN

2.3. SETTING CAMERA

3. USER MANAGEMENT

3.1. Login (Web)

3.2. Logout (Web)

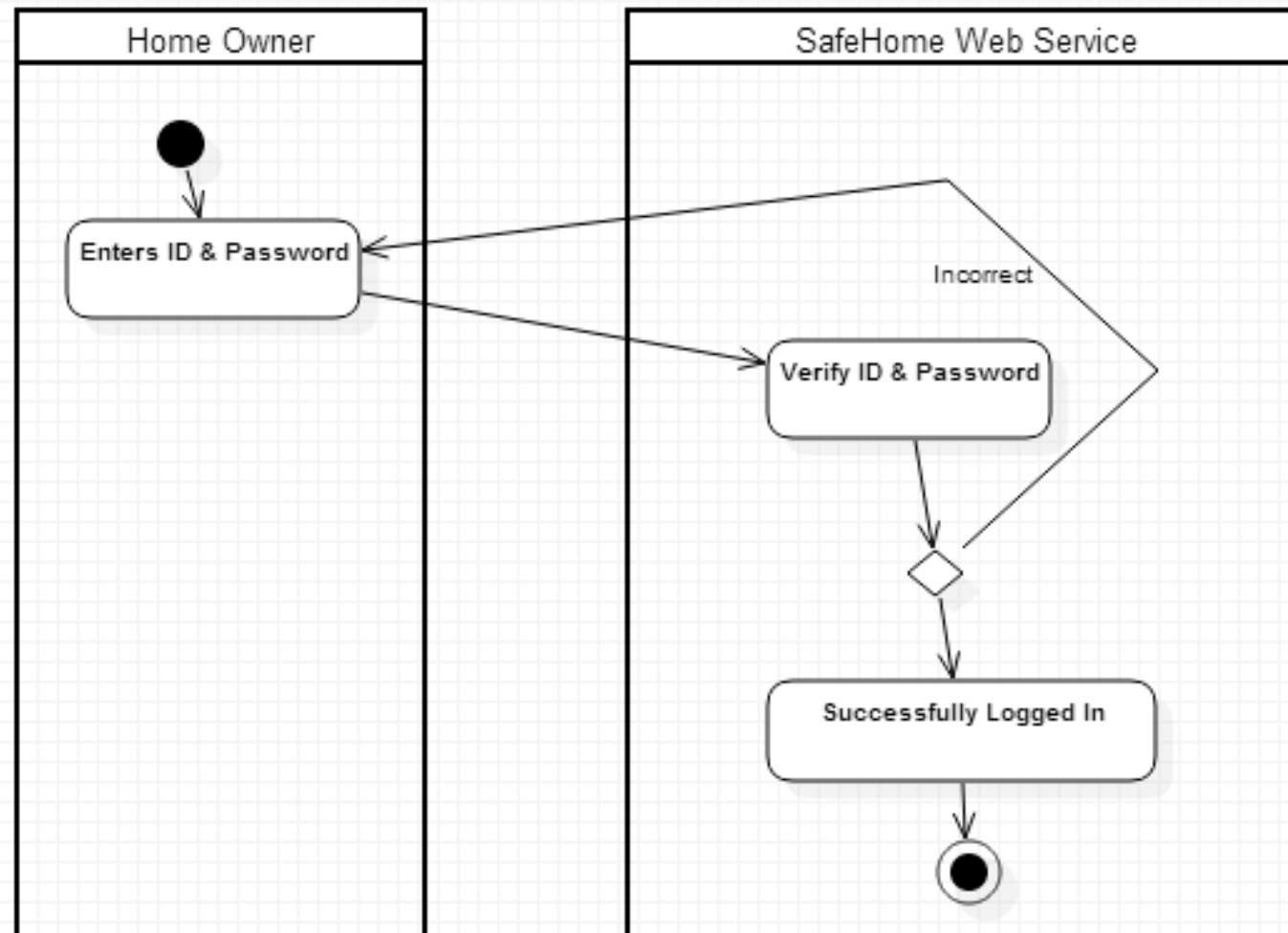3.3. User Log (Web)

3.4. User Create (web)

3.5. User Edit (Web)

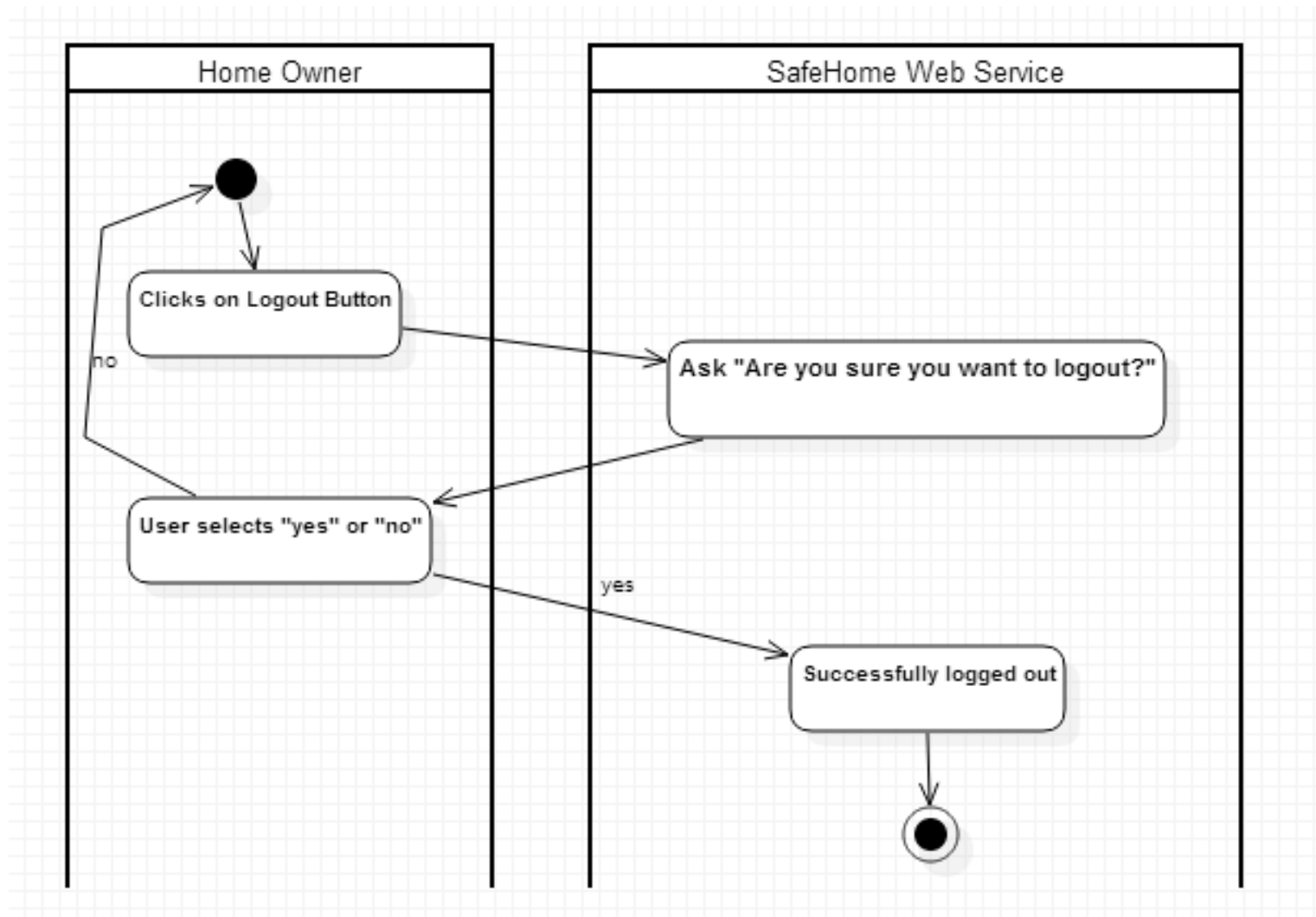3.6. Finding ID/Password (Web)

GUI: WEB SERVICE LOGIN (3.1.)

3.1. LOGIN (WEB)

3.2. LOGOUT (WEB)

GUI: USER VIEW (3.3.~3.5.)

User	Surveillance	Sensor Data	Settings

User name	Camera View	Message alarm	Disarm	Admin
HOME	■	■	■	■
Owner1	■	■	□	□
Owner2	■	■	■	□
Kid	□	□	■	□

user log	Create new account	Edit

GUI: USER LOG (3.3.)

User	Surveillance	Sensor Data	Settings

User	Time	Activity
HOME	2014-04-21 03:55	Surveillance
Owner1	2014-04-22 14:52	Surveillance
Owner2	2014-04-22 22:45	Sensor Data
Kid	2014-04-23 17:36	Surveillance
Owner2	2014-04-23 08:23	Setting
HOME	2014-04-23 05:14	Surveillance
Kid	2014-04-23 23:42	Disarm

user log | Create new account | Edit

GUI: USER CREATE NEW ACCOUNT (3.4.)

User	Surveillance	Sensor Data	Settings

User name	(enter user name)
Password	(enter password)

Camera View	Message alarm	Disarm	Admin
◎	◎	◎	◎

4 checkbox

user log	Create new account	Edit

GUI: USER EDIT (3.5.)

User	Surveillance	Sensor Data	Settings

User name	Camera View	Message alarm	Disarm	Admin
HOME	■	■	■	■
🗑 owner1	◎	◎	◎	◎
🗑 owner2	◎	◎	◎	◎
🗑 kid	◎	◎	◎	◎

checkboxes to edit authority

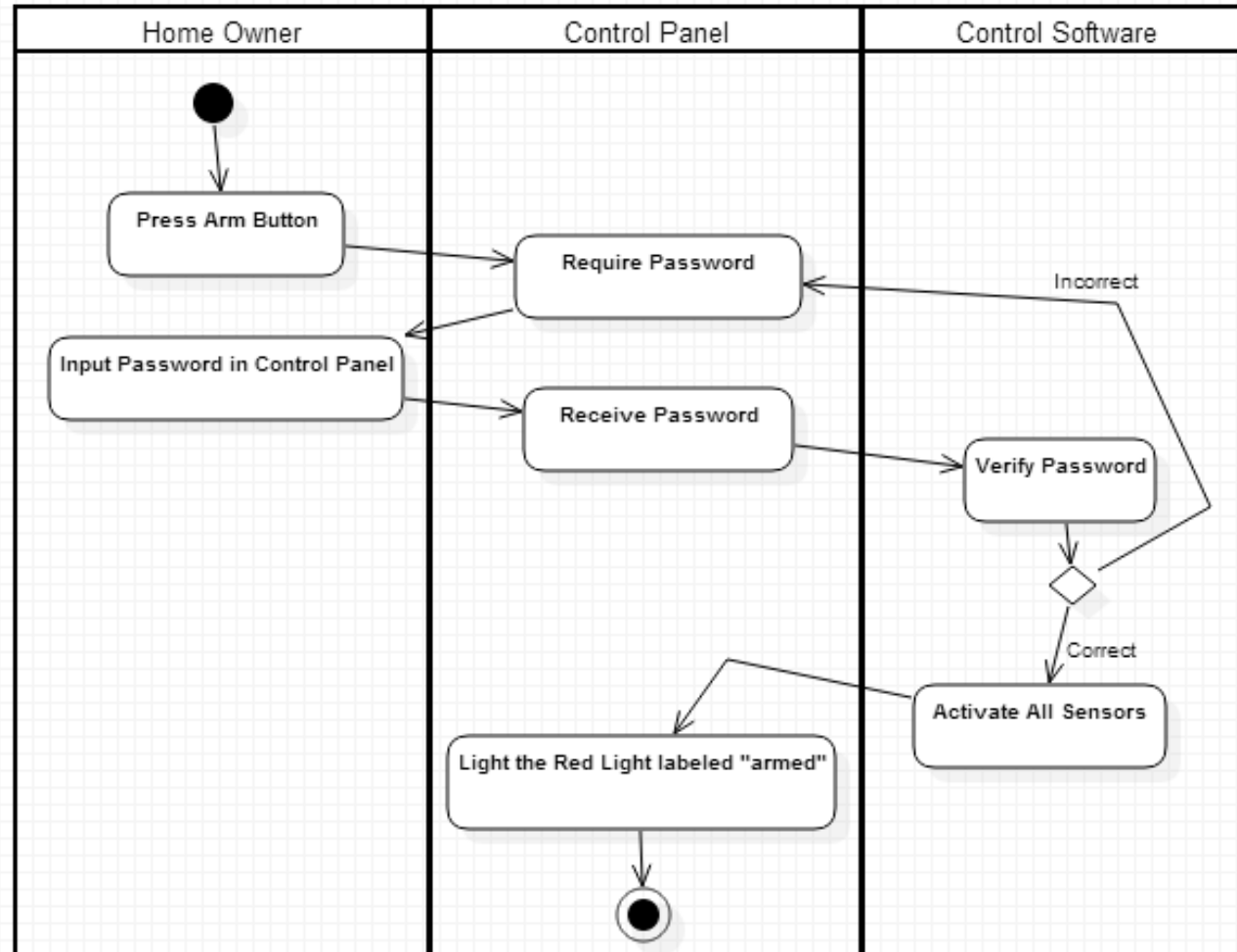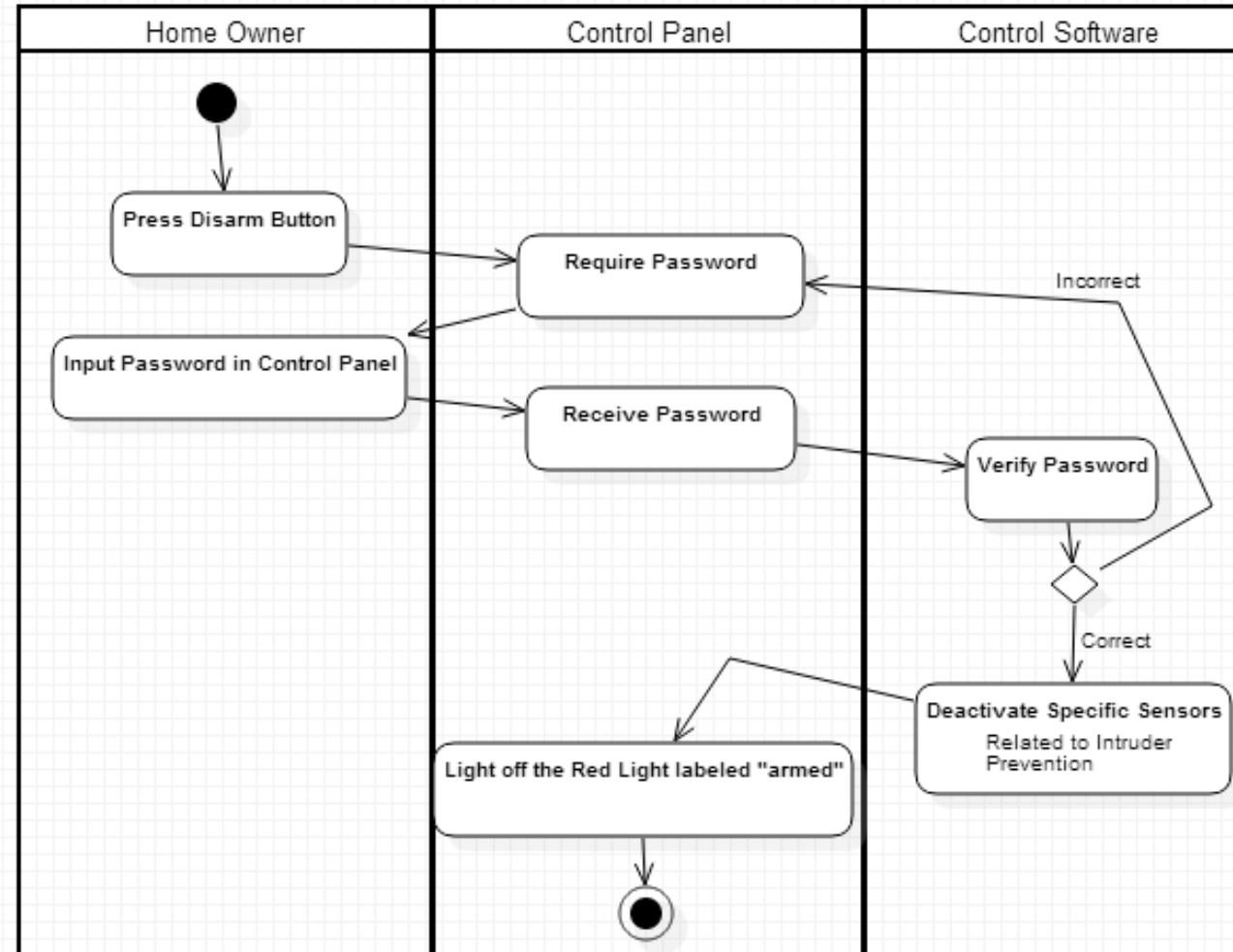| user log	Create new account	Edit

3.6. FINDING ID/PASSWORD (WEB)
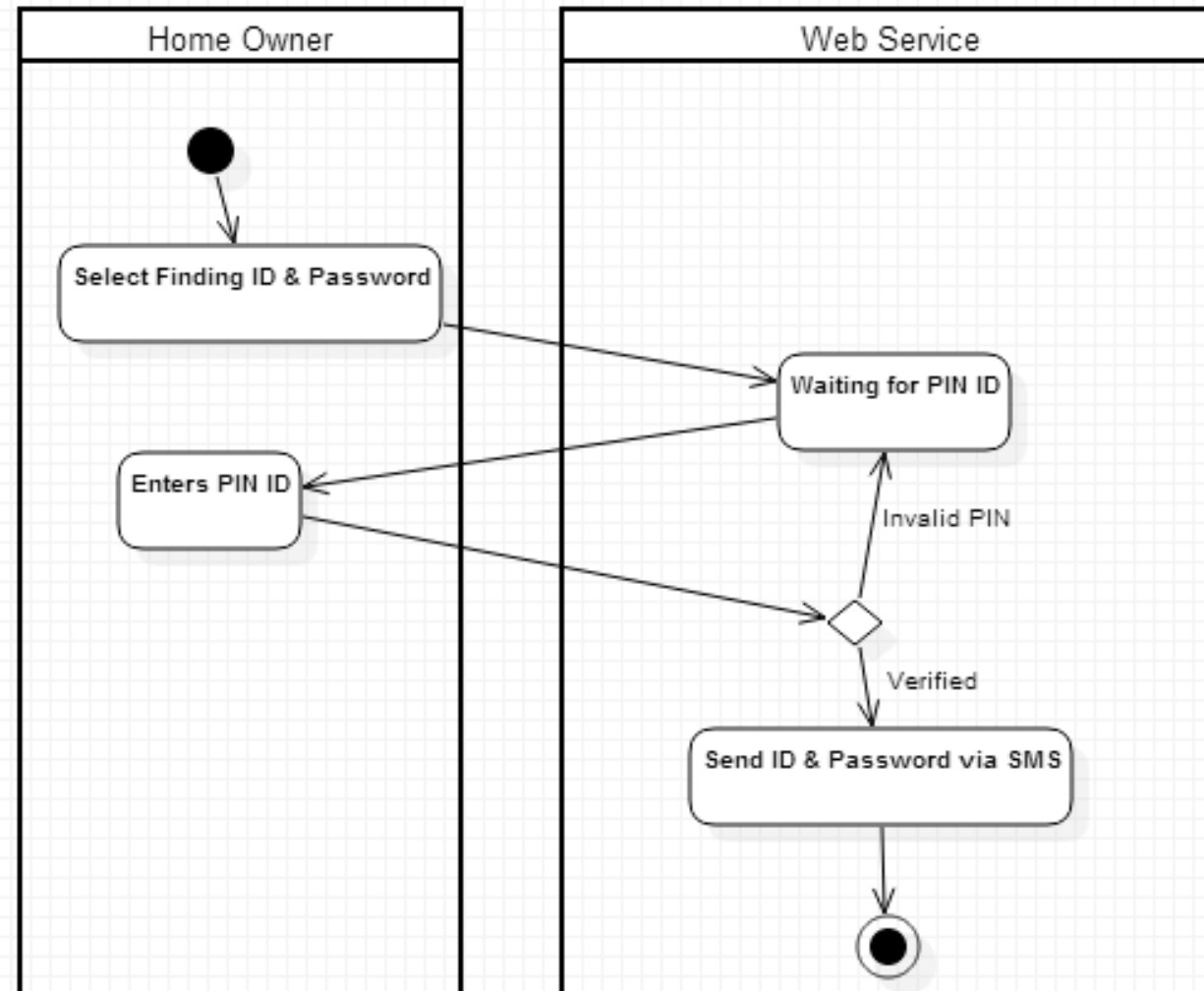
4. ARM/DISARM

4.1. Arm System via Control Panel (CP)

4.2. Disarm System via Control Panel (CP)

4.3. Arm System via Internet (Web)

4.4. Disarm System via Internet (Web)

4.5. Auto Arm System

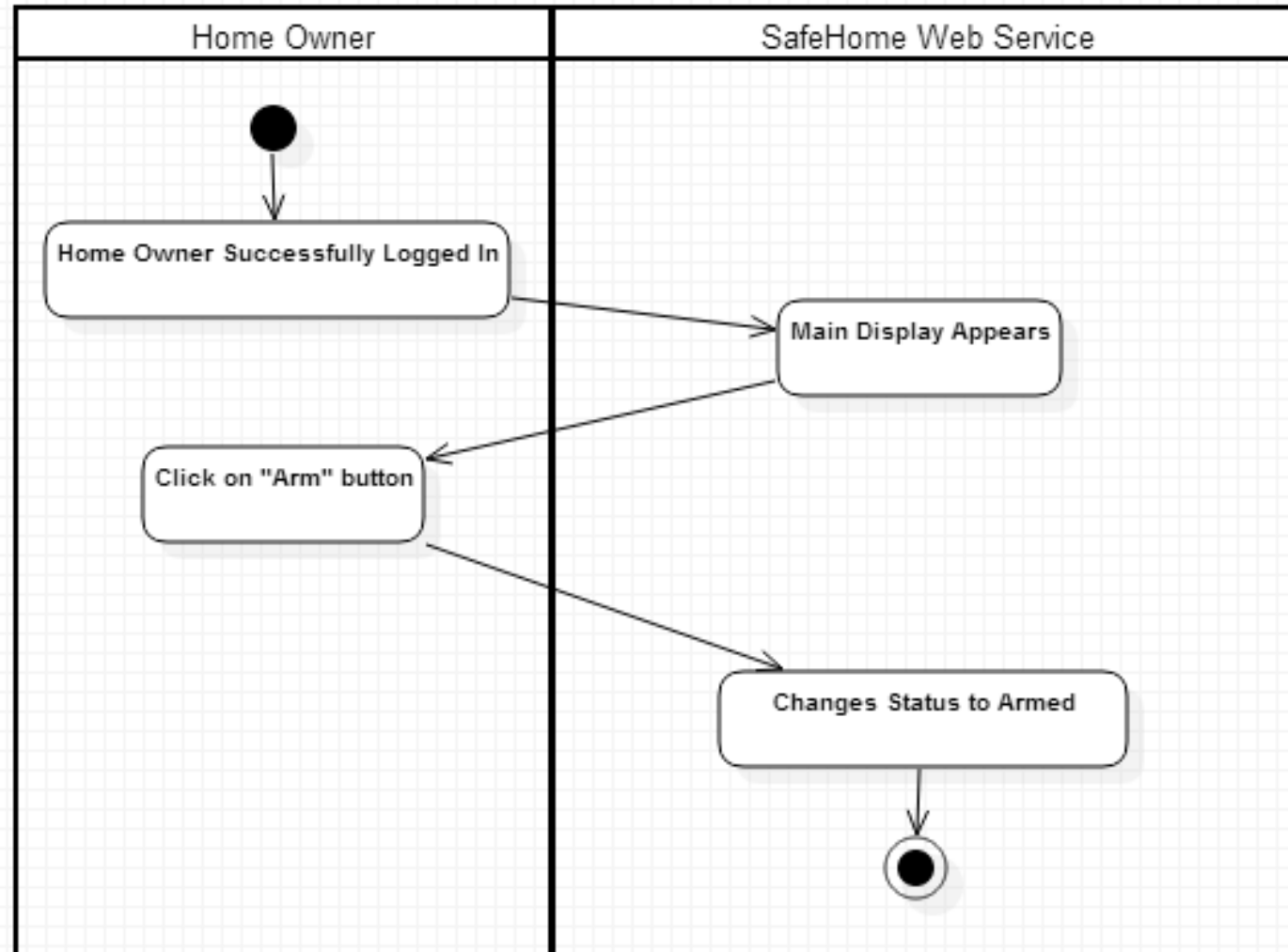4.6. Overnight Travel Mode (Web)

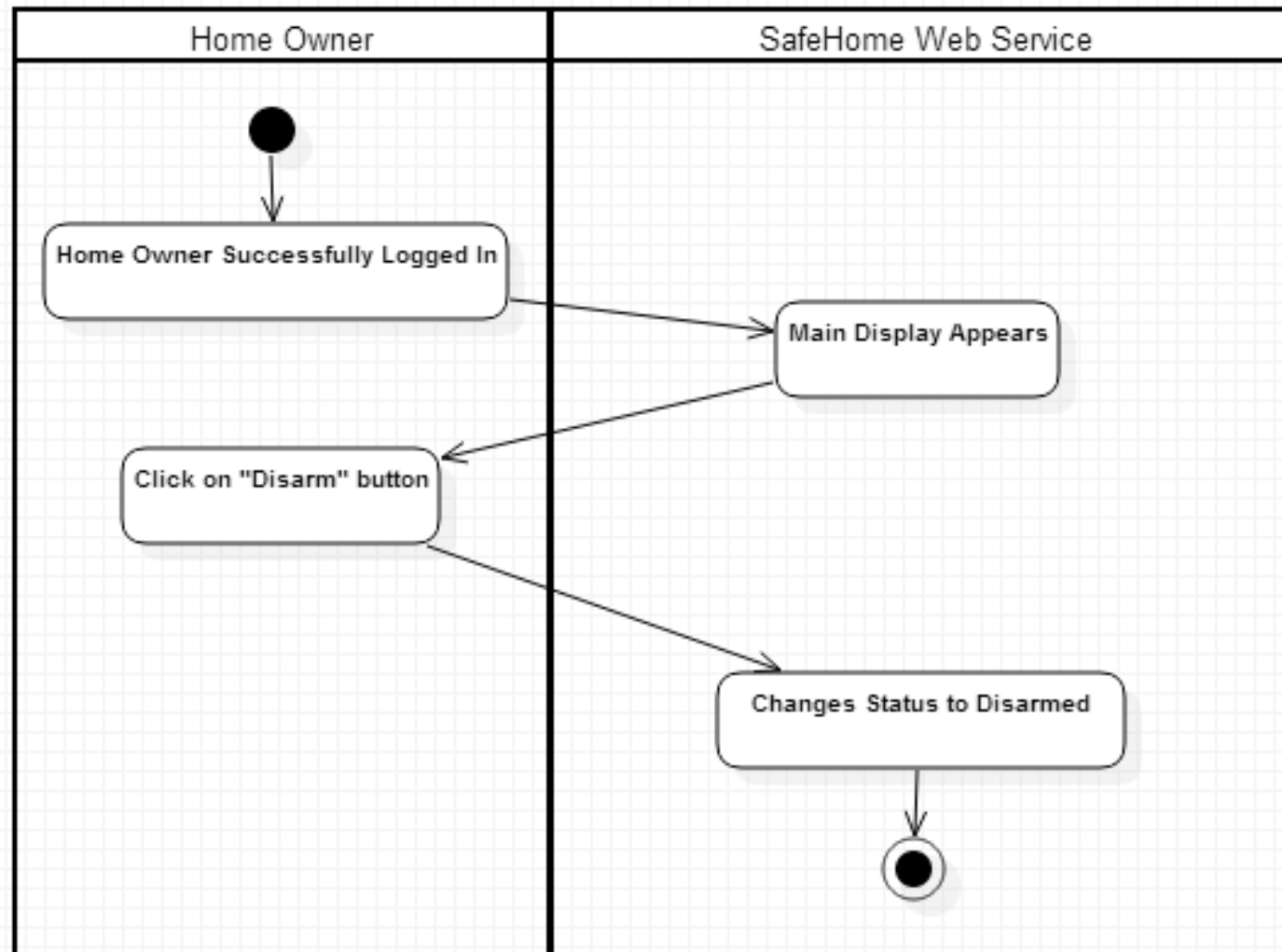4.7. Extended Travel Mode (Web)

4.1. ARM SYSTEM VIA CONTROL PANEL (CP)

4.2. DISARM SYSTEM VIA CONTROL PANEL (CP)

4.3. ARM SYSTEM VIA INTERNET (WEB)

4.4. DISARM SYSTEM VIA INTERNET (WEB)

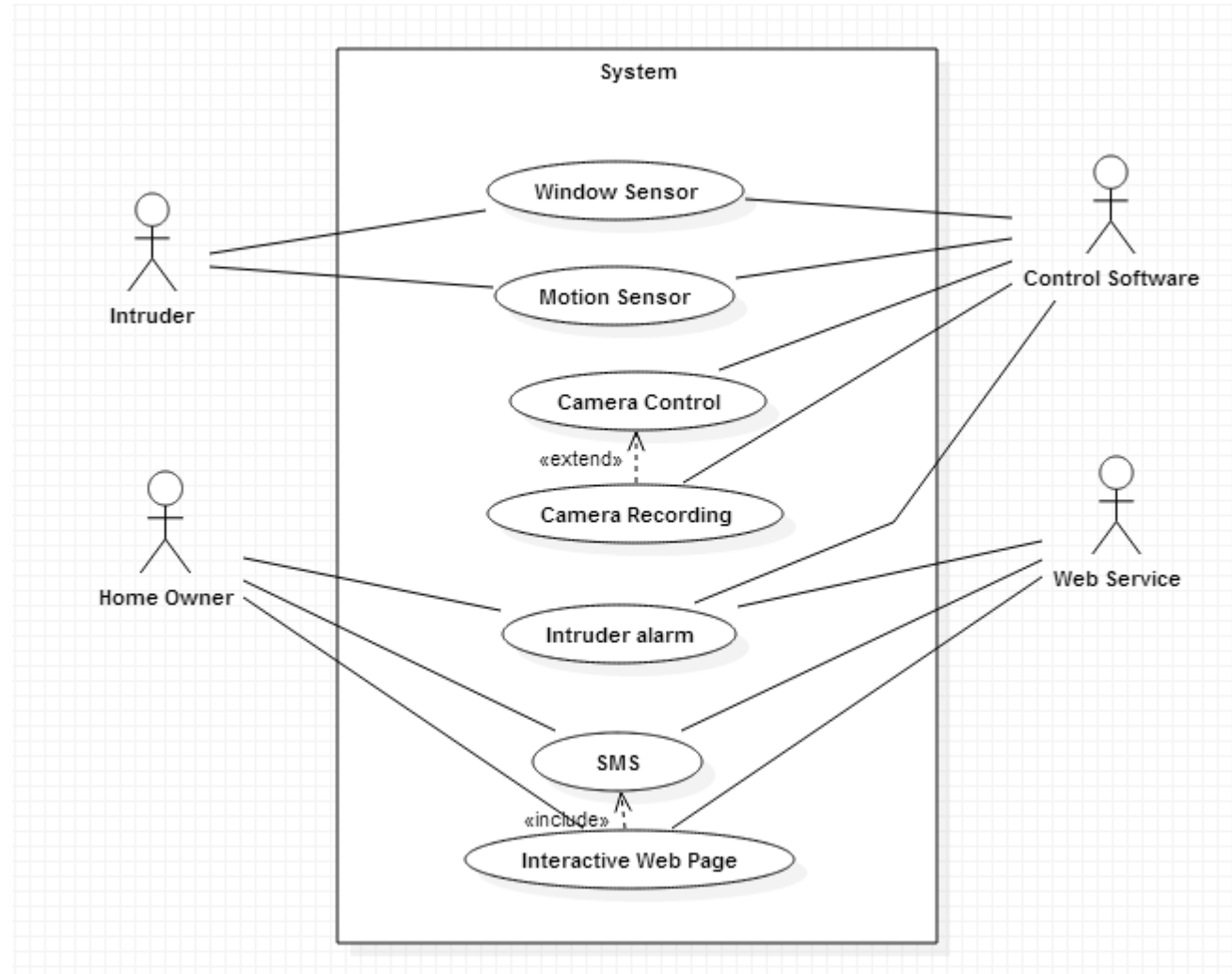| Home Owner	SafeHome Web Service
Home Owner Successfully Logged In	Main Display Appears
Click on "Disarm" button	Changes Status to Disarmed

5. INTRUDER PREVENTION SYSTEM
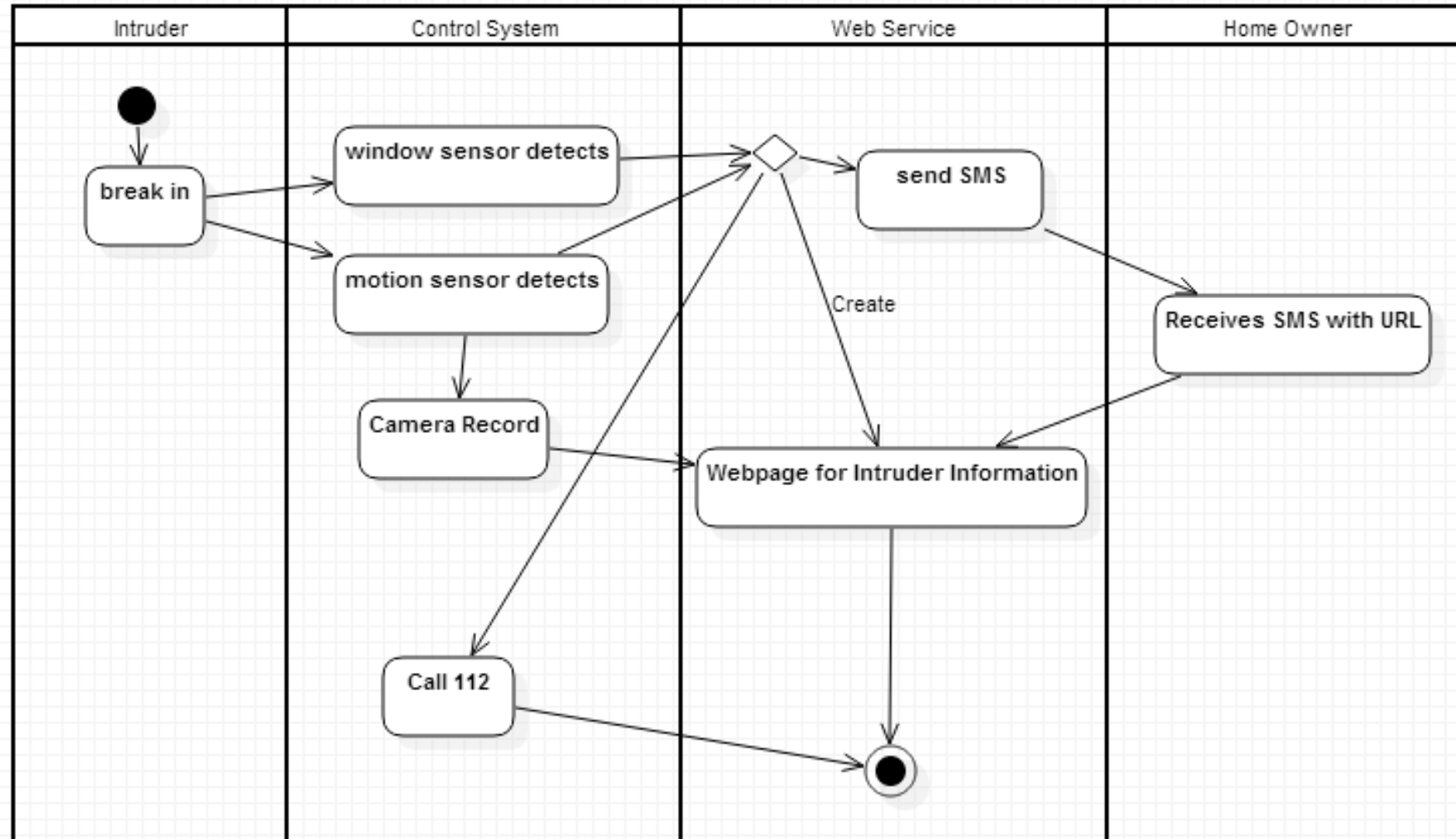
5.1. Intruder Detection

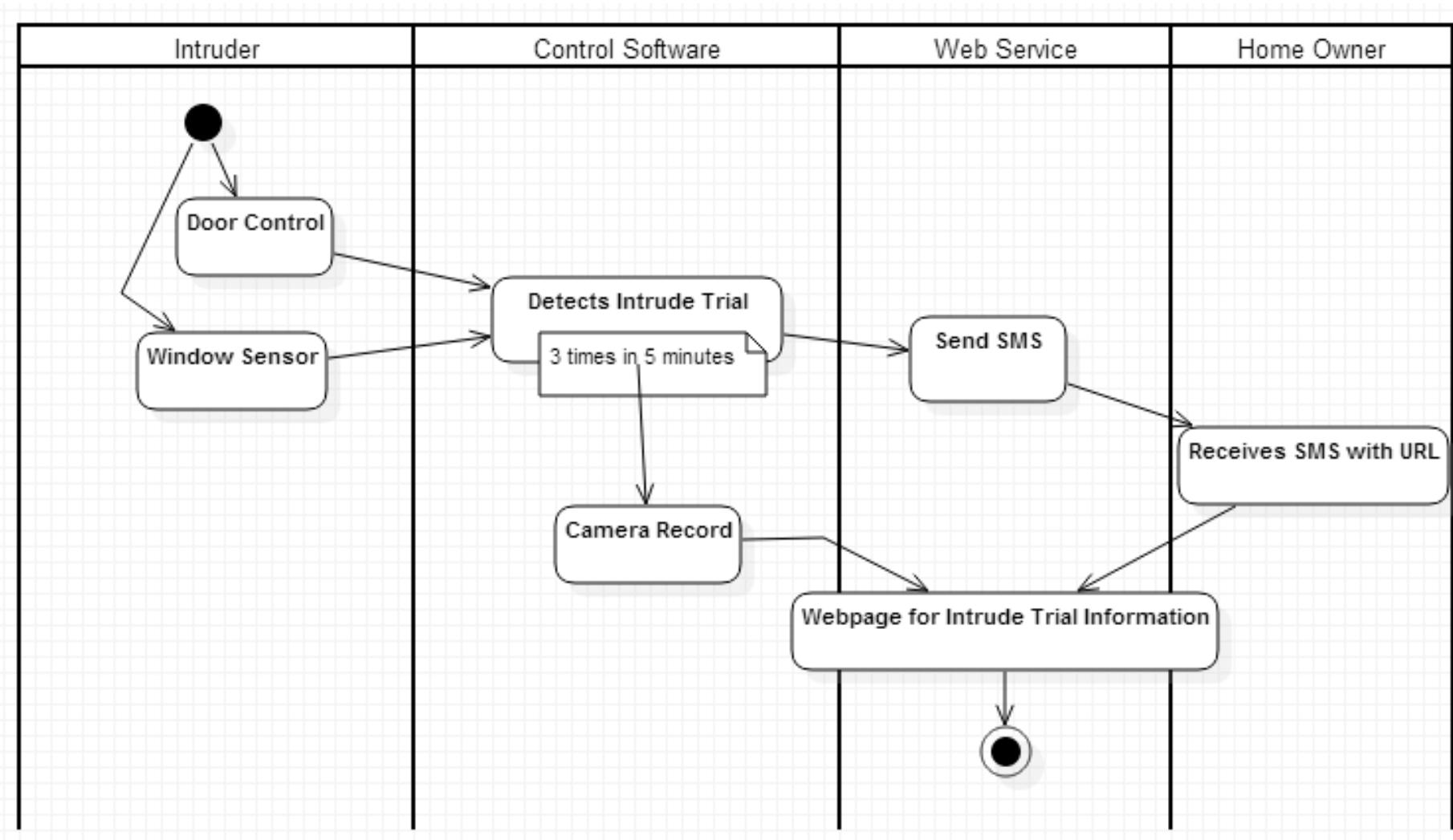5.2. Intrude Trial Detection

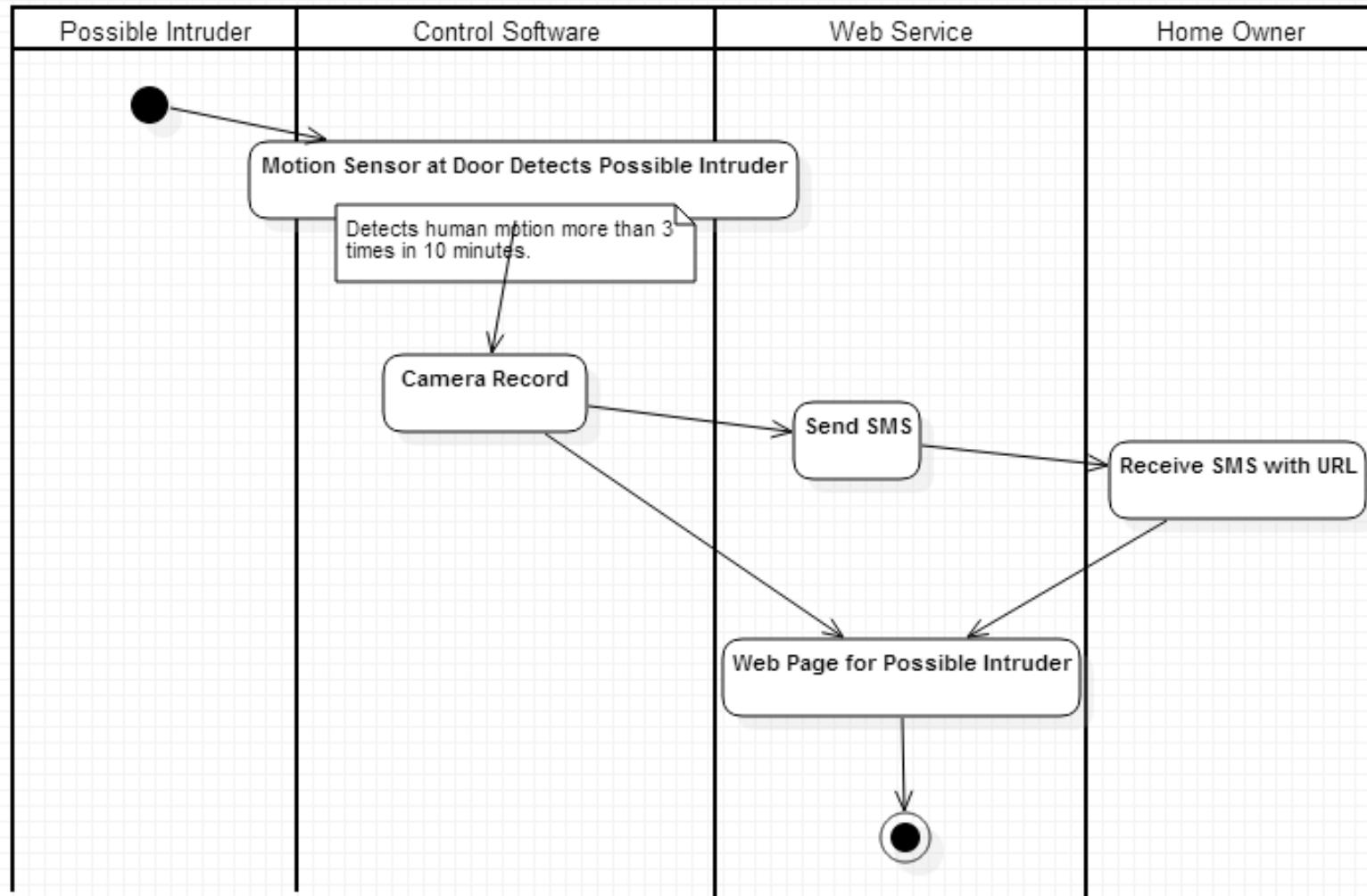5.3. Possible Intruder Alarm

5. INTRUDER PREVENTION SYSTEM

5.1. INTRUDER DETECTION

5.2. INTRUDE TRIAL DETECTION

5.3. POSSIBLE INTRUDER ALARM

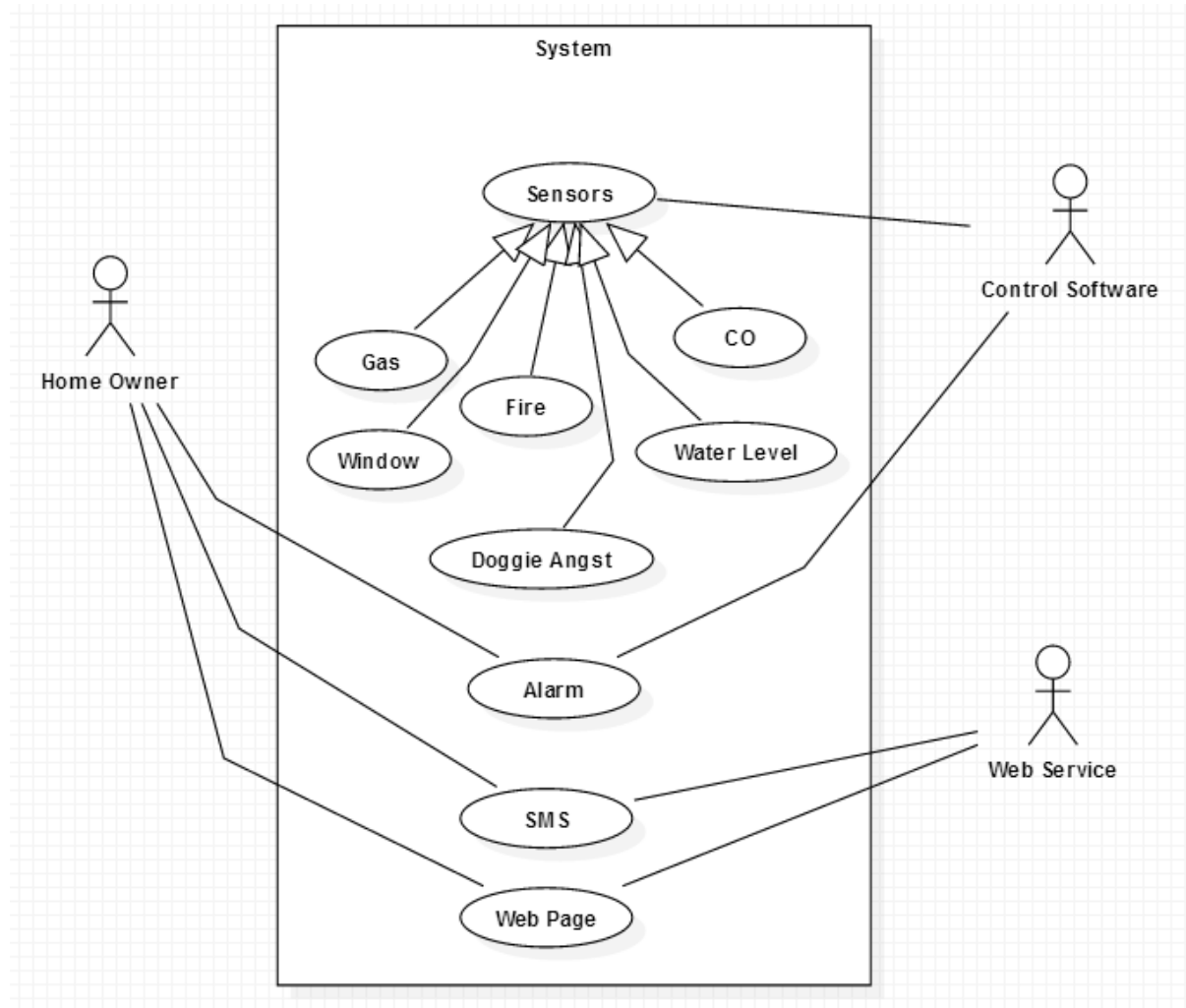# 6. HOME MANAGEMENT

6.1. Fire Alarm

6.2. Gas Alarm

6.3. Water Level Abnormality Alarm

6.4. Doggie Angust Alarm

6.5. Display Sensor Data

6.6. Control Appliances/Lightning/HVAC via Internet (Web)

6.1~6.5 SENSOR-RELATED

GUI: SENSOR DATA DISPLAY

User	Surveillance	Sensor Data	Settings
CO Level	55	On/Off	Log
Temperature	22	On/Off	Log
Water Level	0	On/Off	Log
Gas Level	0	On/Off	Log
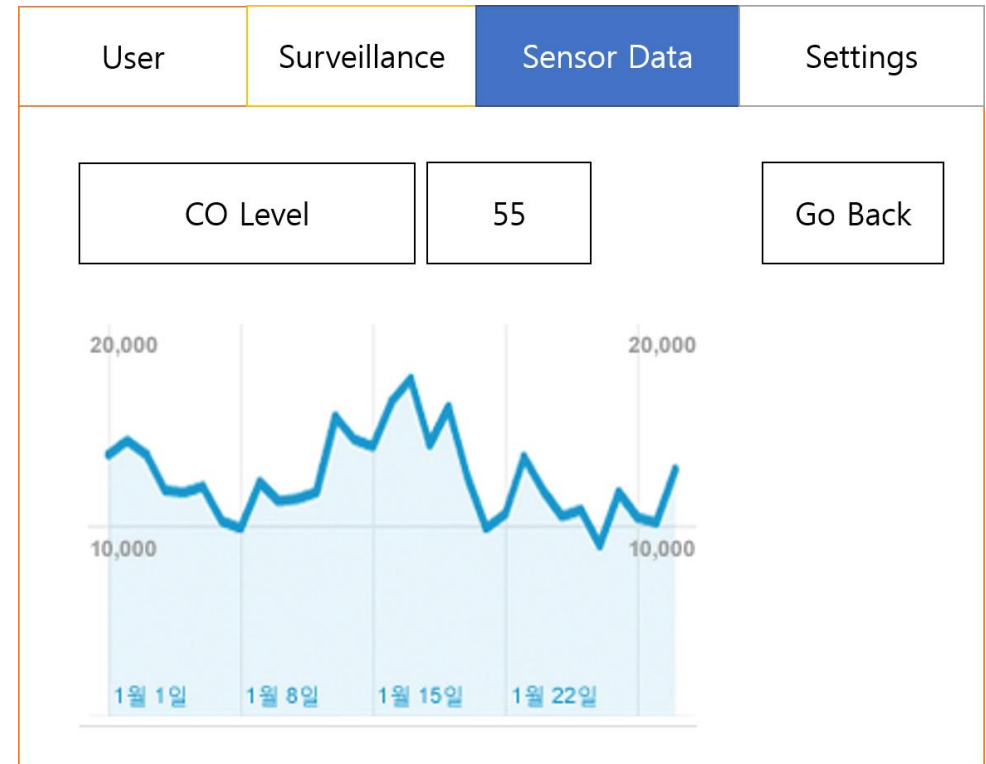
User	Surveillance	Sensor Data	Settings

| CO Level | 55 | | Go Back |

6.6. CONTROL APPLIANCES/LIGHTNING/HVAC VIA INTERNET (WEB)

7. HOME SURVEILLANCE

7.1. Temporary Camera Control (Web)

7.2. Camera Overview (Web)

7.3. Camera Detail (Web)

7.4. Camera Record

7.5. Create Camera Thumbnail
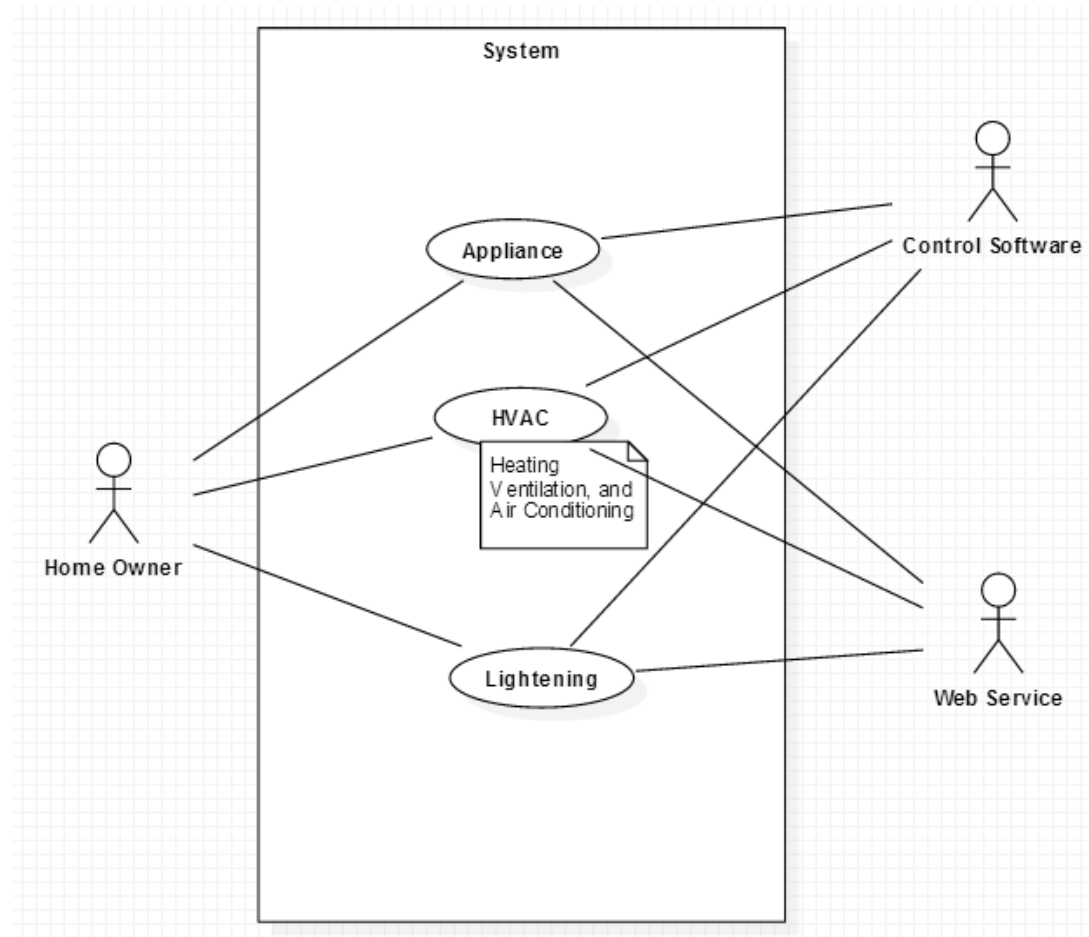
7.6. Play Recorded Video

GUI: CAMERA THUMBNAILS WITH FLOOR PLAN

GUI: CAMERA DETAIL

User	Surveillance	Sensor Data	Settings

Camera 1	Camera 2	Camera 3	Camera 4	Camera 5

Time	Duration
2014-02-26 04:11	35s
2014-03-21 08:44	16s
2014-04-23 04:11	36s
2014-04-23 05:13	20s

HOME SURVEILLANCE
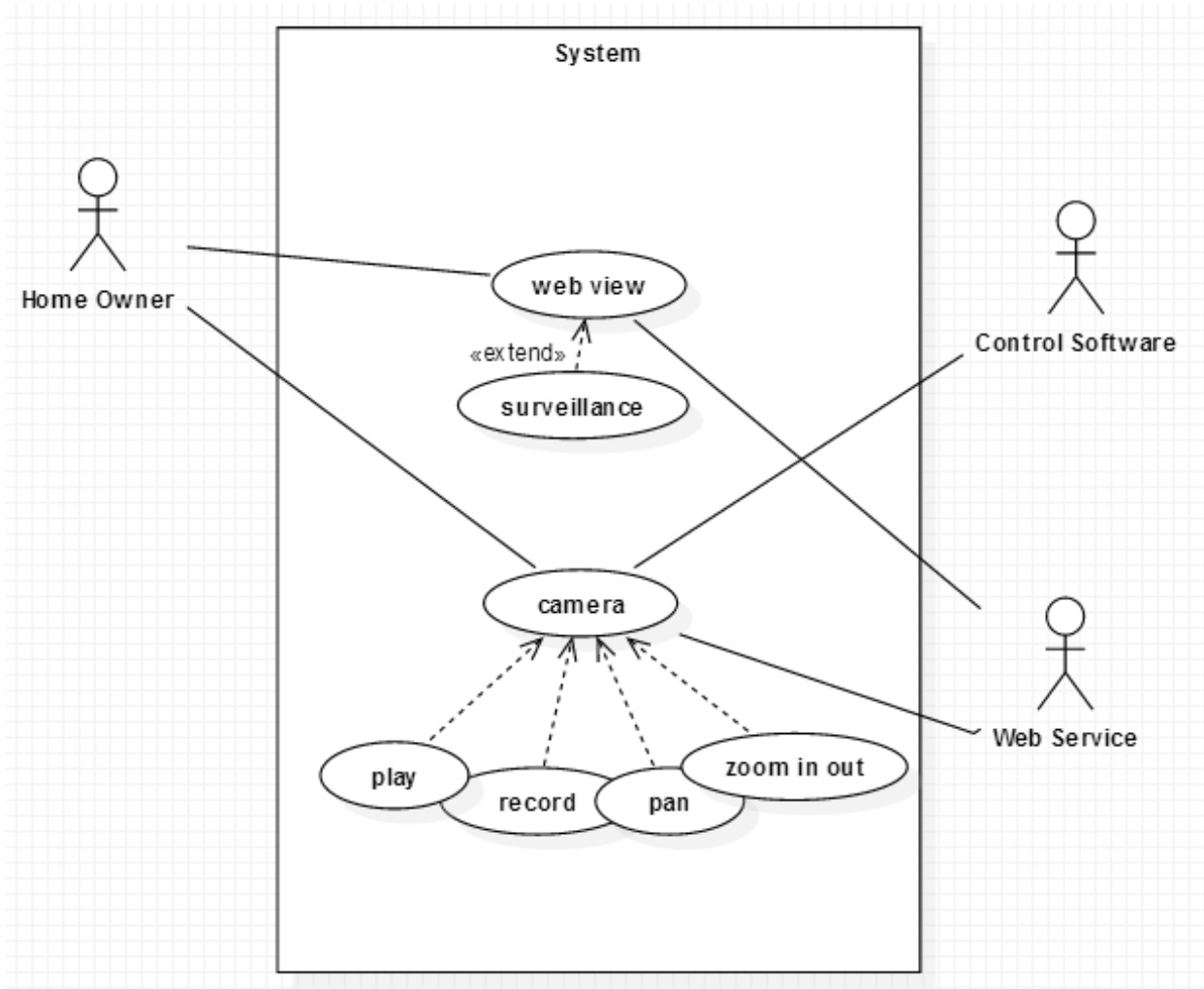
HOME SURVEILLANCE
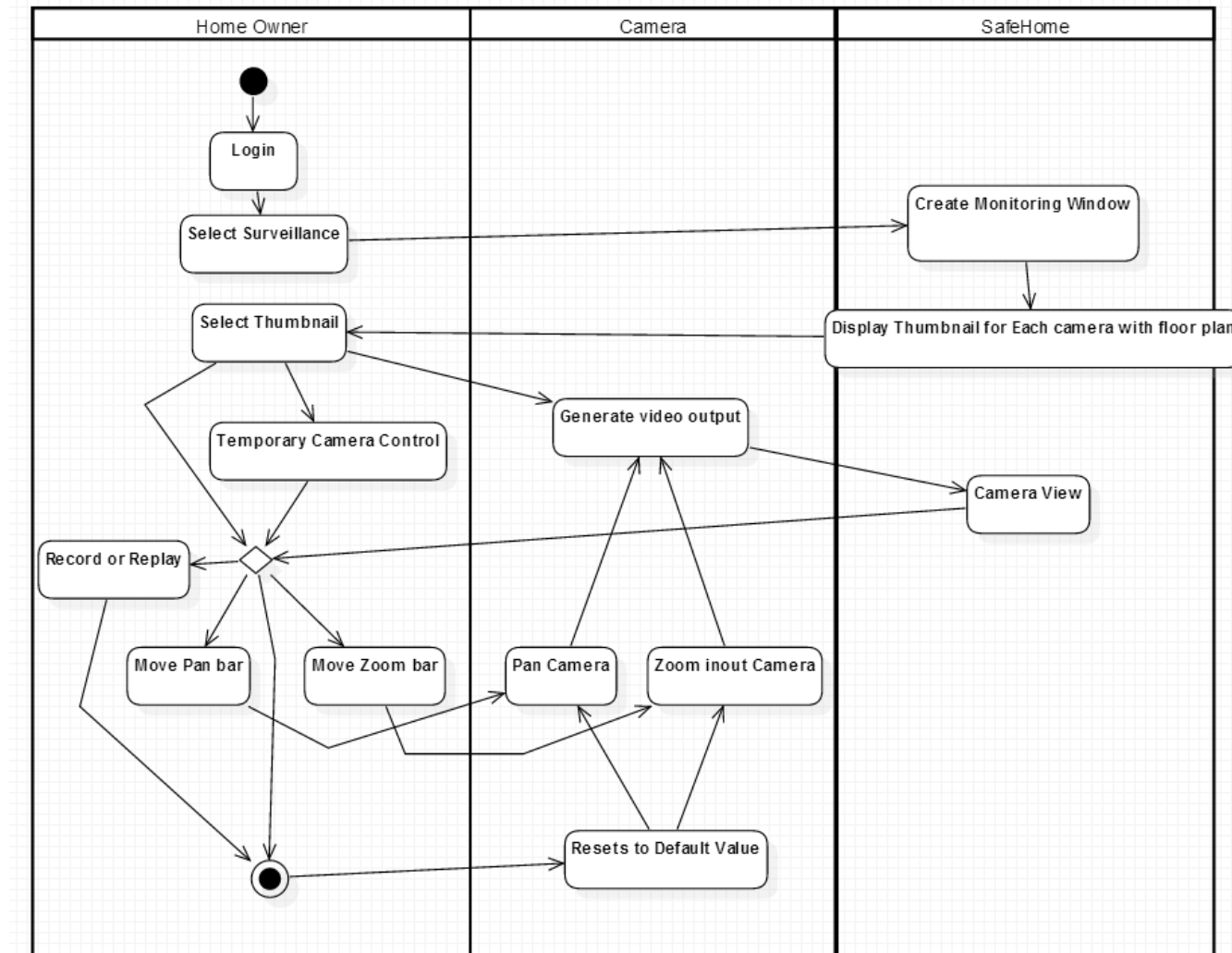
* NON-FUNCTIONAL

8.1. Telephone Call Control (ARS) → Functional

8.2. Extra Power Supply

8.3. Session Timeout

8.4. Multiple Access Control

8.5. Backup

8.6. File Manager

8.7. Security

8.1. TELEPHONE CALL CONTROL

8.2. EXTRA POWER SUPPLY

8.3. SESSION TIMEOUT

8.4. MULTIPLE ACCESS CONTROL

PLAN

- Difficult, takes time
- Need External API or additional discussion
- Need Hardware

1. Boot
- 1.1. Boot-up (CP)
- 1.2. Shutdown (CP)
- 1.3. Initialize Sensors
- 1.4. Initialize Cameras
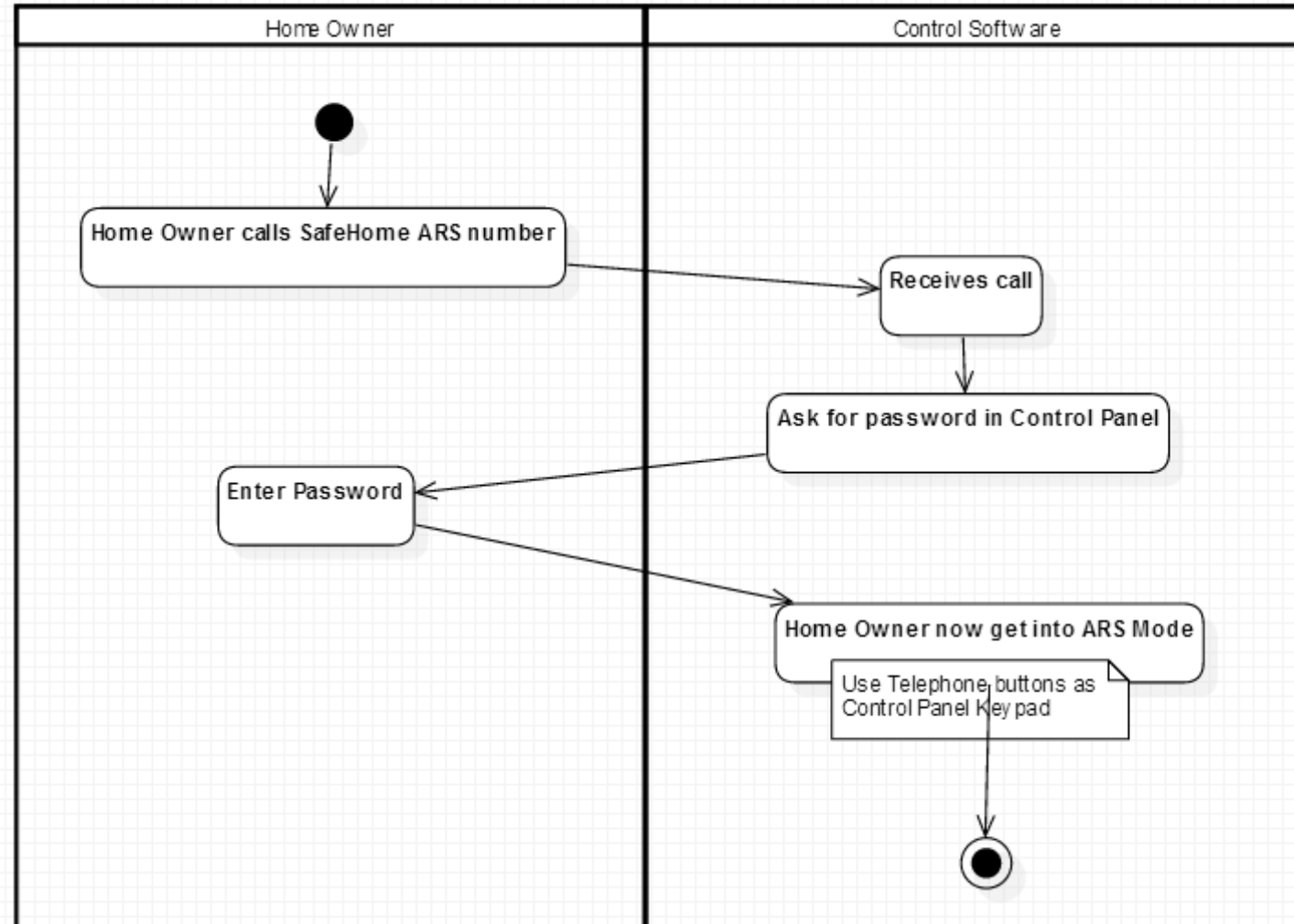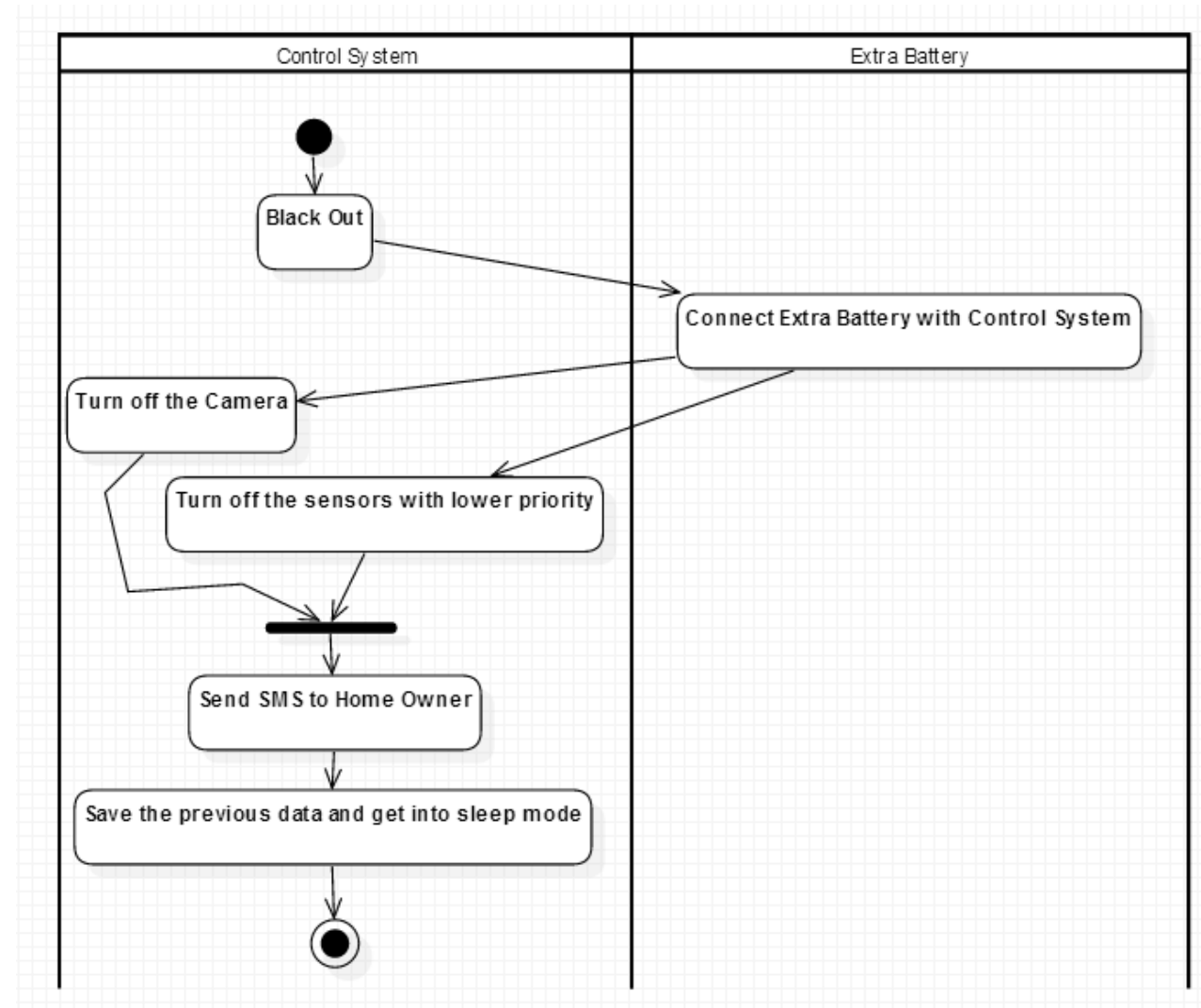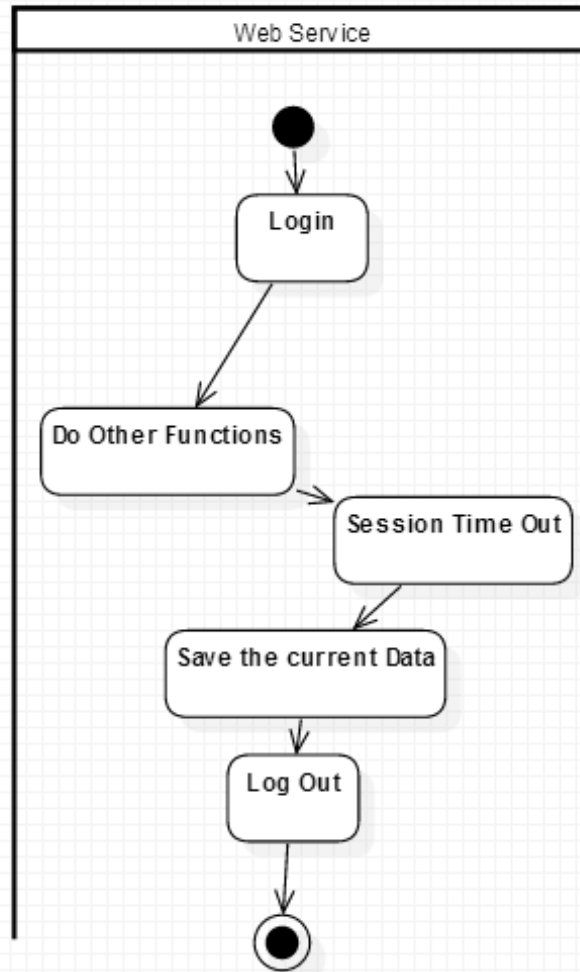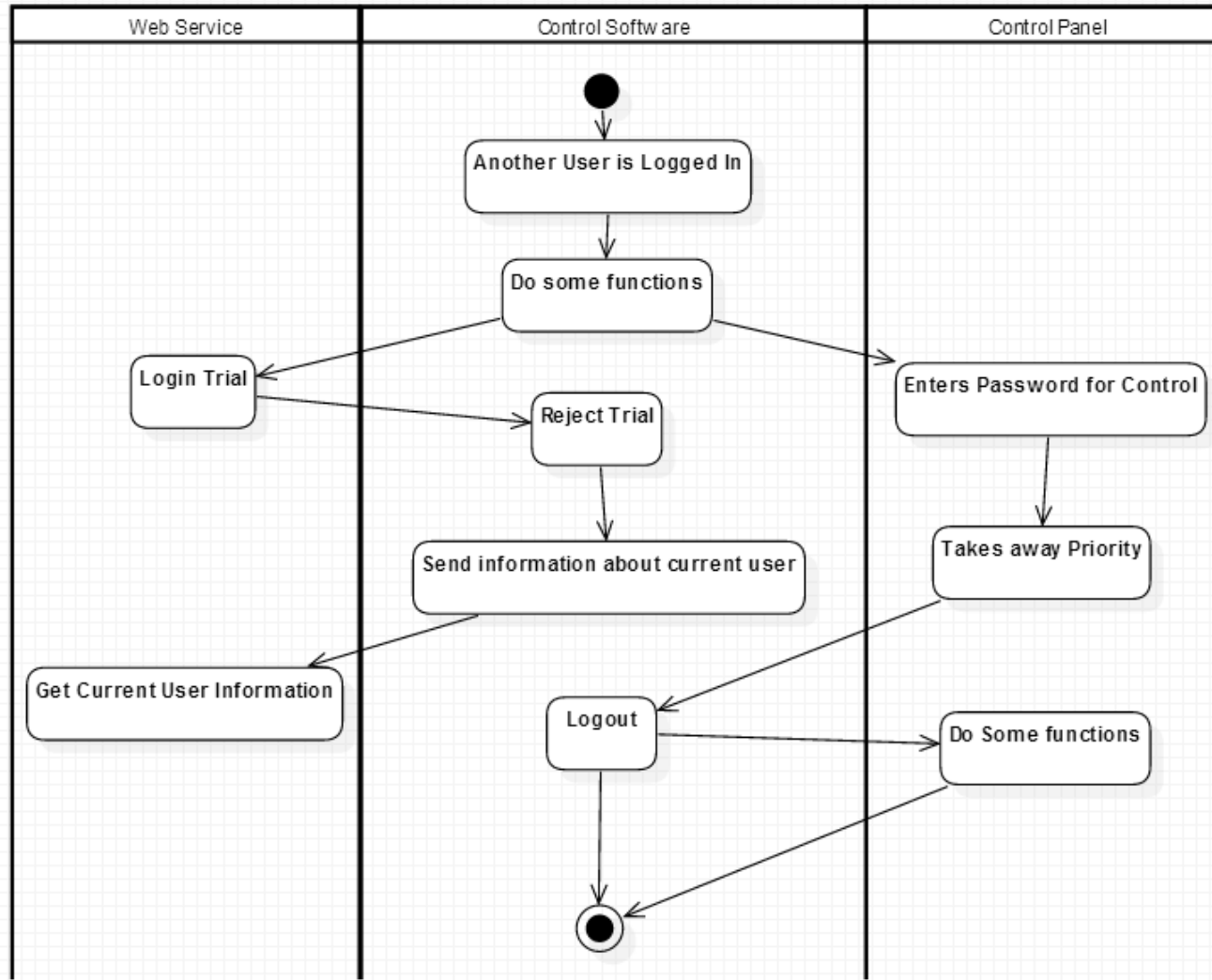- 1.5. Finish Sensors
- 1.6. Finish Cameras

2. Configure
- 2.1. Setting Main (Web)
- 2.2. Setting Sensors (Web)
- 2.3. Setting Cameras (Web)
- 2.4. Setting Cameras Detail (Web)
- 2.5. Setting Options (Web)
- 2.6. Weekly Mail Report
- 2.7. Self-Diagnosis

3. User Management
- 3.1. Login (Web)
- 3.2. Logout (Web)
- 3.3. User Log (Web)
- 3.4. User Create (Web)

- 3.5. User edit (Web)
- 3.6. Finding ID/Password (Web)

4. Arm/Disarm
- 4.1. Arm System via Control Panel (CP)
- 4.2. Disarm System via Control Panel (CP)
- 4.3. Arm System via Internet (Web)
- 4.4. Disarm System via Internet (Web)
- 4.5. Auto Arm System
- 4.6. Overnight Travel Mode (Web)
- 4.7. Extended Travel Mode (Web)

5. Intruder Prevention System
- 5.1. Intruder detection
- 5.2. Intrude Trial Detection
- 5.3. Possible Intruder Alarm

6. Home Management
- 6.1. Fire Alarm
- 6.2. Gas Alarm
- 6.3. Water Level Abnormality Alarm
- 6.4. Doggie Angust Alarm

- 6.5. Display Sensor Data
- 6.6. Control Appliances/Lightning/HVAC via Internet (Web)

7. Home Surveillance
- 7.1. Temporary Camera Control (Web)
- 7.2. Camera Overview (Web)
- 7.3. Camera Detail (Web)
- 7.4. Camera Record
- 7.5. Create Camera thumbnail
- 7.6. Play recorded video

8. Non-Functional Use Cases
- 8.1. Telephone Call Control
- 8.2. Extra Power Supply
- 8.3. Session Timeout
- 8.4. Multiple Access Control

SCHEDULE

[5/11] Presentation

[5/20] Design Model (10 days)

[6/7] Construction & Deployment (18 days)

Date	5/11	12	13	14	15	16	17	18	19	20	21	22	23	24
	PPT	SRS Refine			Design Based on deployment diagram					Design Model	1.1. 1.2. 1.3. 1.4. 1.5. 1.6.	4.1. 4.2.	6.1. 6.2. 6.3. 6.4. 6.5.	

Date	25	26	27	28	29	30	31	6/1	2	3	4	5	6	7
	3.1. 3.2. 3.3. 3.4. 3.5. 4.3. 4.4.		7.1. 7.2. 7.3.		2.1. 2.2. 2.3. 2.4. 2.5.	5.1. 5.2. 5.3.		4.5. 7.4. 7.5. 7.6.		6.6. 8.3. 8.4.	2.6. 2.7. 4.6. 4.7.			Construction & Deployment

CONSTRAINT

Time
- Look for External API
- Systematic approach
  - Skeleton to flesh

Business
- Project Experience
- Coding Level