- **Functional Requirements**
  - A Smart home control system (SHCS) is a system which is controlled by a mobile phone application or a web application, and at the same time controls, monitors and coordinates home appliances such as air conditioner, microwave oven, garage doors, TV , indoor/outdoor lights, home security system, etc.
  - In order to activate home appliances and to allow use of home appliances, the SHCS needs mechanisms for communication between the different devices in the system, and for coordination among the various processes running on such devices.
    - Note that the SHCS needs mechanisms for adapting to different needs of the user as well.

- **NON – Functional Requirements**
  - **Adaptability**
    - The SHCS shall be adaptable. Any change is environment shall be detectable, and the SHCS shall then take actions on different home appliances. This presumably according to the customer needs. Detecting changes in the environment is usually a very time-consuming task, hence hurting speed. Similarly, detection of events could induce significant performance penalty.
  - **Security**
    - The SHCS shall also be safe. For example, If Electricity cut, SHCS will segregate electricity from all home appliances. For Example 2, if there's a fire SHCS will turn on fire extinguishing device. For Example 3, SHCS Will have the full access on gas in home so it can make use of gas when it's needed.

- **Use Cases**
  - **Operate**
    - The use case *Operate* is a service provided for the users to operate on the devices that are connected to SHCS through remote devices. For example, user can send messages of turning on a TV, starting microwave to cook for five minutes, and so forth to SHCS and then SHCS will perform the action.

  - **Restart/Redo**
    - The use case *Restart/Redo* is an extension of the use case *Operate*. When the SHCS could not conduct the command that the user sent, it shall detect and fix the error or restart the device to make it function normally. And the operation will be conducted once more. Besides, the SHCS shall inform the user about this exception.

- **Operate Microwave**
  - The use case *Operate Microwave* is a service provided for the users to operate on the microwave that is connected to SHCS through remote systems. Users can send messages of cooking, defrosting, stopping, etc.
- **Operate Heater**
  - The use case *Operate TV* is a service provided for the users to operate on the heater that is connected to SHCS through remote systems. Users can send messages of turning it on, turning it off, adjusting water temperature automatically or manually.
- **Operate TV**
  - The use case *Operate TV* is a service provided for the users to operate on the TV that is connected to SHCS through remote systems. Users can send messages of turning it on, turning it off, increasing the volume, decreasing the volume, and changing channels.
- **Operate Cooker**
  - The use case *Operate TV* is a service provided for the users to operate on the cooker that is connected to SHCS through remote systems. Users can send messages of turning it on, turning it off, increasing the oven temperature, decreasing the oven temperature, and the oven timer.
- **Operate A.C**
  - The use case *Operate A.C* is a service provided for the users to operate on the A.C that is connected to SHCS through remote systems. Users can send messages of turning it on, turning it off, increasing the temperature, decreasing the temperature, and changing Fan speed.

- **Check/Update Status**
  - The use case *Check/Update Status* means that the SHCS keeps a record of the state of all the connected devices. It keeps updating their states from time to time. When users require the state information of some device through remote systems, the HACS send the latest state of that device to the remote system that requested.

- **Add/Remove Device**
  - The use case *Add/Remove Device* is a service for the users to add a device, for example, microwave, TV, and Boiler, onto the SHCS to be controlled remotely and automatically, as well as remove a device from the SHCS that is no longer to be controlled. When a device is connected to SHCS, both the SHCS and the device are configured in order to collaborate with each other.