1. Customer / Market:

This product is intended to be used as intelligent device for home or office automation. The users are everyday common people. This product is advised to be used only by the people above the age of 12.

1. Time Frame

Start of project: 28th May 2014  
Presentation of concept: 11th June 2014  
End of project: 25th June 2014

1. Goals

3.1 Purpose

This product is designed to control the ON or OFF timing of up to two electrical devices independently in sync with using a countdown timer, which is displayed. You can choose if the device turns ON or OFF after the countdown time and the countdown time is also adjustable. Next to the timer it is even possible to switch a device ON or OFF every time. The actual status (ON/OFF) is shown by a status LED.

A clock is integrated so that one can plan the timers to a specific time.  
One can use a menu to do all the settings, which is very intuitive.

3.2 Benefit

> Provides flexibility to the user by automatically switching ON or OFF an electrical device.

> Saves electricity

> No time wasting for waiting to switch a device ON or OFF at a specific time

> Shutdown timer for a running process can be used (shutdown TV after 30 minutes, because I felt asleep…. Can someone describe this better than I did? ☺)

4. Application of product

4.1 Area(s) of application.

Can be used where electrical appliance running on 230V AC supply need to be controlled using real time clock or countdown timer.  
E.g.: Switching OFF light and printer in office after 7 pm, Start cooker in 45 minutes, shutdown TV after 30 minutes, switch ON my video recorder in 2 hours, switch on my radio in 6 hours, turn off washing machine in 1h 45 min, switch ON heater in office on 16 hours.

4.2 Users, stakeholders

Householders, offices

4.3 As – is processes

4.4 Supported to-be processes

5. Product functionality

5.1. All functions, described from the point of view of the user

* Clock (with adjustable time)
* Clock timer for two devices
* Switch for two devices (on/off)

5.2 Detailed input / output, user interface

* Input: Joystick (up, down, right, left, press), num-keypad: (0-9, \*, #)
* Output: One-line display, 2 relays (with status LED), Buzzer
* User interface: one-line discriptions of the actual states
  + TIME: “88:88”
  + DEVICE ONE ON: “D1 ON”
  + DEVICE ONE OFF: “D1 OFF”
  + DEVICE ONE COUNTDOWN: “D1 88:88”
  + DEVICE TWO ON: “D2 ON”
  + DEVICE TWO OFF: “D2 OFF”
  + DEVICE TWO COUNTDOWN: “D2 88:88”
  + SET TIME: “SET T”
  + LEAVE MENU: “BACK”
  + SETTINGS TIMER ONE: “SET T1”
  + SETTINGS TIMER TWO: “SET T2”
  + SOUND: “SOUND”
  + SET COUNTDOWN: “SET CNT”
  + SET COUNTDOWN: “SET CNT”
  + SET COUNTER ON: “ON”
  + SET COUNTER OFF: “OFF”
  + KEYPAD INPUT: “88:88” (Actual digit blinking)
  + Acoustic feedback for switching between states
  + Acoustic feedback for entry acknowledgement

6 Product data

6.1 Quantity structure

* 2 relays with 230V/25A (???) each
* 1 display with 6 characters in one line
* 1 buzzer
* 1 joystick
* 1 keypad

6.2 Demands on hardware, software, interfaces

7. Product performance

7.1 Response times, battery life time

* Response time < 1sec
* Battery life time ???

Quick response time and battery life time of 100 working hours.

8 Quality specifications

8.1 Usability, reliability, efficiency

??????????