



Team Name	
University	
Product Name	
Category	

Problem Definition, Analysis and the Solution

- These days both men and women are going for jobs and they spend less time at home. They work in the night.
- The major activities carried out in our day to day to life are sweeping, washing clothes, cooking and opening/closing windows.
- For sweeping – Automated vacuum cleaners such as Roomba, For washing clothes – Automated washing machines, For cooking – Smart rice cookers, smart coffee makers, intelligent ovens. But nothing
- Even though the ICT era has started still we are doing it manual. But there are some innovations done regarding this area. Such as smart glass which is a glass or glazing used to block light and operated by turning a knob, remote window opener which uses a remote to open and close the windows within a limited area.
- How many times have you faced difficulties without opening or closing windows?
- In our lives we have faced so many difficulties. Dew drops, mosquitoes, when people forget to close windows, thieves may enter.
- Our solution is to implement a unit to replace the casement stay of a window (window stay – metal bar used to hold a window) and connect all the units to a hub which connects to the home network. It can do activities such as opening and closing windows at a set time, adapting to conditions such as rain, temperature which is discussed below.

Product Overview and Uniqueness of the Product

This unit replaces the casement stay as mentioned above...

Key Features

- - Opening and closing windows at the set time
- Closing windows when raining
- Controlling the system through an app which can be used even when the user is not at home over the internet.
- It can opened or closed according to external temperature.
- It can be used to open windows during a fire or a gas leak.
- It can be also used manually during a power failure.

Even now, most windows are opened manually and one of the solutions implemented for this problem is the remote window opener which can be used for opening heavy windows and can open or close windows within a limited area. Another solution implemented for this is the smart glass which can only block light. For smart glass windows, it costs about \$50 to \$100 per square foot. The whole kit costs about \$99 to \$249. These are mostly used in big companies such as ... These devices are highly costly and a not used for home usage.

When installing our product it is required to replace only the casement stay. Unlike other products mentioned above our system can be used to open and close windows to a set time, adapting windows to external and internal environment changes and control windows over the internet.

Business Model and Marketing Plan

- Target market is the general public
- Within Sri Lanka this solution is not yet implemented. So the sponsorship of manufacturers designing casement stays can be obtained.
- The cost for manufacturing this at the experimental level is about \$20 to \$30 and if it is manufactured in wholesale the cost can be reduced to about \$10.
- This can be first marketed in the local market and when the device can be manufactured in wholesale the product can be distributed to the international market.

Technical Overview and Implementation

Mobile application - we have decided to build an android application in our prototype android studio will be used to develop the application.

Hardware – Arduino Mega Microcontroller, Stepper Motor, Rain Sensor, LPG (Propane) Gas Sensor, LDR Sensor, DHT11 Temperature – Humidity Sensor, ESP8266 Wifi Module, Ethernet Shield

User Scenario

Smith is an employee who receives a middle scale income and he must maintain his family. All his windows are manually operated. With his busy life he forgets to close his windows most of the time. Due to this he has faced so many difficulties. Most of his valuable things have been damaged due to dew and some have been stolen. He got to know about the “Smart Window” devices. He got it installed very easily by only replacing the casement stays and he bought it for a reasonable price. Now he can schedule the windows easily to open and close and he can open and close the windows even from his work place. One day there was a fire at his home and he got a notification through the app.