ELEN4009 - Software Engineering
Smart Home Power Management System
Lab 03 - First Prototype of the Project

Ari Croock (718005)
Kanaka Babshet (678851)
Alice Yang (597609)
Daniel Weinberg (547937)

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1   Introduction

This report documents the implementation of the first prototype of the Smart Home Power Management System.

The project aims to provide a flexible software system which is able to remotely control and monitor IoT devices, as well as perform detailed power consumption diagnostics.

2   Work Schedule

2.1   Prototype development execution

All work was conducted as a well collaborated team. Upon receiving information complying to the deliverables of this lab, a three-hour sprint planning meeting was called in order to conclude the following:

1. The sprint goal

2. The action plan of how to achieve this goal by the target date (07/04/2016)

As is required in a sprint planning meeting, the product backlog was first created in order to decide which of these tasks will be transferred to the sprint backlog for the latest product increment. Upon this discussion, a sprint backlog was drawn up on Trello (a software collaboration tool). The sprint backlog is a basic list of the tasks that must be implemented by the team in order to deliver a functional product increment at the end of that sprint [1].

With a timebox of 3 weeks, tasks were delegated and the product was worked on and shared amongst the team using GIT, while sprint retrospective meetings were held every 3 days. Figure 1 below details the product backlog and sprint backlog created on Trello.

As was decided at the commencement of this project, Alice Yang and Daniel Weinberg have been assigned to the front-end development, whereas Ari Croock and Kanaka Babshet have been assigned to the back-end development.
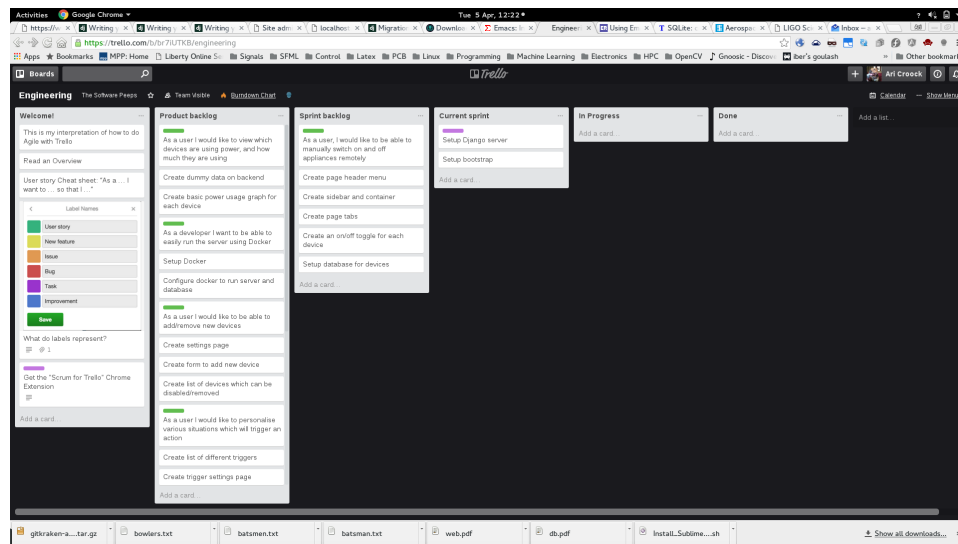

Figure 1: Screenshot of the Trello page drawn on the first day of the initial prototype implementation

2.2 Key Modules Selected for Project Illustration:

A few class modules have been written using Django, a high-level Python Web framework, in conjunction with Bootstrap, a powerful front-end framework, for the first prototype:

1. A scrollable webpage, with a page header and tabs

2. The addition and removal of a device, with corresponding specifications

3. Viewing the devices connected

4. Toggling between the state of devices

2

2.3 Testing:

Simple tests have been written and conducted along the development process of this prototype:

2.3.1 Back-end:

1. Check that a device can be added to the database

2. Test that the system does not allow datatypes which do not fit the device specifications. For example, a user cannot enter a device IP address as "3498347", but instead it must be an IPv4 or IPv6 address.

3. Check that a certain home location cannot contain two devices with the same names. For example, a kitchen cannot contain "kettle 1" and "kettle 1"

4. Test that no two devices can have the same IP address

2.3.2 Front-end:

<Alice and Weiny add your tests here please >

References

[1] Luciano Felix. 2009. *9 Tips for Creating a Good Sprint Backlog.* [ONLINE] Available at: https://www.scrumalliance.org/community/articles/2009/march/9-tips-for-creating-a-good-sprint-backlog. [Accessed 06 April 16].