User equipment control and logging software development

Overview
Sponsor has a suite of equipment for which the department requires computer login access to ensure that users have received the proper laboratory safety and equipment use training. The time period of each user using the machine needs to be recorded for charging purpose. Sponsor wants to build the user interface and centralized server from sketch, improve the original UI design with added functionality, and setup new hardware to turn on/off the machine.

Objectives
Develop a set of new login software package centralizing all logging information across lab while having a modern efficient user interface.

Approach
- Multiple meetings with sponsor and IT team were made to understand needed functionality and test new equipment
- Two different designs of GUI are developed for sponsor to choose
- Programming languages for server and software client are determined upon group discussion
- The functionality of Webrelay (box that wirelessly turn on the machine) is tested using a light bulb plugged into Webrelay.
- The functionality of software client is tested by checking the message sent to server.
- The validation of result is checked during the demo for the sponsor.

Outcomes
- Sponsor can manage student authorization, machine status and time limit in administration client.
- Sponsor can search and export usage log
- Students can turn on authorized machines for a period of time and manually turn off machine
- Students can enjoy a clearer overview of machine status and easier login procedure
- Student can turn on machines wirelessly throughout the room