

STATEMENT OF WORK

Philips Hue Lighting Control

Lighting Control System

September 26, 2019

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		Project Number	00001
Project Name	Weebs' Lighting		
Project Team Members	Eldon Hayes		
	Simon Ngo		
	Calvin Trinh		
	Madison Koelzer		
	Cody Mangham		
	Nathan Van		

Project Request and Background:

● Project Description:

The purpose of this project is to create a mobile application, compatible with iOS and Android, which integrates lighting functionality and customization to provide convenience for lighting designers. The application will contain two modes: developer and user; the user mode will contain a much more streamlined version of the app to provide basic functionality for manipulating lighting to the user's preference. On the other hand, the developer mode will contain much more complex functionality to channel the extreme need for customization from lighting weebies. While optimized for residential housing, the application will be usable within any area containing Phillips light bulbs.

● Description of Current Situation:

The Current Philips Hue application is less optimized for newer users, leaving current instructions for the new owners of the Hue light bulb directionless when the time comes to configure their lighting scenes. Hue's current functionalities is in need of improvement, specifically regarding the order of how lights are set up. With the apps stock state users are also forced to use a slider for their custom colors, the ability to configure colors through RGB Values or Hex Values will lower set up times, leaving Hue lightbulb owners less frustrated and appreciative of the new feature. Adding compatibility with more applications and hardware over the network will also prove to be a great

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selling point as Hue's latest version does not interact with consumer's home devices that include: Google's Home, Amazon's Alexa, and Siri from Apple. Users are also required to open the application whenever they desire to turn their lights on, adding more complexity and time to a task that should be as fast as a press of a button.

- **Statement of Problem/Opportunity/Need:**

Lighting designers are in need of a better version of the Philip Hue lighting control application for simplicity and better functionality. Current system only allows lighting customization through a slider, and this is less user friendly for new users. Adding the ability to configure colors through RGB Values or Hex Codes will help shorten the time spent on colors configuration.

- **Justification and Benefits:**

By allowing interior decorating light designers easier access to the usage and control of lights, we can enable better quality lighting in both a professional and home setting. The creation of this application eliminates the limits placed on a lighting designer, and permits them to be as creative as they wish.

- **Concepts for Proposed System:**

This will be an android/iOS application that will be network based. The user will be able to organize the loads into groups (consisting of at least one load) into scenes. The groups are set to the same color and brightness and can be adjusted after initial creation. Scenes can be created using groups from different rooms. An important function of the application is being able to quickly turn off/on common scenes without opening the app (whether that be through micro

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controllers or third party devices such as Amazon Alexa or Google Home). The app will be able to preview how the groups interact with each other to create a scene.

Scope of Proposed Effort

● Assumptions:

- This application will primarily be used by lighting designers and homeowners
- Installation of the lights will have already taken place
- A bridge will handle the majority of the functionality for connection to loads/groups
- Light bulbs will be considered single loads
- There will be a difference in the functionality of the app between two different modes

● Scope:

- Keep track of the loads available and connected via the bridge
- Allow for grouping of loads depending on user's preference (when within developer mode)
- Modify the color of lighting of loads/groups
- Modify the luminescence of loads/groups
- Modify the time for transition of loads/groups
- Create scenes which contain presets for the color/luminescence of loads/groups
- Allow for custom naming and storing of scenes
- Allow for IoT compatibility with popular household items
- Contain functionality for showing previews of chosen scenes/settings for lighting
- Security will be implemented via a passcode to authorize household owners complete control over app functionalities. Said authorized users will be allowed to disallow modification of certain loads/groups
- Contain a widget compatible version to allow for quick modification of scenes or loads/groups

● Business Constraints:

- We must complete the project by the time specified by the user
- Before starting development, we must gain software licensing to use the Philips API
- Stakeholders may or may not have knowledge of complex lighting design. Thus, two modes will exist with accessibility and usability the focus of one and complexity for lighting design the focus of the other
- While security will be implemented, efficiency and usability will be focused for the end product

● Technical Constraints:

- We are limited by the capabilities of the Philips Hue API and a corresponding bridge for loads to connect to
- Application will be designed and available specifically for mobile devices, iOS and Android
- Application will be designed in Swift (iOS) and Java (Android)

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Major Business Functions:

ID #	Business Function	New or Modified Features
01	Project Management	
02	Home Owner Account / Master Code Entry / Edit	
03	Color Edit	
04	Luminescence Edit	
05	Load Entry / Edit	
06	Load Color / Luminescence Edit	
07	Group (of Loads) Entry / Edit	
08	Group Color / Luminescence Edit	
09	Scene Entry / Edit	
10	Scene Preview	
11	Load / Groups Access (for Master Code holder) Edit	
12	App Maintenance	
13	Manuals, Documentation, and Help Screens	
14	User Training	

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Risk Assessment:

Risk Description	Potential Negative Impact	Risk Probability (H/M/L)	Risk Impact (H/M/L)
Losing Team Members	The work will be split up between the remaining members	L	H
Philips Licensing Hue	Owner's will need to pay for Hue	L	H
All Philips API has major changes	All code using APIs could be lost	L	H
Philips discontinues Hue lights	Our software will only be compatible with a limited amount of people	L	H
Application does not meet specifications	Time delay	M	M
Limitations created by the APIs	Reworking of the design	M	H
App glitches cause problems with lights	Angry users which can cause them to abandon the app	L	H
Project not completed on time	Project cannot be submitted	L	H

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Communication Strategy (include both team and external stakeholders):

The team will communicate through the Discord app and have biweekly meetings to discuss the state of the project and assign workload. The stakeholders will be addressed through in person interviews conducted by the group to deduce the course of action for the direction of the project. These interviews will be recorded and have notes taken.

Change Requests:

During the course of the project, there may be changes requested related to the project requirements, project schedule, or project budget. If this occurs, the Project Leader will prepare a standard Change Request Form and submit it to Project Sponsor for approval.

User Acceptance Criteria: *(For Minor Projects, define the user acceptance criteria for each of the major business functions listed earlier. Use the format provided in the User Requirements template.)*

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Agreed to and Accepted By:

Project Team		Business Unit	
Project Lead Name:	The Group	Project Sponsor Name:	
Signature:	<i>The Group</i>	Signature:	
Date:	10-29-2019	Date:	