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Deliverable C - Design Criteria and Target Specifications

Project Group 18

Introduction:

The design criteria is based on two main aspects. One being functional criteria and the other being non-functional criteria. Functional criteria is used to better design a product while non functional only is used to make a design look and work appropriately. Functional criteria can be a limiting factor which can lead a design into a certain direction. A functional criterion is any criteria in which a number value can be assigned or a criteria that can be tested. A non functional criterion is a criteria which can not be tested or assigned a numerical test value.
Benchmarking is a tool used to help narrow down multiple designs down to one design. Benchmarking helps to see which design would fit all the design criteria and would be a good fit for the next stages of designing and prototyping.
Using the information we gained from the initial client meeting with CEED and Ross Videos and our group meeting we have come up with the following functional and non functional criteria for our design to follow.

Functional and Non-Functional Requirements

Week 5's client meeting provided enough information to put together a list of interpreted client needs. From those needs, a list of design criteria was compiled to aid in the design-thinking process. With this design criteria, a list of functional and non-functional requirements were compiled to help further break down what is needed.

	Need	Design Criteria
1	Easy to use (From both client and operator perspective)	Doesn't require difficult manipulation to function
2	Must genuinely improve the productivity of one of the CEED spaces	-
3	Cosmetic design must fit well within the CEED space	Aesthetics (Colourway, exterior design, etc.)
4	Product must be stable and free of any bugs or crashes	Properly coded

5	Product must be easy to maintain and repair when needed	Made from quality material
6	Cost	Should cost less than $100

Functional Requirements	Non-Functional Requirements
Improve the efficiency/productivity of a CEED space	Longevity
Easy and intuitive to use	Aesthetics
Use of Ross Video DashBoard software	Safety of users

Aesthetics of any given product is a major key to how it will be perceived by customers and users . Even though it doesn’t affect the function of a specific product, it still will affect the success of the product. It’s mainly about how the eye of the users or customers react to the shape, colour, exterior design and any other specific traits of the products. For example: A watch is used to know the exact time at any moment, but the price can range from 5 CAD to thousands or even millions of dollars. All of that is due to the aesthetic nature of the product.

Longevity is also another non-functional requirement of products that affect the customers and users. Users expect the product to have a long life span, lifespan depends on the materials used in manufacturing, on the usage, environment in which the product is being used and many more.The longevity can be described by different metrics, like the number of years or uses.

Safety of use is the most important trait that the designers focus on, because the product should not be harmful to the users. In this case, there’ll be usage of arduino boards, cables and other electrical components. All these together can become a hazard like electrocution if not used adequately. Which is why the system should be connected adequately, taking into consideration the voltages and current passing through it so that the users don't face any harm while using the product.

Benchmarking

There are a number of existing products that are used in different a different context, that could prove valuable in the design of this project. One instance is the parking lot guidance system that is used everywhere worldwide from airports to shopping centres. This product functions by tracking the cars that are occupying the spaces in a parking lot and relaying the information to a screen at the entrance that'll customers know if there are any spots available, which floor they're on, etc… In addition, there's usually a small LED light on top of each individual parking space so the customers would be able to see straight away the parking spots available rather than waste time driving around the lot trying to look for one. The appeal in a system like this is that it requires no action from the customers themselves. They simply park their cars and the computer will register that a car is present and take the necessary actions. This is as user friendly as it gets, since the user doesn't have to do anything and the entire process is automated for them. This relates well to CEED's need for a system that can let users know which machine is being currently used. The "Internal Space Indicator LED Parking Guidance System", from Indec is an example of such a product. It is easy to maintain and doesn't require much upkeep. It is also easy to install. Most importantly, it performs the function CEED needs; to let users know if there are any spots available. Admittedly, Indec's product far exceeds the budget constraint for this project, along with being much too big. However, a smaller version to fit CEED's need should be well-within the budget.

Another product that was discussed in the previous report is a panel containing an interactive map. These panels can be found in almost every major shopping centre in Canada. For some, it is rather intimidating going to a new shopping centre alone trying to find a certain store. Others might be short on time and would like to be in and out as fast as possible. This panel shines here. It provides an interactive 3D map of the entire mall, detailing where every store is along with directions to get there. CEED would benefit from such a product since it'd save a lot of time for both staff users. If an individual is looking for a certain piece of equipment, they could simply use the interactive map panel to find it. It's very easy to use and should help users in case staff aren't around. This specific product costs a lot more than the $100 budget for the CEED product, however, a smaller version within the budget could be made. Also, it would be relatively easy to maintain.

Constraints

There are many constraints that can be applied to the design of this project that will help the product . One constraint is that the materials used in this project cannot cost over $100 to design. Another constraint is that the product must not be to heavy and be able to be moved around by one person. The CEED spaces are not that big and all the space needs to be used to be as efficient as possible. In that case the product has to be efficient in the amount of space that is taken up in the design.