Group C13: Prototype I and Customer Feedback

GNG1103 - Engineering Design

Deliverable F - Prototype I and Customer Feedback

Victoria Ajulo, Ryan Fabek, Mihir Jakhi, Koghulan Jeyapalasingham, & Hongjian Zhu

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University of Ottawa

Introduction

This document outlines the first of the prototyping models, in which we introduce prototyping and how it applies to this particular stage of the testing. After a general introduction, the specifics of prototype 1 and its purpose will be explored. This includes going over the reasons for testing, objectives of the testing, and expected results which will allow for us to learn what to improve upon for the next working model.

Reason for Testing

*This is an introduction. Capture the reasons for the test, giving enough background information to justify doing **any** prototyping at all. Is the **general** objective one of: learning, communication, de-risking, etc.*

Prototyping is used to provide a sample of the design to test whether it meets the customer needs addressed in the earlier parts of design thinking. The purpose is to find out what works in our design or what things need us to change in the design based on the overall proof of concept, The idea is that we, as the design team, present the first design through some kind of modelling, and the customers and/or users, based on their interpretations, will provide feedback about how it met their needs and where it requires improvements.

Test Objectives Description:

*What are the **specific** test objectives?*

The specific test objectives of this prototype is to determine the feasibility of the bracket system that will allow for a column to be folded up and transported in an efficient and ergonomic manner. The idea is not for the customers to see a working model, but to get an idea as to what the model could eventually look like, and how its physical design is specific to their particular needs.

*What **exactly** is being learned or communicated with the prototype?*

The information being learned is what the design in question is capable of, what it excels in, and the possible flaws in its design. The things being communicated are the essence of the design, in terms of portability and its intended function, as well as its place in the system.

What are the possible types of result?

There may be many possible types of results. Ideally, the desired feedback is that the prototype result matches the customers' expectations for what they are looking for. However, it is possible that the design does that not meet their expectations at all, resulting in a complete failure. Most likely, certain parts of the design will be well-received and appreciated, while other parts will be received with less enthusiasm and criticism.

How will these results be used to make decisions or select concepts?

The result would help us know what to fix or what we need to adjust in our design instead of wasting money on the actual design only to find out that it needs adjustments and this can affect the whole project.

What are the criteria for test success or failure?

If the test result goes the same as our previous expectation of the prototype, then we regard it as a success. Otherwise, we regard it as a failure.

What is going on and how is it being done?

*Describe the prototype **type** (e.g. focused or comprehensive) and the reason for the selection of this type of prototype.*

The prototype we will be building is of the focused type. This is because we will be focusing on the bracket subsystem of the tower, which is the main mechanism of the tower system that will allow for the new system to be more portable than the pre-existing system.

Describe the testing process in enough detail to allow someone else to build and test the prototype instead of you.

The process begins with identifying the purpose of the test. In this case, The purpose is to find out what works in our design or what things need us to change in the design based on the overall proof of concept. We will treat our prototype 1 as a scale model and try to figure whether our design is achievable or not based on how the customers perceive it. The proof of design aspect of prototype 1 means there are no quantitative attributes that can be measured, and instead, we will be looking at qualitative observations. To continue, it means that the presentation of the prototype to the customers is, in fact, the actual test of the prototype. The

customers' reactions are to be observed, recorded, and analyzed during the presentation to be interpreted later on for the next working prototype.

*What information is being **measured**?*

Full dimensions of the top and bottom brackets(includes the holes on the brackets). Also, the height of the system is essential to be measured.

*What is being observed and how is it being **recorded**?*

The main observation is the reaction from the customers; we need to ensure that they understand how the design works and how it functions to serve their needs of portability. We will be noting down their statements on the design and pay close attention to nonverbal/indirect communication, such as body language, emotional reactions (excitement towards what they like, and discontent towards what they do not like).

What materials are required and what is the approximate estimated cost?

The materials that are required include cardboard, tape, and glue. The approximate cost of these materials is negligible, as they are common items and easily accessible.

What work (e.g. test software or construction or modeling work or research) needs to be done?

Research and benchmark with other similar products in the current market are required to be done. By doing that, we can know what are their advantages and drawbacks so as to improve our design.

When is it happening?

*How long will the test take and what are the **dependencies** (i.e. what needs to happen before the testing can occur)?*

One of the dependencies is that a prototype must be ready and functional in order to be tested. Another dependency would be that the prototype structurally sound and secure.

A separate test planning Gantt chart can be created to help making sure that the testing fits with the overall project schedule or it can be defined as part of that schedule (i.e. as a sub-task).

We firmly agree with this sentiment.

When are the results required (i.e. what depends on the results of this test in the project plan)?

The results should require to be aiming or providing a way for clients to improve and promote their using experience. The result would be required when we officially start prototype 2.

Conclusion:

This document provides a great amount of detailed information and instructions on starting and building the first prototype. In addition to its intended function, the focus is not on the model itself, but how the customers receive its proof of concept. Essentially, detailed testing procedures are provided for the first prototype alongside the materials that are required to construct the first prototype. The overall design will be presented and based on the customers' qualitative feedback, we will be able to figure out exactly what works in our current design and what we need to improve upon. This is a crucial step in the design process, as it is the first real test of a model presented to the customers. Up until this point, the only interactions that we have had were theoretical and based on brainstorming, but this prototype is the first real evaluation of our design efforts.