

Deliverable J : User Manual

Team Z7

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Abstract

As part of the class GNG2101 the team Fusion 5 had to create an online learning platform for the Center of Entrepreneurship and Engineering Design. In order to create the best solution the Fusion 5 team created 3 prototypes. The first prototype was a physical comprehensive and was based on the first client meeting. This helped the team show what they had in mind and to have a visual representation. The second prototype was also a physical comprehensive, it was based on the second client meeting. For the second prototype, the Fusion 5 added some features that the clients suggested, for example having the task self correcting. The second prototype was similar to the first one but with more features. The third and final prototype was also a physical comprehensive prototype, based on the third client meeting. Once again the modifications made from the second to the third prototypes were things that the client wanted, for example to have less buttons and to change the wording. The final prototype is very similar to the first prototype, the reason behind this is because the prototypes are a website. With having a prototype that is a website it is easy to add or remove aspects that the clients did not like.

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1 Introduction

Due to the current regulation toward the coronavirus and the social distancing measures, the workshop offered by Center of Entrepreneurship and Engineering Design (CEED) cannot be offered in person, therefore it will be offered online. The Fusion 5 team has an objective to take the in person fusion 360 workshop and convert it to an online workshop, and base the design criteria on the customer needs. It was very important to the client, CEED, to make the workshop very similar and offer the same experience as the in person workshop. It is also important to let the students interact with the instructors, and it must be accessible to the majority of the students. This is advantageous for CEED because given the circumstances they can still offer the workshop, and offer the same services that they had before the coronavirus. It is also advantageous for the students because they can still do the workshop, the only difference is that they do it from home. The team fusion 5 found the best solution to offer an online experience very similar to the in person workshop. The solution is easy to use and lets the students interact with the instructors when they need help. The solution by Fusion 5 also lets the students practice what they learned during the workshop and get feedback for their work.

1.1 The Problem and its Importance

The problem is to conceive for the CEED MakerLab an interactive distance learning platform to replace in person Fusion 360 workshops. In addition, the learning platform should be accessible from home, easy to use and navigate, and must be taught with the same expertise as in person workshops. Therefore Fusion 5 created a website in order to offer the workshop for

students even if they can't go to the university. This is an important problem in order to help the students advance in their knowledge of computer assisted design (CAD) and fusion 360.

1.2 Fundamental Customer Needs

The customer needs played an important role in the conception of the prototypes. In order to assess these needs it was important to emphasize with the customer. This was done by asking open ended questions, asking a lot of questions and examining the body language. From the answers of the client the following customer needs were determined:

- Interactive
 - The students need to be able to ask questions
- Experience
 - The experience of the workshop needs to be the same as an impersonate workshop
- Accessibility
 - It needs to be accessible to students from home and easy to use
- Cost
 - It should not cost more than 20\$ for the students to accomplish the workshop, and it should not cost more than 100\$ for the fusion 5 team to create the prototypes

1.3 What Sets Our Product Apart from the Others

The online beginner fusion 360 workshop made by Fusion 5 is a great option for students that want to learn the basics of fusion 360. Firstly, some points that set this workshop apart from the others are the rapid response time for the questions sent by email, one on one talk with the

instructor and the frequently asked questions (FAQs). This lets the student ask questions in a manner that is easiest for them. This means by talking, sending an email or just researching. This system also lets students be more autonomous, in a way that they can do the research before asking a question, in the FAQs. Compared to other platforms where you can find the information you want, if the student has a question the response time is not as fast and the student can't talk with the person at the other end if the student prefers to talk to someone. Also the students need to do more research to find the information that they need.

Secondly, the workshop by Fusion 5 offers the pre-workshop and the five different tasks. This lets the student practice what they learned in the lab manual with the support that they need. The task also lets the student know that when they have accomplished them they now have the capability to do some basic designs in fusion 360.

Finally, the workshop gives the options to the students to go through the lab content either by watching a series of videos or reading the lab manual. This option is to let the students learn the basics of fusion 360 the way they prefer. It also lets them switch between the videos and reading. For example, if a student is watching the video and did not understand a certain part of the video, he can just go read the manual and continue, and vice versa. Compared to other resources that the students can learn, the students don't usually have the choice or they can not hope from one way to the other. If they do, it is not usually the exact same topic that is covered.

1.4 Main Function of Our Product

The product was conceived in order to offer the in person workshop of fusion 360 to students online for CEED. The main functions are the different sub tabs of the website. Those tabs are

- Home page
 - This page lets the students register to the workshop and gives an overview of the workshop.
- Pre-workshop
 - This page has instructions to download fusion 360. There is also a pre-workshop quiz. This quiz should be answered after the students have read the pre-workshop and test the base knowledge of the student on fusion 360.
- Workshop content
 - This is where the students can go through the workshop either by reading or watching the video series.
- Tasks
 - This is where the students can do the 5 tasks. Task 1 is a quiz and the students will get their grade instantly. The tasks 2-5 are designed in fusion 360. The students will only submit the task 5 which also contains the task 2-4.
- Video Chat
 - This is where the students will see the instructors schedule. If an instructor is online they can click on the link for the zoom meeting.
- Contact Us

- This section is where the students can send an email about a question that they have, or any other problem there is with the website.
- FAQ
 - This section is where the FAQs are. The students can look through them to see if they can find the answer to their questions.
- Login
 - The login section is there so the website can keep track of the progress of the students.

2 How the Prototype was Constructed

For the creation of the prototypes the team Fusion 5 used the website creator wix. This allowed them to create their own website easily. Since the general template was already created, it allowed them to concentrate on the important aspects that the clients wanted in the product.

2.1 Category

2.1.1 Home

The home page contains a register option for the users that are not a student at UOttawa. This option would allow the instructors of the workshop to monitor who are taking the workshop. You can also find on the home page a brief description of fusion 360 and the advantages of using it. There is also an overview of what the website contains and in what order it is recommended to complete the different aspects. The figure 1 to figure 3 contains the entire home page.



Figure 1 - Home page contents (1)



Figure 2 - Home page contents (2)

Why use Fusion 360?

Fusion 360 allows you to create CAD models using "Sketch Based Modeling"

- Follows a more common modeling interface similar to Solidworks (Transferable)
- Allows you to create more complex and dimensionally accurate designs
- Based on principle of creating a 2D sketch
- Then transforming 2D sketch into a 3D object
- Provides you with more freedom in your design
- Contains features to simulate your design's motion

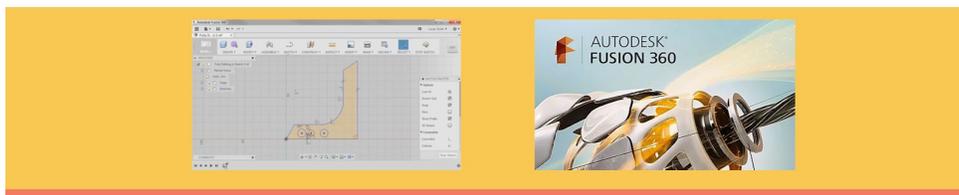


Figure 3 - Home page contents (3)

2.1.2 Pre-Workshop

On this page you can find the instructions to download fusion 360 as well as the workshop powerpoint and the pre-workshop quiz. The link to the website where the users would download fusion 360 to this page. The user just needs to click on the button that says download and it will take him to the page needed. The same steps would be followed if the user wants to download the workshop powerpoint. The pre-workshop quiz was made using google form and is linked to the button quiz on that page. When the user is ready he would click on that button to take the quiz. After completing the quiz, the user would get feedback on his performance. The figure 4 below shows the pre-workshop page and the figure 5 shows the pre-workshop quiz.

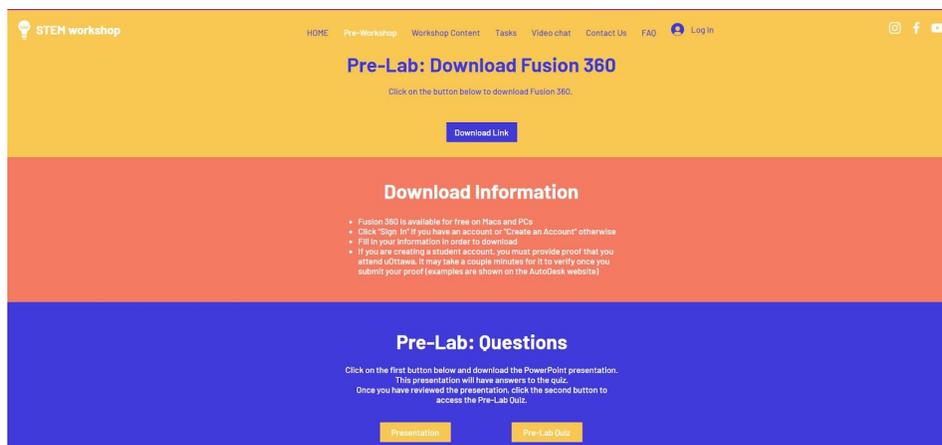


Figure 4 - Pre workshop tab

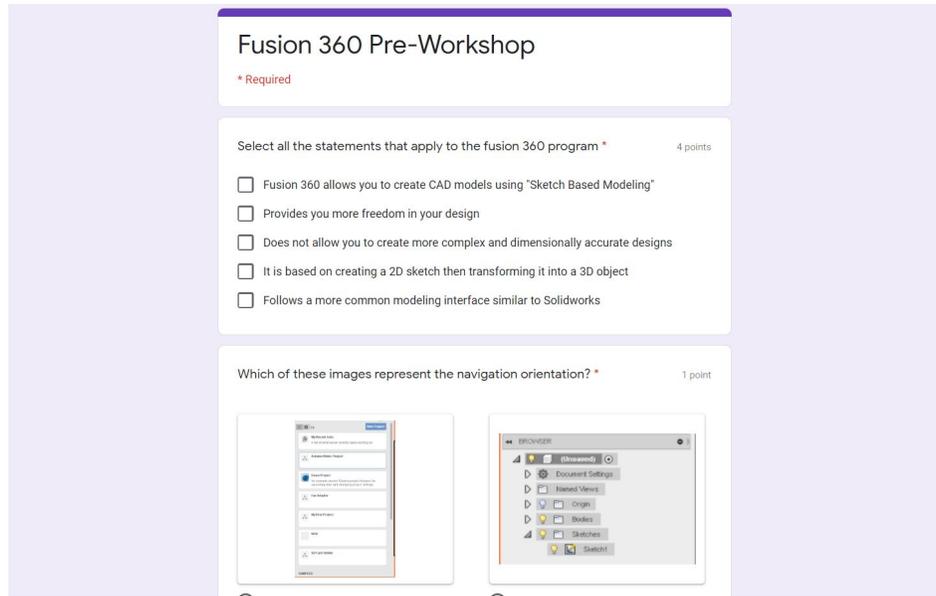


Figure 5 - Pre-workshop quiz

2.1.3 Workshop Content

In this page, fusion 5 gave the option to the users to decide between two different options. Either to go through the workshop content by viewing different tutorials or by reading the workshop manual. Figure 6 contains the workshop tab

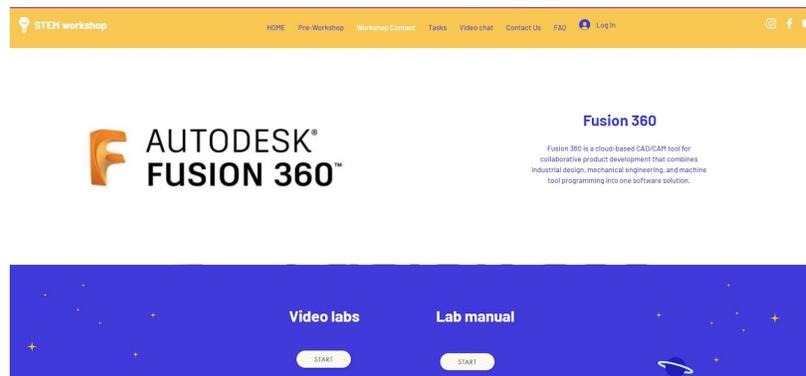


Figure 6 - Workshop tab

If the user chooses to view the tutorials he will begin by viewing an introduction video to fusion 360. Then he will move on from video to video until he completes the workshop content.

If they choose the workshop manual, they will read through all the workshop content and instructions. In the following figures (figure 7 and figure 8) contains lab manual and the video labs

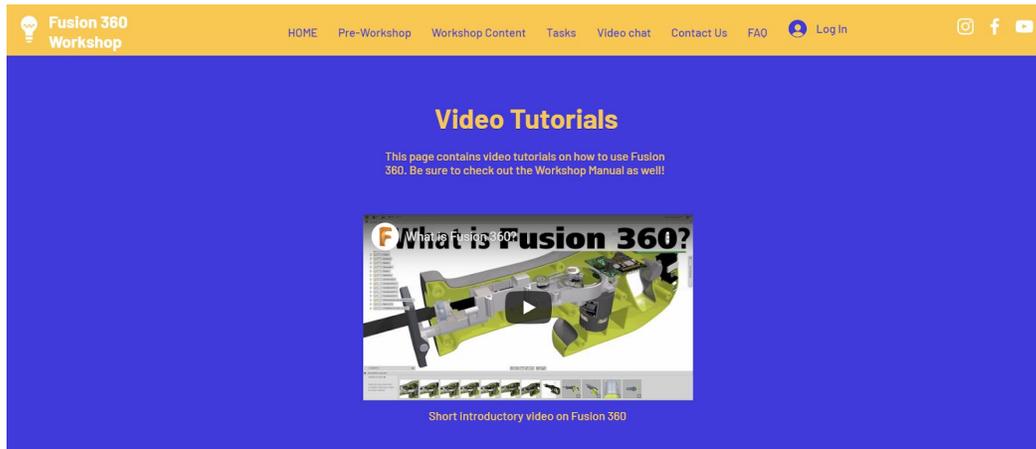


Figure 7 - Video workshop

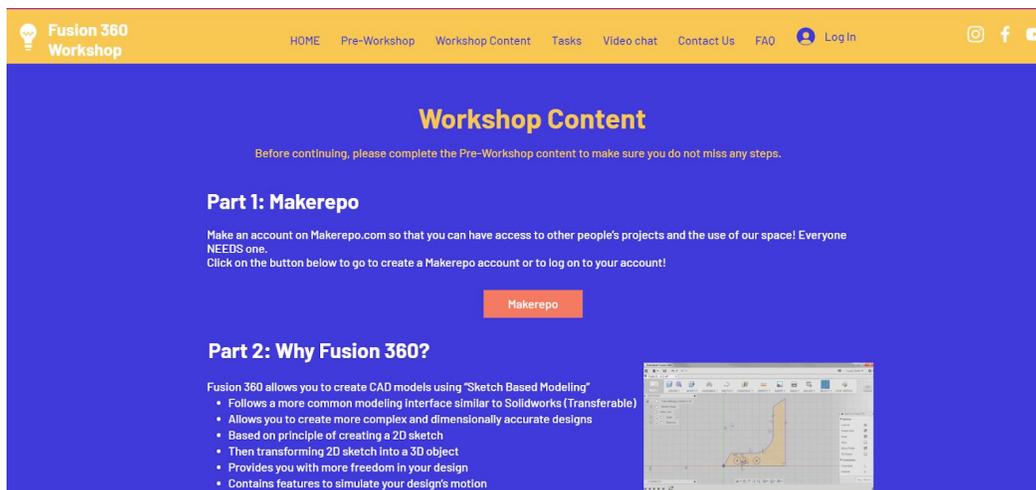


Figure 8 - Workshop content

2.1.4 Tasks

On this page, the user we'll have to do 5 tasks in order to test his comprehension. The first task will be a quiz in google form to test their main nolidge of the content. Task number 2,3

and 4 are fusion 360 projects that the user would have to do. All three of these tasks are linked to each other and you would need to complete the previous one before moving on to the next task. Task number 5 consists of finding the center of mass of their assembly and submitting the fusion 360 project to the instructor responsible for the workshop for correction. The user can access each task by clicking on the button under each task description as shown in the figure 9.

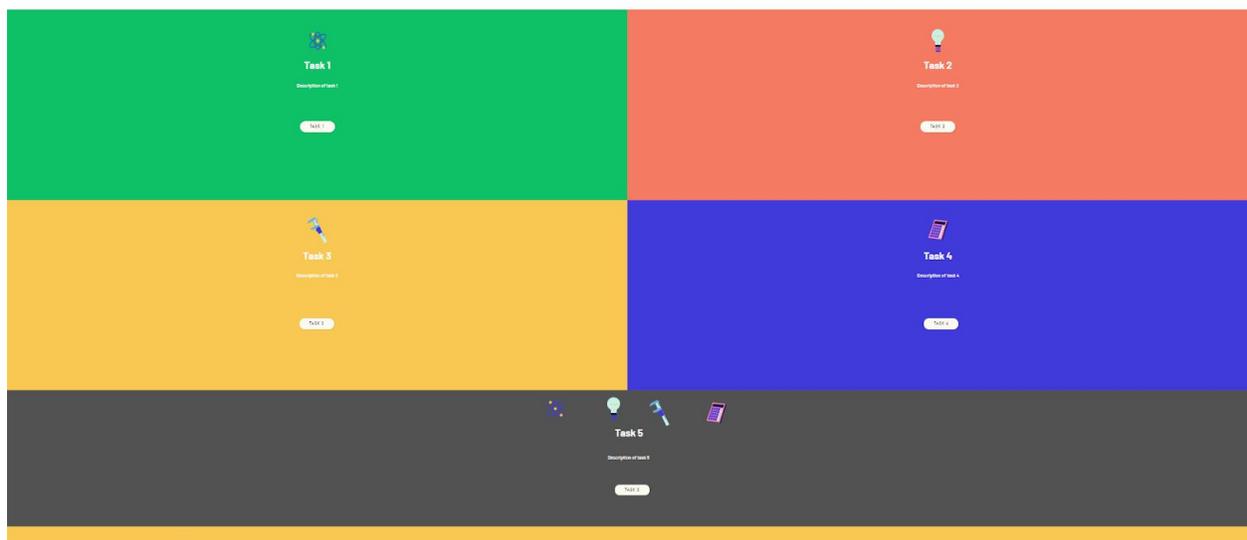


Figure 9 - Task page content

2.1.5 Video Chat

On this page (figure 10), the user can find all the time availabilities of different instructors responsible for the fusion 360 workshop. If the user has a question about something he can request a video chat with an instructor via this page. The user would click on the zoom link and that will send them automatically to zoom where they can talk one on one with the instructors. The instructor would also have the zoom link available where the user could access during the available times.

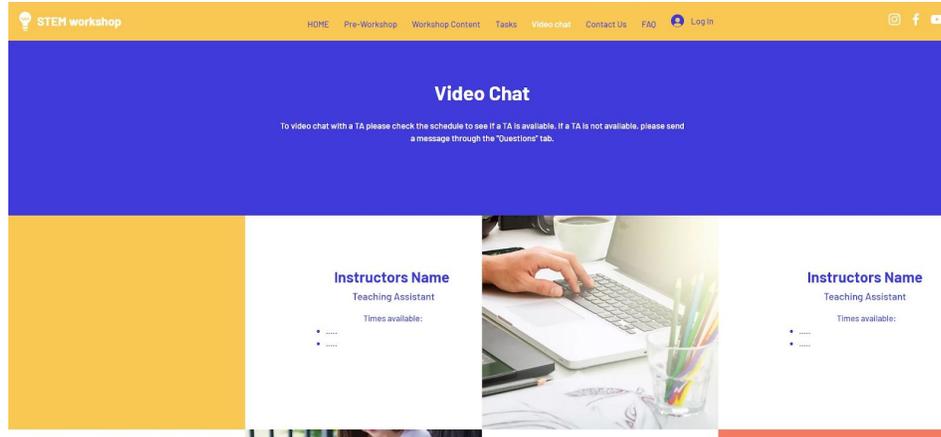


Figure 10 - Video chat content

2.1.6 Contact Us

The contact us page (figure 11) is part of the home page and can also be accessed on every page of the website. This page allows the user to send out an email to the instructor if he has any questions about the workshop. The contact us page is also used for submitting the final task of the workshop.

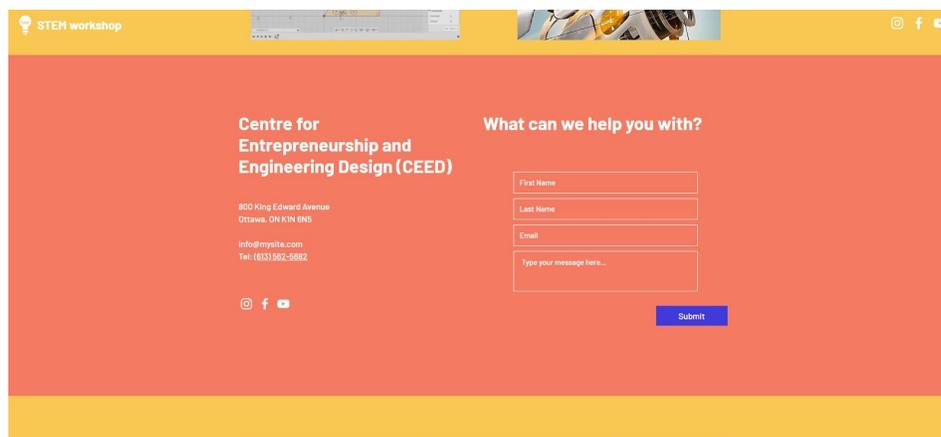


Figure 11 - contact us content

2.1.7 FAQ

This page (figure 12) contains some frequently asked questions that the user can consult during the workshop. These questions are based on the recurring questions on the fusion 360 workshop. If any other questions keep recurring, the instructors can add that question to the FAQ page. If a user has a question, he can consult this page before sending out an email or requesting a video chat. This page will also give access to the instructor to add questions that are frequently asked.

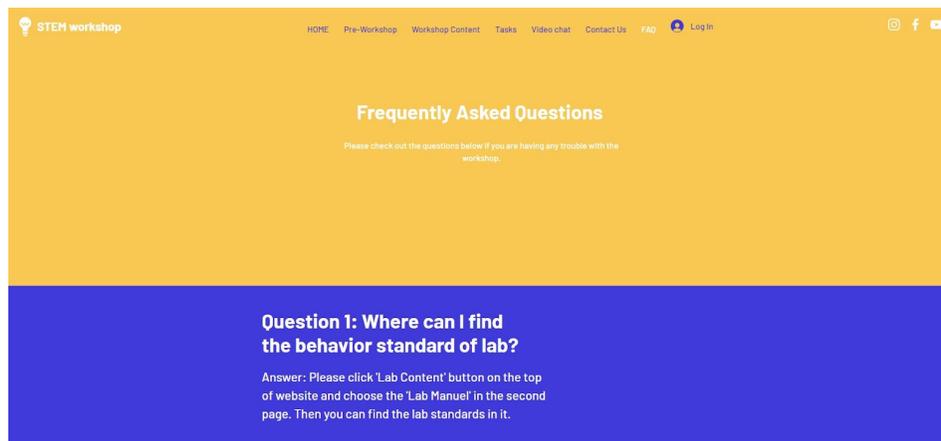


Figure 12 - FAQ page content

2.1.8 Login

There are two types of login pages on our website. If the user is a student from UOttawa and is doing this workshop for a class, he can login using the login page (figure 13). But if the user is not a student, he can use the register page to register to the workshop (figure 14). These two login pages permit the instructors to track who are doing the workshops.



Log In

New to this site? [Sign Up](#)

 Log in with Facebook

 Log in with Google

or

Log in with Email

Figure 13 - Login page

Fusion 360 Workshop

HOME Pre-Workshop Workshop Content Tasks Video chat Contact Us FAQ Log In

Register to the lab

First Name

Last Name

Email*

I accept terms & conditions

Submit

Figure 14 - Register page

3 How to use the Prototype

3.1 The functions of the Prototype and How they Work

The website contains three main functions, the FAQ page, the quizzes/tasks and the contact us/video chat page. The FAQ page offers answers to frequently asked questions by the

students and users. The way that that page works is that whenever the instructors of the workshop receive the same questions multiple times, they can manually add them to that page. In that way, all the other users will have the answer to that particular question in the future. The second main function is the quizzes and tasks. The quizzes are made in google form and can be accessed on the website by a corresponding button. These quizzes can be modified if necessary. When a user finishes the quiz he will get immediate feedback. The instructors will also be informed of how well the user does on the quiz. The final main function is the contact us and video chat function. The user can send out an email to the instructor by filling out the form on the contact page. He can also request a video chat with the instructor by going on the video chat page and clicking on the meeting link. Another function of our website is the login function. Students can login to the website that way the instructors of the workshop can keep track of who is doing their work. The users who are not students can also use the register function to sign up to the workshop. These features allow the instructors to keep track of who is a student and who is only a user.

3.2 How the Users Uses the Prototype

The users or students will be given the link or will do a quick google search in order to be sent to the website. Once the students are on the home page, they can read what the workshop is about and register. The registration will bring them to a login page where they can sign up to the website. If they want, they can also login with their uottawa account.

Once they have registered they can go on the pre-workshop tab. Then they can read the pre-workshop and answer the quiz. They will receive their mark instantly for the quiz. The quiz is there to test their knowledge on the basic functions of fusion 360.

After doing the pre-workshop, they can go on the workshop page. The students will have the choice to follow the workshop by reading the workshop manual or by watching a series of videos. When they are finished with the workshop they can go to the task tab.

On the task tab they will have to accomplish them in order starting with the quiz of task 1. When they complete the quiz they will get their grade instantly. This quiz is also about the basics of fusion 360, but it is more about the different functions of the software. Then the tasks 2-5 rely on each other and must be done in order. In order not to give too much correction to the instructor, only the task 5 will be submitted and corrected. Once the task 5 is successfully completed and submitted, the workshop will be completed. The instructor will get the file, and grade it.

If at any time a student has a question about the workshop, they have 3 options. The first option is the FAQs where they can look through the previously asked questions. The second option is to see if an instructor is online and join the zoom chat. The final option is the contact us tab, where the student can email the instructor with their questions.

3.3 How to setup the Prototype

The majority of the website is already set up, the changes or more oriented to a change of email for the website. Firstly, the pre-workshop quiz needs to change emails so the instructors can view and collect the results from the students. Secondly, the video part of the workshop needs to be changed. The current button for the video is linked to a random youtube video, that video would need to be changed to the video that the instructors would make to be related with the workshop content. Thirdly, the quiz for task 1 needs to change to emails, so that once again the instructors can see the results from the students. Also the link for the submission would need

to be changed in order to send the work of the students to the instructors. Fourthly, for the video chat section, the instructor's name and available hours would need to be changed in order to reflect the hours that the instructor would be available for the live chat. Also the zoom link would need to be added. Finally, the email for the contact us would need to be changed. This would be done automatically when the ownership of the website would change. The FAQs would only need to be changed if the instructors feel that the same questions are being asked repeatedly. Lastly, the user needs to register to the workshop if he is not a student and students need to login. That's the only setup from there part.

4 How to Maintain the Prototype

4.1 Tests performed on the prototype for validation of the final design

In order to validate the final prototype, the website went through some tests. The test included doing the workshop over and over to confirm the reliability. Next, to check if the website was reliable when there were a lot of people using it at the same time, the Fusion 5 team asked some friends and family to try and have at least 15 people using the website at the same time. Both those tests were successful.

Since the Fusion 5 team knew that the website was reliable, they asked friends and family members to do the workshop to determine if the website was easy to navigate, and if the task were not too hard but not too easy compared to the workshop content. The feedback that fusion 5 received was mostly positive. The navigation of the website was easy and it was straight

forward. The feedback for the task was that the task 1 was a great resume of the basics of the workshop and how to start working in fusion 360. The task 2,3 was easier than the workshop but a great start to learn. Task 4 was harder than the workshop, since the workshop doesn't really show you have to do it. But with a bit of research and question asking, the Fusion 5's friends and family were able to learn quickly how to do it. Finally the task 5 was not covered in the workshop, but with a quick search in the FAQs or google, the Fusion 5's friends and family were able to accomplish it.

4.2 Regular Maintenance

The product by the team Fusion 5 is a website. Therefore the regular maintenance that needs to be accomplished will be basic website maintenance. The maintenance would include periodically going through each link to make sure they work. Periodically check for security breaches, and periodically backup the website. Other maintenance would be to frequently update the FAQ page in order to add any new questions that were asked.

5 Conclusion and Recommendation for Future Work

In conclusion, many lessons were learned during the process of creating the 3 prototypes. The first lesson that was learned was empathising with the client. During the creations of the prototypes, it was important to empathize with the client in order to better determine the clients needs, this helped us to also create prototypes that are more what the clients had in mind. A second lesson that was learned is creating a website, this is something important for the Fusion 5 team because the project was a website. Therefore in order to create a good project the team had to learn how to create a website. This is also a good skill for the future. A third skill that was

learned was conflict management. This was a useful skill to help the team choose between different solutions, and chose the best one. This is also an important skill for the future when you work in different teams. The fourth skill was learning fusion 360, this is an important skill because fusion 360 is a powerful tool to design CAD files. A final and very important skill was time management. For this the team used Microsoft projects in order to assign the different tasks to different members of the team. This helped to have all the deliverables and prototypes done on time.

Recommendations for future teams is to use Microsoft projects in order to help with organization of the team. It also helps with the distribution of the workload, so that everyone can do their part and so that no one does too much work. It is also important to have a good “game plan” and to have everyone on the “same page” in order to better accomplish the deliverables. This will help the team to also do the deliverables in a timely manner. A final recommendation would be to expect the unexpected and to try to get ahead for the submission of the deliverable, this helps with dealing with the unexpected.

6 Bibliographie

Here is a link to our website:

<https://jkara036.wixsite.com/fusion360>

Here is a link to makerepo project page:

<https://makerepo.com/Maxime/gng2101-z7-fusion-5>