Project Deliverable G - Prototype II

GNG2101

Professor Mana Azarm

Group E14 - SensAct User Interface

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Introduction

This deliverable will focus on the client's feedback on the first prototype and what will be done to improve upon it. Screenshots of the second prototype (D) and results of our testing will also be included in the deliverable. Our client's feedback on the most recent prototype will also be included as to evaluate what will need to be changed for the next prototype. Our plans for developing our complete model of our product would be included as long as what we have to fix and add into that model to make it a better version than the one presented in this deliverable (prototype II). We have also included a project plan to assign tasks to different members of the group to have specific goals to work towards as we conclude our project.

Client Meeting Feedback for First Prototype

Feedback from the first prototype was provided during the second client meeting and was discussed in a previous deliverable [D] a summary of the feedback is provided below.
The client really enjoyed the new audio feature and design of the interface. He believes we were able to properly understand the issue and try to implement an intuitive design as our first prototype. He was surprised with our progress and would like us to focus on functionality by adding a serial node in Node-Red and focus on testing using user profiles. We took this feedback and focused on functionality for the second prototype. Functionality for the client includes connecting the Sensact device and Node-Red interface such that they can communicate.
Since the client wants us to focus mostly on the basic functionality, we also improved the user friendliness of our user interface. We planned on doing so by getting the buttons to function properly and setting up separate menus for each type of patient, suitable to their needs. This would likely improve the usability and intuitively of our product. For example, for the no vision device menu, we could include voice control and touch sensors.

Updated and Detailed Design of the Second Prototype

The design of the second prototype was kept relatively the same especially because the main focus of this prototype was functionality. The newly implemented part of the prototype is the patient system menus, and the button functionality.

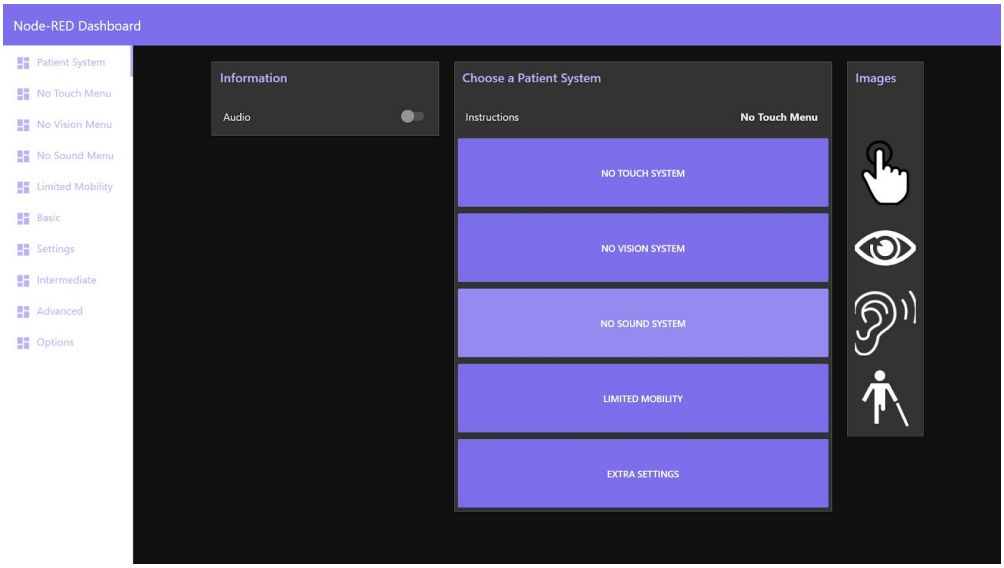


Figure 1: Main Menu of The Interface

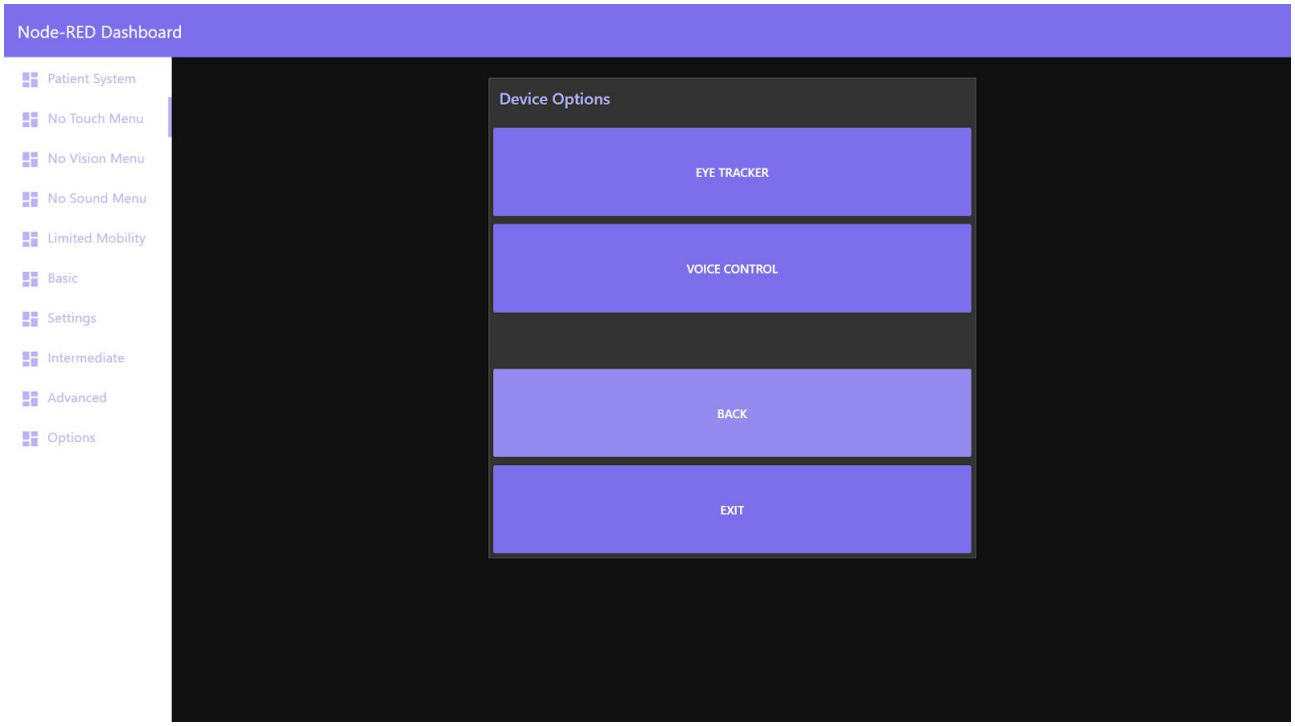


Figure 2: The No Touch Device Menu

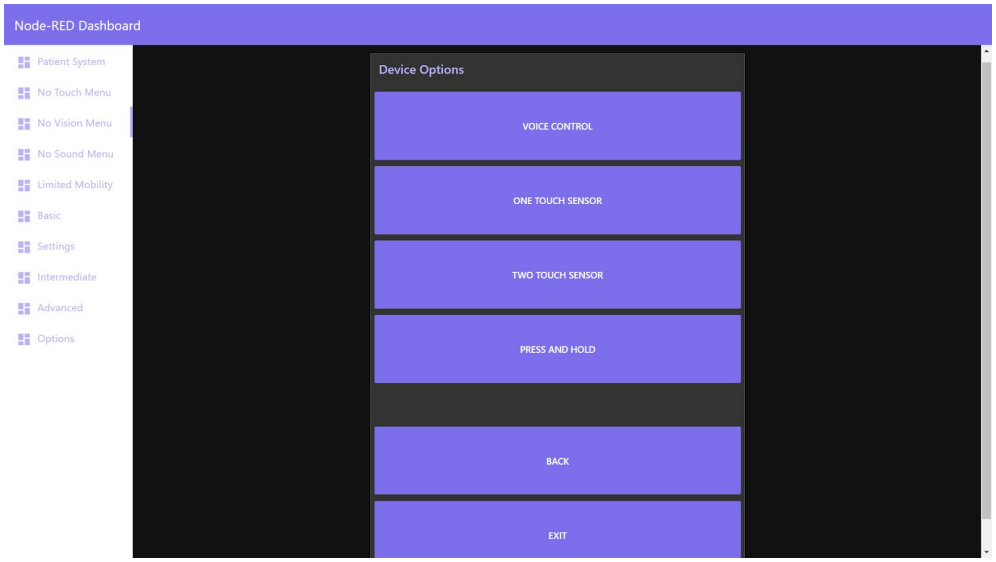


Figure 3: The No Vision Device Menu

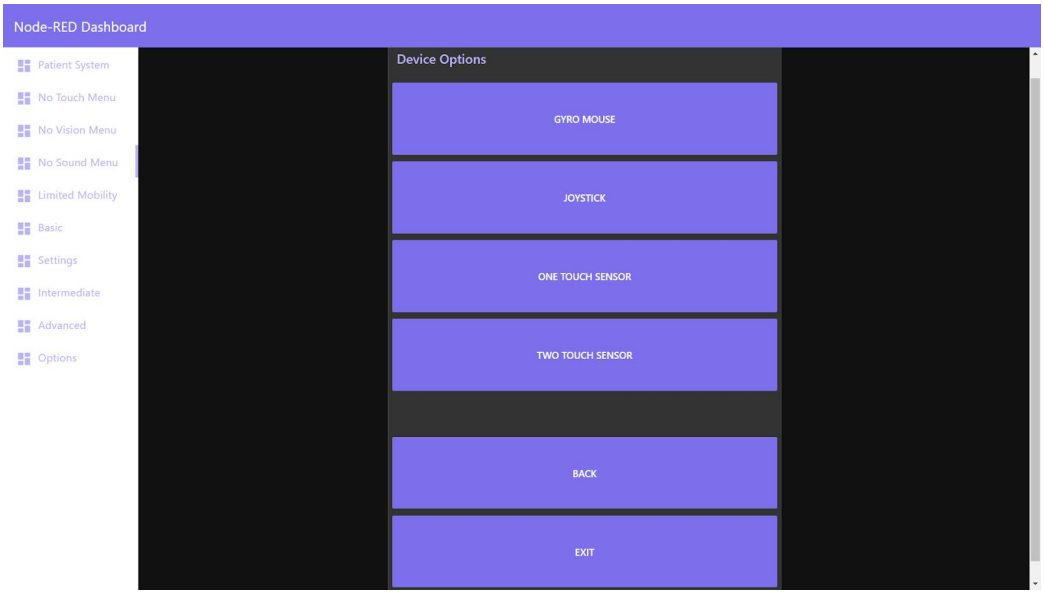


Figure 4: The No Sound Device Menu

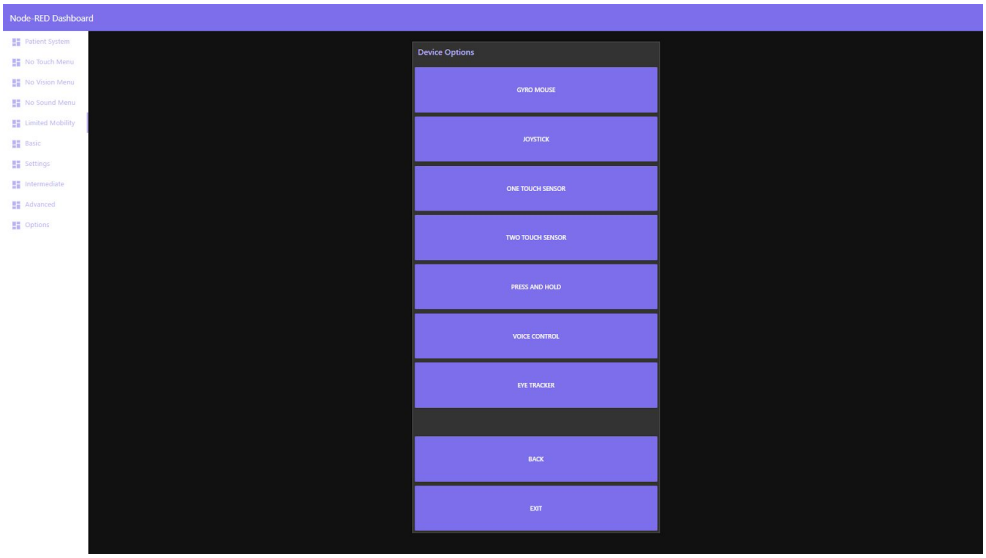


Figure 5: The Limited Mobility Device Menu

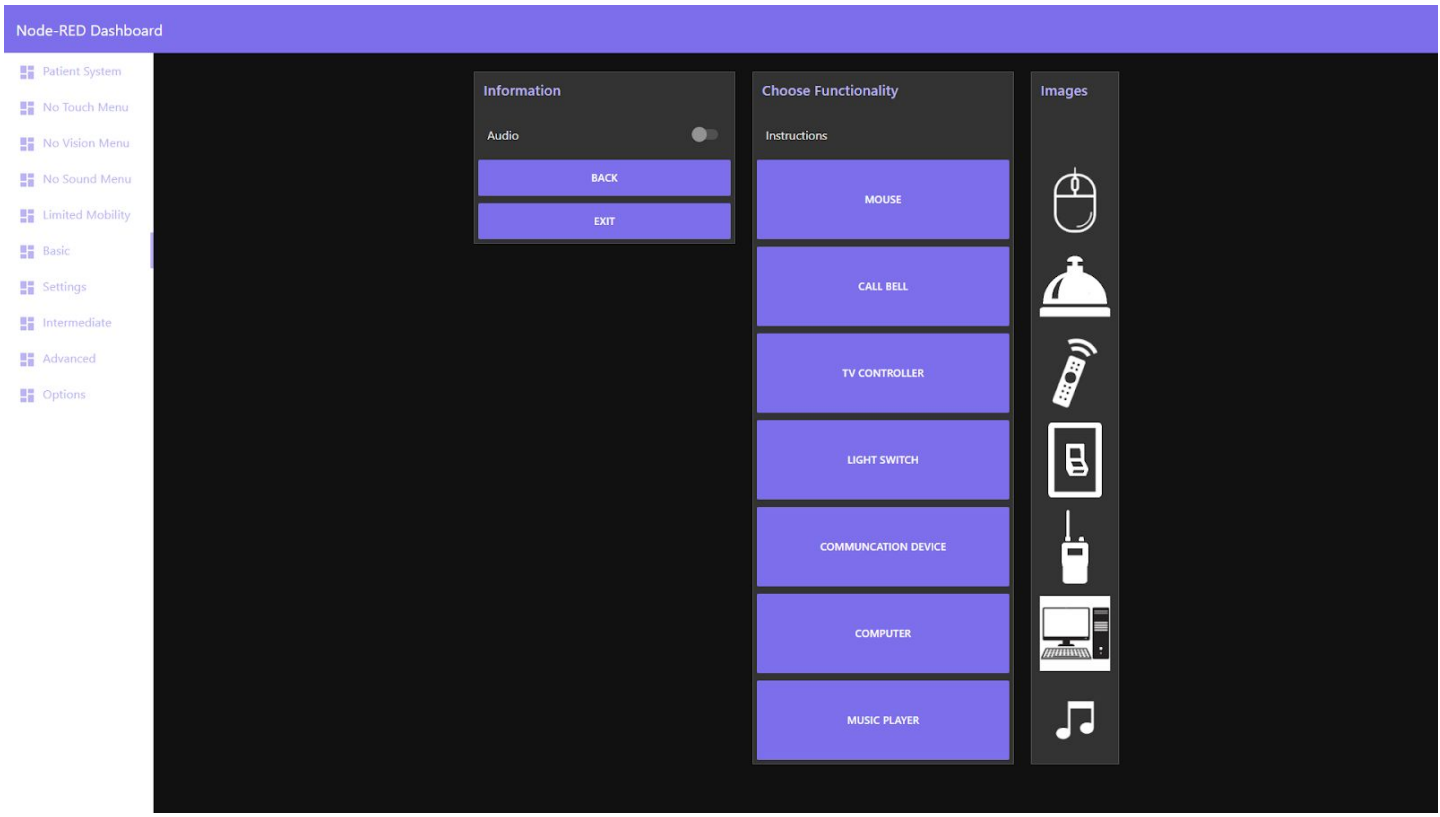


Figure 6: The Basic Functionalities Menu

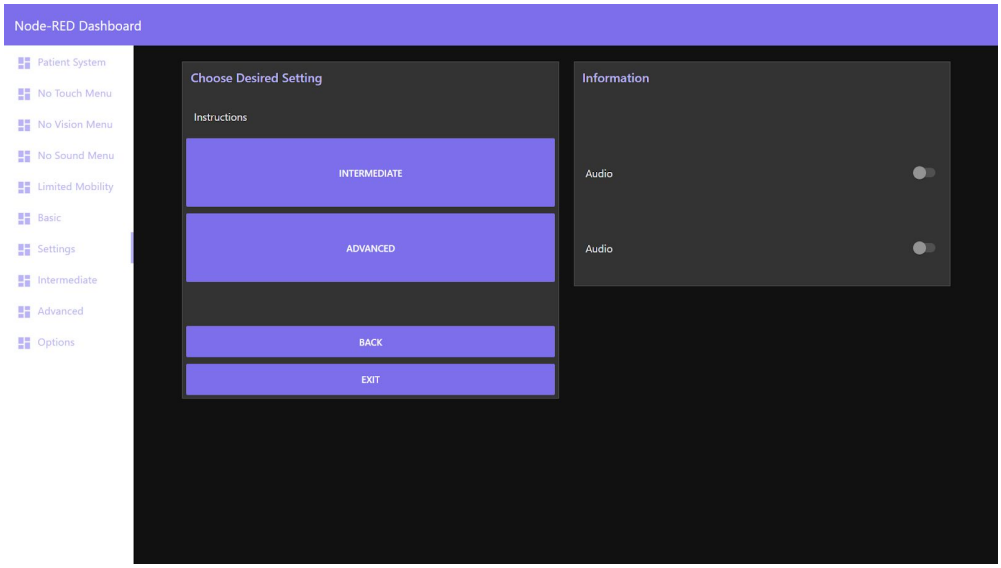


Figure 7: The Extra Settings Menu

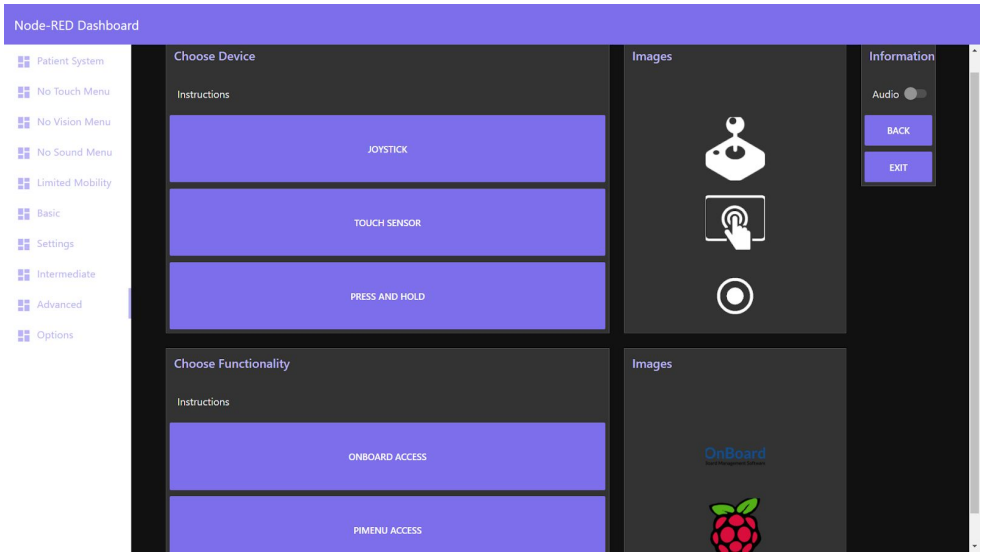


Figure 8: The Intermediate Functionalities Menu

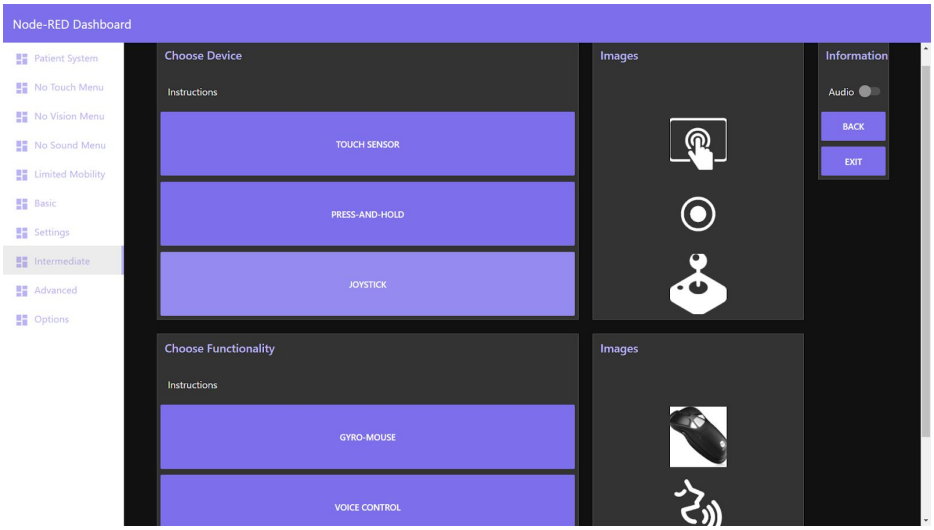


Figure 9: The Advanced Functionalities Menu

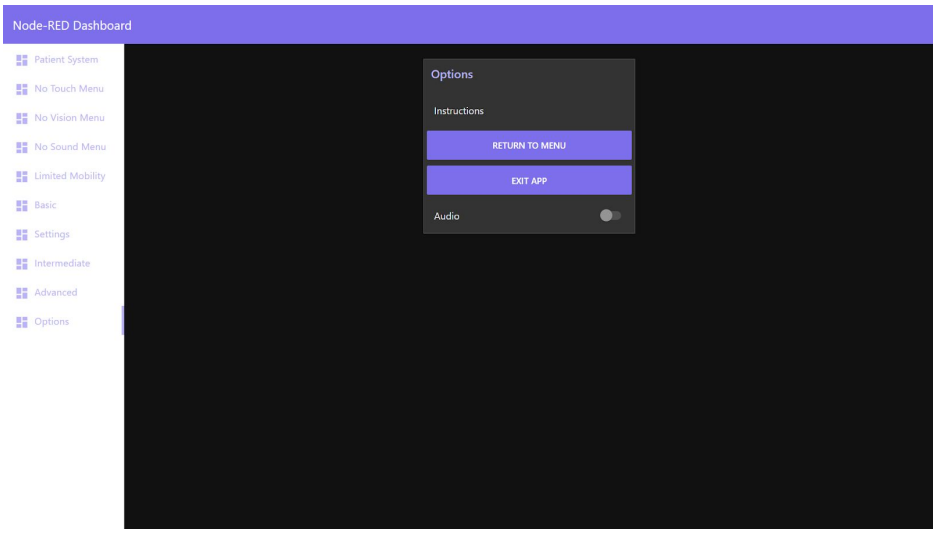


Figure 10: The Final Options Menu

For prototype 2, our main focus was the basic functionalities and implementing the interface onto SensAct. Our client wanted us to focus on simplicity after showing him our first prototype which focused on basic, intermediate and advanced functionalities. To fulfil his request, we added new menus which include different devices, customized specifically for the different patient systems listed in figure 1. Each patient system has its own customized device menu based on ability as seen from figures 2-5, and to reach any of these menus, one simply has to click on their respective patient system. After picking a patient system, one has to select a device by clicking on it which leads to the basic functionalities that the device can be used for as

seen in figure 6. In figure 1 which is the main menu, there is also the option for extra settings which leads to the menu in figure 7, where the user has more customization options. The new additions in this prototype are: the customized patient device menus, the button functionality, the back and exit buttons which allow the user to return to the previous page and the exit button to jump to the last page seen in figure 10.

As for the implementation of the interface to Sensact, our team tried a variety of methods to connect the Node-Red interface to the Sensact device. We began by following the feedback from the client which was to connect it using a serial node. However, we quickly realized that there had to be more done in order to connect the two and after communicating with the client again it was clear that we needed a better understanding of his java program as well. In terms of implementing functionality to the 2nd prototype we were unable to complete this which was clear through testing multiple attempts of having the Node-Red interface communicate with the Sensact device.

Critical Assumption

The critical assumptions for the second prototype include everything from the first prototype

Table 1: List of Product Assumptions

#	List Of Assumptions	Tested in Prototype I	Tested in Prototype II	To be tested before final product
1	Program works close to flawlessly to enable users to operate using as few buttons as possible	✓	✓	
2	Program accommodates the ability of the different users (different patients have different disabilities which might limit their use of the program)	✓	✓	
3	Program is very scalable		X	✓
4	Allows the user to operate simply, even without knowledge of the software	✓	✓	

5	Can be accessed on multiple devices (customizable)	✓	✓	
6	The program can carry out multiple tasks consecutively		X	✓
7	The program is properly visually represented	✓	✓	
8	Program is built with little expense	✓	✓	
9	Contains shortcuts	✓	✓	
10	The program is easy to use and requires little knowledge in programming		X	✓

Prototype Testing

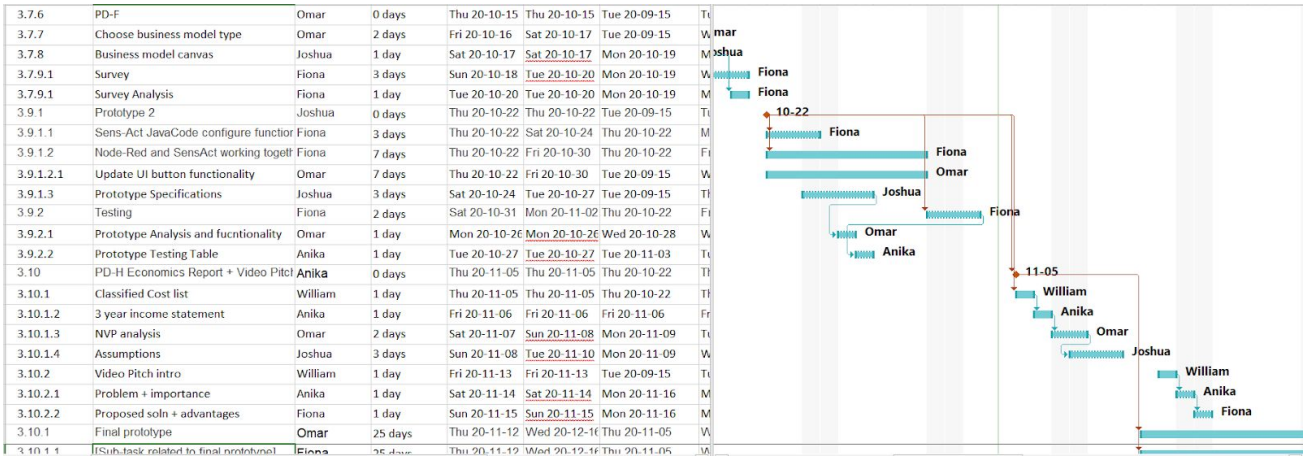
As the client liked our first prototype design this prototype was heavily focused on functionality. There were 3 main goals with this prototype all of which will be shown in the table below. Tests will be completed by our team and the same tests as before will be conducted (ex. Buttons on screen) to ensure that we still meet the requirements after the new additions, as well as additional tests for functionality. New tests include checking if buttons take the user to the correct destination and if the Sensact device receives information from the Node-Red software. Anything that was tested in the previous prototype and were not affected by the new additions were not retested.

Testing of functionality included running the interface alongside the Sensact device after connecting it using a serial node. Specifically, our tests involved us looking to see if there was any indication of communication from the Sensact after pressing a button on the interface. From our understanding throughout multiple tests and changes to the prototype we were unable to have the Node-Red interface and Sensact communicate with one another. Thus our goal for the future prototype is to be able to have the two interact with one another and if possible implement full functionality where the Node-Red interface can completely control the Sensact device.

Table 2: Summary of Prototype Testing

Testing Criteria	Expected Results	Actual Results	Evaluation	Test Units
Simplicity	2-5	≥9	Any given screen has at most 9 buttons. May consider removing buttons as to make design more simple	# Of buttons per screen
Shortcuts	6	10	Actual result is greater than expected results. Value increased due to additional patient menus, however should not affect use of interface	# Of shortcuts on the interface sidebar
Easy Navigation [From main menu to mouse]	<8	3	Actual result is lower than expected which is ideal as it means our interface is easy to use	# Of clicks to use desired device
Visual Representation	>12	21	We included more graphics for each button since we added in a couple more screens and buttons, we required more graphics to explain each button. Actual results lower than expected.	# Of total graphics
Intuitivity	5	4	Feedback: “ Tell the user what to do instead of just providing options instead of ‘eye tracker’, 'Use eye tracker' for example.” “Separated pictures and audio looks kind of confusing” “Menu useful because it lets you see where (what setting) you are currently in” “Audio sliders just say ‘audio’ and seems like it is just one audio option”	Feedback rating from students with no technical background Scale: 1-5

Project Plan



3.7.6	PD-F	Omar	0 days	Thu 20-10-15	Thu 20-10-15	Tue 20-09-15	Tu
3.7.7	Choose business model type	Omar	2 days	Fri 20-10-16	Sat 20-10-17	Tue 20-09-15	W
3.7.8	Business model canvas	Joshua	1 day	Sat 20-10-17	Sat 20-10-17	Mon 20-10-19	M
3.7.9.1	Survey	Fiona	3 days	Sun 20-10-18	Tue 20-10-20	Mon 20-10-19	W
3.7.9.1	Survey Analysis	Fiona	1 day	Tue 20-10-20	Tue 20-10-20	Mon 20-10-19	M
3.9.1	Prototype 2	Joshua	0 days	Thu 20-10-22	Thu 20-10-22	Tue 20-09-15	Tu
3.9.1.1	Sens-Act JavaCode configure functior	Fiona	3 days	Thu 20-10-22	Sat 20-10-24	Thu 20-10-22	M
3.9.1.2	Node-Red and SensAct working togeth	Fiona	7 days	Thu 20-10-22	Fri 20-10-30	Thu 20-10-22	Fi
3.9.1.2.1	Update UI button functionality	Omar	7 days	Thu 20-10-22	Fri 20-10-30	Tue 20-09-15	W
3.9.1.3	Prototype Specifications	Joshua	3 days	Sat 20-10-24	Tue 20-10-27	Tue 20-09-15	Th
3.9.2	Testing	Fiona	2 days	Sat 20-10-31	Mon 20-11-02	Thu 20-10-22	Fi
3.9.2.1	Prototype Analysis and fucntionality	Omar	1 day	Mon 20-10-26	Mon 20-10-26	Wed 20-10-28	W
3.9.2.2	Prototype Testing Table	Anika	1 day	Tue 20-10-27	Tue 20-10-27	Tue 20-11-03	Tu
3.10	PD-H Economics Report + Video Pitch	Anika	0 days	Thu 20-11-05	Thu 20-11-05	Thu 20-10-22	Th
3.10.1	Classified Cost list	William	1 day	Thu 20-11-05	Thu 20-11-05	Thu 20-10-22	Th
3.10.1.2	3 year income statement	Anika	1 day	Fri 20-11-06	Fri 20-11-06	Fri 20-11-06	Fr
3.10.1.3	NVP analysis	Omar	2 days	Sat 20-11-07	Sun 20-11-08	Mon 20-11-09	Tu
3.10.1.4	Assumptions	Joshua	3 days	Sun 20-11-08	Tue 20-11-10	Mon 20-11-09	W
3.10.2	Video Pitch intro	William	1 day	Fri 20-11-13	Fri 20-11-13	Tue 20-09-15	Tu
3.10.2.1	Problem + importance	Anika	1 day	Sat 20-11-14	Sat 20-11-14	Mon 20-11-16	M
3.10.2.2	Proposed soln + advantages	Fiona	1 day	Sun 20-11-15	Sun 20-11-15	Mon 20-11-16	M
3.10.1	Final prototype	Omar	25 days	Thu 20-11-12	Wed 20-12-16	Thu 20-11-05	W
3.10.1.1	[Sub-task related to final prototype]	Fiona	25 days	Thu 20-11-12	Wed 20-12-16	Thu 20-11-05	W

Task Breakdown

Task/Report/Project/ Topic	Description	Due Date	Team Member
Prototype 2	Group meeting to discuss steps for prototype 2	Oct 24, 2020	William, Anika, Fiona, Omar, Joshua
	Run SensAct Java code and configure the sensors	October 25, 2020	Fiona
	Connect Node-Red to SensAct using Serial Nodes	October 30, 2020	Fiona, Omar
	Get Node-Red and SensAct to function together on a Raspberry pi	November 1, 2020	Fiona, Omar
	Write the prototype specifications	October 30, 2020	Joshua
	Test Prototype functionality	November 3, 2020	Fiona, Anika
	Write analysis on prototype's	Nov 4, 2020	Omar

	functionality		
	Create a Prototype Testing table	Nov 4, 2020	Joshua, William
	Submit PD-G	Nov 5, 2020	Joshua
Client meeting 3	Prepare a presentation of button functionality, additional improvements in UI and functionality so far for the client meeting.	Nov 3, 2020	William, Anika, Fiona, Omar, Joshua
	Meeting with TA to fix problems in SensAct functionality	Nov 7, 2020	Fiona
PD H Economics Report and 1 min. Pitch	Group meeting to discuss ideas for Video	Nov 7, 2020	William, Anika, Fiona, Omar, Joshua
	Classified Cost list	Nov 6, 2020	Joshua, William
	3 Year income statement	Nov 7, 2020	Anika, Fiona, Omar
	NPV Analysis find break-even point	Nov 7, 2020	Anika, Fiona, Omar
	Assumptions	Nov 8, 2020	Joshua
	Intro + Branding for video	Nov 13, 2020	Fiona, William
	Problem being solved + importance	Nov 14, 2020	Joshua, Anika
	Proposed solution + competitive advantages	Nov 14, 2020	Omar, Fiona
	Film and edit video	Nov 15, 2020	William, Anika, Fiona, Omar, Joshua
	Submit	Nov 19, 2020	Anika

PD I Design day pitch and final prototype evaluation	Prepare a 2min pitch	Dec 3, 2020	Fiona, Joshua
PD J User manual	Begin work on user manual	Nov 24, 2020	William, Anika, Fiona, Omar, Joshua
	Submit user manual	Dec 10, 2020	Anika
PD K Final presentation	Begin work on the presentation	Nov 28, 2020	William, Anika, Fiona, Omar, Joshua
	Complete presentations	Dec 2, 2020	William, Joshua
	Submit all relevant work	Dec 3, 2020	Anika
	Run through presentation multiple times for practice	Dec 6, 2020	William, Anika, Fiona, Omar, Joshua
PD L Intellectual property search	Explore intellectual property databases	Nov 24, 2020	William, Anika, Fiona, Omar, Joshua
	Describe the relationship that exists between products	Nov 26, 2020	Omar, Joshua
	Explain the importance of these intellectual properties	Nov 28, 2020	William, Fiona
	Explain the importance of intellectual properties	Dec 1, 2020	William, Anika, Fiona, Omar, Joshua
	Submit the deliverable	Dec 10, 2020	Anika
Design Day	Final product must be completed	Dec 3, 2020	William, Anika, Fiona, Omar, Joshua

Conclusion

In conclusion, this deliverable gave us more information on what we need to improve upon based on the client feedback. The client likes that we were able to improve upon our design with the new patient system menus however would like us to continue to work on the functionality of our interface. Due to difficulties with implementing functionality, there is some setback in the creation of our final product. Despite said setbacks, there was still progress made towards the final product, and we will continue to work on functionality for our next prototype. The goal is to have the basic menu and Sensact communicate to meet our clients expectations, and begin to implement said functionality into the advanced menu.