

Team: 18414

Engineer: Tessa Mellinger

Entering Phase: Customer Handoff and Final Project Documentation

What do I plan on doing to ensure that Team P18414 has a successful Phase review?

Task 1: *Analysis of existing test results. As the person who wrote all the test plans and conversed with the client on what their needs were concerning the testing measures, I will go through the results of the testing protocols other members of the team conducted and ensure that the results match with what the customer asked for. I will also help communicate with the client the results of the tests.*

Task 2: *I will help to conduct the remaining test protocols. Although most of the testing has been completed at this point, several tests were purposefully delayed because there was significant risk of damage to the toilet. These include force testing and water retention analysis.*

Task 3: *I will design a stencil for the toilet to represent RIT and our project. The stencil concept has already been approved by the team, now all that's left is the final cutout and application to the toilet.*

Task 4: *As always, I will continue to update our Edge site with the documents from our team.*

Entering Phase: Integrated Build and Test

What do I plan on doing to ensure that Team P18414 has a successful Integrated Build and Test Phase review?

Task 1: *Lead in the organization and execution of Human Subjects Testing. I will ensure that all necessary materials are available for the testing sessions. I will also help to assure that all the testing protocols proceed according as planned. I will also aid in the analysis of the survey results.*

Task 2: *Execute the test protocols in accordance with the previously designated schedule. I will communicate with the team the testing schedule and organize the locations and materials for each test protocol.*

Task 3: *Complete data analysis and written conclusions from each test protocol. I will compile the results into an easy to interpret document so that laymen can understand the testing processes.*

Task 4: *Continually update our EDGE page with our team's work.*

Entering Phase: Subsystem Build and Test

What do I plan on doing to ensure that Team P18414 has a successful Subsystem Build and Test Phase review?

Task 1: *Create a conceptualized design for the hose prototype. This will include feasibility analysis, PUGH charts and preliminary research. This will also include detailed drawings breaking down the complete system into its distinct subsystems.*

Task 2: *Aid in the development of human subjects testing. This will include advertising to collect subjects, making sure all materials are present, and analyzing the data from the studies.*

Task 3: *Facilitating the development of testing our customer requirements. This will involve using the complete urine diverter prototype developed by our team. This will also involve inputting data from the tests and analyzing it to provide summaries of the design's success.*

Task 4: *Continually update our team's EDGE website. As the head of EDGE design, I will be tasked with keeping our EDGE up to date with all of the work that we do into the next phase of this design process.*

Entering Phase: Build and Test Prep & Subsystem Build and Test Design

What do I plan on doing to ensure that Team P18414 has a successful Systems Design Phase review?

Task 1: *Consider the urine dilation portion of the design as a unique system within the toilet. Research will be conducted to draw inspiration from systems with successful urine dilation devices as well as create inspiration for our team's system. Different options will be considered and benchmarked upon to help prioritize the design. Week 1*

Task 2: *Identify components of the lead subsystems from benchmarking. Through our benchmarking process in the previous phase, the competitors we looked at closely will be used to decide common subsystems used in similar designs. Week 1.*

Task 3: *Brainstorming and idea generation. As an individual, I want to present my own ideas for this project and think creatively for how to solve the problem at hand. Week 2.*

Task 4: *Refine concepts for the seat, urine diverter, urine dilation system, and manufacturing process. As an individual, I will voice my opinions on the design of the above listed subsystems of the design. Week 3.*

Task 5: *Continually update our team's EDGE website. As the head of EDGE design, I will be tasked with keeping our EDGE up to date with all of the work that we do into the next phase of this design process. Week 1 -3.*

What did I actually do last phase?

During the systems design phase I contributed to the team in multiple ways. For assignments based on team collaboration, I participated in idea generation, providing feedback and voicing my opinions. It was important as a group that we all communicated together and made sure that each member participated in the design process. Individually, I assisted in providing additional research for the subsystems of the toilet. I contributed to the benchmarking for the urine diverter subsystem and created a document for additional research when considering materials for the toilet frame. I also spent my time drawing a handful of the concepts for the morphological table. As the web master, I also spent my time making any necessary amendments to our existing Edge webpage, such as the home page and the problem definition pages, updating links to documents when necessary. I also spent my time developing the systems design webpage for our Edge site to present at our systems design phase review.

What did I learn?

Although this process is only in its second phase, I feel as though I've learned a lot during the time. As the web master I had to put in a lot of additional time to learn how to format the site correctly and how to attach pictures and documents to the pages. As someone with very little computer experience, I feel like I learned a lot in that respect. I've also learned as an individual how to collaborate with a group of people with many different strengths. I've learned how to communicate with the different members of our team and how to voice my opinions and concerns about the project. I've also learned how to take constructive criticism from the other members of the team and implement it to better myself as a teammate. Another valuable skill I have learned throughout this process is how to manage my time; between group meetings, group worktimes, and individual worktimes, it was a learning process for me to adjust to managing the way I work to be most efficient and effective. Another skill I have learned through this process has been the importance of documenting any changes to documents. It is necessary for our team to continue to update documents as we see needed, and those changes need to be tracked maintain the validity of our efforts.

What do I plan on doing to ensure that Team P18414 has a successful Preliminary Detailed Design Phase review?

Task 1: *Development of test protocols. To assist the team throughout the next phase, I plan to lead in the development of proper test protocols and techniques for prototype testing. 10/23-11/4*

Task 2: *Develop a system for tracing and tracking alterations to any test protocols or supplementary test procedure documents. One program source I plan on looking into for our team is TestTrack. This was a project management software I used during my time on my last coop. This software allows for unique test protocols to be written and recorded electronically. The program can link any relevant requirements and will track edit histories and adjustments made by any user over the duration of testing. 10/23-11/4*

Task 3: *Continue editing our team's Edge website with updated documents and new preliminary detailed design phase appropriate information. During this phase I will also be in charge of going back*

through the webpages for the previous two phases and make any necessary changes based on the feedback from our Systems Design phase review. 10/23-11/4

Task 4: *Participating in the development of prototype ideas and models. As a group, we will all collaborate on how to make the best prototypes of our reviewed designs for future testing. 10/23-11/4*

What did I actually do last phase?

The main focus of my work from last phase has been developing test protocols with which to test our engineering metrics. This was necessary to ensure that our design meets the restrictions we set for ourselves. Because Haiti does not abide to any government regulations concerning health standards, the tests were written to test usability and overall system robustness. Also during this phase, I facilitated the testing process for percent of urine diverted. Because the test was unsuccessful during the initial run-through, I went back and modified the protocol so that we could obtain usable results. Additionally, throughout the Preliminary Detailed Design phase, I managed our team's Edge website and updated it with the work from the members of the team.

What did I learn?

Throughout this phase I learned how to function as a team member individually. Most of the work I completed was working on test protocols, it was mostly individual based work, but I did seek my team for insights when I thought was necessary. I also learned how to adjust my existing test protocols with new methods that were discovered through the initial round of testing. It was important to iterate of the test protocol because during the initial completion of the testing measures it was found that the protocol could be improved to give better results that were more representative to the engineering metric being tested.

What do I plan on doing to ensure that Team P18414 has a successful Detailed Design Phase review?

Task 1: *Consider the urine management component of the toilet system as a whole. Talk with the clients to provide a component to the toilet system that will work with their vision and resources. This task point will also include working closely with the industrial design student to create an appealing design. Week 13*

Task 2: *Reimagine the current method for identifying the urine level within the urine collection jug. An ideal method for identifying the urine levels within the jug is desired to help simplify the management of waste. This task point will also include working closely with the industrial design student to create a design that is both aesthetically pleasing and simple for the customer to utilize. Week 13-14*

Task 3: *Develop test protocols for human test subjects. Although our proposal for human subjects testing may take some time before it is approved, it is important that we have developed test protocols in place so that we waste no time at all for testing. Week 13-15*

Task 4: *Facilitate the testing process. Because in the previous phase I wrote all the test protocols to test our engineering metrics, I will mainly be in charge of making sure all the testing goes smoothly and according to plan. I will also help to develop altered protocols in case we encounter problems while testing. Week 13-15*

Task 5: Continually update the Edge website for Team P18414. I will populate the Edge page with our work once it comes in. Week 13-15

What did I actually do last phase?

After concluding the preliminary detailed design phase, it was decided as a team that as we entered the detailed design review phase that our project would be focused to include only the design development of a single diverter. This decision was made so that we could direct all our time and resources into designing the best urine diverter possible for our clients. This crucial project update lead us to review our previously decided upon engineering metrics and customer requirements. From here, I took on the responsibilities of going through the previously written test protocols and updating them to make sure the revised engineering metrics were being properly tested. I also assisted with the development of the human subjects testing proposal, abstract, and protocol. This was necessary to ensure that the team could submit the document prior to the upcoming winter break. I also collected the necessary documents from the team and uploaded them to the Edge website and formatted it properly

What did I learn?

I learned about the importance of iterating on our design development. Having it be almost the end of the semester, it was frustrating to realize we had to return to work we had done during the first phase of the process and amend it. It was necessary though, as the focus of our project had changed. I also learned about the importance of thoroughly completing the proposal for human subjects testing. The data collected from the human subjects would give us an accurate representation of the effectiveness of the toilet diverter.

What do I plan on doing to ensure that Team P18414 has a successful Build and Test Preparation & Subsystem Build and Test phases?

Task 1: *Facilitate in the implementation of test protocols. Because I've been the main engineer in creating the different protocols to test our engineering metrics, I will aid in teaching the team the protocols, coordinating materials, and finding a testing location.*

Task 2: *Facilitate in the implementation of human subjects testing. Assuming our proposal is approved, human subjects will have to be recruited for the trials. I will also help to ensure that all testing happens smoothly and that all proper measurements are obtained. I will also help to generate formal reports of analyzed data from this process.*

Task 3: *Assist in building a working toilet prototype. Assuming that we will have all the required supplies during the first two phases of MSD II, I will help in doing the physical construction of the toilet. Hopefully, Josaphat will have his VISA approved and will be able to visit and help construct the toilet.*

Task 4: *Help with necessary design updates. It is possible that as we gather the materials and begin constructing a toilet model prototype, we encounter unexpected issues and need to alter our design. I will help with thinking of how the design can be adjusted to fix our problems.*

Task 5: *Update our team's Edge page as needed with all relevant documents.*