**Week 2: Problem Identification and Customer Interviews**

**Lab Deliverable**

You will need to turn in your INDIVIDUAL lab report worksheet (this document) with all tables and questions completed by the due date listed on Canvas. Some of the tasks will be done as you go through the process, while some questions must be answered at the end of an activity. While your procedures will look identical to your team members, make sure that your answers are your own and you are able to explain every detail in this lab worksheet. DO NOT COPY your team members’ reports. If you are absent during the lab, you will be responsible for completing all of the work in this report yourself.

**Part 1: Thank You For Your Service**

**Activity Description**

***Thank You For Your Service*** (TYFYS) is an interactive adventure designed to allow students to see the full cycle of the engineering design process coupled with the importance of the entrepreneurial mindset. TYFYS starts with a military veteran describing veterans’ issues. The objective is to create an end-product to mitigate some of those challenges and showcase that end-product at an upcoming veterans conference. The player (student) will make a series of decisions during the activity leading to an end-product that the customers (veterans) will find valuable. At the end of the activity, players are given feedback to reflect, so that if played again, they make better decisions and create a more valuable solution from the veterans’ perspective. The decisions students make pertain to various stages of the engineering design process — research, brainstorming, prototyping, testing and most importantly involving the end-users and incorporating customer feedback, ideally throughout the process.

**Lab Procedure**

As a team, work together to advance your way through the design process of the TYFYS interactive website ([https://static.edpl.us/courses/fse100/ASU-TYfYS/story\_html5.html).](https://static.edpl.us/courses/fse100/ASU-TYfYS/story_html5.html)  As you go through the different steps and choices, make sure to document your process by recording each step that your team selects and the duration that it takes. Please **DO NOT** skip through the automated scripts as you will miss valuable information delivered by your customer. You must have your design ready in 47 days, and each stage within the design process has a time constraint associated with it. At the end of the activity, your team will be given a score based on the product’s value, the timeliness of delivery, and the use of the engineering design process.

Fill out the below template with your team’s choices and results while completing this activity. Make sure to answer the final summary questions by reflecting on this activity. This worksheet is an **individual worksheet**, so while your team is working together on the same timeline, make sure your summary answers are your own.

| **Thank You For Your Service Timeline** | | |
| --- | --- | --- |
| **Option Selected (in order)** | | **Time Required** |
| Talk to more veterans  Research  Brainstorm  Talk to the customer  Research  Brainstorm  Create and Test Prototype  Show prototype to veterans  Team will improve the app  Show the veterans  Team will now improve app  Release to market | | 5 days  6 days  3 days  2 days  4 days  2 days  11 days  2 days  4 days  1 day  4 days  1 day |
| **Customer Discovery Research** | | |
| What types of information did you learn from your research with different veterans? This can occur at numerous times during the timeline.  What types of information did you learn from your research with different veterans? This can occur at numerous times during the timeline.  Challenges:  ~reintegrating into civilian life\*  ~Accessing government benefits  ~dealing with PTSD  Research Takeaways  ~civilian and military lives are different  ~veteran support organizations are different  ~veterans have formed their own support groups  ~resources for medical issues are plentiful  Research Conclusions  ~ transitioning to civilian life is hard to find resources for in one place  ~processes for connecting veterans to the right resources is not efficient  ~military doesn't prepare for successful transition  ~info resources are minimal and inconsistent  ~most think an app is a good resources  Veterans opinion on prototype:  ~User profile  ~recommend services and connect users  ~provide a smart map | | |
| Which questions did you ask your customer regarding your app prototype? This can occur multiple times throughout the design process.   1. If you used any of the veteran services here, how was your experience? 2. At what point of your veteran life would this app have been most useful to you? 3. What features/menu options would be most useful to you? 4. How can we advertise this better to veterans?   5.  6. | | |
| **Activity Performance** | | |
| Total Days Spent: 46 | Overall Score: 98.5 /100 | |
| Final Product Value: 22 /25 | Use of Time: 25 /25 | |
| Customer Discovery: 26.5/25 | Engineering Design Process: 25 /25 | |
| **Summary** | | |
| How many different times throughout the activity did you talk to the customer or interview the veterans for input? Do you feel you should have done more/less customer research at different stages?  We interviewed and questioned the veterans four separate times throughout the duration of this activity. After completing the activity I believe we could have talked to the veterans more and got more information and tips on how to address this audience and how we could have improved the app to help their needs drastically.  Did your team members agree with each other regarding the decisions and approach to creating the product? Were there conflicts about which route to pursue throughout the activity? How can your team ensure that conflict is avoided in the future?  Overall, we for the most part agreed. We had a few discussions and debates over time usage and what stages to continue and what stages to skip because of the time constraint. This conflict can be avoided in the future by having a set plan of time usage and deadlines in place to properly complete the project the best way possible.  What is an overall POV (Point Of View) statement that you can identify from this activity?  The American Veterans need a support system to help them integrate back into civilian life because they are suffering from PTSD, getting access to government benefits and much more. | | |

**Part 2: DeVILS Project**

**Activity Description**

You are now beginning your first team project for FSE100. This is known as the “Developing Value and Innovating Limitless Solutions” (DeVILS) project. You and your team will be creating a conceptual design of your choosing that will solve a problem that your team must identify. In this lab, your team will work through the beginning stage of problem identification to discover potential customers and interview them to learn about their pain points and needs. Over the next few weeks, you will then work through all the necessary stages of the design process to come up with a final conceptual design that will be presented to the class.

**Lab Procedure**

To begin, you and your team must start working on identifying a new problem that you would be interested in solving. This can be of any size or magnitude but try to keep it to a manageable level. You can start with your team by thinking through categories of similar interests such as sporting, children’s safety, access to healthcare, everyday gadgets, access to safe drinking water, future of automation, farming, politics, etc. to hopefully find an area that could be improved. You can also begin by researching online current issues and trends in the news to help develop a clear problem statement. This problem can be personal, like something that you would put on a bug list to improve your daily life, or macroscopic in scale affecting communities across the globe. **Your first task** as a team is to narrow in on a specific area or issue that you want to explore further, to see if there is room for a new development to solve potential problems with the current implementation. You are NOT coming up with a solution right now and you don’t have to have a full problem identified yet.

**\*\*STOP HERE as a team and complete the next step as an individual.\*\***

Next, **individually** you must interview someone connected to this topic issue to learn more about pain points and the feelings regarding this problem. This can be done by a physical conversation with someone, by reading over a published interview with someone, by researching facts and statistics around the issue, by supplying a survey to numerous friends and relatives with probing questions about their feelings on the issue, or by observing behavior posted in online videos regarding the situation. You can approach these interviews from a guided standpoint where you gain feedback on a proposed problem that you are passionate about or you can conduct the interview by searching for pain points from your participants to aid in defining a new problem you hadn’t realized. Be sure to take notes during your interviews and learn as much about your interviewees as possible; they are your customer archetypes. Feel free to get creative with your customer viewpoints as there is information to be gathered everywhere.

**\*\*STOP HERE as an individual and complete the remainder of the lab during class with your team.\*\***

**As a team**, share what you’ve learned from your customer interview, and collectively define 3 customer archetypes in as much detail as possible. Details should include demographics relative to your issue; economic status, race, religion, location, occupation, age, etc.

Next, **as a team**, you should write one fully defined Point-Of-View (POV) statement using the guidelines from our lecture videos and slides. This POV statement should be based on the interviewed customers that you used to define your customer archetypes. Be sure to consider both users and payers and clearly distinguish between them if needed. The better you define the problem, the more value you will be able to create for your customers when you finish your design. Now that you have a better idea of what potential customers have identified as wanting improved, write your problem definition statement. Make sure you do not include a potential solution at this time. Identify as many aspects of the problem as possible from standpoints of different users.

Next, **as a team**, you should define a list of requirements and a list of criteria, outlining the constraints both for solutions to the problem and for what comprises a “good” solution” for consumers, respectively. Your requirements and criteria should be as specific and quantitative as possible, and focus on the needs (in the case of requirements) and wants (in the case of criteria) of your potential customers. Try to find all possible requirements from the problem description and from your interviews with the customers. Do not start planning out solutions yet. For requirements, consider what your design must solve. When developing your criteria, think about how your customer will be evaluating the different design options and make sure to include these as criteria. You should have at least 5 different requirements and 5 different criteria.

Finally, **as a team**, you will create your own Analytical Hierarchy Process table, where your team will decide which criterion are the most important in your decision. You should have **at least 5 different criterion** to compare and a reasoning as to why that criteria was selected. Explain briefly as to why your team prioritized certain criterion above others and make sure to point to customer feedback to defend your decisions.

| **DeVILS Problem Identification** | |
| --- | --- |
| **Individual Work** | |
| Customer Interview Plan (who are you interviewing, how did you find them, where are you searching online, what questions are you planning to ask):  Zachary Fantzzi, Suitemate who was available at the time, Tooker resident, ASU student  Feedback from Interview/Research:  Throughout my interview with Zachary (Zach), he brought to life many current issues with the ASU water system. He started out his small speech by stating, “ The ASU water is not clean.” He then continued on to speak on how he doesn't trust the water the school provides and says he spends around $85 a month on water to stay hydrated. He also brought to light the importance of cleaning. He opened up his sink’s faucet cover and a thick black gunk was all over it. He also in turn reported that when the sink water first turns on in the morning he smells a funky odor. Zach responded to the question, “Do you think PH level in water matters?” by stating that he believes a neutral water or PH10 level water is the best water and that water should at least be purified as a standard. When asked if he knows where a public water source is, Zach responded that he doesn't believe free water or public water is available at ASU unless you are in a medical facility. Zach also had some complaints about the water pressure at ASU. He reported having to “fumble with the faucet” to even have a chance to clean his hands. He also said the shower pressure is surprisingly underwhelming. Overall, my interview with Zach was very conclusive and gave me good information on many pain points. | |
| **Team Work** | |
| Customer Archetypes:   1. Johannas: Tooker Resident, Germany, Male, Aerospace Engineering major 2. Jack Timothy Rupert Nanna: Hassyampa Resident, White Male, Business Major 3. Maddie: Tooker resident, White Female, Civil Engineering | |
| POV Statement (User/Need/Because):  Dorm housing residents at ASU need clean water access because the current system is unsanitary and too expensive for college students. | |
| Problem Statement:  The water at ASU is inaccessible because the current tap water is not meeting students standards, which causes many students discomfort, dehydration and irritation trying to afford clean water. | |
| Requirements (5) | Criteria (5) |
| **The water shall be purified**  **The water shall be accessible within two minutes from dorm room**  **The system shall not cost more then $1500 (school/companies)**  **The system shall be able to fill a 32 oz water bottle**  **The system shall self clean** | **The water should be cold**  **The system shall have at least 40 psi**  **The water should be tasteless**  **The water should have a balanced PH level**  **could have an additional ice service** |
| AHP:   | **Criteria** | taste | ice | pressure | cold water | pH | **Total** | **Weight** | | --- | --- | --- | --- | --- | --- | --- | --- | | Taste | 1 | 8 | 7 | 4 | 4 | 31 | 40.9% | | Ice | 1/8 | 1 | 1/8 | 1/8 | 5 | 6.38 | 8.4% | | Pressure | 1/7 | 8 | 1 | 1/7 | 1/5 | 9.49 | 12.5% | | Cold Water | 1/4 | 8 | 7 | 1 | 6 | 22.25 | 29.4% | | PH | 1/4 | 1/5 | 5 | 1/6 | 1 | 6.62 | 8.7% | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | | **Total** |  |  |  |  |  | 75.74 |  |   Reasoning why criteria was selected and prioritized:  **Taste was prioritized because the current water taste has an aftertaste that is unpleasant. As a group we agreed that the water needs to be cleaned so there are no contaminants and or tastes in the water.** | |
| **Individual Reflection** | |
| Categorize your requirements as either quantitative or qualitative requirements.  Quantitative:   * **The water shall be purified** * **The system shall not cost more then $1500 (school/companies)** * **The system shall be able to fill a 32 oz water bottle** * **The system shall self clean**   Qualitative:   * **The water shall be accessible within two minutes from dorm room** | |
| If you could interview more people or do additional research, who would you want to interview?  I would like to interview someone who is a doctor or in the health industry to figure out the needs and or suggestions from someone who sees hundreds of people and how this issue can help people and how it can make a difference in people's lives. I can start with the ASU health office. | |
| What additional information might you need to solve your identified problem?  Some additional information I might need to gather is what is a safe metal or a safe material to create a product. Also I would need to look at how to create a water filter. I would also have to do extensive research on UV light and its cleaning abilities. | |