**Team:3D Bioprinter Engineer: Felix Chamberland**

**What were the outcomes of the prior phase?**

1. What did I plan to do?

I plan on looking over the printer in the lab and make an inventory of what we have. (I could collaborate with team members for that one (3 hours)) – week 1

I plan on looking at the electronics and the motors and figuring out if the printer is functional in terms of 3D printing movements (x,y,z) (5 hours) - week 1

I plan on looking over the software conversion to G-code with Mark and Ramsey and see what work is to be done (4 hours) – week 2

I plan on working with Haley and Mark to design a system map helping us visualize the different components and their interconnections (5 hours of iteration and discussion). – week 2

I plan on looking over our budget and what items we need to purchase and see if those line up and discuss with Mark about how we are going to decide what to purchase (2 hours) - week 3.

1. What did I actually do?

I looked over the printer and verified that the 3D printing part is functional. I haven’t done a complete inventory, but I saw and noted everything I wanted to see for the mechanical/electrical part of the project.

I have investigated G-Code with Mark a little bit, and it seems to be super easy and straightforward.

As a team, we went through the process of finding a first concept to explore as start and I made a brief overview system map to illustrate how every piece is going to connect to each other.

As a team, we have identified areas we need to explore further before designing the final concept and we converted those into a few feasibility analysis.

1. What did I learn? How were plan and reality different?

I learned that it is important to go through all of the process even though you basically know what you want to explore first. It is important because it allows you to discover a few alternative ideas and to really search in detail all the technologies that could be incorporated within your system. I think that pretty much everything went up to plan except that we realized how time consuming it is to get everybody to do those exercises together and to really own in on the project.

**Team level goal for next phase**

From the team: In the Preliminary Detailed Design phase, we will divide work and develop specific schedules for the bioprinting and mechanical/electrical/software teams. Each team will work on design and conduct feasibility tests for their appropriate subsystems in order to determine viability of the selected concept and discover necessary adjustments to the system. Specifically, some feasibility tests that will be conducted include cell and material combination, crosslinking implementation, compatibility of existing electrical equipment, print head design details, and extrusion pressure limits.

From me: I hope the team will not be afraid to prototype and get their hands dirty to get a good feel for what we are trying to build! I want us to not be afraid to experiment too as it is still early, and this is how we will get breakthroughs.

**What do I plan on doing to ensure that my team has a successful review at the end of the next phase?**

I plan to refine the system map and add more details has we figure things out. (entire 3 weeks for a total of about 3 hours).

I plan to test the LED and figure how we will hook it up with the electrical system and figure out how we can mount it to the gantry system. I also want to see some real action UV crosslinking. (week 1-2 for 5 hours)

I want to look more into the design of the syringe pump and just confirm that we can hook it up to the control board and that we can find the complete open source design online. (week 3 for 2 hours)

I want to play with the printer more and discuss with Mark how to control the printer using G-code. (week 1 for 3 hours)

**What is standing in my way of meeting my next phase goals?**

I need to get into the lab even more than I have and invite teammates to get their hands dirty as well so we can see what we are trying to accomplish. I also need to find resources to help me with electrical stuff as I am simply an amateur trying to be an EE! I will need the team to order some material that we can try to extrude and crosslink ASAP so that it is there on time for when we are ready to do some prototyping and testing.

**Note to teams**: Consider using an abbreviated form of this for your daily/weekly check-ins with your team and/or guide, similar to an Agile standup:

* What have I done since the last class to move the team toward its phase goals?
* What do I plan to do next to move the team toward its phase goals?
* What blockers are preventing me from getting my work done?