

Virtual Reality for Prototyping Factory Processes

Sprint Log

PREPARED BY
GROUP 14
JASON CHEN, NATHANIEL MOHR, AND ZACHERY THOMPSON

Sprint 1

Thursday, October 15

The group had our first meeting with our project partner.

We were shown videos of the model factory and workers performing tasks.

Tuesday, October 20

We had our weekly meeting with our project partner along with a grad student who has been working on the project (Linkon).

We had our first weekly meeting with our TA. It was recommended that we create times for 2 standup meetings and a longer time frame allotted for coding and working on the project.

During our first standup meeting, we came up with another time for a second standup as well as the longer meeting time. We discussed what needed to be done in order to complete Milestone 2, but at this point we had not received any of the Unity code from our project partner. We created a Github as well as a Jira.

Friday, October 23

We still did not have the code from our project partner, but we continued to familiarize ourselves with Unity.

Tuesday, October 27

We received the Unity code from Linkon.

During our standup meeting, we divided the work on Milestone 2 between the group.

Friday, October 30

We finished and submitted Milestone 2.

Tuesday, November 3

During the standup meeting it was decided that Nathaniel would contact Linkon in order to get one of the VR headsets for use by the group. All members were continuing familiarizing themselves with the project and Unity.

Thursday, November 5

Nathaniel got the HTC Vive Pro Eye from Linkon.

Tuesday, November 10

Nathan revealed during the TA meeting that Nathaniel's intended solution to making the VR headset work with his laptop would not work.

Linkon informed us during our meeting that Joseph wanted us to create the worker models.

During our standup meeting it was decided that Zach would have to come and get the headset from Nathaniel to try and get it to work on his desktop. Jason and Nathaniel would work on a Powerpoint for a potential presentation on Friday. Zach is going to work on creating a moveable worker that holds a tool in order to demo on Friday. Nathaniel is going to create the sprint backlog.

Sprint 2

Tuesday, November 17

There was no TA Meeting.

We received a new Unity folder from Linkon that contained more models and scripts.

We updated our Jira backlog to include what features we need to accomplish.

We created a new Sprint and added some of those features to it.

Zach or Jason will be coming to get the VR headset from Nathaniel within the next couple weeks.

The two will also be working together to incorporate Steam VR libraries into Unity. Nathaniel will be working on creating character movement in Unity. Zach will be working on the design for the user workflow.

Tuesday, November 24

Last TA Meeting for term. Nathan reminded us of Fall Term Retrospective as well as the Oral Defense Assignment.

Joseph brought up the Vive tracker as a potential resource that could be implemented.

Zach has the VR Headset working on his desktop.

Zach has been working on creating a workflow for the worker.

Jason has been working on integrating VR into the Unity project.

Nathaniel has been working on getting more knowledge on Unity development and character motion.

Tuesday, December 1

We received some resources from Linkon of projects that are similar to ours.

- <https://www.invonto.com/insights/virtual-reality-training-construction-safety-demo/>
- <https://arxiv.org/ftp/arxiv/papers/1901/1901.06248.pdf>
- <https://ascelibrary.org/doi/pdf/10.1061/9780784482421.010>

Jason has continued working with VR integration.

Zach has continued with workflow.

Nathaniel started and worked on the Fall Term Retrospective.
Jason and Zach are going to complete the assignment to be turned in tonight.
There are no roadblocks.

Sprint 3

Monday, January 18

We had a meeting with Linkon on Thursday.
We had a meeting with Nathan today. We went over the overview of the term and what should be expected of us.
Zach will be testing the VR integration that Jason worked on with the headset.
Nathaniel will work on moving the demo code into the higher resolution factory model and enhancing the movement code.
We will work to get VR working in the high-res factory as well.

Sprint 4

Monday, January 25

Nothing new to report.
Development continued with no immediate troubles.

Friday, January 29

The group gave a presentation on the current status of the project. This included any changes made to the initial vision and scope of the project, what has been accomplished, and what the future of the project.
Completion of the updated Milestone 2 document was also completed, creating the basis for the upcoming alpha functionality assignment.
Integration of VR was completed, along with movement and object interaction with the VR hardware.

Monday, February 1

Nothing new to report.

Thursday, February 4

Had a meeting with Linkon and Joseph and further finalized the scope of the project.
The user should be able to assemble a floor in sequential steps.

1. Assemble the floor frame
2. Attach joist hangers

3. Lay down joists

4. Nail in joists

Each step should be accompanied with ghosted positions of the materials.

A fast forward ability where the user only has to do a certain percent of each step until the step is auto completed could be implemented.

During the standup meeting we went over what would be needed in order to accomplish above goals.

Nathaniel will work on the in world tutorial system.

Jason will work on being able to pick up the materials.

Zach will work on the different prefabs to enable ghosting.

Monday, February 8

Had a meeting with Nathan.

We went over what the group has accomplished since our last meeting.

Discussed alpha and beta functionality assignments.

We will continue to have meetings only once per sprint.

Thursday, February 11

We began completion of the Alpha Functionality document.

As per our last meeting with Linkon and Joseph, we adjusted our functional requirements to focus on the user's ability to complete a task given instructions.

Sprint 5

Thursday, February 18

Meeting with Linkon cancelled.

Thursday, February 25

Zach has the prefabs in order to enable ghosting of materials completed. Demoed to Linkon and Joseph.

Nathaniel has the UI skeleton created. Once the UI is linked to the prefabs then it should be complete.

Jason is continuing work on object interaction.

Created a plan to merge individual components after Monday's meeting with Nathan.

Monday, March 1

We had a meeting with Nathan and went over what to expect for the end of term.

We will have a Beta Functionality video due this weekend.

There will be a Winter Retrospective document focusing on what we would do differently if we were to start this project over again.

This term the individual defenses have been substituted for team defenses that will take place during week 10 and finals week. (sign ups to come)

Reminder that virtual expo will be June 4th.

We began the process of joining our individual components of the project together.

Thursday, March 4

We had our meeting with Linkon.

We finalized the merging of our individual contributions to the project and started working on the script and slides for our Beta Functionality presentation.

Saturday, March 6

We completed our Beta Functionality video which highlighted the progress that we have made thus far.

Wednesday, March 10

The team defenses have been substituted with a peer review which has been distributed today.

Thursday, March 11

Our meeting with Linkon and Dr Louis was cancelled.

Monday, March 15

We finished our Winter Term Retrospective document.

Thursday, March 18

We had a small update meeting with Dr. Louis to see how the term was wrapping up.

Sprint 6

Monday, April 5

We had a meeting with Dr Louis to discuss the project trajectory for the future.

We discussed what changes need to be made with the project including bug fixes and altering of task completion to match the task operations Dr Louis would like.

Monday, April 12

Jason created a document that detailed what needed to be done with the project as well as a schedule of when the tasks might be completed.

We had a short update meeting with Dr Louis and Linkon.

Tuesday, April 13

We had a beginning of term (there was some miscommunication and scheduling errors that resulted in the group missing the first meeting) with Nathan.

He pointed our attention to what the term was going to look like.

There is a portfolio update assignment where we submit our updated portfolio with our project included.

We have a project showcase individual assignment due April 30th where we practice describing our project to three different groups: highly technical, general audience, and 5th graders.

Our Code Freeze has been named Code and Repo Grading and takes place during week 7 (May 10-14).

He reminded us to keep a log of the project for when our code and documentation is graded.

Sprint 7

Monday, April 19

Short check in meeting with Linkon and Dr Louis to see if there were any problems. We let them know that we are continuing to work on bug fixes.

Tuesday, April 20

We had a short check in meeting with Nathan to get our group in the same meeting rotation as the rest of the teams.

Monday, April 26

Short check in meeting with Linkon. We let him know that Zach has updated the build order to facilitate all joist hangers being placed before the joists are placed, rather than alternating between the two. We will continue to work on bug fixes.

Monday, May 3

We had a check in meeting with Linkon and Dr. Louis. Zach updated the build order to correspond to the proper order. Nathaniel updated the UI to be an object in the environment rather than text on the VR display. Jason presented the remaining work to Linkon and Dr. Louis.

Tuesday, May 4

There was a meeting with Nathan in which he informed the group that we did not need to attend the following two lectures since we will be presenting our project on May 21st. We will also be providing feedback to the other groups that are presenting on that day.

Sprint 8

Monday, May 10

We checked in with Linkon and Dr Louis.

Friday, May 14

We submitted a draft of our Virtual Expo page.

Monday, May 17

We had our meeting with Linkon and Dr Louis. Dr Louis let us know that he was at the real factory. He showed them what we had and they were excited to try it out. He wants us to work on creating the executable so that the program can be shared.

Tuesday May 18

We had our meeting with Nathan. Our Project Evaluation is taking place this Friday, starting at 10am. We are given 30 minutes to give our presentation, which should include

1. How to build the project
2. Functional diagrams
3. Demo
4. User Stories
5. Github

We will be reviewing each of the teams, individually, based on the information in the "Peer Review Form Upload [HERE](#) for Project Evaluation Presentations" assignment. After we have each completed our reviews, we will send them to Jason, who will then compile them into team specific documents and distribute them to the respective points of contact. We will receive the feedback from the other teams and have 2 weeks to respond to the teams' feedback.

Monday, May 24

We had our meeting with Dr Louis. Dr Louis would like two versions of the project sent to him.

1. The entire repository with code, documentation, etc.
2. An executable with a user guide and instructions on how to install and setup.