After the first lecture for emerging technologies I feel lost, I have no clue about a field to go into, no idea on what I could possibly make that hasn’t been made before, In an attempt to try to find motivation, I asses all of the things I am currently doing and think about something to go into, the game I’m currently playing is Sekiro, an action-adventure where its highlighting feature is its combat system, it has no VR compatibility, but when thinking about trying to add a feature, as it took 4 years to make the game, yeah...no. Another game I have always been interested in is Civilization, Sticking with VR I hoped that I could create some sort of rip-off where the player would be a god-like being, controlling armies and talking to others... However its already been done (Deisim) . I then started looking at the kind of things that I watch, and was immediately attracted to youtuber Michael Reeves, as I was having trouble finding something that hadn't been done, so I found great comfort in realising that I didn’t have to make something that was necessarily practical.

At the lecture I created an idea, I was going to revive my first year unity project, and add real-world implications using Phidgets, where losing with no points would result in a shock, reaching a high score would sound a siren, and other silly things that would give my game a niche, I began to look at the logistics of this, learning the phidgets and trying to map their applications, however the drive for me to do this isn't there, so... back to the drawing board.

Eureka moment, I was scrolling through my news feed, and stumbled across a post about vertical farming (VertiFarm, prof.dr.ir. LFM (Leo) Marcelis), I thought, there's farming simulators, this is the next big thing in agriculture, what if I could make something, that makes vertical farms. It could be a simulator or a maker but overall, it's something that I’m interested in. HTME’s Closet farming video introduced me to the concept of vertical indoor farms a few years ago, I really liked how convenient and efficient it seemed, having farms without the coinflip English weather battering crops sounds great. After watching Some videos (Farm for future, Aerofarms) I've been keeping up with certain advancements, with the most important being big businesses buying into this as being a viable food source for the future (Russell Hotten, BBC). In seeing its current and future usages, I couldn't help but look back at how vertical farms came about. The concept was brought up in 1999 with the first farm being made in 2009 (Kevin L Frediani, Paignton). The first commercially viable farm was made in 2012 in Singapore(Olivia Siong, Singapore News) utilising more space and raising price of its produce, various companies have risen with the best statistics being shown by japan-based Mirai, using 40% less energy, 80% less food waste and 100x the amount of traditional agriculture methods (Kurt Benke Vol 13, 2017). Overall... yeah, this is what I want to base my project around.

After a bit of planning and working out what kind of stuff is in the world, My idea is to make a Vertical farm... maker, it will take into account all the necessary details, and calculate useful stuff of the user, there is nothing like this out there... thankfully. Also deciding how to make it wasn’t very difficult, I’m presented with options of game engine... and that’s it, of which I will use Unity as I have worked with it before and I don’t believe my project will require too much complicated mechanics. So... The overall plan: Implement building a structure, that can be as big as the user want, take into account the materials and other costs of making the structure, have a graphic showing the size of the current structure, its efficiency, its output and other useful information.

My project now consists of a menu, options and game, I'm not sure whether this will turn out to be a ‘game’ or something else, but I have also began looking into the building implementation, Partum's Building system seems like what I want, where I add snap points to on top of in to stack, each foundation representing a size, to be determined in the UI. Now the fun begins, adding my own snap points to the foundation is fine, but when attempting to make a 3x3 foundation building, snap points bug out, are unable to go on top of themselves, go in the same point over and over and struggle to snap to each other. I have now also created some sort of background, very hard to scale background with the build, also made the platforms, overall it looks horrible, but I'm not a designer.

Getting away for the depressing looks, i have shifted my focus from the building system to the maths, realising there's lots of constants I need to research, being: Land price (Frank Knight, Farmland Index). Using a Charles Koch blog, Journal of Agricultural studies & Evan’s Vertical farming cost model, I was able to calculate initialisation costs, and the power consumption which, with usual electric prices I was able to calculate a cost for electricity, water consumption varies, from 70% less water (Rick Leblanc, Vertical Farming) to 100% less as water is recycled and rain water is collected (Sustainable Water Management in urban Environments pp235-263). Tessa Naus, Plantlab, shows the average crop yield for vertical farming, and I believe that’s all I require.

Deisim <https://store.steampowered.com/app/525680/Deisim/>

Michael Reeves <https://www.youtube.com/channel/UCtHaxi4GTYDpJgMSGy7AeSw/videos>

AeroFarms <https://www.youtube.com/watch?v=ME_rprRlmMM>

Russell Hotten, BBC <https://www.bbc.co.uk/news/business-49052317>

Kevin L Frediani, Paignton <https://www.bgci.org/files/Dublin2010/papers/Frediani-Kevin.pdf>

Olivia Siong, Singapore News <https://web.archive.org/web/20121027232546/http://www.channelnewsasia.com/stories/singaporelocalnews/view/1233261/1/.html>

Kurt Benke Vol 13, 2017 <https://www.tandfonline.com/doi/full/10.1080/15487733.2017.1394054>

Partum's building system <https://www.youtube.com/watch?v=S2uMerP2wL0>

Frank Knight, Farmland Index <https://content.knightfrank.com/research/157/documents/en/english-farmland-index-q1-2019-6317.pdf>

Charles Koch blog <https://www.charleskochinstitute.org/blog/is-the-worlds-largest-vertical-farm-worth-the-cost/>

Journal of Agricultural studies [https://www.researchgate.net/publication/259702659\_Up\_Up\_and\_Away\_The\_Economics\_of\_Vertical\_Farming#pf5](https://www.researchgate.net/publication/259702659_Up_Up_and_Away_The_Economics_of_Vertical_Farming)

Evan’s Vertical farming cost model <https://urbanverticalfarmingproject.com/2018/09/11/vertical-farming-cost-model/>

electric prices <https://www.businesselectricityprices.org.uk/>

Rick Leblanc, Vertical Farming <https://www.thebalancesmb.com/what-you-should-know-about-vertical-farming-4144786>

Sustainable Water Management in urban Environments pp235-263 <https://link.springer.com/chapter/10.1007/978-3-319-29337-0_8>

Tessa Naus, Plantlab <https://www.eitfood.eu/blog/post/is-vertical-farming-really-sustainable>