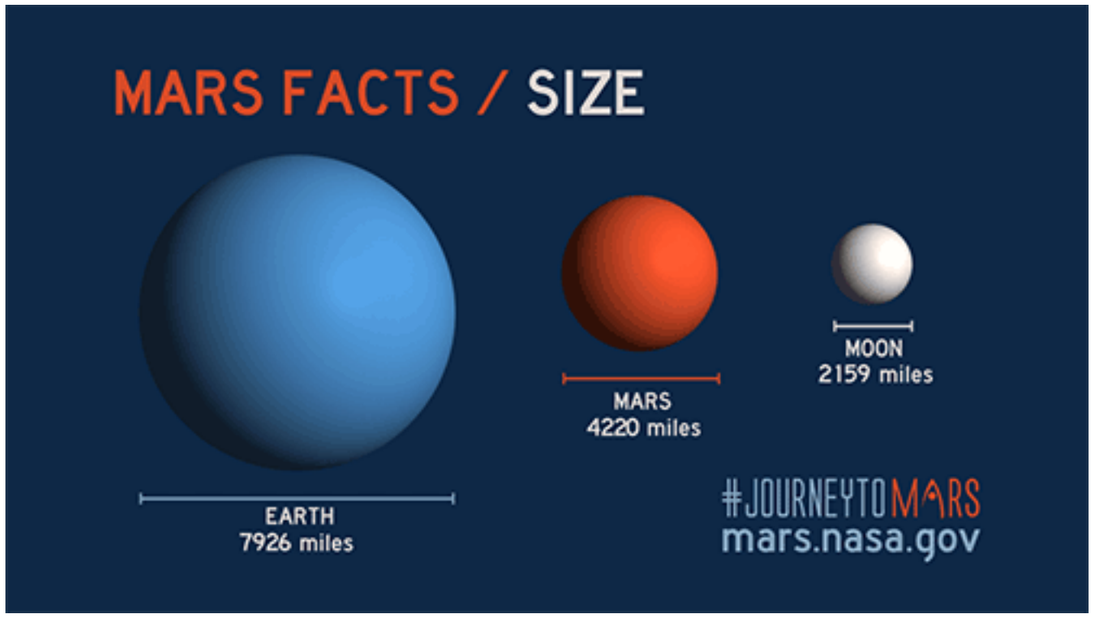
It's the year 2030, two researchers have been selected to set up the first human colony on Mars. Their mission is to collect soil and environmental data in hopes of one day colonizing Mars! If this mission is successful, humankind will have their first agricultural farm in outerspace.

Earth VS. Mars

24 hours to turn around its axis
1 year = **365** days
Average temperature is **57** degrees **F**ahrenheit
Clouds and wind
9,807 m/s²

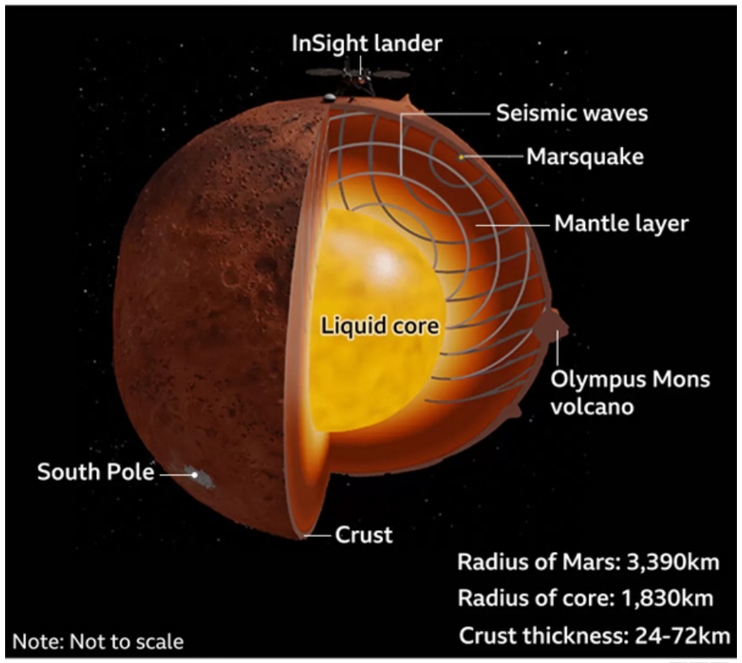
24.6 hours to turn around its axis
1 year = **687** Earth days
Average temperature is **-80** degrees **F**ahrenheit
clouds and wind
3,721 m/s²



The *atmosphere* on Mars contains more than *95% carbon dioxide* and much less than *1% oxygen*. It is *thinner* than on Earth.

Context - Climate

The interior layers of Mars



Source: S.Cottaar/P.Koelemeijer/J.Winterbourne/Nasa BBC

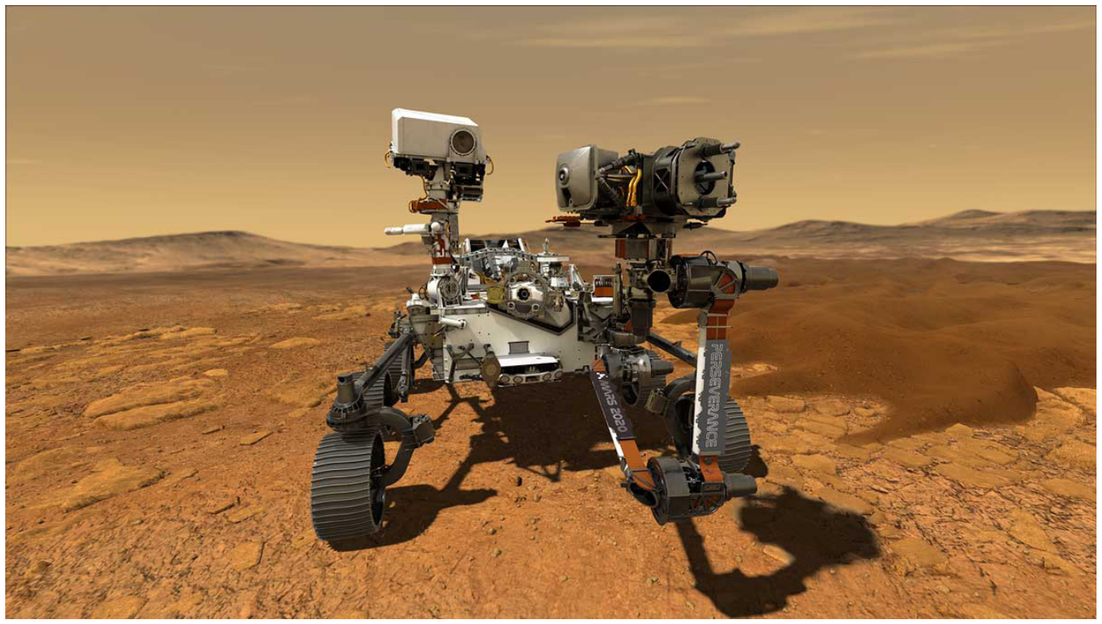
The surface of Mars is cold and dry, and bombarded with radiation
Red planet due to iron oxide chemicals in the soil

Context - Geography

https://ichef.bbci.co.uk/news/976/cpsprodpb/9B2C/production/_119542793_mars_640-2x-nc.png.webp

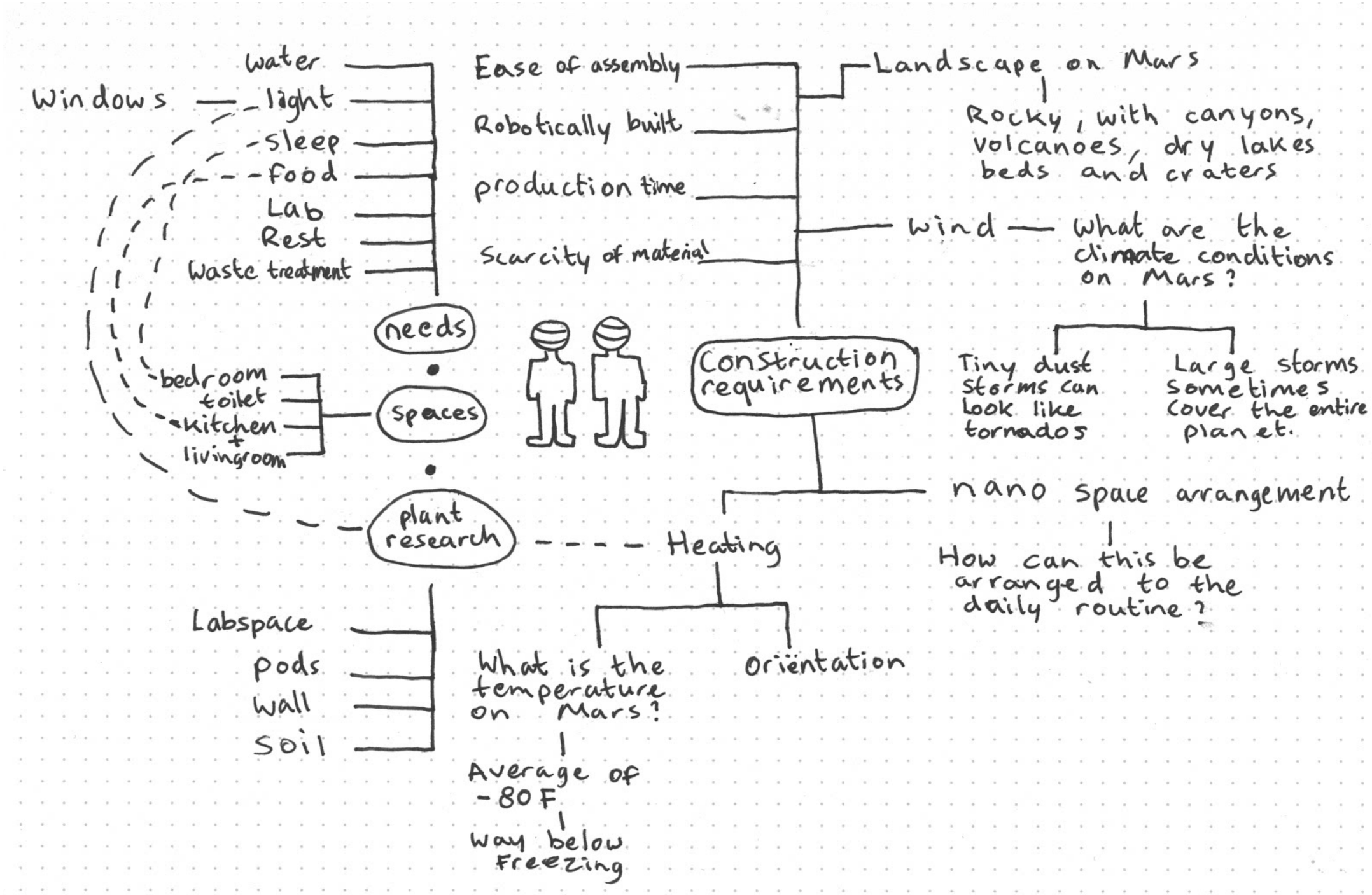
Problem VS. Solution

Dust storms
Less than 1% oxygen
Low temperature (-80 F)
Non-fertile soil (Iron oxide chemicals)
Radiation from the sun that is dangerous for humans



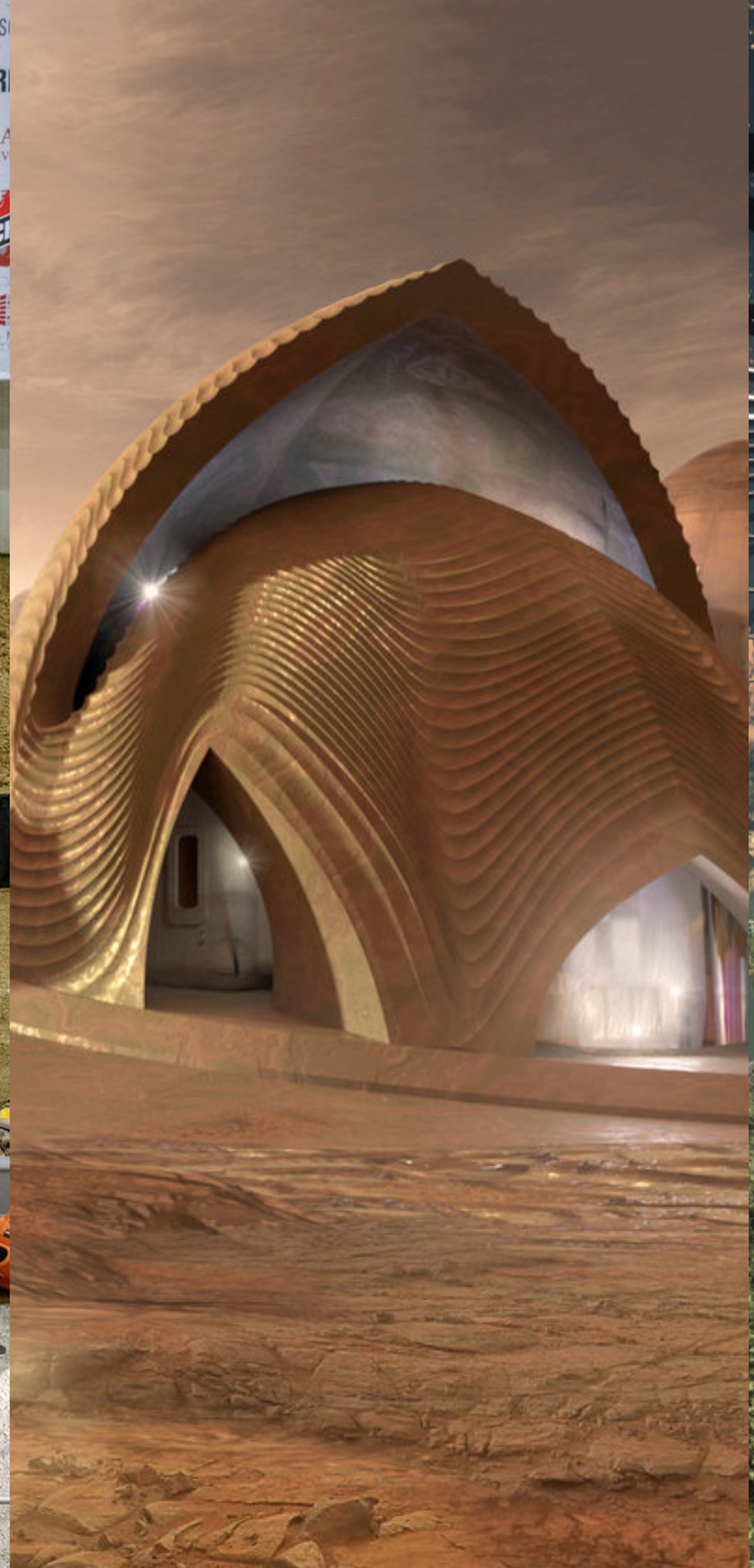
Oxygen
The Perseverance rover carried a small helicopter and landed on Feb. 18, 2021. Perseverance has a tool that will try making oxygen like a tree does. It will inhale some of the large amounts carbon dioxide on Mars and exhale oxygen. This kind of tool could help to prepare for when humans first visit the planet.

Problem - Radiation | Low temperature | Dust storms

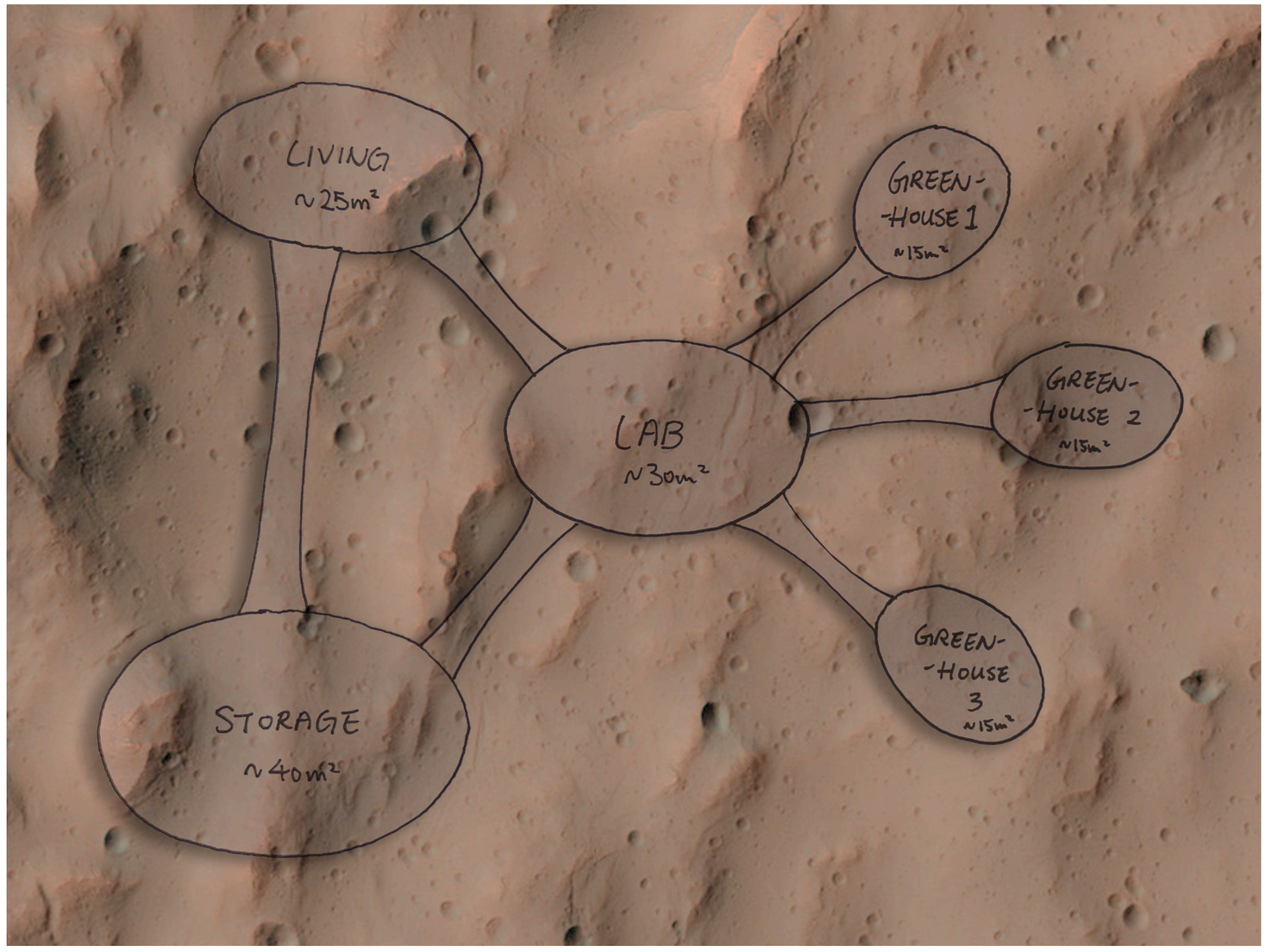


Design priorities - Mindmap

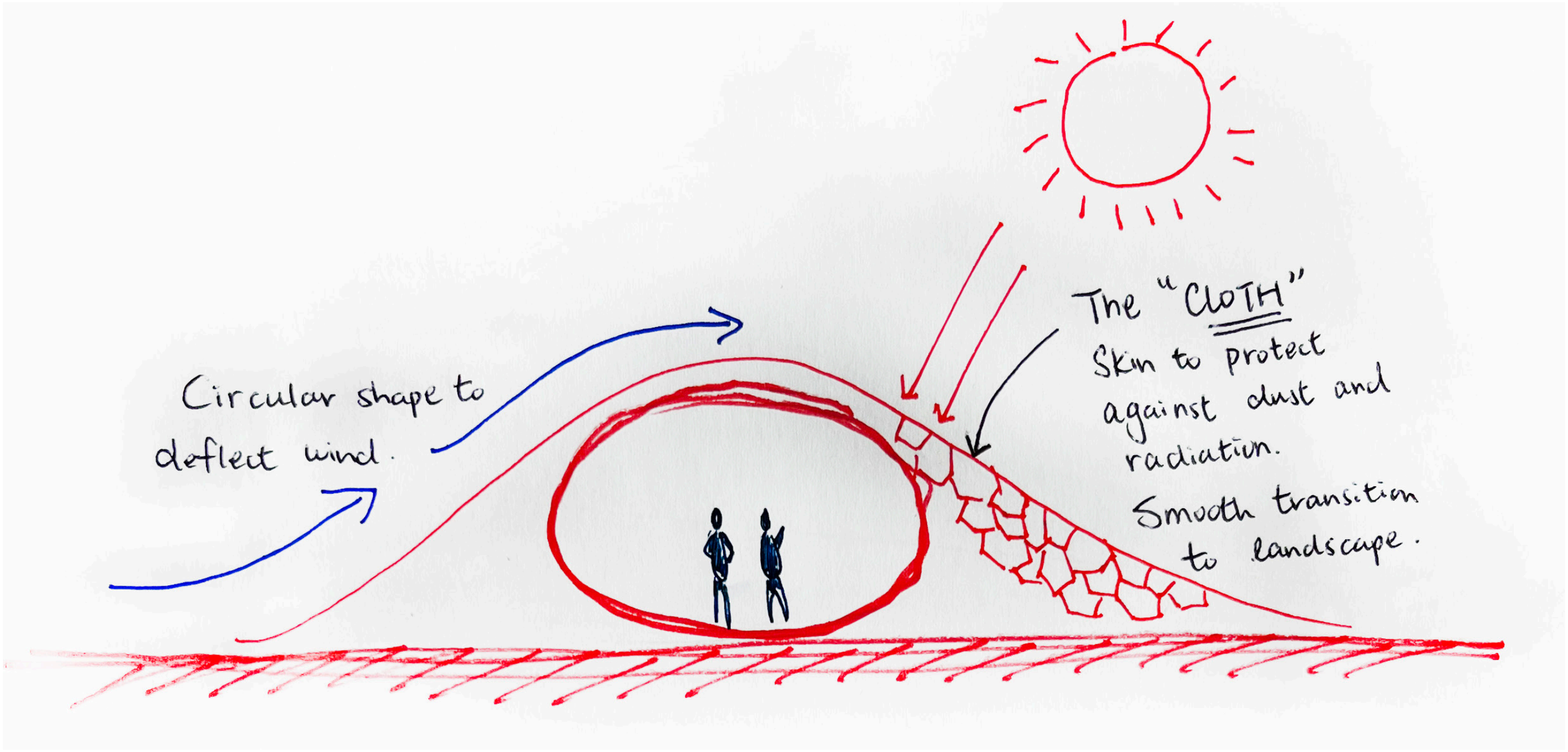
Inspiration Image



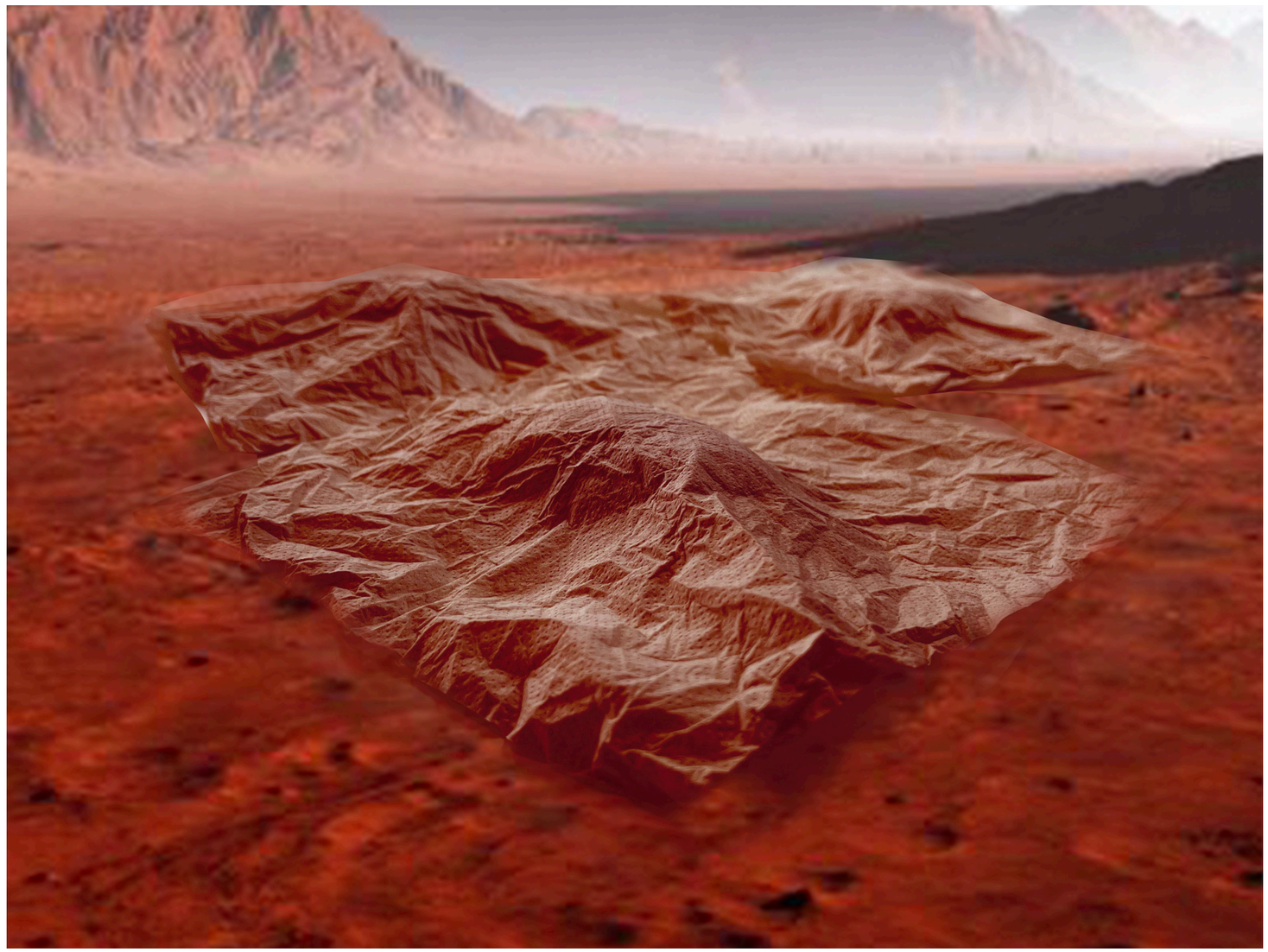
Concept - Idea



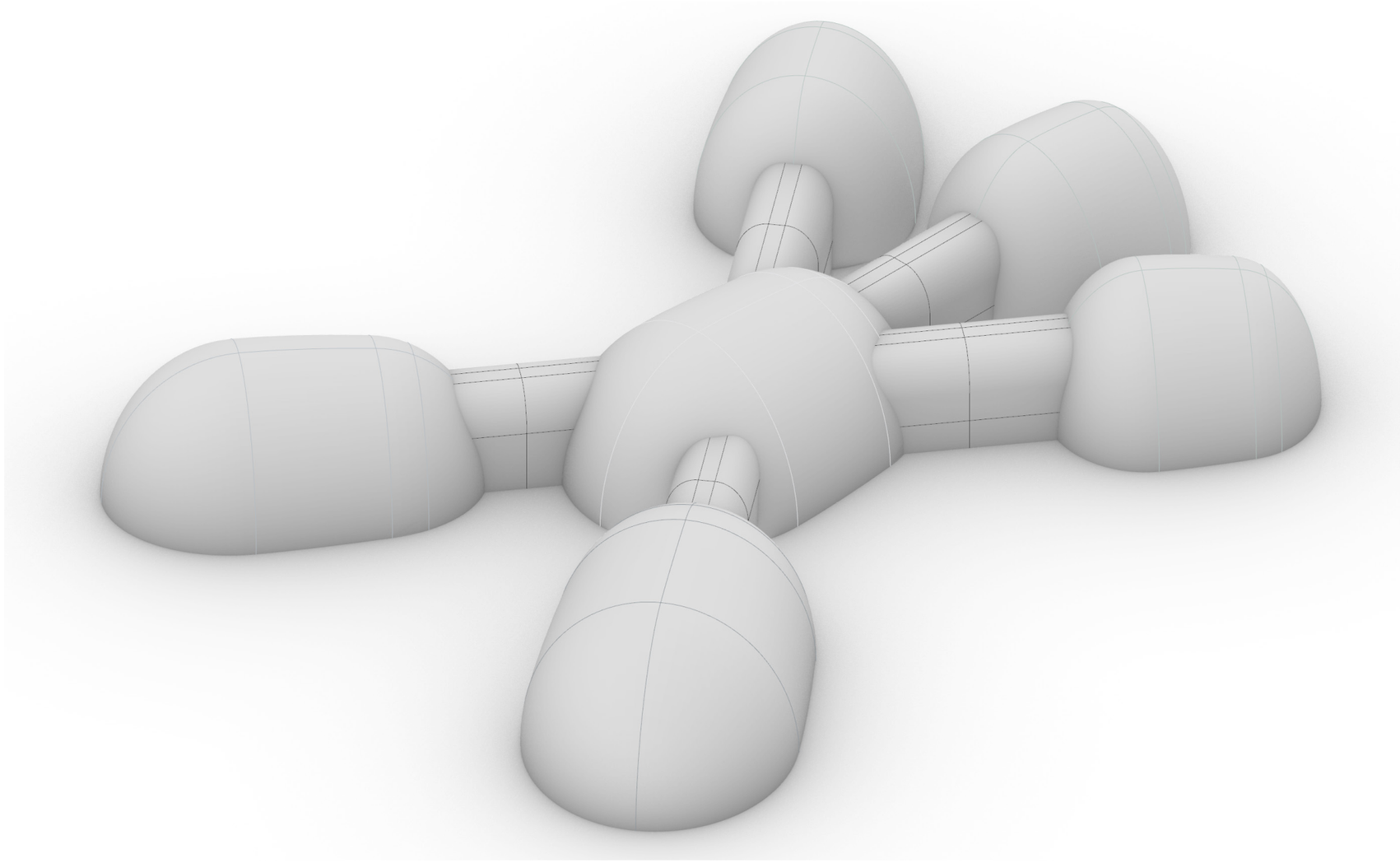
Concept - Layout

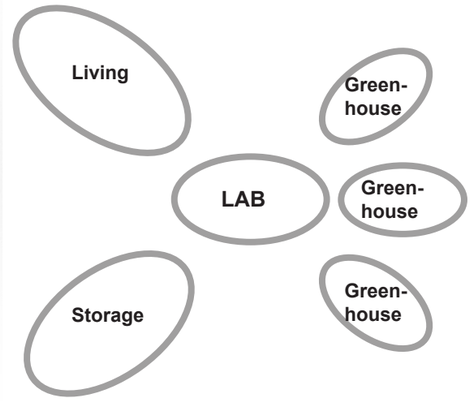


Concept - Section

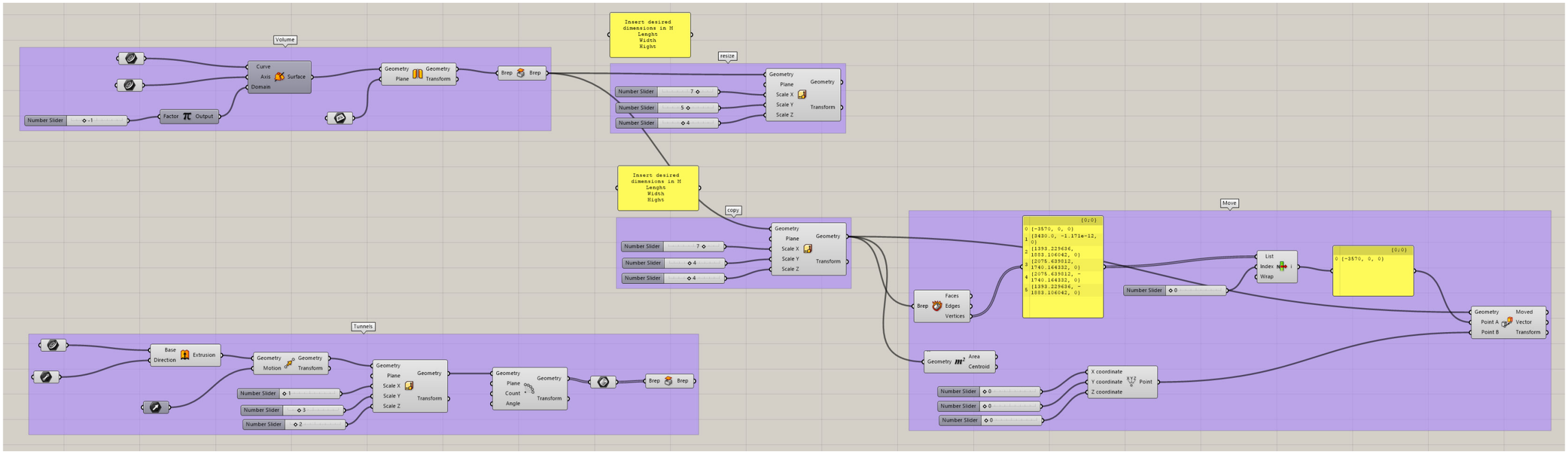


Concept - The “Cloth”



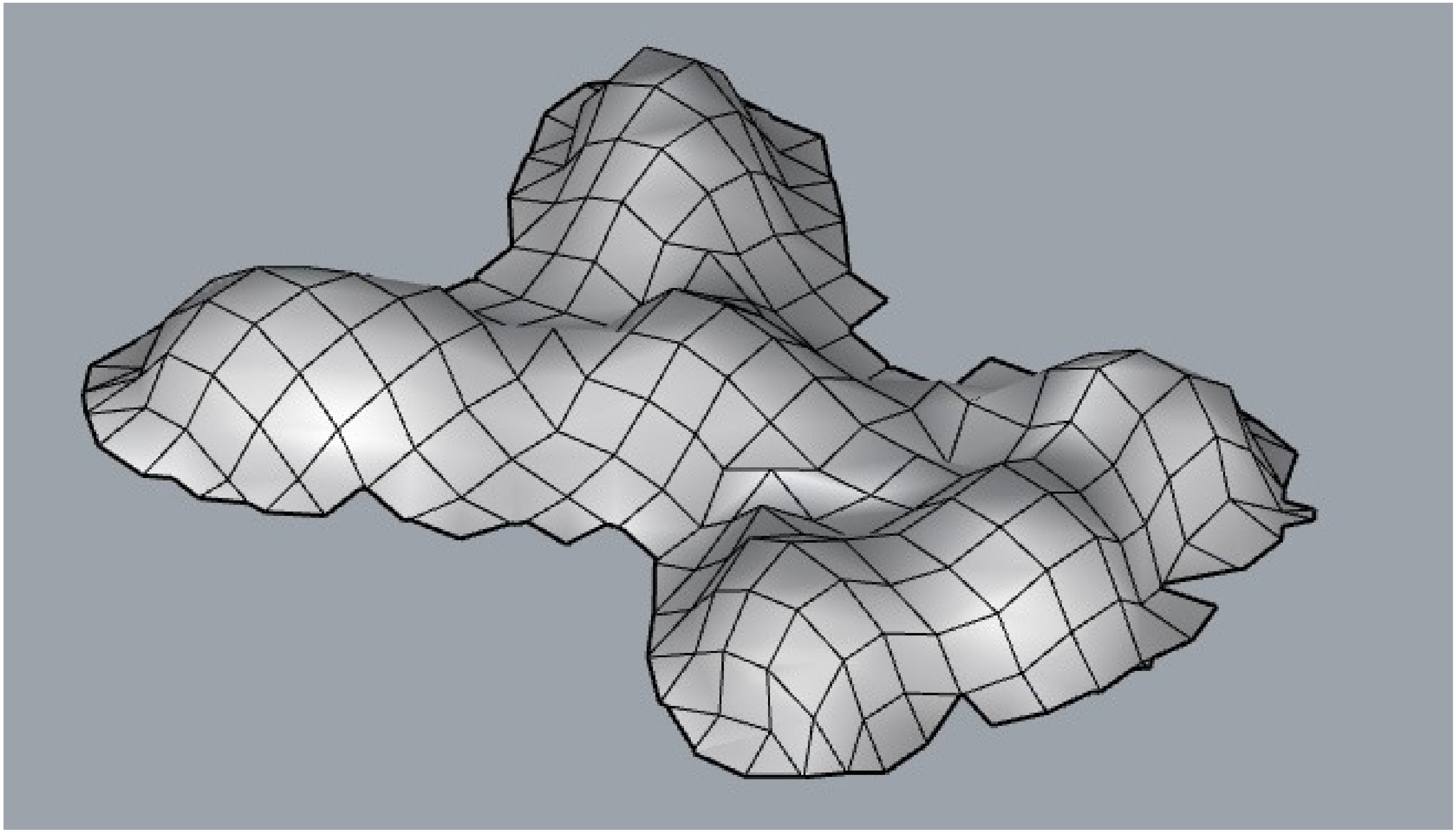


Model - Pods

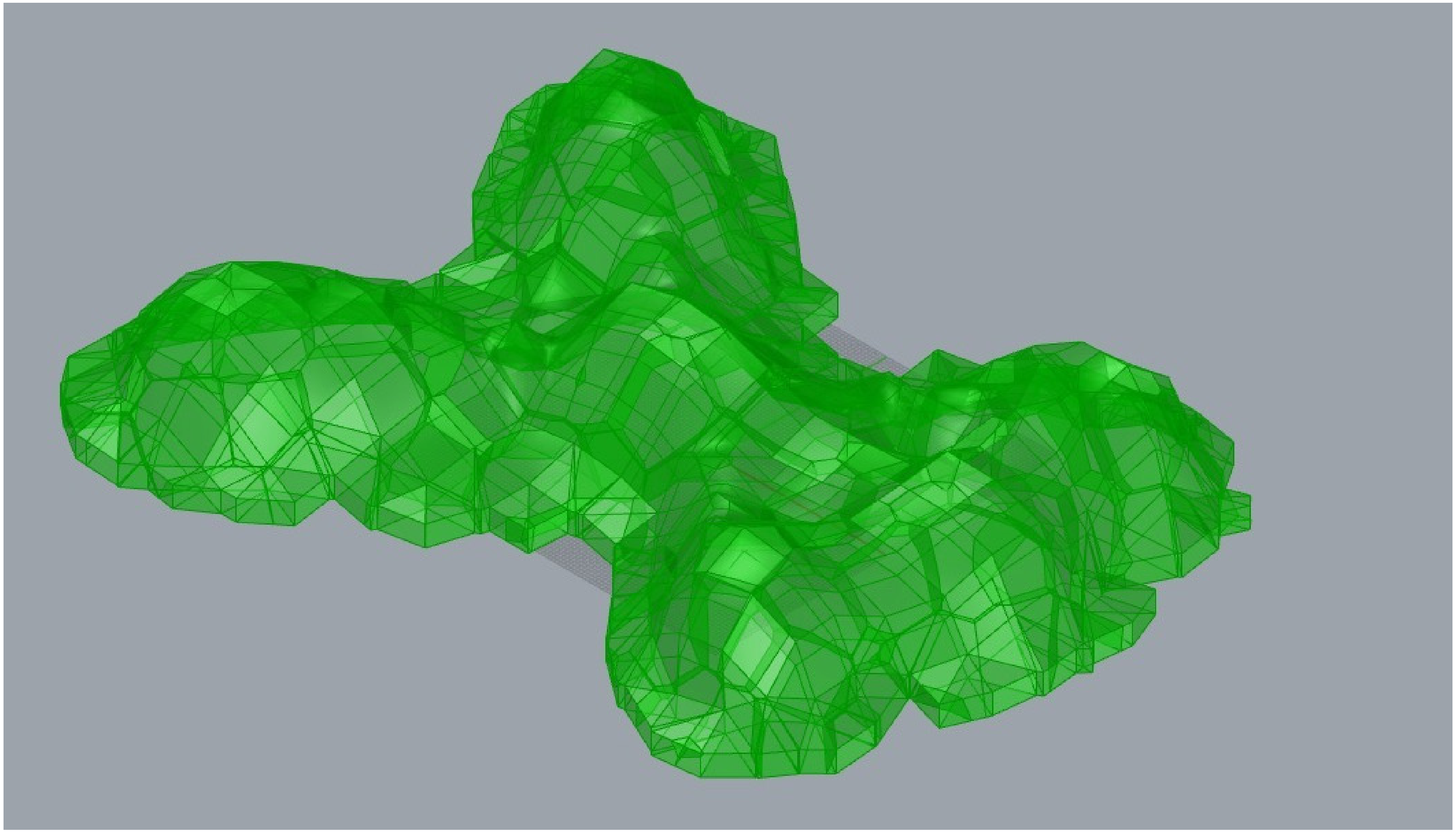


Grashopper - Pods

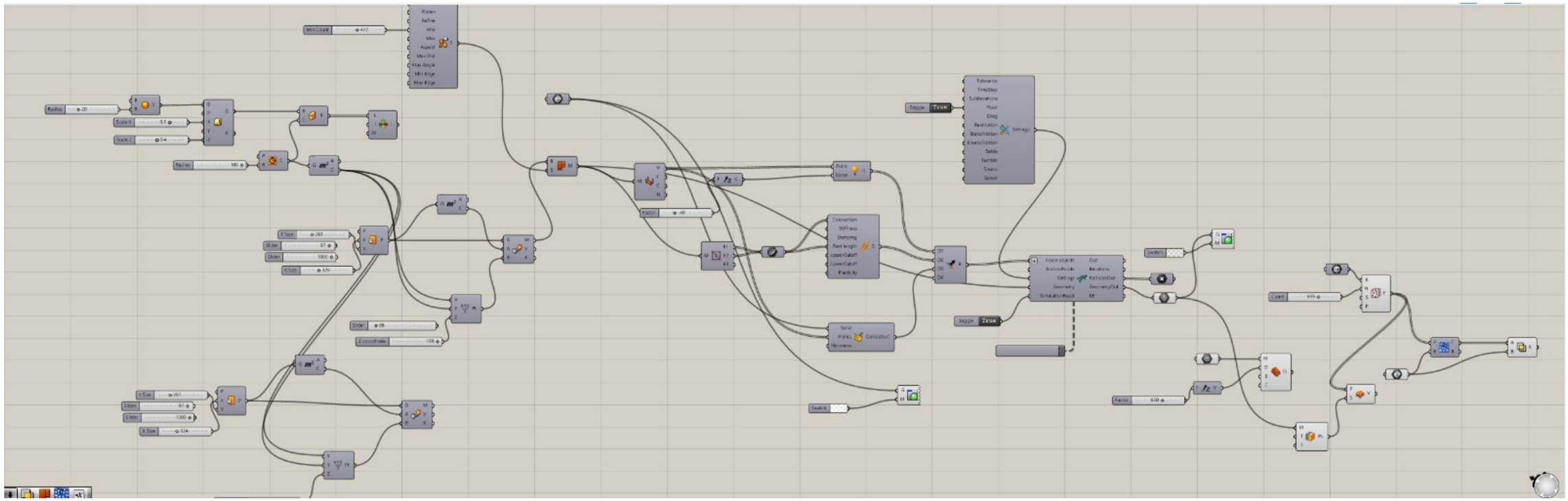
Simulation - The ‘Cloth’



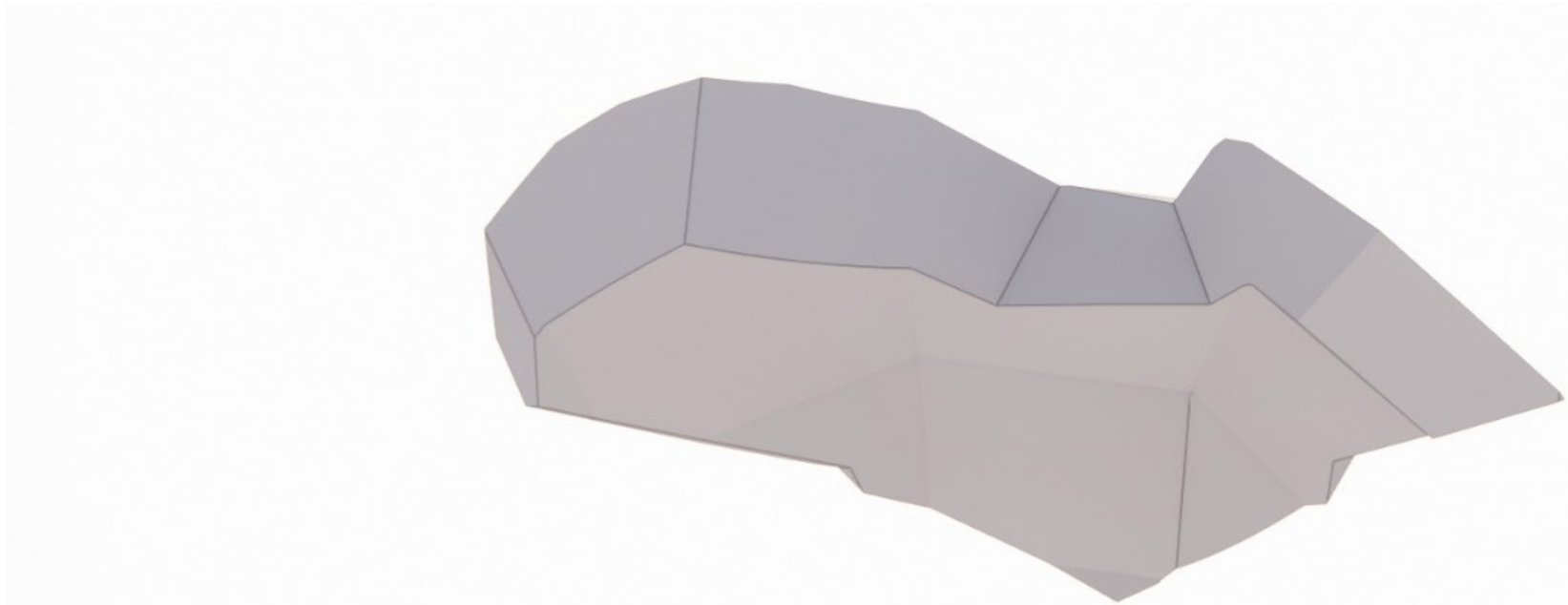
Model - The ‘Cloth’

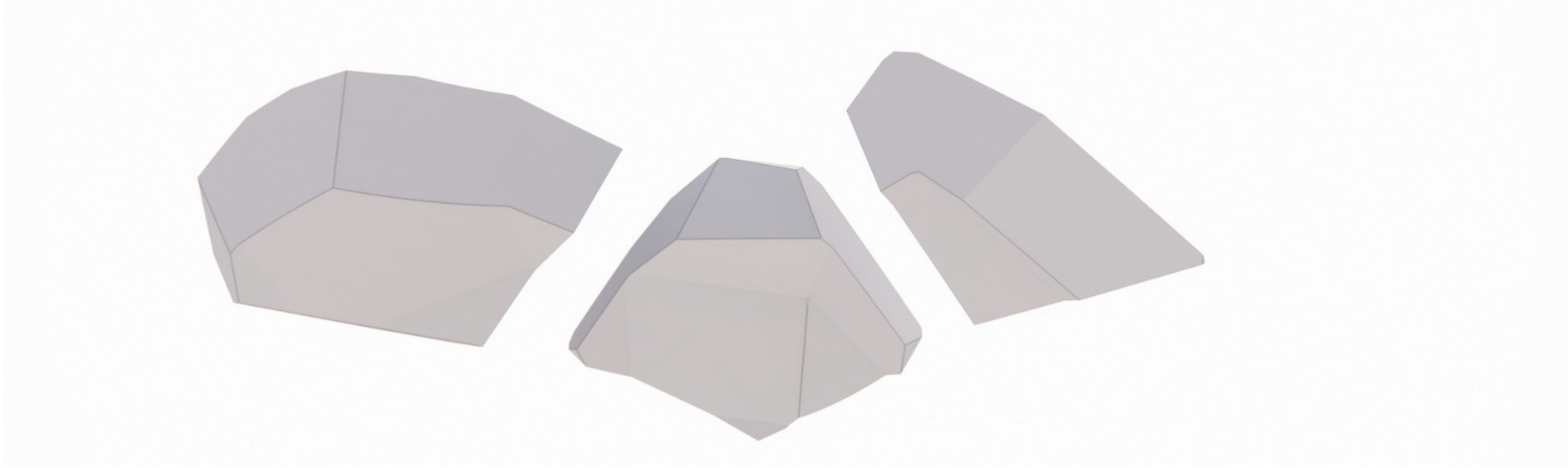


Voronoi - The ‘Cloth’

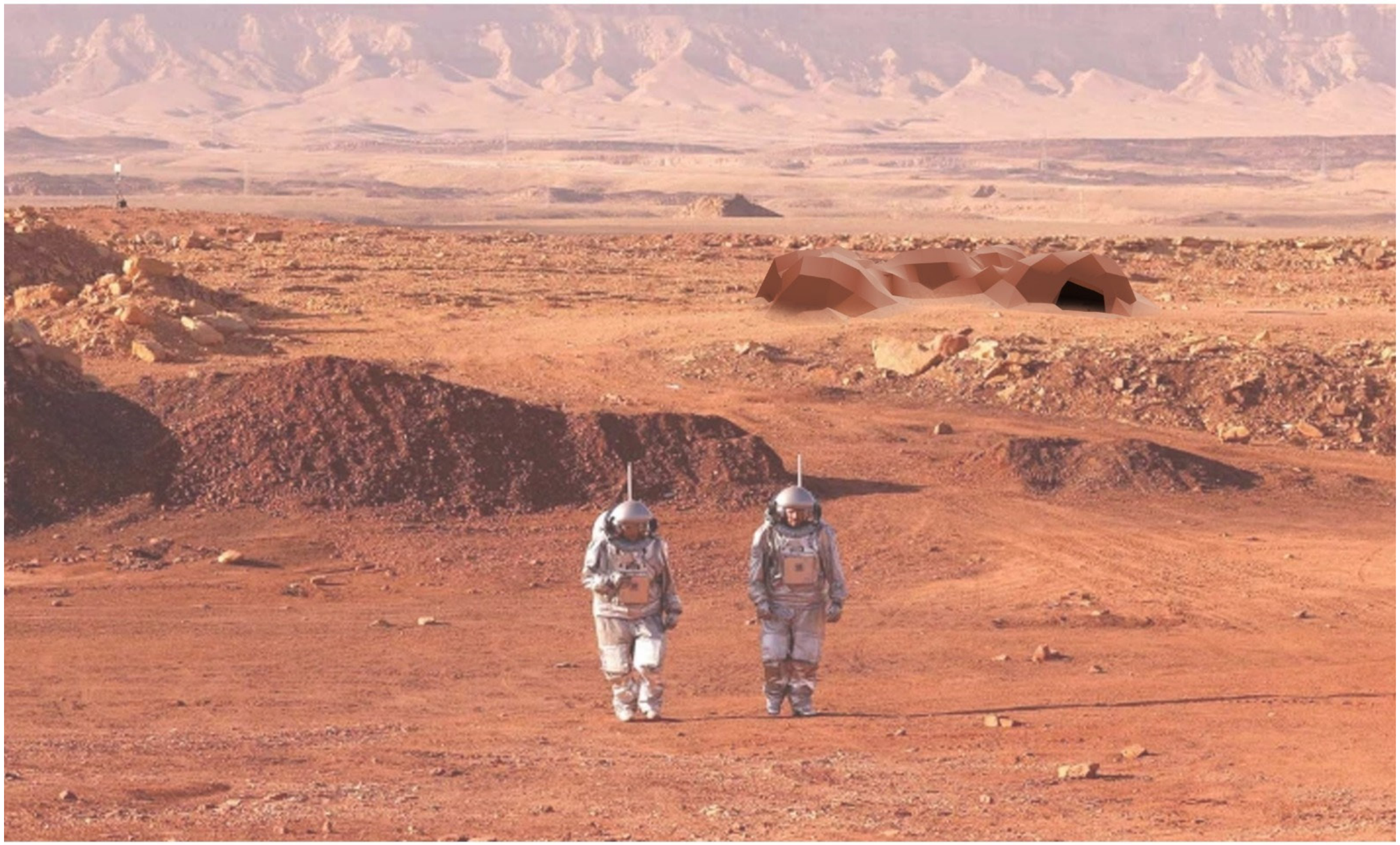


Grasshopper - The ‘Cloth’





Model - Fragments



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