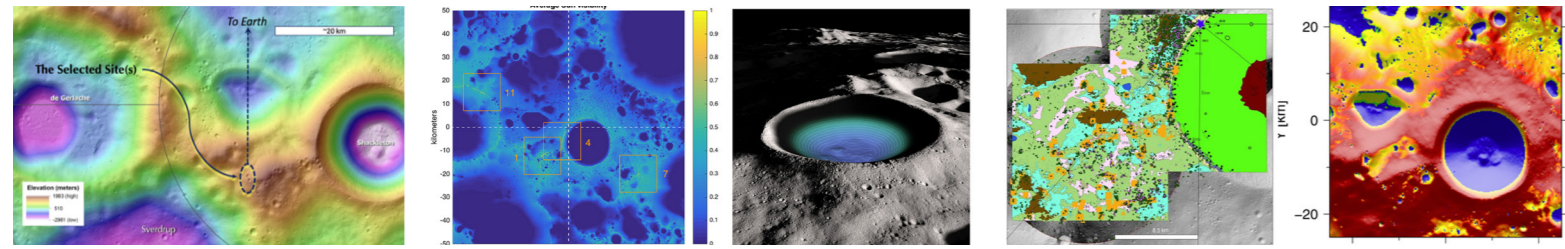


# Moonstation

Living on the Moon has become a current exploration with the advancement of aerospace technology. As human effort, material, and supply are limited on the Moon, this project aims to provide a Voronoi housing scheme for 3-6 astronauts using human and robot collaboration. The project was initiated through Lunar site selection through researching environment and terrain challenges, Lunar Energy and Health and Life Support systems, and construction robots; then explore the design of communal living units using local materials (regolith); and finally explore ways to realize the design using technologies of Design-to-Robotic Production-Assembly (D2RPA), Computer Vision (CV) and Human-Robot Collaboration (HRC).

**Area Specificities:** The reason for the chosen site is because the ridge along the crater's rim is exposed to almost continual sunlight for solar charging, human health, and greenhouse, while the interior is perpetually in shadow, which indicates the presence of water ice for water collection as well as water that can be used for in-situ material use. The landing and launch facilities could be located on the far side of the south polar lunar ridge line to minimize the risks due to 'ejecta' produced during arrivals and/or departures from the settlement. The slopes near the ridge appear adequate for surface mobility to facilitate access by surface transportation to permanently shadowed regions (PSR) where ice has been detected during recent years.



## Station Site Selection

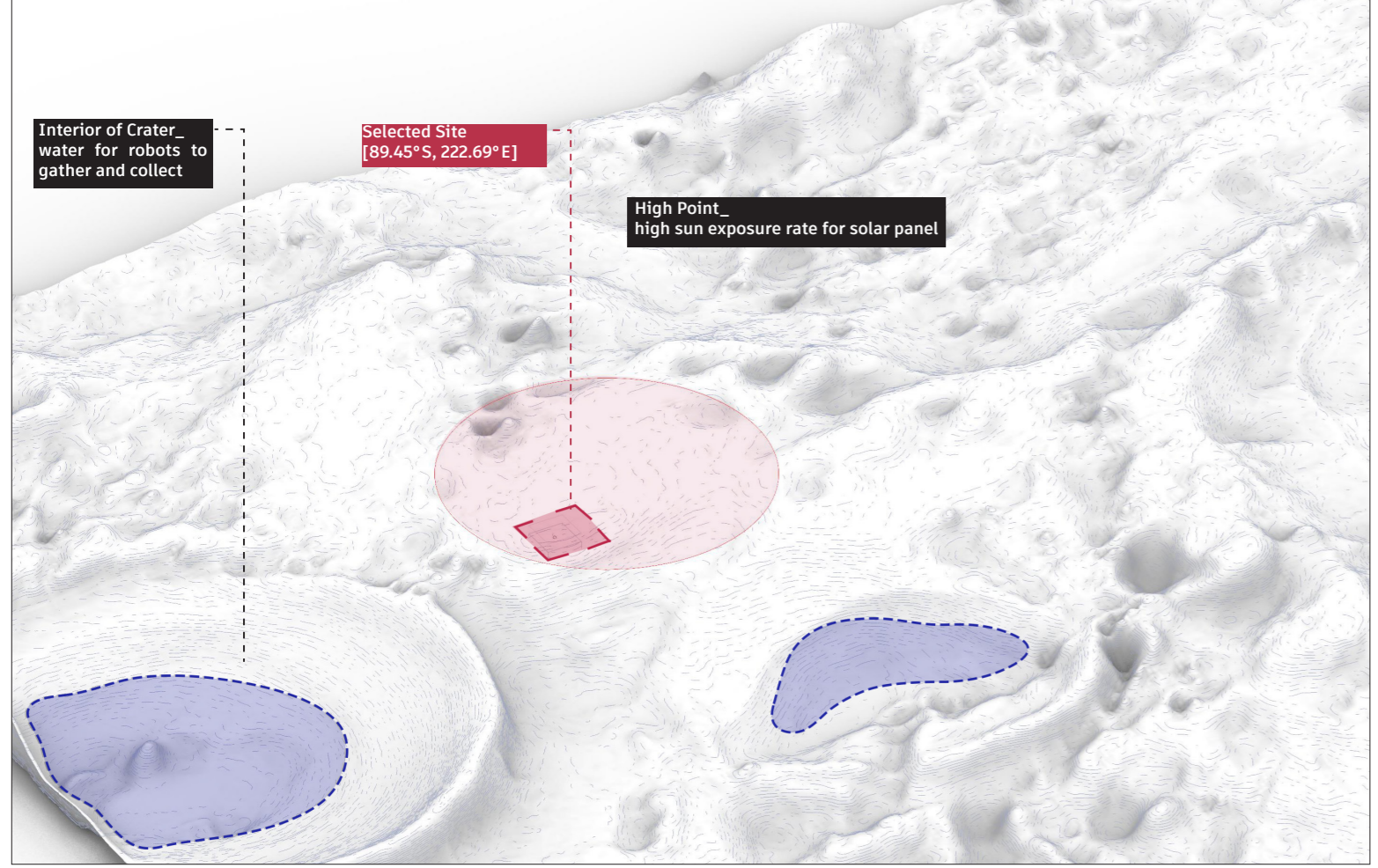
- The Lunar south polar ridge on the left of Shackleton Crater
- Situated along the Earth-facing slope of the Lunar south polar ridge, along the upper edge of an approximately 800m diameter crater there

## Considerations and Opportunities for water and sunlight

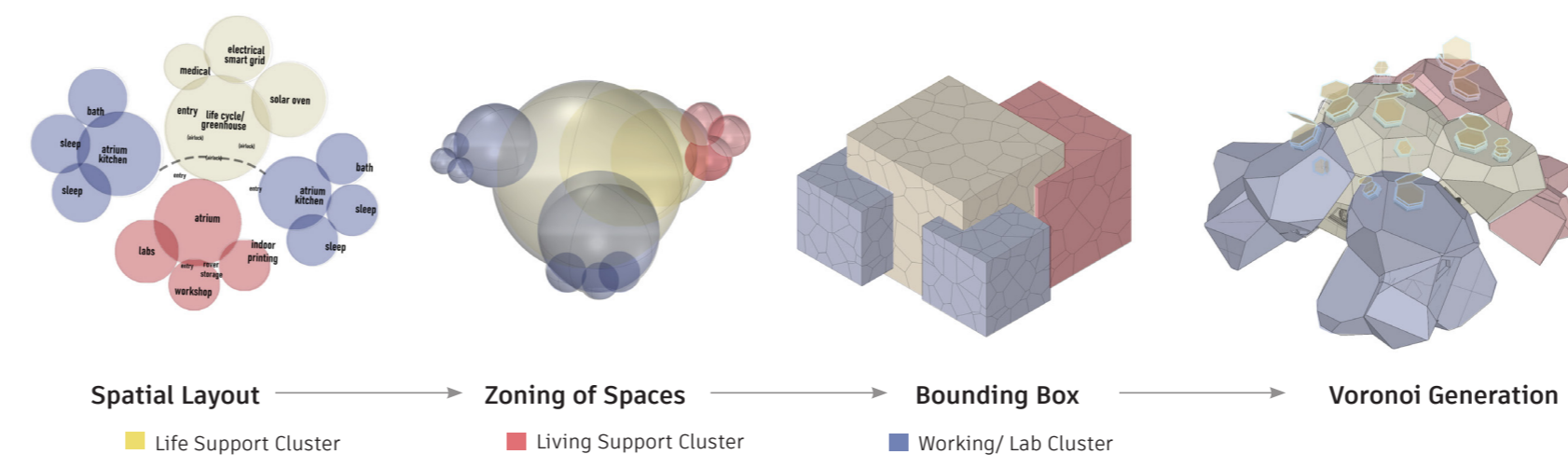
- The ridge along the crater's rim is exposed to almost continual sunlight
- The interior of the crater is perpetually in shadow that may indicate the presence of water ice.

## Selection Features for 3D print material and water collection

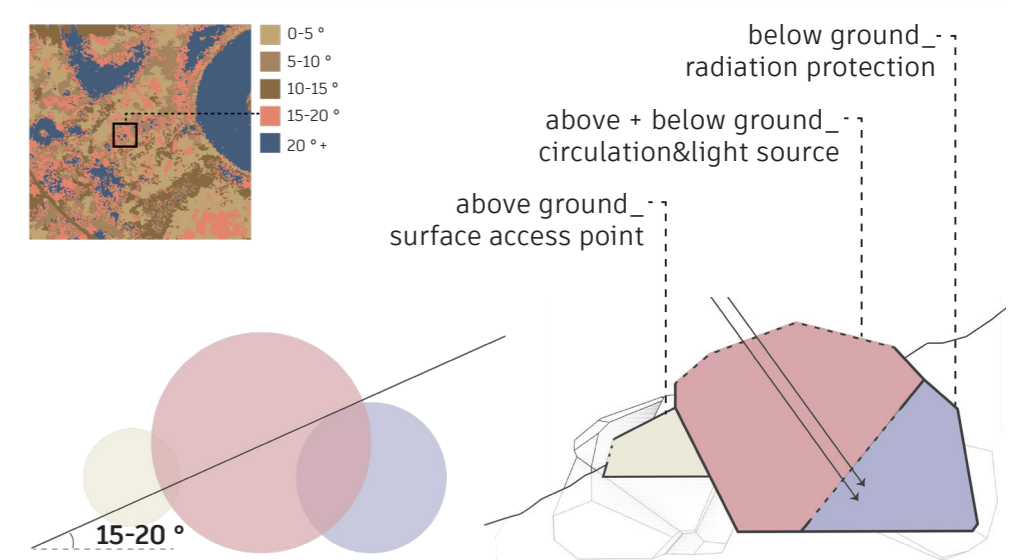
- Isolated boulders, rock exposures, rocky craters overlaid on geomorphological map-providing 3D printing materials for the robots to collect and gather.
- Depth of ice in the area mapped; possible water collection and system to be implemented.



## Voronoi Iteration and Complexity - Form Finding



## Use of Typography



## Spatial Formation to Voronoi- 4 modules for 3-6 occupants

