**LAGI Submission 2022**

**Bloom**

Introduction

The Earth is filled with different phenomena of nature. Nature is determined through plants, landscapes, and animals. Our society and economy, perhaps our existence, are made out of the nature of the Earth. Nature can include the smallest animal, such as an ant, to a larger scale of our forests and ocean. We do not realize that our Earth is made up of nature, which we continuously rely on for numerous services and goods. We sometimes depend on nature for our well-being and happiness.

Located in Mannheim, Bloom is a proposed construction that depicts the purpose of nature. When it comes to nature, it varies from a small scale to a larger scale. In keeping with the idea of nature, Bloom includes huge flower-like structures and bud-like structures. Furthermore, in keeping with Bloom’s character of nature, it includes a unique way to form renewable energy through solar photovoltaic technology. The concept involves educating the importance of nature, sustainable attributes to the local community, and creating a healthy environment for every individual's needs.

Activities

Bloom provides gathering spaces and an experience during the day and night. Flower-like structures will have a staircase surrounding the mesh that includes a growing tree inside while vegetation grows alongside the form of the metal mesh. The staircase includes a platform accessible for individuals to view the site of Mannheim day and night. As the sun rises, the flower-like petals open as if they were blooming to provide a shading device for individuals while collecting natural sunlight. These flower-like petals will close during the evening and provide lighting for the site. Lights will be embedded along the flower-like structure, providing individuals with a night experience. Individuals can stay within site at night due to having these flower-like structures.

The bud-like structures are represented through domes that are embedded on the ground. These structures will provide an environment where individuals can gather and have a meeting space. In addition, farmers can use these spaces to create a product that uses specific vegetation growing within the site. This bud-like structure allows natural sunlight to flow through the solar panel glass and vegetation to grow through the metal mesh connecting to the ground naturally.

Bloom is a park that allows individuals to view the entire site from a higher elevations. Paths connecting these flower-like structures gives individuals the opportunity to either experience the site from a perspective in the ground level or in a higher level close to the flower-like structures.

Bloom gives the opportunity to freely give individuals the option to do different activities to their liking. Bloom is where individuals can exercise, meet others, gather, and enjoy the experience by walking throughout the site. In addition, individuals have the chance to see the two different experiences during the day and night that Bloom offers.

Technologies and Materials

Bloom is primarily constructed mainly with steel through the meshes that support the structures. Materials such as wood occur in a few parts of the structures, such as having timber framework in a few places but performing equal tasks as the steel meshes. These meshes will support each structure and allow vegetation to grow within the form of structures. Having a mesh as one of our central construction systems allows for natural ventilation throughout the spaces. Throughout the year, as the season changes, these meshes collect water which will create energy for the site and also will go through the plants. As rainwater or snow melts, it is captured and stored after which a certain amount is later used to generate power to certain places of the community or site. Plants and crops will also populate throughout the meshes while receiving natural sunlight. As for structure, solar panels occur within the south side of the bud-like structures in order to receive more natural light. This natural light results in an electrical charge which will be used for the site. LED lights occur within these bud-like structures that lights up at night. LED lights are controlled with a sun tracker which automatically turns on the light in the absence of sunlight.

Flower-like structures will bloom (open) as the sun rises through a sun tracker embedded in the solar panels identifying the sun's position throughout the day. Solar panels are placed on the petals of the flower-like structure absorbing natural sunlight and creating energy resulting in an electrical charge used throughout the site. Each structure is estimated to produce 56 megawatts of energy. This technology is called solar photovoltaic, which allows light from the sun to convert to electricity or voltage. Some electrical charges are used at night as these structures light up through LED lights. LED lights are used throughout the site, which consumes less energy and reduces any risk of combustion. These flower-like structures resemble how nature is able to grow which could be beneficial to individuals’ well-being by producing better air quality for the community. As for the flower-like structures, the form of solar panels in which resembles a petal, as it opens when sensing sun, the petal will be tilted along the South side of the site to receive more natural light.

Dimension

As for the flower-like structures, sizes will vary from 24 meters to 27 meters from its peak to the trunk of the flower-like structure of 70 meters with 6 meters in diameter. Its petal size is 5 meters by 12 meters length. While the bud-like structures remain at 10 meters in diameter.

Within the flower-like structures, we decided to plant trees that will receive adequate light and water. The trees we chose are common in Germany and work well with the weather conditions that Mannheim provides. We also chose them based on their attractiveness. We chose the Elm tree, Maple and Birch tree. They all grow to a height of 15 to 21 meters. Elm and Maple trees spread out to around 12-15 meters when mature, and 10 meters for a birch tree.

Development

Bloom is inspired by the idea of the collectivity of different features of the Earth. Nature includes plants, animals, and the landscape, which created the idea of Bloom. From the earliest stage of the phenomena of the physical world of having a bud or seed into a fully grown wildlife. A flower represents nature, growth, and the idea of a flourishing site into a beautiful positive place for individuals to visit. A bud showcases the form of the seed representing a chance to grow. Over time, these buds or seeds will eventually grow fully, allowing population and creation of an environment that promotes wildlife. The development of flower and bud-like structures corresponds to the idea of nature. Having a bud-like structure and a flower that blooms during the day creates a positive environment while fulfilling the task of producing energy through the use of solar panels and promoting the life of nature.

Environmental Impact

Bloom impacts the environment significantly by promoting sustainability while representing the greenery of nature. The Bloom will produce the electricity that powers the site while producing electricity in a few residential houses in the community. With the use of renewable energy through the use of solar panels along the flower and bud-like structures, it can collect and absorb natural sunlight. The use of solar panels reduces gas emissions and lessens the effect of climate change. Solar panels are a system powered by pure energy from the sun. The use of solar energy could improve the air quality within the community by lessening air emissions.

The choices of materials such as metal and wood are used due to their potential environmental impact. Metal can most likely be recycled and is more commonly recycled than other materials making it beneficial for the environment. As for wood, it can be harvested anywhere in the location and can be reused and renewable. Wood is also a natural resource that gives the advantage of being grown or populated throughout time.

Throughout the site, different varieties of plants and trees will be embedded. Having greenery within the site improves the air quality by reducing the amount of pollution that occurs within soil and water. By spreading greenery throughout the site, it will give a forest feel to individuals. Having a characteristic of the site similar to a forest creates a positive impact on the environment by having greenery that stabilizes the climate and can be one of the keys to helping prevent climate change. These plants and trees could be easily propagated, populating throughout the site. Different plants and trees could also result in economic growth within the community. Individuals can purchase products created through plants and trees. All profits are used to improve the site and create more opportunities for more renewable energy sources.

The Bloom is a site located in Mannheim, Germany, that offers different opportunities for individuals to experience. From flower-like structures that resemble the idea of a flower blooming when sunlight is available to a bud-like structure resembling a flower at an early age of a seed which offers individuals a place to gather. Bloom is a place where individuals can experience and are educated about the importance of green but yet promote the usage of renewable energy.