

## **Ideology of the project**

In 1903, the Wright brothers first launched the plane, and 58 years later people walked on the surface of the Moon. Of all the facts that I know about humanity, this is the most impressive thing to me.

Our passion for discoveries has accompanied us since our childhood. Each child is essentially a scientist who carry out experiments and opens up a new world for himself. Perhaps man is the only tool that allows the universe to study oneself. Therefore, if I am asked what the meaning is in the existence of mankind - I will immediately answer that the meaning is in the opening of new horizons. This is what makes us wake up in the morning and provides content to our lives.

There is so much space around us that we just do not have the right to live on only one planet. Our place is among the stars, and Mars is the first step towards this perspective.

Becoming our multi-planetary species is a new chapter in the history of mankind. And it is our generation that must take this step. We have all the tools for this, we need only inspiration and will power, so that in the next 10 years - for the first time in history, man could call another planet a home.

Mars is the nearest planet with the best conditions for life in the Solar System after Earth. Therefore, Mars itself should be our first step on the way to other planets and stars.

## **Analysis of conditions**

I have studied Mars for 2 years, and in my project I wanted to show how a city on Mars could look like. I tried to show the surface of Mars, its atmosphere, and features in the architecture in the most realistic way I could. To learn more about the surfac of Mars you can visit the site of NASA:

<https://mars.nasa.gov/all-about-mars/facts/>

For an architect, design is very important. Apart from providing all the functional needs, the city on Mars should be comfortable and attractive, so that a large number of people would want to live there. I have conducted an analysis of the Martian projects of two leading architectural studios: Foster and partners and BIG, and used their work in their project. You can find these projects on the link:

<https://www.fosterandpartners.com/projects/mars-habitat/>

<https://www.big.dk/#projects-mars>

I have also got acquainted with Ilon Mask's plan for the colonization of Mars:

<http://www.spacex.com/mars>

After a detailed analysis of the Martian conditions, I came to the conclusion that the main part of the city should be under the surface to provide protection against radiation and asteroid attack. And on the surface there may be domes with air and verture for episodic stays. In order to protect the domes from radiation, we can use a local electromagnetic field on the surface of Mars around the dome, and eventually, when we are able to place a radiation shield in a stable orbit between the Sun and Mars, we can transfer all life to the surface:

<https://www.popularmechanics.com/space/moon-mars/a25493/magnetic-shield-mars-atmosphere/>

Building a city on Mars can take some decades, but I tried to show how this might look like taking into account today's technology. Only some part of the city is represented in the illustration, but it can be scaled throughout the planet by a similar principle.

## Description of the project

The main part of the city is located under the surface of Mars, where one can get to places of concentration of human streams with the help of elevators located along the perimeter of the domes. However, for an average person, there will be no need to visit the surface frequently .

### On the surface there is:

**A Exploration center** with laboratories, a technical base, a radio telescope, a plant growing area and experiments, Mars rovers for long journeys and a study of Mars;

**A Dome for people** to live in consisting of residential buildings with small apartments in the residential areas. In addition, there are green areas, shops and places for recreation there. The life in this dome is greatly close to the life on Earth, so people there can pass the period of adaptation quite successfully;

**A Dome for flora and fauna** where wildlife conditions will be restored. Here you can observe and explore the life of animals on another planet. Animals are an important element of earthly life, so we must be aware of the peculiarities of their adaptation to the conditions of other planets. By the way, the ability to plunge into the wild is very important for a person who is 400 million kilometers away from Earth;

**Portholes** that are in large numbers located around the ground part and serve for partial sun illumination of the underground areas;

**Solar panels and Wind Rotors** which are used for power generation. The bulk of the energy elements should be located outside the city, in the place where they will be as effective as possible.

The illustration shows a part of the city, but this form can be scaled to the entire surface of Mars. It is very convenient, since there is no need to develop large complex structures immediately, and the city will grow from modules depending on the needs of mankind.

## Transportation

**Big Falcon Rocket** is currently actively developing at SpaceX and will be ready for the next two years. Their main goal is to deliver people to Mars. They can deliver up to 100 people aboard at a time. The project provides places for landing.

**Hyperloop** is a vacuum train, which will be very effective for transportation between cities on Mars. It can be used both on the surface and on the ground.

**Martian rovers** that are being developed by NASA will be used to explore Mars at distances up to 1000 km. They will work on electricity and will be built on a 6-wheelbase.

**Martian Quadcopters** will be used to monitor the environment and will be good for personal need. The atmosphere of Mars is very thin, but there is also three times less gravity, so it's technically possible to use this vehicle. NASA is currently working on it.

So, we were on the Moon, but in open space it looks like a short stroll around our house. The real traveler has no borders: other cities, other countries, other continents, other planets, other solar systems, and other galaxies.

A city with a population of 1 million people on Mars is a very ambitious goal. However, we should start implementing it if we want to travel in space and see how our universe really looks. Earth is a cradle of our civilization, but we have grown up, and it's time to go on a great trip to the stars!