METANITY

"Preserving the Red Planet, Nurturing Life: Sustaining a Thriving Martian Ecosystem!"

A Sustainable Ecosystem Made By Man Himself. We Provide Food And Shelter Where There Is No Life. Sustainability Is One Of The Most Important Features Of The Project, As We Work To Provide All Needs, Address All Problems, Exploit The Site And The Environment, Exploit And Recycle The Waste Of The Project..Our Project Provides Food And Shelter, And Also Provides A Habitat For Animals And Even Humansthe Method Of Building Is Local To Mars, Where Future Generations Will Be Able To Survive In The Extremely Harsh Environments On The Planet By Building Their Communities Using Local Materials Of The Surrounding Environment, Using Current 3d Printing Technology To Shape The Design Of Surfaces To Protect Against Thermal Fluctuations And Space Radiation.At Least Two Cargo Ships Will Land On The Red Planet, Using Robots To Start Creating The Energy, Mining And Life Support Infrastructure With Water And Food Resources And Potential Hazards.

1-GOALS AND PLANS

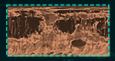
Project Goals :

1- Creating An Infrastructure Capable Of Serving The Entire Village
2- Establishing Self-sufficient Systems That Are Closed On Themselves Without The Need For Ground Assistance.
3- Maintaining An Integrated Sustainability System That Provides All Human Needs
4- There Is No Need For Ground Materials In Building In A Local, Scalable Way
5- Ease Of Assembly And Installation Of The Project Using The Latest Technologies And Robots Without The Need For Manpower
6- Providing One Of The Best And Most Enjoyable Experiences For Residents Of The Village
7- Research, Scientific Progress, And Expansion Of The Project Will Result In A Planet Suitable For Living

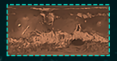
plans:

1- Food Production From Different Means Of Agriculture
2- Producing Drinking Water By Melting The Ice Of Mars, Treated Urine And Some Girls
3- Units As Repetitive Living Spaces That Provide All User Needs And Are Flexible In Dismantling And Installation.
4- Permanent Oxygen By The Acls System, Bacteria That Absorb Food From The Soil And Produce It, And The Moxie System.
5- Providing Energy For The Project, Solar, Nuclear, Wind And Mechanical Energy
6- Solve The Problem Of Low Temperature By Creating A Greenhouse For The Project.
7- Radiation Protection Using Materials Such As Hydrogen Skin, Used As A Good Shield Against Radiation, Polymeric Tissues And Lead.
8- Using Local Building Materials From Soil And Rocks9- Building An Entertainment Center That Includes Entertaining And Enjoyable Activities.

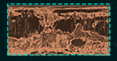
2-LOCATION



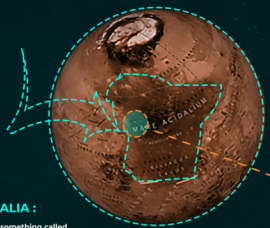
FERRIC OXIDE



PYROXENE



DUST



ACIDALIA :

There is something called

CONES (FREY AND JAROSEWICH)

Arrows: Cones Of Volcanic Origin, Lava Flows Interacting With Groundwater . .
It Is Of Volcanic Origin And Was Formed As A Result OfThese Lava Flows That Interacted With Groundwater And Led To Its Formation.

SNOW HILLS (LUCCHITTA)

It was formed due to changes in ice melt.

MUD VOLCANOES (OEHLER AND ALLEN)

. Formed by pressure and liquid release of fine materials at a relatively
. Low temperature from gas, liquid and rocks
. They are fluid-rich basins with dense accumulations of sediment
. It contains ground water or ice
. It releases a lot of gas and methane

1- An example of an irregular agglomeration

SHOWS DEVELOPED MOAT.

2- An example of morphological variance .

Arrows indicate flow-like features..

THE EXACT LOCATION:

1- A crater about 11 km (7 miles) in diameter.

2- It is located in acidalia planetia, which is part of the Northern plains.

3-Several features in and around this crater indicate the Presence of fluid and ice on and near the surface.

4-Ice can act as a lubricant, facilitating the flow of rock and Soil, thus smoothing landscape features such as hills and Potholes.

5-Antarctica features are produced by the repeated expansion And contraction of groundwater and ice, due to seasonal Fluctuations in temperature.

6-the funnel-shaped depressions that can be seen in the crater Floor could be collapse pits and are further evidence Of ice dissolution.

3-HUMAN NEEDS

How will basic needs be satisfied in new worlds?
Human needs and how do humans adapt to environments.
Humans have certain basic needs. we must have food, water, air and shelter to survive. if none of these basic needs are met, humans will not be able to survive.

Comment les besoins de base seront-ils satisfaits dans de nouveaux mondes ? les besoins humains et comment les humains s'adaptent-ils aux environnements
les humains ont certains besoins de base. nous devons avoir de la nourriture, de l'eau, de l'air et un abri pour survivre. si aucun de ces besoins fondamentaux n'est satisfait, les humains ne pourront pas survivre.

1-GRAVITY :

We may not have to deal with it - it's entirely possible that humans will adapt well to the gravity of mars.
exercise is the number one health priority in space. "no activity other than eating and sleeping is given this priority. if astronauts don't exercise, their bodies start to lose bone and muscle.
two and a half hours each day is devoted to fitness.

839.5 HOURS /YEAR

2-WATER:

About 60 percent of the average adult human body is made of water, according to a national institutes of health report. this includes most of your brain, heart, lungs, muscles and skin, and even about 30 percent of your bones. there's no dispute that water is crucial to healthy life according to studies, human being should drink 2.3 to 3 liters a day.

839.5 LITER /YEAR TO 1,095 LITER /YEAR

3-OXYGEN:

The average adult, when resting, inhales and exhales about 7 or 8 liters of air per minute that totals about 11,000 liters of air per day.nhaled air is about 20-percent oxygen. exhaled air is about 15 percent oxygen. therefore, about 5-percent of breathed air is consumed in each breath, that air is converted to carbon dioxide. so, as far as how much air is actually used, human beings take in about 550 liters of pure oxygen per day.a person who is exercising uses a lot more oxygen than that.

200,750 LITER /YEAR

4-FOOD:

On average, a male needs 2,500 calories, or 2,000 calories for a female, to maintain a healthy body weight.

you should eat about 3 to 5 grams of carbohydrates per kilogram of body weight. they should eat between 1.2 to 2 grams of protein per kilogram of body weight. (plant protein).

87.6 KGM/YEAR TO 146 KGM/YEAR(C)
35 KGM/YEAR TO 58.4 KGM /YEAR (P)

4-CONCEPT

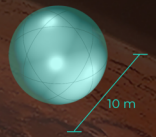
The design idea is mainly inspired by the sacred geometry that we see around us in the many different shapes and configurations of things.
the metatron's cube is the original inspiration for the village, drawing inspiration from it both philosophically and visually.the metatron cube contains every shape that exists in the universe created by god, and these shapes are the building blocks of all physical matter to create a balance in nature, just like the simulation in martian village

THE METATRON'S CUBE

METANITY LAYOUT

5-FORM GENERATION

The various configurations of the design units descend from the sphere shape, which is inspired by the circle that forms the branches of the metatron's cube
All units have one basic element that is fixed in size with a different number of repetitions for different use
The various configurations of the design units Inspired by the sphere shape, which is inspired by the circle that forms the branches of the metatron's cube
All units have one basic element that is fixed in size with a different number of repetitions for different use.
Each of the units consists of a certain number of spheres, one or more, and the sphere has a diameter of 10 m and a volume of 294.5 m



Horizontal unit.

x 1 sphere
volume: 294.5 m³
area: 78.6 m²

Factory unit.

x 6 spheres
volume: 1,767 m³
area: 471.6 m²

Entertainment unit.

x 14 spheres
volume: 4,123 m³
area: 1,100 m²

Service unit.

x 1 sphere
volume: 294.5 m³
area: 78.6 m²

Residential unit.

x 1 sphere
volume: 294.5 m³
area: 78.6 m²

Docking unit.

x 9 spheres
volume: 2,850 m³
area: 707,4m²

Centeral unit.

x 22 sphere
volume: 6,479 m³
area: 1,729 m²

Lobby unit.

x 1 sphere
volume: 294.5 m³
area: 78.6 m²

power unit.

Vertical unit:

x 2 sphere
volume: 589 m³
area: 157 m²

Agriculture unit.

x 10 sphere
volume: 2,945 m³
arca: 786 m²

x 14 spheres
volume: 4,123 m³
area: 1,100 m²

Residential

The interior design of the housing unit consists of a base that serves as the foundation for the entire unit. The base provides stability and support for various internal components.

One of the main features of the interior is the bed, which is designed to provide a comfortable sleeping space for passengers. The bed can be placed on one of the horizontal levels of the unit, providing a comfortable and private area for resting.

The unit also includes a bathroom that provides space for occupants to freshen up and take care of their personal hygiene needs. The bathroom may contain a sink, toilet, shower or bathtub, depending on the specific design of the unit.

To get to the top floor of the unit, there are stairs built into the design. These stairs provide a safe and comfortable way for occupants to move between the different levels of the unit.

Another important element of the interior is the work space. This area is designed to provide a designated space for residents to study, work, or engage in other activities that require a desk or table. The work space may include a desk, chair, and storage space for books, papers, and other materials.

Storage is an essential aspect of the unit's interior design, providing space for residents to store belongings such as clothes, shoes and personal items. This storage may be in the form of cabinets, shelves, or drawers, depending on the available space and the design of the unit.

In general, the interior of the housing unit is designed to accommodate the basic needs of two people. It provides separate areas for sleeping, bathing, working and storing belongings, creating a comfortable and functional living space.

7-ARCHITECTURAL PROGRAMMING

22 Residential

Residential Unit :

Base
Bed
Stairs
Bathroom
Workspace
Storage
2 levels
horizontal

This unit provides shelter for two people, where they sleep, store clothes, bathroom and study areas.

26 loobbies

lobby Unit:

contact points
bridges

This Unit is the meeting point the condominium units and an element of communication between the different units

1 Central

Centeral Unit:

Control area
Horizontal levels
Central intelligance courtyard
Major infrastructure zone
Labs

Management control of the entire project, a community for the government in the project, and there are offices and places equipped for scientific research

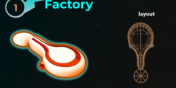
1 Power

Power unit :

Base
Laboratory
Solar farm
oxygen production device

This unit works on generating energy in several ways with different equipment and units, water and oxygen extraction processes

1 Factory



Factory Unit:

Base
Fabrication zone
Laboratories
Storage
Outdoor work area and helipad

It contains manufaction machines and mechanical equipment necessery for permanent manufacturing

1 Docking

Docking Unit:

Drone garage
Spacesuit storage
Landing area
pressure-gravity equalization zone

pressure-gravity equalization area This unit is responsible for launching drones and equalizing pressure for visitors

1 Enteryainment

Entertainment Unit:

Base
Gym
Relaxation area
Restaurant and cafe

Enjoy and rest to exercies inn the gym to help in fitness and the health of the best places to sit for food and drink

22 service

Service Unit :

Base
Storage
Surgery
Pharmacy
clinic
Medical lab

This Unit is the meeting point the condominium units and an element of communication between the different units

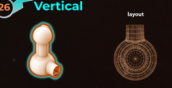
66 HORIZONTAL

Horizontal Unit:

Base
Horizontal corridor
connection space

This Unit makes a horizontal connection between the diffrent units and is used as a bridge

26 Vertical



Vertical Unit:

Elevator
Horizontal levels

This unit transmission units supports between vertical diffrent units

66 Columns

Columns Unit:

Structural coiumns
Mineral mining component

These units are structural elements and the design of these coulmns gives a streamlined shape of the project and support for the project in the soil

1 Agriculture

Agriculture unit:

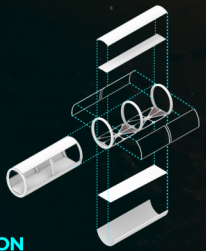
Base
Equipment storage
Food storage
nursery and plantation
Soil conditioning
Hydroponics zone

This unit contains all the agricultural equipment, processors, food processors, storage and soil equipment

8-ON-SITE RESOURCE UTILIZATION

9-BUILDING MATERIALS

1- Structural framework: of metal alloys planted in the ground and rocks
2- Concrete: It consists of a mixture of Martian soil and sulfur
3- Glass: It consists of a mixture of silicon dioxide and ammonium silicate to create different polymers
4- Hydrogen skin used as a good shield against radiation
5- Polymeric tissue for radiation protection
6- Lead for radiation protection



10-CONSTRUCTION AND INSTALLATION METHOD:

The parts:

1- Structural structure:
Made of metal alloys planted in the ground

2- First layer:
Building an inflatable net

3- A layer
building a crust of Martian soil after

4- A second layer:
Filled with hydrogen between the first and second layers to protect against radiation

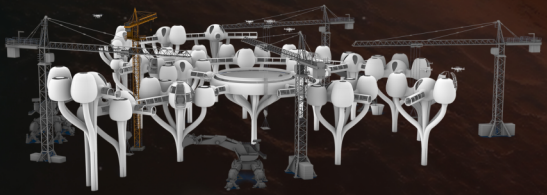
5- Installation of glass
Windows made of different polymers

6- The outer network
Network ofpolymerictissues, external to the unit

7- concrete floor

steps :

1- We use CNC machines to manufacture the structural structure of metal alloys
2- Assembling and assembling the structural elements of the units
3- 3D printing of the outer veneer layer and the inner elements
4- Glass installation
5- Melting of silicon dioxide and aluminum silicate extracted from Mars ice to make glass



11-PROCESSORS

OXYGEN:

1- **Bacteria** in the soil absorb nutrients and produce oxygen.
2- Recycling exhalation **ACLS system advanced closed loop system** air passage through the system carbon dioxide is trapped in small grains of amine, an organic compound similar to ammonia. the grains react with carbon dioxide, turning into water and methane, splitting into hydrogen and oxygen.
3- Converting carbon dioxide from the atmosphere of the red planet to oxygen by a **moxie device**. the device works through electrolysis that uses intense heat to separate atoms from molecules of carbon dioxide, which makes up about 95% of the martian atmosphere.
4- Partial dependence on agriculture for photosynthesis and oxygen production.

TEMPERATURE :

Build factories **global warming** occurs when carbon dioxide (co 2) and other air pollutants collect in the atmosphere and absorb sunlight and solar radiation that has bounced off the surface of mars traps heat and causes the planet to warm. these greenhouse pollutants - specifically carbon dioxide, methane,
nitrous oxide, water vapor and synthetic fluorinated gases - are known as greenhouse gases, and their effect is called The Greenhouse Effect.

WATER:

1-**Mars Water** Treatment Defrosting with a nuclear reactor.
2-Fresh Water Is Stored And **Waste Water** Is Treated.
3-While **The Plants** In The Next Part Of The Plants Grow In The Hydroponics System While The Algae Grow From The Sewage.

WASTE RECYCLING:

Some of the waste products may be repurposed into **useful materials, raw materials for 3D printing** or converted into a **gas** that crews can use or vent into space.
Waste to fuel One method of sustainable waste management is called waste-to-gasification.
While we will need to dispose of items that cannot be recycled or reused in a safe manner for spacecraft, crew and future missions as well to make giant leaps in sustainability. Waste-to-gasification uses a thermal degradation process to convert waste materials into a gas that the crew can either reuse on board the aircraft or dispose of via a gas vent above the spacecraft.

12-Energy

Solar Energy

Defined as the energy produced by converting sunlight into electricity through the use of solar photovoltaic

Wind Energy

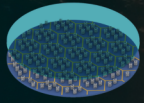
It is a form of renewable energy source in which turbines convert the kinetic energy

Nuclear Energy

It is a form of energy emitted by the nucleus of atoms made up of protons and neutrons.

Mechanical Energy

It is the way in which the body moves based on its position and movement



The nuclear reactor is one of the most impor ant parts of the project and will work to operate most of the units as one of its functions is to work on melting the ice underground to produce water

13-Agriculture

How to grow crops on Mars if we are to live on the red planet ?

It is through the adaptation of plants to Mars by using synthetic biology to develop crops dedicated to Mars.

Scientists propose several points of view, the most important of which are:

The use of microbes as a source of food on Mars. (Example: Conversion of human secretions into food)

Use of hydrophotovoltaic and controlled ecosystems

Using advanced synthetic biology to improve the potential performance of plant life on Mars

The researchers studied nine crop plants :

Lettuce, rice, beans, green peas, canola, tomatoes, peppers, tobacco and arabidopsis, a member of the mustard family that includes cabbage and radish

They found that plants are able to absorb carbon from the outside, providing acetate through key metabolic pathways.

Hydroponics

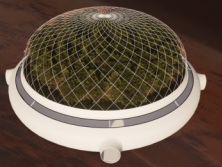
Cultivation in water is a suitable system for recycling plant fertilizers and water for growing plants in the absence of soilWith this system, 10 times the amount of crops can be produced in an open field and therefore

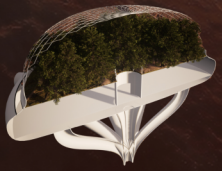
We can grow ground plants by exposing their roots only to mineral solution

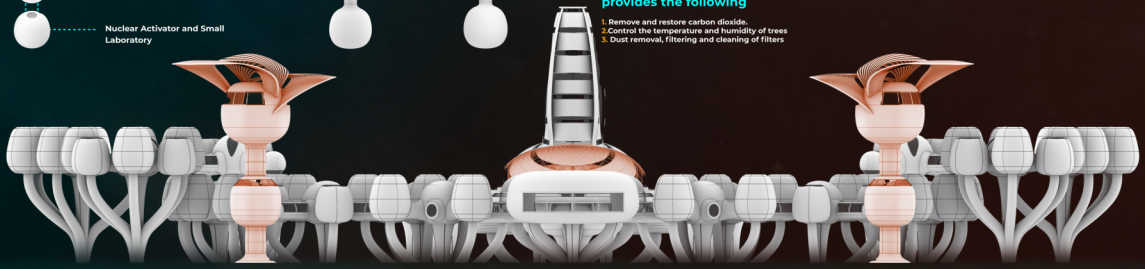
Main fusion reactor for defrosting and shunt for water

There is a section in the purification tower that provides the following

1. Remove and restore carbon dioxide.
2. Control the temperature and humidity of trees
3. Dust removal, filtering and cleaning of filters

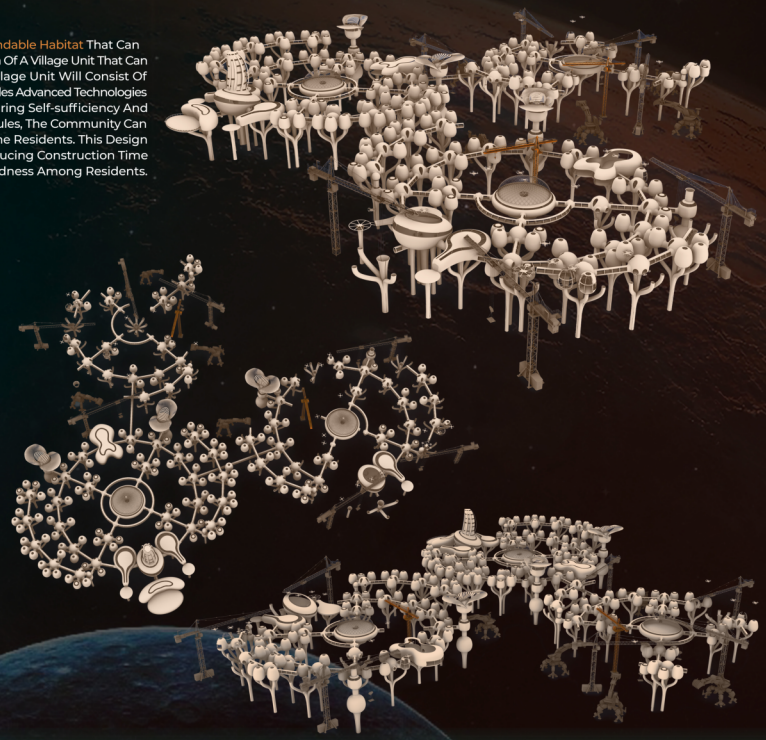






14 -EXPANDABLE

Our Desin For The Mars Project Focuses On Creating A Sustainable, Expandable Habitat That Can Easily Accommodate Future Growth And Development. We Propose The Idea Of A Village Unit That Can Be Replicated Horizontally To Allow For Community Expansion. Each Village Unit Will Consist Of Modular Living Spaces, Common Areas And Basic Amenities. The Design Includes Advanced Technologies For Energy Generation, Waste Management And Food Production, Ensuring Self-sufficiency And Reducing Dependence On External Resources. By Replicating These Modules, The Community Can Easily Grow Organically, Adapting To The Needs And Requirements Of The Residents. This Design Approach Ensures That The Infrastructure Can Be Easily Replicated, Reducing Construction Time And Resources While Enhancing A Sense Of Community And Connectedness Among Residents.



EXPANSION STEPS

1. Community Needs Assessment: Regularly Evaluate The Needs And Requirements Of The Community Living In The Existing Village Units. Consider Factors Such As Population Growth, Infrastructure Demands, And Amenities.

2. Data Analysis: Analyze The Data Collected From The Community Needs Assessment To Identify Areas For Future Expansion. Determine The Number Of Additional Village Units Required And The Specific Amenities And Infrastructure Needed.

3. Master Planning: Develop A Master Plan For Future Expansion, Considering The Identified Needs And Requirements. Determine The Optimal Location For The New Village Units, Taking Into Account Factors Such As Available Space, Resource Availability, And Proximity To Existing Infrastructure.

4. Design And Engineering: Create Architectural And Engineering Plans For The Additional Village Units, Following The Same Modular And Replicable Design Approach As The Existing Units. Ensure That The New Units Seamlessly Integrate With The Existing Infrastructure.

5. Resource Allocation: Determine The Necessary Resources For The Construction Of The New Village Units. Consider Factors Such As Building Materials, Equipment, And Supplies. Develop A Logistics Plan For Transporting These Resources To Mars.

6. Construction Preparation: Set Up The Necessary Facilities And Equipment On Mars To Support The Construction Process For The New Village Units. This May Include Temporary Shelters, Construction Machinery, And Storage Facilities For Materials.

7. Monitoring And Maintenance: Establish A System For Monitoring The Performance And Condition Of The New Village Units. Regularly Inspect And Maintain The Infrastructure, Utilities, And Systems To Ensure Their Continued Functionality And Sustainability.

By Continuously Assessing Community Needs And Planning For Future Expansion, The Project Can Successfully Accommodate The Growth And Development Of The Community On Mars.

15-OUR CENTER IS ON THE MOON

The center on the Moon, the village on Mars, and the control and monitoring units for supplies from Earth are all part of a larger system known as the Interplanetary Supply Chain Network. This network enables the transportation, control, and monitoring of supplies and resources between Earth, the Moon, and Mars.

1-Here's how the different elements are connected:

1. **Center on the Moon:** The center on the Moon serves as a hub for various activities related to space exploration and resource utilization. It houses facilities for research, manufacturing, and resource extraction. It is equipped with communication systems to establish a connection with the village on Mars and control and monitoring units on Earth.

2. **our metanity :** The village on Mars is a settlement where astronauts and scientists live and work. It is designed to be self-sustainable, but it still requires regular supplies from Earth. The village is connected to the center on the Moon through a communication network, allowing for real-time communication and coordination.

3. **Control and Monitoring Units on Earth:** On Earth, control and monitoring units are responsible for managing the supply chain network. These units are typically located in space agencies or mission control centers. They receive data from various sources, including the center on the Moon and the village on Mars, and make decisions regarding the transportation, allocation, and monitoring of supplies.

The communication between these elements allows for efficient coordination and management of the supply chain. Here's how it works:

1. **Supply Planning:** The control and monitoring units on Earth analyze data from the center on the Moon and the village on Mars to determine the required supplies, such as food, water, equipment, and fuel. They consider factors like mission objectives, resource availability, and consumption rates.

2. **Transportation:** Once the supplies are identified, the control and monitoring units on Earth coordinate the transportation logistics. They decide on the most appropriate spacecraft and routes to transport the supplies between Earth, the center on the Moon, and the village on Mars. This may involve using cargo spacecraft, such as the ones used by space agencies. or private companies.

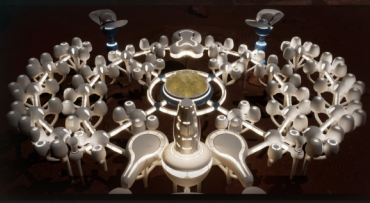
3. **Monitoring:** During transportation, the control and monitoring units track the progress of the spacecraft carrying the supplies. They use various tracking systems and sensors to ensure the safety and timely delivery of the resources. This monitoring includes tracking the spacecraft's trajectory, fuel consumption, and health status.

4. **Supply Distribution:** Upon arrival at the center on the Moon or the village on Mars, the supplies are distributed according to predefined plans and priorities. The control and monitoring units ensure that the resources are allocated efficiently, considering the needs of the astronauts, scientists, and ongoing activities.

5. **Feedback and Adjustments:** Throughout the process, the control and monitoring units receive feedback from the center on the Moon and the village on Mars. This feedback helps them evaluate the effectiveness of the supply chain network and make any necessary adjustments to optimize future operations.

By establishing this interconnected system, the center on the Moon, the village on Mars, and the control and monitoring units on Earth work together to ensure the smooth flow of supplies and resources between these celestial bodies, This collaboration supports the exploration and colonization efforts in space by ensuring that essential provisions are delivered to the village on Mars from Earth, and any necessary monitoring and control measures are in place.

Table of Content



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