Ideal rover

Mechanical –1) aluminium light weight chassis

2)rocker bogey mechanism

Stability**:** The mechanism can adapt to uneven terrain by allowing the entire system to rock and maintain contact with the ground, ensuring stability.

Flexibility**:** The independent movement of the wheel sets allows the rover to navigate over obstacles and rough terrain more effectively than a rigid suspension system.

Redundancy**:** If one wheel encounters an obstacle, the rocker-bogey system allows the other wheels to remain in contact with the ground, maintaining traction and preventing the entire rover from becoming stuck.

3)carbon tyres with honeycomb structure in between as(durable, efficient, high elasticity )

Supresses vibrations

4) 6 wheel drive which are independent from each other

5) arm – 6\* freedom arm 9 can be 7 as well-should do all maintenance tasksas 360 \* rotation for drilling. And use of slip ring motors and servomotors

# Electronics

Base – best is nvidia jetson Arduino uno or rasberri pi

Kill switch system

Custom pcbs made for task

Communication

For video streaming – 5.8Ghz connection , 2.4 Ghz and lower for other purposes

Antennas omnidirectional that tracks data of all direction(360\*)

# Research

Spectrometer-for mineral Analysis, Identification of Organic Compounds,

Test for proteins , carbohydrates , lipids, npk for life presence

environment sensors( ph , methane , ammonia , moisture ,temperature, pressure

and a databse for rock samples present over there detected by spectrometer or microscope

and biret test for protein

benedict test for carbs

staining test for lipids

and space for 6 tubes for testing

# software

open cv integrated with python libraries for ar tag detection

navigation software and odometry for path detection

gui for receiving and controlling data