MATS™ MagLev Transport System for Lunar Transport
Terrestrial Experience. Lunar Ready Results.

ExaMining LLC, CEO Martin Meinshausen, M.Sc., MGM

Key Features and Benefits of MATS:

1) Dust-free operation:
Due to levitation principles , no wheels contact the tracks.

2) Adaptability and Scalability:
Architecting the 5km Lunar Track through optimized payload, weight, and terrain benchmarks.

3) Reduced Maintenance:
Contactless design minimizing wear and tear by limiting moving parts and vibration.

MARS Curiosity Rover wheel driven 22+ miles since 2012

Eugene Cernan, inside the lunar module, covered with dust, 1972.

" I think dust is probably one of our greatest inhibitors to nominal operation on the Moon. I think that we can overcome other physiological or physical or mechanical problems except dust."

Eugene (Gene) Cernan, commander of Apollo 17 and the last person to walk on the Moon. During a technical debrief following his mission in 1972, he famously stated:

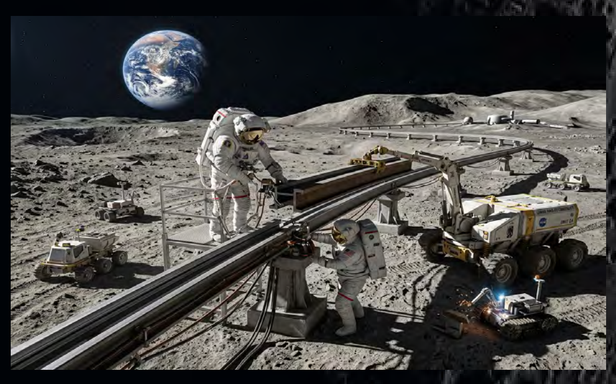
STRATEGIC TECHNICAL OBJECTIVES:

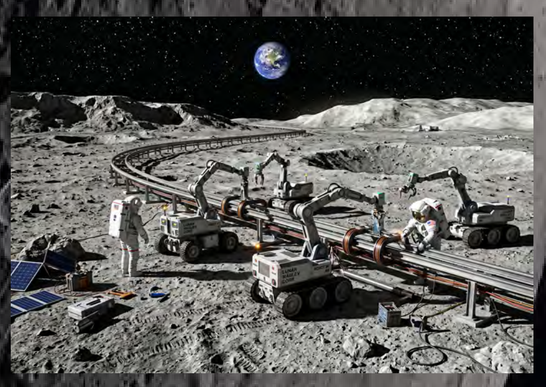
I. Power & Propulsion Engineering
- Gravitational Load Optimization: Model and quantify dynamic power consumption.
- Advanced Magnetic Architecture: Conduct a trade study and selection of permanent magnets and electromagnets optimized for the lunar thermal range.
- Propulsion System: Define and benchmark linear motor requirements.

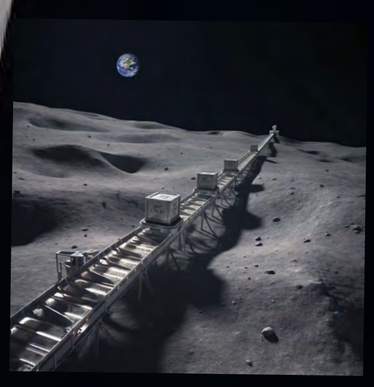
II. Infrastructure & Hardware Development
- Modular MagLev Engineering: Design high-durability, low-mass track geometries capable of rapid deployment.
- Heavy-Lift Autonomous Carrier (Trolley): Engineer a specialized payload transport vehicle optimized for high-volume material transit and center-of-gravity stability.
- Automated Interface Technology: Develop autonomous, precision-aligned loading/unloading subsystems to minimize cycle times and human intervention.

III. Environmental & Operational Validation
- Mitigation of Regolith Contamination: Validate 100% dust-free "contactless" operational protocols to eliminate mechanical wear and ensure the longevity of high-precision components.
- Lunar Sustainability & In-Situ Integration: Analyze the system's lifecycle impact and its potential for integration with local power grids and In-Situ Resource Utilization (ISRU) hubs.
- Mission Integration & Deployment Logic: Formulate a comprehensive Earth-to-Moon launch configuration and a robotic-assisted lunar installation sequence for rapid "plug-and-play" activation.

MATS: Track Development Stages

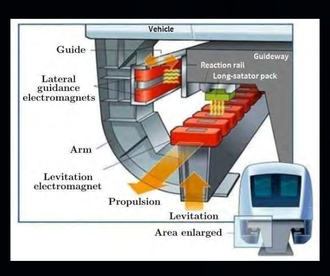






Visualisation of potential lunar dust emissions: EVA astronaut, lunar mining, lunar transportation and lunar road sintering (not actual concepts)

MagLev Technology Research: JPL Magnetic Levitation Study by Ethan Schaler



Transrapid 06, and EMS Electromagnetic Suspension scheme

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