

MARS RAM

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TEAM 22: DESIGN OF A MARTIAN MINING ROBOT

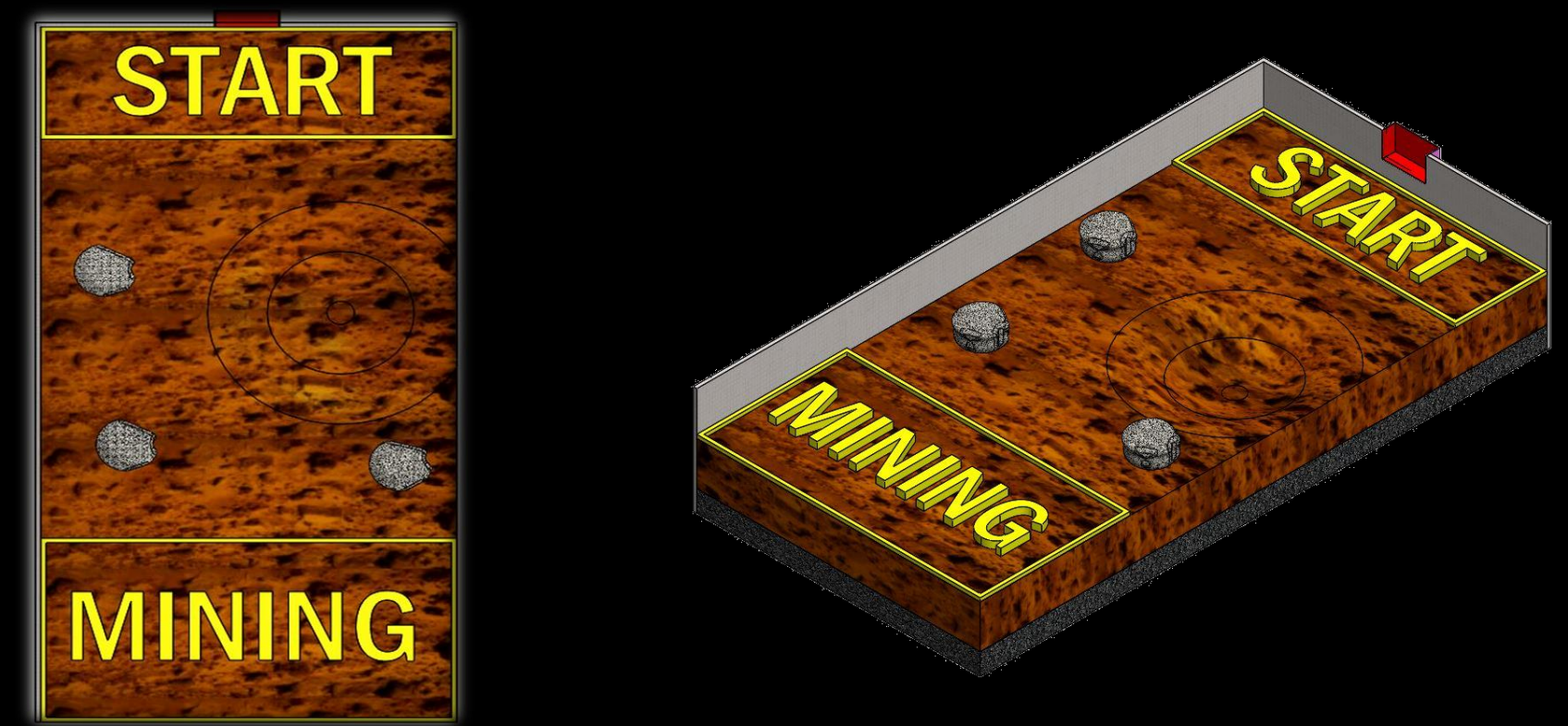
OBJECTIVE

“Design and build a mining robot that can traverse the chaotic Martian terrain, excavate the basaltic regolith simulant and ice simulant, and return them for deposit into a collector bin.”

PROJECT SCOPE

1. On-Site Mining
 - Design/Build a Mining Robot
2. Systems Engineering Paper
 - Optimization, Operation Concepts
 - Systems Hierarchy, Schedules
3. STEM Outreach Report
 - Activities Provided
 - Number of Attendees
 - K-12 Schools Represented
 - Estimated Impact
4. Slide Presentation & Demonstration
5. Social Media and Public Engagement

ON-SITE MINING ARENA



ACKNOWLEDGMENTS

- Advisor: Dr. Jonathan Clark
- CoE Machine Shop: Jeremy Phillips and Mandi Smith
- Funding: Florida Space Grant Consortium

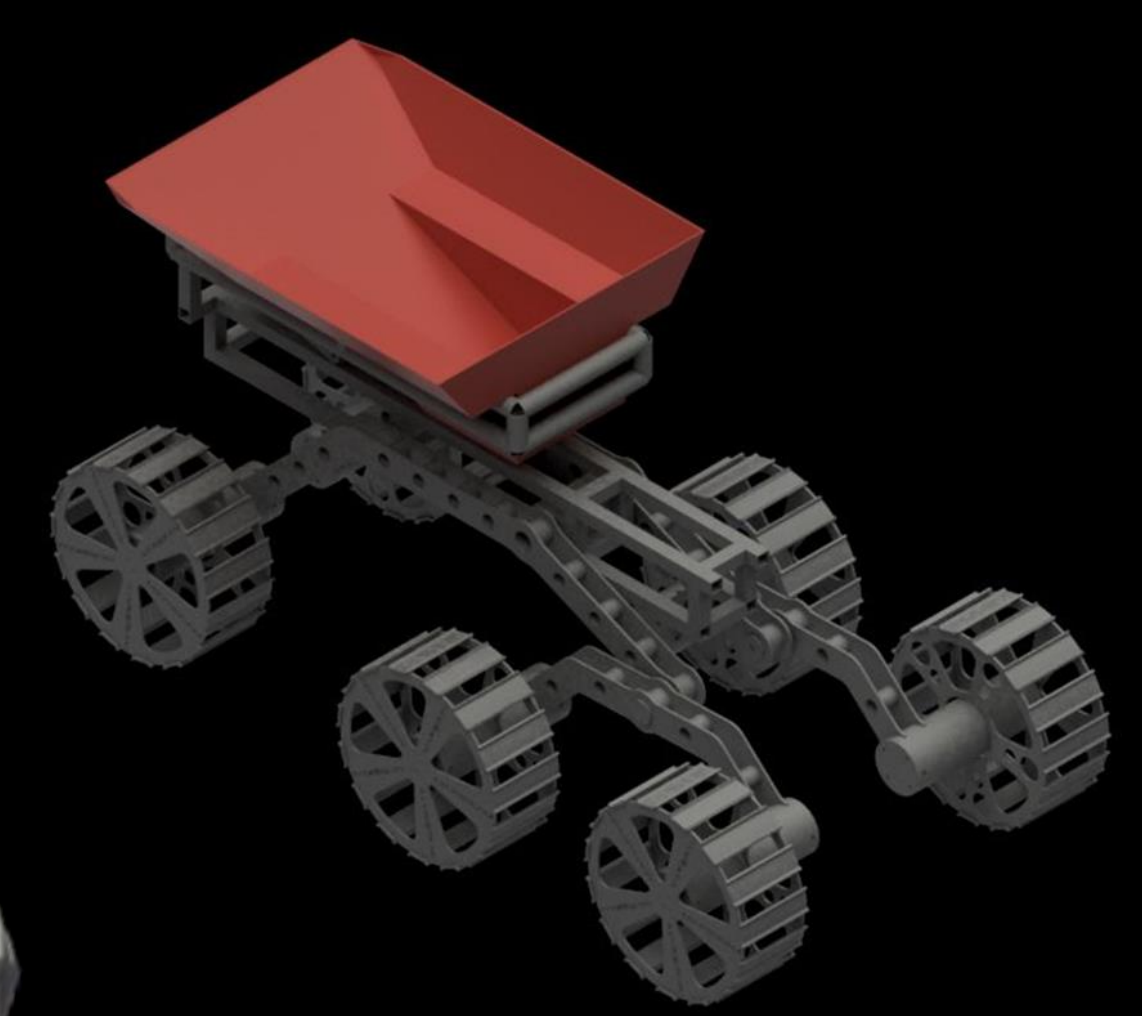


COMPONENTS

MINING RIG

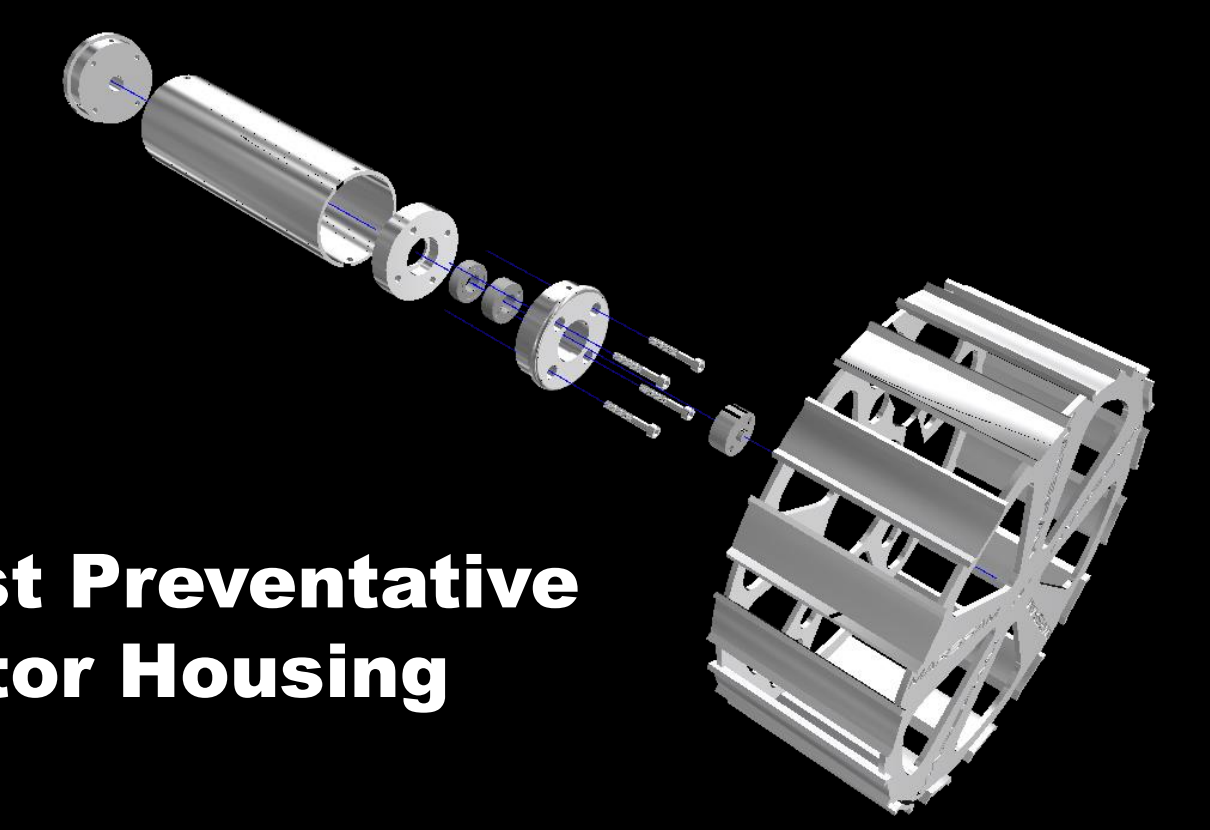


ROVER



ROVER DETAILS

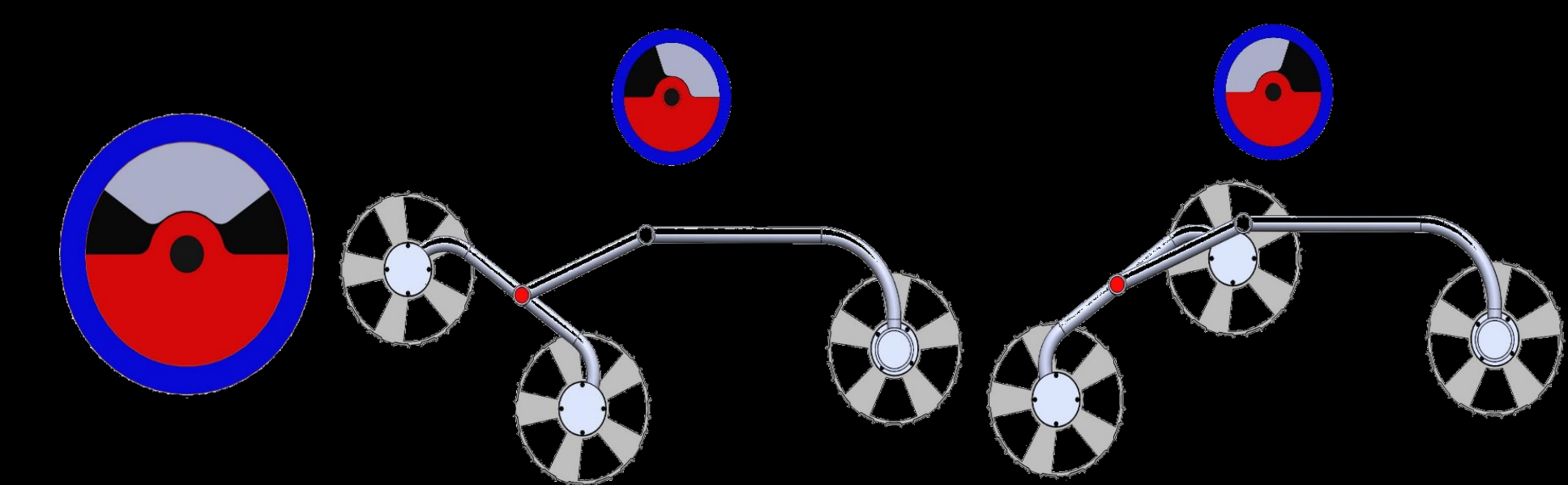
WHEEL HOUSING



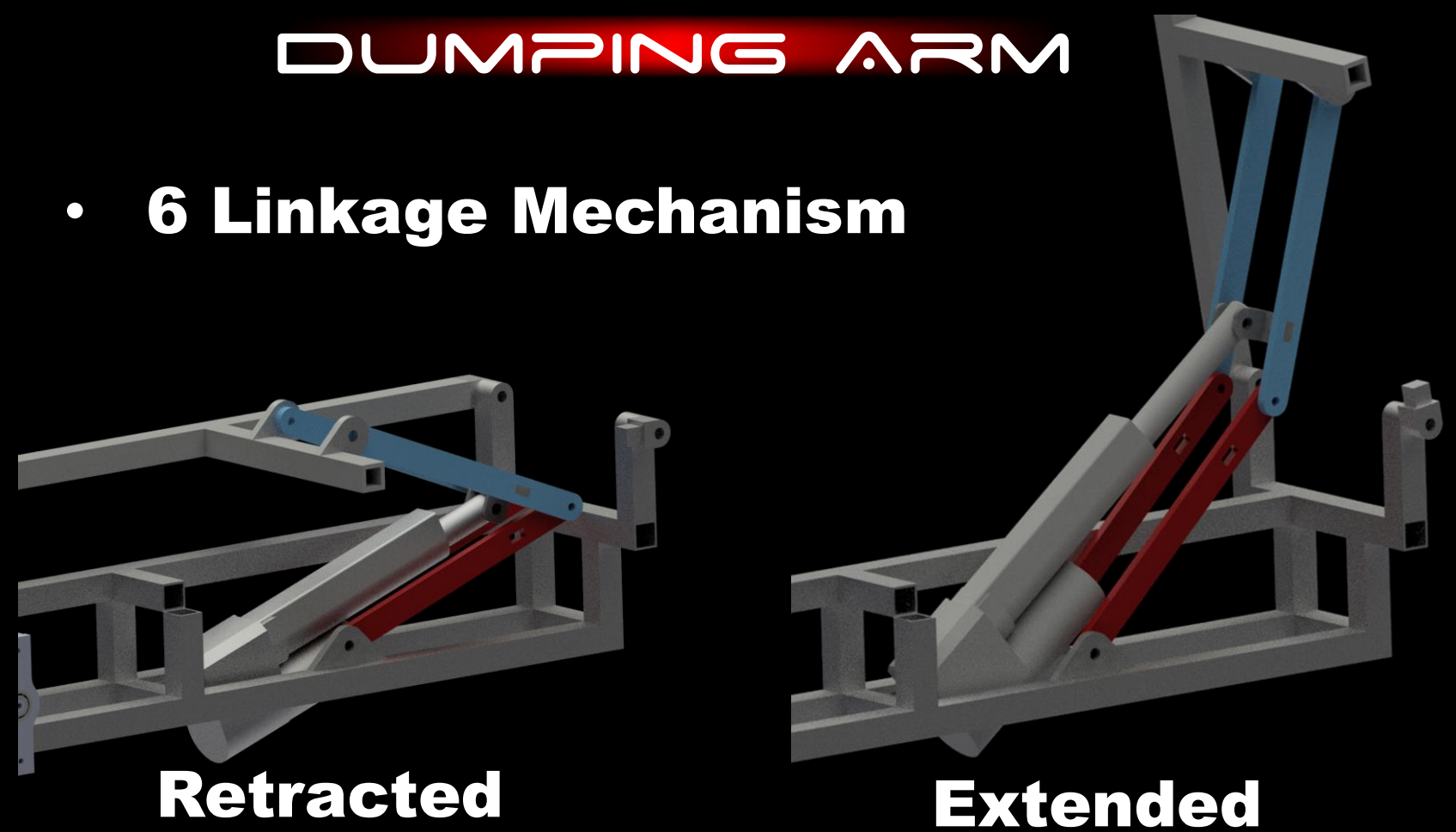
- Dust Preventative Motor Housing

BOGIE CONSTRAINT

- $\pm 35^\circ$ Pin Rotation Limiter

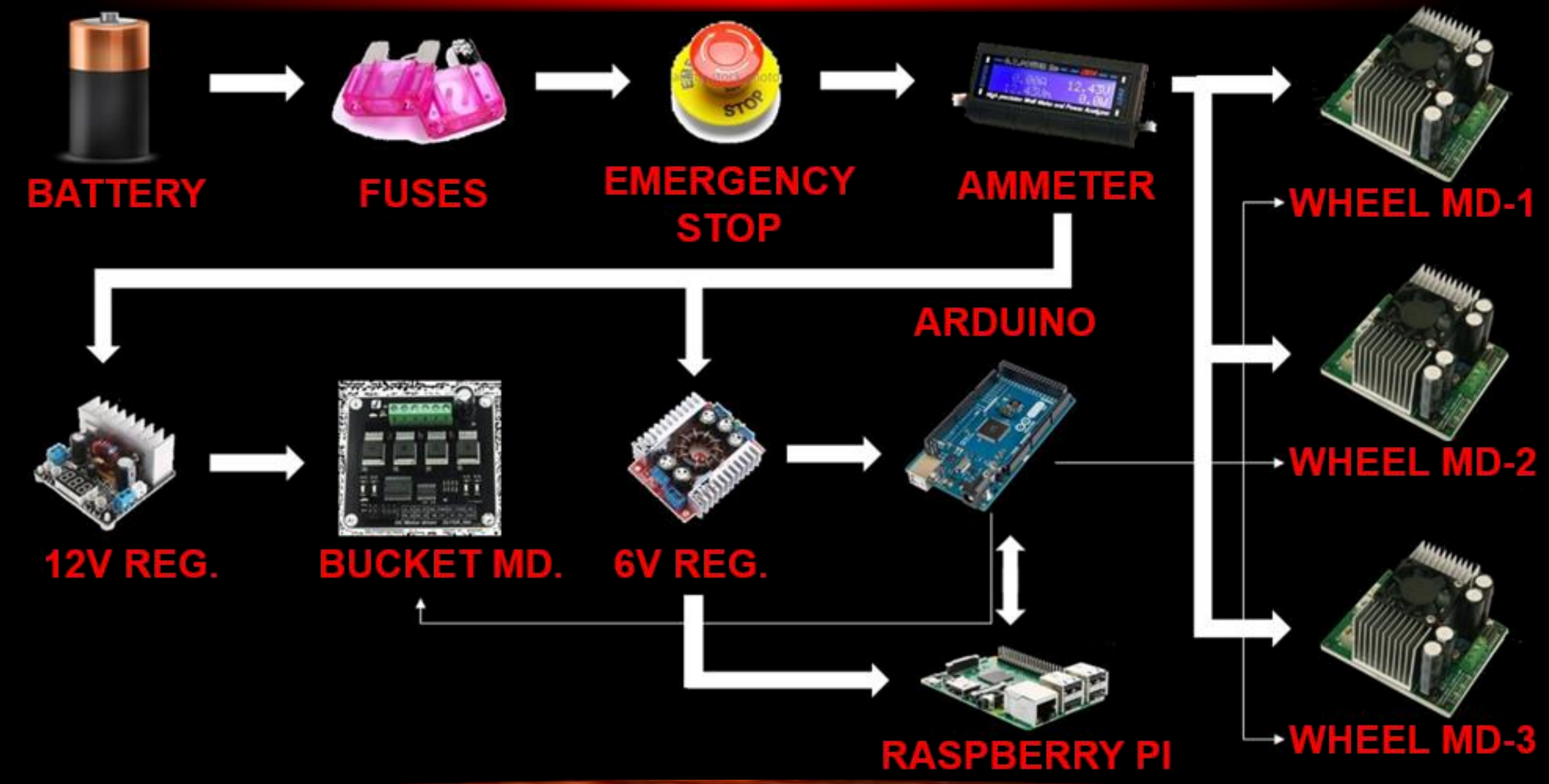


DUMPING ARM



- 6 Linkage Mechanism

ROVER ELECTRONICS DIAGRAM



SUMMARY

- Completed Manufacturing and Programming for Rover
- Completed Designs and Purchased Materials for Mining Rig

MINING OUR OWN BUSINESS ON OTHER PLANETS