The Lunar Mission Simulator Initial Writeup

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1 History

The great challenge of coming up with a real time Lunar Simulator. This challenge was completed in the late 1960's via the Apollo Space program. Simulation of the entire mission (Lunar) with modern computer hardware, and software design is the great challenge.

2 Abstract

With modern computation, a lunar simulation is now possible for a typical home computer (or, even single board computer, like a RaspberryPi). This is the attempt: to create such a simulation.

3 Concept

To gain understanding of developing a full simulation using modern software design and techniques. This includes leveraging modern concurrency concepts and developments.

4 Intent

Develop a Lunar Simulator. This is broken up into several separate Simulations.

1. Launch Simulator
2. Orbital Simulator
3. Injection Simulator
   (a) Trans-Lunar Injection
   (b) Trans-Earth Injection
4. Lunar Lander/Landing Simulator
5. Re-Entry Sequence

Each one of these will need their own Initial Writeup.

5 Stakeholders & Interrests

Anyone interrested in Using the Simulator.

- Space Crews–who want to simulate a complete Lunar Mission
- Mission Planners–who want to ensure a complete and successful mission.
- Mission Planners–who want to simulate possible incidents and/or accidents in that could happen durring a typical Lunar Mission.
- Engineers/Technicians–who want to view/assess mission data in realtime in the Mission decision making process.

6 Typical Success Scenario

For a Lunar Mission, each sequence via each Simulator/Simulation is complete with out indident.