

COS214 Functional Requirements

Daniel (u18041494)

October 2021

1 Functional Requirements

The requirements of the system models the functionality that the system offers. This requirements are necessary in order to successfully meet all the criteria needs for the system.

- R1: The system should test the rocket before a launch using a 'static fire'.
- R2: The system should model rockets with two stages .
 - R2.1: The system should land the first stage on a drone ship in the middle of the ocean so that it can be refurbished and reused.
 - R2.2: The system should use the second stage to deliver the payload.
- R3: The system should model a Falcon 9 rocket.
 - R3.1: The system should model a Falcon 9 first stage with a single Falcon 9 core and 9 Merlin engines.
 - R3.2: The system should model a Falcon 9 second stage with a single Vacuum Merlin Engine.
- R4: The system should model a Falcon Heavy rocket.
 - R4.1: The system should model a Falcon Heavy first stage with a three Falcon 9 cores and a total of 27 Merlin engines.
 - R4.2: The system should model a Falcon Heavy second stage with a single Vacuum Merlin Engine.
- R5: The system should model two variants of the Dragon Spacecraft.
 - R5.1: The system should model the Crew Dragon to send and safely return Humans and Cargo to the International Space Station.
 - R5.2: The system should model the Dragon Spacecraft to only send cargo to the International Space Station.
- R6: The system should model a launch of the Starlink satellites.

- R6.1: The system should model the launch in Low Earth Orbit in clusters of up to 60 satellites on a Falcon 9 rocket.
- R6.1: The system should model in orbit the satellites spread out to cover a large area.
- R6.3: The system should model the communications with the satellites using lasers and then with the users on the ground through radio signals.
- R7: The system should provide an interface to setup test simulations.
 - R7.1: The system should be able to run a simulation in test mode while building the simulation and then run the simulation as if it were a real launch.
 - R7.2: The system should allow a test mode simulation to be interrupted, tweaked and allowed to continue.
- R8: The system should provide an interface to setup and run actual launch simulations.
 - R8.1: The system should be able to store actual launch simulations and run them in batches.