ITOS to EDGE “Bridge” Software for Morpheus Lunar/Martian Vehicle

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Abstract
My project involved improving upon existing software and writing new software for the Project Morpheus Team. Specifically, I created and updated Integrated Test and Operations Systems (ITOS) user interfaces for on-board interaction with the vehicle during archive playback as well as live streaming data. These interfaces are an integral part of the testing and operations for the Morpheus vehicle providing any and all information from the vehicle to evaluate instruments and assure coherence and control of the vehicle during Morpheus missions. I also created a “bridge” program for interfacing “live” telemetry data with the Engineering DOUG Graphics Engine (EDGE) software for a graphical (stand-alone or VR dome) view of live Morpheus flights or archive replays, providing graphical representation of vehicle flight and movement during subsequent tests and in real missions.

Results & Discussion
I was then tasked with updating ITOS pages with thrust temperatures and fail indicators requiring me to code graphical charts for each of the newly added mnemonics.

During the second part of summer, I worked to create a “bridge” program to produce real time and archive replay visualization for tracking and analysis of the Morpheus vehicle. I was able to achieve the desired outcome and my program accurately created a visualization of the vehicle’s telemetry data as it was being replayed. This software was used to visualize live streaming CCSDS data for subsequent flight tests.

Conclusion
Throughout my internship I delivered quality work on each project to which I was assigned or volunteered for. I demonstrated a high level of competence, taking the initiative to work on my own or in seeking out different projects or assistance. I was fortunate enough to be chosen to work on one of NASA’s most recognizable rapid development projects, Project Morpheus, giving me a complete and enjoyable internship experience I will never forget.