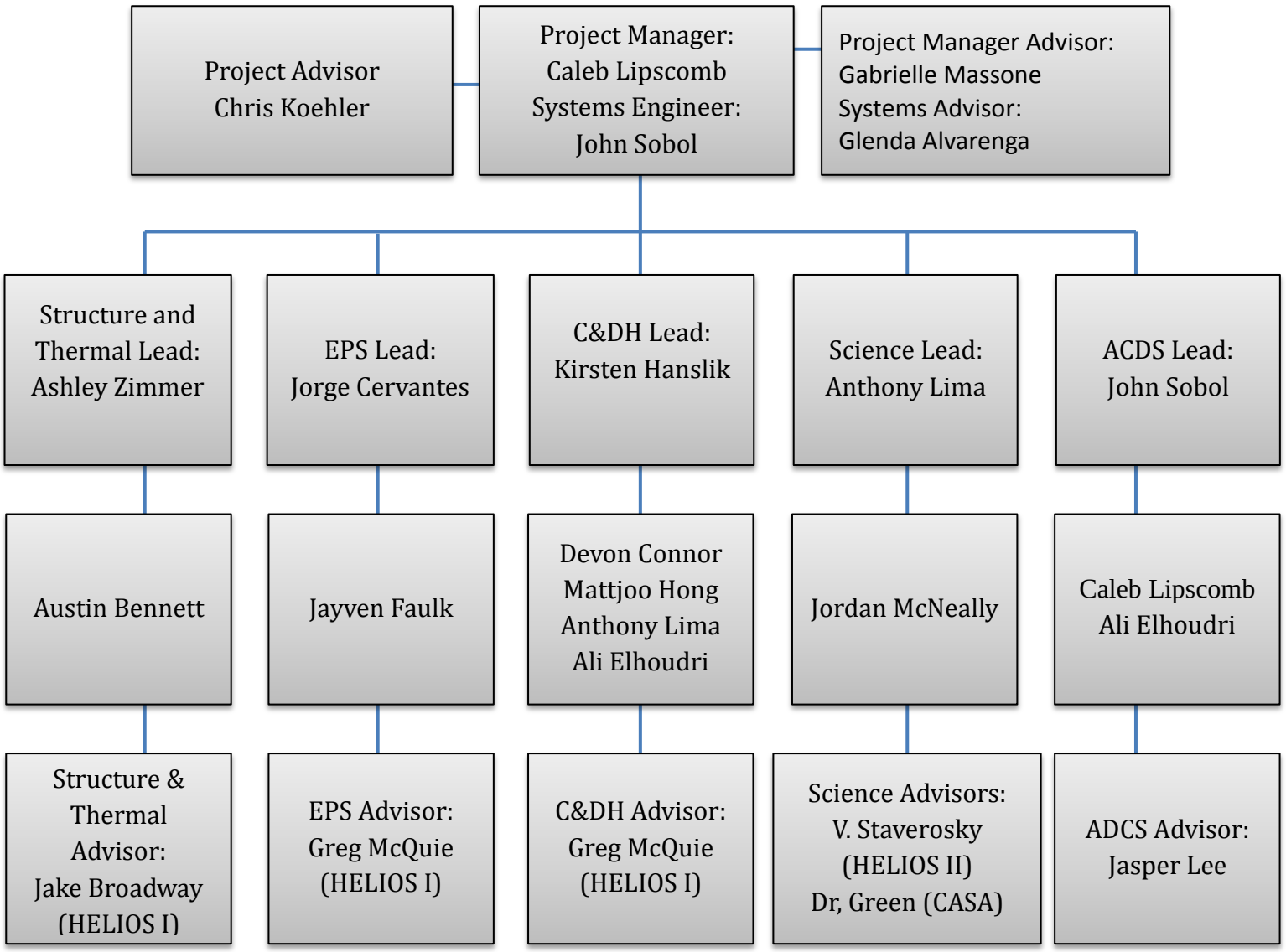
University of Colorado Boulder Monthly Status Report 7/26/2013

Overview Since 6/28/2013

In the last month, HELIOS II has performed extensive testing of all subsystems and has integrated all systems to produce a flight-ready payload. Several day in the life tests with the full payload have been performed, including a cold-test. The team has prepared itself for a Thermal-Vacuum test in Palestine, TX and eagerly awaits the flight date.

Current Team Members and Leaders



Activities of Team members

Since the last report, all subsystem teams have built a functioning and flight-ready system. The ADCS has demonstrated two-axis tracking with a degree of accuracy of

+- 0.5 degrees. The SWIS system has demonstrated that it can capture images of the sun and software has been developed to identify sunspots in the resultant images. Additionally, the SWIS ADCS camera has been modified to detect when the sun is in the field of view of the Science camera. The Structure has been completely machined and assembled. Additionally, the structure has been painted matte white to reduce the amount of heat from sunlight absorbed by the structure and copper-wire heat sinks have been applied from all critical components to the aluminum structure of HELIOS II. The EPS system has been completed and power to all systems is now drawn directly from the EPS which receives its power from an external supply. The CDH system has demonstrated an ability to monitor environmental statics, perform hand-shaking protocols with all other systems, send out and receive commands from ground station and subsystems, and store the images captured by SWIS.

Issues Encountered

A few issues were encountered during subsystem completion and low-level integration

a. Motor drivers were found to be overheating consistently; this will be solved by heat-sinking the driver chips to the HELIOS II structure.
b. ADCS code is functioning; however, there are occasions where small tweaks to the code have to be made before performing tests in order to prevent these issues.
c. C&DH has issues compiling the final flight code, and has fallen slightly behind schedule. Unfortunately C&DH has been unable to perform as many extensive tests as the other HELIOS II systems due to this time delay. Fortunately, the C&DH system is now flight ready.

Milestones Reached

The biggest milestone reached was the high-level integration of all subsystems and testing of the full flight-ready payload. All subsystems have been tested extensively with the exception of CDH; however CDH is now performing nominally and is flight ready. The EPS board fully powers all systems, SWIS captures images, ADCS tracks the sun, CDH stores the images captured by SWIS, the data collected from the environmental sensors, and maintains communication with the ground, and structures successfully houses and supports all systems while managing thermal conditions inside the payload.

Next Objectives

The next objective for HELIOS II is to perform several additional day in the life tests in Boulder to identify and resolve any remaining issues in the HELIOS II payload. Following this, HELIOS II shall integrate with the HASP platform and perform a Thermal-Vacuum test in Palestine, TX from Monday July 29th through Friday, August 2nd.