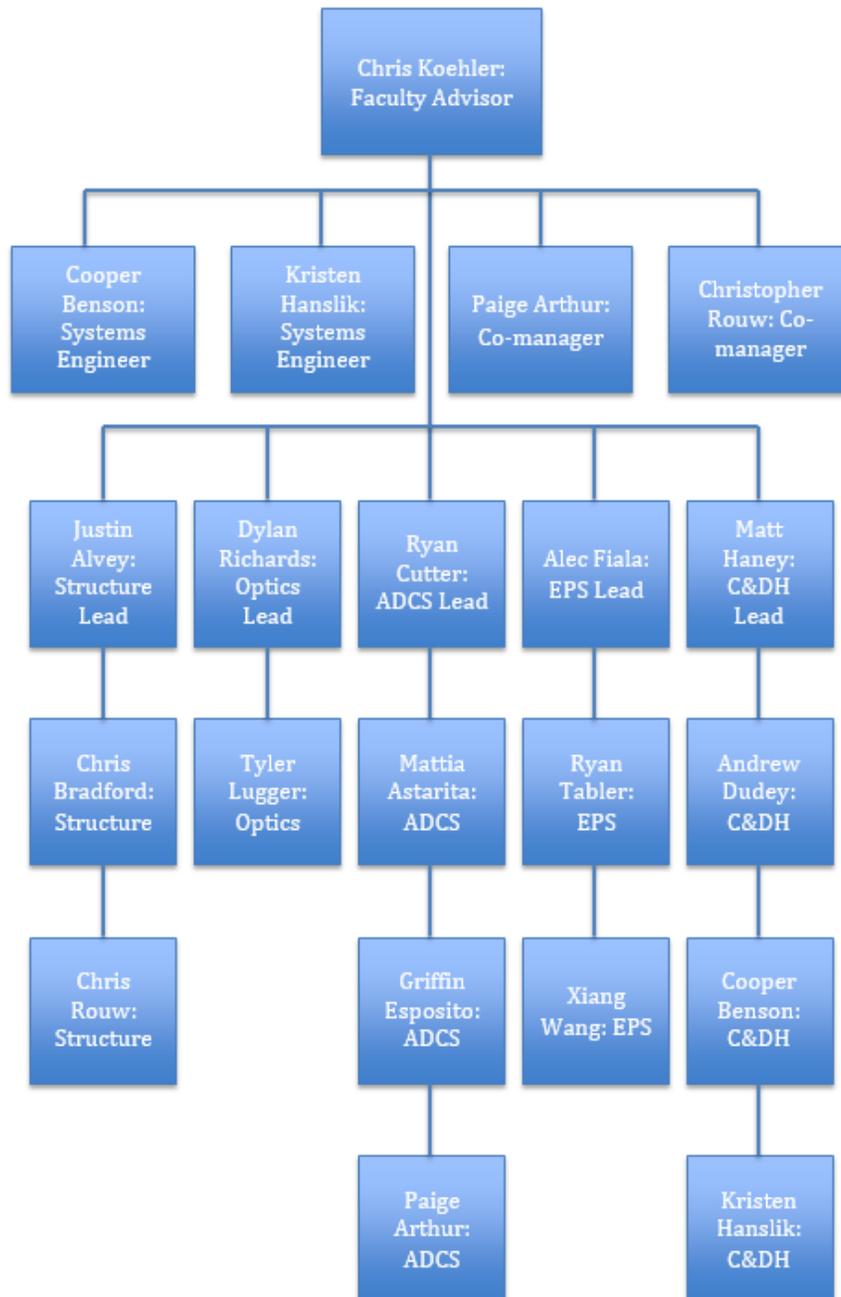


University of Colorado at Boulder February Status Report:

Since receiving verification of acceptance from HASP and forming a team, the HELIOS III team has progressed in the conceptual phase of the project. The team has presented their Conceptual Design Review to the Colorado Space Grant Consortium, and are currently preparing to present their Preliminary Design Review for the Colorado Space Grant Consortium. A more detailed list of what has been accomplished is provided below along with what the team will focus on for March.



Accomplishments for February:

HELIOS III had submitted their completed proposal comments by February 15th as directed by HASP. Their comments were worked on by the four managers with help for the affected subsystems, namely ADCS and C&DH. The completed comments were then reviewed by HELIOS II's project manager, Caleb, and the faculty advisor, Chris. The management team also created a generalized schedule for all deliverables and major milestones up to integration.

ADCS:

The ADCS team conducted several trade studies on various tracking options. They used advice from HELIOS II and from the HASP proposal comments. The team also researched the motors that will be used and analyzed whether they would have the required precision and torque to move the SWIS housing. Finally the ADCS team created concept of operations flow charts for each of their tracking options.

C&DH:

Similar to the ADCS team, C&DH conducted several trade studies on which processor(s) would be used to control HELIOS III. They looked at using HELIOS II's PandaBoard layout as well as other alternatives including a Raspberry Pi, Arduino Mega, and Arduino Uno. Recently the team acquired a Raspberry Pi and has begun testing its capabilities to further their knowledge and influence the final C&DH configuration.

EPS:

The EPS team began by looking at individual components used in the power regulation system. As with the other subsystems, they conducted trade studies on buck converters, linear regulators, and current sensors. The team has been working closely with Jorge, HELIOS II's EPS lead, in choosing each component. EPS has also been working closely with the structure's thermal team member to research the thermal impact of the EPS board.

Optics:

The Optics team has been finalizing several of their equations to determine the optimal focal length of the system. Furthermore, they have created a trade study to show a cassegrain telescope configuration would increase the focal length without a significant increase in the height of HELIOS II's lens configuration. They have been working with a member of the University of Colorado Boulder faculty to help them determine what the mirror diameters must be in order to

achieve their desired focal length. The team has continued to research and conduct trade studies on the cameras that will be used by HELIOS III.

Structures and Thermal:

The structures team conducted a trade study on what material would be used for the HELIOS III structure. They have completed their first revision on solid works files to account for changes since the proposal writing and continue to modify them. The team has designated one member of the team to be the “thermal expert”. This person has conducted a trade study on possible insulations as well as what material the mounting plate could be made with.

Plan Moving Forward:

HELIOS III will be presenting their Preliminary Design Review the first Monday of March. They will also present their Critical Design Review (CDR) on March 17th. Each subsystem will continue to research which components or options will be used for the final design, and present a clear and logical process of selection for each choice. The ADCS and C&DH teams will begin writing preliminary code for their systems to have a working template that will be expanded on in the development phase. EPS has begun creating a preliminary EPS board layout and will continue to refine the design in preparation for final approval after the CDR. The Optics team will continue to look into alternative methods of telescope production in order to remain within the height restrictions. Structures will continue to refine they Solid Works design with the design changes of each subsystem. They will also receive all necessary shop training that must be completed prior to the CDR. Finally the management of HELIOS III will continue to look for additional funding for the project as well as secure new mentors to help the team throughout the conceptual and design phases of the project.