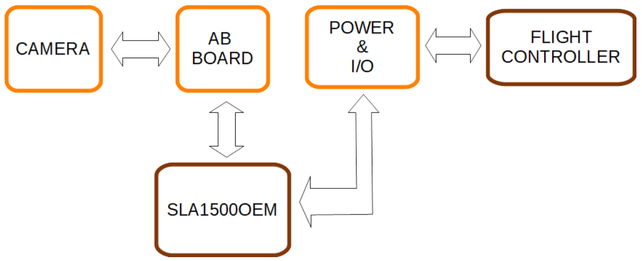
UAV Visual Landing Aid

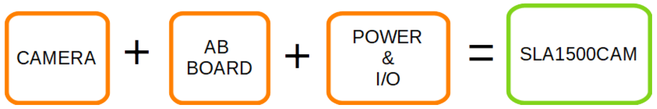
Premise

SightLine Applications has developed a precision visual landing aid for UAV's. The Landing Aid supports autonomous landing operations by automatically finding and tracking an easy to place landing pattern. A wide range of cameras must be supported, and custom AB boards must be designed for each one to interface with the SightLine hardware.

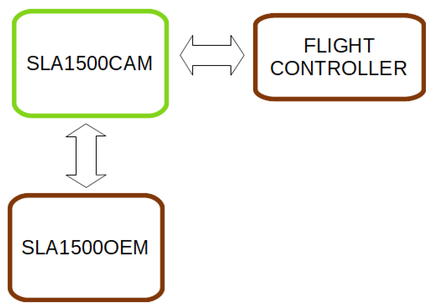


Each of these AB boards can have cable, power, and electrical connectivity issues that are problematic for the end user.

The proposed solution is to develop an all in one unit with plug and play capabilities that can be directly connected to the SightLine hardware.



By doing so camera connectivity and selection problems are eliminated, and deployment is made much easier for the end user.



Solution

Quadcopter

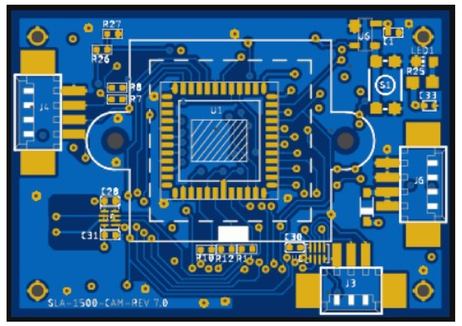
For testing purposes we built a custom quad copter with a Pixhawk 4 flight controller. Using QGroundcontrol software we were able to fly the quad-copter to different way points and land the UAV autonomously via GPS. This was vital to our understanding of UAV operation, and end user experience.

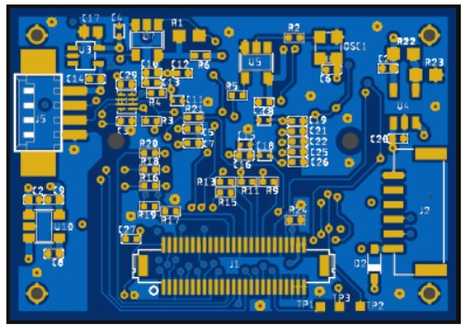
Software

****Software and communication with SLA1500OEM results****

Hardware

The SLA1500CAM board was designed using Eagle CAD. A four layer board with a 74 MHz clock, The SLA1500CAM is a camera based on an On-Semi ARO134CS optical sensor which connects directly to the SightLine processing hardware SLA1500OEM with a 50-pin Hirose connector. The SLA1500CAM also distributes power from the flight controller to the camera, and SightLine hardware, while providing communication paths and general IO.





****Hardware and communication with SLA1500OEM results****

Future Developments

****Whats Left to do****

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