# Future Work

The development of the flight control unit has stopped at a rather late state.  
Future steps encompass the connection of all major control loop modules (e.g. PID and Motor Mapper module). This can be implemented immediately on top of the current state of the flight control unit. Furthermore the timings of all control loop tasks have to be evaluated as well.  
After all parts were put together the system can be tested in a controlled environment e.g. a test construction.

Another important part of a proper and user friendly flight controller is to offer some health status data. In ideal conditions it should be possible to monitor all available data i.e. Sensor-, RC receiver Data as well as the remaining battery life. However the hardware and all functions to measure battery life have to be implemented first. It was planned to logged and transferred to a ground station since the initial planning phase. The current development state already covers the most fundamental parts. It is possible to connect the flight control unit to a ground station pc software via a so called mavlink protocol. However transferring the logging data still has to be fully implemented to the flight control program. Example programs showing how to transfer data to the Linux HPS system are available. This simply has to be placed in the main flight control program.

The section where the logging data has to be transferred during the runtime will be signed in the program code. However both parts only where tested separately.

Since the used RC receiver is capable of handling telemetry data. It would be feasible to transmit some parts to the RC transmitter via the Transmitting serial connection to the receiver.

In the far future the XCopter is meant to be capable of flying autonomously. The main collision detection shall be controlled by the 2nd NIOS II CPU. In order to accomplish such function. Some additional sensors must be available e.g.ultrasonic sensors.