# Autopilot System Design

## Hardware

The platform that was chosen to be developed on is the Atmel AVRMega2500. The choice was very simple to make because the development of AVR controllers can be done effectively in C rather than Assembler. Nobody in the team has experience in assembler development, C is popular language and the number of libraries available is also a bonus. Thus AVR is preferable to PICs or the 8051 microcontrollers.  
The Sensors needed for any auto pilot are gyroscope, accelerometer, magnetometer, GPS, and barometric pressure sensor. With these sensors an aircraft can keep track of it pitch/roll/yaw, heading, global location and altitude.

## Software

There are many open-source autonomous flying vehicles UAVS and fixed wing aircraft. These projects, like Ardupilot Mega and the OpenPilot Project, are very complex and have a huge community behind them with several key developers that work for long period. After looking at various projects of this nature the choice came clearly for the more popular platform, and that was the Ardupilot Mega. The Ardupilot Mega has a large community behind it and also has an extensive wiki with many of the features. Another major feature of the Ardupilot codebase is that it is well documented and allows the user the flexibility to modify it and add addition features. And if the code is useful it might be included in the primary Ardupilot project, which is a very nice bonus.