

ARIES GPS Payload
Inter-American University of Puerto Rico
January 2013 monthly report

Electrical System

During the month of February all the simulations regarding the new dc/dc converters were done. We purchased three different converters (LT3434, LT3972 and LT3693) to select the most accurate after the physical tests. Since all the converters are the same package, the PCB design was started, regardless of which converters is going to be use. Also, for performance purposes, a PCB design was asked by the Software team, to contain the Novatel GPS, IMU, a 3.3V voltage regulator and some LVTTL to RS232 converters. This new PCB will perform the position of the Novatel GPS and the IMU with respect to the last payload.

Software System

During the month our team was working on the software development for the project, mostly the work was addressed to upgrade the Linux kernel on the main ARM processor in order to get a major amount of libraries and support from the newer kernel. In addition after we receive the proposal we started fixing the weak points signaled by the HASP team, so mostly of our work has been reviewing and re-editing the proposal in order to fulfill HASP directions. It is important to point out that most of the issues addressed, were not properly written in the proposal and as such would be clearly stated for the proposal resubmission.

In addition the team focused the work to solve several bugs in the software related the serial ports. Serial communications presented problem during last flight because of incoming GPS strings, even though the team does not require GPS string a more reliable software is being developed in order to fix this problems.

Mechanical System

The Payload structure is going to be completely redesigned for a more user friendly structure. The structure is going to have the following features:

- One of the faces will be able to open making an easier way for the engineers to work on the electrical boards.
- One of the faces will have open slots for the installation of female connectors.
- Some adjustments are going to be made for the antenna support to lower the Payload weight.

The following image is a preview of the structure of the Payload.

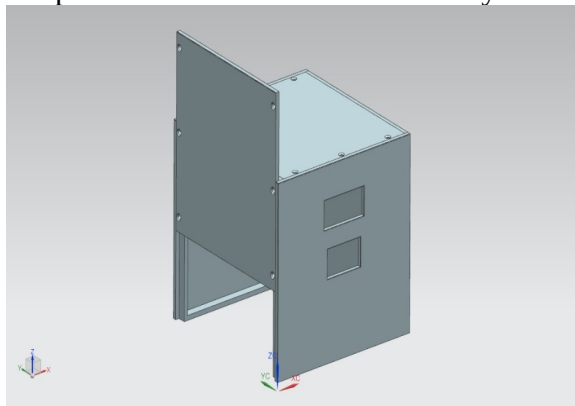
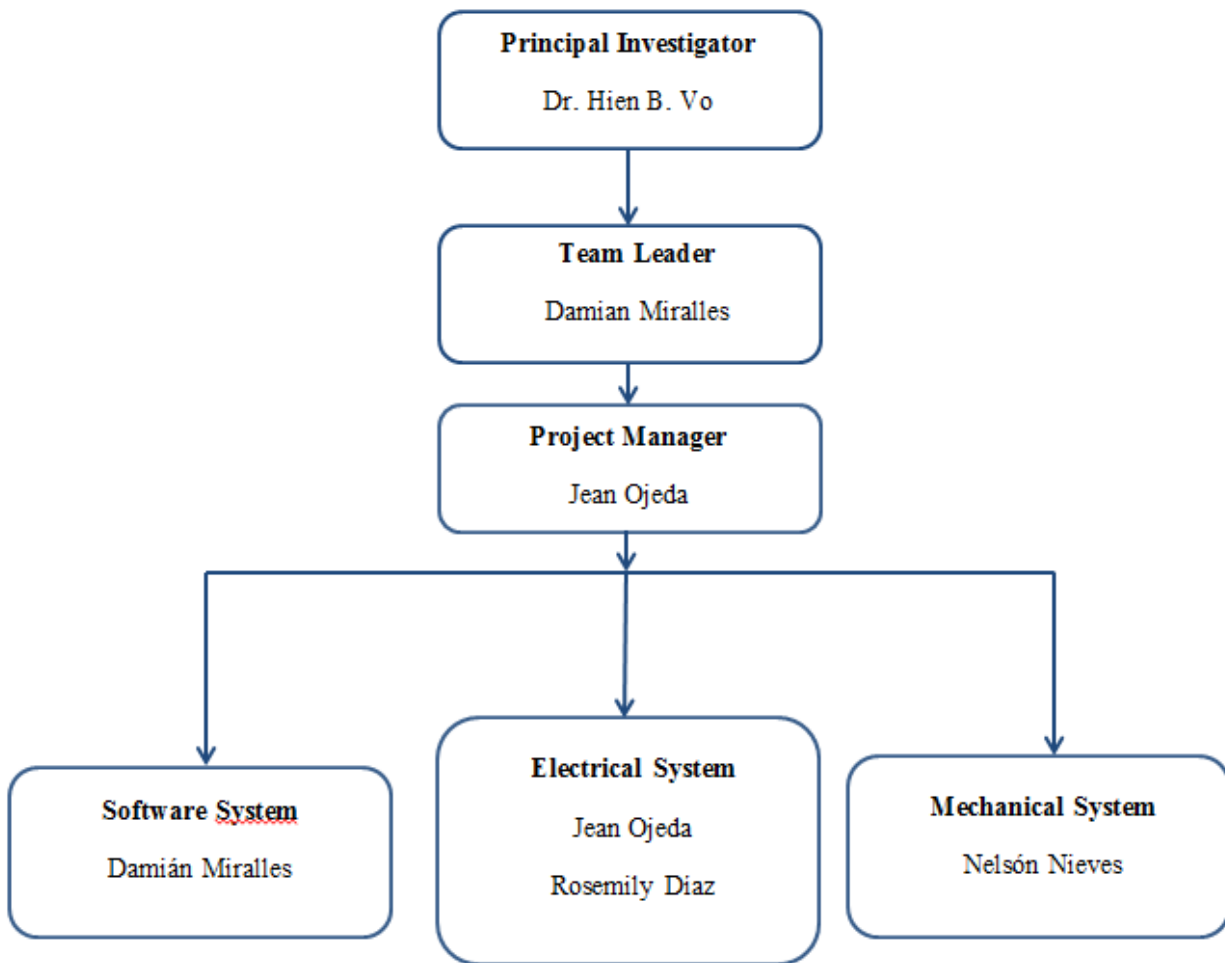


Figure 1 – External Structure

Thermal System

The consideration of different surface finish are going to be consider for the thermal issue of this Payload, if a temperature solution isn't found with different types of surface finish the use of heating pipes must be taken into account. The issue with a heating pipe is the mass budget the payload has. So if the use of the heating pipe is necessary some adjustments will have to be made in the structure.

Current Team Members and Leaders



GPS Payload Students and Tasks

Students	Task
Damian Miralles	Processor programming
Nelson Nieves	Thermal Analysis, Structure
Rosemily	Power Board
Jean Ojeda	Power Board

Table 1 - Team Names and Tasks