ARIES GPS Payload

Inter-American University of Puerto Rico

January 2013 monthly report

Electrical System

Regarding the electric system, the main objective of the team is to design the power board from scratch. In the GPS Payload 2012 the main problem was an in-rush current that exceed the 0.5 A limit. The team manages to obtain a couple of solutions to address this problem. However, the best solution was to use other dc/dc converters with a soft-start feature, which control the amount of current draw during startup. During this month the team was simulating different converters to have a closer approach of which one is going to be purchase.

The feedback of the application was received and we're working to address the comments regarding the electrical system. The main task right now is to provide more information proving that the in-rush problem was resolve, for the resubmission of the application before February 15, 2013.

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.

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.
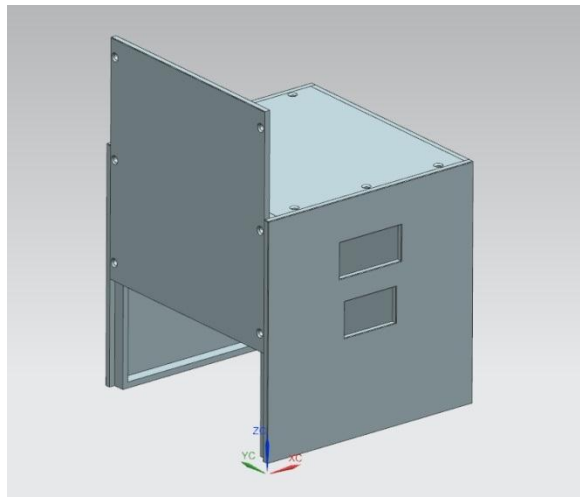
Figure 1 – External Structure

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

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            │  Principal Investigator │
            │      Dr. Hien B. Vo     │
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            ┌─────────────────────────┐
            │       Team Leader       │
            │     Damian Miralles     │
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            │     Project Manager     │
            │        Jean Ojeda       │
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│Software System│  │Electrical System│ │Mechanical System│
│Damián Miralles│  │  Jean Ojeda    │ │ Nelsón Nieves │
│               │  │ Rosemily Diaz  │ │               │
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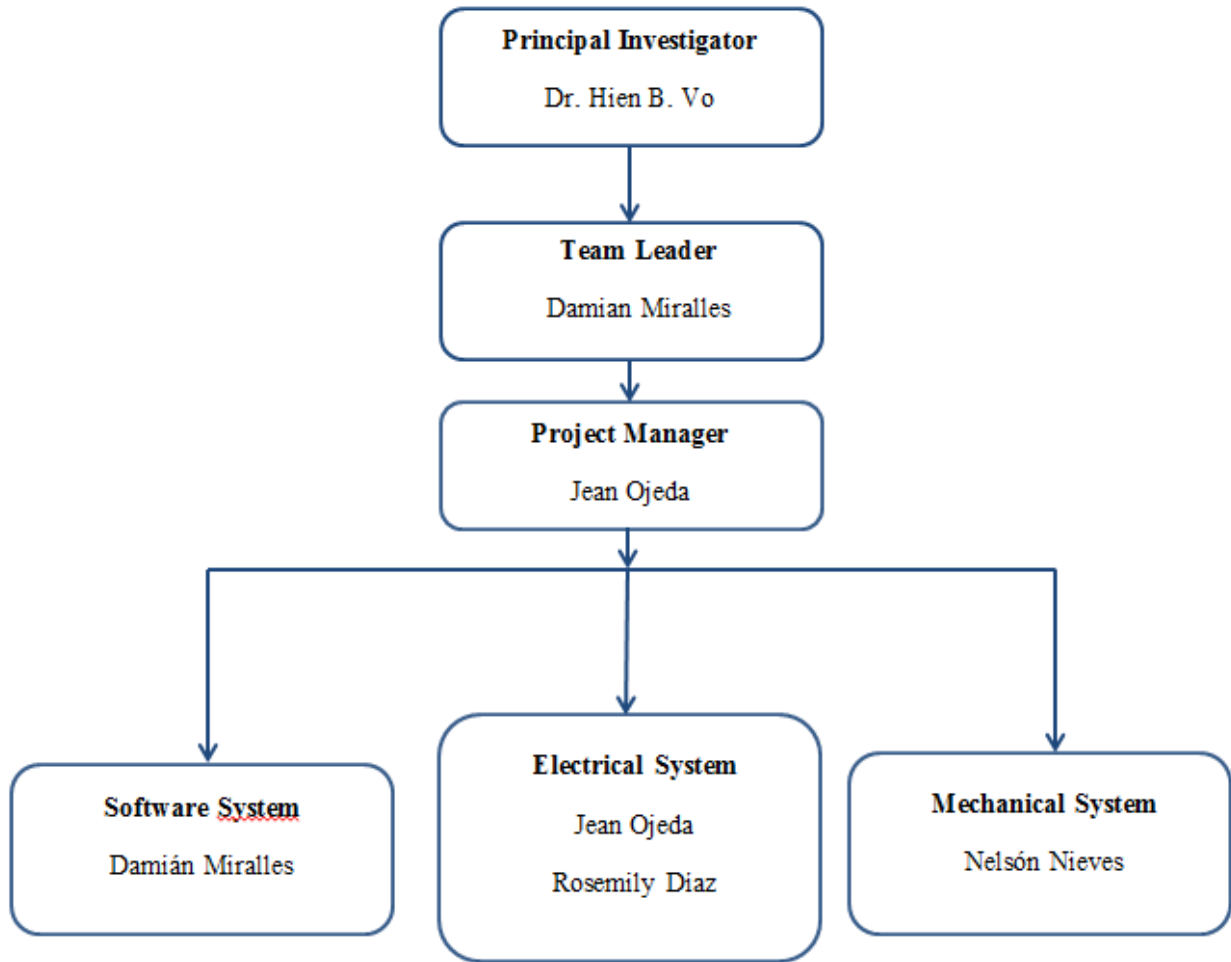
| GPS Payload Students and Tasks ||
Students	Task
Damian Miralles	Processor programming
Nelson Nieves	Thermal Analysis, Structure
Rosemily	Power Board
Jean Ojeda	Power Board

Table 1 - Team Names and Tasks