

1 Purpose

The purpose of this document is to clarify the reasons for our choice of platform.

2 Platform selection

It has been agreed that a solution based on the CubeSat standard will be the platform best suited for our project. The standard has been developed by California Polytechnic state University (CalPoly), and has already served as a platform for several successful missions. Cubesat has been selected primarily because it is the only platform which includes a standardized launch program and deployment system. In addition, much knowledge and experience concerning the CubeSat standard has been gained from the previous projects NCUBE-1 and 2.

There are three different sized platforms in the CubeSat program, all with a length and width measuring 10 cm. The height measures 10, 20 or 30 cm, resulting in platforms with an internal volume of 1, 2 or 3 liters. The maximum total weight is 1, 2 or 3 kg accordingly. Immediately, the largest of the three platforms would be the most desirable, as this has the largest available space and payload capacity. As well as increasing the selection of possible payloads, a larger platform can supply a larger power output due to the added external area available for solar panels. Extra space and weight resources can also be used for more batteries, prolonging the lifespan of the satellite.

If economics and launch possibilities are accounted for, however, choosing the right platform becomes more complicated. Although the development cost does not increase much with the size of these systems, as they are all relatively small, launch costs increase with the weight of the satellite. Furthermore, these small satellites don't have their own launch vehicles, and hence they depend on riding with other missions. If the satellite is big, the launch opportunities may become fewer. Therefore, as a compromise between economics, complexity and launch possibilities, the group has decided to base its work on the 2 liter version of the satellite. It should also be mentioned that a non-cubical shape can possess some inherently stabilizing properties due to difference in the gravitational force exerted on the upper and lower part of the satellite.