**Why should the Molokai Mahina 2.0 robot be selected by the judges?**

* We have new and innovative ideas
* We tried hard to get through the difficult obstacles last year to get in and now we have more experience and we have learned from our mistakes, also we will be able to contribute with familiarity of the competition.
* We work better as a team and our weaknesses are filled with others strengths.
* We all contribute to the community and are open to new ideas

**Robot Design**

**Tires**: Last year we faced a problem with the tires being too far apart to get over the regolith and craters, so this year we decided to connect the tires with a simple hydraulic system that allowed the tires to not be stationary. This system would solve the problem we had last year because; it would enable the tires to move closer together when needed. We derived this idea from actual lunar rover designs we review on the internet. Last year the tires we used had thinner treads and the inner tire was wider in diameter, this made our robot unstable, so we decided to use shorter tires with thicker treads to offer more support and, give our bot a lower center of gravity.

**Motors**: We choose to have three motors, which is the maximum number of motors our resources allow; one motor for the arm and two for the wheels.

**Arm**: When deciding on an arm design we looked at many possibilities and, looked at the arm designs of last year’s top scoring teams. We discovered designs ranging from a simple five prong design with bent ends to a complicated scoop mechanism. Last year we used a 3 prong arm to catch the elements, but ran into trouble finding an appropriate height that would be low enough to pick up the elements but not too low to hit the crater. This year we added small tires to the bottom of our element collecting arm that will be able to run freely so the arm will not get stuck on any bumps, but will glide smoothly over the top.

**Sensors**: To compensate for the rough terrain of the modified board our robot will have two touch sensors on the front, above the front wheels, so that each individual wheel will continue to move forward until its sensor touches a surface. This will help align the robot for successful crater entrance. We made this decision because from last years’ experience we knew that if the robot attempted to climb a crater while not properly centered or aligned with the crater wall it would enter said crater completely off-course. This set the rest of our mission off. Our robot will also have a voice sensor for the ability of remote control from mission headquarters; this is something we are looking forward to experimenting with.

**Camera**: For our camera we decided to utilize a small thin light weight HD camera because, we used the flip camera last year and with its odd dimensions we struggled keeping it secure. Our new HD camera would be easier for us to build around, more aerodynamic, and it would put less weight on our hydraulics, and keep our center of gravity low. As technology moves forward, our plans must utilize its advances.