



Anteater Solar Heater

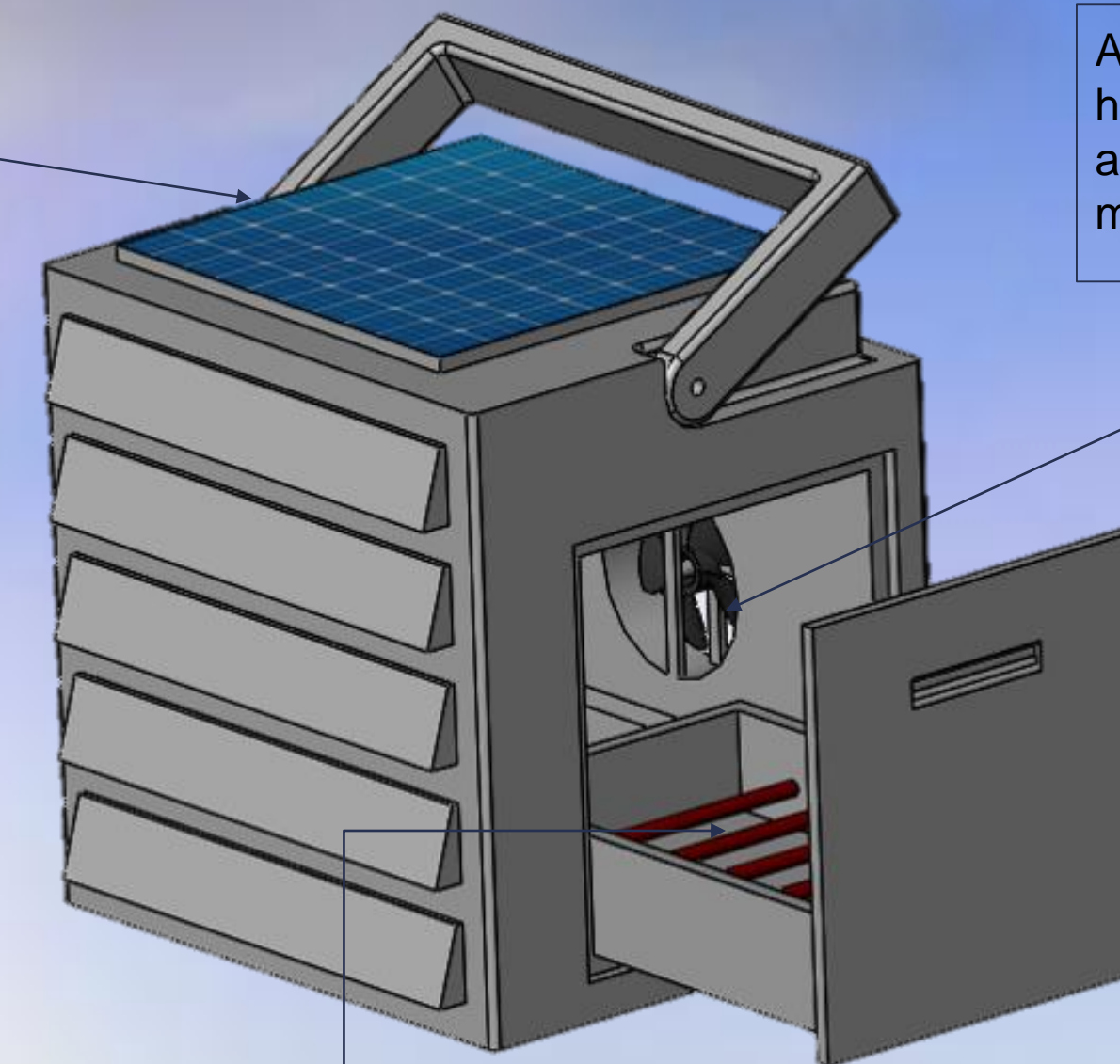
Heat Up Your Space without Electric Power or Fossil Fuels

Advisor: Professor Dunn-Rankin

Background

Outdoor camping temperatures get cold at night. Campers need a safe heat source to use inside their tents to keep warm. Propane heaters are flammable and emit harmful gases. A solar-powered heater can provide a safe heat source that can be used inside a small, enclosed area.

Energy that is collected by a solar panel is stored in a reversible endothermic chemical reaction where the components are stored separately.



A solar powered fan activates the heating process by blowing moist air over the thermochemical material.

MgCl2 is the choice material as it has high thermal capacity. It is stored in an insulated, removable tray. The system can be recharged by separating the components.

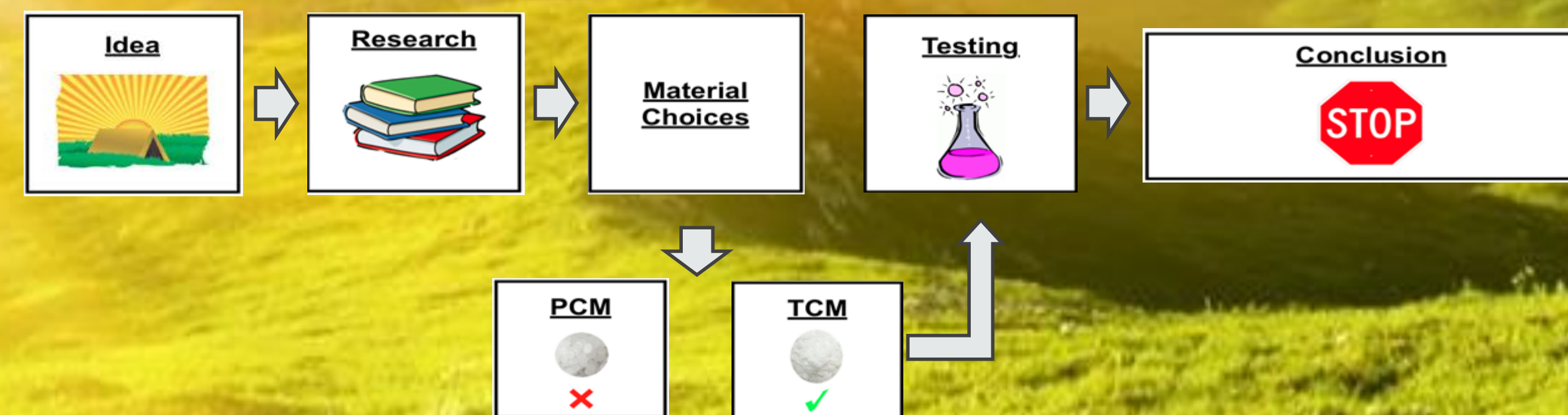
Lessons Learned

In our initial design, the humidity ratio of 0.00272 obtained during the experiment was very low and did not thoroughly activate the $MgCl_2 + 6H_2O$ chemical reaction. The low humidity generated much less energy than expected to make the system functional.

Goals and Objectives

- Small enough to fit inside a camping tent.
- Heat up an area up to 100 sq. ft.
- Provides continuous heat for 4 hours
- Safe to operate without human interaction
- Weighs 20 - 50 lbs.

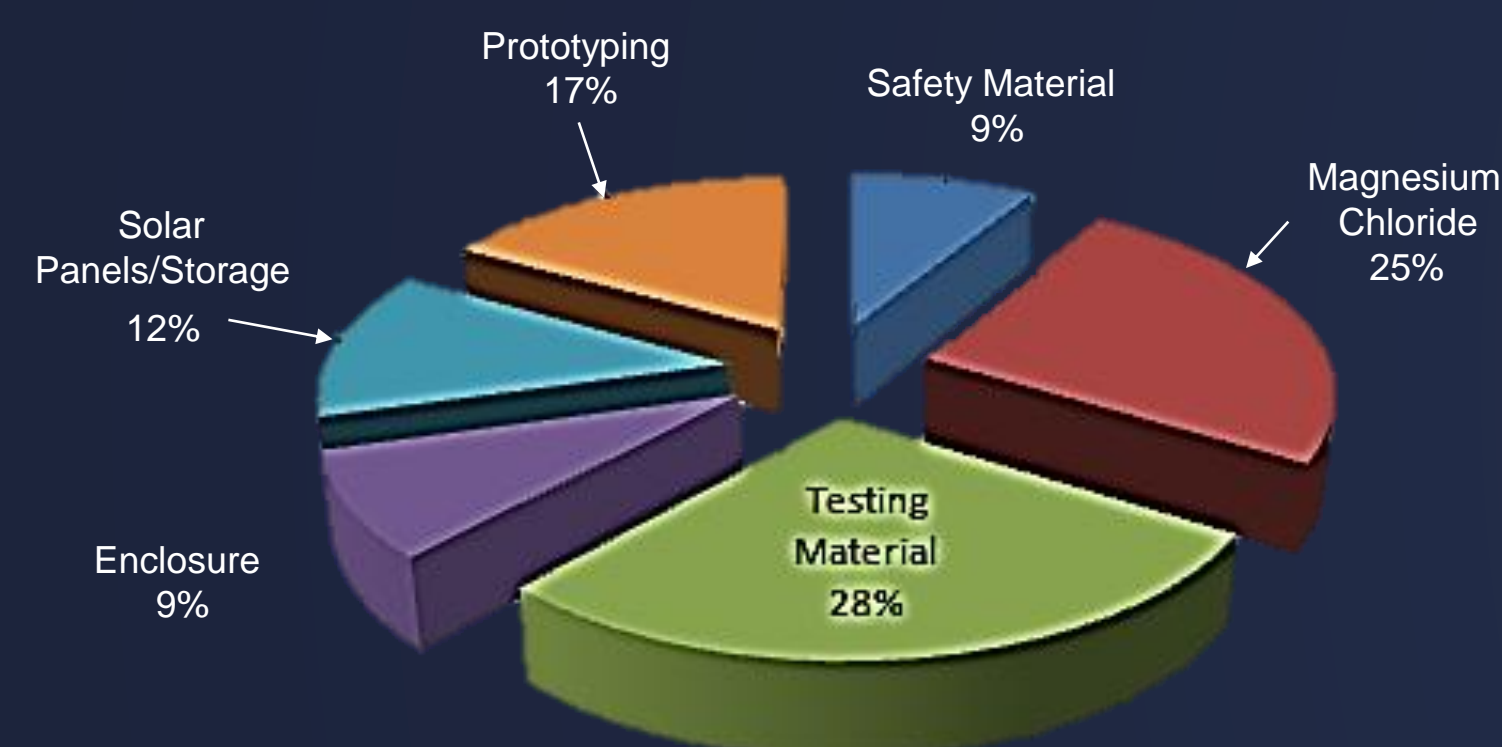
Our Journey



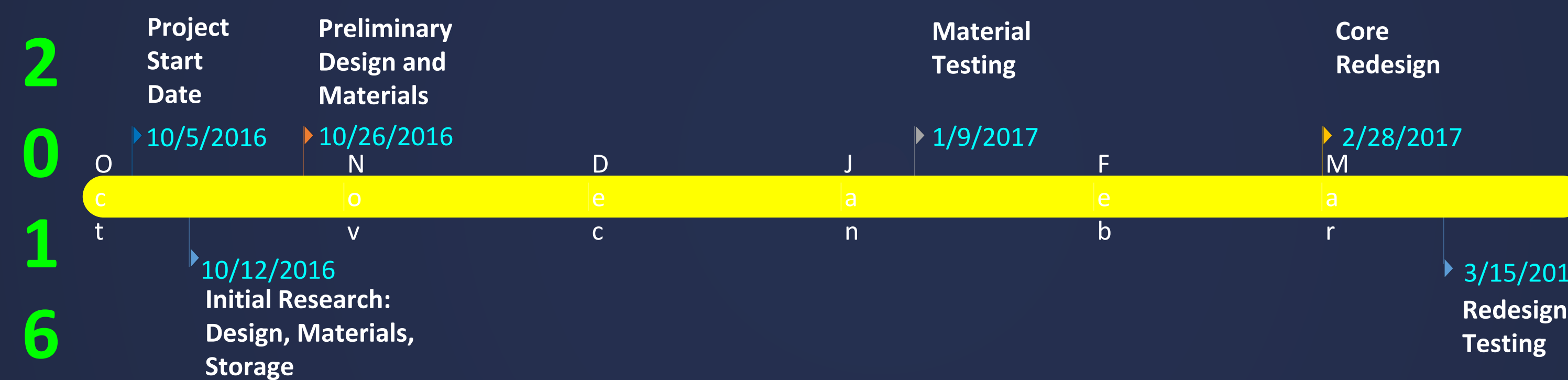
Next Steps



Budget



Timeline



Team



From left: Kunlong Yu, Alexander Torres, Jeremy Dang, Justin Cardona, Elizabeth Bou, Zachary Greensite, Roland Estropia, Darren Chan, William Chiang

