

# Transportation Group

## Basic Utility Vehicle (BUV)

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### Project History



#### What is a BUV?

A Basic Utility Vehicle is an automobile that is specifically designed for the developing world. It is made to be durable and to efficiently transport large, heavy loads quickly over long distances.

#### Our Work

In the Fall of 2012, we established communication with Matt Walsh in Burkina Faso about the potential for a BUV project. The idea was to modify the current BUV design so that it can be used for more than simply a transportation device, but also an alternate power source for various tools and equipment.

### Clients

Currently, the BUV project has no committed client because the original client became unable to support the project financially.

Our project consultant, Matt Walsh, lives and works in Burkina-Faso so he has been our main point of contact.

### Acknowledgements

Benjamin Sollenberger—Group Orientation student  
 Matt Walsh—Project Consultant  
 Dr. Donald Pratt—Project Advisor

### What's Being Done

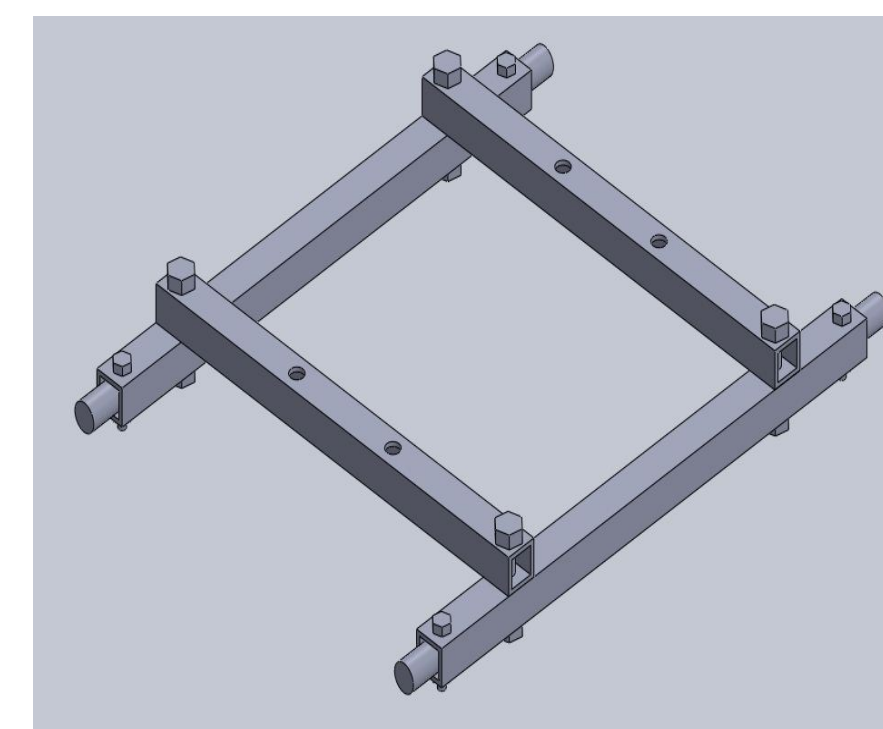


#### The Engine

After consulting with Matt Walsh, we decided to purchase an engine. Our engine needed to fall into a set of specifications to ensure that it closely matched the engine that might be used by a BUV. This engine will be used for all design, prototyping, and testing needs—it will be used to power a prototype BUV model, as well as a power take-off prototype which will eventually be attached to the BUV.

#### Mounting Our Engine

After obtaining an engine for our BUV design, a stand was needed for mounting and testing. We acquired the test stand that the Light Sport Aircraft project had used and were able to use it for our own engine.



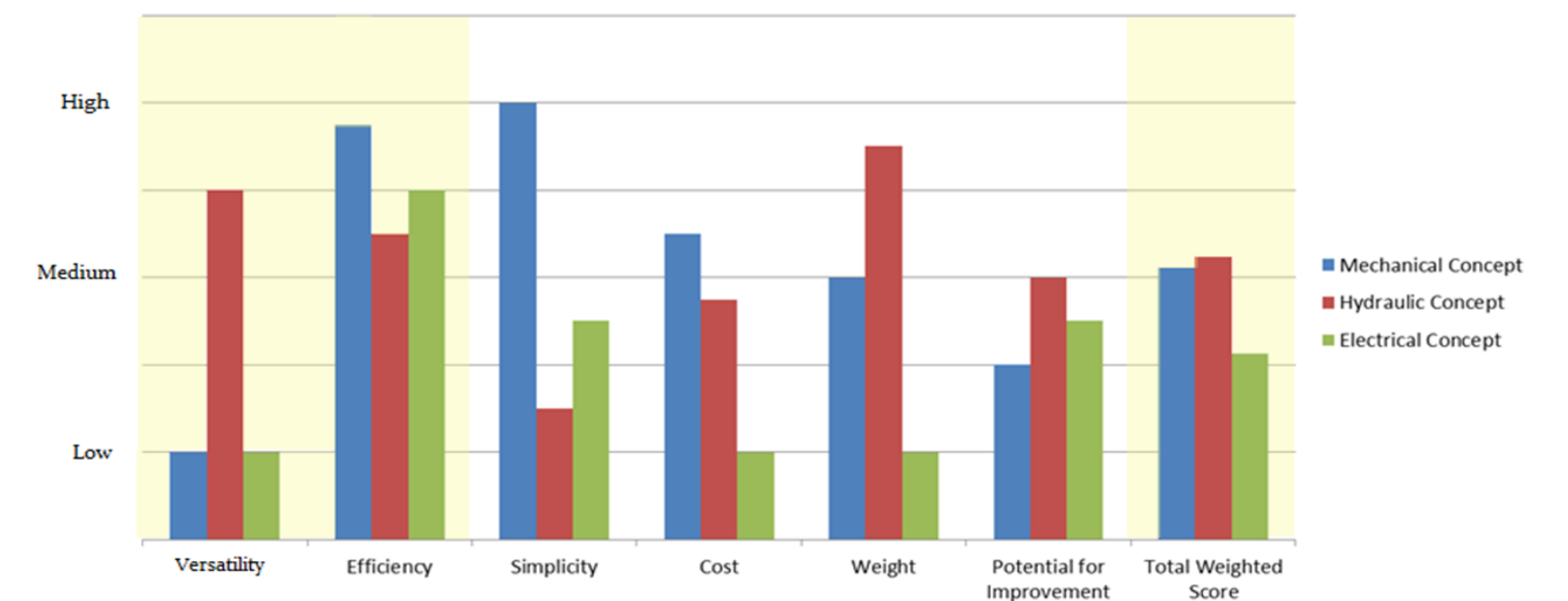
The frame of the test stand was in need of some modifications in order to mount the BUV engine. The largest modification needed was to position and attach additional cross supports to the frame to support the engine. These supports were constructed using square steel tubing with mounting holes drilled through them so that the engine could be secured.

### Further Information

[www.thecollaboratoryonline.org/wiki/Basic\\_Utility\\_Vehicle](http://www.thecollaboratoryonline.org/wiki/Basic_Utility_Vehicle)  
[www.drivebuv.org](http://www.drivebuv.org)

### Future Work

#### Power Take-Off

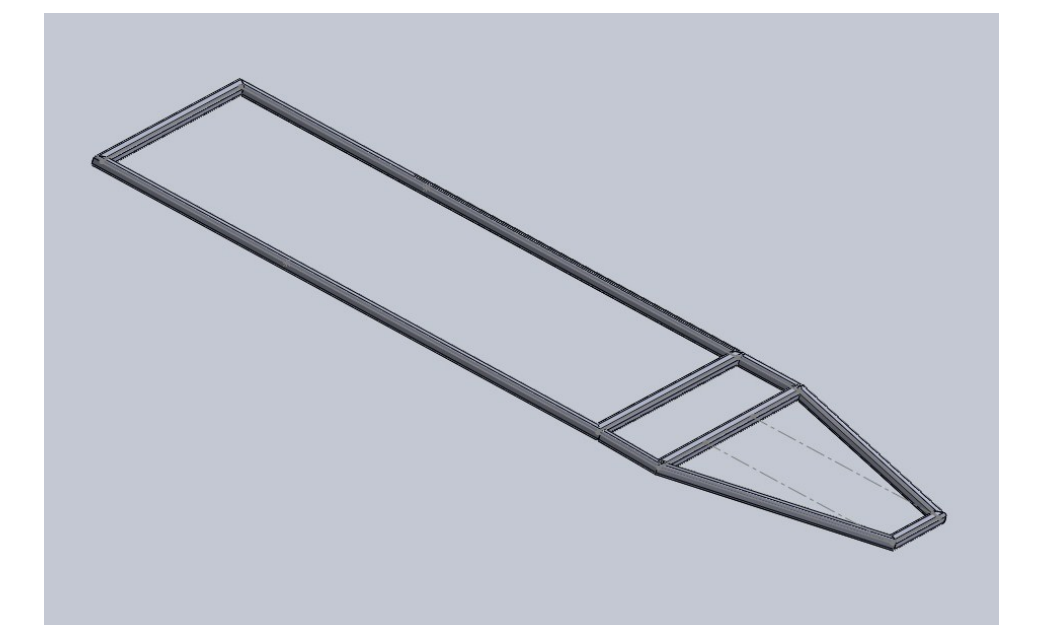


This chart is a graphical representation of the research performed on power transfer methodology. The yellow highlighted sections show the factors that were weighted the highest during comparison of our results, respectively. Each factor, as listed on the horizontal axis, plays an important part in the decision-making process. Our group determined that versatility and efficiency were the most important factors for our target area from our perspective, with the remaining four factors taking on secondary levels of importance.

The ultimate decision about the type of power take-off to be chosen will depend on our consultant's decision after viewing the research and applying it more accurately to the situation. With the choice finalized, the BUV team will proceed to design and potentially build the desired system. Testing using the recently acquired engine and manufactured test frame will then ensue before finalizing the prototype and sending the technology to Matt Walsh or any other interested clients.

#### Test Frame

Once the engine functionality has been verified, it will need to be mounted on a frame so that power take-off modifications can begin. This is the design of a very basic test BUV frame that will be fully functional but not necessarily an official BUV. With this frame, we will be able to determine what changes can be made and how they will affect the available space and potential machines that will be powered by the engine.



#### Down the Road

We have conducted preliminary research on similar applications for 150cc scooters in developing countries. These scooters are extremely common and easy to acquire so we foresee a great opportunity to create another useful tool out of these more generic transportation devices.

