

- (1) Use bicycle wheels, perhaps buy a set of 4 so that 1 spare. Maybe wheelchair wheels as they have lower dia.?
- (2) Formed fiberglass for the body
  - a. LIDAR the original body, or if not accurate enough using the iPhones bring DSLR camera and stitch ~1200 photos into photogrammetry mesh.
  - b. Place into Fusion 360 for design work
  - c. Design new body through informed design choices and calculations through previous research paper. Perhaps use generative design?
  - d. Run simulations to validate design. Re-do in progressive cycles until optimal design is achieved.
  - e. Convert parametric refactored body into series of rib-shapes so that it can be 3D printed for mold making.
  - f. 3D Print ribs and clean up 3D prints.
  - g. Assemble all parts together to form the ribs of a mold.
  - h. Pack with sand-glue mixture to form the bulk of the mold shape.
  - i. Use LIDAR, photogrammetry pipeline to compare mold with the specified technical drawings as given from design phase. Ensures precision curves for proper forming.
  - j. Sand down mold and cover with spray-on epoxy resin type finishing for easy mold removal.
  - k. Using fiberglass cloth and epoxy resin form mold using "paper-mache" method. Ensure that layers maintain around 3mm thickness to cut on weight.
  - l. Sand down formed fiberglass. WEAR PPE, RESPIRATORS, EYE PROTECTION, ETC. DUE TO SHARP GLASS PARTICULATE.
  - m. Using spray paint cans apply paint to reduce the overall mass of paint used on the formed body.
  - n. Graphics team takes over. Vinyl designs may be used to reduce weight by maintain high fidelity designs on the body.
- (3) Cover steering tierods with formed fiber glass shell
- (4) Change center of mass and mounting hard points
- (5) Cockpit refactor with a better windshield
- (6) Recalculate energetic margins and refactor main and auxiliary power buses.
  - a. Use research from previous research paper to determine optimal energetic margins. Pay particular attention to the margin research as given for solar-flight optimization in paper and apply models to the car here.
  - b. Also use mechanical design principles for reduced weight, parasitic drag, induced drag, etc. Minor changes have big consequences at our given energy margins!