

Vehicle Design- Exercise 3

Size and Proportion/ Benchmarking

Look at the sketches you have done. Choose what direction you want to go with for your design. You should have a clear idea of what style of vehicle you want to design so now you can begin to establish the size and proportion of that concept. Look back at your functional objectives to see which key dimensions deserve the most focus.

You are now going to set up some comparisons for different aspects of your vehicle. Select two or three vehicles that are on the market already that have similar attributes. If the intended market segment is well established this should be a straightforward process. If the concept is reaching into new and unknown areas, benchmarking will require more thought and creativity.

You need to set up comparisons for the following:

- 1) Occupant package and interior environment. Look at occupant location and posture. Also focus on the space around the manikins.
- 2) Cargo. Think about volume, size and weight of the items to be transported, and set up space around the occupant package.
- 3) Powertrain package. Choose a product with a similar propulsion system and note the spacial envelopes around the major components.
- 4) Ground clearance. Look at vehicles with similar capabilities (off-road vs. on-road) to your concept, and note the relationship of the underbody components to the ground.
- 5) Crashworthiness. Study vehicles that meet the appropriate safety standards and note the "crush space" and structure allocated to protect the occupants.
- 6) Wheel and Tire package. Compare the tire outside diameter and profile to vehicles of similar size and capability.
- 7) Other Elements. Study other significant components in the concept, such as windshield placement, closure articulation and cut lines, lighting, and seating flexibility.

In a way that is clear and descriptive set up the comparison studies for these six areas. Be sure to include the precedent's study vehicle name, picture, and explanation to each comparison.

Be sure to also establish these key target dimensions:

Length, Width, Height, Wheelbase, Tire O.D., Ground Clearance