Layout and Size

The chassis will be 1:6 scale of the original Pathfinder Pod, keeping the wheelbase proportionate. There must be space on the chassis to fit the required components and mechanical linkages. These will include motor(s) and drivetrain, servo and steering mechanism and space for the micro control unit and any required sensors.

Materials

The project should try to replicate the aesthetics of the pathfinder pod, as such a formable material is needed for the body. The chassis must be strong enough to handle any stresses and the weight of the components.

Drivetrain

Based on the number of motors powering the system and also the number of driven wheels, there are several options for the drivetrain.

All Wheel Drive (AWD)

Four motors – Hub mounted, one for each wheel

Two motors – One for each axle, will require a differential for each axle

One motor – Belt or shaft driven with differentials

Rear Wheel Drive (RWD)

Two motors – Independent motors for each wheel

One motor – Differential on rear axle

The two options for differential are open or limited slip if this is required.

The size and power of the motor will depend on the number required. There are two main types of DC motor, brushed and brushless.

Steering

The steering mechanism will be designed using an Ackermann steering geometry. A servo will be used to control the positioning of the steering arm(s).