



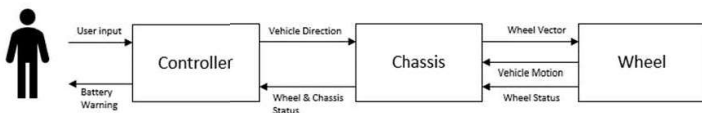
## Background

The shape of the wheel has changed little in the centuries that it has existed, however the Eagle 360 concept developed by Goodyear looks towards the benefits of spherical wheels for future autonomous vehicles.

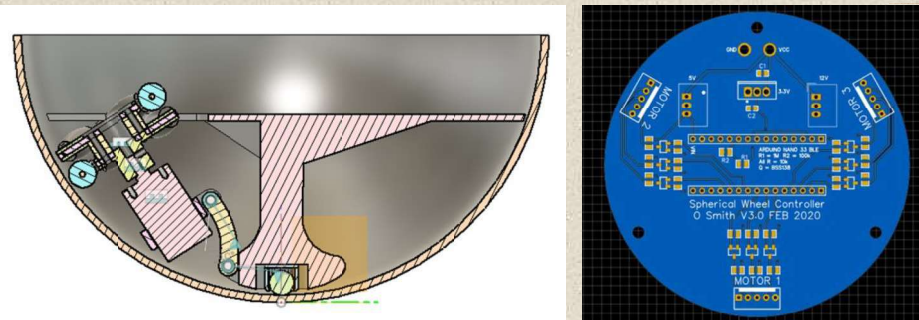
This project aimed to review the Goodyear Eagle 360 spherical wheel concept and develop a prototype using current technology to explore the feasibility of such a design.

## Design

The spherical wheel was developed as three main sub assemblies, the wheel, the chassis and the controller.

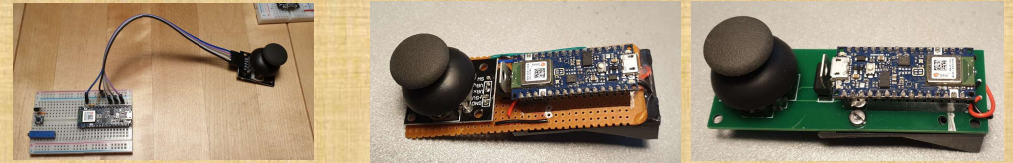


Systems Engineering process "V" model was implemented meaning that the overall design was developed iteratively, with testing being conducted at each stage. Computer Aided Design software was used for both mechanical and electrical components, allowing the design to be fleshed out in 3D space before proceeding to manufacture.

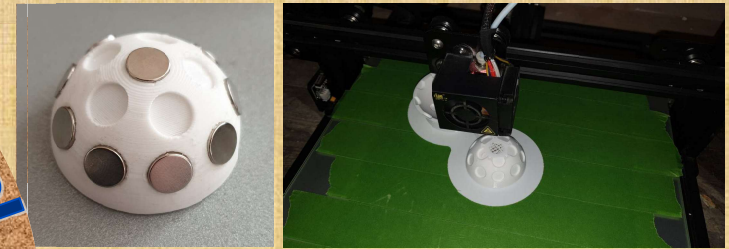


## Build

Sub assemblies were prototyped on breadboards and then using prototyping boards before using the CAD software to develop actual PCBs.



3D printing was used to develop the mechanical components due to the need for complex shapes, that would have taken longer to develop using more traditional manufacturing techniques.



## Conclusion

The project was a partial success, a working prototype was developed and was able to prove that the basic elements of the concept were viable, however additional work would be required to implement the additional capabilities stripped from the project due to time.

## Future Work

Several improvements identified during the project are being developed including; electromagnetic levitation, closed loop motor control and wireless power transfer.

