

## BACKGROUND

**The Company:**  
Quality of Life+ serves wounded veterans and first responders by challenging engineering students to create new technology that improves the lives of their clients

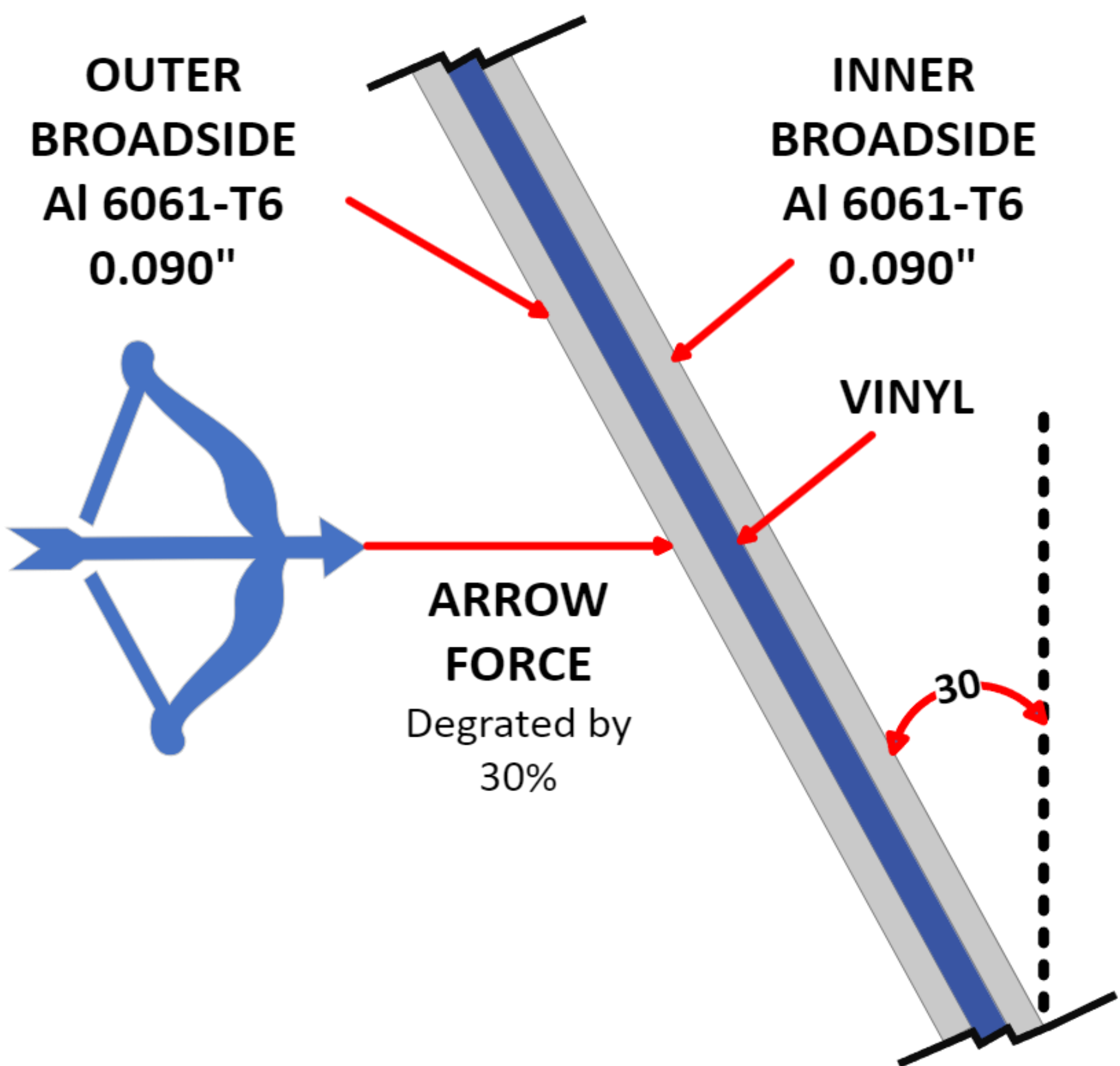
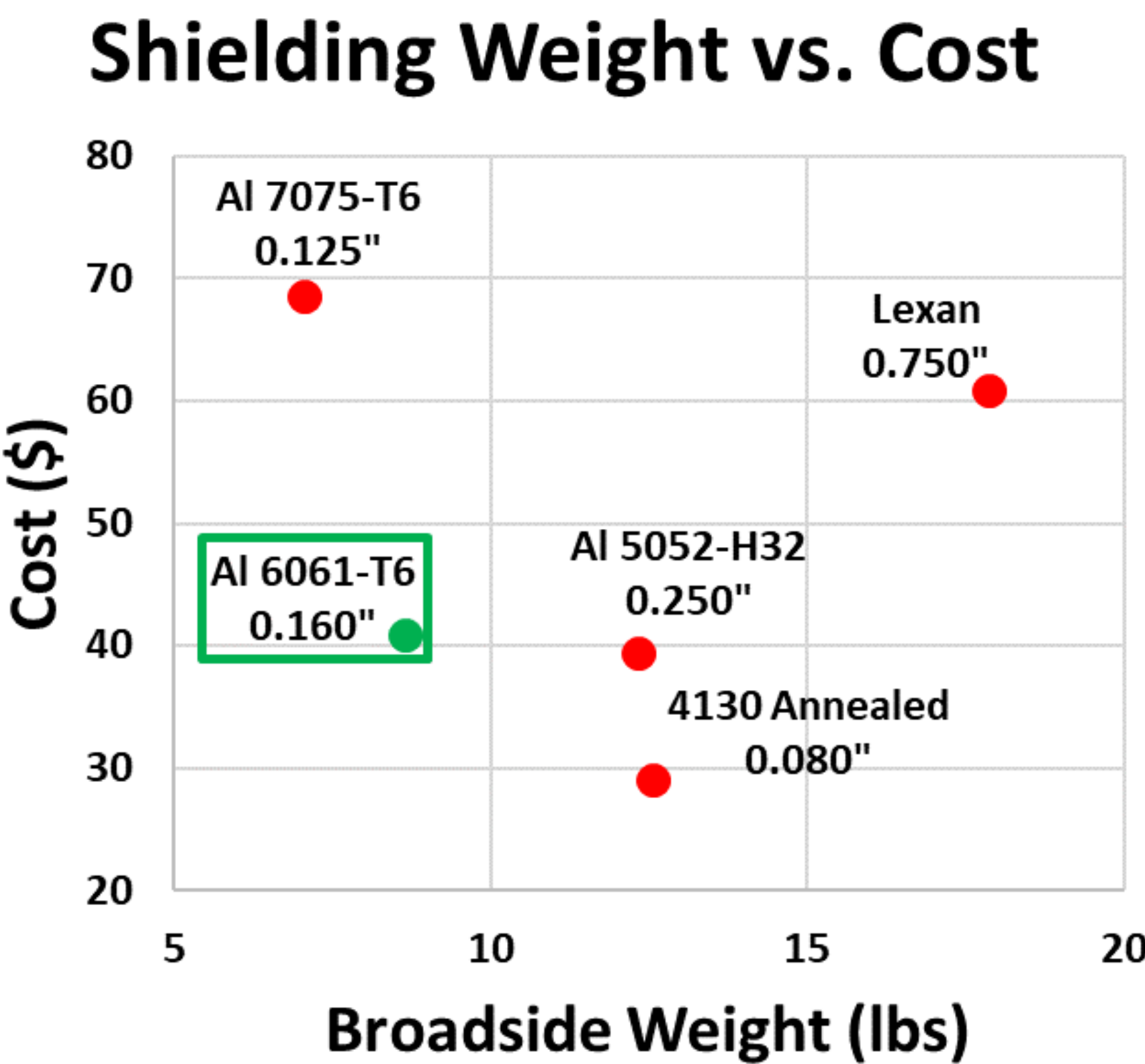
**Problem:**  
Archery shooting involves stationary targets that do not model hunting scenarios

**Objective:**  
Implement a 3-D target with a mobile base to replicate realistic hunting shots

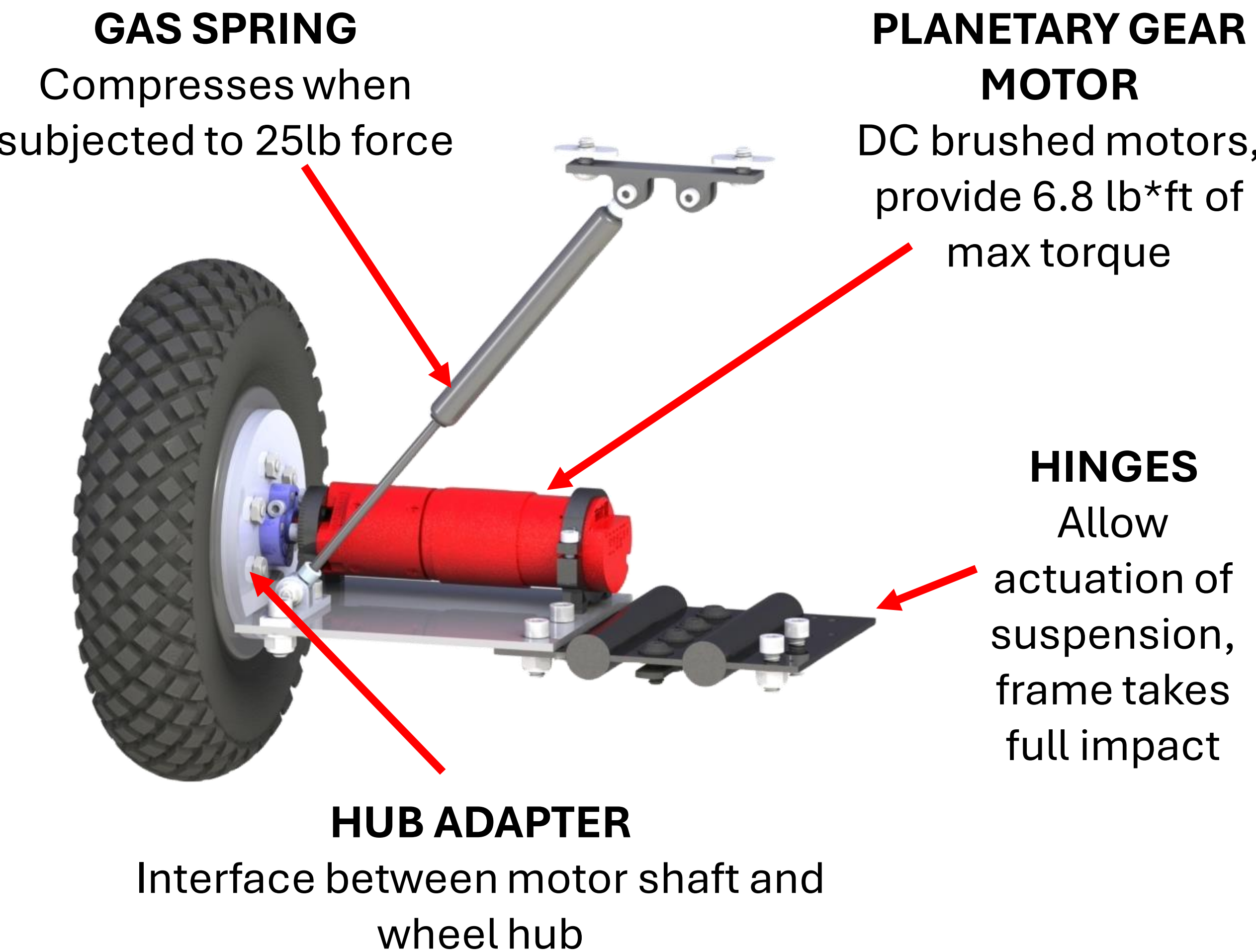
## DESIGN OBJECTIVES

- ✓ Broadside shielding must withstand a 450Gr. field-tip arrow delivered from a 70lb compound bow
- ✓ Dust and water resistant to IP-52 standard
- ✓ Replaceable external components if struck by arrow
- ✓ User must control device via RC transmitter
- ✓ Must move on programmed paths
- ✓ Must move in an autonomous mode that avoids objects
- ✓ Shall be loaded into vehicle by 1 able-bodied person and setup <15 minutes
- ✓ Shall have 1-hour of active battery life

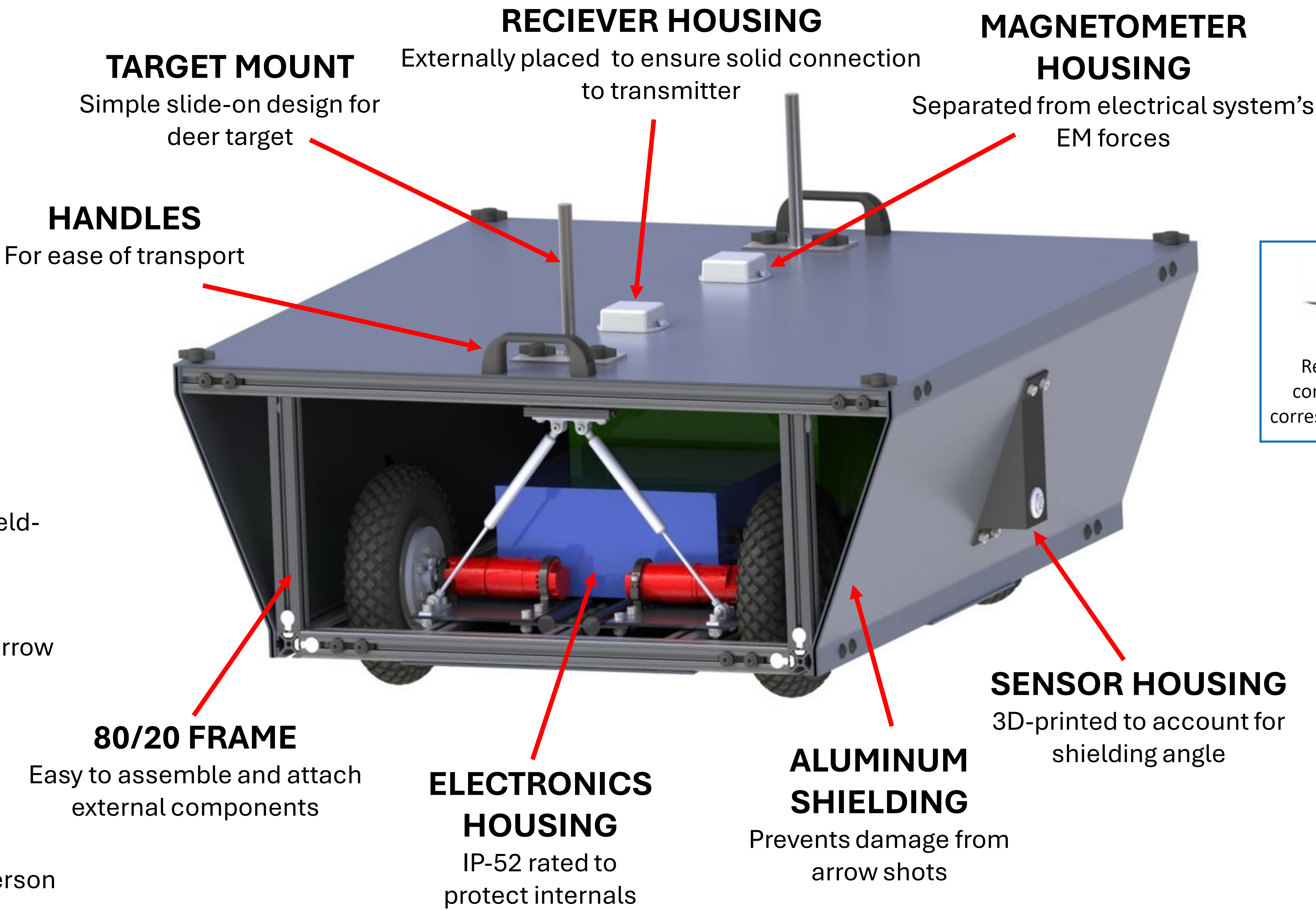
## SHIELDING DESIGN



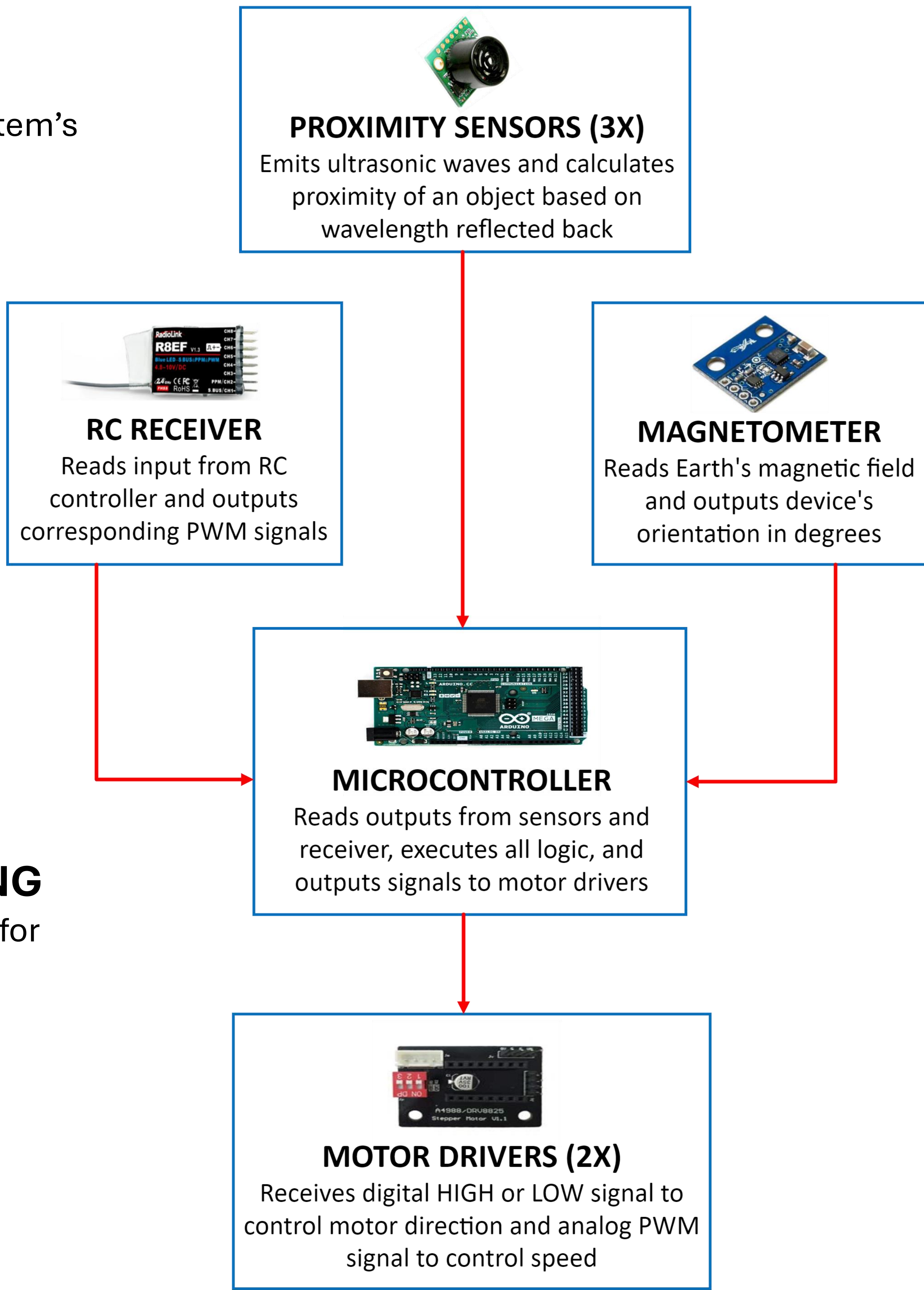
## DRIVETRAIN DESIGN



## DESIGN OVERVIEW



## CONTROLS



## CONTROLLER LAYOUT

