7 Bill Of Materials

No	Name	Part No	Description	Qty	Cost per unit	Total Cost	Manufacturer
1	Wheels	–	Plywood wheels	×4	£6.80	£0.93	In house
2	Base (Plywood)	–	Base platform	×1	£6.80	£2.79	In house
3	Base (Acrylic)	–	Base platform	×1	£7.49	£4.81	In house
4	Hubs	–	Plywood hubs	×4	£6.80	£0.25	In house
5	Hub connectors	–	Steel connectors	×4	£6.99	£6.99	Amazon
6	Screw and Lead	–	Lead screw with nut	×2	£8.99	£4.50	Amazon
7	Plastic Tube	–	Hollow plastic tube	×1	£4.27	£4.27	Amazon
9	Datum	–	Reference point component	×1	–	–	Amazon
10	Gears	–	3D printed	×1	£10.99	£0.13	In house
						Σ = £31.66	

Table 1: Bill of Material for the Mechanical Components

7.1 Mechanics

This table lists the components and materials used to build the chassis for the competition. Key parts include gears for motion transfer and structural elements like plywood, acrylic, and plastic tubes. The hubs and connectors provide stability. The total cost of the components is **£31.66**, covering both in-house and purchased materials.

No	Name	Part No	Description	Qty	Cost per unit	Total Cost	Voltage/Rating	Manufacturer
1	IC/Chips	SN7404N	Hex Inverter IC	×1	£1.99	£1.99	5V	Texas Instruments
		SN74LS08N	AND Gate IC (Quad 2-input)		£0.57	£0.57	5V	Texas Instruments
		CD74HC73E	Dual JK Flip-Flop IC (Dual 1-bit)		£0.64	£0.64	5V	Texas Instruments
		SE555P	Timer IC (Astable, Monostable)		£0.27	£0.27	5V	Texas Instruments
2	Resistors	CF14JT27K0CT-ND	27kΩ Fixed Resistor	×1	£0.08	£0.08	1/4W	Stackpole Electronics
		CF12JT10K0CT-ND	10kΩ Fixed Resistor	×2	£0.08	£0.16	1/2W	Stackpole Electronics
		CF14JT220RCT-ND	220Ω Fixed Resistor		£0.08	£0.16	1/4W	Stackpole Electronics
3	Capacitors	738-CML0603X7R104KT50VCT-ND	100nF Ceramic Capacitor (X7R)	×1	£0.08	£0.08	50V	Stackpole Electronics
		16ZLJ470MTA8X11.5	470μF Electrolytic Capacitor		£0.38	£0.38	16V	Rubycon
4	LEDs	754-1264-ND	Red Diffused LED (T-1 3/4)	×1	£0.15	£0.15	2V	Kingbright
		754-1263-ND	Green Diffused LED (T-1 3/4)		£0.15	£0.15	2V	Kingbright
5	MOSFETs	IRLZ44NPBF-ND	N-channel MOSFET	×2	£0.96	£1.92	55V/47A	Infineon Technologies
		IRF5305PBF-ND	P-channel MOSFET		£1.35	£2.70	55V/31A	Infineon Technologies
6	Switch	CKN10157-ND	SPDT Snap Action Switch	×1	£0.76	£0.76	100mA/125V	C&K
		EG5619-ND	Rocker Switch SPST		£0.55	£0.55	10A/125V	E-Switch
		MS0850506F020P1C-ND	SPST-NO Snap Action Switch		£0.92	£0.92	5A/125V	E-Switch
9	Buzzer	433-1028-ND	5V Magnetic Buzzer	×1	£0.39	£0.39	5V	Soberton Inc.
10	Fuse	BF310-ND	Fuse Holder with 3A Fuse	×1	£1.53	£1.53	250VAC	MPD (Memory Protection Devices)
		F2707-ND	FUSE GLASS 3A 250VAC 5X20MM		£0.92	£0.92	250VAC	Littelfuse Inc.
						Σ = £14.40		

Table 2: Bill of Materials for the Electronical Components

7.2 Electronics

Creating a Bill of Materials (BOM) for electronics can be a complex and dynamic task. Unlike other types of materials, electronic components are subject to continuous testing, changes, and improvements during the design process. It's not uncommon for designs to evolve, which means the BOM may need to be updated frequently as parts are tested, replaced, or modified. This makes it especially difficult to finalize the BOM until the product reaches the final stages of manufacturing.

The list of components here includes key electronic parts such as ICs, resistors, capacitors, LEDs, MOSFETs, switches, buzzers, and fuses. These components were selected to meet the required specifications, but further modifications and testing are expected as the design is refined.

The total cost for the electronics components as currently planned is **£14.40**.

Bulk Buy Basket: `https://www.digikey.co.uk/short/75mq0qh1`

Miscellaneous Items (purchased on the general internet): Some additional components, such as the DC motor, battery pack, and jumper wires, may be sourced from general suppliers as needed.