



BoomBox Workshop

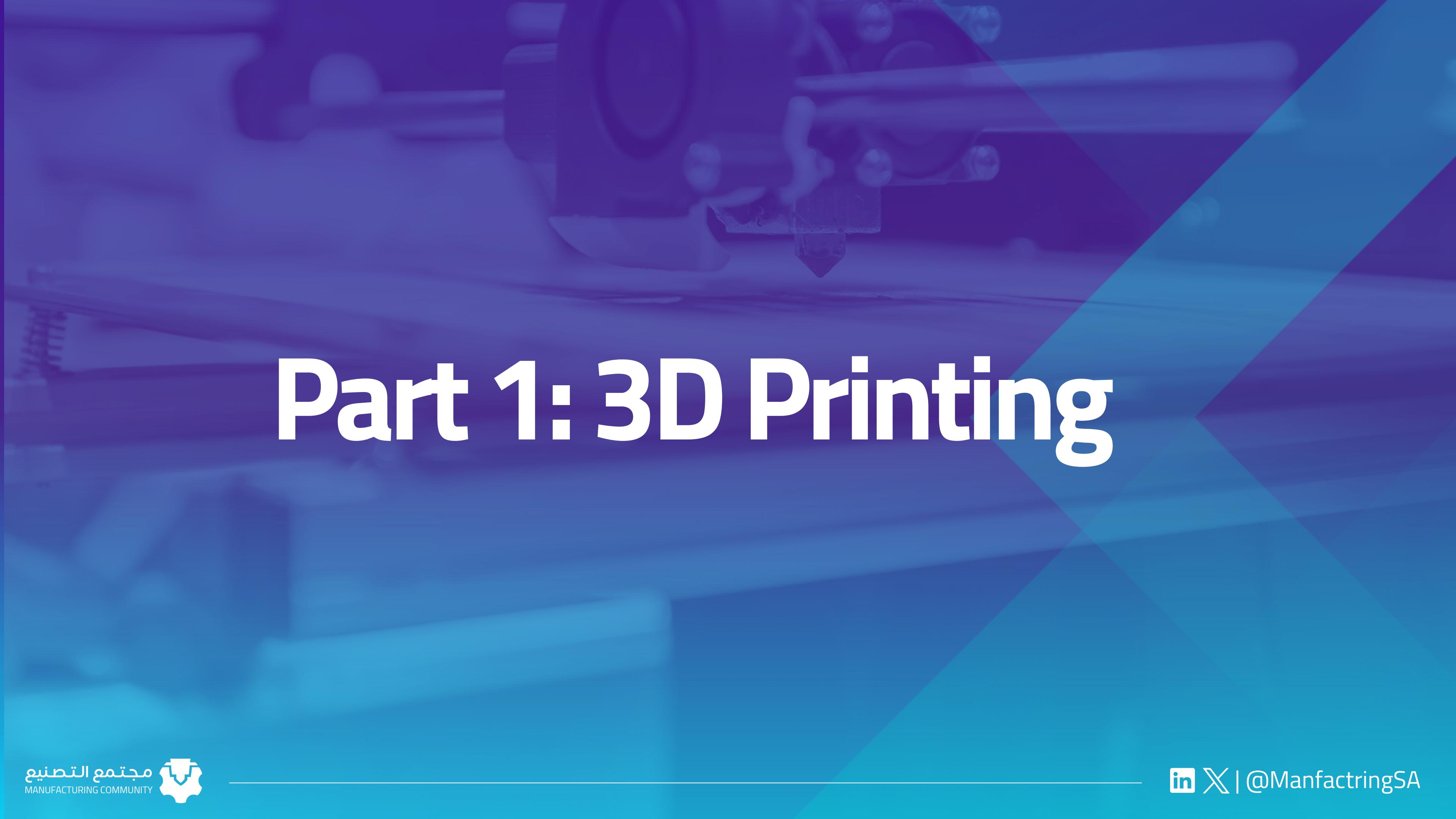
Day 1

Agenda

✿ Day 1 : 3D Printing + Electrical Basics

Day 2 : Microcontrollers

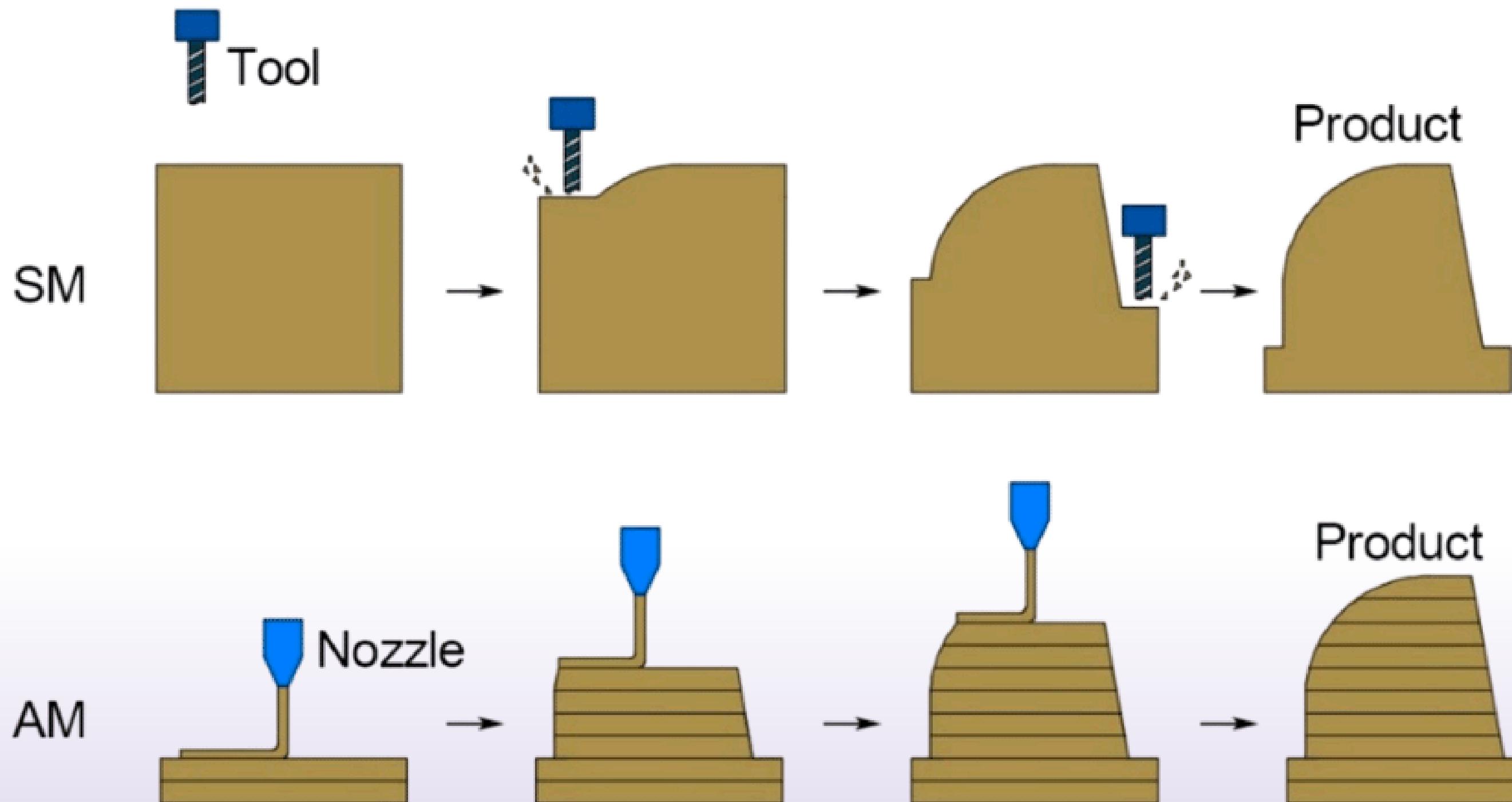
Day 3 : Building the BoomBox!



Part 1: 3D Printing

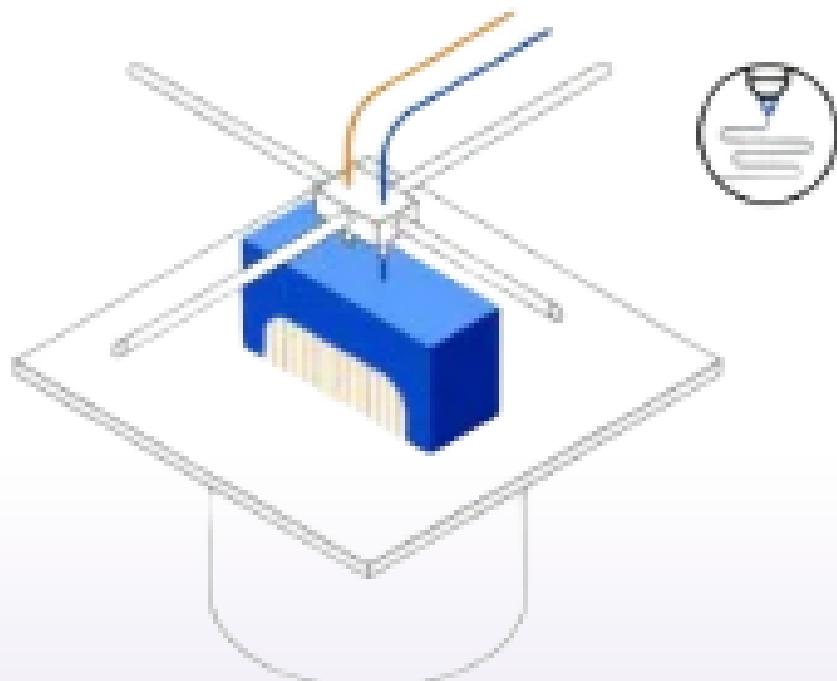


Type of Manufacturing

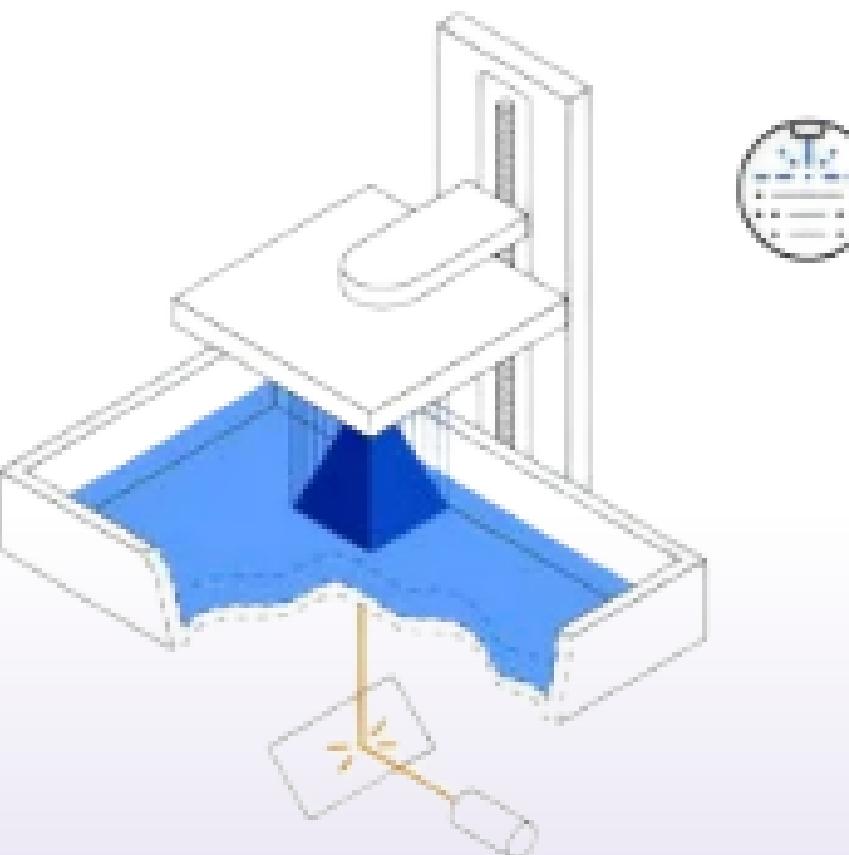


Type of Printing

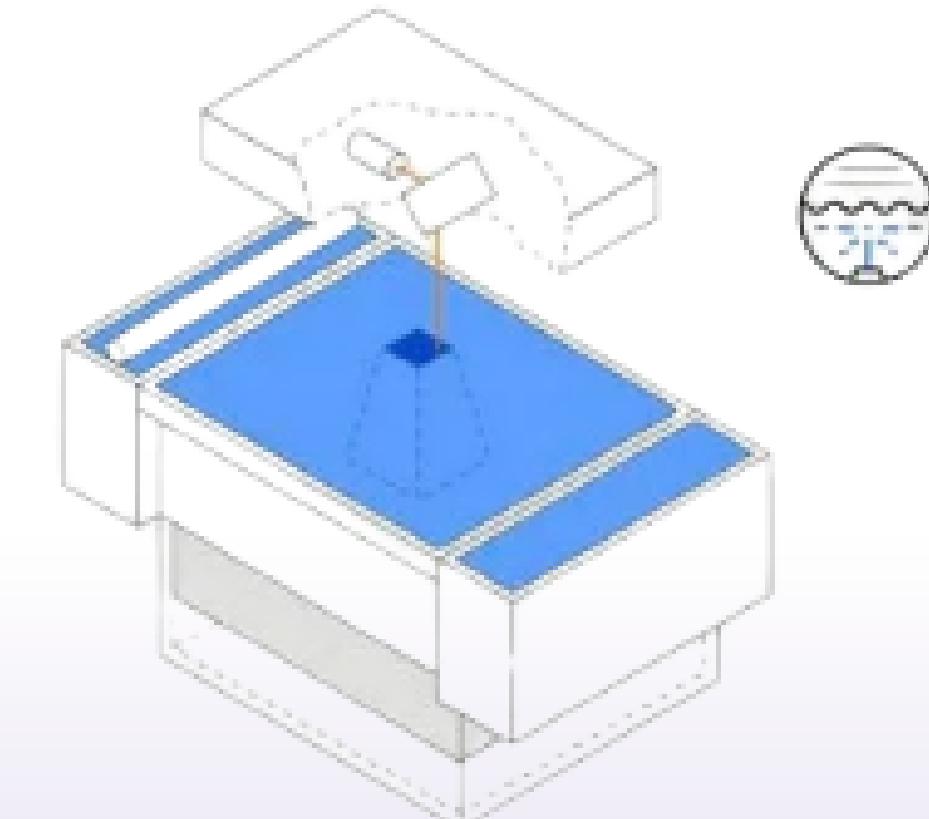
Fused Depsote
Modeling (FDM)



Stereolithography
(SLA)



Selective Laser
Sintering (SLS)

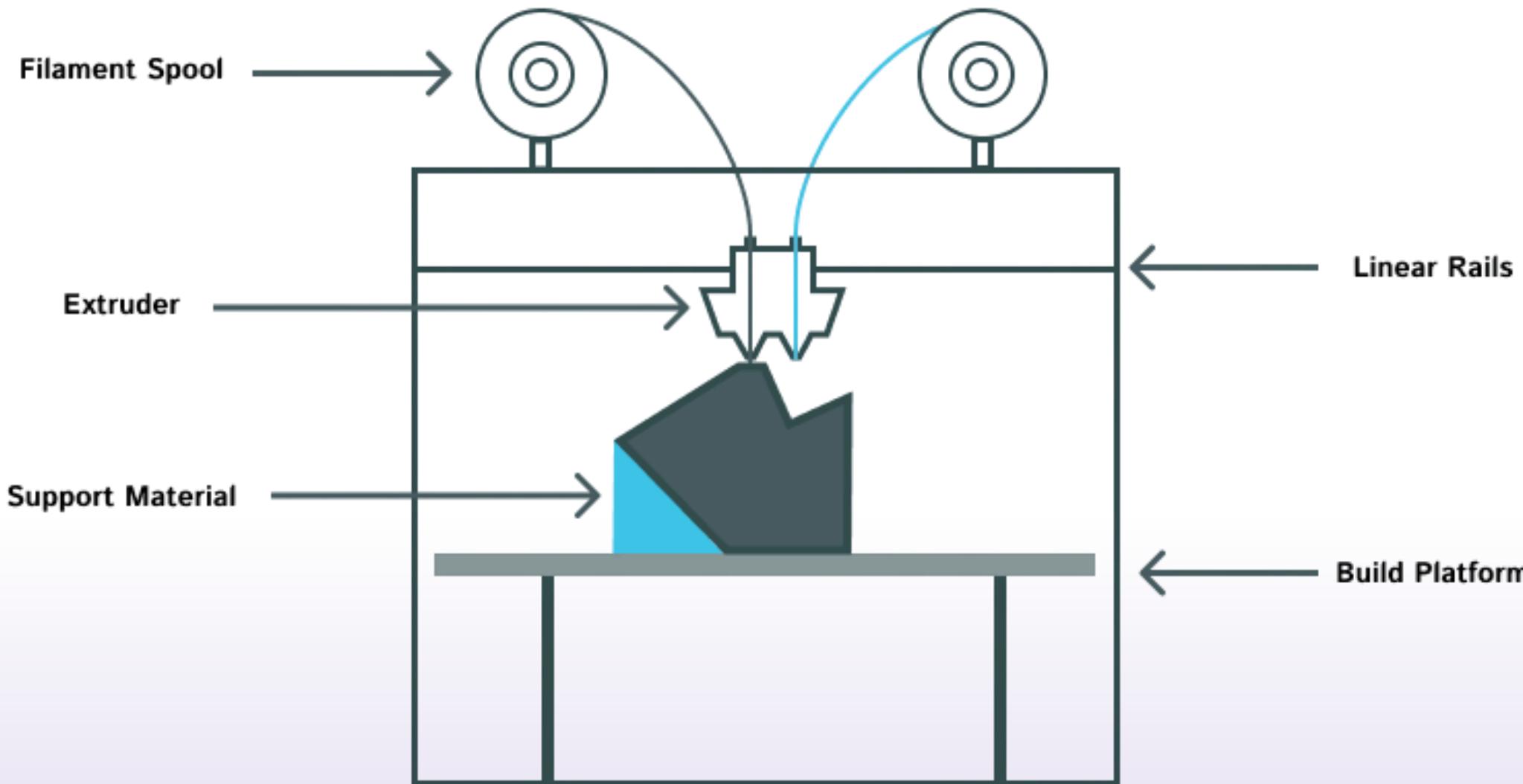


Type of materials

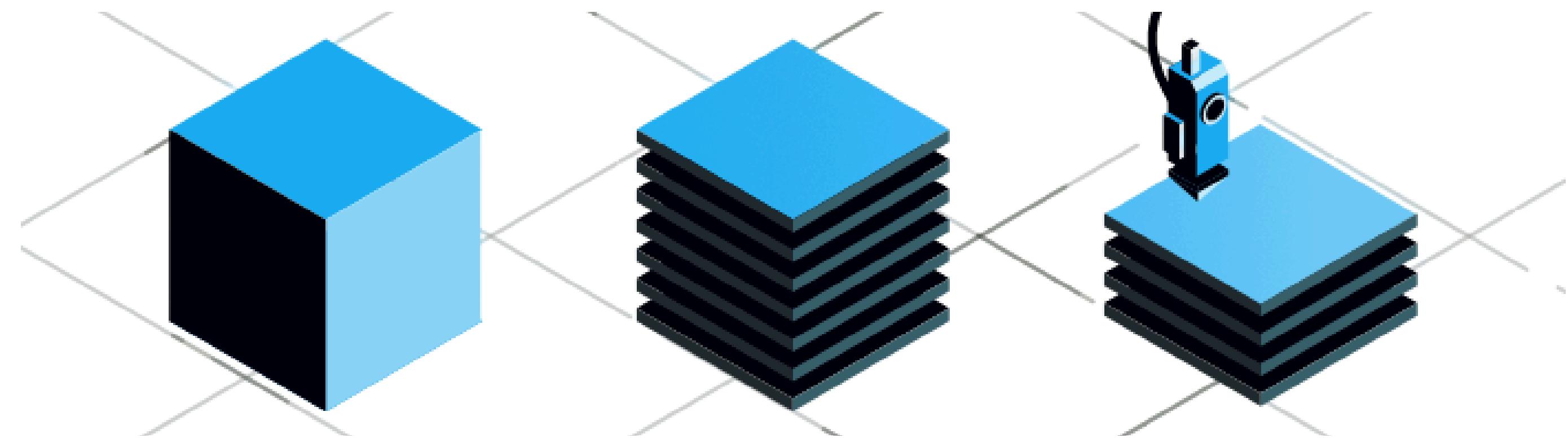
Plastics	Powders	Resin	Metals	Carbon Fiber
PLA - PETG	Nylon 12 - TPU	Transparent - standard	Aluminum -stainless steel	Chopped - Continuous
				

Type of Printing

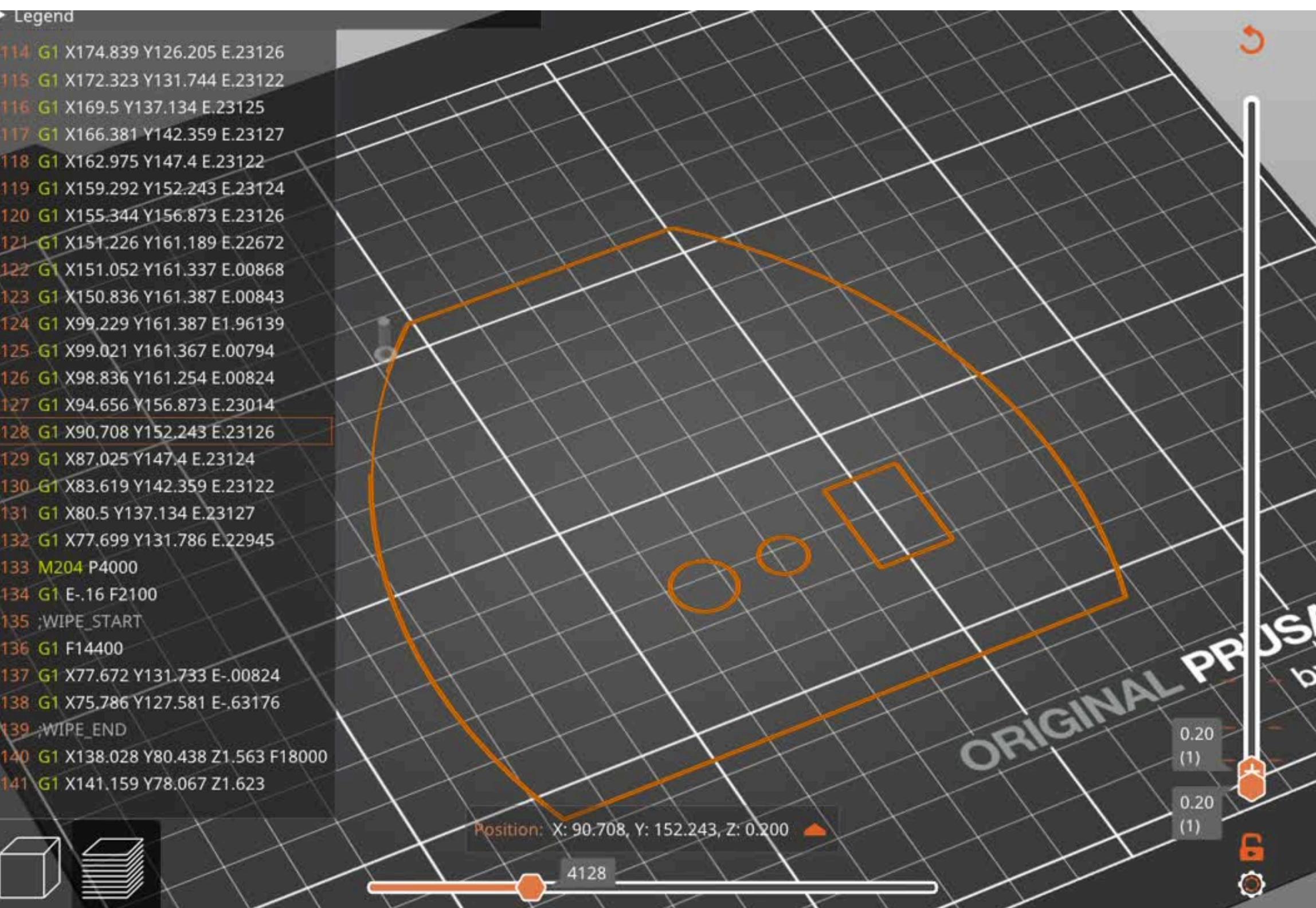
FDM Important parts



How to print



Design - Slice - Print



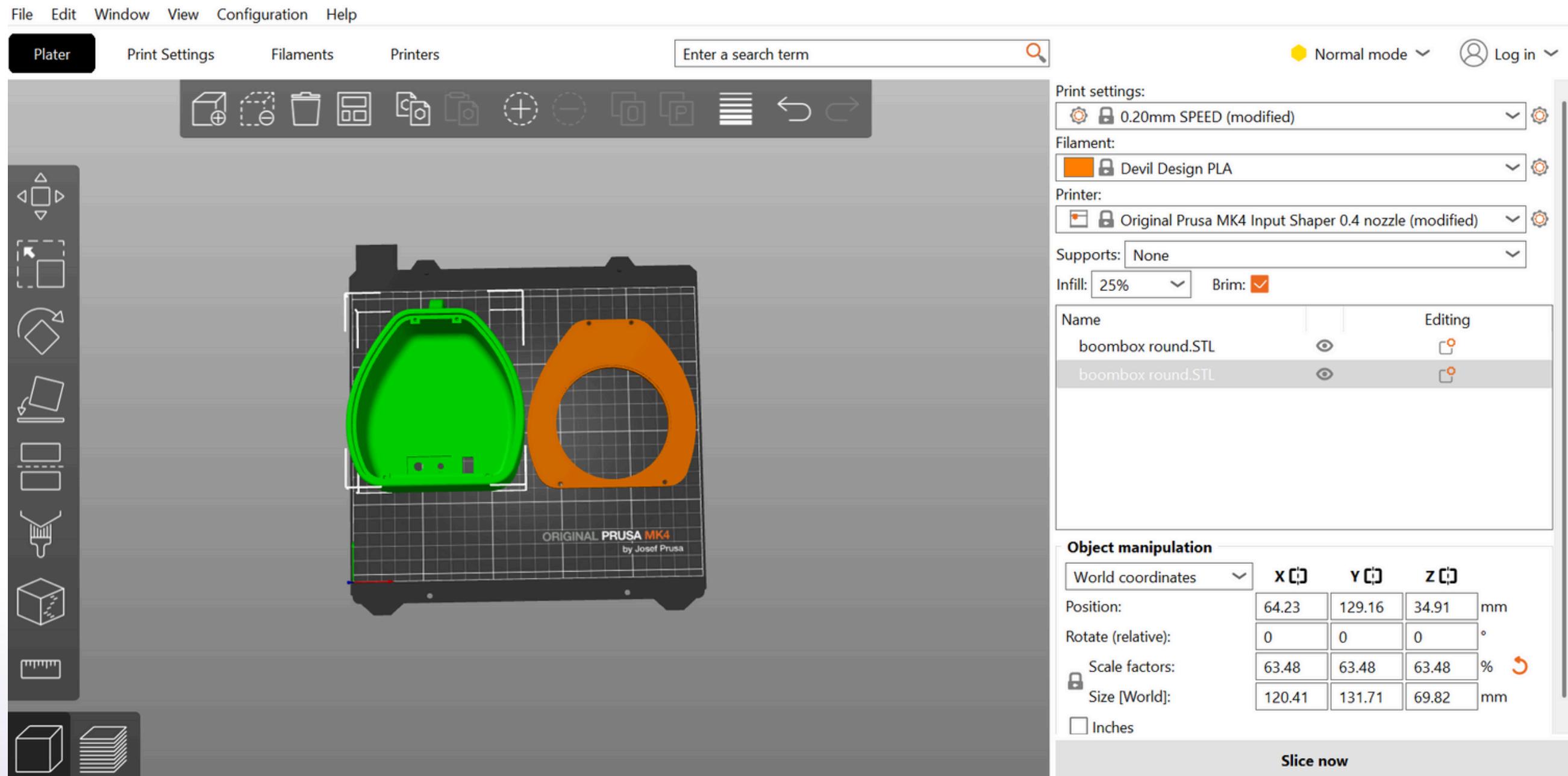
PrusaSlicer interface

Lets download PursaSlicer!

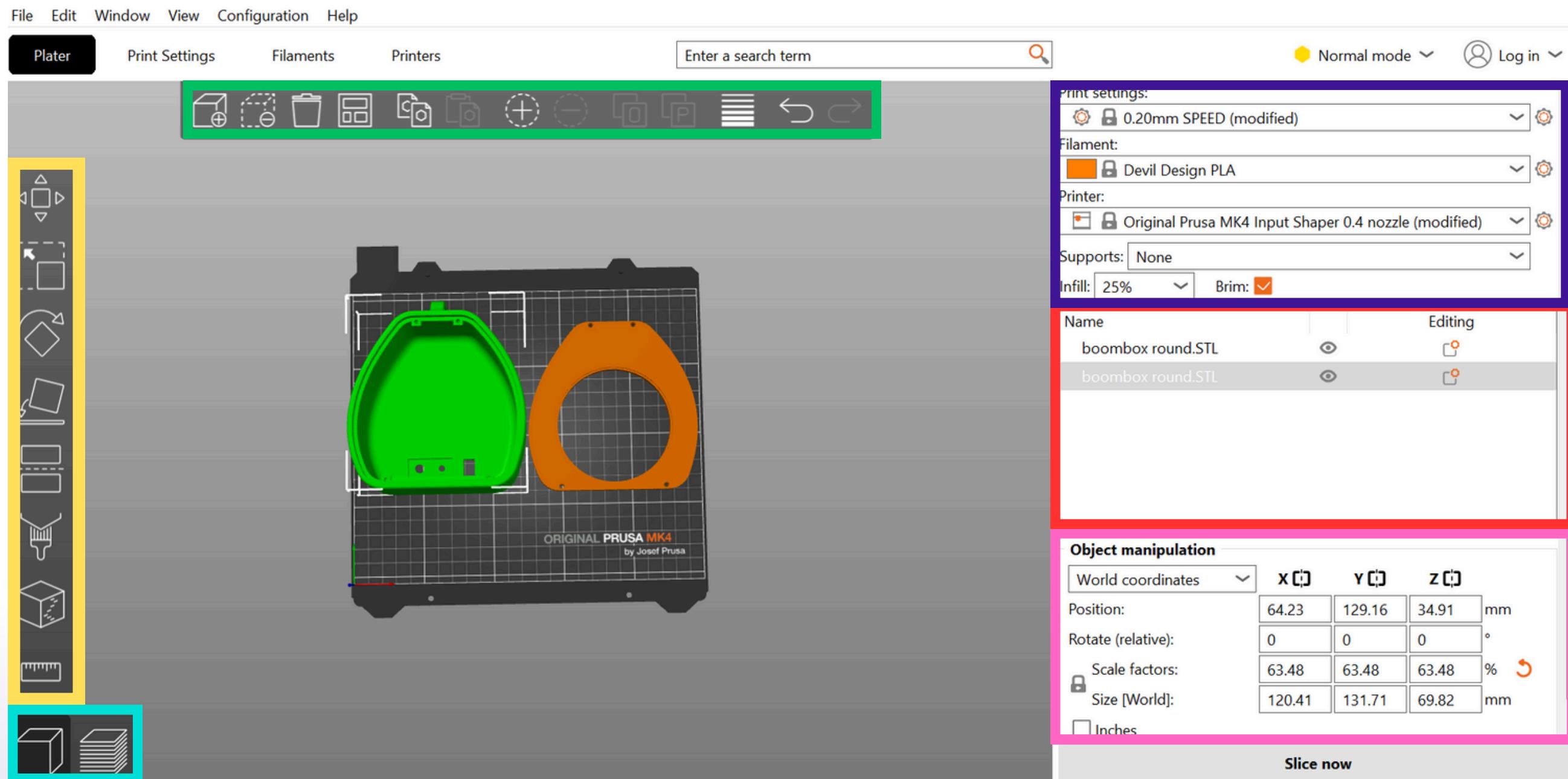


Prusa Slicer

PrusaSlicer interface



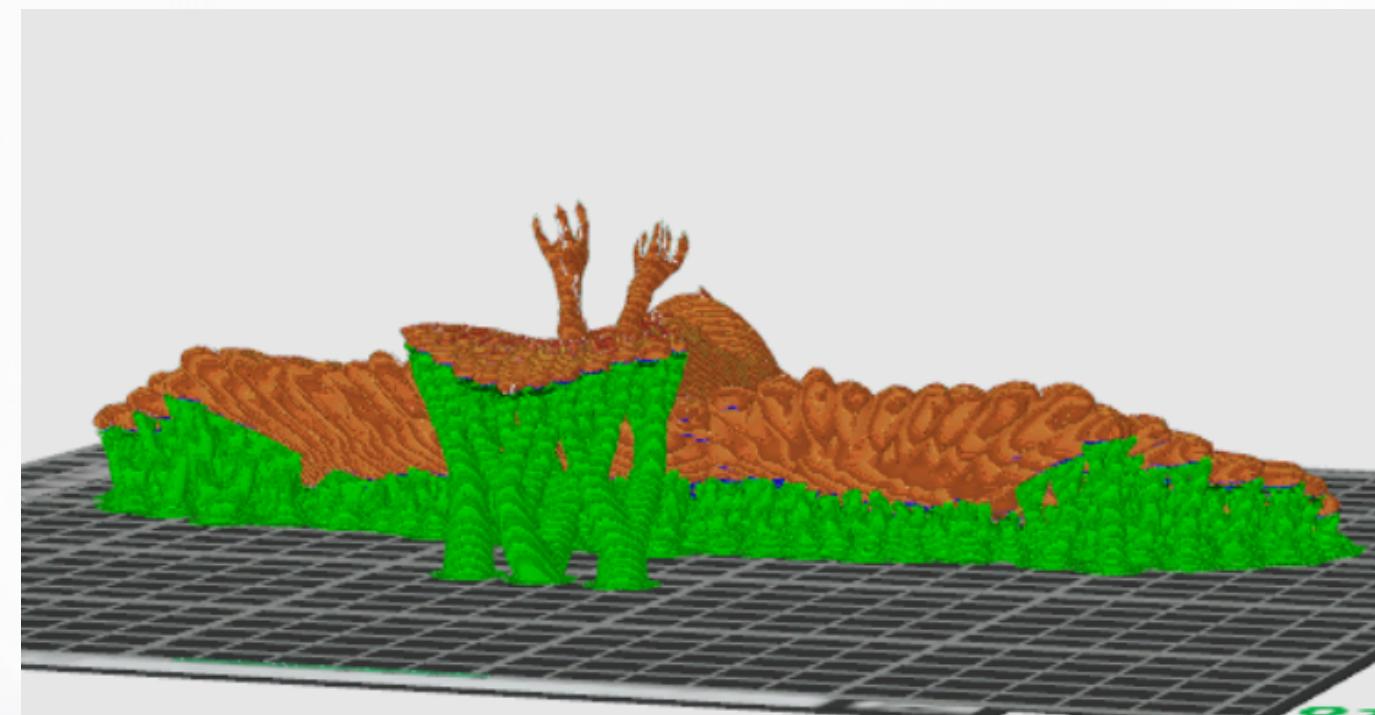
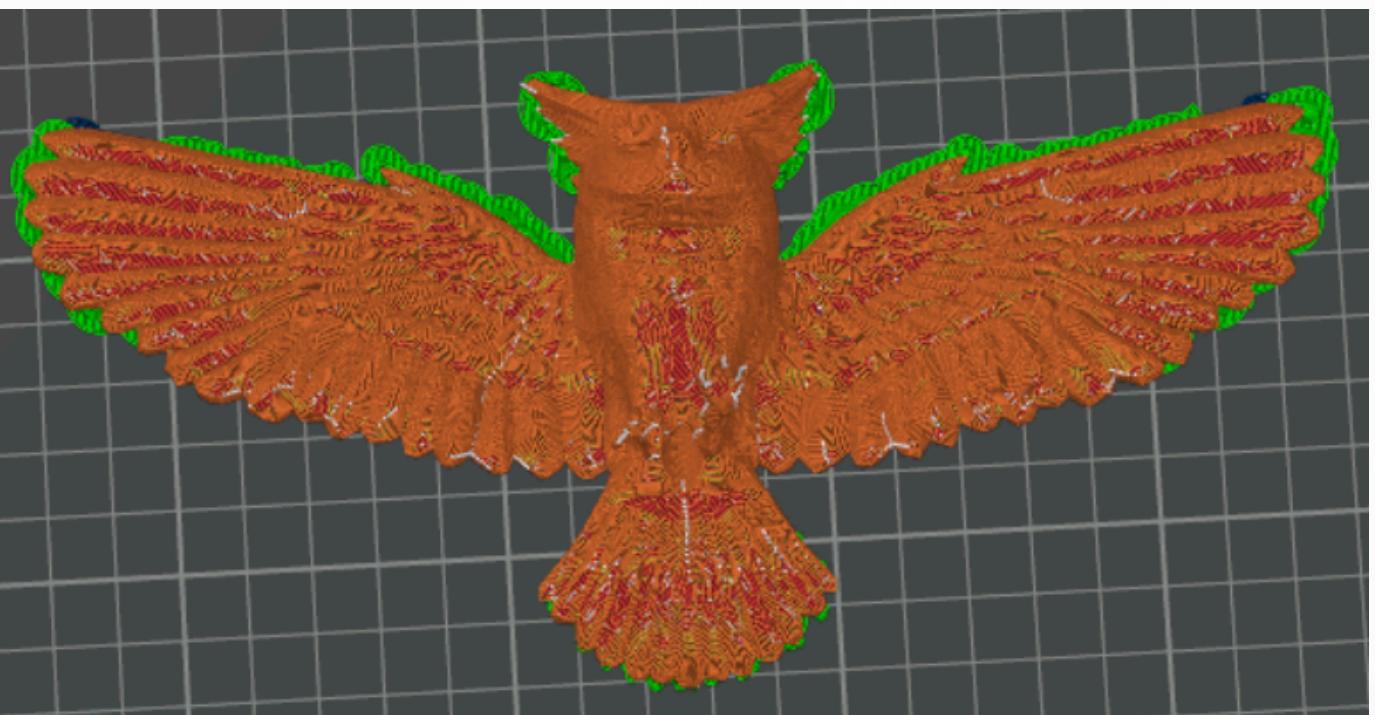
PrusaSlicer interface



Need Support?



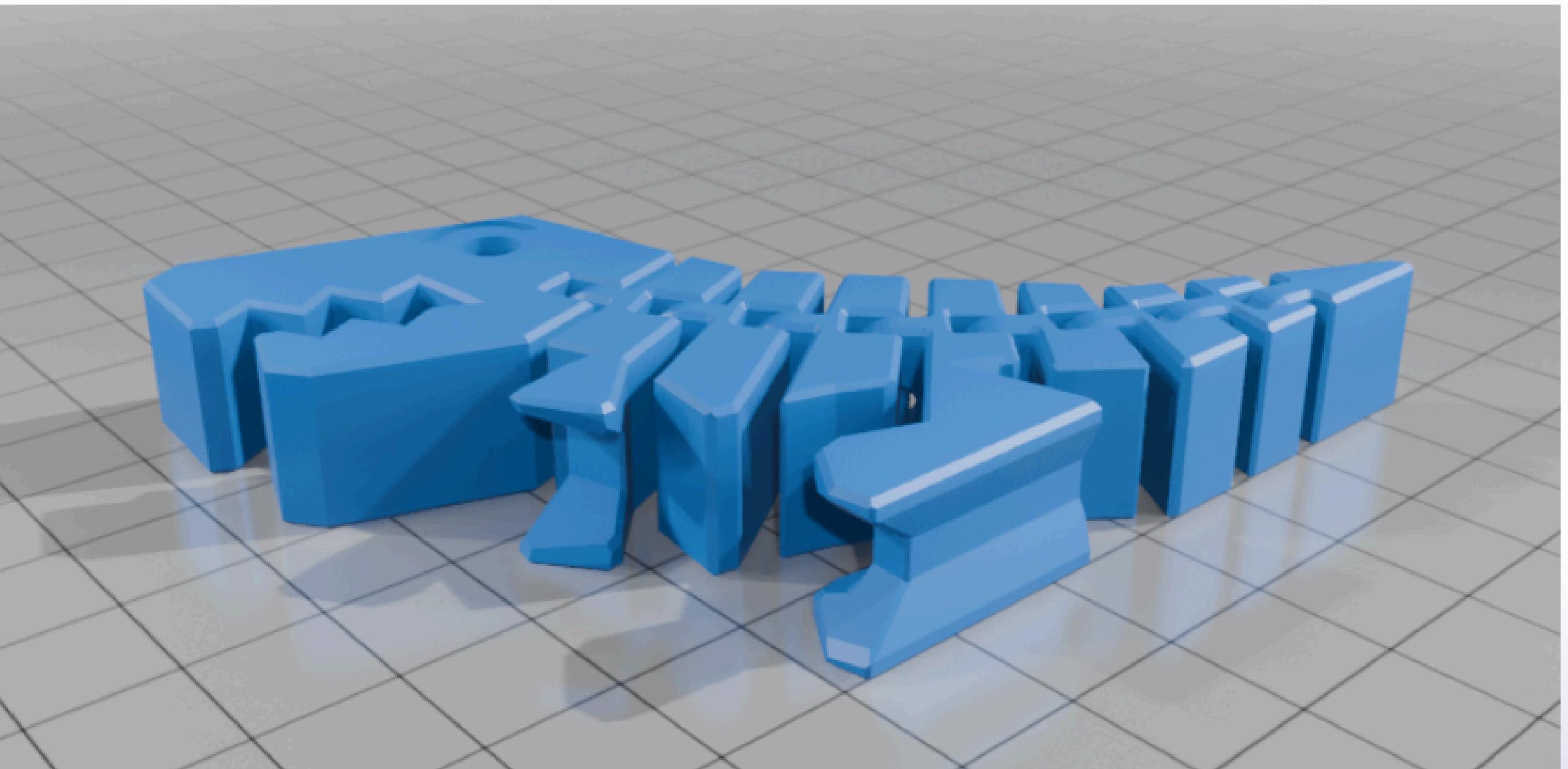
Need Support?



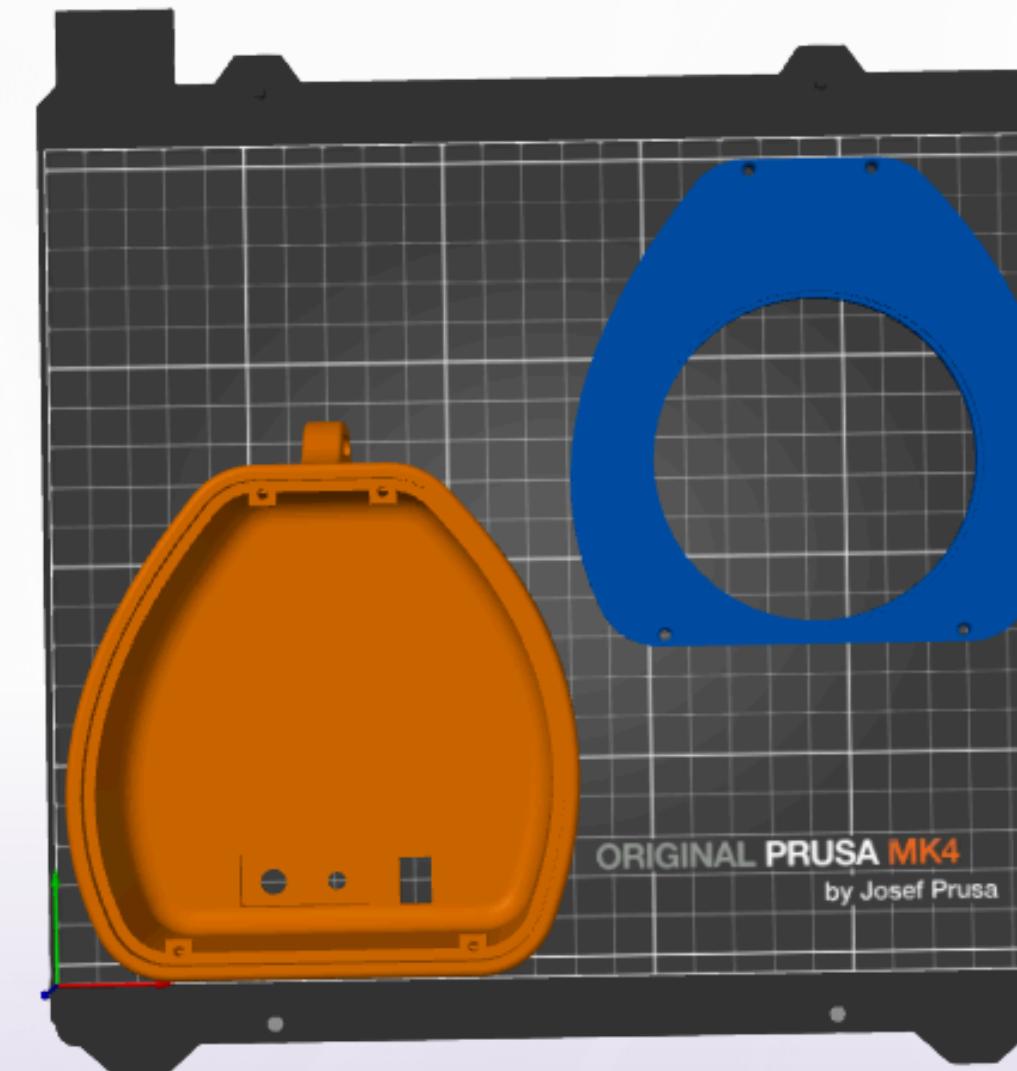
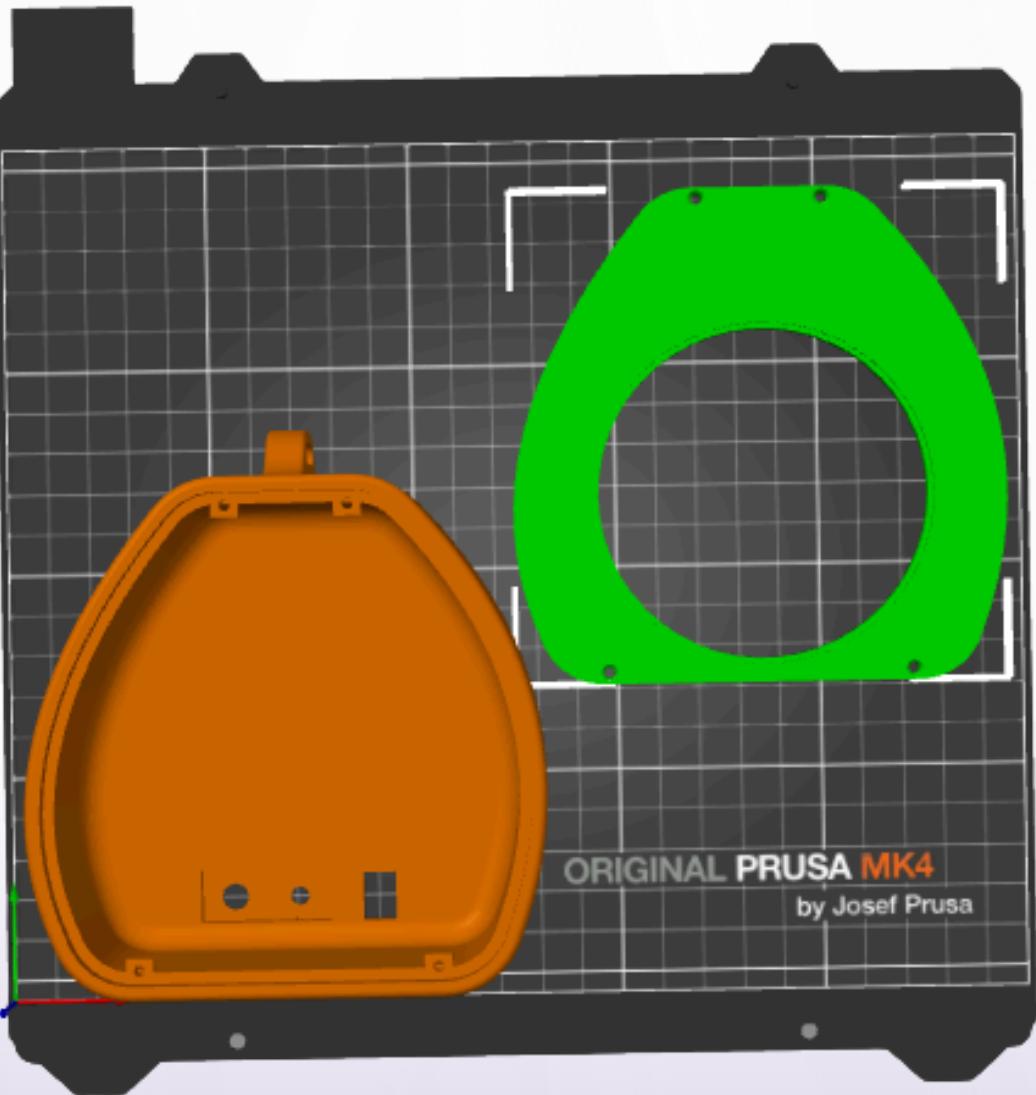
Need Support?



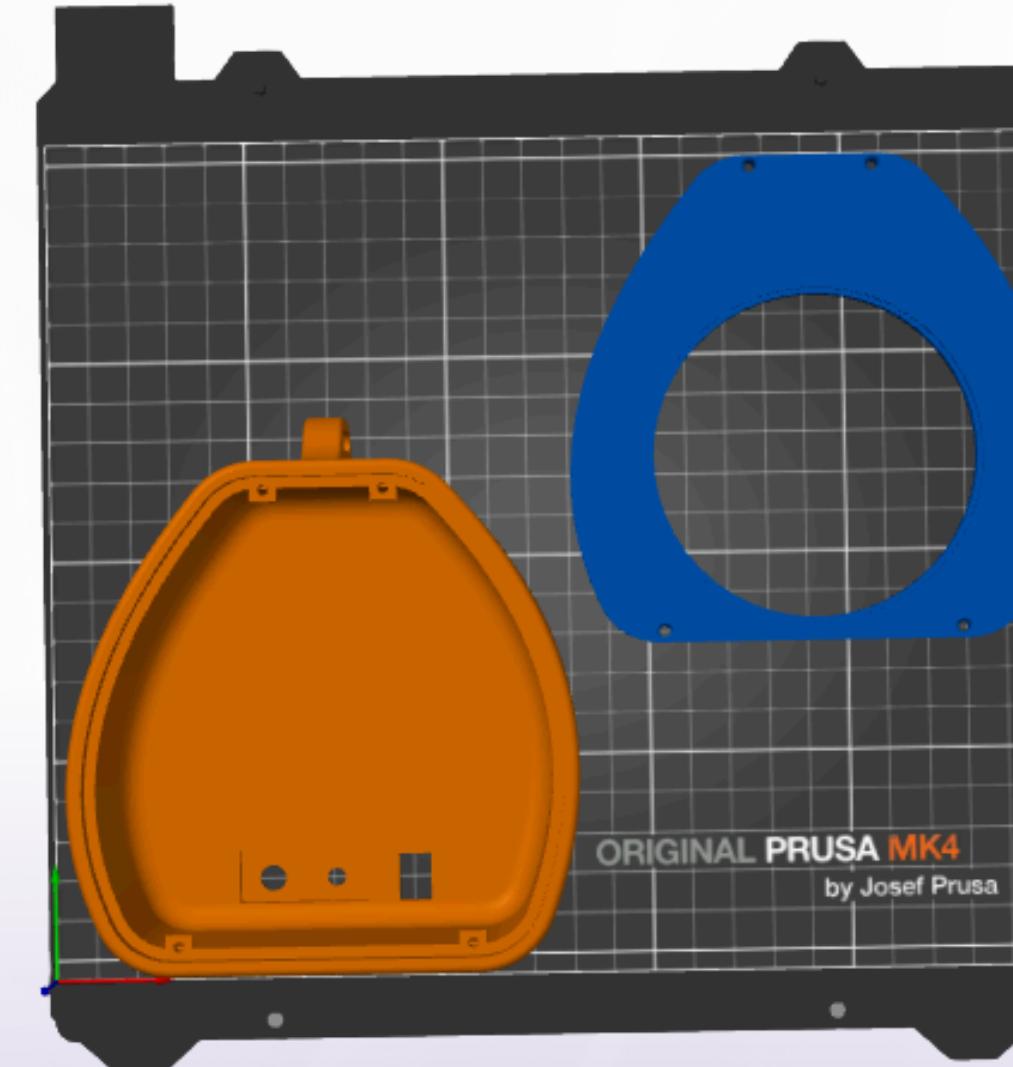
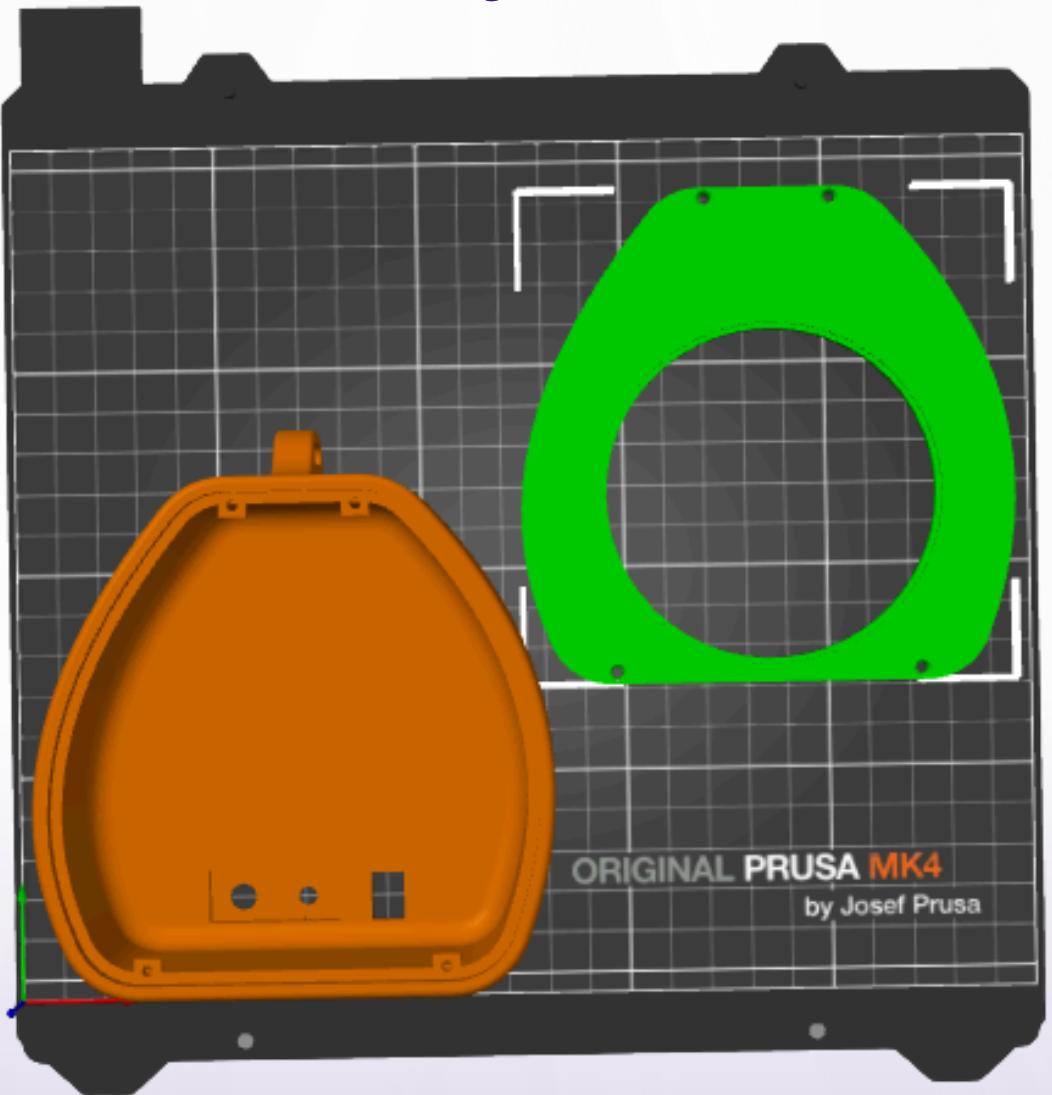
Need Support?



Choose the Correct



Choose the Correct



Break

Part 2: Electrical Basics



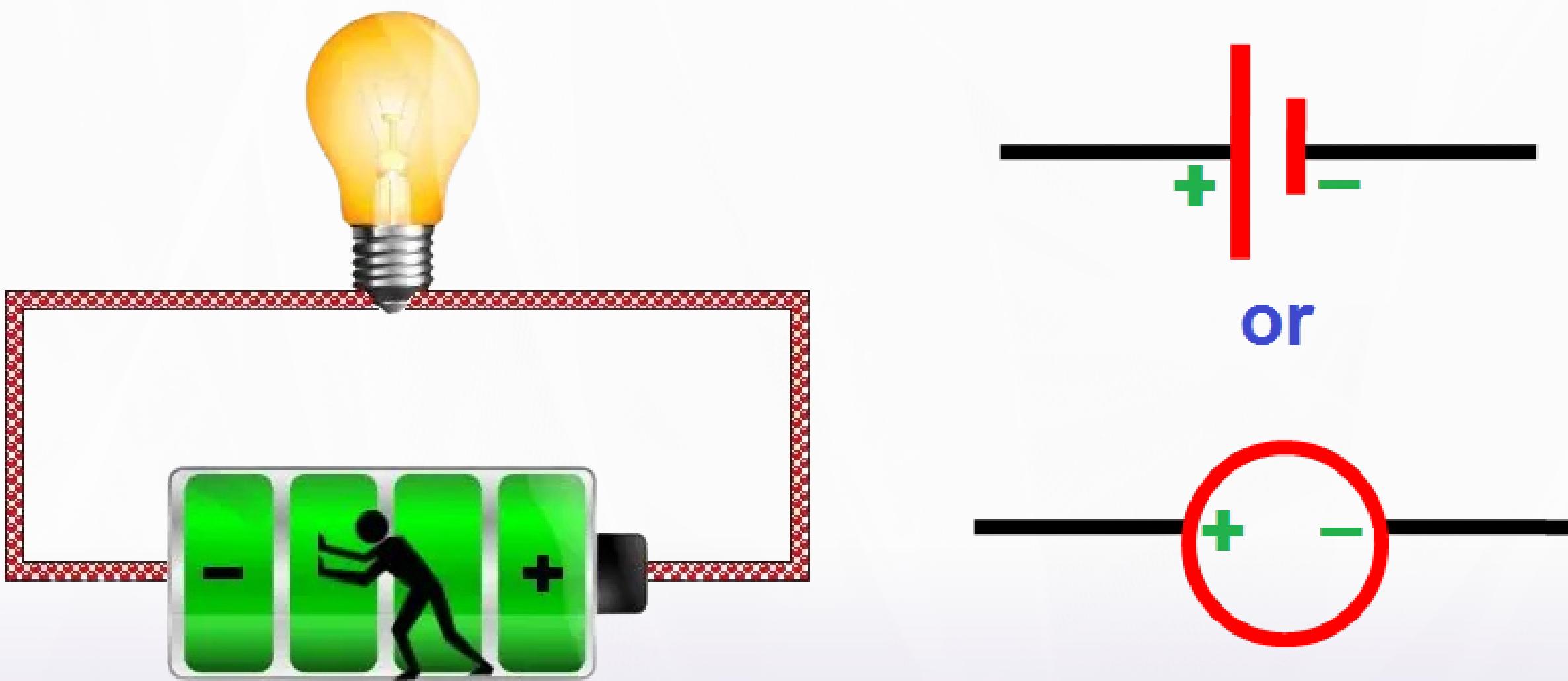
Electrical Fundamentals

Voltage?

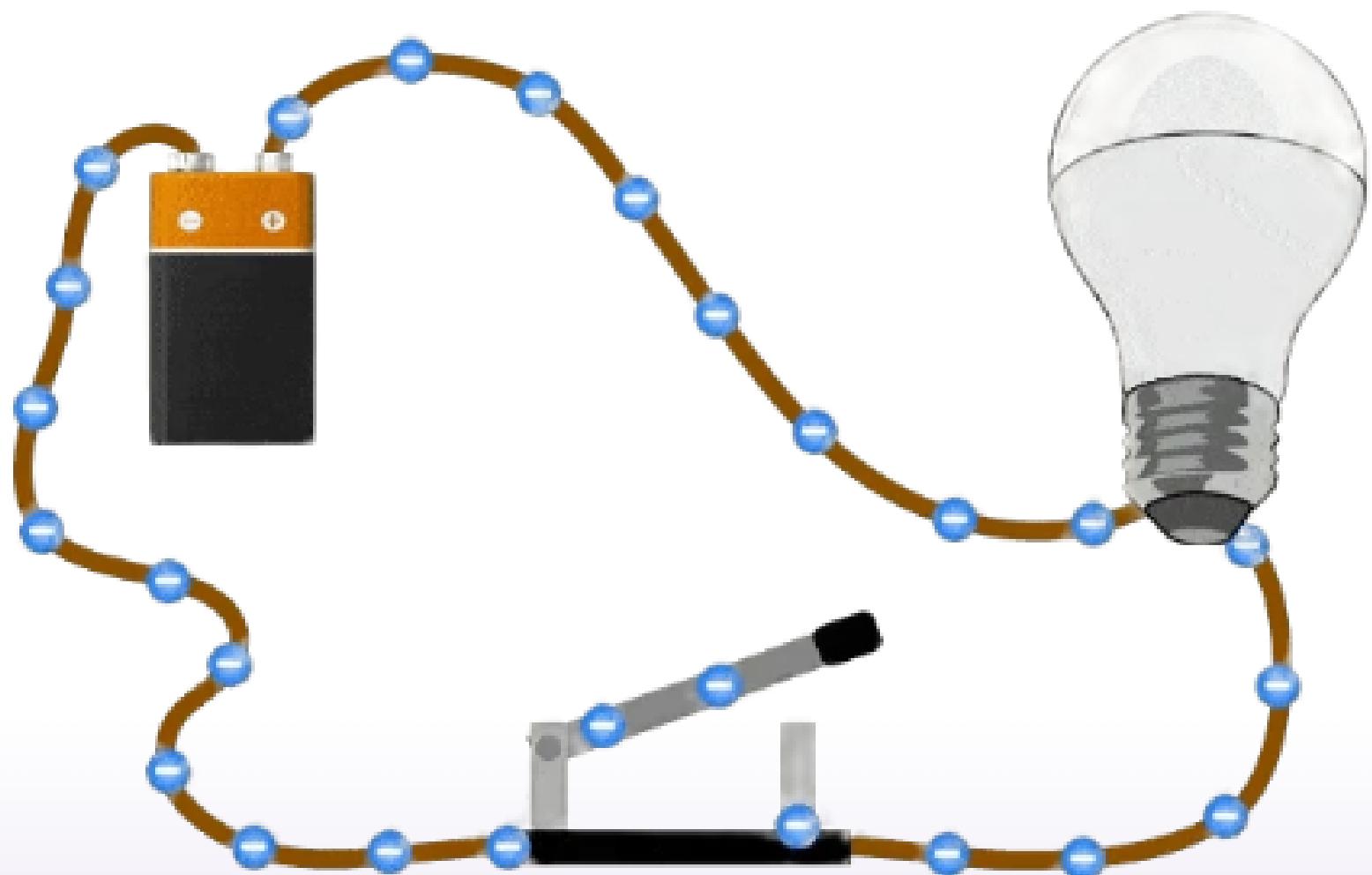
Current?

Resistance?

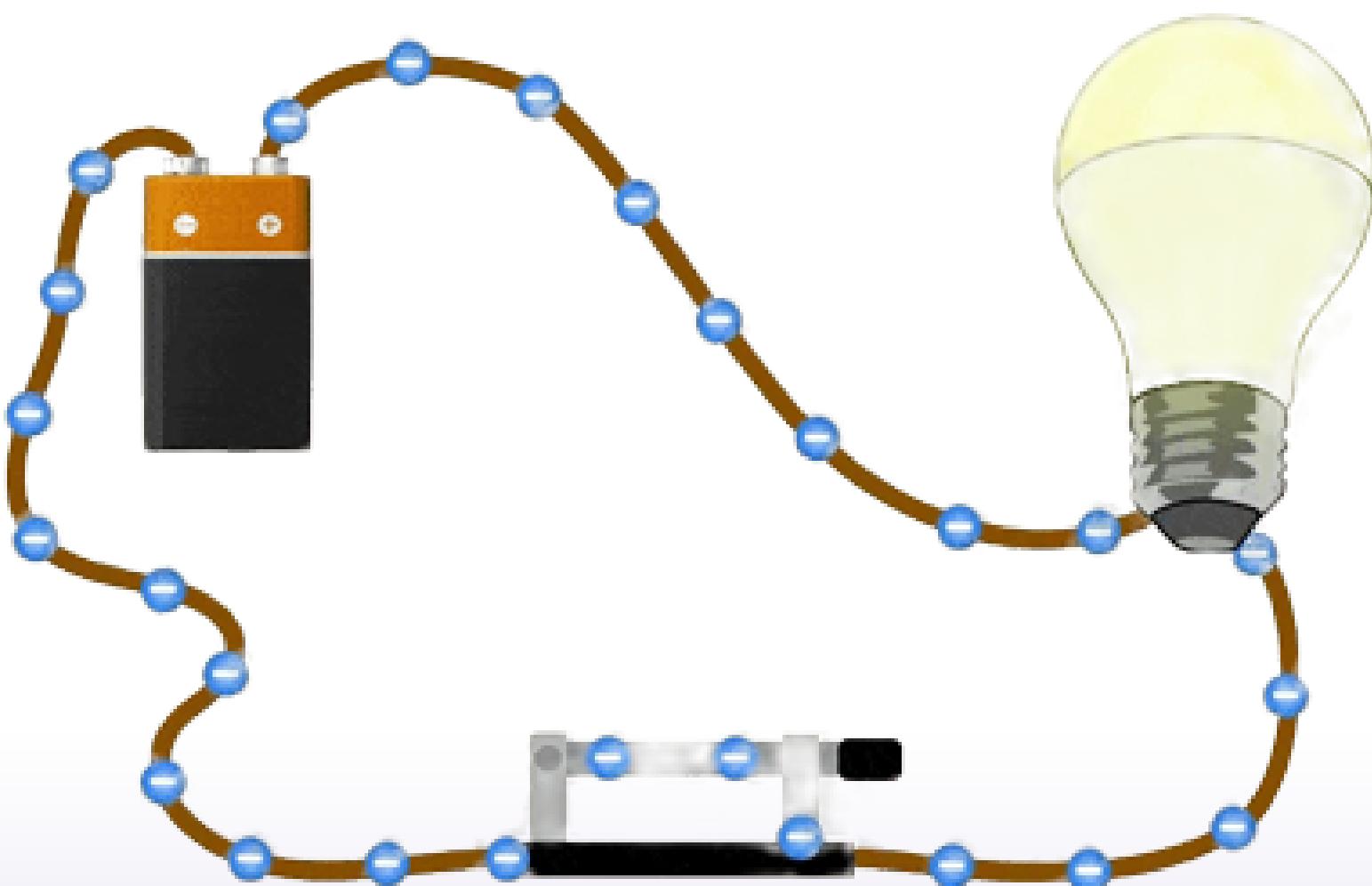
Voltage (V)



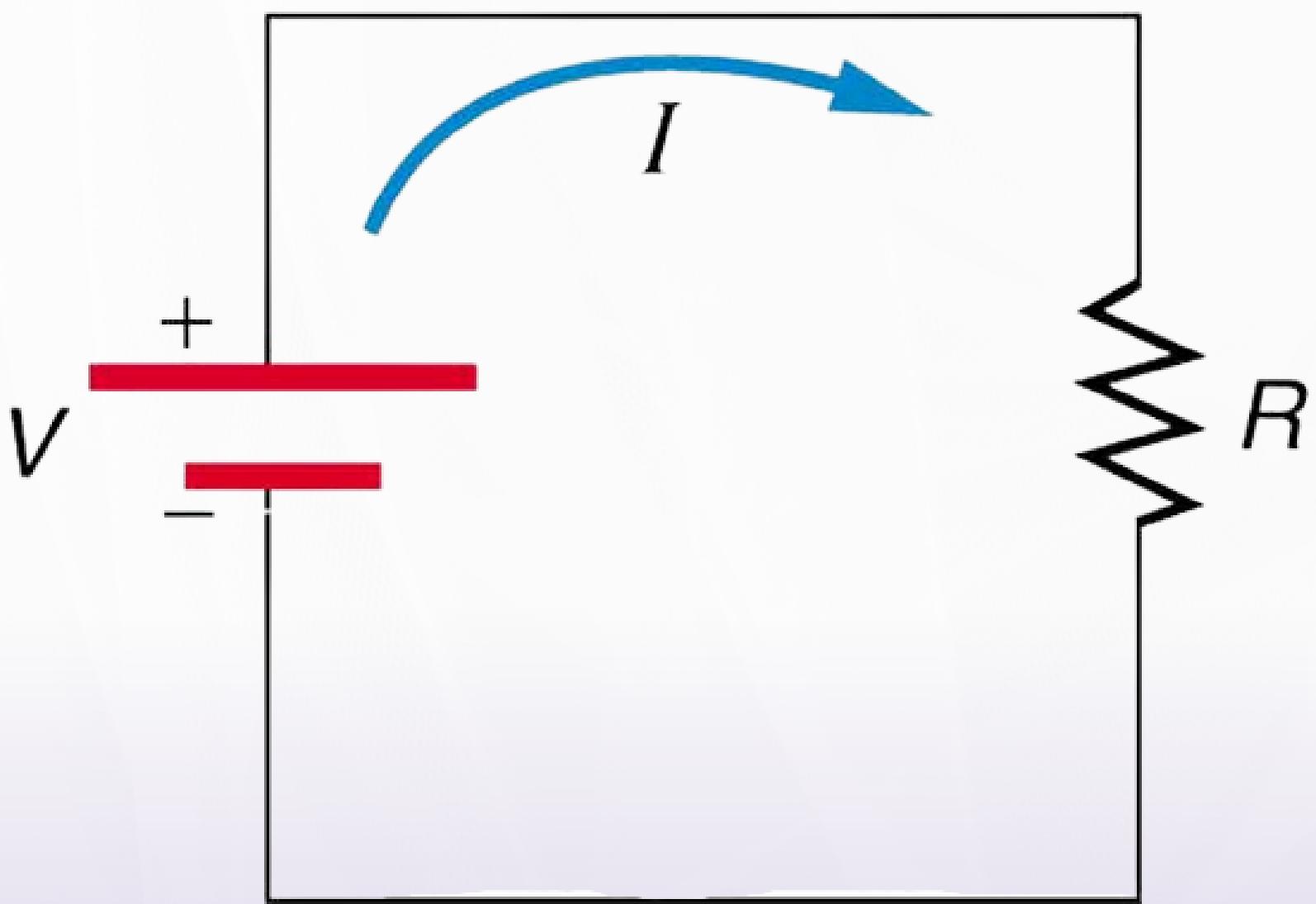
Current (I)



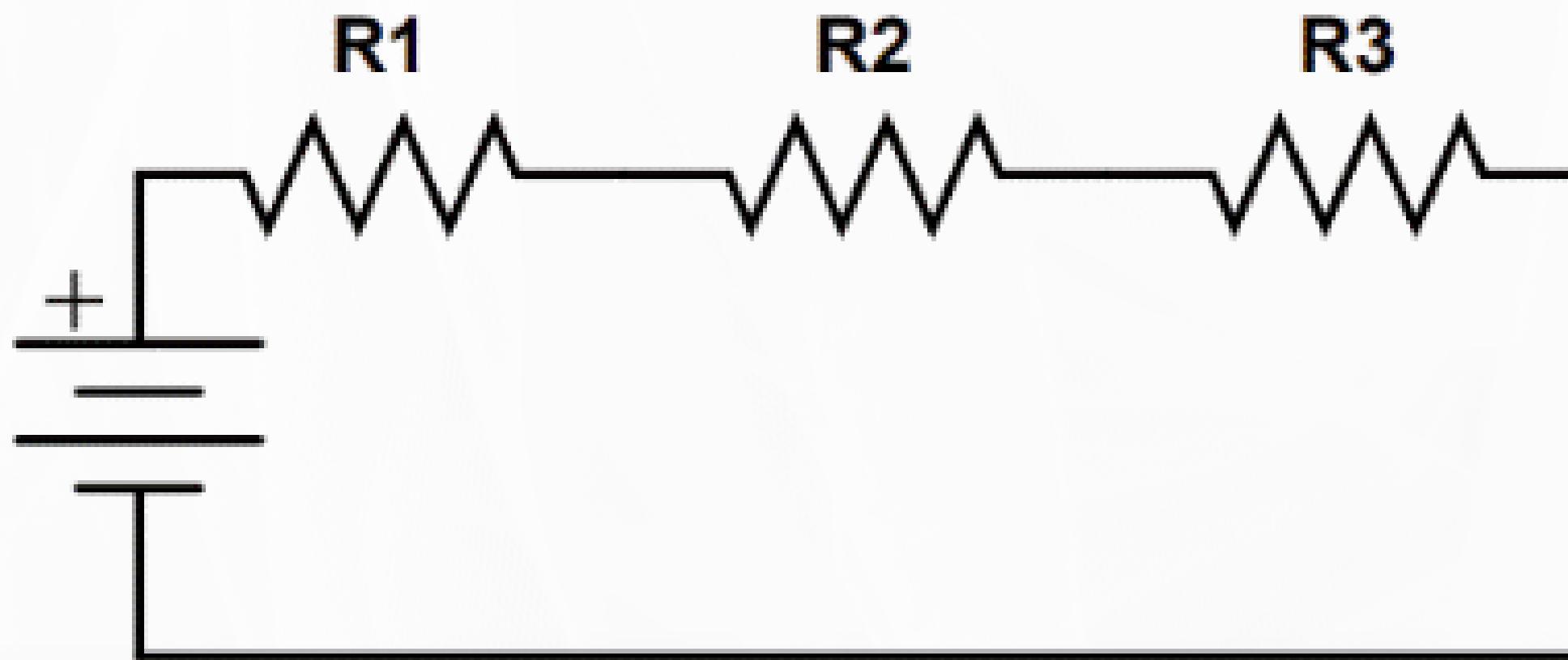
Current (I)



Resistance (R)

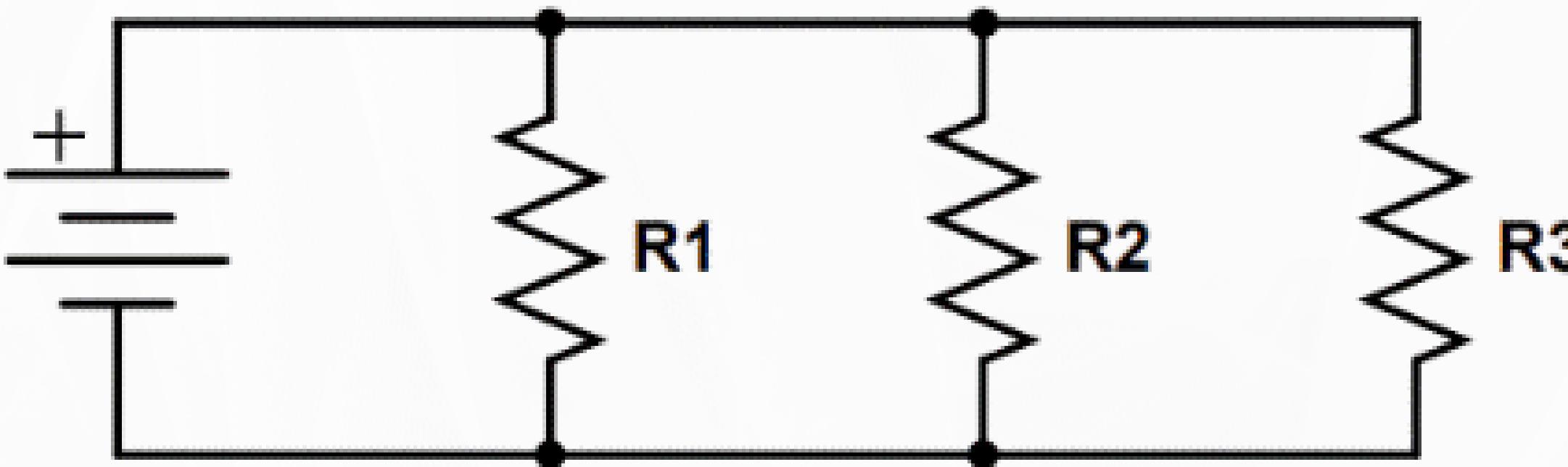


Resistance in Series



$$R_{Equivalent} = R_1 + R_2 + \dots + R_{N-1} + R_N$$

Resistance in Parallel



$$R_{Equivalent} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_{N-1}} + \frac{1}{R_N}}$$

Activity - Draw



Level 1 +1

Connect 3 resistors to get an equivalent resistance of 5Ω

- $R1 = 6\Omega$
- $R2 = 3\Omega$
- $R3 = 2\Omega$

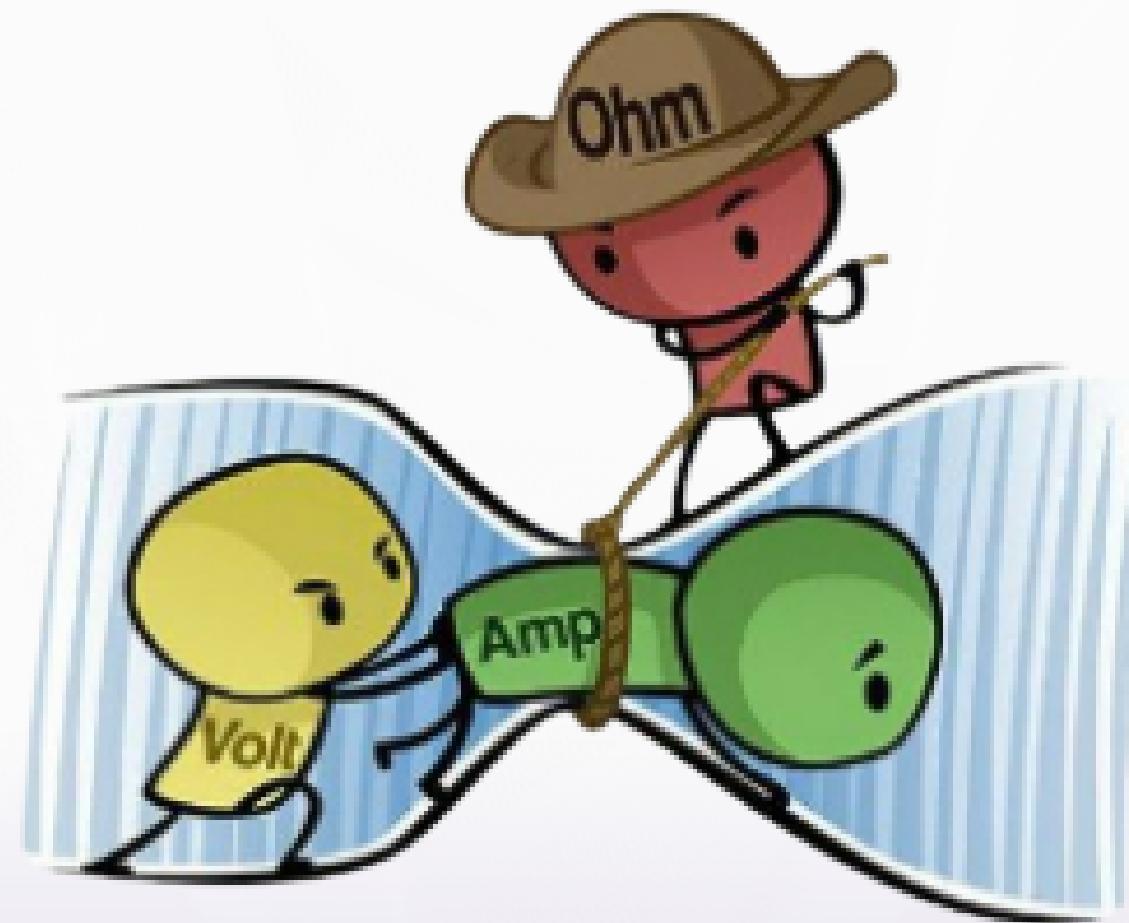
Level 2 +2

Connect 5 resistors to get an equivalent resistance of 10Ω

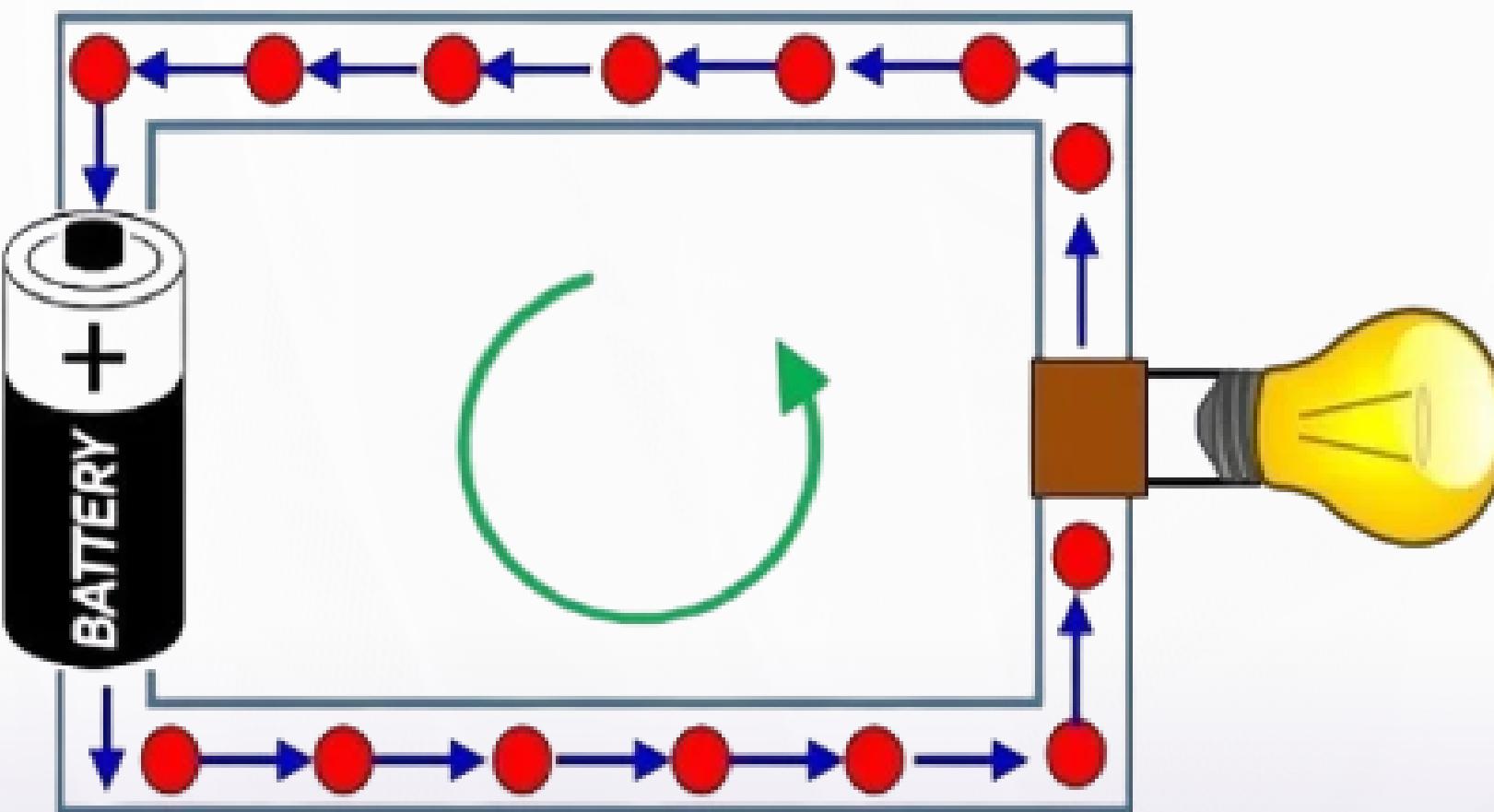
- $R1 = 15\Omega$
- $R2 = 30\Omega$
- $R3 = 20\Omega$
- $R4 = 10\Omega$
- $R5 = 5\Omega$

Ohm's Law

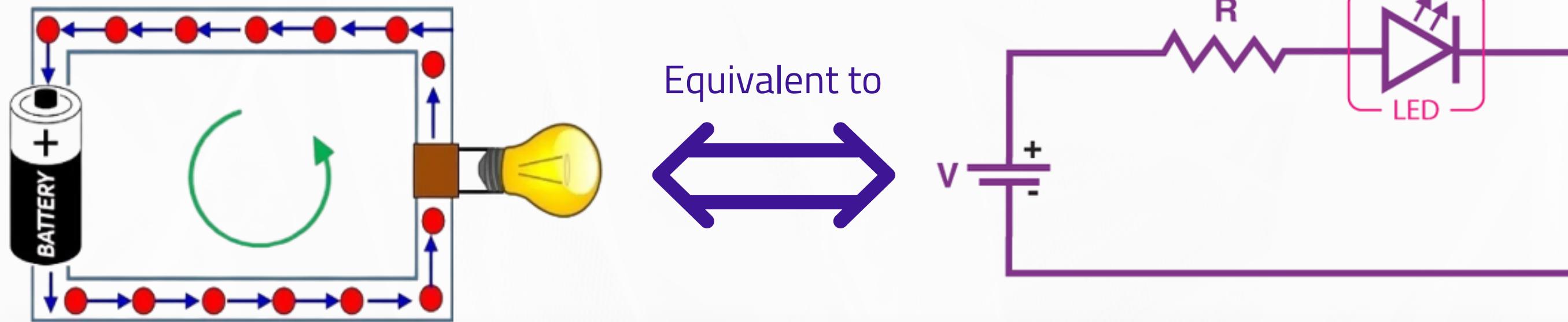
$$V = IR$$



Simple Circuit



Circuit Schematic



Activity



★ +1

Build a circuit with 2 LEDs in parallel and 1 LED in series