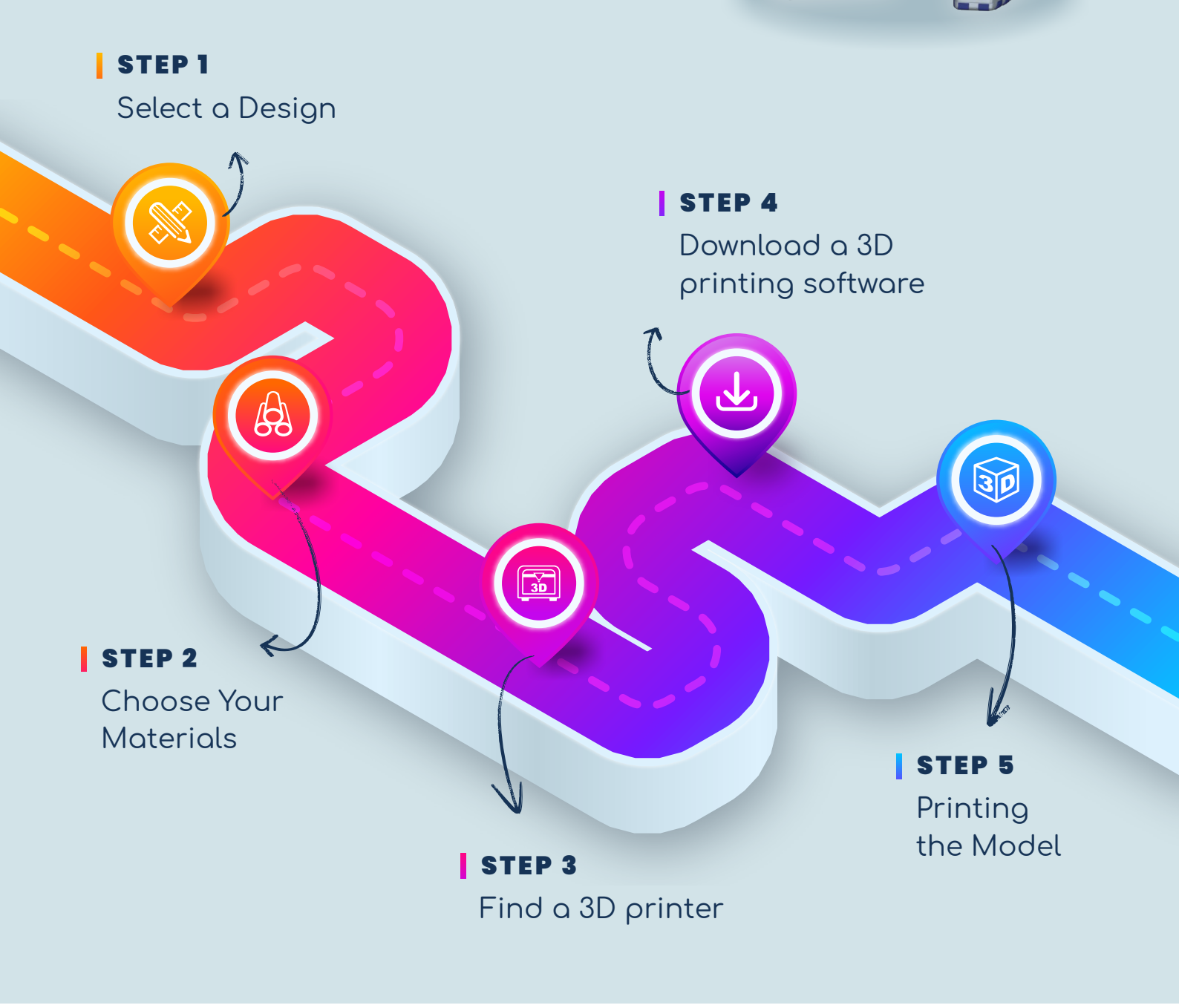
BOTPEGS

To print a 3D model of the main BotPeg character

What is 3D printing?

The term "3D printing" can refer to a variety of processes in which material is deposited, joined or solidified under computer control to create a three-dimensional object, with material being added together, typically layer by layer.



STEP 1
Select a Design

For the 3D model, you can use the existing 3D models available on **PegHeads.org** or you can design your own 3D object or use the models available online.

You can look for free 3D models in the following sites:

- **TurboSquid**
- **Free 3D**
- **3DExport**
- **Thingiverse**
- **Hum3D**
- **Sketchfab**

STEP 2
Choose Your Materials

With new 3D printing materials on the market every day, it can be tricky to know which is the right one for you.

The most common filaments on the market are ABS and PLA.

ABS (acrylonitrile butadiene styrene) is one of the most widely used plastics in the world. It is the plastic used for construction of toys, and is also prevalent in the automotive industry, domestic appliances, and even the medical sector. ABS is printed at a temperature of approximately 230°C, but it requires a 3D printer with a heated platform because it tends to retract. ABS is a hard-wearing and slightly flexible plastic, which is why it is preferred to PLA for making mechanical parts.

PLA (polylactic acid plastic), it is a biopolymer, an organic plastic composed primarily of corn starch. Printing with PLA requires a lower temperature than ABS, between 180 and 220°C. PLA does not require a heated platform and is one of the easiest materials for printing. Objects printed with PLA tend to have a glossier and smoother finish than ABS printed-objects, but they are less resistant to shocks and temperature.

STEP 3
Find a 3D printer

So you've got a model, and you just want to print it. How do you go about finding a printer?

You will probably want to buy a 3D printer of your own. You will need to choose between buying a pre-assembled machine or getting one that you have to build yourself. Both routes come with their own set of advantages and disadvantages.

Before you start shopping, first think about the features that you want for your 3D printer. There are a ton of options out there to set your 3D printer up just right, A few often considered features include: bed leveling, connectivity, user interface, motion systems ... pick a few features that are important to you and prioritize.

STEP 4
Download a 3D printing software

The first step to get your hands on a 3D printer, is to master 3D printing software. Find the software that suits you best as there are endless applications for you to choose from. For this example we are using Cura Software, this is free. You will use this software to set your printing parameters and slice your model.

To setup & install Ultimaker Cura, please visit **Getting started with Ultimaker Cura.** Cura is now ready to be used. Please remember that you might need to tweak the setting if your printer is not in the list. You can also use another program like TinkerCAD, MeshLab, FreeCAD or Creality to get the job done.

STEP 5
Printing the Model

Save your file, Click on toolpath to SD to save the file to your USB. The process will convert the file into .gcode.

G-code is the most widely used computer numerical control programming language. It is used mainly in computer-aided manufacturing to control automated machine tools, and has many variants. G-code instructions are provided to a machine controller that tells the motors where to move, how fast to move, and what path to follow.

Insert the SD card to your printer. Turn on the printer and adjust the setting of your machine. Once the setup is done, the 3D printer will start printing your 3D model.