

# NWWA 3D Printing Software

## [3D Software \(freeware or Open Source\)](#)

<https://all3dp.com/1/best-free-3d-printing-software-3d-printer-program/#appendix-the-3d-printing-workflow>

## Design

I have selected more technical design programs, if your requirements are different there are many others such as **Blender** etc

### 1 FreeCad

<https://www.freecadweb.org>

Excellent design program supported by worldwide developers. Since 'Fusion360' changed the subscription costs - this looks like a freeware successor. There are frequent updates and a large online user community. Even with its small niggles, it is a very powerful program.

FreeCAD is made primarily to design objects for the real world. Everything you do in FreeCAD uses real-world units, be it microns, kilometres, inches or feet, or even any combination of units. FreeCAD offers tools to produce, export and edit solid, full-precision models - export them for 3D printing or CNC machining, create 2D drawings and views of your models, perform analyses such as Finite Element Analyses, or export model data such as quantities or bills of materials.

All FreeCAD objects are natively parametric, meaning their shape can be based on properties such as numeric values, texts, on/ off buttons, or even other objects. All shape changes are recalculated on demand, recorded by an undo/ redo stack, and allow to maintain a precise modelling history. Properties of one object can drive the value of properties of other objects, allowing complex, custom parametric chains that could only exist in your wildest dreams. New parametric objects are easy to code. This means that once a design is completed, variations of sizes etc. are easily made without having to redesign the part.

FreeCAD supports dozens of different file formats such as STEP, IGES, OBJ, STL, DWG, DXF, SVG, SHP, STL, DAE, IFC or OFF, NASTRAN, VRML, OpenSCAD CSG and many more - in addition to FreeCAD's native FCStd file format. Add-on workbenches can also add more file formats.

## 2 OpenSCAD

<https://openscad.org>

OpenSCAD is software for creating solid 3D CAD models. It is free software and available for Linux/ UNIX, Windows and Mac OS X. Unlike most other free software for creating 3D models (such as Blender) it does not focus on the artistic aspects of 3D modelling, but instead on the CAD aspects. Thus, it might be the application you are looking for when you are planning to create 3D models of machine parts but are pretty sure is not what you are looking for when you are more interested in creating computer-animated movies.

OpenSCAD is not an interactive modeller. Instead, it is something like a 3D-compiler that reads in a script file that describes the object and renders the 3D model from this script file. This gives you (the designer) full control over the modelling process and enables you to easily change any step in the modelling process or make designs that are defined by configurable parameters.

OpenSCAD provides two main modelling techniques: First there is constructive solid geometry (aka CSG) and second there is extrusion of 2D outlines. Autocad DXF files can be used as the data exchange format for such 2D outlines. In addition to 2D paths for extrusion, it is also possible to read design parameters from DXF files. Besides DXF files, OpenSCAD can read and create 3D models in the STL and OFF file formats.

## 3 TinkerCAD

<https://www.tinkercad.com>

Web based 3D design software, useful for beginners.

## Slicers

3D design files (usually .stp) have to be converted to 'gcode' format to drive the 3D printer. Programs that perform this are called **slicers** as they change the design to layers that make up the final object.

## 1 Cura

<https://ultimaker.com/software/ultimaker-cura>

Arguably the most widely used slicer. It is freeware developed by Ultimaker. Many of the other slicers available for specific machines are derived from Cura.

## 2 Slic3r

<https://slic3r.org>

Slic3r is a 3D slicer, first started back in 2011 by Alessandro Ranellucci and champions the open-source philosophy alongside RepRap 3D printers. It's a completely non-profit project, which is very commendable considering it is definitely one of the best 3D printer slicer options out there.

With a wide variety of features that advanced users will enjoy, including effective, strong infills and many different preview views for ensuring you're happy with your model before you press print, Slic3r is versatile enough to handle almost anything you throw at it.

## 3 Prusa Slicer

<https://www.prusa3d.com/prusaslicer>

Based on Slic3r this is primarily aimed at the Prusa range of printers, but with so many Prusa clones it is widely used.

## 4 Repetier Host

<https://www.repetier.com/download-software>

Powerful all-in-one package allowing many modes of printer control.

## 5 Octoprint

<https://octoprint.org/download>

Octoprint is a Raspberry Pi based package. Although not a specialized 3D slicer, OctoPrint does feature a slicing tool for slicing STL files in addition to its incredible main features. OctoPrint acts as more of a slicing software platform and host, allowing for simple and effective remote monitoring of in-progress printing, so you could be in a different city and seamlessly check on how your 3D print is going. You can monitor your print's progress, temperature, estimated remaining time, and install a webcam to get video footage of the print to check if any errors have occurred. And if they have, you can remotely pause or stop the print to save on wasted filament!