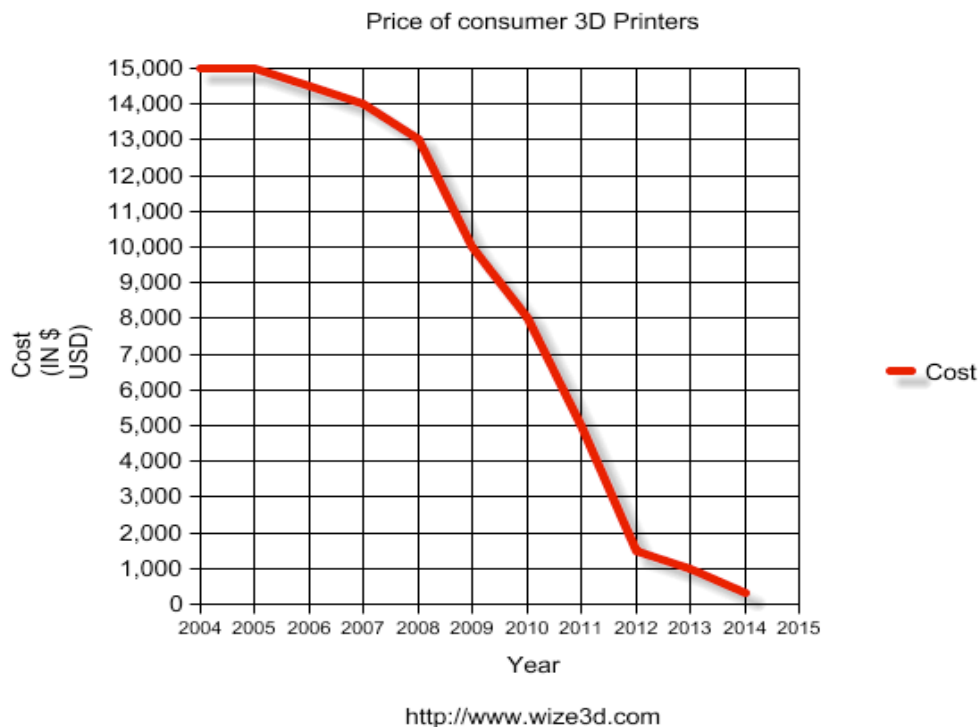R. Johnson
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Cost

The cheapest 3D printer can be purchased for 299 dollars while at the high end you would be looking at over 2000 dollars, while most entry-level 3D printers are under 800 dollars (2). Like most new technology, the cost of these devices has been decreasing significantly.

Price of consumer 3D Printers

http://www.wize3d.com

Types of Printers

The three most common types are :

FDM 3D printers: stands for fused deposition modeling which uses a few drops of certain melted thermoplastic materials which are then joined together to form a shape and thus as the material hardens a 3D object is produced.

SLA (Stereolithography) 3D printers:known as stereolithography which concentrates beams of UV rays on the surface of the object to be printed. The object is filled with resin (photopolymer) and when light hits this resin you will get a high resolution 3D model.

SLS 3D printers: known as selective laser sintering and is very similar to stereolithography but instead of using liquid resin, you can use powdered material.

Other types are:

SLM 3D printers:known as selective laser melting which is similar to SLS but instead of simply combining the powder granules together, the powder is melted.

EBM 3D printers: known as Electronic Beam Melting where electronic beams are used instead of UV rays to make the 3D object.

LOM 3D printers: known as Laminated Object Manufacturing where to create an object materials are glued together and then they are cut with a knife or a laser to give them a shape.

Types of Software

There is a multitude of 3D softwares out there that can be used to create the 3D models that will then be sent to the 3D printer to be printed off. This report only lists free software, because, naturally, we will try these out first.

Free 3D softwares:

1. Google SketchUp-known for being easy to use sd to build models you draw edges and faces using a few simple tools which can be learned in a short period of time.With the Push/Pull tool you can extrude any flat surface into a 3D form. This program can work with Google Earth, such that you can actually import a scaled aerial photograph directly from Google Earth, or you can use SketchUp to build models which can be seen in Google Earth.

2. 3DCrafter-is a real-time 3D modeling and animation tool that uses a drag-and-drop approach to 3D modeling.The standard version of 3DCrafter is freeware however there are paid versions known as 3DCrafter Plus and 3Dcrafter Pro.

3. 3Dtin-The simplest 3D software. You can draw the model to use for printing directly from your browser.

4. Anim8or- is a 3D modeling and character animation program.

5. Blender-is the free open source 3D content creation suite which is available for all major operating systems under the GNU General Public License. Blender was created as an in-house application by the Dutch animation studio NeoGeo and Not a Number Technologies (NaN) and is a powerful program that contains features characteristic of high-end 3D software.

6. BRL-CAD is a cross-platform open source solid modeling system that includes interactive geometry editing, high-performance ray-tracing for rendering and geometric analysis, image and signal-processing tools, a system performance analysis benchmark suite and libraries for robust geometric representation.

7. Creo Elements/Direct-which used to be known as CoCreate is a complete design environment that offers a direct 3D CAD modeler, it also has 2D CAD, CAE and integrated product data management (PDM).

8. DrawPlus Starter Edition-simple, with an accurate vector drawing program, realistic brush, pen, and pencil tools, text on a path, and blend modes for advance artistic effects.

9. FreeCAD-is a general purpose Open Source 3D CAD/MCAD/CAx/CAE/PLM modeler, aimed mainly for mechanical engineering and product design but also works for architecture or other engineering specialties.

10. GLC Player-is used to view 3d models in COLLADA, 3DXML, OBJ, 3DS, STL, OFF, COFF, Format) and to go through the models easily. With the album management, capture and multi-capture capabilities, html export and navigation possibilities GLC_Player is the accurate tool to review a lot of 3D models and to create illustrations. GLC_Player is a cross-platform application (Mac, Linux and Windows) and it is lighter than regular modelling software.

11. LeoCAD- is a CAD program that can be used to create virtual LEGO models. It has an easy

to use interface and currently features over 3000 different types of pieces created by the Ldaw community.

12. Netfabb Studio Basic- provides mesh edit, repair and analysis capabilities and due to its compact size of only a few megabytes it can be quickly downloaded. Installation is easy and the handling of STL and slice files can be done within seconds.

13. K-3D-allows for freedom when it come to 3D modeling and animation software. It features a plugin-oriented procedural engine for all content, which makes it a very versatile and powerful package. K-3D excels at polygonal modeling, and includes basic tools for NURBS, patches, curves and animation.

14. OpenSCAD-is a software for creating solid 3D CAD objects available for Linux/UNIX, MS Windows and Mac OS X however it does not focus on the artistic aspects of 3D modelling but instead on the CAD aspects.

15. Tinkercad-only has three basic tools but they allow you to create a wide range of things and once your project is ready just simply download the STL file and start your 3D print.

16. Wings 3D-is a subdivision modeler that offers a wide range of modeling tools, a customizable interface, support for lights and materials, and a built-in AutoUV mapping facility.

Types of Material
Currently there are printers which print the following materials:
resin (photopolymer)
melted thermoplastics
nylon
ceramics
glass
aluminum
steel
silver

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