

# Achieving Innovation through 3D Printing

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In fact, innovative activity has been the single most important component of long-term economic growth, not to mention job creation. It is through a series of innovative breakthroughs in different fields that the growth of new industries has been stimulated. In recent years, one of the most talked about and promising breakthroughs in innovation has been 3D printing. According to a report recently published by the World Intellectual Property Organization (WIPO), entitled Breakthrough Innovation and Economic Growth, 3D printing is one of the three frontier technologies that hold the potential to boost future economic growth. Although the concept of 3D printing dates back some 30 years, the technology and advancement in the field have gained tremendous momentum in the past decade or so.

The term '3D printing' is the industry term for a number of different techniques that use additive manufacturing technology to create a three-dimensional object by depositing successive layers of material on top of one another to form the object and by using a digital blueprint. 3D printing can be used in the production of various components and even finished products in different fields, including automotive, construction, medical, electronics, industrial design, fashion, footwear and even food.

Those who are spearheading 3D printing technology argue that the technology is not only important for rapid prototyping but it can also assist companies in overcoming traditional methods of manufacturing finished products, optimise product design and reduce manufacturing costs.

Through the technology and eventual wide scale availability of 3D printing, and from a personal use perspective, people will be free to make almost anything they want themselves, which opens the door to a new wave of innovations.

Both the number of patent applications of 3D printing and the value of the industry have been growing rapidly in recent years. According to a report published by the UK Patent Office, there have been approximately 30,000 published patent applications worldwide since 1980 relating to 3D printing. Most of the patented 3D printing inventions are from companies located in the US, Germany, Japan and China. Most of the patent applications for 3D printing are filed by companies, albeit universities have in recent years also increased their patent application with regards to this technology. The United States Patent & Trademark Office (USPTO) reports that during the last decade, more than 6,800 patent applications related to 3D printing have been received. Since 2007, about 680 patents a year have been filed - 39.6 percent more than in 2002, when 487 patents were filed. Since 2003, the office has granted 3,500 patents related to 3D printing.

Many global brands are starting to embrace this new phase of technology known as the '3D printing era'. By way of example, the USPTO has recently granted global brand leader Nike a major patent for technology associated with the 3D printing of shoes. The patent, identified as "strobel printing", is a method by which it is required to affix the shoe's upper to its midsole. Nike's patent calls for a machine to scan the design into a computer and, based on the data, print sewing guidelines on the strobel. It should however be highlighted that the 3D printing technology patented by Nike does not fundamentally change how the company makes shoes. Rather, it merely updates and modernises the process through which the

company does so. For consumers, this potential new method for shoe manufacturing could mean the ability to bring a digital file into a Nike store and have a custom fit shoe manufactured on the spot.

The developments in 3D printing are also revolutionising the way medical and pharmaceutical fields will soon be distributing goods. Recently, in the field of pharmaceuticals, there has been a development of a 3D printer capable of assembling chemical compounds at the molecular level. This innovation would allow patients to go to an online drugstore with their digital prescription, buy the blueprint and the chemical ink needed, and then print the drug. In addition to the added advantage of having the pharmaceutical product being readily available and accessible, there is also the advantage of having the medication customised to individuals in ways that make it safer and more effective. The size, dose, appearance and rate of delivery of a drug can be designed to suit an individual.

3D printing can without doubt accelerate the advancement of innovations by reducing costs and time in translating innovative concepts into prototypes and finished products. In addition, 3D printing opens the door for the development of new lines of products/technologies by enabling the design & manufacturing of certain products which was not possible to achieve using the traditional manufacturing methods. This can be at any scale, even on the micrometer or nanometer scale.

3D printing is a technological concept. Customized 3D printing machinery should be designed and produced in order to enable the 3D printing capabilities depending on the specific application desired. Printing a pizza requires a different 3D printing technology than printing an electronic circuit board. The 3D printing technology can therefore be innovative in itself and subject to patent protection.

Despite the many advantages of 3D printing, there are also a number of questions being raised as to IP and the impacts of 3D printing on existing rights such as copyright, industrial designs and patents. Industry experts have compared the use and widespread distribution of 3D printers to the infamous Napster era, whereby the music industry was significantly shaken by the introduction of peer-to-peer file sharing. Similarly, the rights of product designers may be undermined and violated, should digital blueprints of works be shared electronically and subsequently printed. Thus, personal 3D printing potentially raises issues of large scale reproduction of existing products.

One way to protect against the reproduction of existing products facilitated by 3D printing is to make sure that intellectual property rights are adequately secured.

In this optic, copyright and industrial design protection should be considered to protect the new aesthetic and ornamental features of useful articles such as the 3D shape of a product. Where the 3D shape of the product is used to distinguish/identify the source of the product, then trade mark protection can be considered as well. Where the article of manufacture contains novel functional or structural features, patent protection should be secured to make sure the "spirit" of the article is protected as well.

If IP protection is sought, any reproduction of the article or manufacture using 3D printing or other traditional manufacturing methods could be deemed an act of infringement reprehended under the law and exposes the infringer to civil and criminal sanctions based on the applicable local laws.

***How Can Al Tamimi help?*** Our IP department has a dedicated Patents & Designs (R&D and Innovations) Practice which can assist in a wide range of contentious and non-contentious matters related to innovations, including legal protection, contractual matters and litigation. For more information please contact Ahmad Saleh (Regional Head of Patents & Designs - R&D and Innovations) at [a.saleh@tamimi.com](mailto:a.saleh@tamimi.com) or Sadaf Nakhaei (Senior Associate) at [s.nakhaei@tamimi.com](mailto:s.nakhaei@tamimi.com).