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## 3-D Printing: The Intellectual Property Challenge

Just last month, artificial blood vessels were made on a 3-D printer at the Fraunhofer Institute in Germany. One of the largest manufacturers and distributors of 3-D printers, Stratasys, has seen profits and demand climb since last year, and local companies such as AppliCAD are already profiting from sales in Thailand.

3-D printers use digital computer files to “print” physical objects using additive manufacturing; the object is built fusing layers of the material together at high temperatures. The ease, speed, and low cost of printing products—ranging from chocolate to prosthetic limbs to an airliner wing—with a newfound precision and quality has created the noise in the market. It can also build internal immovable parts simultaneously, reducing the time taken to market, on product assembly, and on prototype development. Furthermore, once a Computer-Aided Design (CAD) exists, it can be shared and distributed like other computer files.

The 3-D printers available in the consumer market are limited by types of materials, but are currently priced as low as USD 1000–2000. This revolutionary technology has opened doors to innovation and creativity, but has undoubtedly also created a widespread threat to intellectual property right holders whose patented designs can be scanned and reproduced using a perfectly affordable printer. There are some situations where 3-D printing will create issues both legally (in patent, trademark, *and* copyright law) and commercially that IPR holders must be wary of.

### Design Patents in Thailand

When a spare part of a product breaks or goes missing, a 3-D printer can replace it. Assuming that such spare part is design-patented, if a consumer were to use a 3-D scanner or program to model the piece themselves, it would be almost impossible for the IPR owner to detect infringement and take action. Commercially, this would have a profound impact on the after-sales services that many businesses survive on.

With the help of CAD modification, 3-D printing will inspire many new ideas. In Thailand, patent law is separated into invention and design patents. While the doctrine of equivalents is available for invention patents, and Chapter 3 of the Patent Act B.E. 2522 (1979) recognizes that substantially similar design patents constitute patent infringements, IPR holders may still face problems enforcing their rights due to complexities in proving so.

The Thai Patent Act allows IPR holders to seek criminal and civil remedies against parties involved in the production and use of counterfeit goods. Prosecuting individuals or small businesses, in a country where raids are always a challenge, may eventually be futile. It is unfeasible for IPR holders to detect every act of infringement in the face of an imminent increase. Changes to enforcement and perhaps the rigor with which courts assess evidence of infringement are more effective alternatives.

### 3-D Trademarks

Trademark law will be affected in cases where 2-D trademarks and logos are copied onto printed products, and where counterfeit products with 3-D trademarks are copied and printed illegally. However, if a product with a registered trademark were purchased, then subsequently copied and printed for personal use, the consumer would not be held liable for infringement. Used this way, the technology will have a seriously adverse impact on commodities businesses and mass production, thus necessitating legislative amendments in the future. Of course, if used commercially, IPR owners will still have strong grounds for legal action.

### Developments in Thai Copyright Law

Thai copyright law is necessary to regulate file-sharing websites as a preventive measure, and must therefore see concrete legislative and judicial developments.

In Thailand, service providers may not be liable for simply hosting file-sharing; they are not directly involved in uploading/downloading illegal content, and contributory infringement does not explicitly exist in Thai copyright law. However, practitioners believe that IPR holders can enforce their rights against service providers through the tort law of joint liability, under Section 432 of the Civil and Commercial Code, or under Section 86 (assisting a criminal offense) of the Criminal Code.

Alternatively, the Department of Intellectual Property (DIP) has shown willingness to use Sections 14 and 20 of the Computer Crimes Act B.E. 2550 (2007) to prosecute the distribution of “partially spurious” or “false” data that is likely to cause injury to the public, affect the security of the Kingdom, or be inconsistent with public order or good morals. It is not clear whether courts will read these sections to include counterfeit goods and copyrighted files; however, the increase in 3-D printing may indeed eventually clarify this.

As file-sharing websites such as Thingiverse begin to include files for 3-D printing, they have already faced take-down notices in accordance with the Digital Millennium Copyright Act 1998 (DMCA). In Thailand, however, the Copyright Bill (adopting the DMCA), drafted five years ago to enforce royalties of copyrighted music on the internet, is still pending enactment due to political reasons. Perhaps 3-D printing, as a “disruptive” technology, will help to accelerate lawmaking in this area.

### The Future and Alternatives

Although 3-D printing is indeed still in its infancy, the potential disruption to intellectual property rights and laws cannot be undermined. When photocopiers first made it possible to reproduce any book or printed page quickly, cheaply, and in large quantities, novels were not copied and resold; instead, teachers printed hundreds of packs containing copyrighted materials, fewer books were sold, and hard-covers lost their value. Eventually, however, universities signed licensing deals, publishers regained some profits, and booksellers diversified. History repeated itself with the internet, and the DMCA was enacted in the United States, after which the music industry stigmatized peer-to-peer file transfer protocols and banned file hosts such as Napster to help the music industry survive.

It is clear that IP enforcement methods must be developed to deal with this new technology, while legislators will soon feel the need to introduce amendments. For now, though, businesses must take careful steps in registering their rights correctly and finding commercially viable options, such as offering CAD models of their products or spare parts online for a small price, or even developing an iTunes model for their products. 🍷