WITHOUT DUE diligence, companies using 3D printing are vulnerable to intellectual property risks.

REUTERS/YUYA SHINO

"As an innovation, 3D printing can be managed either as a sustaining innovation that you can use to improve your business or as a disruptive innovation that overtakes an existing market and puts companies out of business."

—EMILY CUMMINS, MANAGING DIRECTOR OF TAX AND RISK MANAGEMENT, NATIONAL RIFLE ASSOCIATION

Risks in Three Dimensions

The risks of 3D printing include product liability, intellectual property, and safety and security issues. BY ALEX WRIGHT

Companies are leaving themselves exposed to a host of costly and unexpected risks if they fail to come to grips with the new challenges presented by 3D printing technology.

Industry experts said that businesses need a fundamental review of their risk management processes and controls to deal with the potential problems caused by this new technology or they could find themselves being sued for copyright infringement or, worse still, having to pay out millions in product liability claims.

3D printing or additive printing, as it is commonly known in the industry, is the process of producing solid three-dimensional objects using a digital blueprint. It works by using a computer to send the design to a printer that then builds the product.

Take-up of the new technology has been phenomenal over the last 10 years because of the potential for substantial time and cost savings.

PwC estimates that 67 percent of manufacturers already use 3D printing, while NASA has been testing the technology in its space station for years. It is widely used for creating prototypes in the aviation, automotive and medical industries, and applications range from plane engines and car spare parts to surgical implants and prosthetic limbs.

With the industry expected to grow in value by 25 percent to $17.2 billion by 2020, according to consultancy firm A.T. Kearney, the scope for the technology is almost limitless — as are the potential risks, including counterfeiting and the manufacture of illegal drugs.

"The biggest risk of 3D printing is that you can make anything, anywhere in the world and that presents a host of potential problems," said Mark Schonfeld, a partner at Burns & Levinson LLP.

"Those problems in the main include product liability, intellectual property, and safety and security issues."

SUPPLY CHAIN RISKS

Schonfeld said that the biggest difference between 3D printing and traditional manufacturing is the complexity of the supply chain and the number of different parties involved.

"With 3D printing, you have more players than you would have in the traditional manufacturing process, where most of the participants work for the same company," he said.

"So if something goes wrong with the product,

who is liable – is it the designer, the supplier, the manufacturer or even the end user?

"Currently there is no legislation governing 3D printing, so it is often very hard to tell who is responsible."

Rob Gaus, global product risk group leader at Marsh, said there are three key factors affecting any manufacturing process: "It's about having a clearer focus on the materials that are being used, the financial strength of your supply chain partners, and the quality assurance program and processes that you have in place," he said.

"Overarching all of those risks is the product risk management process, which revolves around risk assessment and how they apply in foreseeable use and misuse scenarios."

Robert Weireter, vice president and senior underwriter at Swiss Re, said that increasing the scale of 3D print manufacturing also creates the problem of ensuring the quality and durability of the end product.

"When you print out something in a small-scale environment, you have a lot of control over the process, and therefore over the quality of the finished product," he said.

"However, with 3D printing, questions arise when you increase the scale to a commercial level. Can you still ensure the quality of the finished product?"

COUNTERFEITING PROBLEMS

Another key issue with 3D printing is counterfeiting or the illegal copying of products.

Provided you have the right design or blueprint and a 3D printer, it's easy to quickly produce, for example, your own iPhone at home.

"It's very easy if you have your own 3D printer at home to scan a design into your printer, print it out and sell it," said Cindy Slubowski, vice president and head of manufacturing at Zurich North America.

"We have seen some claims, and the real issue is that the original manufacturer who has the rights to that product now has a counterfeit product out there that it knows nothing about and that can cause serious issues in terms of liability, patent and trademark infringement."

No one is immune from the intellectual property risks associated with 3D printing, said Tom Srail, technology, media and telecommunications industry group leader at Willis North America.

"Intellectual property is a significant risk not only for the organization making the product but

Summary

● 3D printing risks are compounded by supply chain complexity and the number of different parties involved.
● A key risk is counterfeiting or the illegal copying of products.
● There are no meaningful regulations impacting the use of 3D printing.

also for the supply chain as a whole and for other companies' copyrights, trademarks and patents in similar types of products and areas," he said.

"Even if you're not producing anything using 3D printing, you can still be exposed to risks in the supply chain with other entities using the technology to counterfeit or copy what you are doing."

Michael Bruch, head of emerging trends/ESG business services and chief underwriting officer, risk consulting, at Allianz Global Corporate and Specialty SE (AGCS), said that the convergence of manufacturing and digital technology also make unauthorized copying of product designs easier to do in the future.

"Because it will be much harder to track these products, traceability will become an even bigger issue than it was before," he said.

"It will also bring a whole suite of issues such as piracy and copyright infringement to the fore."

Therefore, it's important for companies to do due diligence before manufacturing new products, said Shawn Ram, executive managing director and western regional manager at Crystal & Company.

"When manufacturing or technology companies develop a certain product, they have to do due diligence on patents and discovery on trademarks and copyrights, which is often overlooked because of the time and cost involved," he said.

SECURITY AND PRIVACY FEARS

The shadow of cyber risk also lurks around 3D printing. It's no stretch to imagine someone hacking into a computer system and fundamentally changing the design of a product.

"You have this whole file sharing component in 3D printing that you don't have in traditional manufacturing and so that automatically becomes a huge potential security and privacy issue," said Zurich's Slubowski.

"We are seeing a lot of 3D printing going into hospitals these days and

if someone were to hack into their computer system and modify the design of a key component they produce, such as a heart valve for a patient, then the consequences would be unthinkable."

Ram said that the lack of a strong regulatory environment in 3D printing also makes it much easier to manufacture a product such as a weapon that can cause harm or damage.

"There are still a lot of gray areas because there are so many different parties involved in the process, so it can be hard to create any meaningful regulations," he said.

AGCS's Bruch said that like any new technology, 3D printing will

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—CINDY SLUBOWSKI, VICE PRESIDENT AND HEAD OF MANUFACTURING, ZURICH NORTH AMERICA

have its teething problems at first, but provided it is closely monitored, risks can be eliminated early in the manufacturing process.
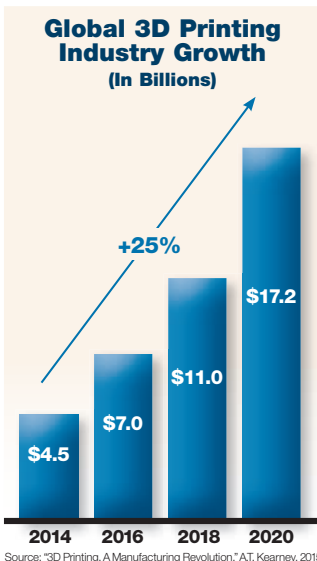
Global 3D Printing Industry Growth
(In Billions)

+25%

2014	2016	2018	2020
$4.5	$7.0	$11.0	$17.2

Source: "3D Printing, A Manufacturing Revolution," A.T. Kearney, 2015

"In terms of cyber risks, risk managers will need to review all of their IT risks in both their office computer systems and production lines and throughout the whole digitalized manufacturing chain from the first idea to the final 3D printed end-product," he said.

3D printing also opens up the possibility of criminals exploiting the technology for their own gain, said Emily Cummins, managing director of tax and risk management at the National Rifle Association.

"Quite simply, any company that uses credit cards to run its business, which is most, carries a potential threat of being exposed to cyber

risk," she said. She cited a recent case where a criminal gang used a 3D printer to produce an ATM skimmer that was used to steal customers' details.

"The kind of fraud that can

be perpetrated from extracting the information on credit cards includes identity theft and financial theft."

RISK MANAGEMENT PROCEDURES LAG BEHIND

All of these risks have opened up companies to a host of potential claims running to millions of dollars, particularly on the product liability side.

Slubowski said the biggest danger to companies is failing to understand their exposures.

"If you don't understand all of the nuances around 3D printing, then you will probably find yourself with claims that you didn't anticipate you were going to have," she said.

"We have seen it in the industry before where small companies get hit with large claims and they go out of business because they can't come back from the reputational and monetary damage they have suffered."

Despite companies' best intentions, many are still lagging behind in terms of their risk management procedures for dealing with the risks of 3D printing, experts said.

Willis' Srail said that the evolving technology of 3D printing means that companies have to continually adapt their risk management models.

"Some companies are well along the way with that," he said. "However it's safe to say that most companies are not ready for everything that is coming.

"It's something that organizations will need to look at internally, externally and throughout their supply chain, and to undergo an ongoing improvement process by reviewing all of these risks on a continual basis."

Ram went even further to say that 3D printing is still not even on some risk managers' radar.

"Our general awareness of the value and opportunity of 3D printing is relatively nascent and so many risk managers aren't prepared for it," he said.

However, despite all the risks and possible downsides of 3D printing, Cummins is upbeat about the future.

"As an innovation, 3D printing can be managed either as a sustaining innovation that you can use to improve your business or as a disruptive innovation that overtakes an existing market and puts companies out of business," she said.

"So those companies that get on board early on with the new technology can use it in a sustaining way to enhance their product and become industry leaders."

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