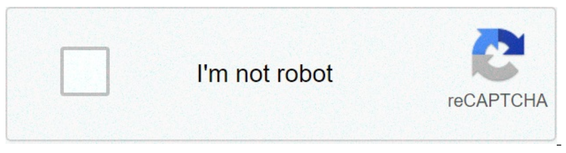

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The next time you read your favorite magazine or go through the latest catalog that arrives in your mailbox, stop for a moment and think about how that publication came to be. First, writers, editors and designers participate in the creative process. Printers take that creative work and turn it into the publications you read every day. Printing is a fascinating process involving huge high-speed machines, 2,000-pound rolls of paper, computers, metal plates, rubber blankets and sharp knives.Offset lithography, the most commonly used printing process, and detail the three production steps: pre-press, press run and bindery. We'll follow the publication of our new magazine, How Stuff Works Express, from start to finish to explore this process. Getting a handheld device to communicate with a printer can be pretty simple. Some printers have built-in Bluetooth or 802.11 receivers. For printers without them, USB adapters can add wireless capabilities. A wireless print server, like the Axis Communications 580 Print Plug or the HP Jetdirect ew2400 Wireless Print Server, can also make a printer wireless. Some print servers can process documents and prepare them for printing so that the handheld device doesn't have to. Others mainly act as a switchboard, letting signals from wireless devices through to the printer one at a time.Adding wireless capabilities to a printer can be easy, but getting a handheld device to communicate with it can be more difficult. Newer devices can automatically discover a wireless printer, just like they would a WiFi connection or a nearby Bluetooth device. Most mobile printing programs let users maintain a list of printers they use frequently. That way, people don't have to sift through a long list of available printers.But even if a PDA detects a nearby printer, it can't use it if it doesn't have the right drivers installed. Many printer manufacturers provide scaled-down drivers that let handheld devices print to most of their printers. This usually works pretty well, but because of the generic nature of the driver, the device can't always use each printer's specific features.For people who travel extensively, portable printers can be a better option than looking for available printers. These are compact, lightweight and can be both battery operated and wireless. Some portable printers, often used for labels and bar codes, will even fit in a pocket or on a belt.If you're considering buying a portable printer, be sure to compare the printer's abilities with what you'll need to print. If you mostly print photographs, consider getting a portable photo printer, which reads directly from a camera or a memory card. Make sure that the printer is compatible with the device and software you want to use.To learn more about printers, PDAs, smart phones, WiFi and other topics, see the links on the next page. 3D printing is taking the world by storm — a bit. It’s not quite the in-home Diamond Age fantasy that was prophesied, but rapid 3D printing does currently underlie some of the incredibly efficient industrial processes we now enjoy. It’s not just about quick and easy manufacturing, but rapid prototyping allowing engineers to work through simple design issues in hours, where it could previously have taken weeks. 3D printing is working its way into hospitals and research labs, firing ranges and auto repair shops. But how does it work?First, the generalities. All 3D printers on the market today are, at least primarily, additive. That is to say, they work by precisely depositing more and more of a building material, creating an object up out of nothing. This is as opposed to the process of sculpture, in which you shave an existing object down — there are 3D printers that can do carving on top of a recently created object, but sculpture will never be able to provide the advantages of additive manufacturing. By building objects up, usually in layers, 3D printing makes hollow objects, or those with complex internal convolutions, as simple to physically manufacture as a solid, homogeneous cube.3D printed M1911 pistol, broken down into parts.There are only a few general types of additive manufacturing technology right now, though there are many slight variations on these types. Each has its own strengths and weaknesses, but even older technologies like extrusion deposition are likely to find a long term place in the market through sheer simplicity and lack of expense.The grand-daddy of all 3D printing technologies is stereolithography (SLA). This is a layer-based system that uses a laser to solidify portions of a liquid medium, called a photopolymer. A metal platform is immersed in the photopolymer and held one layer’s-thickness away from the surface, usually a 10th of a millimeter or less. An ultraviolet laser traces out the first layer’s shape, creating a hardened solid wherever it touches, and then the platform descends another layer’s-thickness. A thin film of photopolymer sweeps in the cover the growing object, and the laser hardens the next layer atop it. This isn’t the most efficient way to printing, but it can use some very interesting building materials, like ceramics, for a relatively low price.Yet, probably the simplest form of 3D printing came a bit later, truly beginning the sudden storm of attention coming from the mass market: extrusion deposition. This is the easiest form of 3D printing to visualize: A robot nozzle moves about, squeezing out a plastic building material like a very, very precisely controlled hot glue gun. Some plastics are meant to harden as they cool in the air, others are mixed with a hardening agent as they’re laid down, but in any case the goal is to create one hardened layer on top of another. If the layers are thin enough, and laid down precisely enough, this can create surfaces that seem fairly smooth, like a traditionally molded plastic object.If we want to do printing with ever-more-study and -diverse materials, things like high strength metal, we’re going to need something better than a super-advanced hot glue gun.Historians can use 3D printing to study ancient artifacts.Selective laser sintering (SLS) has been the primary answer, thus-far. This approach involves releasing a tiny cloud of your building material in an aerosol form, a small puff spit out over the area we’re trying to build up. A precisely-timed laser blast then fuses these individual molecules of building material, usually metals, to the growing object. An even more advanced version of this technology called Selective Laser Melting (SLM) works in much the same way. Rather using the laser to fuse additional molecules to a growing object, SLM machines completely melt their particles of building material, essentially building from tiny speck of molten metal and potentially creating much stronger and denser final materials.Then, there are the more specialized forms of printing. One example is carbon fiber, which can be used to print high-strength parts with low density. These sorts of specialized and composite building materials still require entry to the high end of the price spectrum — but not necessarily the extreme high-end. For well just over $5,000, an enthusiast can print in carbon fiber parts that are, in most ways, better than those printed in metal.It’s all, finally, starting to hit the real world. Aviation companies like Airbus is now producing thousands of cheap, light-weight parts for their jets with 3D printing, while medical professionals can now quickly produce molded casts and prostheses for patients. Most design firms have at least a cheap little 3D printer sitting on a desk somewhere, so they can quickly pick up an idea and look at it from all angles.The first mission-ready print from NASA.It’s a testament to the versatility of additive manufacturing that it’s being used even by enthusiasts for all sorts of interesting purposes. People are making working firearms. They’re printing functional replica musical instruments. This guy has even made a huge belt-based printer aimed at making full-scale pieces of corporate art from, basically, solder.The efficiency of 3D printing is also perfect for the high-end science crowd. So-called bioprinting could revolutionize the growth of organs from stem cells, as new printers can build a matrix of stiff polymer laced with nutrients and the appropriate stem cells. This allows organs to grow as organs, structured three-dimensional objects, rather than homogeneous lumps of organ tissue in a petri dish.SLS and SLM have both been used by NASA to create mission-ready parts for real launches. The goal, long term, is to be able to 3D print entire complex missions, perhaps even in space. There have been attempts to print in glue mixed with moon- or Mars-dust, potentially allowing a lander to autonomously build structures for later human colonists. There’s even an initiative called SpiderFab aimed at 3D printing large structures right in the vacuum of space. We can now start to print soft robots, and even start making objects dynamic over time.The number of possible applications for 3D printing is truly dizzying. Like neural networks, it’s one of those technologies that can change the world without you even noticing it happen. If the vast majority of the printers remain behind the curtain, in factories and labs around the world, then their impact could only ever be felt in the steadily increasing quality of life, and a steadily decreasing cost of living.Check out our ExtremeTech Explains series for more in-depth coverage of today’s hottest tech topics. Picture a robot-controlled hot glue gun that uses plastic instead of glue, and you have the basics of a 3D printer. Strands of plastic are fed into a print head, which is heated up to melt the material. The print head moves around very precisely in three dimensions and drops lines of plastic onto the print bed—the table on which it prints. The printer does this over and over, building up layers of plastic until it forms a 3D part. It All Starts with 3D Models Every object printed on a 3D printer starts with a 3D model. These are usually made in a CAD program designed for working on real-world 3D models, like TinkerCAD, Fusion360, or Sketchup. This is a bit different to how 3D models might be made for movies or games, though you could certainly print out very detailed figures from traditional 3D modeling software. RELATED: What is Sketchup (and How Do I Use It)? One benefit of a 3D printer is that it can print nearly anything. Some models are so complex that they’re impossible to make with traditional manufacturing techniques like molding or CNC routing, and that’s where 3D printers take an obvious lead. However, they’re not just used for making fancy geometric shapes, as it’s usually much cheaper for a large factory’s R&D department to print a single model in plastic rather than rigging up the whole factory to make the actual part. This is called prototyping, making a rough draft to help test the final copy without wasting valuable time and materials. Slicing the Model for the Print Since a printer doesn’t understand how to take a complex 3D mesh and turn it into a printed model, the 3D model must be decoded into information that the printer can understand. This process is called slicing since it takes scans of each layer of the model and tells the printer how it should move the print head to create each layer in turn. It’s done with the aid of a slicer, a program that handles all of this for you, like CraftWare or Astroprint. The slicer will handle the “fill” of the model, creating a lattice structure inside a solid model to give it extra stability. This is one area where 3D printers shine—they can print very strong materials with really low densities, by strategically creating pockets of air inside the model and making it much lighter. Another thing the slicer handles is support columns. Since the printer can’t lay down plastic on thin air, support columns must be created to allow the printer to bridge the gap. These are removable but are used in the printing process to ensure it doesn’t collapse. Once the slicer is done, it will send the data over to the 3D printer to start the printing process. Waiting a Long Time Once the printer starts, you’ll notice the main problem with 3D printing today: it’s horrendously slow. While a 2D printer can print a whole book in a couple of minutes, most 3D prints will take several hours, if not days, to finish printing. And if you messed up the settings, misconfigured the slicer, or just bumped into it a bit, you could lose the whole print. There are some faster technologies making splashes in the industry, like the Carbon M1, which uses lasers shot into a bed of liquid and pulls the print up out of it, speeding the process up significantly. But these kinds of printers are many times more complicated, much more expensive, and only work with plastic so far. So Should I Buy a 3D Printer? If you’re not interested in designing and printing parts, you certainly aren’t going to be replacing your boring 2D printer anytime soon. The printers most consumers will buy usually print in plastic, though there are exotic (and expensive) printers used in the industry that can print pretty much anything. There’s even a 3D printer that can print artificial meat. The technology is moving very quickly and has significant implications across many industries. Surely someday, you’ll be able to print gourmet meals from an edible food printer, but until then it remains a hobbyist and industrial device. Still, with prices coming down all the time, it can be a fun hobby—especially if you build anything where small plastic models are used. Image Credits: Kaca Skokanova/Shutterstock Photo Courtesy: @dwell/Twitter Thanks to 3D printing, we can print brilliant and useful products, from homes to wedding accessories. 3D printing has evolved over time and revolutionized many businesses along the way. This relatively new technology has disrupted the medicine, music, fashion and automotive industries — for the better. Take a look at some impressive real-world examples of 3D printing and the companies that have embraced this advanced technology. Are we living in the year 3000? The Berlin-based technology company BigRep definitely makes it look like we’re already in the future. This company is ready to change the motorcycle industry. BigRep developed the world's first 3D-printed motorcycle called NERA (and it looks amazing). Photo Courtesy: @BGR/Twitter The 3D-printed e-motorcycle is fully made from scratch, from the tires to the frame. The only components that weren't printed were the electronics. Even better, BigRep plans to let its users print replacement motorcycle parts from home instead of buying pieces in stores. What's life like under the sea? Humans may be able to know the answer sooner than we thought. Art graduate Jun Kamei created an incredible 3D-printed garment with gills called Amphibio. The amphibious gill could allow humans to breathe underwater. Photo Courtesy: @imperialcollege/Twitter Kamei was inspired to create Amphibio to help humans survive if a flood occurs or if the earth becomes submerged due to rising sea levels. Amphibio is a groundbreaking invention (whatever the aquatic future may hold). Are you tempted to buy these gills? Fashion and design have also embraced 3D technology. Many dresses have been created thanks to 3D printing, including wedding dresses and runway dresses. Printing a gown is cheaper, easier and quicker. Now, you don't need to shop for a dress at the store anymore — you can develop one right at home! Photo Courtesy: @lonelyplanet/Twitter In Shanghai, designers 3D printed intricate wedding dresses that took one week to make. These luxury gowns cost up to $3,200. Dutch fashion designer Iris van Herpen also featured 3D-printed dresses at a runway show. Her printed creations took the forms of a squid, an octopus and other ocean creatures. Bicyclists and pedestrians can now cross on 3D-printed bridges. Some of these bridges have popped up around the world. In fact, the world's first 3D-printed bridge is located in Gemert, the Netherlands. In China, Shanghai has one of the largest 3D-printed concrete bridges on the planet, measuring 86 feet long and 11 feet wide. Photo Courtesy: IaaC/Wikimedia Commons Dutch start-up MX3D plans to install a 3D-printed stainless steel bridge. Using industrial robots to print the bridge, MX3D finished the project after four years. The bridge is expected to appear in Amsterdam's red light district over the Oudezijds Achterburgwal canal. Traditional prostheses are expensive, but 3D printing has the potential to put an end to that problem. In one case, college students used a 3D printer to create a prosthetic arm for six-year-old Alex Pring. The new arm only cost $350 to make, while many prosthetic arms can cost up to $40,000 each. Photo Courtesy: StarWarsRey/Wikimedia Commons Thanks to 3D-printing enthusiasts, people like Pring can afford artificial body parts. In fact, a medical charity hospital in Jordan produced 3D-printed prosthetics for victims of war. For those looking for superhero-inspired prosthetics, The Hero Arm develops strong, bionic 3D-printed prosthetic arms. Homebuilding techniques are changing. Thanks to 3D printing, homes can be built in less than 24 hours at a cost of only $4,000. Other than cheaper prices and faster construction periods, 3D printing could also help those living in poverty. Photo Courtesy: Tech Insider/YouTube In fact, a housing charity company has already teamed up with a tech construction company to tackle global homelessness, and people are living in these extraordinary homes. A family from France became the world's first to live in a 3D-printed house. For those looking for luxury 3D-printed smart homes, haus.me sells homes that allow customers to live off-grid almost anywhere. If you love musical instruments, you can 3D print them too. For instance, you can create all types of guitars, from acoustic to electric. Printing a guitar can be cheaper, faster and more convenient than purchasing one. Making traditional prototypes for instruments takes many hours of trial and error. However, a 3D printer can reduce the time. Photo Courtesy: Maurizio Pesce/Flickr The quality is just as good as an instrument made of wood or metal. British indie rock band Klaxons performed using a printed guitar. Also, the world's first live concert with 3D-printed instruments took place in Sweden. The group printed a drum, keyboard and two guitars. Many couples try to find tips and tricks for saving money on their weddings. However, one bride cut costs for her special day using a 3D printer. Harnessing her love for 3D printing, Erin Winick designed and created her headband, the table numbers, the cake topper, the floral cake decorations and the flower girl’s necklace using a 3D printer. Photo Courtesy: @bfeld/Twitter She also printed about 200 flowers for the bridesmaids’ and bride’s bouquets. For more than 100 hours, Winick cranked out and put together all the bouquets. Some guests had no idea she 3D-printed her wedding and thought everything was store-bought. While 3D printing isn't new, some luxury brands support it more than others. Since 2010, BMW has adopted 3D-printing processes to manufacture car components. The automotive company reached a huge achievement by printing one million components over the course of a decade. Photo Courtesy: @RoadandTrack/Twitter It all started 25 years ago when BMW began testing out the new technology. The company used 3D printing for prototypes and development at first. Eventually, it printed automotive components for mass production. Although the company has already reached a major accomplishment, BMW is just getting started with 3D printing. NASA is one step closer to turning one person's trash into another person's treasure. The space agency invented the "Refabricator," a system that takes 3D printing to a whole new level. The Refabricator lets astronauts recycle waste to create new tools while in orbit. Photo Courtesy: @ToshJohn/Twitter With the help of the Refabricator, astronauts can stay in space longer. As of late 2019, the 3D printer remains 250 miles above us on the International Space Station. Perhaps people on Earth will be able to use this incredible technology to recycle all types of waste someday. With 3D printing, it's possible to create brilliant and useful products. For instance, German disability rights activist Raul Krauthausen designed a game-changing device. He invented a portable, 3D-printed wheelchair ramp. His prototype helps him ride up and down steps and curbs. Photo Courtesy: @RickHansenFdn/Twitter Krauthausen's prototype took a lot of work and optimization. The ramp had to be big enough to allow people in wheelchairs to move up or down average-sized steps but small enough to fit conveniently in a wheelchair's pocket. He also shared his process online so others can print mini wheelchair ramps for themselves. This technology is also revolutionizing fashion footwear by creating custom-made shoes for better support and fit. Big fitness brands have already released 3D-printed shoes for mainstream consumption. For instance, New Balance began selling $400 3D-printed shoes in 2016. Adidas also developed futuristic shoes in 2016, but the company only gave them to Olympics-winning athletes at first. Photo Courtesy: @SAI/Twitter In 2018, Adidas kicked into full gear and dropped new tech shoes to the masses for a cost of $300 a pair. Of course, Nike welcomed the trend too. The company released a 3D-printed, stretchy, water-expelling running shoe at a whopping $600. Dreaming about driving a 3D-printed car? Well, it’s soon to become a dream come true. Thanks to 3D printing, the automotive industry is changing. For instance, car manufacturer Bentley created the Bentley Speed 6 using state-of-the-art metal 3D-printing technology. Photo Courtesy: Wikimedia Commons The Blade is another example of how the industry is evolving. Made for high performance, the Blade is set to be the world's first 3D-printed supercar. Strati plans to sell the world's first 3D-printed electric car, which consists of far fewer parts than a traditional vehicle. And automotive companies aren't the only ones building cars. A father and son 3D-printed their own "Lamborghini" in 2019. 3D-printed medical models are groundbreaking for preoperative analysis. The new technology allows healthcare professionals to print in different colors, textures, gradients and transparencies. Doctors and surgeons who study the models learn more about human anatomy due to the prints' realism and accuracy. Photo Courtesy: @Berci/Twitter A Seattle doctor saved a spleen instead of removing it by utilizing 3D printing. He practiced surgery on a printed spleen and acquired more knowledge before performing the procedure on his patient. The practice gave him confidence and helped cut the time of the surgery. Running low on makeup? Is your favorite lipstick discontinued? No problem. Whether it's lipstick or eyeshadow, it's possible to create cosmetics with 3D printing. One woman developed a portable makeup printer called Mink, allowing people to print at their homes, in their cars or even in their favorite coffee shops. The co-founder of Mink, Grace Choi, says the color options are endless. Thanks to Mink, users can easily create makeup in any color using FDA-approved ink. For instance, the device can print a pink eyeshadow in less than 40 seconds. Eventually, anyone can snap a picture of a friend's makeup and print it out later. What a time to be alive. Coral reefs have also merged with the 3D-printing revolution, and scientists believe 3D printing may help the environment. For instance, using artificial corals could fix the damage that results from bleached corals. The 3D-printed versions of the invertebrates offer the possibility to save more than just the coral, but also other organisms. Photo Courtesy: @CNET/Twitter The artificial creations can also protect coral reef inhabitants. In fact, fish have already embraced the 3D-printed coral as if it was the real thing. Researchers from Fiji used a coral skeleton and 50 iPhone images to develop effective and attractive 3D coral models. Hold the phone. We can now print skin thanks to 3D printers, although the technology is currently only tested on animals. Dr. James Yoo created a special 3D printer that can scan the wounds of burn victims and crank out synthetic skin right into the injuries. Yoo successfully presented the ways the machine works on a pig. Now, the 3D skin printer is on standby for FDA approval to start testing on humans. According to Yoo, the artificial skin heals burns and wounds faster as well. Home decorations and technology are merging more than ever before. Can't find the right dining chairs to go with the rest of your home's décor? Instead of running to IKEA, consumers will be able to customize their furniture with 3D printing. Photo Courtesy: Iain Farrell/Flickr UCL’s Design Computation Lab is one of the organizations that’s paving the way for 3D-printed furniture. UCL developed a chair printed from plastic. Design brand Nagami also partnered with famous artists to develop 3D-printed chairs, and the collaboration was revealed during Milan Design Week 2018. Vinyl LP records are returning to the mainstream, but some are coming back as 3D-printed versions. Using a 3D printer, music lovers can get close to the real thing. The audio on the new records is low-quality, but listeners can still recognize the music. Photo Courtesy: @doctorow/Twitter According to Mashable, the world's first 3D-printed record was unveiled during the 2013 SXSW festival. There are also 3D-printed record players. Lenco-MD developed the first 3D-printed modular record player in 2018, winning the best innovation award at a consumer electronics fair. 3D printing can also change the lives of animals. A cute husky, Derby, was born without two front legs, so his ability to move was limited. His owner, Tara Anderson, provided him wheels for mobility, but these just weren’t the right fit. Photo Courtesy: @TreeHugger/Twitter Next, Anderson made Derby 3D-printed prosthetics, and these were better tools for him. The prosthetics allowed him to run and sit just like other dogs. Thanks to 3D printing, more dogs, cats and other pets have the chance to walk and run in ways they couldn’t have before. 3D-printed food may sound weird, but it can still be delicious. The ingredients are all real too. To 3D-print food, the ingredients must be puréed and fit into a syringe-like device in order to eject onto a plate. Other ingredients must be added by hand. Photo Courtesy: ZAGAT/YouTube There are many benefits of 3D printing food, such as bringing complex and artistic culinary visions to life. It can also help astronauts in space to create meals and make meat more sustainable. People can 3D-print all types of food, from pizza to spaghetti. Locked out of the house or office? Forgot your keys? No worries. You can make a spare key with a 3D printer and always have a copy with you. "Do not duplicate" keys aren’t restricted, either. Thanks to Keysforge, you can replicate any key you want. Photo Courtesy: @engadget/Twitter That's good news for people who forget or lose their keys often. However, we also have bad news: 3D-printed keys could be a thief's ticket to unlocking any building. With just a picture of a keyhole, researchers found a way to print out a working key using special software. Thankfully, the researchers aren't planning to sell their tech. 3D printing is going to brilliantly disrupt the medical industry. Believe it or not, we will be able to 3D-print solid organs eventually. Using the new technology, Organovo developed functional liver cells that survived for more than 40 days. The product is currently only for pharmaceutical testing. Photo Courtesy: @CBSNews/Twitter However, researchers are one step closer to 3D-printed organs. Scientists at the University of Rochester Medical Center developed model organs that bleed, feel and look like real ones. Even better, scientists at Harvard’s Wyss Institute developed 3D-printed hearts with blood vessels and beating heart tissue. Can't afford the camera of your dreams? With the rise of 3D printing, photographers can create custom cameras for themselves. London-based photographer Paul Kohlhaussen 3D printed many components to create his dream camera. Some people have also 3D printed entire cameras, including the lenses. Photo Courtesy: @HYPEBEAST/Twitter For instance, 3D modeler Amos Dudley designed and created a fully functional camera called SLO. SLO is a 35mm film camera with a "film cartridge, film path, film take-up spools, gears for rotating the spools, shutter, aperture plane, lens, film access door and a lightproof box." Need protective headgear? No problem. 3D-print it! The Swiss Guards who protect the Pope at the Vatican always wear helmets, but for more than 500 years, those hard hats have been uncomfortable to wear (especially in the hot sun). The guards no longer have to worry about the uncomfortable helmets. Photo Courtesy: @cnni/Twitter Now, the guards happily put on 3D-printed helmets, which come with hidden air vents and more space. The guards aren't the only ones who get to enjoy 3D-printed helmets, either. SpaceX developed a helmet that’s almost entirely 3D-printed. The sleek headwear features air-cooling components and a retracting visor. Millions of people around the world need surgery for new corneas due to corneal blindness or scarring. However, scientists may be one step closer to solving this problem thanks to 3D bioprinting. In early 2019, University of Newcastle researchers developed a highly advanced "human" cornea using a 3D printer. Photo Courtesy: @PopMech/Twitter The study wasn't easy. The researchers analyzed a volunteer's eye to create a model. They had trouble keeping the model's rounded shape and getting ink that was the right consistency to fit in the printer's tube. Eventually, the researchers successfully created an artificial cornea that's close to a real one. Arevo Inc. used 3D software and technology to create the world’s first 3D-printed bicycle. The fully functional bike is made of carbon fiber. After two weeks, the company finished building the bike. Although two weeks sounds like a long time, it's quicker than the traditional, more labor-intensive process. Photo Courtesy: @Reuters/Twitter The Arevo bike looks and feels like a high-end bicycle for commuting. The 3D-printed bike is also fully functional and stronger than titanium. Arevo doesn't plan to produce or sell bikes for the masses, but the company wanted to show the incredible possibilities of 3D technology. Some of the most controversial creations of 3D printing are weapons, particularly guns. Defense Distributed developed the first 3D-printed firearm in 2013. Although 3D printers can work with metals, it's expensive. As a result, Defense Distributed made the firearm from plastic. Photo Courtesy: Vvzvlad/Wikimedia Commons Defense Distributed released a blueprint showing people how to build a 3D-printed firearm, and it was downloaded 100,000 times in two days. Concerned for public safety, multiple states filed lawsuits to stop the information's release. Consequently, a federal judge temporarily blocked the release of the blueprint. 3D printing has transformed the medical industry in many ways. One incredible example of how 3D printing has disrupted the industry is by fixing broken bones. After a bone breaks, plates and screws are often required to hold the damaged parts together as the bone heals. Photo Courtesy: @Ultimaker/Twitter Those days may soon be over. Hala Zreiqat and her team at the University of Sydney developed a 3D-printed ceramic implant. The product successfully healed broken leg bones in rabbits. Even better, the products turned into the natural bone and repaired large leg fractures in sheep. Testing the product on humans may be next. For those who wear glasses, finding a frame that fits right is challenging. The frames may be too big, too small or too uncomfortable. Fortunately, 3D printing is creating new and improved opportunities for customized glasses frames. Now, the eyewear industry has met the 3D printing uprise. Photo Courtesy: HP/YouTube Glasses wearers are also happy about the additional alternatives. Big brands like GlassesUSA have adopted 3D printing technology. Fitz Frames also allows users (both kids and adults) to create unbreakable 3D-printed glasses through an app. Some people can also print their own frames at home.