

## 1: The Free Beginner's Guide - 3D Printing Industry

*The history of printing starts as early as BCE, when the Persian and Mesopotamian civilizations used cylinder seals to certify documents written in clay. Other early forms include block seals, pottery imprints and cloth printing.*

The printing press has been in use for around years. It has played a crucial role in the spread of literacy and the development of culture. Nowadays, the printing press is essential not only for printing books, but also for making promotional pamphlets, instructional guides, decorative posters, and so much more! Inception of the Printing Press In , the first metallic movable-type press was used in Korea to create a book called the Jikji. Around , the printing press was introduced to the West by Johannes Gutenberg. Gutenberg was a goldsmith who figured out how to create a hand mold that would produce movable metal type. Thus, the printing press was born in the West. By , printing presses in Europe had produced more than twenty million volumes. The newfound high production rate of books meant that books and pamphlets were easier to purchase or distribute. With the availability of reading material, literacy in Europe increased and ideas and opinions were easier to share. A Very Proper Press By the Victorian era, the old, hand-operated Gutenberg press had been replaced by a more modern steam-powered rotary press. For the first time, printed material could be produced on an industrial scale. This was when newspapers and advertising began to gather traction. By the 18th century, newspapers were publishing articles and essays about topical issues. The middle class became a strong readership as they started to participate in the exchange of ideas and news. Readership of newspapers and gazettes were high, and the demand was insatiable. This led to many companies using newspapers as prime real estate for marketing. As the press began to change, grow, and evolve, so did advertising. Advertising became somewhat of an art form, with heavy experimentation and innovations. The Press Today Today, that innovation in printing continues to thrive. There are three types of rotary presses that exist today: With the advent of computers, the printing press is more varied and dynamic than it ever has been. The digital printing revolution has lead to more options and freedom for the printed word. Printing presses today offer a wide variety of services , from industrial printing to book binding to text formatting. Atlantic Graphic Systems Established in , Atlantic Graphic Systems has been a premier equipment sales and service provider for forty years. The technology of printing has been integral to the communication of ideas and information for hundreds of years. Want to keep up with the latest news and information?

### 2: A brief history of home printing technology

*Johannes Gutenberg's printing press in the 15th century with mechanical moveable type, first mass-production manufacturing machine William Caxton William Caxton printed the first book to be published in English, Recuyell of the Historyes of Troye, in Spread to.*

Keeping hard copies of your important documents is important in the event of a software malfunction or a power outage. Whether it is the printing of statements, accounts or HR documents, a printer is one of the most used machines in an office. For printers in Nelspruit many companies come to Nashua Lowveld as we not only sell high quality printers, we are also leaders in printer maintenance and repairs. Most people know that the history of the printer goes way back to the original printing press which allowed the printing to be manually by hand. During these times books were exceptionally expensive and they were not easy to come by as only a few were ever made. The printing of a book was a time consuming task and the effort put in would mean that the printing process was rarely done. When you think back on what you know about the history of printing, the name Gutenberg will probably pop into your mind. This is because he was the first person to create a printing press, designed for the purpose of printing on paper. Printing goes way back to the Mesopotamian civilization, who began printing in BC however we are looking at the history surrounding the printing of text and images on paper rather than the earlier forms of printing that took place on wood, papyrus and even silk. In these early times stamps were used to do the printing. Johannes Gutenberg Gutenberg was a goldsmith by profession and in he began to work on the printing press with the assistance of a partner and the owner of a paper mill. Books were produced before the printing press but they too took a long time to produce as everything was done by hand, including the writing. There are still a few bibles in existence that were hand written, so you can imagine that having a book of your own was quite something. During the time of Gutenberg, a number of printing houses had started up and the owners, known as printing masters, were manufacturing and selling printed books with the goal of creating a profit. These printing masters had apprentices and yet surprisingly the apprentices did not have to be able to read and write. In fact many people who were around during this time were not able to read or write. The apprentices would prepare the ink and prepare the paper and assist with the working of the press. An apprentice could advance if they learned Latin and worked under a journeyman. Modern Times Printing has obviously come a long way since these early rudimentary printing times. These days not even much writing is done by hand, almost everything is done by computer and is then printed. This makes things easy to do as there is no longer huge expenses involved and you are even able to do printing in your own home. Printers used for mass printing such as those used to print magazines and newspapers have reduced costs as the printing is done on a massive scale. Independent newspaper manufacturers have sprung up and they have been hugely successful in printing on a grand scale, selling at reduced costs and still being in a position in which they can make a profit. Modern printing has meant the use of printers in businesses and homes which has increased productivity and made life easier for many people. Printers in Nelspruit can be bought from Nashua Lowveld and with a service plan, your printer will be kept running efficiently for longer.

### 3: A Brief History of the Printing Press - Atlantic Graphic Systems

*Printing, or the process of reproducing text and images, has a long history behind it. This page describes the evolution of print. It acts as a summary of a more elaborate description which starts here.*

Manufacturing 3D printing is a tremendously exciting new technology that is changing the face of modern manufacturing. The transformative impact of this technology on the way we produce things is only likely to increase as it continues developing. While it may seem like 3D printing has only recently exploded onto the scene, the technology has actually been around for three decades. Kodama had invented a device which used a UV light to harden photoreactive polymers. Like other early forms of additive manufacturing, the idea was that the technology would be useful for creating models and prototypes. Since then, additive manufacturing technologies have been used for rapid prototyping, where it has significantly improved the speed of the product development process. Only three years later, in 1986, a team of French inventors led by Alain Le Mehaute applied for the first patents on the stereolithography method, which is still widely used today. Remarkably, their patent application was abandoned by General Electric. This lack of foresight was unfortunate for Le Mehaute and his colleagues, but it benefited the man now widely recognized as the father of 3D printing: Chuck Hull would file his patent for a stereolithography machine a mere three weeks after the French team had filed their patent application. In 1986, Hull named the process stereolithography, which remains one of the most common 3D printing techniques today. While Kodama had actually invented this system before Hull came up with his machine and coined the term, he did make another important and unique contribution to the history of 3D printing. This was the development of the STL file format – the digital files that can be read by 3D printers which are still widely used today. It was the development of the STL file format that allowed additive manufacturing to become what it is today. With this combination of hardware and software, it became possible to design a 3D model on a computer and have it reproduced automatically by a 3D printer. The Field Quickly Expands While stereolithography was the first system to be patented, there were other technologies being developed during the same period. While Kodama, Le Mehaute, and Hull were working on SLA, others were developing sintering and extrusion-based techniques for the additive layering of 3D objects. Deckard actually conceived the invention while an undergrad and continued to develop it throughout his Masters and Ph.D. Deckard had dreamed of becoming an inventor since visiting the Henry Ford Museum as a child. His dreams came true in a big way. The laser sintering process has become the most popular 3D printing technology, used across a wide range of industries for models and for end-use parts. With DMLS, laser sintering would become the only 3D printing technology capable of producing entirely metal parts. This greatly expanded the range of applications for which 3D printers could be used, as complex parts could now be created from real, durable metals. It was also during this period that the most popular method of 3D printing in use today was first invented. Scott Crump, who invented and patented the technology in 1989. Crump and his wife Lisa founded Stratasys that same year, which has remained a leading manufacturer of 3D printers. With FDM, a cable of thermoplastic material is fed through a heated nozzle that extrudes the liquefied material in layers to create the part being printed. Interestingly enough, Scott Crump had the idea for FDM while in the process of making a toy frog for his daughter using a glue gun loaded with wax and polyethylene. During the 90s, several other 3D printing companies would emerge including ZCorporation, Objet Geometries, and others. Each would contribute to the development of the technology. Launched in 2009, the RepRap initiative set out to create an affordable 3D printer that could replicate itself, which is where the project gets its name. RepRap stands for Replicated Rapid Prototyper. In other words, a RepRap printer can print other RepRap printers. The RepRap project is an open source initiative, with participants all over the world contributing to the goal of producing cheap, effective 3D printers, thereby bringing 3D printing out of the factory and into the home. The RepRap project adopted FDM technology and has inspired many desktop 3D printers which have also employed extrusion. In the nineties, two important trends emerged in the additive manufacturing industry which has continued to the present. The first is the ever-improving quality of the high-end machines. The second is the ever-lowering cost of consumer-grade machines for the home audience. By the 2010s, the cost of 3D printers

decreased substantially. Other firms also emerged to meet the growing demand for desktop printers. While it once seemed like science fiction, additive manufacturing is becoming almost commonplace. While 3D printing is still a relatively new technology, it has already had an impact on the manufacturing sector. The reduction in tooling costs and the increased pace of product development have already changed the game in meaningful ways. But the biggest changes have yet to come. With additive and digital manufacturing technology in general, we are beginning to see a shift of manufacturing back to the United States. The automation of manufacturing means fewer labor costs and more of an emphasis on design and computer science than on unskilled factory work. This could be a boon for local economies as it undermines the need for companies to outsource manufacturing. It also means that, in the near future, we may not be shipping products around the world nearly as much as we are now. This could be important when it comes to reducing global greenhouse gas emissions and move away from fossil fuels. From the Present to the Future Today, desktop 3D printers are cheaper and better than ever and are continuing to improve. What the history of the 3D printer tells us is that technology will continue to advance very quickly. Soon, every home will have a 3D printer. While there is a dedicated core group of enthusiasts who benefit from having a machine in their homes, most of the desktop units are actually used in schools and businesses. The affordability has improved dramatically, but you still need to have CAD design skills to generate the STL files that make the 3D printers run. Besides, the quality achievable by the commercial units is still far above what the more modest consumer-grade printers can produce. For most individuals, 3D printing services are the best way to take advantage of the ever-growing potential of additive manufacturing. Buyers can get access to top-of-the-line printers and materials for the projects they need without having to invest in buying a machine themselves. This is where Cad Crowd comes in! We offer world-class 3D printing design services for anyone who has a product idea but lacks the expertise to create a CAD file. With our contract 3D printing services, we also take you to the next step and connect you with leading additive manufacturing companies ready to produce your design.

### 4: History of printing relief techniques

*The history of 3D printing goes all the way back to the s, believe it or not. Take a look back in time at the early days of 3D printing before reading about all of the advancements made today.*

Bring fact-checked results to the top of your browser search. History of printmaking Engraving is one of the oldest art forms. Engraved designs have been found on prehistoric bones, stones, and cave walls. The technique of duplicating images goes back several thousand years to the Sumerians c. They conceived not only the idea of multiplication but also the mechanical principle, the roller, which in more sophisticated form became the printing press. On the basis of stone designs and seals found in China, there is speculation that the Chinese may have produced a primitive form of print—the rubbing—about the 2nd century ce. The first authenticated prints rubbed from woodblocks were Buddhist charms printed in Japan and distributed between and ce. It is believed that the first wood-block prints on textiles were made by the Egyptians in the 6th or 7th century; but the earliest printed image with an authenticated date is a scroll of the Diamond Sutra one of the discourses of the Buddha printed by Wang Jie in ce, which was found in a cave in eastern Turkistan. In Europe, stamping to imprint royal seals and signatures preceded printing by rubbing or with a press. The earliest documented impressed royal signature is that of Henry VI of England, dated Textile printing, however, was known in Europe in the 6th century, the designs consisting largely of repeated decorative patterns. Printing on paper developed from textile printing, following the introduction of paper from China. Soon afterward paper manufacturing began in France and then in Germany and Italy, notably by Fabriano, whose enterprise was established in The first woodcuts on paper, printed in quantity, were playing cards. Many documents from the 15th century indicate that a clear distinction was made between the designer and the cutter of the woodblocks. From the outset, woodcut was primarily a facsimile process: Printing from a metal engraving, introduced a few decades after the woodcut, had an independent development. The art of engraving and etching originated with goldsmiths and armour makers—men who were thoroughly professional craftsmen, practicing an art that had a long, respected tradition. Since the armour makers and goldsmiths were designers themselves, the whole process was controlled by the creative artist. Printmaking in the 15th century Germany Single prints in contrast to those printed in a series or as part of an illustrated book of the early 15th century were not signed or dated, and, because they were religious images carried by pilgrims from one place to another, it is nearly impossible to establish with certainty their place of origin. Their style alone must be relied upon for some indication of origin. The first phase of woodcut, from about until about , was dominated by boldly designed single figures against a blank background. Most of the cuts were made to be hand coloured. In the second half of the 15th century the cuts became more complex: The design was created by tiny dots punched into the metal and intermingled with short cuts. Surface printed, the whites are the positive part of the design, which is dominated by the dark background. Tiny holes in the borders indicate that most of these plates were intended as decorations to be mounted rather than as printing plates. The earliest dated intaglio-printed engraving is from The Flagellation, of a Passion series. About this time, the first distinct personality to have great influence on German engraving appeared. He is known as the Master of the Playing Cards. His style was simple, nearly monumental; unlike the printwork of goldsmiths, his engravings lack ornamentation. For shading he used slightly diagonal parallel cuts. The Master of the Playing Cards heralds the beginning of a century of great printmakers in Germany. Another significant engraver, the Master of the Banderoles, was named after the ribbon scrolls characteristic of his prints, which are more decorative than those of the Master of the Playing Cards. Playing Cards, Master of the: National Gallery of Art, Washington, D. Little is known about him, but the personality that emerges from approximately plates is forceful and distinct. Although it is evident from his prints that, like most early engravers, he was first trained as a goldsmith, his work has strong pictorial quality. Martin Schongauer was the first great engraver who is known to have been a painter rather than a goldsmith. During the second half of the 15th century, a group of brilliant engravers known only by their initials emerged in Germany. They are the Masters B. The controversial figure of Israhel van Meckenem appeared at the end of the 15th century. A superb and extremely

prolific engraver, he was a rather eclectic artist, borrowing from other masters and often copying them. Italy In the 15th century, Italian printmaking was dominated by the northern cities: Florence, Venice, and Milan. Throughout the century, printmaking was mainly concerned with playing cards and book illustrations, with a few single prints appearing in the second half of the century. While in Germany and the Netherlands the art was completely dominated by devotional, religious subject matter, Italian printmaking covered a relatively broad range. The awakening Renaissance attitude made the artists much more receptive to purely aesthetic, decorative, sensuous experience. In addition to religious subject matter, Italian prints included mythology, pure ornamentation, and some of the finest early portrait engravings. Giorgio Vasari, the chronicler of Renaissance artists, credited the Florentine goldsmith Maso Finiguerra with the invention of printed engraving, but present knowledge indicates that, at the same period in Germany and the Netherlands, printmaking was in a more advanced stage. Despite the fact that book printing was originally introduced from the northern countries into Italy, engraving remained a national, regional development, free of strong foreign influence until the beginning of the 16th century. Two methods of engraving were practiced in Italy, the broad manner and the fine manner. The fine manner, associated with the Finiguerra school, is characterized by closely cut and extremely fine lines combined with cross-hatching intermingled at times with dots. The broad manner is less dense, and forms are modelled using diagonally cut parallel lines, interlaid at times with short cuts or dots. In shading, the spacing between the lines is wider than in the fine manner and there is no cross-hatching. Finiguerra himself was not an important artist. His significance lies in his influence on Antonio Pollaiuolo, a Florentine painter, sculptor, and architect whose reputation as one of the most distinguished engravers of the 15th century is based on his one authenticated print, *The Battle of the Nudes* c. Mantegna produced approximately 20 plates only seven of which are completely authenticated, all line engravings in the broad manner. A superb draftsman and a virtuoso engraver, Mantegna could achieve, in spite of the limitations of his method, an incredible range of colour in his prints, a quality lacking in the work of most of his followers. Other countries The Netherlands and Burgundy The first half of the 15th century in the Netherlands and Burgundy was dominated by woodcut book illustrations. Although no single prints of great importance were produced, beautiful books were published. Antwerp and Delft were the main printing centres. Parallel with, if not even a little earlier than, the emergence of distinguished printmakers in mid-century Germany, a group of great engravers emerged in the Netherlands and neighbouring Burgundy. Superb artists, they are identified only by the subject of their most characteristic work: *Toward the end of the century, the Netherlands produced a brilliant artist—rivalling Master E. He is known by this name because the finest collection of his extremely rare prints is in the Print Cabinet of the Rijksmuseum. His prints are painterly and almost expressionist in power. His role in the technical development of printmaking is also significant, as he was the first major artist to make drypoints.* France In France, book illustrations dominated printmaking throughout the century. Paris, the cultural centre, led in book publishing, although other prosperous cities, such as Lyon, produced many illustrated books. Strangely enough, there was little engraving of importance. Most of the French engravings of this period were either rather crude, provincial illustrations or playing cards. One of the towering figures in the history of printmaking, he was a complex, truly Renaissance man, interested in philosophy and science as well as art. He was one of the first to break the provincial isolation of Germany by traveling to Italy, where he learned from the Italians and in turn influenced them. His prints deal with religion, history, mythology, and folklore. He is also one of the first great portrait engravers. As a technician he raised the art of engraving to a height it never reached again. As an experimenter, he produced, in addition to his engravings and woodcuts, etchings and drypoints. His best works are metal engravings, which he cut himself. His woodcuts are perfect reproductions of his superb drawings. In his images of witchcraft and magic, Baldung expressed the medieval mysticism that lingered in the German Renaissance. Besides his black and white work, he produced fine chiaroscuro woodcuts in which light and shadow are produced by using different woodblocks for different tones of the same colour. He had a vivid imagination and an earthy imagery that was full of vitality. He made many woodcuts and relatively few metal engravings. Albrecht Altdorfer was one of the first great landscape artists and one of the first to make landscape etching and woodcuts for their own sake, rather than as backgrounds for figures. Under his influence, two other artists

made fine landscape prints: Augustin Hirschvogel and Hanns Lautensack. The spontaneity and directness of their work foreshadows the lyrical landscapes of the 18th century. If the latter birth date is correct, at age 14 he was already an accomplished engraver. Besides his metal engravings, which are characterized by a very delicate touch, van Leyden designed many woodblocks and also made a few etchings. A virtuoso of the burin, the Flemish engraver Hendrik Goltzius developed an incredible variety of cuts and textures to imitate the surface qualities of materials. Other printmakers of the period include Allaert Claesz and Cornelis Matsys.

Italy After the death of Mantegna in , Italian printmaking of the 16th century was dominated by lesser figures. During the 16th century the few etchings produced in Italy have only historical interest. The most influential engraver of the century was Marcantonio Raimondi. Thus, Raimondi won the dubious honour of being the first of the many printmakers who ultimately were influential in turning the art of engraving into mere reproduction. He was followed by a whole generation of competent engravers who were devoted solely to reproduction. One of the exceptions was Giorgio Ghisi of Mantua, who in his isolated regional development escaped the corrupting influence of Rome.

### 5: The Timeline of 3D Printing: A Brief History | Free Guide

*Printing history is an interesting one. For centuries, typography has spread worldwide and has helped educate people generation after generation. Now those who open a business printing can opt for different types of printing, depending on their preference.*

Although woodblock printmaking had been around in China since the ninth century, European printmaking made its appearance from the beginning of the twelfth century. Relief printing appeared in Europe and became popular in the fifteenth century when paper became much cheaper and readily accessible. The introduction of the rotary printing press by Johannes Gutenberg, a German blacksmith and printer, brought together the use of metal moulds and alloys, and oil-based inks, and allowed for the first time the mass production of printed books. Prints and their processes fall into three broad categories: Woodcut and wood engraving and relief prints from metal plates. Engraving and etching on metal line engraving, dry-point, etching, mezzotint, stipple, crayon and the dot process, aquatint. The printing parts remain level with the surface while the non-printing parts are removed, typically with a knife or chisel. National Gallery of Art. It is called a relief process because the lines and surfaces to which the ink adheres are higher than the parts that are not printed. As the cutting of the wood was a skilled process an image would be processed by both an artist, who would draw the design, and a professional woodcutter who would then cut out the image, ink and print it. The printing of a woodcut could be done both in a press and by hand, much like a stamp. Artists this century have sometimes preferred hand-printing to the use of a press because of the expressive effects obtained by varying the pressure. Because of the difficulty in executing detailed images, woodcut images were often simplistic and humble being used mainly for playing cards and crude devotional images. However, the woodcut became more popular in the late 15th century with illustrated books. Although printmakers like Gutenberg had already produced printed texts, like the Gutenberg Bible, woodcuts became an obvious choice over the popular engravings as illustrations could be printed in the same press and at the same time as the type, whereas an engraving would have to be done separately, and therefore more expensively, printed in a different press. The first great illustrated book was the folio *Weltchronik* of , published in Nuremberg by Anton Koberger. His series of design established the woodcut as a major art form, and later gave way to designs with much more complexity than previously thought possible with woodcut. This technique allowed for greater accuracy and more detailed prints. By the end of the sixteenth century woodcuts had become almost obsolete in their work in texts and illustrations and was taken over by intaglio illustration. The reasons for this were detail and accuracy, both of which could be achieved much higher with Intaglio printing. The metal plate would be covered with an acid-resistant ground and the image was then drawn on with an etching needle or similar sharp tool with cut through the ground exposing the metal underneath. The plate was then submerged into acid. The acid would then react to the exposed metal creating a mark known as an etching bite. The longer the plate was left in the acid, the greater the bite would be. With earlier engraving, the printing process would gradually fade and the image would have to be drawn again after a certain number of prints had been made. With intaglio etching, the acid bite would create a deeper hole meaning much many prints could be made before the plate became worn. It also meant a cleaner image, with engraving a burr would often be created leaving the image with a slightly fuzzy line. With etching the acid would create a much more crisp clean line and was able to create much more subtle marks. With Gutenburgs revolutionary printing press, which could produce up to impressions per hour, by the end of the sixteenth century printing presses has been set up in nearly cities throughout Europe. Williams and Newton The majority of illustrative prints were religious or in some form of advertisement. From the Middle ages the demand for religious prints was sustained since they fulfilled a devotional, moralizing and educational role as well as a protective function. Lange 53 Unlike paintings and drawings, prints were cheap. Their flimsy nature meant they were prone to damage and therefore had to be replaced frequently, keeping the demand for prints coming. Where eighteenth-century publications had been illustrated usually with copperplate etchings and engravings, in the nineteenth century, a broad array of new techniques was introduced that included wood engraving, lithography and photography. Ives 1 Lithography is a method of

printmaking based on the chemical repulsion of oil and water. It is a process of printing from a smooth plate; the printing and non-printing surfaces are all at the same level, as opposed to intaglio or relief processes in which the design is cut into the printing block. From lithography stemmed the process of chromolithography which used different stones or plates to layer different colours on top of each other. The main attractions of chromolithography was that it allowed for relatively inexpensive, large scale production of coloured prints, often using more than twenty coloured printing stones to complete one print. The process of chromolithography was intended by many to duplicate watercolours and paintings before the arrival of coloured photography. Kathryn Polks Despite chromolithography becoming a cheap method of printing bright and colourful prints for the masses, some images were elaborately designed and coloured, using upwards of twenty stones or more to create a rich variety of colours and tones. Despite the ability to create these various tones chromolithography was most successful with images with flat areas of colour like manuscripts. The reproductions of paintings created problems with accuracy and matching exact colours. For more information on Western print please see the links below which will take you a series of essays on the Metropolitan Museum website:

### 6: A Brief History of Printmaking | 19th Century Prints

*Today's screen printing industry seems like a completely modern endeavor, with computer-based design, commercial-grade electric screen printing machines, special effects inks, UV lights and commercial dryers.*

The Precursor to Screen Printing Many people trace the origins of screen printing back to the dawn of man. Since man began creating images on cave walls, stencils were in use. Around the globe, early man was finding innovative ways to cut stencils and apply paint. As tools and technology evolved, people began finding ways to create better stencils to apply images to a myriad of surfaces. As people evolved, stenciling was used during the Middle Ages to decorate everything from wallpaper to playing cards. As we know, stenciling continues to be used in many ways today – and one of the most popular applications is screen printing. Silk was used as a medium for stenciling. Silk was stretched between paper stencils and brushes were used to force ink through. Screen printing folklore credits Englishman Samuel Simon with taking the concept of silk screen printing and modernizing it. Patents related to screen printing were being filed at a rapid pace. Printers began using photo-emulsions to create hardened stencils on screens. Printers discovered that it was possible to create multi-colored images using screen printing. Their hard work and innovation proved worthwhile: Screen-printed posters became popular in advertising movies and political propaganda. By World War II, everything from military t-shirts to tanks were being marked using screen printing. The Modernization of Screen Printing Screen printing, as we know it today, really took hold during the s. Artists like Andy Warhol created screen prints that elevated the artform to a mainstay of pop culture. At the same time, a rotary machine was developed to print bowling shirts. It was, of course, discovered that the machine could be used to create images on just about any substrate. Several companies bought licenses for the technology, and the rest, as they say, is history. Screen printers, by nature, are innovators who are always looking to create new effects and find better ways of creating great prints. It remains to be seen what new technologies will bring about the next generation of screen printing. Interested in what the future may have in store for screen printing? Check out this blog:

### 7: A Brief History of Printing [Infographic] | Confessions of the Professions

*Learn about the history and evolution of printing starting with interesting facts about the first printing in China, the oldest known woodblock, technology evolution of printers by Johann Gutenberg, what offset printing is and how it is used in everyday printing operations, the first printing business was established in in St.*

Stencil Hand stencils, made by blowing pigment over a hand held against a wall, have been found in Asia and Europe dating from over 35,000 years ago, and later prehistoric dates in other continents. Stencils may have been used to colour cloth for a very long time; the technique probably reached its peak of sophistication in Katazome and other techniques used on silks for clothes during the Edo period in Japan. In Europe, from about 1400 they were commonly used to colour old master prints printed in black and white, usually woodcuts. In China seals were used since at least the Shang dynasty. In the Western Zhou, sets of seal stamps were encased in blocks of type and used on clay moulds for casting bronzes. By the end of the 3rd century BC seals were also used for printing on pottery. In the Northern dynasties textual sources contain references to wooden seals with up to 10 characters. Daoists used seals as healing devices by impressing therapeutic characters onto the flesh of sick people. They were also used to stamp food, creating a talismanic character to ward off disease. The first evidence of these practices appeared under a Buddhist context in the mid 5th century. Centuries later seals were used to create hundreds of Buddha images. Archaeological evidence of them have been unearthed at Mawangdui and in the tomb of the King of Nanyue, while block printed fabrics have been discovered at Mashan zhuanchang in Jiangling, Hubei. Among the earliest evidence of this is a stone inscription cut in mirror image from the early 6th century. Yuan Dynasty woodblocks edition of a Chinese play Mongolian Buddhist printing block. Korean wood printing block from the 19th century, on display at the British Museum in London. A printing block from Yangzhou. Song dynasty bronze plate advertising print for the Liu family needle shop at Jinan. Earliest extant print advertisement. Copperplate of "cash Jin dynasty" paper money with bronze movable type counterfeit markers Ceramic movable type print from the Western Xia. Discovered in the Mogao caves. It became widely used throughout East Asia both as a method for printing on textiles and later, under the influence of Buddhism, on paper. As a method of printing on cloth, the earliest surviving examples from China date to about 1400. Ukiyo-e is the best known type of Japanese woodblock art print. Most European uses of the technique on paper are covered by the term woodcut see below, except for the block-books produced mainly in the fifteenth century. The semi-mythical record of him therefore describes his usage of the printing process to deliberately bewilder onlookers and create an image of mysticism around himself. By copying and preserving these texts, Buddhists could accrue personal merit. As a consequence the idea of printing and its advantages in replicating texts quickly became apparent to Buddhists, who by the 7th century, were using woodblocks to create apotropaic documents. These Buddhist texts were printed specifically as ritual items and were not widely circulated or meant for public consumption. Instead they were buried in consecrated ground. The Great Dharani Sutra Korean: They have been dated to the reign of Wu Zetian using character form recognition. This copy of the Diamond Sutra is 14 feet long and contains a colophon at the inner end, which reads: Reverently [caused to be] made for universal free distribution by Wang Jie on behalf of his two parents on the 13th of the 4th moon of the 9th year of Xiantong [i. During the Song dynasty, the Directorate of education and other agencies used these block prints to disseminate their standardized versions of the Classics. Other disseminated works include the Histories, philosophical works, encyclopedias, collections, and books on medicine and the art of war. It took 10 years to finish the, blocks needed to print the text. The finished product, the Sichuan edition of the Kaibao canon, also known as the Kaibao Tripitaka, was printed in The completed work, amounting to some 6,000 volumes, was finished in Unfortunately the original set of woodblocks was destroyed in a conflagration during the Mongol invasion of King Goryeo ordered another set to be created and work began in, this time only taking 12 years to complete. In the complete Goryeo Daejanggyeong numbered 81, printing blocks, 52,000 characters, titles, and volumes. Due to the stringent editing process that went into the Goryeo Daejanggyeong and its surprisingly enduring nature, having survived completely intact over years, it is considered the most accurate of Buddhist canons

written in Classical Chinese as well as a standard edition for East Asian Buddhist scholarship. Fan Ping had in his collection 7, rolls juan, or a few hundred titles. Two centuries later, Zhang Mian owned 10, juan, Shen Yue 20, juan, and Xiao Tong and his cousin Xiao Mai both had collections of 30, juan. Emperor Yuan of Liang was said to have had a collection of 80, juan. The combined total of all known private book collectors prior to the Song dynasty number around , with the Tang alone accounting for 60 of them. The Song dynasty alone accounts for some known private collections, more than triple the number of all the preceding centuries combined. Private libraries of , juan became commonplace while six individuals owned collections of over 30, juan. The earliest extant private Song library catalogue lists 1, titles in 24, juan. The majority of which were secular in nature. The Three Institutes were one of several imperial libraries, with eight other major palace libraries, not including imperial academies. The emperor went to the Directorate of Education to inspect the Publications Office. He asked Xing Bing how many woodblocks were kept there. Bing replied, "At the start of our dynasty, there were fewer than four thousand. Today, there are more than one hundred thousand. The classics and histories, together with standard commentaries, are all fully represented. When I was young and devoted myself to learning, there were only one or two scholars in every hundred who possessed copies of all the classics and commentaries. There was no way to copy so many works. Today, printed editions of these works are abundant, and officials and commoners alike have them in their homes. Scholars are fortunate indeed to have been born in such an era as ours! I can recall meeting older scholars, long ago, who said that when they were young they had a hard time getting their hands on a copy of Shiji or Han shu. If they were lucky enough to get one, they thought nothing of copying the entire text out by hand, so they could recite it day and night. In recent years merchants engrave and print all manner of books belonging to the hundred schools, and produce ten thousand pages a day. Yet, to the contrary, young men and examination candidates leave their books tied shut and never look at them, preferring to amuse themselves with baseless chatter. The advantage was that it was now possible to flip to a reference without unfolding the entire document. Woodblock prints allowed two mirror images to be easily replicated on a single sheet. Thus two pages were printed on a sheet, which was then folded inwards. The sheets were then pasted together at the fold to make a codex with alternate openings of printed and blank pairs of pages. In the 14th century the folding was reversed outwards to give continuous printed pages, each backed by a blank hidden page. Later the sewn bindings were preferred rather than pasted bindings. For example, one complete Tripitaka had over 6, juan in tao. Indeed, manuscripts remained dominant until the very end of Imperial China: As a result of block-printing technology, it became easier and cheaper to produce multiple copies of books quickly. By the eleventh century, the price of books had fallen by about one tenth what they had been before and as a result they were more widely disseminated. Nevertheless, even in the fifteenth century most books in major libraries were still in manuscript, not in print. Almost to the end of the empire it remained cheaper to pay a copyist than to buy a printed book. About 4 percent of it was printed in movable type in , but it was hand-carved movable wooden type. Indeed, the entire collection was only printed for the first time in the s. Access to books, especially large works, such as the Histories, remained difficult right into the twentieth century. The age of printing gave the act of copying by hand a new dimension of cultural reverence. Those who considered themselves real scholars and true connoisseurs of the book did not consider imprints to be real books. Under the elitist attitudes of the time, "printed books were for those who did not truly care about books. According to the Ming dynasty author Hu Yinglin , "if no printed edition were available on the market, the hand-copied manuscript of a book would cost ten times as much as the printed work," [26] also "once a printed edition appeared, the transcribed copy could no longer be sold and would be discarded. In , the Korean Choe Bu observed during his trip to China that "even village children, ferrymen, and sailors" could read, although this applied mainly to the south while northern China remained largely illiterate. Stamps were carved for printing these prayers on clay tablets from at least the 7th century, the date of the oldest surviving examples. History of Western typography Printing with a press was practiced in Christian Europe as a method for printing on cloth, where it was common by Images printed on cloth for religious purposes could be quite large and elaborate, and when paper became relatively easily available, around , the medium transferred very quickly to small woodcut religious images and playing cards printed on paper. These prints were produced in very large numbers from about onwards.

## BRIEF HISTORY OF PRINTING pdf

These were all short heavily illustrated works, the bestsellers of the day, repeated in many different block-book versions: There is still some controversy among scholars as to whether their introduction preceded or, the majority view, followed the introduction of movable type, with the range of estimated dates being between about 1450 and 1470.

### 8: Core Business Solution - A Brief History of Printing (INFOGRAPIC) | Core Business Solutions

*A Brief History of Printing The earliest printed book in recorded history is the Diamond Sutra that was printed in CE in China. Some people believe, however, that book printing might have occurred long before this date.*

History of 3D Printing  
The history of 3d printing goes back further than you may expect – back 30 years ago to To get to where we are now is a story of people, patents, and a groundswell of excitement and expectations. Clarke was a British futurist and science fiction writer, who made many prescient predictions about future life – including wireless smartphones and the internet. He will have, in his own house, not a computer as big as this, but at least, a console through which he can talk, through his local computer and get all the information he needs, for his everyday life, like his bank statements, his theater reservations, all the information you need in the course of living in our complex modern society, this will be in a compact form in his own house – and he will take it as much for granted as we take the telephone. Clarke also predicted that cyborg monkeys would be human servants. Like any futurist, he got plenty of things wrong as well. The Next Generation in , the original Star Trek in features a food synthesizer machine that was capable of replicating food and drinks by arranging and assembling molecules. This is significant as the first major introduction of the concept of a 3d printer in popular culture. The invention led to Hull starting a company called 3D Systems, which today is one of the largest publicly traded 3d printing companies around. Stereolithography is still a common method of 3D printing today and in Chuck Hull was inducted into the National Inventors Hall of Fame. The method basically uses lasers to zap powder to bind them together as a solid form. Scott Crump was the co-founder of Stratasys, which is now – alongside 3D Systems – is one the large publicly traded 3d printing companies. The expiration of this patent helped lead to the explosion of desktop 3d printers like Makerbots. As you can see, quite a bit of the foundations of contemporary 3d printing – including patents for three of the main fabrication methods – were laid decades ago. Instead, they referred to it as additive manufacturing. Even though many of the 3d printing techniques were already patented, the technology took years to improve and was far from being a democratized, accessible, or anything close to a universally adopted technology. The beginnings of when 3d printing began to go mainstream began with another academic project in However, the project is completely self replicating. Parts such as microcontrollers, steppers, and sensors cannot be printed. This project has gone through many iterations, with open source plans posted online for free. The Rep Rap project is undoubtedly a watershed moment opening the doors for a wave of inexpensive desktop 3d printers to come. This online service allows users to submit 3d files, which Shapeways will in turn will 3d print an object from the file and ship back. Shapeways offers a very wide range of materials, offering a 3d printing option for individuals and companies worldwide. In addition to being a 3d printing service, they are also a marketplace for buying 3d printed products that are hosted on their platform. You can browse their shop and once you buy a product, they will print the product and ship it to you. There is no need to hold an inventory. In addition, you have the ability to design products or figurines and host them on Shapeways for other customers to buy. Makerbot took some of the open source foundations built upon by the Rep Rap project and created their own 3D printer kit for sale. Since the companies humble beginnings, the company has sold over , 3d printers. Makerbot is significant because it is one of the most visible companies at the forefront of the democratization of 3d printing. Makerbot also created Thingiverse, which is an online file library from which you can download 3d printable files, or submit your own designs for download. They accomplished something pretty rare in terms of Kickstarter projects. They shipped their product on time! Because the Form 1 uses stereolithography instead of fused deposition modeling, the surface finishes, resolution, and detail are superior to what a traditional desktop 3d printer is capable of. Prices for 3d printers were becoming more and more affordable – but still with a price tag in the thousands of dollars, many people simply wanted access to a 3d printer without having to purchase one. And since more and more people had 3d printers at home, many of these printers were being underutilized. A result of this interest was an influx of press and media stories written about 3d printing technology – and intense speculation on how 3d printing could change applications that would disrupt several industries. When the show had an episode that revolved around 3d

printing and using a 3d printer, it was a significant moment of 3d printing getting a massive spotlight in popular mainstream culture. Was it as significant as the Beatles performing on the Ed Sullivan show? But it was still a notable moment in 3D printing history. Why has the stock price fallen since ? The answer is most likely inflated expectations. Many people were making aggressive speculations based upon bullish predictions around a consumer 3d printing market, which never fully materialized. CLIP technology is similar to stereolithography in that it cures a photopolymer resin – however, unlike stereolithography, CLIP is continuous instead of layer by layer. The result of this is much faster 3d printing – in some cases up to times faster. Given that printing speed is a significant limitation to current 3d printing technology, this was an exciting development. During this TED talk, the company founder did something pretty brave and impressive. He actually demonstrated a part printing during the talk. And in minutes, the part was finished 3d printing! Carbon also has pioneered a unique pricing model. Their printers are only available through a subscription model – you cannot buy them outright. Official presidential portraits have been made for every president, but President Obama was the first 3d scanned and 3d printed bust. And it came out at a pretty interesting time too. Although the machine is pricey and geared more towards commercial and enterprise use, the printer features improvements in speed and in full color printing. Because GE found that metal 3d printing of airplane parts could save massive amounts of money, be stronger, and more efficient. More than other industries, the aerospace industry is finding very real opportunities for 3d printing applications that are giving companies like GE a significant competitive advantage.

### 9: Where It All Began: A Brief History of Screen Printing – Anatol Blog

*The Declaration of Independence may be one of the most recognized and influential documents ever created, but it took a long time to get it to its current state, and along the way there were many.*

The history of printing Printing, or the process of reproducing text and images, has a long history behind it. This page describes the evolution of print. It acts as a summary of a more elaborate description which starts here. You can also click on the title of each century to get more in-depth information. There is a separate section on the history of prepress. In other early societies in China and Egypt, small stamps are used to print on cloth. Seventh century A small book containing the text of the Gospel of John in Latin is added to the grave of Saint Cuthbert. In it is recovered from his coffin in Durham Cathedral, Britain. The Cuthbert Gospel is currently the oldest European book still in existence. Eleventh century A Chinese man named Pi-Sheng develops type characters from hardened clay, creating the first movable type. The fairly soft material hampers the success of this technology. Twelfth century Papermaking reaches Europe. Thirteenth century Type characters cast from metal bronze are developed in China, Japan and Korea. The oldest known book printed using metal type dates back to the year Fifteenth century Even though woodcut had already been in use for centuries in China and Japan, the oldest known European specimen dates from the beginning of the 15th century. Woodcut is a relief printing technique in which text and images are carved into the surface of a block of wood. The printing parts remain level with the surface while the non-printing parts are removed, typically with a knife or chisel. The wood block is then inked and the substrate pressed against the wood block. The ink that is used is made of lampblack soot from oil lamps mixed with varnish or boiled linseed oil. Books are still rare since they need to be laboriously handwritten by scribes. The University of Cambridge has one of the largest libraries in Europe – constituting of just books. In Gutenberg begins work on a printing press. It takes him 4 years to finish his wooden press which uses movable metal type. Among his first publications that get printed on the new device are bibles. The first edition has 40 lines per page. A later line version comes in two volumes. In the first drypoint engravings are created by the Housebook Master, a south German artist. In their print shop in Venice John and Wendelin of Speier are probably the first printers to use pure roman type, which no longer looks like the handwritten characters that other printers have been trying to imitate until then. In William Caxton buys equipment from the Netherlands and establishes the first printing press in England at Westminster. That same year copper engravings are for the first time used for illustrations. With engravings, a drawing is made on a copper plate by cutting grooves into it. By the end of the century, printing has become established in more than cities around Europe. One of the main challenges of the industry is distribution, which leads to the establishment of numerous book fairs. The most important one is the Frankfurt Book Fair. Sixteenth century Aldus Manutius is the first printer to come up with smaller, more portable books. He is also the first to use Italic type, designed by Venetian punchcutter Francesco Griffo. In Lucas Cranach invents the chiaroscuro woodcut, a technique in which drawings are reproduced using two or more blocks printed in different colors. The Italian Ugo da Carpi is one of the printers to use such woodcuts, for example in Diogenes, the work shown below. The Bembo typeface is named after him. Christophe Plantin is one of the most famous printers of this century. In his print shop in Antwerp, he produces fine work ornamented with engravings after Rubens and other artists. Many of his works as well as some of the equipment from the shop can be admired in the Plantin-Moretus museum. Seventeenth century Plantin is also the first to print a facsimile. A facsimile is a reproduction of an old book, manuscript, map, art print or other item that is as true to the original source as possible. The printers, Robert Barker and Martin Lucas, are fined and have their printing license revoked. The tiny pits in the plate hold the ink when the face of the plate is wiped clean. The first American paper mill is established in Eighteenth century In the German painter and engraver Jakob Christof Le Blon produces the first engraving in several colors. He uses the mezzotint method to engrave three metal plates. Each plate is inked with a different color, using red, yellow and blue. Later on, he adds a fourth plate, bearing black lines. This technique helped form the foundation for modern color printing. William Caslon is an English typographer whose foundry operates in London for over years. His Caslon Roman Old

Face is cut between and The letters are modeled on Dutch types but they are more delicate and not as monotonous. It is generally considered to be the first general interest magazine. In Benjamin Franklin establishes his own printing office and becomes the publisher of the Pennsylvania Gazette. Alois Senefelder invents lithography in and uses it as a low-cost method for printing theatrical works. In a more refined form lithography is still the dominant printing technique today. Another famous person from this era is Giambattista Bodoni who creates a series of typefaces that carry his name and that are still frequently used today. They are characterized by the sharp contrast between the thick vertical stems and thin horizontal hairlines. Nineteenth century In Charles Stanhope, the third Earl Stanhope, builds the first press which has an iron frame instead of a wooden one. This Stanhope press is faster, more durable and it can print larger sheets. A few years later another performance improvement is achieved by Friedrich Gottlob Koenig and Andreas Friedrich Bauer who build their first cylinder press. Their company is still in existence today and is known as KBA. In Godefroy Engelmann is awarded a patent on chromolithography, a method for printing in color using lithography. Chromolithographs or chromos are mainly used to reproduce paintings. The advertisement below is from the end of the century and shows what can be achieved using this color printing technique. Another popular technique is the photochrom process, which is mainly used to print postcards of landscapes. It costs five pence in Around cards are printed and hand-colored. Ten of these are still in existence today. Around the same time the American inventor Richard March Hoe builds the first lithographic rotary printing press, a press in which the type is placed on a revolving cylinder instead of a flatbed. This speeds up the printing process considerably. This process can be used to faithfully reproduce the detail and continuous tones of photographs. With this typesetter, an operator can enter text using a character keyboard. The machine outputs the text as slugs, which are lines of metal type. This pop-up book contains six pop-up scenes of circus acts, including acrobats, clowns, and daredevil riders. In Bibby, Baron and Sons build the first flexographic press. This type of press uses the relief on a rubber printing plate to hold the image that needs to be printed. Twentieth century In American printer Ira Washington Rubel is instrumental in producing the first lithographic offset press for paper. In offset presses a rubber roller transfers the image from a printing plate or stone to the substrate. Such an offset cylinder was already in use for printing on metals, such as tin. Screen printing quickly becomes popular for producing expensive wallpaper and printing on fabrics such as linen and silk. A few of the new press manufacturers that appear on the market are Roland nowadays known as Man Roland in and Komori Machine Works in In Hallmark, founded in , creates its first Christmas card. It can be used for printing banknotes. Over time security printing becomes one of the main focus points of the company. The first commercially successful series of paperback books is published by Penguin Books in the UK in Earlier in German publisher Albatross Books had already tried to market a series of lower-priced books with a paper cover and glue binding. Penguin copied many of the concepts of their failed attempt, such as the use of color-coded covers. In Xerography, a dry photocopying technique is invented by Chester Carlson. The first commercial xerographic copier is introduced in but it is the Xerox plain paper copier that is the breakthrough. A popular press from that time is the Heidelberg Tiegel. This is a unique numeric identifier for commercial books. Pad printing can now be done on an industrial scale. In the USA newspaper circulation reaches its highest level ever in The first laser printers, such as the IBM and Xerox , hit the market in They are prohibitively expensive but useful for applications such as cheque printing.

The book of festivals and holidays the world over. Report on the East Gippsland area, review, August 1985. Adventure Three: Lets Learn About Language Mathematics of random media Frequent questions about universal design for learning Grace Meo Ccna study guide First day of school or Sunday School You are a priest forever A Jesuit apologia : appellant abuse The Germany of to-day. Re-union of the sons and daughters of Newport, R. I. August 23, 1859. Games workshop painting guide ISIS OF CORINTH 72 Elizabeth and Colonel Fitzwilliam Filing for bankruptcy Grays anatomy 39th edition Medicines and society GACE Professional Pedagogy Assessment 171, 172 The Jackson Trail Who Lives Here And Why Asus p8p67 le manual Safety and sanitation in institutions of higher education Merleau-Ponty and Marxism Retreat or, the machinations of Henry Connections in the mind and brain : the biology of dreaming. networks in the cerebral cortex Village life in Palestine Introduction: Why the Genesis lectures? Episodes : a laugh and a tear in every photo Natalie King Earth and its peoples 6th edition Effect of carbohydrate source on postprandial blood glucose in subjects with type 1 diabetes using insuli Aileen Carol Wuornos Amflo retractable hose reel parts German POWs in South Carolina The Art of Fighting Python 3 web development beginners guide Act december 2017 Masculine dominance and the state Varda Burstyn. Business ethics and professional values Selected Literary Commentary In The Lite Contemporary perspectives on property, equity, and trusts law