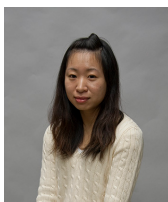# Printing changed the world
– now the world is changing printing
2012-2022

A team of RIT students share their opinions and predictions on where the Printing Industry will be in 2022.

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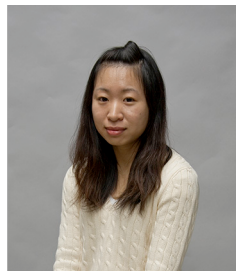
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Introduction

It was September, 2011. We had just dragged ourselves out of our beds for the sake of our Industry Trends class with Frank Romano, known industry guru and author. We weren't quite sure what to expect, but we were in no way prepared for what came next.

"By the way, you're going to be writing a book."

We looked at each other, then looked back at Frank.

"You're going to be writing a book about YOUR thoughts on what is going to be happening in this industry. You're going to be predicting the future, ten years from now."

We looked at each other again, incredulous. What did we know about the future? It was hard enough to predict five years out with today's rate of change, let alone ten.

A collective gulp went around the room. We were panic-stricken. But Frank was serious. Dead serious. And so we began…

Our Thoughts About the Future

For each of our predictions, we used arrows to gauge how we felt the market for specific printed products would be in the future. Five up arrows means we see a huge growth opportunity. One down arrow means a slight downward trend. And five down arrows means we feel it's best to jump ship sometime in the next few years...

Collectively, we see mobile devices as the great enablers of digital distribution, allowing on-site pop-ups on customers' displays, and easy access of technology from anywhere, empowered by widespread wireless connectivity. These may currently be smartphones and tablets, but they will continue to evolve to do more with less. Multimedia allows a level of expression in documentation and advertising which cannot be replicated in print.

We also see the Postal Service going away. It is clear that it will have to change drastically in order to survive, but there is already dwindling need for its services. Unless someone is trying to reach a specific geographical audience, digital can do it better in many cases.

But, packaging will never go away. If anything, the great connectivity of nations makes the demand for packaging and e-commerce surge. There is no substitute for packaging, and new technologies will empower packaging designers and printers to creatively influence the world.

There is also no replacement for printed security features. At least, not yet. Anything digital can be hacked, duplicated, and otherwise tampered with. Anything foolproof can be trumped by

a bigger fool. And those "fools" are getting cleverer by the day...

Also, industrial printing is coming up just around the bend, rich in opportunities for the rebirth of the industry. Manufacturing and medical science may never be the same again.

Summary

Despite great difficulties, the print industry will survive and transform. Printing used to change the world, but now the world is changing printing, and printers have to respond to it. We see a bright and rich future ahead, for those who are prepared to adapt to it. And certainly, take our predictions with a grain of salt. Just remember to keep your eyes on the horizon...

Ad Promo

Booklets • *Brochures* • *Circulars* • *Flyers* •
Inserts • *Mass-Mailed Coupons* • *Pamphlets*

Promotional documentation mass-distributed to consumers, or distributed on-location in a store or at an event, such as a trade show or convention.

Booklets

By definition, booklets are saddle- or wire-stitched bound publications, smaller than books, but bigger than brochures. Usually booklets are defined as small bound publications of sixteen pages or more.
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Booklet production has already shifted from offset to digital due to their decreasing print volume, but personalization could be used to give another point of interest to this printed product. Indeed, as an example, one can imagine receiving personalized booklets from a car manufacturer which introduce its new model, printed in one's favorite color. On the other hand, the "static" booklet, which is already printed on an on-demand basis with digital presses, will probably shift online by 2022. However, it will not be the end of the booklet due to the volume of information it can contain and the fact that some products are not especially enhanced by variable data. It still can be an appealing tool for a company having a small range of products to present.

Brochures

Single sheets folded into multiple pages, either containing information or used as a tool for promoting a service or a product
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Brochures will still have use at trade shows since they are events at specific locations which digital distribution cannot readily access, but they will be less used for other purposes. Indeed, brochures will be mostly used to drive readers to other contact points or media (such as the Internet) through "call, click, or visit" campaigns, using QR codes and smartphones or other smart devices.

The printed volume will decrease because the Internet allows users to access the latest versions of a "brochure" with all of its updates

since the last print run. The digital brochure could be presented as a static brochure to download, or it could use Internet multimedia with video, sound and other interactivity features. However, brochures will not entirely disappear since not everyone has or wants access to information through digital media.

Circulars

Circulars are advertisements which are either mass-mailed to residents of a particular location, or are inserted into newspapers for distribution.

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Circulars are primarily distributed through newspapers, and their effectiveness is based on the readership of those newspapers. The Internet is largely responsible for the decline of the newspaper industry by reducing newspaper readership and impacting the profitability of ad circulars in turn, which had been the primary revenue source of those newspapers. In 2000, advertising circulars in the newspaper industry represented 9.2% of the total advertising revenues, representing about $5 billion. In 2010, advertising circulars represented 18% of the $29.7 billion in the total news- paper ad revenues, but not because they were making more from those circulars. Rather, it was because readership had declined so much that the circular's revenues became a bigger proportion of what revenues were remaining. However, printed ad circulars are becoming less appealing to marketers due to the declining readership of newspapers, so newspapers are finding ways to digitize themselves and the circulars in order to keep their industry afloat. Even though remaining newspapers will still include ad circulars, newspapers overall are a declining industry, and printed ad circulars will decrease alongside.

Flyers

Advertising circulars consisting of single, unfolded sheets, not used for direct mail. They are not size-dependent and often vary greatly, but are smaller than posters.

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Flyers are an inexpensive method of getting a message in front of a location-based mass audience. Because they are hand-distributed, posted or dropped in front of the door in specific geographical areas, the flyer cannot be easily replaced by digital distribution, and thus will be used in even bigger quantities. Despite being an unexpected solicitation, flyers are viewed as less annoying compared to emailed spam, so they can have a greater impact on the reader than an email solicitation. Indeed, more than 3 billion unsolicited spam emails are sent every day, and are often deleted without even viewing the contents. Variable data printing will also increase the role of flyers in advertising campaigns, enabling them to target specific audiences or better meet the needs of the consumers they are sent to.

Inserts

Pre-printed advertising, consisting of multiple pages, either bound into or loosely inserted into newspapers or periodicals.

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Similar to ad circulars, the future of inserts is strongly related to the future of the newspaper industry. The printed volume of newspapers is continually decreasing with no signs of slowing down, and inserts will also be decreasing rapidly alongside. Also, people reading newspapers tend to be of older generations, since the younger generations are getting their news online instead. From a marketing point of view, it's important to keep that in mind in order to reach the targeted market, which means ad designers should withdraw from printed newspapers and focus on online advertising instead.

Mass-Mailed Coupons

Coupons are individually- printed sheets representing discounts or other offers, usually containing a bar code or other tracking information.

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Coupons' printed production will remain relatively steady or slightly decline for several reasons. Using coupons is an efficient way to attract people to a store or market in a geographical region, but mass-mailed coupons are going away in favor of personalized coupons, which can improve the coupon's efficiency by targeting consumers who are more likely to purchase the product.

However, where non-personalized coupons shine and digital distribution cannot compete is through in-store coupon deals, which are presented to every single customer who enter into the store at the time they are shopping, and may encourage them to buy products they were not originally planning to. Good products for these coupons are those which remain vital for everyone and do not require personalization, such as: soap, water, milk, shampoo, or salt. One way to use them would be to integrate them with a flyer with the help of QR codes, which can drive consumers to a website with more choices and thus opportunities to sell.

Online coupons also tend to encourage customers towards online ordering rather than towards a physical store, unless the store already has contact information for customers in a geographical area. Though many stores are capturing contact information and personalization data from customers through their membership cards, many customers still are wary of providing personal information and weary of being bombarded with advertisements. Senior citizens will still prefer a printed version of coupons and a physical store visit than an online interaction.

Even though mass email coupons can lead to online orders, printed coupons still have a greater impact for local markets and in-store persuasion, so they will still be viable in the near future.

Pamphlets

Brochures and pamphlets are tools for promotion and disseminating information.

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Pamphlets differ from brochures in that they are non-commercial in nature, whereas brochures are designed to lure prospective customers to a product or service. Printed volume of pamphlets will decrease as the Internet is increasingly used as the primary provider of information for consumers. If pamphlets still need to be printed, they will be produced with an office printer on-demand, not from a commercial printer.

Books

Art Books and Graphic Novels •
Hardcover • *Mass-Market Paperbacks* •
Romance Books • *Self-Publishing* •
Textbooks • *Yearbooks/Memory Books*

In the past a book was defined as any printed document that is bound. Even a list of telephone numbers was called a phone book. When people think of a book however, most recall a classic novel they read growing up. What will become of books when, with just a tap to a screen, you can flip the page of your favorite book on an e-reader?

Art Books and Graphic Novels

Narrative works conveyed in sequential pieces or other works of art printed and bound together.

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With advances in technology, art books and graphics novels will both benefit and challenge future artists. The Canon EOS 50D and Nikon D90 have opened the door for many artists by allowing them to film with a SLR camera. Soon, art books will turn into a new media production of both pictures and HD video. Printing an art book would be a luxury piece that would be produced on- demand for the consumer.

With the growth of e-readers and iPads, there will be opportunity for artists to produce animated novels. Graphic novels will not only be able to be printed or turned into an electronic file, but will also be given the option for animation, to give consumers a different user experience. A select few will buy the printed version, but it will be a luxury product due to the use of special substrates (e.g. high gloss, waterproof, high rub-resistance paper), spot colors, special effects in the print, and limited editions with personalized features.

Hardcover

Books with hard covers containing text and/or pictures.

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Hardcover books will survive by an individual's preference to hold an actual book. Hardcover books will continue to improve design in order to increase their perceived value and collectability, making it worth purchasing. Although hardcover books are declining in revenue, it is advantageous to use e-readers as test runs for books.

It would allow publishers to see which books sell well and better gauge consumer demand for hardcover editions. Hardbacks will not disappear, but do need to evolve to compete against e-readers.

Mass-Market Paperbacks

Books printed primarily on newsprint for mass-market audiences.
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Mass-market paperback books are known for being portable and cheap. There is no fear or consequence of accidentally dropping the book into a body of water or leaving it behind somewhere. Unlike e-readers, paperback books can easily be replaced and therefore will continue to be published even into the future. However, in the next ten years e-reader advances will significantly affect mass-market paperbacks. According to the Association of American Publishers, the paperback has seen a 17% decrease in sales between 2010 and 2011, whereas e-books have increased 160.1%. With e-readers becoming more common, someone can just download a book to their e-reader without a trip to the store. Publishers will no longer have to gamble on mass-printing best sellers; on-demand printing will be able to print and ship each book as orders come in. A digital file could be stored on-hand for future reprints.

The paperback industry is changing every day as new e-readers are introduced to the public. Current e-readers are more expensive than several actual books, but as more consumers purchase a device, the price will decline—at least for the older models. E-readers also pay for themselves once a dozen e-books have been purchased, due to the cost savings. One of the most recent e-readers released to the public is Amazon's Kindle Fire tablet. This device allows the consumer to purchase and access movies, TV shows, music, magazines, and books, and store them through free online "cloud storage" on Amazon's website. As e-readers adapt to better meet customers' needs, such as improved readability, paperback books will become a commodity for those who prefer the feel of a book in their hands.

Romance Books

Genre of books which focuses on relationship and romantic love between two people.

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According to Romance Writers of America, romance fiction was the largest share of the U.S. consumer market in 2010. It is estimated that in 2011, romance fiction revenue will be $1.368 billion—an increase since 2010. However, most of the revenue will be made from the e-books sold through publishers. Printed romance novels will be replaced by e-reader editions because of the discretion it gives to its readers. You can't judge a book by the cover anymore with the anonymity that e-readers provide. Romance is now the fastest-growing segment of the e-reading market, providing publishers an opportunity to benefit. Barnes and Noble have more than 25 percent of the market in romance e-books. This allows them to sell their book cheaper than other retailers. Therefore, consumers have switched from hard copy to e-book for the reduced prices and anonymity.

Self-Publishing

Publication of books or other media by the author, without the involvement a publisher.

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New and aspiring authors will benefit from the industry moving toward on-demand printing and e-book publishing. Publishers won't have to gamble on the potential book sales, and e-books require no further work to produce and distribute additional copies. Since less pre-press labor would be required to fit an author's transcript into a standardized template for on-demand printing, it will become more popular for authors. There is no money being wasted on printing, binding, or shipping a book that will not sell. Self-publishing is booming, thanks to the ease of use of these technologies.

Textbooks

Books for trade, elementary, high school, or college teaching.
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As iPads, Kindles, and other e-readers are implemented into daily life, textbooks will also be affected. According to the U.S. Census Bureau, textbook revenue decreased from $11,162 million to $9,891 million from 2008 to 2009. This number will continue to decrease as electronic textbooks would allow students to have the most current edition without requiring expensive reprints. Over time, electronic textbooks could integrate real-time updates similar to what we see on the Internet. In order for students to benefit and make the transition, teachers also need to start using them in the classroom.

In May 2009, California's governor Arnold Schwarzenegger launched the "Free Digital Textbook Initiative." With the average printed textbook costing $75 to $100, cheaper digital textbooks were purchased as an alternative in order to close the budget deficit. However, in 2009, e-readers were expensive and seen as more of a luxury device than a learning tool.

In 2011, e-readers such as the iPad, which was released in 2010, are now being integrated into the classroom. A private high school in San Jose, California, Archbishop Mitty, plans to have every student using an iPad in and out of their classrooms by Fall of 2013. The iPads are financed through a leasing program at the school, to make them easier for families to afford in lieu of traditional textbooks. Although this is just one school, e-readers are already being adopted as the new format for textbooks, and it will only be a matter of time until they are in every school across the nation.

Yearbooks/ Memory Books

One-time publications memorializing a special event, such as graduation or vacation.

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Yearbooks are traditionally printed by web or sheetfed lithography in large quantities by companies such as Jostens or Herff Jones, but will now be printed on demand. Yearbooks' and memory books' printing contracts will be given to smaller companies who can print digitally. Yearbooks and memory books are also moving into digital forms such as CDs and DVDs. However, these will never fully replace printed yearbooks and memory books, for there are always new file formats being introduced, which means older formats will have compatibility issues and not always be accessible in the future. Thus, consumers may be unwilling to purchase a digital yearbook or digital memory books that may become inaccessible to them later in life.

In addition, an American tradition of signing yearbooks would be unavailable if the yearbook was in a digital form. This would lead to a need for an alternative way of "signing." This however could be in the form of a booklet printed on the side or a personalized web site where friends can post messages. This could be beneficial to school advertisers or to the school itself.

Electronic media offer many options for memory books to be in video archives, however there once again is the challenge of finding a universal file type that can be opened in the future. Therefore, yearbooks and memory books will keep their markets alive with the use of on-demand printing. Self-publishing could also be a key factor in allowing consumers to create their own memory book using a template. Memory books will continue to grow as people want to keep track of life experiences. With the ability to travel more as globalization increases, people will also want to document their experiences. As a result, memory books will continue to flourish in the publishing industry.

Catalogs

Business and Industrial • *Consumer* • *Dealer and Distributor*

Publications which advertise a company's products and services with the objectives of informing the customer and/or generating a sale. Catalogs allow customers to identify and select the correct product/ service and facilitate its ease of ordering. They can be physically mailed, sent by email or acquired on location.

Business and Industrial

Business and industrial catalogs are used to do business between companies. They differ from consumer catalogs in that they emphasize technical information to meet a company's needs, whereas the consumer catalogs emphasize a consumer's psychological desires.
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Business and industrial catalogs are geared towards informed decision-making versus impulse purchasing, because they are fulfilling a need for a business rather than appealing to the end customer's desires. They will disappear because they will published online, since digital catalogs or websites can host more information, and online purchasing is much more timely than ordering through a catalog.

Consumer

Consumer catalogs are publications which are designed to generate interest in a consumer to either visit a store, visit a website, or call a company, in order to purchase a product or service.
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The number of personalized catalogs sent to consumer audiences will decrease slowly, despite increased costs of distribution, because printed catalogs tend to get higher viewing rates than emailed ones and can convince more consumers to browse, thus leading to more potential sales. Those catalogs can also work as part of a cross-media marketing strategy to encourage those browsing customers to visit the company website for more information or to purchase products. Catalog personalization will create even more opportunities to reach a receptive audience and improve their response rates. The page count of these catalogs will be less than the ones we receive today, but they will be more

effective in generating results.

For high-quality goods which benefit from samples or very high-quality printing, those high-quality printed catalogs will use specialized inks, paper or finishing processes to distinguish themselves from the competition and convey quality to the end user. Every time an e-commerce package is shipped for luxury products, a catalog tends to be included. For instance, Victoria's Secret sends a catalog with every purchase which includes perfume samples of collaborating marketers. Other high-end luxury products also benefit from the brand image boost and conveyed product quality from a well-printed catalog. These high quality catalogs may also include future products to generate consumer interest, and can contain discounts, coupons and other marketing tools to get consumers onto their Web page.

Non-luxury products will gradually migrate away from catalogs, because their e-commerce sites in essence do the same job for less, and they can count on walk-in impulse purchases at their storefronts. They may also migrate towards online mass-retailers such as Amazon, whose retail sites function exactly like catalogs but also include direct links to e-commerce applications for quick, easy-to-use sales interfaces.

On-site catalogs will decrease overall as technology develops to allow on-site digital distribution. For instance, as a customer approaches a store in a shopping mall, a catalog with coupons and special offers could immediately pop to their mobile device to entice them into the store. Some high-end expensive products which do not generate walk-in sales, such as automobile and cruise companies, will still have to use printed catalogs, but the price of the product still allows for the printing of a high-quality catalog.

Dealer and Distributor

Dealers and distributors are "middle man" companies who buy goods from producers and sell them to retailers or consumers. Dealers use catalogs to show, advertise and promote those products to their customers. Usually, dealers personalize their printed catalogs and use their own brands, so the final users do not buy directly to the manufacturer.
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Dealers and distributors are valuable for large manufacturers since they can take care of customer service, have the infrastructure to handle a multitude of small orders, and can bring added value to the consumer. Therefore, they are not going away any time soon.

Dealers and distributors' catalogs will become completely electronic by 2022. PDF catalogs can be emailed to customers, and interactive sales applications can be used on websites or on mobile devices for online ordering. If they are properly linked to producers' databases, these catalogs can be instantly updated with the latest products and offers with minimal effort, bringing great value to the deal-hunting consumer.

Direct Mail

Envelope Mail • *Notices* • *Personalized Coupons*
Postcards • *Reply Cards*
• *Self-Mailers*

Advertising, promotional, or informational documents sent to specific consumers or other businesses, often using variable data or personalization to reach their target audience.

Envelope Mail

Stamped and addressed envelopes, used to send documents through the postal service.

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Envelope mail has already been in a steady decline for quite some time. The Internet has revolutionized the way in which we communicate, and traditional envelope mail has been termed "snail mail" for its comparative ease of use and speed of delivery. To add to this, the USA is experiencing a crisis in its Postal Service, which may be entirely disappearing by 2020 and thus greatly affects the use of envelopes.

Notices

Single sheets, usually unfolded, that are used to communicate information about events or notifications.

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The beauty of notices is that they are a simple way to grab consumer's attention about events or changes in the community or within a company. Most often, notices are distributed door-to-door or posted in public areas to draw attention. Their largest use of notices is with smaller organizations or clubs trying to notify the community about events and increase their membership.

With the marketing power of the Internet and the widespread use of social media, notices will take a decline. Notices will always be around and used by smaller-budget firms who do not have contact information for their potential members, or by companies with information which their consumers are legally required to receive; however the overall use of notices will decline severely as social media gains geographical access. The notices of the future will be integrated with the Internet through QR codes or other methods

to drive viewers to their website, increasing convenience
and response rates.

Notices will be predominantly printed with digital printing, since
the clubs and groups using them will have small budgets and not
need large quantities to reach their audience. Long runs on offset
presses will no longer be the go-to production method for notices.
Variable data and customization may not be applicable since the
information and events are specific to the organization, though
they may be used to reach target markets in different regions.

Personalized Coupons

*Individual printed sheets representing discounts or other offers, usually
containing a bar code or other tracking information.*
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The marketing strategy of a coupon has been successful and
has worked for decades. A coupon opens up the market by
encouraging consumers to try something new, promotes brand
loyalty through cost savings, and allows for direct tracking of
marketing campaigns through scannable codes.

Consumer data has been instrumental in allowing companies to
customize coupons for their specific customers, based on their
shopping trends, either encouraging them to try a competitor's
product, save more on their favorite brands, or get them in the
store on days they don't normally shop.

With the influence of the Internet, and the growing use of online
coupons through company email lists or organizations such as
Groupon or Couponsuzy.com, it is clear that coupons themselves
are popular, but the way in which they are delivered will rapidly
change.

The volume of commercially-printed coupons will decrease every
year. The trend will be towards online coupons which are printed
by the consumer at home, and the coupons may directly
incorporate QR codes or other electronic media tie-ins for

tracking results, convenience to the consumer, and increased use rates. Consumers will no longer need to bring in printed coupons when they can simply show them on their phone at checkout.

Postcards

Postcards are single, unfolded sheets that are mailed to an individual or a company.
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Most people on vacation use postcards as memorabilia to share their adventures with family and friends. This has gone on for decades and will never truly disappear, as the sentimental value in a postcard will never go away. Increases in electronic media use will cause people to value postcards even more, because sending an electronic message is not able to reproduce the unique value of a postcard. Postcards are also a cheap and effective way to promote a business, product or event. Being sent by mail and or distributed at events they prove to be an inexpensive and simple way for a company to promote their message.

Social media, such as Facebook, has become a quick and cheap replacement for postcards, as people can upload their photos online for their friends to view almost instantly and they can discuss their adventures as they are happening. Since the primary appeal of postcards is to connect with friends and family, social media has become a simple and effective replacement. However, since social media is known as a quick and lazy way to communicate, getting a postcard in the mail is even more unique and special to the recipients.

There will be a decrease in the market for postcards, but they will continue well into the future. Digital technology will be dominant in producing postcards due to short runs and full color requirements. Toner and inkjet technology improvements will influence this product's transition from offset.

Reply Cards
Unfolded self-addressed single sheets, which are mailed, inserted, or bound into publications.

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Reply cards are typically mass-produced and distributed to large audiences. A common strategy to grab the reader's attention is through using color and unique designs. Due to the ease of use and convenience of electronic media, reply cards will decrease at a rapid rate. It is far more convenient and faster for a consumer to subscribe to a magazine or accept a "limited" offer online than it is to fill out and mail a reply card. Also, reply cards are frequently seen as an annoyance if the consumer is not specifically interested in using it. Personalizing cards using variable data is not an effective option because consumers are still not going to want to physically fill out a card if they can simply go online to do the same thing.

One possibility is to integrate QR codes or other electronic media tools on reply cards, so consumers can use the printed product to go directly to the website for their reply, saving time and improving convenience through synergy. The use of color will continue to increase as publishers attempt to grab consumers' attention with catchy designs. Longer runs of reply cards will still be printed using offset, but as digital technology increases, it will slowly shift over to capture the smaller print runs.

Self-Mailers
Single sheets similar to flyers, usually folded and mailed without requiring an envelope.

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Self-mailers are an inexpensive method for increasing volume and/or sales. Typically full-color, it draws attention and convinces consumers to call, click or visit. With increased use of variable data to personalize eye-catching messages to recipients or reach target markets more effectively, self-mailers are now even

more effective in drawing higher response rates. In combination with the use of demographic targeting, the overall cost effectiveness is greatly improving.

Self-mailers are expected to increase in total volume. They have proven to be a cost effective way for companies to reach out to their targeted audiences and receive a high response rate. Color printing will continue to increase, and with the use of variable data and advances in digital technology, digital printing will be the dominant process used to produce self-mailers. Offset will lose its share of self-mailer production.

Directories

Industrial / Business •
White Pages • *Yellow Pages*

Alphabetical listings of phone numbers for residencies, businesses, or individuals in organizations, in a certain location or group of companies.

Industry / Business Directories

An industry/business directory is a website or print media listing of contact information for which lists all industry/businesses within some a category. Businesses directories can be categorized by type of business, location, activity, or size. Business contact information may be compiled either manually or through automated online searches.

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Like the White Pages and the Yellow Pages, industry and business directories provide company contact information, but they differ in that they are specific to one business or industry. These directories will go digital and the need for hard copies will rapidly vanish.

Since these directories are also available online, the need for hardcopies will absolutely disappear. Also because each industry is so specialized, the directories mostly serve for the companies' rather than the individual's use. The electronic form will replace the hardcopy in the future because they are accessible digitally, which is more convenient and easy to access, and companies will have Internet connections anyway as a requirement to develop their business and keep in touch with their customers. The online version of the industry directories and business directories will always available to them.

What's more, digital directories cost much less to produce compared to printed ones, because of savings on paper, ink, and production. Electronic search engines also help a lot to get listings for customers, even with very little available information.

In the future, there will be very few printed directories of any kind, except perhaps for archival in case of power disruptions. People may preserve the directories in government offices.

Otherwise, printed directories for daily use will disappear within five years. Since the younger generations and even more of the older generation are getting used to computers and the Internet, they will use only the electronic versions of directories in the near future.

White Pages
Alphabetic listings of landline phone numbers for residencies in a given region. Telephone directories using the name "White Pages" exist in 91 different countries.
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Yellow Pages
A classified telephone directory or section of a directory, listing subscribers by the type of business or service they offer, usually printed on yellow paper. Yellow pages almost always include paid advertising.
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There's no doubt that the need for both White Pages and Yellow Pages will greatly decrease in the future due to the popularity of multi-media. With the high-speed development in digital technology, the prevalence of cell phones and smart phone is pushing the white pages and yellow pages to disappear. Not only is it easier to contact people with digital methods than it is to make a phone call, but also, the numbers for cell phones and smart phones are not listed in the White Pages. Therefore, White Pages are rapidly becoming obsolete. However, the market for hard copies of the Yellow Pages will always be there, but they'll be printed on demand with digital printing technology. Printing on-demand not only will eliminate wasteful excess printing, but will also give people the opportunity to choose the specific content that they want, by industry or region.

For example, the most frequent service numbers that a person would use are limited by reasonable driving distance from where they live. Sometimes a customer is only interested in the service

of car repair in a small region. The need for fifty pages of phone numbers for the whole county is over. In this case, what works best for this specific customer is just to have a hardcopy with the car repair service numbers in his or her region. He or she would be happy to order printed white pages with just the information he needs.

Another advantage of printing on-demand is that the white pages are going to be more reliable and less out-of-date if they are printed from a regularly-updated database, rather than once a year. Data updating will be more frequent, and the publishers can verify the information within the database throughout the year to keep it current. The white pages are still going to exist until the phone number database can be reachable by portable electronic appliances.

Financial / Legal

Ballots • *Business Reports* • *Census*
Legal Communications • *Transactional*

These printed products are legally-required and regulated publications produced by governmental and corporate entities, and are held to exacting standards in their security, information quality, accessibility, and ease of future reference.

Ballots

Ballots are tools for recording individuals' votes in organizational and governmental elections of personnel, decision-making processes, and other applications.
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VDP may see use in ballots in order to print them on-demand or tailor ballots to different user groups. Security or fraud concerns may lead to continued use of printed ballots in government elections, though organizations may transition to digital distribution for cost savings and ease of tallying.

Later, as a larger proportion of the population begins to work, shop, communicate, and learn from home, it is natural that they will be less inclined to leave their homes in order to vote as well. There will be a demand for voting and ballots to go digital, reducing the demand for printed ballots. In order for this to happen, digital security needs to improve to reduce errors in the vote-counting process and prevent hacking of voting systems. Ease of digital access may begin with improvements in voting machines at voting locations. Then ballots may transfer online through a secure government network, and away from print. Voter turnout may increase due to improved ease of access and reduced time commitment. Electronically counting digital ballots is far quicker than machine- or hand-counting paper ballots, improving the speed with which elections can be determined. There will need to be some redundancy in the process for security concerns or fraud, however, but this too may be digital.

Business Reports (Annual, Quarterly, 10K) *Business reports are legally-required documents describing how a business performed during a specific fiscal period, such as a fiscal quarter or fiscal year, are legally required to be filed with the SEC, and distributed to stockholders and shareholders for both promotion and information.*

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Business reports will go digital with the option to print on-demand as more consumers digitally access their information, but what copies are still printed will be high quality and well-designed. Portable digital devices with improved search features will improve an individual's ability to use these digital documents as reference during meetings and conferences, which will greatly reduce or eliminate the need for printed copies. In addition, due to the multimedia and full-color viewing capabilities of portable digital devices, business reports will become larger and better designed, with integrated multimedia functions. This will improve their marketing appeal and boost the brand image of the companies who have invested in good design.

Census

The census is a regular survey conducted by a government, sent to residencies and businesses within the country's bounds, to calculate actual population and other factors.

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Due to its high sensitivity to fraud, it is difficult to determine how the census will be conducted in the future. Currently, the printed census is conducted through the postal system, with follow-up visits to homes which did not mail in their forms. However the postal system will largely be gone by 2022. The census may be distributed through a surviving branch of the postal service, to prevent fraud. Later, the government will develop a new digital method of delivering the census to businesses and residences, since every residence and business will have internet access and be able to view digital media.

The resulting census report will be digitally distributed and archived much sooner, though it may be printed on-demand by request and for archival purposes. This will make the data much more accessible overall, and improve readers' ability to search and compare results between different census years.

Legal Communications

Legal communications record court case decisions and documents other laws, and also can be messages from the government or governmental organizations to notify a person or business of law-related information.
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Overall, printed legal communications will decline in favor of more secure methods of digital distribution. Legal communications with individuals, such as notices, will largely go digital as electronic security improves and the postal service disappears. Tickets for traffic violations will be digitally transmitted to vehicle owners by law enforcement officers after they perform an owner lookup using the license plate of the offending vehicles.

Legal statutes will be printed on-demand for archival purposes in legal libraries, but otherwise will be stored digitally in secure, publicly-accessible databases linked to government websites. Once statutes are stored digitally, they will be easier to sort, search, access, and compare. This would also enable access of digitized legal records while the reader is physically located in a courtroom, which may have an impact on legal courtroom procedures.

Transactional (Receipts, Bills, Statements)

Transactional documents are legally-binding documents which record sales, exchanges of money, and services rendered between two parties, such as a customer and a business, or between two businesses.
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As commerce increasingly goes digital, so too will receipts, bills, and statements, as nearly all forms of transaction will be

conducted over the Internet or from multifunctional devices. In-store consumer technology will allow "smart checkout" once RFID transmitters are on all store products, merely requiring the consumer to pass through a large scanner and be automatically charged to their associated account through eWallet applications on portable electronics. The receipt for their shopping trip would likewise be digitally sent through their bank account's transaction records. Digital security features will also improve for those receipts, and smart devices will be used to scan and verify a receipt code on a customer's digital device display, so consumers may increasingly return products to the storefront without a printed receipt.

Bills and statements will no longer be mailed due to the fact that the USPS will have disappeared due to rising postage and distribution costs, which leaves companies the option of either going digital or trusting a private distributor to handle their customers' sensitive data. Digital distribution will be the clear choice, especially since customers will already be interfacing with those companies digitally for all of their purchases, payments, and communication. There will be no need for printed bills and statements, though if any are still printed, they will likely be printed on-demand from a single on-location printer rather than at individual cashier registers.

Industrial

3D • Batteries and Solar Panels • Components • Electronics • Medical • RFID Tags • Surfaces • Textile

Industrial printing products are components of other manufactured products, using various jettable "ink" materials to create printing other than text, illustrations, or photographs.

Since industrial print products are manufacturing products rather than marketing or advertising products, they track with the demand for the manufactured products themselves. Industrial printing has a potential for growth in the near future as printing processes diversify to use various liquid polymers and other materials in place of traditional imaging inks, especially in the realms of electronic, component, and medical printing.

Printers and presses may also be repurposed for producing components of other products. Inkjet and waterless offset will have potential for finer resolution printing than flexography and screen printing, while inkjet, screen printing, flexography and gravure may achieve higher-density ink film thickness than offset lithography. This will open up different markets and opportunities for these printers, but will require development of precision manufacturing techniques, tolerances & specifications, and quality management–especially in printed electronics.

3D Printing

3D printing is a process by which an actual three-dimensional product may be produced, built up layer by layer with a printing process using various kinds of inks.

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3D printing may become a common manufacturing process in many different industries due to its ability to create three-dimensional products by building up patterned layers of inks. 3D printing can process multiple "inks" of different chemical or material compounds within a single print job, allowing simultaneous production of pre-assembled product pieces, such as joints, bolts, or screws. This eliminates the need for manual or complicated automated assembly procedures in the manufacturing process. There will be a large potential for growth as 3D printing is creatively

integrated into existing workflows, or designed into entirely new manufacturing lines.

Companies are already developing new inks for inkjet printers, since they are capable of printing almost any kind of jettable polymer, ink, or other material. Jettable materials and their associated drying processes are limiting factors, but developments will reveal new opportunities for creative industrial printers. Through 3D printing, previously low-speed, and high-cost production can become low cost, high-speed production. 3D printing can especially reduce the need for specialized production equipment, since 3D printing can create components within other components, reducing production complexity and increasing the speed of assembly tasks. Also, 3D printing can generate multiple parts of a product in one location with minimal need for manual labor. Thus, 3D printing has the potential to radically change manufacturing.

Batteries and Solar Panels
Batteries and solar panels produced via printed electronic methods, not conventional production methodology.
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Printed batteries and solar panels are already under development as of 2010 and will be mass market by 2022, if not sooner. They can be created using repurposed presses which can produce dense and consistent ink films, such as flexography and gravure presses, and screen, inkjet, and 3D printers. These products will be essential for energy storage and capture in the near future. It is also worth noting that printed batteries are already far more efficient than traditionally-produced batteries, due to the decreased distance between contact points in the device. Once they are mass produced and their price comes down, they will quickly displace traditional batteries as the preferred choice of consumers. Once printed batteries and solar panels can be mass produced, especially on flexible substrates, their applicability, accessibility, and market appeal will drastically improve, and

they will be a great opportunity for developing new markets.

Components

Component printing products are parts to another product that is manufactured by other methods, such as the printing on displays in a car dashboard.

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Printed products are already secondary components in many other products today, produced on a wide variety of materials such as paper, wood, glass, plastic, and metal. As older equipment is repurposed and 3D printing is more fully developed, component printing will become a growth area for industrial printers who are shifting their business model away from traditional print manufacturing. Because components are manufacturing products rather than marketing or advertising products, they track with the demand for the manufactured products themselves.

Component printing has a potential for growth in the near future as printing processes diversify to use various liquid polymers and other materials in place of traditional imaging inks. Different opportunities will arise for different printers, based on the capabilities of their equipment. Printers and presses may also be repurposed for producing components of other products. Inkjet and waterless offset will have potential for finer resolution printing than flexography and screen printing, while inkjet, screen printing, flexography and gravure may achieve higher-density ink film thickness than offset lithography. This will open up different markets and opportunities for these printers, but will require development of precision manufacturing techniques, tolerances & specifications, and quality management.

There will be the most opportunities for 3D printers, who can develop inks for a wide variety of materials, and can create dimensional products ranging from microscopic components to construction materials for houses. The possibilities are nearly endless, but require both creativity and investment.

Electronics

Printed electronics uses metallic inks on conductive substrates to create products which require electricity in order to operate. This includes batteries, circuit boards, displays, and solar panels, among others.
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Printed electronics will become a growth opportunity for industrial printers, providing a disruptive force to already-existing markets in electronic circuitry and components. Production methodology for printed electronics is already under development in over a dozen different companies. Flexible conductive substrates will also be developed, improving the durability of electronics and their applicability in new kinds of products. The mass production of printed electronics may reduce the costs of electronics manufacturing overall, and thus make electronics more accessible at lower cost, improving the penetration and opportunities for digital technologies worldwide.

However, for complex circuit board production in advanced electronic devices, there are many specific production requirements which will still be in development by 2022, not yet ready for mass market production. In the distant future, printed circuitry may greatly decrease the costs of electronic devices, and upset the electronics manufacturing industry as a result. In the meantime, it is already possible to produce electronics which do not require very fine resolutions, such as RFID tags, batteries, displays, and solar panels, with specially-engineered printers and presses. All will become mass market by (or even before) 2022.

Medical

Medical printing involves the production of bio-matter through 3D printing processes, using inks which are made up of organic components.
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Medical printing, aka bio-printing, will be a highly-debated and regulated industry in the future. Fully functional organs have already been produced in lab tests, using specialized cells from the organ to be produced or stem cells, and printing on a mesh structural support. Virtually any organ can be produced to grow into its final form and be fully functional, with the potential to revolutionize transplant procedures and medical research. Ideally, this would be performed with stem cells or organ cells taken from the specific patient needing the transplant, greatly reducing organ rejection rates, the need for transplant donors, and the need for organ warehousing and distribution systems, and vastly improving the survival rates of transplant recipients. Medical printing may also improve medical and biological research, with the ability to create and study organs without requiring an organ donor.

However, there will be many ethical and legal debates over the use of stem cells, the possibility for genetic engineering, organ replacements for the aged and wealthy to extend their lifespan, and organ trafficking. There may also be debates over the ethics of growing other organisms, potentially-harmful genetic experimentation, and animal rights for lab-synthesized (grown?) organisms. Despite the risk of controversy, medical printing offers potential growth as an industry.

RFID Tags

RFID tags are antenna, usually printed with metallic inks, which transmit a signal code that can be scanned and read from a distance.
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RFID tags are already producible by current printing processes, and will revolutionize inventory management, store checkout, security verification, and tracking in many different industries. RFID printing shows opportunities for growth with many creative applications and a growing market. New metallic inks will be developed to improve

the cost and signal range of these tags, and conductive flexible substrates will eliminate the need for glass wafers. These developments will improve the applicability, durability, and portability of these specialized electronics, leading to even more demand in the marketplace.

Surfaces

Surface printing creates covering material for table tops, flooring, wallpaper, and other similar products, through the use of adhesives and lamination.

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Surface printing will still be relevant into the future as these kinds of products are functionally needed in homes and businesses, and aesthetically desired. Printed electronic displays may be more cheaply produced on flexible substrates, which would enable more printing processes to produce them. Flexible substrates would also allow a wider variety of printed surfaces to integrate digital displays and, by extension, become multifunctional devices themselves. This may become a new area of opportunity and growth for industrial printers.

Several kinds of surface printing products may become more or less relevant, depending on home and office decoration trends. Wallpaper may increase in popularity as adhesives improve, allow wallpapering in humid environments, reduce preparation and application time, and simplify the removal process. If digital displays or electronic technology are somehow integrated into wallpaper, either functionally or aesthetically, there may be a surge in consumer demand.

Textile

Textile printing involves the production of ink and dye patterns on fabrics of various kinds, such as clothing and home decor.

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Prints will still be relevant for creating the clothing and fabrics into the future, and is slated to grow as new markets are accessed, new manufacturers open, and the population grows. There will always

be a demand for clothing and home décor. Dye printing, inkjet printing, and screen printing will remain dominant textile production processes. Improved inks will allow finer resolution, tonality, and color management, greatly improving the quality of printed textiles. Special inks may also be developed for appealing optical effects. These may increase the fashion industry's thirst for new developments in textile printing.

Internal Communication

Internal communication documents are used within an organization to disseminate information to its constituents, not usually used for advertising or promotional purposes.
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Printed internal communication such as memos and informal correspondences will disappear completely, because they will be replaced by electronic communication, such as email and communication software in personal computers and mobile devices, which are more convenient, easy to use, cheaper per message, and save paper. Material used in offices will decrease due to electronic communication and paperless home-offices.

Documents which record transactions will completely disappear as management and accounting software are getting more accessible and easier to use by businesses, allowing automatic electronic record-keeping and instant information distribution. Receipts are already mostly electronic, and bank transaction records help consumers and businesses keep track of their purchases and stay abreast of fraud. Forms will be also substituted by electronic software/hardware for increased convenience, ease of use, and the ability to produce and distribute multiple copies for record-keeping. For instance, when signatures or user-input data are required for a transaction, the signing/input process could be on a tablet, and a PDF will be automatically sent to the user and company.

Newspapers

Daily • *Weekly*

Publications printed on newsprint paper, consisting of folded, unstapled sheets containing news, articles of opinion, photographs, advertising, correspondence and other general information, such as movie theater events. Newspapers are issued daily or weekly.

Daily

Daily newspapers focus on reporting the most current news locally and nationally on a daily basis, with a few special sections each day, and heavy advertising.

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Daily printed newspapers in the US and Europe will almost disappear because Internet will replace the information dissemination business. Internet brings the immediacy and updatability that printing cannot. In the most crowded cities with effective public transportation, advertising-sponsored newspapers are already given at no cost (e.g. "20 minutes" in Spain) in subway, metro and bus stations, in an attempt to boost readership and thus increase ad revenues. As emerging countries increase their literacy rate and education level, medium-run daily newspapers will appear, covering new geographical areas and demographic sectors.

Newspapers will change their business model to survive, because of consumers mass-migrating to the Internet for their news. Some dailies are in bankruptcy, some are printing fewer pages, and some have closed altogether. In order to survive, some of them will become pro bono organizations; other may merge with advertising/marketing companies, and could even have subsidies or be Government-sponsored. This does not mean that newspaper content will disappear; just the way to deliver their content will be electronic. Some customers will want to have the printed version of the newspaper, so they will have it physically delivered at a higher cost, but most customers will prefer to get their news online.

Weekly

Weekly newspapers differ from daily newspapers in that they tend to cover more specialized niche topics, and have more devoted readership as a result.

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Improvements in digital printing technology will allow short-run newspapers to be more cheaply produced for niches. Highly-customized weekly newspapers or periodicals will be printed using digital technologies, as well, for specific market sectors and population segments, becoming consumer-oriented. Because printing consumables costs are constantly increasing, especially paper, the publishers will reduce the size of the printed newspaper and some of the content will be delivered electronically. They are also transferring digitally similar to daily papers, but somewhat slower due to their appeal to niche markets and their specialized information.

Packaging

CD /DVD • *Corrugated* • *E-Commerce* •
Flexible • *Folding Carton* • *Labels* • *Music* •
Point of Purchase Displays • *Tags* • *Videogame*

Packaging products are designed to contain and protect other products for shipping, storage, and distribution. They also frequently serve to promote the product contained within.

CD/DVD Packaging

Packaging, such as jewel cases or paper sleeves, used to contain CDs and DVDs.

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CDs and DVDs have simplified in packaging from jewel cases to paper cases in many instances to save on production costs, but the storage media themselves will soon become obsolete, and thus CD and DVD packaging production will run out of business. This is due to new developments in digital technologies and file formats, which will rapidly increase the typical size of digital files beyond the storage capacity of CDs and DVDs. CDs are already being phased out by DVDs, but DVDs will soon become obsolete as well. Digital data transfer tools, such as flash drives, email, and, most importantly, cloud storage, will enable the faster and easier transfer of larger files without the need for portable transfer devices. Thus, CDs and DVDs will be neither necessary nor adequate for data in the future, and thus the market for their corresponding packaging will diminish.

Corrugated Boxes

Boxes and other corrugated or heavy stock packaging, used to protect products during shipping and distribution between locations.

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Corrugated boxes will remain a very steady market with great potential for growth in the future. With electronic media changing the way people purchase products through e-commerce, there is much greater demand for the shipping and distribution of products. This will increase the use of corrugated boxes, and with technology such as RFID, it could very likely increase the functionality of the boxes as well. Big box stores are also increasing as consumers and companies seek bulk-purchase discounts, which also increases the demand for corrugated boxes. With electronic media

serving to increase the amount of shipping and distribution worldwide, corrugated boxes are here to stay and grow.

E-Commerce Packaging

E-commerce packaging is packaging for products purchased through e-commerce and then distributed to the consumer.
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E-commerce is predicted to sustain double-digit growth over the next few years as commerce goes global and penetrates the lives of every consumer, greatly increasing the need for e-commerce packaging. Despite dramatic increases in distribution costs in the early 21st century, e-commerce has still boomed, and will continue to grow through 2022. If distribution and fuel costs hold steady or decrease, e-commerce and e-commerce packaging will grow even faster, with great opportunities for packaging printers.

E-commerce is also spurred by the growth of mobile commerce as online shopping sites adopt mobile-friendly interfaces. E-commerce has an unusual niche in "virtual" currencies earned as rewards for online games, promotions, or competitions, used to win prizes which are shipped to the recipients. Stores all across the world are increasingly adding e-commerce capabilities to their websites, as consumers are buying products online more and more.

Flexible Packaging

Flexible packaging is made of plastics or metals to form pouches, usually vacuum-sealed, for containing products which will rapidly expire with contact to oxygen.
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Flexible packaging plastics are all around us and, much like folding cartons, play a key role in getting consumers to pick up and purchase the product contained within. Electronic media does not serve as a threat to this market, since flexible packaging is used to contain products which require an airtight seal or other protective

features, which means that there will be continued growth. The vast majority of flexible packaging is mass-produced through flexography or gravure printing processes, due to the size of the runs and the ink requirements of the substrates. The future is looking bright for flexible packing printers.

Folding Cartons

Folding cartons are made of paperboard, and are cut, folded, laminated and printed on to protect and market the products contained within them. They are typically used in stores for displaying products on the shelves.
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For the majority of the products that consumers purchase, folding cartons play a key role in catching our eye. With countless printing effects added to folding carton it is a crucial element to the product which lies within it. Fortunately, electronic media does not play a threat to this market segment. QR codes could be incorporated as a method to draw the audience to an online video or website for further in-store marketing options, or to get more information.

Folding cartons will remain a steady market long into the future as new products are constantly being developed, and current products are continually spreading to new markets abroad. New packaging technologies may be developed which allow improved packaging functionality, such as sensing when contents expire or are being stored in unsafe conditions, or allow faster checkout with RFID tags.

Labels

Printed sheets cut into units that are affixed to envelopes, cans, bottles, products, and other packaging.
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Labels are legally required on many types of products, from personal care to food items. It allows marketers to promote their products and try to visually differentiate themselves from

their competition, while providing the consumer with legally-required product information. Depending on the final product, many different printing processes are used based on the ink and substrate.

Labels will be a large area of growth as new products are always hitting the shelves, and overseas markets are continually being opened and accessed by new companies every day. There is no threat from electronic media, which makes labels one of the hottest print markets. Digital technology in inkjet will also allow areas of growth in smaller print runs, or customization of labels for consumers.

Music Packaging
Packaging used for the media storage devices music is accessed from.
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The music industry has been in an upheaval since 2004. As digital distribution emerged and then iTunes surged in popularity, the sales of music CDs plummeted. Consumers were finally able to buy just the tracks they wanted, and play them anywhere they wanted with their iPods. Even more drastically than books' and videogames' packaging, music packaging will rapidly disappear as consumers acquire their content digitally.

Apple's iTunes has been instrumental in disrupting the music media industry by splitting album sales into individual tracks, taking business away from the traditional music publishers by appealing to what the consumer always wanted. iTunes has also made digital distribution readily accessible because the tracks' relatively small file sizes make downloading music nearly instantaneous. In the near future, music will no longer need packaging. What music packaging is still produced may be redesigned to fit new portable media storage technologies, since CDs and DVDs are becoming obsolete.

Point of Purchase Displays

Point of purchase displays are printed products positioned at cashier checkouts in stores, designed to hold and/or advertise products.
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Store checkout may change in the future as RFID tags are included in all products, eliminating cashier positions and allowing consumers to merely walk through a scanner on their way out of the store in order to purchase goods, rather than being captive audiences while waiting in line. This may reduce the number of point of purchase displays in stores due to the reduced number of checkout lines and the increased speed of customers passing by the displays. It also may lead to increased competition for producing the most eye-catching displays through specialty printing techniques. Thus, the market for point of purchase displays may hold steady with new opportunities for diversification and competition.

Tags

Printed sheets cut into units that are used to identify and price products at the retail or wholesale level.
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Tags are similar to labels in that they are both legally-required informational printed pieces that accommodate a product. The main differentiation is that tags are printed on heavy stock with either staples or die-cut holes and strings to affix them to a product. Tags provide information and add a level of security to a product.

Tags will remain very steady because electronic media cannot readily replace their legal function of product identification and their convenience for checkout methodology. Tags are printed in long runs which are much more cost-effective via traditional printing methods, so digital printing cannot yet compete. There is potential for short-range transmitting RFID tags to be incorporated into products in lieu of traditional tags, for incredibly speedy checkout and convenience.

Videogame Packaging

Packaging used for the media storage devices video games are installed and accessed from.

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The videogame industry on a whole is booming, rapidly becoming one of the primary entertainment media of the 21st century, which means that there are almost always growing opportunities in the videogame packaging market. Because videogame packaging is a media delivery method, it will change similarly to the book printing industry, with special collector's editions as opportunities to market special print capabilities, while mass-market videogame consumers may gradually migrate to digital distribution to save on storage and costs. Improvements in videogame technology will significantly increase the size of the data beyond DVD capacity, which means that videogame packaging will likely be designed around different media storage devices in the future.

The videogame packaging market will be ripe with opportunities for packaging printers to market their capabilities for effective product marketing and overall shelf appeal. Just as hardcover books tend to be specially designed for collectors to display and treasure, so too are the collector's editions of videogame packaging improving in their shelf appeal for both store and home display. Likewise, just as the trend for mass market paperbacks is to be digitally distributed in eBook formats, so too is mass market videogame packaging migrating online for digital distribution via download. However, since the videogame market overall is booming, printing opportunities for videogame packaging may still increase despite the overall migration towards digital distribution. Also, because of the large file sizes of typical videogames, digital download may be too slow for the majority of consumers unless there are significant improvements in lowering the cost and improving the speed of the average home user's internet bandwidth.

Several specific opportunities may emerge for printers who are capable of printing electronics. The packaging may include electronic displays in order to save space in the box design, and increase the package

appeal through displaying gameplay videos and preview trailers on the box, as well as interactive multimedia promotions. There may be in-store option to try game demos using scanned promotional codes from advertising campaigns. Special editions for collectors may be designed with specialty inks for optical effects, include 3D-printed additional products and memorabilia, and use VDP to develop different versions of the packaging for pre-order customers or collectors. These opportunities, among others, may slow the reduction in sales of box copies despite the rising influence of digital distribution. There are many opportunities for creative competition in this field.

Periodicals

Comic Books • *Journals* •
Magazines • *Newsletters* •
Reprints • *Subscription Cards*

Informational documents about specific topics or areas of interest, regularly mailed or otherwise distributed to subscribing consumers or organizations.

Comic Books

Comic books are magazines made up of comics, narrative artwork in the form of separated panels that represent individual scenes, often accompanied by dialog as well as including brief descriptive prose.
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Comic books have a stable market with collectors, but newer generations are rarely buying comic books these days, preferring instead to access their comics online. This is causing a gradual decrease in the comic market. There will always be a demand for special collector's editions in print, but the majority of comic book printing will be going away in the near future.

Journals

Journals are periodicals for professional, scientific, or academic subjects, with content that is rigidly defined by peer review.
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Journals are very important in the world of academia and science, but there are several costs associated with them that will encourage changes for this market in the future. Electronic media offers many attractive advantages over the traditional printed journal that may make these changes occur sooner rather than later.

The problems with the printed journal are many. Compared to magazines, printed journals have a relatively limited market, making them less profitable. Thus the small size of these niche markets and rigor of the content makes subscriptions to journals expensive. Production and storage of paper-based journals leads to some additional costs compared with the electronic version. Electronic journals also offer many attractive features, such as embedded audio and animation, which cannot be replicated in print. Most importantly, they can be searched.

Also, as globalization develops, more and more articles need to be shared or communicated from various places in the world. Transferring files and documents electronically improves global readers' access. They will make reprints virtually obsolete, which are very expensive to begin with. Most journals will be produced and archived electronically, to save on library space and costs. The transition from printed to electronic distribution is just around the corner.

Magazines

Magazines are periodicals consisting of multiple pages, bound as a unit, and published on a scheduled basis with a fixed interval between issues. Size and binding may vary but subject matter is defined for a specific audience or specialty.

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According to the latest report from the online magazine database MediaFinder.com, 138 magazines launched in the first half of 2011, which is about half of the newly launched titles in same time period ten years ago. Due to the flexibility of magazine publishers and innovative new publishing entrepreneurs, it is possible that there will be many new titles launched every year in the next few decades. However, due to the convenience of newer, more direct media, like the iPad or Kindle, and their ability to embed audio and video, the lifespan of new print-only magazine titles will decrease. For example, only about 16% of the new titles launched in the first quarter of 2011 have been released four times or more.

Magazines package information in a format which provides customers with a feeling of attachment to print, because holding a real magazine and tangibly feeling what you paid for is much more fulfilling than turning on your e-reader and reading a digital copy. Magazines have a credibility that is passed on to their advertisers: if the consumer trusts the editorial content, they are likely to extend that credibility to the advertisers. Moreover, printed magazines can include a physical product like a sample of perfume, while digital

magazines cannot.

Magazine readers in general tend to be more educated and more affluent than frequent television viewers. Business people and professionals who have relatively high income tend to be heavy magazine-readers and loyal subscribers. With the release of e-readers and handy Internet-accessible devices like the iPad and Kindle, business people and professionals are switching their subscriptions of magazines from printed to electronic versions.

Magazines will continue to add new titles, especially in niche markets, which may lessen the decline of printed magazines. However, more and more magazines will offer their subscribers the option of digital distribution, and many new magazine titles will be launched in only digital versions. Therefore, magazine printing will decrease in the near future.

Newsletters
Newsletters are periodicals with highly specialized and often time-sensitive communication published on a regular basis, usually with fewer pages than magazines and journals.
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Newsletters are regularly-published documents within organizations such as small business or church congregations, with communications from members, information about upcoming events, and other information pertinent to their community and operations. Because newsletters contain few pages and have a smaller circulation, a future trend may be to print small quantities on-demand on-site, while also sending members a digital edition. This makes economic sense for small groups because it would eliminate a great deal of the cost of raw materials and postage. Therefore, the number of printed newsletters will decrease.

Digital versions of newsletters are more convenient to distribute and receive compared to the traditional printed format. However, printing is still desired in some particular fields, so a shift will be made to on-demand printing or digital printing

due to the short lifespan of newsletters and small production quantities.

By the next decade, the printing of newsletters will decrease tremendously or disappear because of the speed and economy of electronic transmission, via computer or perhaps via e-readers like the iPad and Kindle.

Reprints
Reprints are additional copies of pages, articles or issues of previously printed material.
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Reprints usually have less than ten pages because customers might only ordering specific articles from certain issues, thus, a reprint would be shorter than a full magazine or a journal. Customers will more easily accept reading shorter articles online than longer publications. So, 95% of reprints maybe distributed online in the future, with the rest printed on-demand for people who have difficulties accessing the Internet or personally do not like electronic interfaces.

Subscription Cards
Subscription cards are usually distributed with magazines, for customers to send in to renew their subscriptions.
↓ ↓ ↓
Sometimes there is more than one subscription card included with a publication, as publishers tend to believe that the more cards they give you, the more likely you are to be convinced. However, most consumers see these as an annoyance. To eliminate the postal cost, magazine publishers are sending subscription emails instead of including subscription cards, reducing the demand for their printing. Also, as subscriptions to printed magazines disappear, subscription cards will disappear as well.

Security

Checks • *Certificates* • *Credit / Debit Cards* • *Currency* • *Passports / ID* • *Stamps* • *Tickets* • *Vouchers*

Certificates

Documents used to attest that people or organizations have passed a test, accomplished something, or gained a certain level of education.

↑ ↑

Certificates are used to prove that the owner has achieved something, ranging from an academic degree to governmental certificates for companies. Certificates will become more and more complex to guarantee that they are authentic, and more governmental regulations will lead to a growth of printed certificates. Whereas in the past certificates were printed with more handwork, e.g. letterpresses, they are transferring to digital printing. Certificates are also an emotional product that people are not willing to substitute with electronic technologies, being a mark of pride and a display item. A transfer to electronic technologies is therefore unlikely in the future.

Checks

Checks are a written order directing a bank to transfer money.

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Checks are another form of currency, printed by a financial institute. Checks are a good example of personalized printing, with serial numbers and account details differing for every printed check. In the near future, checks will still be used, printed with more complex security features. In the long term, checks will experience a strong decline as they are replaced by digital payment methods.

Currency

Any kind of a medium that has a monetary value, used for financial transactions.

↑

The Bureau of Engraving and Printing prints US Dollars bills. Currency is not printed by the private sector and therefore does not have a significant impact to the commercial printing industry in America. Consumer printers are always increasing in

availability and quality, which only worsens the problem of counterfeiting. This will lead to a further increase in complexity of printed bills, and the constant addition of new security features. Using paper currency is still an emotional process for consumers. Nevertheless, the availability of electronic payment technologies will lead to a decrease in the circulation of paper currency. Traveler's checks are another form of paper currency, which will experience a distinctive decline in the future.

Credit / Debit Cards
Credit and debit cards are plastic cards that are issued by a bank to enable the holder to pay for good on credit or direct debit.
↓
Credit cards are widely used today. Nowadays, credit cards can be ordered with custom designs, and are increasingly printed with a picture ID for easier identification of the owner. These services are demanding extensive use of digital color printing technologies with variable data. Even with improved security, the concept of using cards will decline. Security issues and the ease of use will favor digital payment methods implemented into smartphones. In the near future, cards production volumes will remain constant, but in the longer term newly-evolving digital payment methods will take market share away from cards.

Passport/ID
Documents issued by the government or another organization to identify individuals. Passports are required to travel to foreign countries.
↑↑
Passports and Identification documents are highly-secure documents used to legally identify people, and are stringently necessary for legal affairs, governmental identification, or international travel. Like any other printed security document, passports and identification cards will adapt more complex security features, requiring reprints to update the features of existing documents. Travelling is also becoming more and

more important in a globalized world. This combined with the growth of the population will lead to an increase in production of these documents.

Stamps

Small labels issued by the postal service. Once stuck to an envelope, they are evidence that the postal charges are paid.

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Stamps are used by the United States Postal Service to pay the fees for mailing envelopes and packages. Printed stamps are directly related to the circulation of mail, so since the volume of mail is declining, stamps will also experience a significant decline. The transport of individual packages will rise, but these packages will increasingly be shipped with private shipping companies rather than through the USPS, so they will not require stamps. The broader acceptance of electronic signatures will also impact the volume of shipped envelopes.

Tickets

Tickets are documents used as evidence that the holder has paid admission or the fare to attend a service or event.

↓

Tickets are printed with a wide range of security features, from very simple tickets with almost no security features to complex tickets with many different security technologies. Like many other products, tickets are prone to counterfeiting, and ticket "scalpers" are notorious for making a big profit at events, especially concerts and sport events. Therefore, the complexity of tickets will increase. In the short term we do not expect a decline of printed tickets. The infrastructure to read electronic tickets is not yet widely spread. However, as electronic tickets' infrastructure and security improves, in the longer term there will be a decrease of printed tickets. Today, there is already a small amount of train and flight tickets that are transferred to smartphones by using 2D-barcodes for identification. This trend will continue to grow.

Vouchers

Documents indicating that the holder has credit against a future purchase.

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Vouchers will experience a similar trend as tickets. Like tickets, vouchers will become more and more of a target for fraud. Therefore, their production techniques will get more complex. Vouchers are also strongly affected by electronic devices. After an increase in printed complexity, they will experience a decline due to transference to smartphone displays.

Signage

Indoor: *Maps* • *Navigation* • *Safety*
Outdoor: *Billboards* • *Building* •
Decorative • *Road*

This category is different from conventional printing products since signage is based at a specific physical location, and often is functional as well as advertorial. Signage production will gradually increase and last for a very long time, since there is consistent demand with no reason to replace it with some non-printing product. The amount of signs will basically depend on the amount of construction, such as buildings, roads, or events, or change within organizations.

The past decade of successes with sign production via digital printing set new standards for image quality, turnaround, and versatility, which guarantee gains in the digital production of all types of signage. With that, sign producers can expect systems which boast innovation and increase productivity at lower price points, making them more attractive and affordable. Digital printing is getting to the point where every sign shop has to put in a large format printer.

Indoor

Maps

Maps are a more complex form of navigational sign, also used for wayfinding within a location.

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The content is more variable and customized for specific locations, which means that any building layout changes will mandate reprints of those maps. Also, they tend to be redesigned and reprinted as a business rebrands itself. Since they are so heavily customized for a specific location, they tend to be produced in very small quantities, and are best produced via digital printing. They are likely to be produced within a company rather than outsourced to a commercial printing company. It is possible that maps will be on digital displays in the future due to the expense of frequent reprints, and advances in display technology which allow searching, path-planning, zooming, panning, and rotating. Users may also wish to download a digital map to their multifunctional device.

Navigation

Navigation signs in buildings, including room, directional, and exit signs, help people find their way to locations inside or outside of a location. They are legally required in all buildings.
↑ ↑

Besides a few specific requirements about visibility and design, navigation signs can be customized for a business's desired aesthetic. Thus, navigation signs are regularly redesigned or reprinted for locations, as they change their brand or redesign their building layouts. Also, since there are always new businesses opening or changing location, there is always a need for new navigational signage.

Exit signs denote the location of an emergency exit in a public facility. They usually contain a simple image and one color on the sign, and usually are produced in large quantities. Exit signs currently are a $30 million business, and the amount of exit signs will increase because of the increasing numbers of new buildings and facilities. However, since their appearance is legally regulated, they are not allowed to be customized for businesses, reducing the need for reprints.

Safety

Safety signage is legally required signage which describes procedures in case of an emergency.
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Safety signage is most commonly needed in production environments due to OSHA standards regarding worker safety, describing how to use emergency and first aid equipment, and detailing on-the-job procedures which impact the safety of workers. OSHA has specific standards about what kind of information is required on these signs, so they tend to be produced in larger batches and distributed to multiple locations, rather than customized for each separate business. Since there is a legal requirement for these signs, they will always be in demand. They may eventually be printed on-demand for easier distribution to companies, and there may be regulatory changes which mandate mass reprints.

Outdoor

Billboards

Billboards are large standalone outdoor displays, either advertorial or informational.

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There are some digital billboards along the highways, but printed billboards will still dominate because, according to a news article from USA Today, more than a dozen cities around the nation have banned digital billboards as well, since some consider them a growing external driving distraction.

Thanks to the introduction of inkjet printing, billboards today tend to be more colorful and more sophisticated than in the past. It is becoming increasingly popular to produce signs via inkjet or other digital printing technologies. However, due to the chance of distracting drivers, they cannot be designed to be extremely eye-catching or require extensive reading.

Building Signs

Building or shop signs are labels located outside the main entrance of a business.

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Building signs used to be painted, but now are printed or crafted through other methods in sign shops. They have small runs and large formats, which is perfect for production via digital printing. Building signs need to be replaced every few years due to fading or wear and tear, and as locations move or acquire new businesses, they also need new signage. Therefore, building signs will still have a growing market in the near future.

Decorative

Decorative signage includes building wraps, scaffolding covers, mesh banners, or wall murals.

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Decorative signage is usually printed digitally in large format with small runs. When a building is being constructed or decorated, it needs a building wrap to cover the unfinished part to protect it from the elements, and to give people a better impression or future expectation of the building. Because of this, this kind of sign not only serves as a wrap or cover, but also needs to have good image quality for their decorative aspect. Digital printing, which provides relatively high image quality and quick turnaround, would be the best way of producing outdoor building decoration wraps. Since there is always new construction or decoration occurring all over the world, the market for decorative signage will continue to increase.

Road Signs

Road signs or traffic signs are erected at the side of roads to provide information to drivers, bikers, and pedestrians.

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Road signs usually are printed on metal or plastic surfaces, and they contain simple shapes in one or two colors. They do not require very complicated printing, since they are designed for easy identification at a glance. As there are more roads under construction globally, there is demand for increased road sign production, and existing signs also need to be replaced periodically. Thus, the market for road signs will keep increasing in next few decades.

Stationery

Company-branded paper on which other things are printed, such as business cards, a letterhead which gets used for memos, notices, flyers for internal communication, etc., with the corporate logo, information (i.e. address, telephone, web page) and corporate brand design template.

↓ ↓

Letterhead and corporate-branded envelopes are largely going away as documents are no longer printed and no longer mailed. For instance, printed internal communication is going online because is easier and cheaper to send an e-mail than to print and distribute a document. Communication between companies and institutions is going digital as well (e.g. letters, quotations), reducing distribution and postage costs.

Business cards not readily replaceable by digital technologies just yet, and becoming more popular as professionals are encouraged to network with their peers, and job-hunting frequently becomes a networking exercise. By 2020 computers, mobile phones, and tablets will be able to freely communicate with each other, so business cards will be digital transferred. The information will be automatically stored in a database, so business card printing will decrease significantly. Business cards may also go digital with the use of QR codes on name badges at conventions, allowing digital distribution of a business card to someone's email.

Technical Documentation

Instruction/Guide Manuals • *Other*

Informational documentation specific to a certain product or service.

Instruction/Guide Manuals

Publications containing information on the use and application of specific products.

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Instruction guides are already under pressure to be digitally distributed rather than printed out, due to the cost of printing, and weight of the product. In many cases, the documentation for a laptop computer weighs even more than the computer. Many companies are now sending instructions digitally with their products, included on the install DVDs for computers and software, without any printed documentation accompanying them.

Even though instruction manuals will largely be electronic, there may be a need for start-up instructions on a card or sheet for getting devices connected or operating. Besides the start-up instructions, most major documentation will be in PDF or hosted on the website. Eventually there will be integration between these two formats so that information can move effortlessly between print, online, and hand-held Internet communicator devices of all kinds. A concern will be information accessibility in case Internet access is disrupted. Because downloading a manual from Internet is currently a time consuming task, people prefer to have a more convenient printed manual. But, as accessibility increases, the volume of printed technical documentation will be reduced.

The size of printed manual's market will keep decreasing because of the cost-effectiveness and convenience of the digital files. In the next decade, printed instructions or manuals will not completely disappear, but they will only be produced in small run and on-demand printing.

Other
↓ ↓ ↓ ↓

Price lists, operating procedures, specification sheets, and other complex documentation will be accessible from Internet and from DVDs provided by the product manufacturer. Even though many consumer and industrial products will still be accompanied by some printed instructions or operating information for legal reasons, these documents are perfectly suited for electronic delivery. They are usually black-and-white text with simple illustrations, thus the digital format files won't be too large in size.

Maintenance manuals and repair notes contain information about the repair and maintenance of specific products. There are many reasons it would be advantageous to move these documents into an electronic form. Repair manuals need to be updated constantly with new products and product changes. Not only are electronic forms easier to update, but they also offer features a printed version cannot, such as search engines and multimedia components.

Illustrated parts breakdowns (IPBs) are visual representations of how components in a product are fitted together, assembled, and disassembled. They are often used as reference for procedures detailed in the maintenance manuals and repair notes, or to show how to reassemble or remove a part specified in a parts manual. IPBs stand to benefit the most from digitization, because a struggle of IPB creators has always been how to best show their methodology through illustrations. With a digital format, videos can be integrated to specifically show how to do something, and users can zoom in on and rotate specific sections, or read more detailed guides for complicated procedures. Thus, IPBs will be quick to move to digital formats.

Miscellaneous

Calendars • *Food Wrapping Paper* • *Gift Wrapping Paper* • *Greeting Cards* • *Menus* • *Time Schedules* • *Tissue Paper / Paper Towels* • *Traditional Games*

Calendars

A chart or series of pages showing the days, weeks, and months of a particular year, or giving particular seasonal information.

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Calendars not only remind people of their schedules, but also can be a part of their home or office decoration. Although most people have PDAs or smartphones in their pocket with calendar functions, they still prefer to have a calendar hanging on the wall of their office or study. They are simply more attractive, and easier to input data into than a clumsy phone interface. Also, nowadays personalized calendars are getting more popular. People like to choose them as a present to match their decorations. Calendars can include group pictures of the family, the beautiful views from their trips, or some big event in their life from that year. Those pictures can remind people of wonderful memories that they would like to keep on display. In the future, calendars will act more as decorative objects than time schedules and planners for people, so people's orders for more personalized calendars will surely increase. However, PDAs and smartphones will improve in their planner technology, which will make them easier to use and thus decrease the amount of calendars used overall.

Food Wrapping Paper

A tough, hygienic paper used for food wrapping in fast food restaurants.

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People use wrapping paper to wrap food in their daily life, such as at fast food restaurants like McDonalds. The paper serves as packaging for the product while also containing advertising and nutritional information, and because it is quick, cheap, mass-produced, and protects food, it cannot be readily replaced by digital technologies. Also, fast food restaurants are becoming more common as people feel more pressed for time, so food wrapping paper will increase in the future.

Gift Wrapping Paper

Strong or decorative paper for wrapping parcels or presents.
↑
People like to use the wrapping paper for holiday spirit, celebrating events with bright colors and cheerful decorations. For example, most people would prefer wrapping paper with red and green decorations during the Christmas holidays, and red and pink for Valentine's Day. It gives people a strong feeling of the holiday. The market varies according to the seasons, being much busier during the winter because of the Christmas and New Year's holidays, but demand is steady throughout the rest of the year for birthdays and other holidays.

So far there's no good substitute for wrapper paper, so it will not disappear in the near future.

Greeting Cards

A decorative card sent to convey good wishes on some occasion.
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""Whether it is a card or a letter, printed mail still matters," said Rose Rossello.

Variable data printing technology makes it easier to send greeting cards to customers due to the automatic labeling and addressing, which greatly saves on production time. With social media and online card-giving sites, most traditional production of greeting cards is being replaced. However, although people nowadays are getting used to receiving many electronic or paper greeting cards from their bank, the insurance company, the local supermarket, or their friends, they still get excited when they receive a handwritten one because it is seen as a unique, thoughtful act. People will value those physical greeting cards which are sent by their relatives or friends, because they are more thoughtful than a cheap and quick digital card. Most people are willing to keep those precious cards all their lives as keepsake items.

Thus, greeting cards will steadily decline in the near future, but not entirely disappear. The amount of printing might even increase gradually if people long for more traditional, thoughtful ways to get in touch with someone.

Menus

A page or series of pages, typically laminated, which shows the food available or to be served in a restaurant or at a meal.
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Menus of the future will probably be digital. There are quite a few restaurants which have already started to use iPads or table-mounted screens to display their menu for the customers. More colorful pictures of the dishes would be more attractive to people. What's more, electronic menus don't have the problem of display area limitation. They can contain as much information about the dish as they want, such as all the ingredients, nutrition and allergen information, since people are becoming more and more health-conscious. Printed menus cannot accomplish this level of detail without being as thick as a dictionary. Printed menus for takeout will also disappear since most of the restaurants have a website for online ordering. The one exception will be high-end restaurants, which still desire high quality printed menus for their establishments, so there will still be a market for high quality printing with special features to improve the brand image of those restaurants. Otherwise, printed menus will be totally replaced by electronic ones in the future.

Time Schedules

A list of times of departures and arrivals for a mode of transportation; a timetable.
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Most of the airlines, train and bus lines still have printed schedules, but the number of copies has declined a lot. Most of them also publish their schedules on the Internet, which is more popular and used more often for planning trips.

One big advantage of the online schedules is that they are easy to update. Most airline companies provide online schedule searching functions for the customers, to select the location of the trip, the date, or even the time period of their departure. These schedules are getting more and more customizable with the use of search engine technology.

However, by contrast, the primary advantage of printed schedules is that they are portable and easy to use where there is no Internet or power connection, which is often the case with these modes of transportation. It will be at least five years before there is widespread internet and power connection on all transportation forms, which means that printed schedules will still have a market.

According to the above trend, time schedules will disappear in 10 years, once widespread wireless and power connections enable the electronic versions to totally replace them.

Tissue Paper / Paper Towels
Thin, soft paper, typically used for wrapping or protecting fragile or delicate articles. Tissue paper is also used for cleanliness and hygiene needs.
↑ ↑
The need for tissue paper is consistent in people's lives, because people need them for everyday functions that cannot be replaced or eliminated. Most people keep a box of tissue in their office and bedroom, or even in their cars, or sometimes they need to clean up a mess or tidy something a little bit. People need tissue paper almost all the time, and that is not about to change.

Although some may say that we can use cloth instead of tissue paper, for environmental reasons, it would be less convenient and take more effort for most customers, so tissue paper is here to stay.

Traditional Games

A form of play or sport, esp. a competitive one played according to rules and decided by skill, strength, or luck. Board games and card games are typical traditional games. A board game is a game in which counters or pieces are placed, removed, or moved on a pre-marked surface, according to a set of rules. Games may be based on pure strategy, chance or a mixture of the two, and usually have a goal which a player aims to achieve.

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There's a growing trend of playing traditional games amongst the younger generations, such as chess, and other board and card games. They have the opportunity to get together and talk to each other in person rather than facing the computer screen. It's also great for new social connections as young people see games in progress and sit down to join the group, then become a regular group which plays those games together. These are especially popular on transportation, such as playing card games on airplanes or trains. The growing popularity of board and card games will definitely help to increase their printing demand. The market for printing board and card games will maintain a steady rate. However, traditional games are also being redesigned for play on Internet-connected digital devices, so those games can be played with other connected friends from a distance. Thus, traditional games may decline slightly in the distant future.

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