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WELCOME

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Publisher's Message

With the successes and challenges of 2015 behind us, the start of a new year once again presents us with opportunities to change, grow, and make our mark. It's much easier to make our mark, of course, when we have some idea of where to aim. Fortunately, in the *Forecast Part 1, The Year Ahead,* passionate and dedicated industry experts provide guidance and well-informed perspectives about what lies ahead in 2016.

Want a heads-up on potential hot-button topics for the printing industry in 2016? Check out the **Industry Insights** section, which contains articles on the proposed Clean Power Plan, strategies for piquing students' interest in print, and updates on timely HR issues.

Whether you plan to branch out with new offerings this year or simply want to expand your reach in an already established niche, the **Print Markets** section provides valuable strategic advice. For instance, learn about the growing differences in the business plans of commercial printers and in-plant operations.

In the **Technology** section, our authors take stock of the evolving tools of our trade. Here, you'll learn about the continued growth of production inkjet as well as the current state of the 3D printing revolution.

In the final section of the *Forecast,* we focus on successful strategies for spreading the story of your business. Find **Solutions** for solving tough marketing and financial problems through value engineering and deciphering the true message that your photographs convey to your audience. We also share what Twitter founder Jack Dorsey can teach us about marketing as well as tips on making friends with the media.

A new year brings new challenges. With the right attitude and resources, these challenges can be met head on. It is my sincere hope that each and every issue of *Printing Industries of America: The Magazine* is one such resource, and that the information they contain proves valuable as you steer your business toward a noteworthy and profitable 2016.

Julie Shaffer

Julie Shaffer
Vice President, Education & Marketing
Publisher, *Printing Industries of America: The Magazine*

CONTENTS

INDUSTRY INSIGHTS

PRINT MARKETS

TECHNOLOGY TRENDS

SOLUTIONS

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Updated Economic and Print Outlook

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Currently, there is a mix of positives and negatives pushing and pulling on the U.S. economy. At the same time, U.S. print markets are performing remarkably well. In this article, we take stock of these dynamics and update our forecasts for both the economy and print over the next twelve to eighteen months.

A Fresh Look at the Economy

The economy's path over the first three quarters of 2015 was erratic but positive, growing at a pace of 0.8 percent in the first quarter, 3.9 percent in the second quarter, and 2.1 percent in the third quarter. The overall velocity for full-year 2015 should end up at about 2.2 percent. This rate just about equals the average since the end of the recession in mid-2009.

Right now there are significant impediments to increased growth:

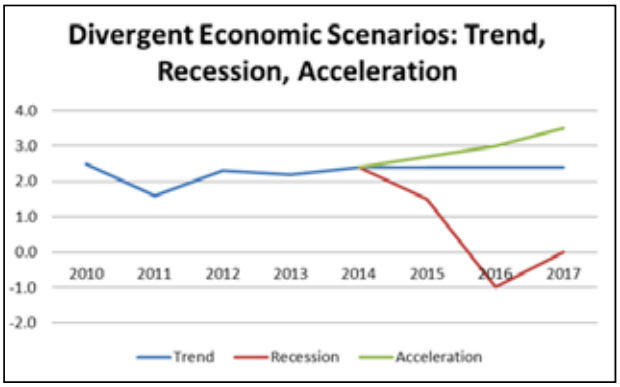
- Global headwinds, with other major economies either growing at a slow pace or in decline
- The maturing of the U.S. economic recovery after almost seven years
- Numerous tax and regulatory hindrances to growth
- Continuing questions about monetary policy—both the future direction and effectiveness

However, at the same time, two significant positives remain:

- The U.S. economy has displayed enduring resilience, as it continues to grow despite the negatives outlined above.
- While the economic recovery may be mature, it is also weak by historical standards so it may have some life left.

As discussed in our most recent outlook late last year, there are three likely paths for the economy over the next year or so.

- **Continued slow-yet-spotty growth (50 percent chance).** This trajectory is a more-of-the-same scenario and is, I believe, the most likely path of the economy over the next twelve to thirty-six months, primarily because of its own momentum.
- **Mild to average recession (25 percent chance).** Given that the recovery (mild though it has been) is now six years old, it is approaching the normal life span of post-war recoveries. We see the chance of this scenario coming true in the next one to three years as about 25 percent.



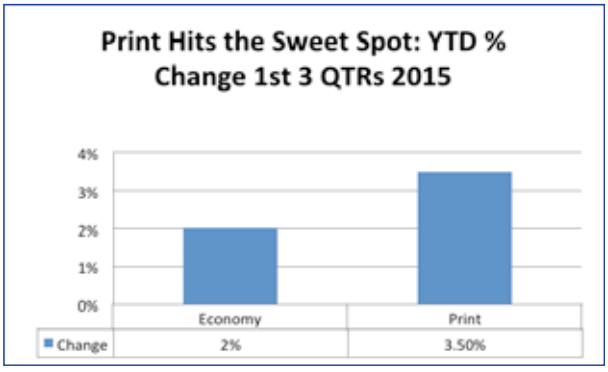
- **Accelerating growth (25 percent chance).** We have been waiting six years for the coming boom. It finally arrives in this scenario with a 25 percent chance of happening.

For the time being, we are sticking to these, with the continued slow-but-steady scenario as the most likely and as our base for planning purposes.

Recent Good News on Print

Now, for the good news—unlike the economy, print is doing very well. As a matter of fact, based on data from the U.S. Department of Commerce and the Institute of Supply Management, the printing industry is on a tear.

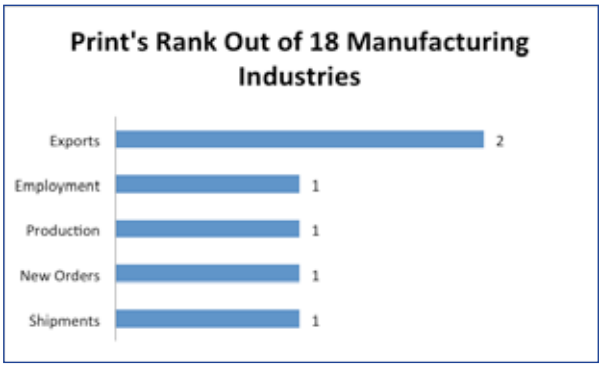
According to the Commerce Department, printing shipments outgrew the economy over the first nine months of 2015 by a significant margin of 3.5 percent growth for print versus 2.0 percent growth for the economy.



Findings from the ISM October 2015 survey are even more impressive for print. Of the eighteen manufacturing industries, the printing industry was ranked number one in four growth categories:

- Shipments growth
- New orders growth
- Production growth
- Employment growth

Additionally, print was ranked number two in export orders. Not a bad performance for a supposedly "mature" industry. So why is print doing so well?

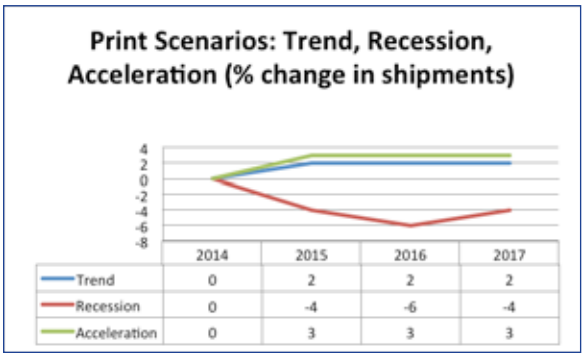


- First and foremost, the economy has been in the "sweet spot" for print, a mature recovery phase, for a long time now.
- Print logistics, packaging, and labels/wrappers typically follow the economy, and without competition from digital media, are providing sold baseline growth.
- The long-term hollowing out of print due to competition from digital media appears to be slowing as the "low hanging fruit" has been picked.
- Print as a marketing and promotional media has proven its effectiveness and is showing solid growth.
- Even print's function as a communications media, long under assault from digital media, is doing relatively better with printed books bouncing back.

Print's Path for 2016–2017

So what does all this mean for print over the next twelve to eighteen months? Based on the three economic trajectories, there are three paths for print. The three paths have similar likelihoods as the economy—25 percent for the optimistic and pessimistic paths and 50 percent for the most likely.

If the economy stays on a path of slow growth, print should continue to outperform it with shipment growth around 3 percent. If the economy stumbles into recession, printing shipments will likely decline by 4 to 6 percent per year or more if the recession deepens. If the economy somehow accelerates into the 3-to-4 percent range, printing shipments should increase by 3 or more percent per year.



2016 Printing Industry Environmental Outlook

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In 2016, expect more hot air than clean air coming from Washington. Congress, the Obama Administration, and federal agencies will continue to be locked in a battle over the Clean Power Plan, considered fundamental by many in the Administration to the President's environmental legacy. Without the votes to overcome a Presidential veto, the Republican-controlled Congress, which is openly hostile to the Clean Power Plan, will focus its efforts on limiting the Clean Power Plan's impact through the federal budget process. Between the divided government, political maneuvering in advance of the 2016 elections, and prolonged and repeated budget stalemates, little or no new environmental legislation will be introduced (let alone become law). The one notable exception is that the multi-year effort to reform the forty-year old Toxic Substance Control Act (TSCA) may finally come to fruition, as chemical management and safety reform is one of the few environmental issues with bipartisan and industry support.

The environmental issue for 2016 is the Clean Power Plan, particularly the legislative and legal efforts to stop it. The Obama Administration's Clean Power Plan envisions sweeping changes in the power sector by requiring significant cuts in carbon dioxide emissions. While the Administration promises that the plan will protect health and boost the economy, most in industry see this significant expansion of regulation as a driver for higher electricity prices and as a threat to economic growth. Moreover, the fact that these regulations, issued under authority of the Clean Air Act, reach "beyond the fenceline" signals to many a dangerous expansion of U.S. Environmental Protection Agency (EPA) powers. The printing industry should be concerned about this expansion, as the Clean Power Plan's "regulation" of power plants by mandating the expansion of competing power-generating facilities translates easily to the printing context; e.g., a regulation mandating the electronic delivery of documents and other media under the guise of a regulation aimed at reducing emissions from printing plants.

So far, twenty-seven state and industry organizations have filed legal challenges to the Clean Power Plan regulations released by the EPA, claiming that the regulations improperly exceed the Clean Air Act's authority. The Clean Power Plan legal fight will likely end up before the Supreme Court, with industry waiting months or years for a Court pronouncement—a pronouncement that likely will not resolve all of the issues. In the meantime, however, states will continue to grapple with implementation of the Clean Power Plan, including development of what are essentially fifty new state energy policies, including emissions limits and choosing "winners" and "losers" among existing power-generation facilities and alternative generation means. Regardless of the outcome of the legal challenges and the Clean Power Plan's ultimate future, businesses will likely see higher retail electricity prices in 2016 due to previously planned decommissioning of coal-fired generation and the uncertainty created by regulation through judicial fiat.

Recently, Republican lawmakers passed two resolutions to invalidate the Clean Power Plan. Congress employed a little-used statute, the Congressional Review Act (CRA), in an attempt to overturn EPA limits on greenhouse gases from power plants. The CRA permits Congress to enact a disapproval resolution that blocks recently published "major" regulations through an expedited procedure, provided that Congress acts within 60 working days of publication. If Congress enacts a disapproval resolution, and the President does not veto the resolution, the regulations do not take effect, and the agency is prevented from reintroducing similar regulations. A CRA disapproval resolution, like any other proposed law, must be presented to the President for approval. If the President vetoes the disapproval resolution, only a two-thirds vote in each house of Congress can overcome the veto.

More specifically, the House and Senate passed a disapproval resolution to block the rules requiring carbon dioxide limits at existing power plants, with a separate resolution applying to the rules for new power plants, arguing that the regulations are unnecessary, expensive, and destructive to existing industry. The Congressional votes to block were largely symbolic; however, because President Obama exercised a "pocket veto," stopping Congress' disapproval resolution by neither vetoing nor signing it.

Congress, however, timed the disapproval votes to coincide with the December United Nations' Climate Change Summit in Paris. Republicans hailed the votes as evidence that the Obama Administration has little domestic support for international talks on greenhouse gas emissions limits.

Congress continued to push back against increased regulation on other environmental fronts, including in federal water permitting. Employing the CRA again, Congress passed a disapproval resolution in early 2016, rejecting EPA's "waters of the United States" or "WOTUS" rule, which has not taken effect due to a Court injunction. Industry argues that the WOTUS rule threatens economic activity generally by vastly increasing circumstances in which a permit is required. An Administrative veto of the disapproval resolution on the WOTUS rule is near certain in 2016.

In addition to a continued fight over the Clean Power Plan regulations, the legislature may push back on the Obama Administration's environmental agenda through appropriations negotiations. The late-year election of Paul Ryan as Speaker of the House meant concessions on inclusion of environmental riders in 2015, but expect tougher tactics in the 2016 appropriations bill negotiations. The omnibus appropriations bill signed at the end of 2015 removed dozens of environmental riders seeking to eliminate environmental programs. The Republicans have used riders with middling success in the past five years and will likely try to do so again, once Speaker Ryan is more established.

Be on the lookout for Congress to pass a new version of the forty-year old TSCA act after years of negotiations. Chemical safety regulation reform through an updated version of TSCA is one of the rare environmental issues with bipartisan and industry support. The House passed its version in June 2015, with the Senate version passing in late December. A final compromise version of TSCA reform is expected in the first half of the year. While updated chemical management and safety regulations will require increased testing, registration, tracking, and labeling of chemicals, the likely impact on the printing industry of increased prices of certain chemicals and required reporting by downstream processors and users is expected to be small compared to competing concepts for TSCA reform.

The year 2016 ushers in the distractions of the primary season and general election in the fall, as well as the ongoing battle over the Clean Power Plan. In this political climate, Washington is unlikely to clear the air on environmental legislation and regulation anytime soon.

2016 HR Forecast

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Health Care

Legislation: The health care law has been amended at least fifteen times since passage. In late 2015, it was amended again with a two-year delay (now 2020) of the so-called "Cadillac Tax." The "Cadillac Tax" is a 40-percent, non-deductible excise tax on employer-sponsored health coverage that provides high-cost benefits. The thresholds for high-cost plans are currently $10,200 for individual coverage and $27,500 for family coverage. These thresholds will increase at the regular rate of inflation every year. Note that medical inflation is much higher.

Another bill idea that is being considered for 2016 is to amend the definition of a "full-time employee" under the health care law. Currently, the threshold is 30 hours per week, but a proposal is out there to raise it to 40 hours per week. The idea of amending the full-time employee threshold is gaining traction on Capitol Hill and in the White House.

Telemedicine: As part of the larger consumerism trend, telemedicine services are becoming more prevalent as cost-effective health options for employers. These offerings also appeal to employees who are paying more out of pocket for their care. Employees enrolled in high-deductible health plans may find this an attractive, inexpensive option. Telephone and Internet video options are now used by many services. Some PIA affiliates offer a telemedicine plan, or talk to your broker.

Overtime Rule

In July 2015, the U.S. Department of Labor (DOL) issued a proposed update to the overtime exemption regulation. While most experts expected proposed changes to the "duties tests" for the various occupational exemption classifications (e.g., executive, administrative, professional, outside sales, and computer programmers), DOL decided not to make any proposed changes to the duties tests. However, that won't stop them from making changes later. DOL did propose a doubling of the salary threshold for the first three classifications mentioned above, from $24,660 a year to $50,440. The final annual salary number is expected to change, but it should be close to the $50,000 level. Annual increases to the threshold were proposed (tied to the CPI-U or a salary survey that DOL and the Census Department jointly conduct). The proposal would allow 10 percent of the salary threshold to be made up of an incentive/bonus payment made on a frequent basis (e.g., weekly). Note, employers may offer a larger bonus, but only 10 percent could be used in the salary threshold determination.

DOL asked in the Preamble of the proposed rule for suggestions to add additional classifications that could be exempt (under certain conditions). Since the printing industry has long struggled with the overtime exempt classification of customer service representatives (CSRs), PIA and about two-dozen printers asked for a CSR exemption. PIA's comments cited specific case law where CSRs were deemed exempt. Note: some state regulations would overrule this CSR determination (e.g., California).

A final regulation is not expected to be issued until after the November 2016 national election with a January or February implementation date.

Changing Workforce

The printing industry has one of the highest average ages of the manufacturing sector in the United States (our average age is 46, according to 2014 BLS data). In 2016, some 3.6 million baby boomers are expected to retire, and this trend is expected to continue for many years. Workforce and succession planning will become critical for printing companies going forward. While some firms have had success in hiring experienced workers from firms that have had layoffs, those workers' age-demographics typically match the rest of the industry. New blood is needed, and firms must be dedicated to the training and development of these new hires. One source of new hires are the schools that have graphic communications programs. For a listing of college-level schools, see www.pgsf.org and the Resources tab. There are 211 colleges and universities with graphic communications programs in forty-two states.

There are 127 high schools and vocational schools with the PrintED certification in twenty-five states. For a listing of schools by state, see http://tinyurl.com/o5hjh34. Note, there are many more high schools and vocational schools out there that do not have PrintED certification. A list of these schools is being developed and will be published in 2016.

Editor's Note: If graduating graphic communications students from the schools noted above have a "job offer in hand" when they graduate, the probability of these programs continuing well into the future will increase as instructors, principals, deans, and other decision makers take notice. We suggest members contact their local schools and get to know the programs, instructors, and students well before graduation each year.

CORRECTION

The correct injury and illness rates of the 2015 Best Workplace in the Americas winners are as follows.

Incorrect information appeared in the December 2015 issue of *Printing Industries of America: The Magazine*.

SAFETY AND HEALTH	
	Injury/Illness Rate
Small	2.56%
Medium	2.58%
Large	2.48%
All Firms	2.55%

How to Get Students Interested in Print

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Companies throughout the industry (and this includes suppliers) are facing a common problem. They have an increasing number of employees who are reaching retirement age and are wondering where they are going to find replacements for these skilled workers. While this has always been somewhat of an issue for our industry, today it is becoming mission critical. How we address this going forward is of vital importance to the future survival of the graphic arts community. This article will not address a need you have to fill an opening next week, but intends to look at the macro view of how you can address the issue long term and more globally.

Traditionally, the graphic communications industry has done a poor job of promoting itself. In the eyes of most high school guidance counselors and the typical parent, "printing" is thought of as a dirty, non-essential industry. All over the country, at both the high school and post-secondary level, graphics programs are being dropped by school administrators. As a percentage of the total, few companies make an effort to support their local or regional educational programs or to do any industry promotion.

While the main focus of the Print and Graphics Scholarship Foundation (PGSF) is to award funds to students who are enrolled in a vocational school or college program, it also is actively involved in the general promotion of the industry. It has several tools and aids available to enable recruitment of young people into the industry and to support the efforts of companies on a local basis.

So, what can a company do in its own area to improve recruitment and encourage young people to consider the graphic arts as a career choice?

Here are a few ideas. . .

Hold tours at your company. Let the local middle and senior high know that you are available for class tours to show how the company operates and what you produce. Place an emphasis on digital, wide format, creative, and other new technologies that showcase the modern aspects of the industry.

When offering tours, don't forget about Boy Scouts, Girl Scouts, yearbook staff, design club, journalism class, or any other related group that may have an interest in touring or learning about the company or manufacturing process. You never know where you might strike an interest.

PGSF has a 16-page *Career Guide* available that you can give to visitors that describes the industry and lists several potential positions available in a typical company. Downloadable files are available so that you can add your own logo and information on the back cover.

Send speakers to local high school career days whenever the opportunity exists. Hand out literature (see previous note) and use interesting graphics or display materials if your company produces them. One company I know produced a life-sized cutout of Justin Bieber, and every kid in the room wanted to take a selfie with it. Send one of the youngest and best speakers you have—someone who will relate to the kids—not just a senior vice president.

Do whatever you can to promote the industry in whatever venue you can. PGSF has produced a Career Poster that is available to anyone requesting it. It can be posted in schools or anywhere kids will see it. It is intended to pique their interest and encourage them to consider a career in the graphic arts.

If you know a student who is planning on going to school to get a one-, two-, or four-year degree in a graphics related program, encourage them to apply for a scholarship with PGSF. Last year we gave out over two hundred scholarships totaling over $400,000.

If enough companies start taking action, we will certainly be able to move the dial and ensure that we have enough young people entering the workforce to replace those that are leaving. Let's get started!

For more information on PGSF and how you can support its programs, go to www.pgsf.org.

OSHA Designates Printing Industry as a High Hazard Industry for Amputations

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Amputations are among the most severe and disabling workplace injuries and often result in permanent disability. Unfortunately, amputations do occur in printing operations, and their incidence has remained consistent over time and has resisted efforts at reduction.

In order to respond to developing situations in which the health and safety of workers may be compromised or in which negative trends in safety call for heightened scrutiny of certain industries, OSHA relies on its Special Emphasis Program tool. For example, a spike in illness, injury, or fatality rates in a specific industry somewhere in the country might lead OSHA to create a Special Emphasis Program to lower risks or mitigate corresponding hazards.

National Emphasis Program

Due to a high rate of amputations in certain industries, OSHA established a National Emphasis Program (NEP) on Amputations in 2006 to address the situation. In August of 2015, OSHA issued a revised version of its NEP on Amputations that includes an updated list of eighty industries, primarily in manufacturing, that are targeted for inspection based on the high number of amputations that have occurred in those industries since 2006.

The printing industry is not the only industry that experiences amputations, as there were a total of 4,250 amputations that occurred in private industry during fiscal year 2014. Figure 1 shows the number of amputations that have occurred in printing since 2011.

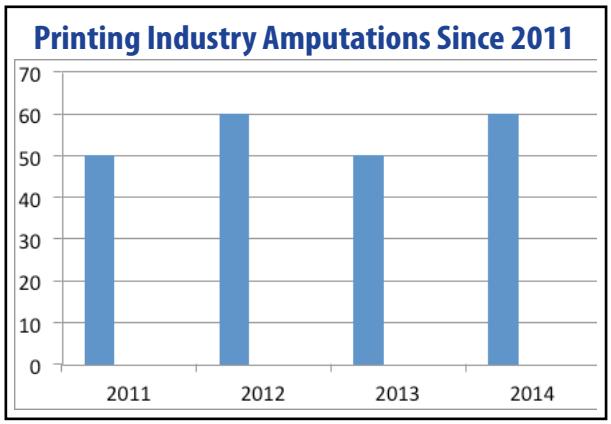

Figure 1.

Inspections under the Program focus on any machinery or equipment likely to cause amputations. OSHA will evaluate measures to protect employee exposures to hazards during equipment operation that can cause entanglement, crushing injuries, or amputations.

In addition, OSHA's new requirement for reporting work-related fatalities and severe injuries, such as amputations, has caused an increase in the number of inspections at printing operations under the NEP. Employers must now report fatalities within eight hours of learning of the incident and any in-patient hospitalization, amputation, or loss of an eye within twenty-four hours. Once OSHA receives a report, they will choose to either physically inspect the operation for violations or send a Rapid Response Request, which requires a mandatory written response addressing the root cause and corrective measures taken to prevent a reoccurrence of the injury.

NEP Inspection

OSHA believes that the failure to properly apply machine guarding techniques and the failure to adequately control associated energy hazards during servicing and/or maintenance activities are primary causes of amputations. When an inspection occurs under the NEP, the OSHA compliance officer will pay particular attention to potential employee exposure to nip points, pinch points, shear points, cutting actions, and other points of operation when inspecting machinery and equipment. In addition, inspectors are directed to evaluate employee exposures during regular operation of the machine; setup/threading/preparation for regular operation; clearing jams or upset conditions; making running adjustments while the machine is operating; cleaning, oiling or greasing of the machine or machine pans; scheduled/unscheduled maintenance; and locking out or tagging out.

OSHA inspectors will also review servicing and maintenance activities including cleaning blankets and rollers, clearing paper jams, other cleaning actions, oiling or greasing machines or machine pans, and locking out machinery to prevent accidental start-up.

Printing Industry Impact

The update was not good news for the printing industry. Due to the continued occurrence of amputations in the printing industry, the list of covered printing types has been expanded to more than just commercial printing operations.

The covered printing operations now include the following segments of the printing industry:

- Corrugated and Solid Fiber Box Manufacturing
- Folding Paperboard Box Manufacturing

- Other Paperboard Container Manufacturing
- Paper Bag and Coated and Treated Paper Manufacturing
- Commercial Printing (except Screen and Books)
- Commercial Screen Printing
- Books Printing
- Plastics Bag and Pouch Manufacturing
- Plastics Packaging Film and Sheet (including Laminated) Manufacturing

The significance of the NEP is that it provides OSHA with a legal basis to inspect any identified industry segment without warning or prior notice. Since the NEP has been released we are aware of several printing operations that have been inspected and cited for violations of machine guarding and lockout/tagout requirements. OSHA has been commonly proposing the maximum penalty of $7,000 for each identified violation for the first time a violation is discovered. In addition, OSHA has been itemizing all violations, causing the proposed penalties to be in the mid- to upper-five figures. If any violations are found to be repeat or willful, then the penalty can be as high as $70,000 for each violation.

Compounding the issue is that in 2016 OSHA's penalty structure is going to change, as all penalties will increase by up to 80 percent. This means first-time violations can be assessed a penalty of up to $12,000. Repeat and willful violations can have a penalty of up to $120,000.

Steps to Prevent Amputations

All printing companies are urged to perform a critical review of their machine-guarding and lockout/tagout programs to ensure they are current and compliant, including employee training and management oversight. While the focus will be on printing presses, all equipment in the facility can be examined for machine guarding deficiencies.

It is also important to realize that even brand new equipment could have machine-guarding deficiencies. While it is not common, some new equipment could be improperly guarded, so all equipment needs to be evaluated, and if any hazard areas require guarding, then guards should be installed.

The Lockout/Tagout regulation addresses common minor servicing and all major servicing activities. To comply with the Lockout/Tagout standard, printers must meet several basic requirements, which include a hazard assessment of energy types and sources; the development of a written program detailing specific procedures and when they will be used for locking or tagging out equipment, including machine specific procedures; and an employee training program.

The employee training program needs to be provided to affected and authorized employees. Authorized employees are those who will actually be locking or tagging out the equipment, and affected employees are those who will be working around equipment that has been locked or tagged out. All authorized employees must be "quizzed" each year to ensure that they know and understand how to lock or tag out the equipment they are authorized to work on. This annual evaluation needs to be documented, and the lack of annual evaluations is the one of the most common OSHA violations for printers.

The standard requires that equipment powered by electricity or any other energy source be de-energized (i.e., cut off from its source of power), that any stored energy be dissipated (e.g., hydraulic or pneumatic systems need to be discharged), and that the main or satellite breaker box switch be locked or tagged in the "off" position when a guard or other safety device has to be bypassed (e.g., pivoted or moved) or removed to access the machinery. Tagging out is acceptable only when it can be proven that the equipment cannot be locked or retrofitted to allow for a lock.

Safe Equipment Operations Resources

Printing Industries of America has developed several resources for its members focusing on safe equipment operation. The resources include training materials and safety posters at low or no cost. Below is a brief description of the resources:

- **What You Need to Know for Safe Equipment Operation (Non-member: $250, Member: $125)**
  The guide addresses hazards with common equipment found in the printing industry and methods to prevent exposure to the hazards. The guide contains detailed information on the hazards and a CD with a PowerPoint training program that can be customized for each printing operation.
- **OSHA Lockout/Tagout Regulations (Video File) (Non-member: $35.00, Member: $25.00)**
  Describes the process of creating a Written Energy Control Plan (the Lockout/Tagout regulation) according to OSHA guidelines.
- **OSHA Lockout/Tagout Written Program Template (Word File) (Non-member: $75.00, Member: $0.00)**
  Provides a sample Written Energy Control Plan that meets OSHA requirements for the plan, including the energy hazard assessment and machine-specific procedures.
- **Safety—Know It, Live It Poster Series**
  - † **Safety Poster—General Equipment Safety Practices (PDF) (Non-member: $15.00, Member: $0.00)**
    Communicates the importance of equipment safety practices as they relate to basic lockout/tagout procedures, machine guarding, and proper use of safety controls.

† **Safety Poster—What to Wear Vs. What Not to Wear In the Manufacturing Area For Men (PDF) (Non-member: $15.00, Member: $0.00)**
Communicates the importance of safe attire for men around equipment.

† **Safety Poster—What to Wear Vs. What Not to Wear In the Manufacturing Area For Women (PDF) (Non-member: $15.00, Member: $0.00)**
Communicates the importance of safe attire for women around equipment.

All of the above resources can be purchased or downloaded from PIA's website at www.printing.org/store. The Lockout/Tagout Template can be obtained by contacting the EHS Affairs team at ehs@printing.org or 800-910-4283.

In addition, members can contact the EHS Affairs team with any questions they have about their equipment and work practices. The EHS Affairs team is also available to visit individual member's facilities to conduct hazard assessments, develop a written Lockout/Tagout program, and conduct required employee training. If you need assistance with the evaluation of your programs, please contact the EHS Affairs team at ehs@printing.org or 800-910-4283.

Outlook 2016: The Future of Print in the United States

Ralph J. Nappi
President
NPES The Association for Suppliers of Printing, Publishing and Converting Technologies

Since 2000, the U.S. print industry has weathered tumultuous change. Shipments have declined over 40 percent and more than 30 percent of businesses have consolidated or disappeared. The evolution continues as potentially another 7,000–8,000 businesses will be lost over the next five years.

For the next decade, the U.S. commercial print industry will continue to grapple with a rapidly changing environment as outside forces dampen the demand for print. Recognizing the impacts—which include changing consumer preferences and the direction of both the U.S. economy and print-related industries (technology, advertising, publishing, and packaging)—is critical. On the upside, examining the future landscape through the lens of these key drivers will reveal new business opportunities.

The new 2015 Print Industries Market Information and Research Organization (PRIMIR) study, "The Future of Print in the U.S.—Landscape, Implications and Opportunities," produced for NPES/PRIMIR by the Economist Intelligence Unit, sheds light on what lies ahead, driven by several significant trends:

- Evolution of the consumer experience
- Rise of data
- Importance of mass personalization and product differentiation
- Role of social media in content generation and consumption

Printers who will be successful in the years ahead will formulate new business models to leverage these trends and, based upon the key concepts identified in this study, will innovate, differentiate, specialize, and provide new services. Most of the trends identified in this study will serve to drive down the overall demand for print; however, they will create new opportunities for progressive print industry pioneers.

According to the research, consumers will seek more product differentiation "experiences" instead of material possessions, will desire traceability, will demand more value, and will be better able to evaluate their choices using technology. Coupled with changes in consumer behavior, technology advancements will continue to have profound impacts on the print industry. Trends in the advertising industry, such as mass-personalization, changing advertising channels, and digital advertising, will create significant impacts on commercial printers. However, other trends, such as changing consumer preferences, shorter product lifecycles, shifting channel behavior, and environmental concerns, will present growth opportunities in packaging for U.S. commercial printers. Also, as noted in the study, the publishing industry will continue to see considerable change in the near future with extensive consolidation in the newspaper, book, and magazine markets.

Consolidation in the U.S. commercial print industry will continue as a result of the downward pressure created by outside industry forces, and while the exact pace is unknown, it is likely to be more accelerated than gradual. Today, with the printing industry saturated with overcapacity, buyers in the next two to three years will look to grow their businesses by purchasing customers. Sellers will be driven by a lack of succession planning and dwindling profits resulting from competing on price.

The United States is currently the largest print market. However, notwithstanding its recent economic challenges, China will likely overtake the U.S. print market in 2016. The decline in printing shipments is mirrored by a corresponding decline in the number of establishments and employment. In 2001, there were 42,521 print establishments and 800,000 employees; in 2014, there were an estimated 29,590 establisments and 453,000 employees.

Printers who attain success in the future will transition their businesses away from the traditional print-based model and embrace strategies that include differentiation and specialization in a particular niche, providing new services, and improving human capital. Those that fail to adapt will likely be acquired by larger, more progressive printers. Likewise, vendors will need to quickly adapt their business models and innovate—both in terms of products and partnerships with printers—to provide new business solutions that follow in the pathways of successful commercial printers.

In times of great change, no truer words can be said, "forewarned is forearmed." You can view an informative overview of this study at http://tinyurl.com/Future-of-Print. To learn more about the trends, technologies, and economic impacts that will drive the U.S. print industry forward from the "The Future of Print in the U.S.—Landscape, Implications and Opportunities," study, contact PRIMIR at 703-264-7200 or visit www.primir.org. As the research arm of NPES, PRIMIR is a global source of data, analysis, and trend information about print and related communications industries.

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The Current State of the Graphics & Sign Industry

Dan Marx
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The 2015 SGIA "Specialty Imaging Industry Survey" was conducted between January 1 and February 28, 2015. The data presented in this report is culled from the responses of 193 U.S. sign and graphics producers. To access more of SGIA's Benchmarking Reports, visit ww.sgia.org.

Companies in the graphics and sign community primarily serve business-to-business customers. Three-fourths of companies serve these types of customers, while only 23 percent serve business-to-consumer customers. It is not uncommon for graphics producers to serve customers outside of their local area. Fifty-two percent serve accounts nationally; 62 percent serve regionally; and nearly two-thirds serve locally. Only 20 percent of companies responding serve internationally. Median annual revenue is $1,234,636.

Technology Use

While "entirely digital" remains the strongest classification of how companies in this sector define their technology mix, it is essential to point out that more than 56 percent of companies classify themselves as multi-technology shops offering a mix of analog and digital services. That said, digital remains dominant among technologies used in this segment. Only 2 percent of companies classified themselves as "entirely analog."

It is interesting to note that over the past five years, the number of shops identifying themselves as "completely analog" or "completely digital" have remained relatively steady, as has the number of companies identifying themselves as "multi-technology, no process dominating." A significant shift has been noticed in a strong increase in shops that are "multi-technology, primarily digital," and a strong decrease in the shops that are "multi-technology, primarily analog." This indicates that while a majority of the graphics segment is multi-technology, our data shows this block is moving increasingly toward digital technologies.

While companies in this sector often use a variety of processes to image the products they produce, digital printing is by far the most used (more than 97 percent of those responding). Screen printing—once the predominant process for many specialty graphics applications—is the second most common, used by 43 percent of companies, and litho/offset technologies are used by slightly less than a quarter of respondents. Ninety percent of companies reported that they offer finishing/post-production services to their customers. Of the finishing/post-production services offered to customers, the most common are lamination, grommeting, and installation.

PROCESSES USED TO IMAGE PRODUCTS

	2014	2015
Digital printing	97.4%	98.4%
Screen printing	43.5%	47.1%
Litho/offset printing	23.3%	22.8%
Laser-etching/engraving	22.3%	-
Dynamic signage services	12.4%	13.3%
Flexography	9.3%	7.5%
3D printing or 3D embellishment	8.3%	-
Pad printing	6.2%	7.8%
Gravure	1.0%	1.2%

Equipment Use & Purchases

Of the types of equipment purchased during 2014, the most common were production software and production tools. Of particular note is the large number of companies purchasing a variety of prepress/pre-production solutions. The purchase, or intended purchase, of screen printing presses was small—around 1 percent. The digital press most purchased during 2014 was latex inkjet (width less than 96 in.), and the digital press most intended for purchase this year is UV-curable flatbed inkjet. Among other types of presses, dry toner-based presses and direct-to-garment devices were those most frequently purchased. The most purchased (and most intended for purchase) finishing technology was cutting/trimming/routing/die-cutting equipment. Of the types of equipment intended for purchase during 2014, digital printing production software was noted most frequently.

FACTORS INFLUENCING EQUIPMENT PURCHASES

Purchase price of equipment	59.6%
Price to operate/maintain	56.5%
Range of capabilities	45.1%
Durability of equipment	38.9%
Customer support	29.0%
Quality of construction	23.3%
Brand name/reputation	19.7%
Service plan	8.3%
Upgrade capabilities	6.7%
Warranty	6.2%
Financing	4.2%
User references	2.6%

Equipment purchases were strong during 2014, with 71 percent of companies reporting they had made a significant ($5,000 or more) purchase of production equipment during that year. Of that number, 55 percent indicated they had made a production-related purchase of more than $50,000. For 2015, 72 percent plan to make a significant ($5,000 or more) purchase of production equipment. Of that number, nearly 55 percent plan to make a purchase of more than $50,000.

Products & Markets

Among the vertical market areas served by graphics and sign producers, the most popular are food services, corporate branding, and nonprofits/associations/organization. The former market leader, retail stores, has moved to fourth place, perhaps due to strong competition. The least served is manufacturing OEM. The markets seen as growing the most are food services and interior decorators and designers. Government and government contractors are the market seen as declining the most. Among the product areas served by this segment, trade show displays, banners, and decals are the most common. Several product areas shifted significantly over last year's data. The least served product area is plaques/awards/trophies. The product areas seen as growing the most—wall graphics, environmental graphics, and building wraps—are all related to interior design or architectural decoration. The product seen as declining the most is billboards.

Top Five Market Areas

1. Food services
2. Corporate branding
3. Non-profits, associations, and organizations
4. Retail stores
5. Educational institutions

Top Five Product Areas

1. Trade show displays
2. Banners
3. Decals/labels/stickers
4. Indoor wall graphics
5. Window displays

Business Outlook & Growth Strategies

The year 2014 was a strong one for the graphics and sign segment, with companies reporting median sales growth of 16 percent. This compares to 17.7 percent in 2013, 19.2 percent in 2012, and 16 percent in 2011. Broken down by annual sales classification, one can see that the companies on the lower end of annual sales revenue are often those with the highest annual sales growth.

Nearly three-fourths of companies reported that both their sales and production levels increased during 2014. For that same year, 45 percent of companies reported increased employment, which is equal with the previous year's data. While confidence in the industry is quite strong (62 percent positive), confidence in the U.S. economy is less strong, though it has improved slightly in the last year.

Companies reported that their primary barriers to growth were downward pressure on prices, finding new customers, and recruiting sales personnel. These are the same as reported in our previous report. The barrier least reported was environmental regulations, also unchanged. Among methods undertaken to attract new customers, referrals and company websites were the most commonly used, followed by social media, which has come up significantly in the last year. Companies were also asked about the production-based strategies they've undertaken to improve their competitive edge. Reducing operating costs, adding new product lines, and becoming a one-stop shop remained top choices. Among strategies undertaken in sales and management to improve competitiveness, increasing Internet presence, improving customer service, and hiring additional sales staff were the most common.

Suppliers to the Industry

In the same survey, companies that manufacture or distribute equipment and/or materials to the specialty graphics industry were asked to indicate whether their sales, production (or amount of work), and employment had increased, stayed the same, or decreased over the previous year. The results showed that more than three-fourths of companies were experiencing increased sales and more than 70 percent had increased production. More than half had increased their employment levels. More than two-thirds reported positive confidence in the industry, while a smaller number, 43 percent, have positive confidence in the U.S. economy.

These companies were also asked to indicate their sales growth during calendar year 2014. In general terms, 88.5 percent reported positive growth, 4.6 percent reported no growth (neither positive nor negative), and 6.9 percent reported negative growth. Of those companies reporting positive growth, nearly two-thirds reported sales growth between 5 and 30 percent. Median sales growth was 12.8 percent.

SGIA's full industry reports can be found online at www.sgia.org.

Dan Marx is the Specialty Graphic Imaging Association's Vice President, Markets & Technologies. With SGIA, he works to raise awareness of the specialty graphics industry and helps printers and their customers identify and adopt new technologies and access lucrative market areas. In his more than 20 years at SGIA, he has authored numerous articles for industry publications worldwide, presented at a variety of industry events, and served as an enthusiastic ambassador for innovative imaging technologies. He can be reached at dan@sgia.org.

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Lean Printing: Pathway to Success

Author: Kevin Cooper, Malcolm G. Keif, Kenneth L. Macro Jr.
Item No. 1757
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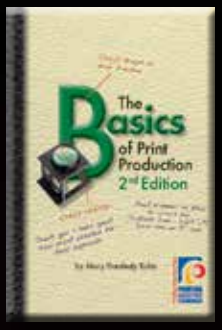
By examining proven techniques, *Lean Printing: Pathway to Success* shows the benefits that come from engaging the entire workforce in recognizing value-adding processes and eliminating waste—whether that means wasted material, wasted motion, or wasted time.



Basics of Print Production, 2nd Ed.

Author: Mary Hardesty Kuhn
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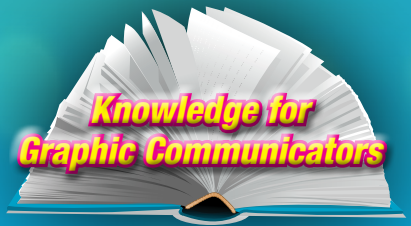

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Are In-Plant and Commercial Printers Heading in Different Directions?

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Reprinted with permission Xerox Digital Printing Hot Spot

In a recent InfoTrends study entitled "U.S. Production Software Investment Survey 2015," commercial print service providers and corporate in-plants were surveyed about their software usage and purchase intentions, services offered, and as we will discuss, their strategic business direction. When the 120 responses were separated into corporate in-plant printers and commercial printers, some interesting differences appeared.

The top three answers from the corporate in-plant printers were reducing production cost and improving efficiency, expanding to new print or services, and focusing on growing their existing core offerings. While commercial printers also listed reducing production cost and improving efficiency in their top three, they also reported focusing on more specific customer vertical markets or industries and focusing on more effective sales and marketing.

Many of these results are not new, but they continue to gain greater momentum and grow in significance. For example, the desire to reduce manufacturing costs continues to be a top priority for all types of companies due to competitive pricing. It doesn't matter if you're an in-plant competing with the outsourcers or a commercial printer competing with online service providers—the motivation to reduce manufacturing costs and offer more competitive products remains a critical success factor. In addition, as print volumes continue to decline, offering new print applications and services continues to grow in importance.

The increased focus for commercial printers on specific vertical markets and industries is, in our opinion, long overdue. Barb Pellow, the Group Director at InfoTrends, has been preaching this in presentations and webinars for years. In the book *The Winning Performance: How America's High-Growth Midsize Companies Succeed,* authors D.K. Clifford, Jr. and R.E. Cavanaugh say, "Midsize high-growth companies succeed by identifying and meeting the needs of certain kinds of customers—not all customers—for specific kinds of products and services. Business academics call this market segmentation, entrepreneurs call it common sense."

One of the challenges for in-plant printers is the fact that they're often discouraged in hiring sales staff. A lack of sales efforts can exacerbate the normal decline in volume by existing customers and make the impact of customer churn more devastating. According to churn-rate.com, churn rate is the amount of customers or subscribers who cut ties with your service or company during a given period. Most business experts believe that customer churn is inevitable. Without a mechanism to acquire new customers, companies must add new products and services in an attempt to maintain sales volumes.

Many in-plant printers understand the importance of sales and marketing and find creative ways to pursue those efforts. Some use "open houses," others use "new staff orientation programs." In addition, those responsibilities are often added to in-plant managers or customer service staff.

For any in-plant who listed "focus on more effective sales and marketing" as a low priority, remember it doesn't really matter what you call it or who does it, in-plants have to focus more time and attention on sales efforts.

How 3D Printing Will Change Everything

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"Disruptive" is a term that is dangerously close to overuse. Due to an endless groundswell of companies claiming to have the latest and greatest "disruptive" technologies, it's becoming difficult to determine which products will truly change the landscape for today's industries.

In other words, which technologies are going to change the business landscape with the same impact as a smartphone? The laptop PC? The printing press?

The answer is 3D printing—a technology that most have heard of, but few know much about. Even fewer know that 3D printing is very close to Main Street right now and that it's already accessible inside their company.

A Glimpse into the Not-so-Distant Future…

Let's lead with a peek into a crystal ball at this highly-disrupted world.

It's a Monday morning like any other. I get out of bed, put my 3D-printed pajamas in a recycling hamper, and begin getting ready for the workday.

While showering, that recycling device transforms my disposable sleepwear into reusable base material.

After a refreshing shower, my body undergoes a daily scan by my digital closet for appropriate outfits. My online closet is so big that I had to buy additional cloud storage to handle the wardrobe, but at least my computer and printer know my exact style, form, and fit. The program takes into account the weather and my scheduled events for the day and recommends a series of potential outfits. When I pick my outfit, it is printed instantly to size and circumstance.

I'll admit, it's a pretty convenient life. Every item I need (at least those smaller than a dishwasher) can be instantly printed at home to my exact requirements, including the plates and utensils I use, the food I eat, the clothes I wear, and the tools I use every day. The raw materials are cheap, recyclable, and readily available and are delivered to my house via a materials pipeline similar to water or gas lines.

Larger items? Well, my apartment simply doesn't have the room to 3D print a speedboat, so that's out for now. Larger goods are produced at a local print center near my home but are equally customizable, recyclable, and disposable, eliminating the need to stow most things away. In the future, living space still comes at a premium. But the need to possess "stuff" doesn't weigh me down.

The way we interact with goods and services has completely changed. Because the economy is extremely automated and efficient, fewer humans are needed for commerce. This technology gives us the opportunity to emancipate humanity's output from self-sustaining to the pursuit of more knowledge and creative endeavors.

But this future isn't the stuff of science fiction. The future of unlimited supply is at hand. 3D printing is the ultimate in customization, efficiency, and on-demand, on-location manufacturing. Much of this story will be possible within the next few years. It will be accessible shortly after that. So, if you're dismissing 3D printing as something your business will need "down the line," you might want to read on.

So, What Is 3D Printing?

In recent years, 3D printing has come into the media spotlight, particularly in the technology-savvy trade publications. Here, 3D printing is proclaimed as the ultimate source of customization and item design by supporters, and dismissed by detractors as a tool to deliver cheap novelties.

Despite some naysayers, 3D printing has more than proven its relevance. Judging from its performance on the manufacturing floor these past twenty-five-plus years, this technology is heralding a new age of creative workforce—one that marries analytical, tech-driven mindsets with those who can leverage tools for new heights in creativity.

3D printing technology is advancing at a staggering rate. American designers are now working on 3D-printed cars, while in Holland, 3D printers are building entire houses. The first 3D-printed hamburger was recently created in England, heralding the possibility of a man-made food supply.

Exciting applications, to be sure. But for existing print companies, 3D applications are a natural extension of their current wide-format offerings. The companies that are first to adopt the technology will likely be the ones to grab a foothold on market share and investment. Those who begin testing and applying this technology will be the ones standing after the masses catch on down the line.

Though still a young technology, personal 3D printing already shows the same disruptive potential as the original printing press or electricity. Just as moveable type spread across Europe and broadened the reach of knowledge, the proliferation of 3D printers promises to broaden.

But Why Is 3D Printing Important to Me?

Pardon the pun, but on paper, 3D printing seems like a must-have technology. Broken microwave? Download the relevant CAD file and print

A 3D-printed car.

it out in plastic. Toys too expensive? Have Santa move his factory to your living room. But what if you need something larger, like a car?

Companies that use 3D printing will be needed because they will have the power to create something new every day with greater speed, higher volume, and in larger sizes. For modern print companies, having 3D technology—and the talent to maximize its output—is a must-have, simply because it's a natural extension of the wide-format inkjet technology currently employed by print industry leaders.

Just as this technology has expanded to use unique materials, such as plastic or metal, 3D printing will take these applications to new levels of form and function. Thanks to 3D printing advancements, customers can obtain fully customized products in near-real time. Whereas Amazon once made mall shopping seem dated, 3D printing will make ordering online feel positively archaic.

As we write this, Boeing, GE, and other industry leaders are manufacturing state-of-the-art aerospace equipment with this new technology, while NASA is demonstrating how 3D printers will be used in space.

Perhaps most dramatic are the advances being made in the medical field. Research and development of 3D-printing-based medical techniques has already saved countless lives and opened the doors to previously unimaginable possibilities in medicine.

3D Printing Entering Modern Workplaces

A big part of manufacturers' 3D printing strategies will be retraining the existing workforce or drawing in new talent with the skills to create digital designs as well as oversee the printing production. A future of "printer farms," with dozens of printers overseen by only a handful of workers, also raises the possibility of losing manufacturing jobs to labor-saving technology.

Answering this employment challenge begins early, with childhood and young adult education. 3D printers provide students with an unrivaled hands-on experience in engineering and design. Applications cross into math, science, design, and computer classes. By garnering student interest in 3D printing at a young age, we are poised to revitalize the workforce, engage more bright minds across new tech platforms, and keep innovation strong.

This type of evolution has happened before, not too long ago. The print industry shifted from making and selling large offset jobs to shorter-run sheetfed and then to even smaller, highly personalized digital printing. This required virtually every substantial company to retrain existing sales forces, reformat commission packages, and bring in new talent that understood the production process. 3D printing continues this refinement of updating sales and production. Likewise, finding and attracting those skilled and re-skilled in 3D printing will be paramount for the future of print companies.

The very nature of people's careers may very well change from one of working for necessity to one of exploration and the hunt for greater knowledge. Pursuits once reserved for the elite will be attainable by all. The type and amount of work will change drastically, leading to the potential development of better societies and advances in human understanding.

New Form Factors

Thanks to 3D printing, designers and engineers have discovered they can produce prototypes to feel, test-fit against other parts in an assembly in a matter of days, show to their sales and marketing teams, and perform engineering evaluation—all at a relatively low cost. Designers don't have to begin tooling to receive a functional part in their hands and check its size, feel, and function. In some cases, the 3D-printing process has revealed better alternatives to traditional manufacturing methods, removing the need for tooling completely. These changes can already be seen, as companies like Alcoa make strategic decisions to separate their commodity holdings from their "upstream" technologies and advances.

As another example, architectural firms can now create 3D blueprints of buildings to give engineers and property owners a much better conceptual idea of a planned project.

In turn, traditional creation methods depend on technologies that create a limited number of structures and shapes, with more intricate ones having to be formed from a number of parts and assembled manually. However, 3D-printing technology transforms this process—the injector of the 3D printer can create many complex figures, confined only by a person's imagination. This method gives them higher structural integrity, more durability, and increased proprietary value.

New Uses for Materials

Combining different raw materials isn't always possible with traditional mass production methods due to the high costs involved and to chemical and physical properties that make it tricky.

A 3D printer capable of using different materials.

3D printing has eliminated many of these limitations, not only because of the initial dependence on plastic, but also because of constant innovation fueled by enthusiasts' belief that 3D printing's potential hasn't been reached yet. Currently in development are printers that can simultaneously use up to twelve different base materials. This will allow companies to print out complex products in a single stream—a phone or car, for example—rather than rely on traditional production methods.

Less Environmental Impact

Manufacturing is generally a wasteful process with a lot of surplus materials. Creating a similar object with the use of 3D-print manufacturing not only utilizes less energy but also uses better designs to minimize waste and unusable byproducts. When 3D printers are located at or near the final destination of the product, the entire environmental and financial cost of transportation and distribution is significantly reduced.

Objects that can be made with the use of this technology include jewelry, footwear, automotive parts, and more. Sometimes, the finished product of 3D printing can be considerably lighter than the machined part but still structurally sound. Large cost savings can be attained in this way, and a smaller amount of waste also means a reduced impact on the environment. The sky is the limit.

National Business Becomes Local

One major benefit of 3D printing is how it can bring national business—currently dominated by a standard production/distribution model—to a more local, immediate stage. For example, instead of having pallets of soda sent to various distribution centers and then redelivered to retail locations, 3D printers can produce the packaging, advertising, and—possibly in time—the food product itself, directly to events and customers.

While this will disrupt a long-standing model of commerce, the cost savings and smaller footprint of direct-to-consumer delivery will make this a change for the better. This disruption will also impact the retail industry. Without a need to visit stores, the retail workforce will be minimized, forcing job seekers to find employment with companies related to services and social interactions.

Faster Production

The speed of 3D printing is quicker as compared to traditional methods. It's similar to comparing the top speed of a car to a horse and buggy. They both get you to your destination, but the travel period differs significantly.

With industrial 3D printing technologies being able to create an object faster, traditional production methods are gradually becoming obsolete. Why should you fill stores up with generalized items if you can make personalized designs on demand?

Even if this approach might not initially gel with major offline manufacturers who rely on outside suppliers, it can prove very efficient for an online business. With so many potential benefits of 3D printing, there's no surprise that this method is making its way through a diverse number of industries and quickly becoming a favorite tool of progressive marketers.

Essentially, outdated companies must evolve to new processes, or die.

The Rise of the TechCreative: Personifying a Changing Business Landscape

The modern workforce is changing. No longer do we have left brains and right brains working in silos. Instead, today's forward-thinking companies employ tech-savvy professionals who combine tech know-how with a healthy dose of creative and design expertise, strengthening both sides of the scale.

These valuable workers look to enhance their talents and are always seeking new ways to utilize their skills, rather than handing them to different departments. This balance of hyper-detailed process and creative long-term vision falls perfectly in line with disruptive tech, and as such, the advent of 3D printing for multiple applications.

As a result, tech-driven companies are shifting the way they hire, with less focus on skilled labor and more focus on a versatile kind of talent we

A leader in the business of 3D printing.

A selection of 3D printers.

call TechCreative. As these companies invest in new equipment and tools, they need TechCreatives to come in to handle existing operations and optimize them for future benefit. (Learn more about TechCreative talent in our e-book, *Introducing the TechCreative*.)

One key example of this shift comes from Shapeways, a company that seized a position as a leader in 3D printing. Rather than offer this technology to create pre-fab items from a finite list, Shapeways sought to maximize their use of the technology, allowing customers to design their own items while organically developing a community of like-minded "creators."

Not only did this open countless new revenue streams, but it also created a community focused on marketing and selling these new 3D designs to new markets.

Conclusion

3D printing is well-equipped to transform the way we create, innovate, and even conduct our daily lives. With unforeseen design freedom, affordable customization, environmental benefits, lower costs, and local production, all who embrace this technology have a competitive advantage.

Perhaps 3D printing adoption is in its infancy, but companies that implement this technology are poised to create new revenue streams, redefine their existing offerings, and—yes—become a truly disruptive presence through groundbreaking applications.

Disrution comes with baggage. The social upheavals that ride on the coattails of 3D printing cannot be ignored. Certain questions will be at the forefront. "What does work look like?" "How do we value human output?" "How do we reward positive social actions?" "How do we address the social stigmas of the old methods in a safe way?" 3D printing cannot solve societal issues. But, with our newfound freedoms due to 3D printing, perhaps we can get started.

P.S. The new *Star Trek* series will be out in one year.

Continuing Momentum toward Production Inkjet

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Reprinted with permission Xerox Digital Printing Hot Spot

The investment momentum toward inkjet production presses continues to increase as evidenced by recent presentations and articles. The Third Annual Inkjet Summit earlier this year was the largest and the best attended so far. Instead of splitting attendees into three groups this year, attendees were split into four groups based on four market segments: books, direct mail, commercial printing, and transactional printing. Sponsors presented case histories in each of the market segments; industry experts offered research on the projected growth within those markets; and inkjet experts made presentations discussing implementation issues and answers.

While most people understand the impact of inkjet production printing in the commercial printer space, not everyone understands the increasingly important role within the government sector. On May 14, seventy in-plant managers from across the country attended the inaugural Digital Printing in Government and Higher-Ed Conference at the Government Publishing Office (GPO) in Washington, D.C. The show, which was sponsored by *In-Plant Graphics* magazine, included a presentation by two state printers from Colorado and California.

Mike Lincoln from Colorado talked about his recent conversion from toner to inkjet production, while Jerry Hill from California talked about his plans to migrate to inkjet equipment. Both state printers discussed the growing role of inkjet production equipment in their printing facilities.

The cover story of this month's *Inkjet Age* supplement is entitled, "What's Your Inkjet ROI?" In the article, co-written by Jim Hamilton and myself, we talk about popular print applications, concerns about paper/quality, and the growing opportunities to invest as less expensive equipment comes to market. One of the more interesting tables is entitled, "The Impact to Print Volume," which looks at percentage changes in the total cost of manufacturing of the equipment, maintenance, consumables, and paper, as the page volume increases.

Projected Growth

According to InfoTrends, the migration from black and white pages to color pages is continuing and it is fueled in part by the adoption of inkjet equipment. According to InfoTrends' "U.S. and Western European Production Printing & Copying Market Forecasts," the growth opportunities remain high for color inkjet production printing. In 2013, production color inkjet accounted for 36.6 percent of the total production digital color volume in 2013. Which is quite impressive since there was hardly any production color inkjet volume at all as recently as 2008.

Much, but not all, of the growth in production color volume can be attributed to inkjet. According to InfoTrends, production color volumes totaled about 265 billion impressions in 2013 and will grow to more than 500 billion by 2018. By 2016, production color inkjet volume will exceed that produced by color toner devices.

As you can see in Figure 1, black and white pages are expected to decline by 6.4 percent, while color pages are expected to increase by 13.7 percent. By 2018, InfoTrends predicts that production color inkjet will account for 59.1 percent, and all of this is happening despite the fact that color toner continues to grow. For more information, feel free to review the InfoTrends webinar by Barb Pellow and Jim Hamilton for Xerox entitled "Inkjet: Closing the Gap."

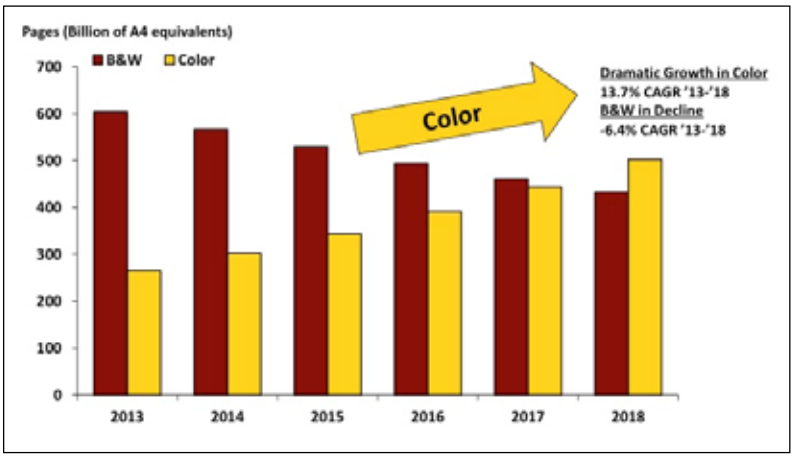

Figure 1. Source: InfoTrends U.S. and Western European Production Printing & Copying Market Forecasts: 2013–2018.

Equipment Optimization to Drive Profitability

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Today's production facilities include a multitude of equipment and solutions to serve the customers' communication needs, be that through printed materials, electronic communication, or as we are seeing increasingly, a combination of the two. Endeavoring to get the most efficient workflow to drive productivity and profitability is one of the underlying goals of many companies. In this, there is often the focus to be more productive with less by increasing production speeds and reducing makereadies while reducing touch points throughout the workflow. There are many tools and techniques that can be used to drive these goals, from procedural/operational changes to new equipment/software acquisitions. The details of how this can be achieved will depend on each individual production facility, the customer base, the verticals addressed, and the business philosophy of the company. However, similar techniques and approaches can be used, which are optimized to the facility.

Critically, business growth can be equally as important as equipment optimization, depending on the particular company. This may seem slightly contradictory considering the focus of the article. However, when looking at equipment optimization, it needs to go alongside a strategic evaluation of your business and growth potential. Too many times the focus is on efficiency in the press room, while not working to increase sales, concentrate on the product mix, and optimize business practices prior to production. Focusing only on quipment will certainly improve efficiency, but without a corresponding change in business practices, full benefits will not be achieved. Full potential is unlocked when the two are carried out in combination.

Prior to any optimization process it is essential to understand your current state, as this provides the benchmark for any improvements that are gained. It is also important to prioritize the areas of focus. Ask yourself the following question: "Can you analyze your current performance?" Unfortunately, in many cases there is no hard data to back up opinions of how the current equipment is performing and where the opportunities exist to gain additional time. There is often the option to interrogate the equipment itself and obtain information about the performance by utilizing existing management systems or third-party data-collection solutions.

There are four main areas that should be considered when optimizing equipment, and neglecting any of them can have a significant effect on the achievable impact. It is the weakest part of the system that will fail first, producing a constraint in the complete manufacturing process. The four areas to be considered are as follows, and we will discuss them in turn. Often the majority of the effort gets placed on items two and three, neglecting the other areas that can have a larger impact.

1. Materials and information arriving at the equipment
2. Equipment set-up and makeready
3. Production efficiency and error reduction
4. Post-production considerations

One frequently ignored aspect when optimizing equipment is evaluating the materials and information that arrive to the equipment. This needs to be both accurate and timely; problems in either case will lead to lost production and reduced efficiency. Many jobs will be entered into a management information system (MIS), and this data needs to be passed, along with the prepress data, through to the press to ensure maximum efficiency. This also ensures that any changes to the job are correctly noted and then acted upon during production. There are now many additional presets that can be made on the transition between jobs and during the makeready process. Passing this information will create significant time savings and a reduction in errors. The delivery and scheduling of materials to press is another area to optimize, so that operators are not waiting or transporting materials when they should be carrying out the makeready. In one facility, a reduction from 40 minutes to 10 minutes was achieved on a wide-format printer by primarily considering transportation issues.

Optimization of equipment set-up and makeready applies to all manufacturing processes, including offset, digital, and flexographic printing, as well as postpress activities, such as cutting, folding, die cutting, and binding. First, you need to understand how good you really are through benchmarking. Second, you need to determine how much more can be driven out of the process. This analysis, along with your production schedule, helps to determine the level of importance to give to reducing set-up and makeready times. Moreover, improvements need to be understood within the context of the overall production facility and not the individual job. For example, a 10-minute savings would appear better than a 1-minute savings; however, when there are twenty set-ups a week in the first case and five hundred a week in the second, there are actually two-and-a-half times the weekly savings to be achieved in the second case. This occurs equally throughout the whole optimization process, and that is why it is critical to understand the full lifecycle of the product.

The makeready process needs to be considered in a similar manner to a Formula One pit stop, where there is a very clear and predefined strategy to achieve the objective. In these situations, it is necessary to observe the current state, and this is where benchmarks will also help. Following

this, internal (can only be done during makeready) and external (can be done during production) steps need to be identified. Where possible, the internal steps should then be converted to external steps. Once complete, both the internal and external steps should be optimized/eliminated and documented so that they can be completed by all staff. The cycle then repeats in a process of continual improvement.

When optimizing the production of a piece of equipment, Overall Equipment Effectiveness (OEE) provides a valuable independent measure of how well the equipment performs over time and is a useful metric to gauge the impact of changes to workflow and production methods. There are several ways to define this, but for the purposes of this article I have defined OEE as:

$$\text{OEE} = \text{Speed Index} \times \text{Quality Index} \times \text{Time Index}$$

Where:

$$\text{Quality Index} = \frac{\text{Total of all good products}}{\text{Total of all printed products}}$$

$$\text{Speed Index} = \frac{\text{Average equipment speed}}{\text{Maximum equipment speed}}$$

$$\text{Speed Index} = \frac{\text{Total production time}}{\text{Total available time}}$$

OEE will change as the run length reduces since there is typically is a larger percentage of time spent on makeready. The actual result will vary dependent on the industry. A typical OEE chart from the printing industry is shown in Figure 1 below, and it illustrates the relationship between OEE and run length, with different equipment/facility combinations shown on the chart. There are many other factors that can move this value, such as equipment type, configuration, controls, job make-up, and production efficiency. Understanding where the equipment is currently, versus where it can be, is the critical to improving overall productivity.

There are many steps that can be completed to achieve optimal equipment performance. Training is often an area of potential. Some operators do not fully utilize all of the available controls on the equipment, and many have never had formal training. Data has shown that this needs to be active training with hands on situations, including the opportunity to get involved with training others. Additionally, having a well-managed and repeatable color workflow will minimize any color changes that need to be taken on press. Finally, there are also many lean manufacturing tools that can garner efficiencies, from 5S to value-stream mapping and Kaizen events. Many of these changes are cultural and need to be driven and recognized by all employees in the company. In all of these, the objective is first to evaluate what the current state is and then to evaluate where the biggest impacts can be made. It also helps to obtain "buy in" from staff, who then personally see the benefit from these changes. On one implementation of 5S on a press, we experienced resistance from one of the operators, who claimed it was implemented "just to make the press look nice!" Three weeks later, with an average of more than 10 minutes saved per makeready, the same operator was asking if 5S could be rolled out across the facility.

To fully optimize equipment and obtain the best OEE, a program should address maintenance as cornerstone of facility management. Equipment failure and downtime can greatly reduce OEE and lead to missed production deadlines and increased costs. The importance of a Total Productive Maintenance (TPM) program that identifies and fixes issues before they occur is critical to production and can lead to a significant reduction in repair costs.

By optimizing all of the steps in the production cycle and standardizing on materials, very high efficiencies can be achieved. An example is shown in Figure 2, where 134 makereadies and 273,000 impressions were completed in 24 hours on a sheet-fed press. This was achieved at a commercial print facility, ESP Color Hub, by having a clear focus on their position in the marketplace and optimizing the press, the consumables,

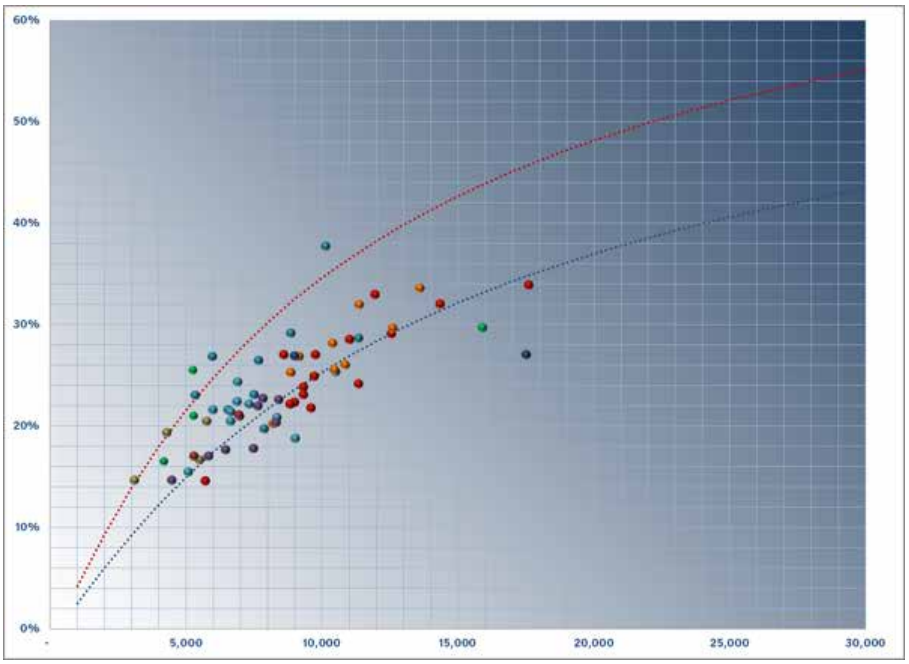

Figure 1. This is a typical OEE chart from the printing industry.

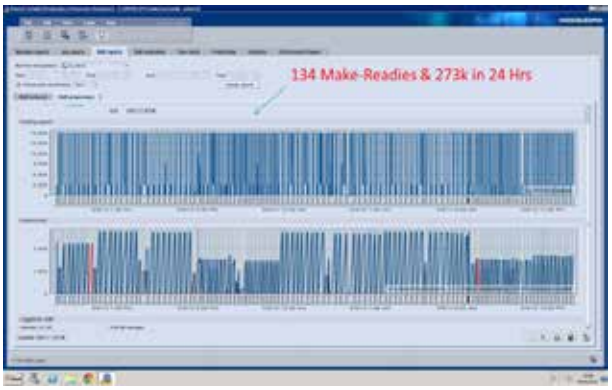

Figure 2. ESP Color Hub completed 134 makreadies and 273,000 impressions in 24 hours.

and the operating procedures to deliver high quality prints to many satisfied customers.

Postpress can at times be the bottleneck in getting finished products to the customer. However, the schedule in this area can often be used to drive production and, in certain instances, pricing. An example of postpress driving production would be scheduling similar job types, such as all trifold brochures, together, so that set-up is eliminated/minimized in all but the first job. In addition, optimizing for postpress in many cases will not only ease production but also result in higher productivity, as the number of last minute/late-breaking job changes are minimized. An instance of a facility optimizing postpress activities occured when a printing company linked their billing to their shipping scanner. The invoices for certain customers were automatically generated and distributed, in this case saving not only time and costs, but also gaining an additional five days of cash flow.

Optimizing the whole production workflow is highly effective, and significant savings can be achieved. In a recent productivity program with Cohber Press, 1,750 hours of added print production capacity was achieved in the first year. These improvements were achieved through technical services, followed by additional training and monthly progress reviews that drove the project implementation and buy-in completely through the management and the staff. This was all driven by data, and big contributors to this success were the highly motivated press operators who were eager to learn more and personally motivated to drive efficiencies.

Analytics, tools, and support are available to drive equipment efficiency and business growth. There need to be parallel efforts to drive the business and the equipment efficiency to obtain the maximum benefits. Evaluating and then acting on the findings and recommendations will ultimately lead to increased profitability.

Information Security Comes to the Forefront

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With the addition of services that cause printers to handle customer data, information security practices are being questioned and audited. Today, it's not unusual for a supplier contract to be contingent on, or at least for customers to ask about, security-related certifications. Firms will increasingly be locked out of high-profit opportunities if they don't have a security policy and can't exhibit sound security practices.

As defined by information security management firm FRSecure, information security is the application of administrative, physical, and technical controls to protect the integrity, confidentiality, and availability of data. Administrative controls address management directives, policies, and procedures. Training, termination procedures, and disaster recovery plans all fall within this aspect of information security. Physical controls are the easiest aspect for most printing businesses to relate to and cover steps taken to restrict access to information. For example, companies handling sensitive data may have a fence around the property, use locks

to limit access to areas where the data is accessed and manipulated, and keep finished goods inventory in locked storage until shipment. Technical controls also restrict access but do so with the application of digital technology. Examples include anti-virus software, firewalls, and permission lists.

Do you need information security? If you're handling private customer information, especially financial or health care information, the answer is obvious. In general, if you are in control of information that needs to be kept secret, needs to be absolutely accurate, or always needs to be available when needed, they you have a need for information security.

The flaw in many companies' approach to information security is failing to view it as a business-level strategy. It is NOT primarily an IT or HR issue. In fact, if top management doesn't demonstrate its commitment by being actively involved in information security strategy, budget setting, and communicating policy, a company's efforts will fall short. Like companies that now consider the environmental impact of all business decisions, information security deserves a similar status. If a company says "we have a guy/gal handling that," when asked about information security, it's a clue that the company hasn't come to grips with the significance of security.

With all of the sites being hacked these days (think Target and the Office of Personnel Management) it's easy to think that technology controls should be your biggest priority. The truth, however, is that people are your biggest risk. A lost or stolen unencrypted laptop full of customer data is more likely to damage your business than Eastern European hackers. That's why administrative policies should be constructed by assessing the likelihood and financial impact of people knowingly or unintentionally taking actions that put a company in jeopardy. It comes down to trying to measure risk. The financial ramifications of security risks determine whether it's worth putting countermeasures in place.

While the need to comply with an outside set of standards can be the catalyst for companies to get serious about information security, remember that "compliance" and "risk" aren't the same. Putting policies and procedures in place to achieve compliance may prove beneficial and raise your competitiveness in certain markets, but that doesn't mean it equals a comprehensive security strategy that minimizes risk. Start by building a sound security strategy and then seek compliance and certification if appropriate.

We had more member questions in 2015 than ever before about the requirements and cost of complying with various security-related standards. Let's examine three of them: SSAE 16/SOC 1 or SOC 2, ISO 27001, and HIPAA.

The first one comes out of the accounting industry. SSAE 16 is an auditing standard covering the control of financial information by service organizations and results in a Service Organization Control (SOC) 1 report. SSAE 16 audits are generally initiated for companies that play a significant role in the financial statements of their customers. SOC 2 is a different report based on criteria designed specifically for data centers and other technology service firms like printers. Main audit areas include security, availability of system, processing integrity, confidentiality, and privacy of personal information. The audit must be conducted by a qualified and licensed CPA. The auditor will visit the company to determine compliance shortcomings and provide a gap analysis report. After allowing time for the company to make adjustments, a follow-up visit is held and a formal report is generated. It usually takes 60 days or more to achieve compliance at a cost of $15,000–20,000.

ISO 27001, from the International Standards Organization (ISO), is a standard for an information security management system. Like ISO 9001, the quality management standard, companies can become certified through third-party certification bodies. Although some customers may require certification, companies can also choose to adhere to the standard and avoid the certification cost. Among the major elements of the standard are security policy, risk assessment and treatment, documentation control, and internal audits. The cost of the preparedness audits and certification visit will likely be $20,000–30,000.

HIPAA is the Health Insurance Portability and Accountability Act that was passed in 1996. Critical for printing companies handling protected patient information (PPI) are the subsequent regulations protecting the privacy and security of certain health information. The regulations stipulate that "covered business entities" like health plans sign an agreement with their service providers ensuring compliance with the security requirements. No external oversight is required (there is no such thing as HIPAA certification), although clients occasionally require third-party audits or even perform audits themselves. The government can penalize companies for serious security breaches.

Here are a few of the other compliance standards that could be relevant based on the type of work a printer is engaged in: Payment Card Industry (PCI) data security standards, Federal Information Security Management Act (FISMA) standards, the Gramm-Leach-Bliley Act (GLBA) financial security standards, and the U.S.-E.U. Safe Harbor Framework for companies handling the personal data of European Union citizens.

As printers perform more work requiring the imaging of personal information, their ability to manage information security with effective administrative, physical, and technical controls will be a competitive differentiator and a way to protect against significant risks. If you don't have written policies in place, or they haven't been updated or enforced, let 2016 be the year you give security the attention it probably warrants in your business.

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How Value Engineering Solves Tough Marketing and Financial Problems

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To remain competitive and profitable, businesses serving a variety of market segments must take counteractive measures within the next twelve months or less. The question is how to quickly and economically create a viable plan to adapt and grow in the face of new trends, new technologies, and resource constraints. All businesses must effectively assess and reengineer their products, processes, services, and facilities at regular intervals. Survival mandates that businesses budget time for continuous improvement and improve at a faster rate than competitors. Change must come from a systematic process, not unplanned events.

Radical changes, rather than small incremental improvements, may be necessary to remain solvent over the long run. This article provides an overview of the value engineering method and what it can do for your company. It explains how completing value engineering workshops and studies can meet the age-old challenge of keeping competitive by identifying opportunities for improvement at less cost. The goal of value engineering is to develop a plan to maximize value and minimize costs.

Failing to plan is planning to fail. All businesses need a clear and realistic strategy for achieving goals. This holds true whether you are developing an annual business plan, operations plan, marketing plan, facility plan, product plan, or project plan. It should be a policy that each department within an organization prepare and submit a list of ideas for improving value on a quarterly basis for consideration by senior management.

What Is Value Engineering?

Value engineering is a systematic method used by a multi-disciplinary team to improve the value of a subject under study through analysis of its functions and related costs. The value-engineering team works under the direction of an experienced facilitator who makes sure the team follows an established set of procedures to fully understand customer requirements and designs a cost-effective solution to the problem under study.

Value engineering involves and strengthens a company's relationships with customers, employees, and suppliers to gain a better perspective of each other's needs and capabilities. The value engineering method can be applied to any business or economic sector, including manufacturing, construction, service, and government. You can use the value methodology to improve the marketability and financial performance of your business. When applied properly, value engineering facilitates teamwork, stimulates innovation, and expedites consensus decisions needed to exploit changes as profitable business opportunities.

Evolution of Value Engineering

The value engineering method was originally developed during the World War II era in the purchasing department at General Electric Company by Larry Miles. It was originally used as a way to find lower-cost substitutes for parts needed to fulfill manufacturing contracts that were unavailable or only available at inflated prices because of rationing during the war effort. The function-oriented approach resulted in lower costs without compromising quality. It often resulted in improved quality at lower costs. The method was originally called value analysis but later was also called value engineering or value management. The value method evolved from strictly focusing on ways to reduce costs. It later was embraced by marketing and engineering as a means to design and develop superior products, processes, services, and facilities within resource constraints. Analyzing and improving the relationships between function costs and worth and creating new ways to satisfy customer desires within resource constraints are the foundations of the value engineering method. Needless to say, businesses cannot simply "cost cut" their way to grow profits over the long run. Value engineering is applicable to both cost reduction and growth oriented initiatives.

During a value engineering study/workshop, all of the functions that are or must be performed by a product, process, service, facility, or other subject selected for study are defined, classified, and evaluated carefully in terms of cost and worth, based on internal or external customer's actual needs. Value engineering systematically examines customer needs and preferences to obtain the required function(s) of an item under study at the lowest total cost, without sacrificing quality and performance. Value mismatches are identified by relating customer attitudes to functions and determining the costs and worth of functions. Creativity techniques are used to generate new and more profitable ways to satisfy customer needs and wants.

What to Do?

The question asked by most senior executives today is not how to do something, but what to do to increase sales and achieve shareholder return on investment objectives. Value engineering forces people who own a problem to communicate, visualize, and evaluate costs in terms of what something does (functions), versus what it is or how it is produced. There are questions and exercises to help participants apply value engineering to develop more profitable and lower-cost ways to satisfy customer requirements.

What Does it Do? What Does it Need to Do?

Function analysis represents the heart of the value engineering method. During the function analysis phase, the value study team identifies, classifies, and analyzes functions within the scope of the value study. Functions

describe required performance actions without describing specifically how each function is performed. A fundamental rule of value management is that all functions must be described using verb-noun combinations. For example, during a value study of production operations, costs for material, labor, equipment, and utilities are identified and translated in terms of functions. Examples of printing operation functions might include supply plates, feed paper, clean blankets, transfer ink, clean press, cut paper, fold paper, make ready, and dispose waste.

Precisely defining the verb-noun requires a better understanding of what the customer wants and what the project, service, product, or system must do for the customer. This is a radical departure from conventional cost reduction, which simply asks the question "What is it?" and then concentrates on making the same item less expensive by asking how we reduce its cost. Moreover, most people equate cost reduction with staff reductions and cannot be expected to be enthusiastic with a project to do that. Improving value is the concept behind value engineering. Value study results may indicate that it is necessary to apply additional resources to those areas that are most critical to maximize customer value.

The Value Engineering Job Plan

Value studies follow a six-phase job plan, which is an organized procedure for accomplishing a value study. A value study begins by identifying objectives and gathering information. Certain information must be compiled prior to the value study to identify areas representing the best value-improvement opportunities. Following is a partial list of the type of information needed to begin an enterprise-wide value-engineering study:

- Type of business; products and services provided
- Annual sales revenues, margins, and trends (by job, account, sector)
- Products, services, and processes that generate the most revenues
- Information about the company's customers and how they procure products and services
- Balance sheets and income statements
- Chart of accounts
- List of production equipment, capacity, and utilization
- Size, layout, and utilization of facility and property
- Marketing plan
- Staffing and cost by department
- List of problems and opportunities (S.W.O.T. Analysis)
- List of potential candidates within the business representing the best opportunities for value-improvement projects
- Workflow charts and diagrams

Matching Functions with Costs

Next, members of the value study team allocate actual costs to functions and look for value mismatches. A value mismatch can be a high-cost function with low worth from the customer's perspective. It can also be a function with high worth from the customer's perspective, where insufficient financial, marketing, or other resources have been allocated.

Creativity techniques are then used to generate alternative ways to satisfy customer requirements within resource constraints. It does not matter how efficiently a product is produced or a service is provided if it is not something the customer wants and is willing and able to pay for. Next, the ideas generated during the creativity phase are ranked according to their feasibility, cost, and probability of being accepted by the customer. Ultimately the ideas that represent the best opportunities for value improvement are developed into a written report, and an oral presentation of the recommendations is also made to the sponsor of the value study.

Applying the Method—Doing More with Less

Value engineering is not just a fancy name for another cost-cutting initiative. The value method is a powerful way to design economical, customer-focused products, processes, services, and facilities by matching functions with customer needs. By comparing how well those functions meet customer needs, and how costs are allocated to the functions, the subject under study can be made more valuable to customers, usually at less cost. The method is also a great way to develop closer customer relationships; find out what they really need, want, and are willing to pay for; and demonstrate a cost avoidance effort. The method can be applied to solve any value problem that can be expressed in functional terms. Its strength is derived from analysis of the relationship of function costs and worth from the customer's perspective, cross-disciplinary team problem-solving, identification of value mismatches, creativity and consensus building techniques, and a systematic approach to generating solutions.

Value engineering is an optimization and improvement method that businesses can use to cope with a world of accelerating change, reduced budgets, and increasing customer demands. When executed properly, value studies stimulate teamwork and creativity, identify and eliminate waste, and enable businesses to differentiate themselves with better work methods, well designed products and services at low prices, and other value-adding improvements.

Richard Sievert, Ph.D., is the author of Value Management: A Step-by-Step Plan to Do More with Less *published by Printing Industries of America. Rick is a recognized expert in value engineering and value management workshops. He is a professor in the College of Engineering at Drexel University, where he teaches value engineering, conducts customized workshops for industry, and prepares students for SAVE International Module 1 basic certification.*

FOR MORE ON THE PROCESS

Click **here** for an example of a value study/workshop agenda (http://prnt.in/valueplan).

What Your Photographs Are Actually Showing Your Audience

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Your audience connects the quality of your marketing campaigns to the value of your products and services. To be more direct, the quality and composition of the photography you use for self-promotions can tell your audience a great deal about your company's priorities and goals. Often times, printers and marketers spend countless hours perfecting the written message for their audience but fall flat when they need professional-level photographs to accompany that message. The type and quality of your photography might tell a different story than you anticipate.

According to research conducted by the Nielsen Norman Group, the average website user spends most of their time analyzing the layout of a webpage and "reading" the images; however, the same user actually reads only about 18 percent of the page content before moving on. Users are more likely to scan the text quickly to get a basic understanding of the page content. In addition, academic studies from Simon Fraser University and University College London found that including photographs of people the audience can relate to creates positive attitudes towards a company's brand and builds trust towards their products and services. Based on this research, using the right photograph that relates to your intended audience should be a high priority.

So what type of photograph is going to work best for you? Unfortunately, there's not one answer that can solve this problem for everyone. Different types of photographs can be used for different applications. Product shots for a print portfolio are much different from photographs taken at a conference. But there are guidelines to abide by when working with photography.

Use Stock Photography Wisely

Usability tests for print and Web applications from the Nielsen Norman Group reveal that users recognize and interact with photos of real people in real situations more than stock photography. Some stock photography, mostly of shiny people shaking hands or looking directly into the camera at a business meeting, are more decorative and rarely acknowledged by the user as useful content. Honestly, it seems like nearly everyone has used these photos before to add a visual element to a design. The reality is that using no photo at all might be better than using these types of cheesy stock photo. Photography from real situations and featuring real people helps to build trust in a company and their brand.

Traditional Effects Are Better than Postproduction

I worked with a designer who spent over four hours trying to create an ink splatter effect in Photoshop when he could have accomplished the same effect with a bottle of ink, a paintbrush, and a high-resolution scanner. It's so common to take a photograph and say, "I can create better effects in Photoshop afterwards." Photoshop and Lightroom are great tools for any photographer and designer, but their scope is limited to the quality of the raw photograph. It's much better, and usually quicker, to create lighting effects the traditional way by using bright lights, reflection cards, and rigging devices rather than spending countless hours in post-production. Try to get as much done beforehand at the shoot, and then you can spend time in postproduction more effectively. Even through all this work, the result will not be as nice as having a properly lit scene or using existing objects to create effects.

Take Photographs Like MacGyver

A common reaction from printers, usually small businesses, is that they don't have the room or can't afford high quality photography lights and cameras. Investing in professional photography equipment can cost a small fortune if you purchase the highest quality gear.

Unfortunately, we can't build a professional lighting system using a book of matches, rubber hose, and paperclip like MacGyver. But, you can create a makeshift photography studio using basic things found around the office and a quick trip to Home Depot.

For example, you can build a studio light for backlighting using a broomstick or lamp base, duck tape, and a high-lumen flashlight. In all, the entire lighting setup might cost upwards of $50 to $60, depending on the flashlight you purchase. Be careful you don't over expose your photo. Some high-end flashlights can give off a lot of light, and you'll end up with lots of burnouts in your photographs. Try using a homemade softbox to help eliminate unwanted lighting effects.

A gray card, used by photographers to test the white balance in an environment, can be replaced by printing a full page of 50-percent black on 8.5 × 11-in. cover stock. This useful tool can aid you in finding the right camera settings needed to make your photos come out looking great.

A soft box, used by photographers to diffuse the light coming from a direct source, can be a piece of white fabric or cheesecloth draped over your homemade studio light. These help separate the light so it displays over your subject evenly, eliminating bright highlights and over exposure.

In the end, while the phrase "a picture speaks a thousand words" might be a cliché, it nonetheless expresses a true sentiment. Always stay attuned to the messages that photographs convey about your business.

What Twitter Founder Jack Dorsey Teaches Us about Marketing

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As a teenager, Jack Dorsey developed dispatch routing software for taxi cabs. During this time, he was intrigued by the way taxis could briefly update others on their whereabouts. Soon, he began to contemplate developing an online program that would allow everyday people to send short messages to others in their online community. Just a few years later, he and co-founders Biz Stone and Noah Glass started Twitter.

Twitter has become an integral part of our lives, and the mindset that led to its creation is just as critical to those looking to market their organizations. Dorsey speaks passionately these days about creating a "user narrative" when developing a product that tells a story of the user's day-to-day life. This allows his companies, like Twitter and Square Reader, to create products that are built with the sole intention of filling a particular need.

This same mindset can also be applied to marketing. All too often, businesses market themselves without the prospect in mind. But successful marketers of the future will begin to align all marketing efforts with a prospect narrative. Creating a prospect narrative is an easy and powerful way to put yourself into your prospect's shoes—and ultimately increase the effectiveness of your marketing.

Here are five questions to consider when developing a prospect narrative for your company's next marketing campaign:

1. **What is your prospect doing during the day?** Most organizations create their marketing materials without considering what a prospect will be doing when he receives a marketing message. Prospects are busier than they have ever been in history. In fact, they are spending over a quarter of their day just responding to emails. In order for your campaign to break through the clutter, you must consider how your ideal prospect is spending his time.
2. **What is keeping your prospect up at night?** Usually, a company centers the majority of its marketing efforts on the company itself or the features and benefits of a specific product. However, prospects don't care about us, our company, or our offerings. All they care about are the issues they are dealing with right then and there. What are the challenges that your ideal prospect takes home with him each night? If you want your marketing to elicit a particular behavior, then spend some time matching your message to the challenges your prospect cares most about.
3. **What will catch your prospect's attention?** Most organizations are so focused on broadcasting how great they are that they don't think about what will most effectively catch the attention of the intended prospect. Most commercials, for example, are generic and unmemorable, so in order for yours to stand out, you need to develop a message that is so appealing or jarring to your prospect that he has no choice but to react to it.
4. **What action will your prospect most likely take?** So many marketing campaigns are solely focused on increasing awareness of an organization, rather than encouraging a prospect to take some action. This is tantamount to burning cash in a barrel. Think about what action your prospect would most realistically take after absorbing your message. Would he most likely go to a website, send a text, pick up the phone, send something through the mail, or find you on Twitter? Once you know which medium a prospect is most likely to use, then you can develop a call-to-action that aligns with it.
5. **How will you keep your prospect engaged?** Rarely do companies develop marketing campaigns that create long-term engagement. However, those that do receive dividends over and over again, all from that initial investment. Therefore, the question great marketers want to answer is, given the prospect's narrative, what are realistic ways to engage him in the long run? This will be the difference between developing a one-time customer and a long-term fan.

By formulating answers to these five questions, you begin to create a story of what your prospect is doing and what he is thinking about. After the prospect narrative is created, your marketing team should channel Dorsey by fitting campaigns precisely into that narrative.

Marc Wayshak is the bestselling author of two books on sales and leadership, Game Plan Selling *and* Breaking All Barriers, *as well as a regular contributor for* Fast Company, Entrepreneur Magazine *and the Huffington Post Business section. As a sales strategist, Marc created the Game Plan Selling System to revolutionize the way salespeople, entrepreneurs, and companies approach selling. Marc's sales strategy is based upon his experiences as an All-American athlete, Ivy League graduate, startup entrepreneur, and years of research, training, and selling. He holds an MBA from the University of Oxford and a BA from Harvard University. Get his free e-book on* 25 Tips to Crush Your Sales Goal *at GamePlanSelling.com. You can call him at 617-203-2171 or email him at Info@MarcWayshak.com. (Twitter: @MarcWayshak)*

Make Friends with the Media

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So you just developed the latest technology, you just appointed your new CEO, or you just confirmed your spot for the biggest trade show in the industry. These huge announcements deserve recognition. And, if you're like many other organizations, you'll turn to the media to get that attention.

When your company has a big announcement to make, the first step is normally to write a press release. You'll spend countless hours drafting, writing, editing, and approving your release. From the headline down to the boiler plate, you'll examine everything meticulously. But still, many of the companies in our industry find problems getting the media to notice us. Whether we pitch to television, radio, or even the printed newspaper, many of the smaller businesses get buried in the bottomless inbox of the busy reporter.

It's not that reporters don't think your update is newsworthy. It's just that most of them, especially journalists in the major news outlets, get very busy, very fast. On any given morning, they could have almost 200 emails (or more) in their inbox and they need to decide which ones have the most value, which ones their audience will react to, and which ones they can easily follow up with before their deadline. Knowing this, how can you revise your communications plan to get your company more exposure in industry media?

Build a Relationship

One of the quickest ways to get your press release into the trash is sending it to the wrong person. At the very least, start fact checking what contacts you send information to on your press list. You may find that you send business related articles to a technical reporter—or vice versa. Although sending your releases to an editor of a publication could work in theory, finding the exact reporter whose beat resides in your niche could increase your chances of getting noticed in a journalist's inbox.

If you have the time, developing a relationship with these people could also increase your chances of getting your news out to the public. Take the time to read what your key news contacts have written about in the past and learn what kind of stories interest them the most. This information could help you spin your press release so a reporter finds it more interesting for them and their audience. Also, reach out to your favorite journalists and let them know you like their article and why. If they recognize your name when a press release comes through, your releases will stand out among the crowd.

Be Courteous of Deadlines

The life of a journalist revolves around deadlines. Being courteous and aware of this issue goes a long way with the reporters in your area. For publications you deem paramount to your media plan, reach out early and find out what deadlines are like in the particular outlet. Then, be sure to send your information over with plenty of time for reporters to follow up with questions and write their articles. Also, inform your office of when you send news to the media. This way, anyone who answers the phone could address questions or direct the journalist to the right person—without giving them the runaround.

Proofread and Edit

You know how you feel when you receive an email from someone filled with grammatical mistakes and spelling errors? Checking for these mishaps before sending a press release out the door could do a lot in getting your release picked up. When your pieces are free of errors, it makes you seem more credible. Even though people usually try to push timely news fast, don't skip the crucial editing and proofreading processes.

Remember that the journalist on the other side of your email is a person as well. When your press releases don't get as much attention as you hope, it's not always because your news isn't worthy. It could be because the reporter deals with many of these things a day. Remember to follow these easy tips and your news releases could start going from the depths of an inbox to the forefront of the media.

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