March/April 2011 Volume 21 | Number 2

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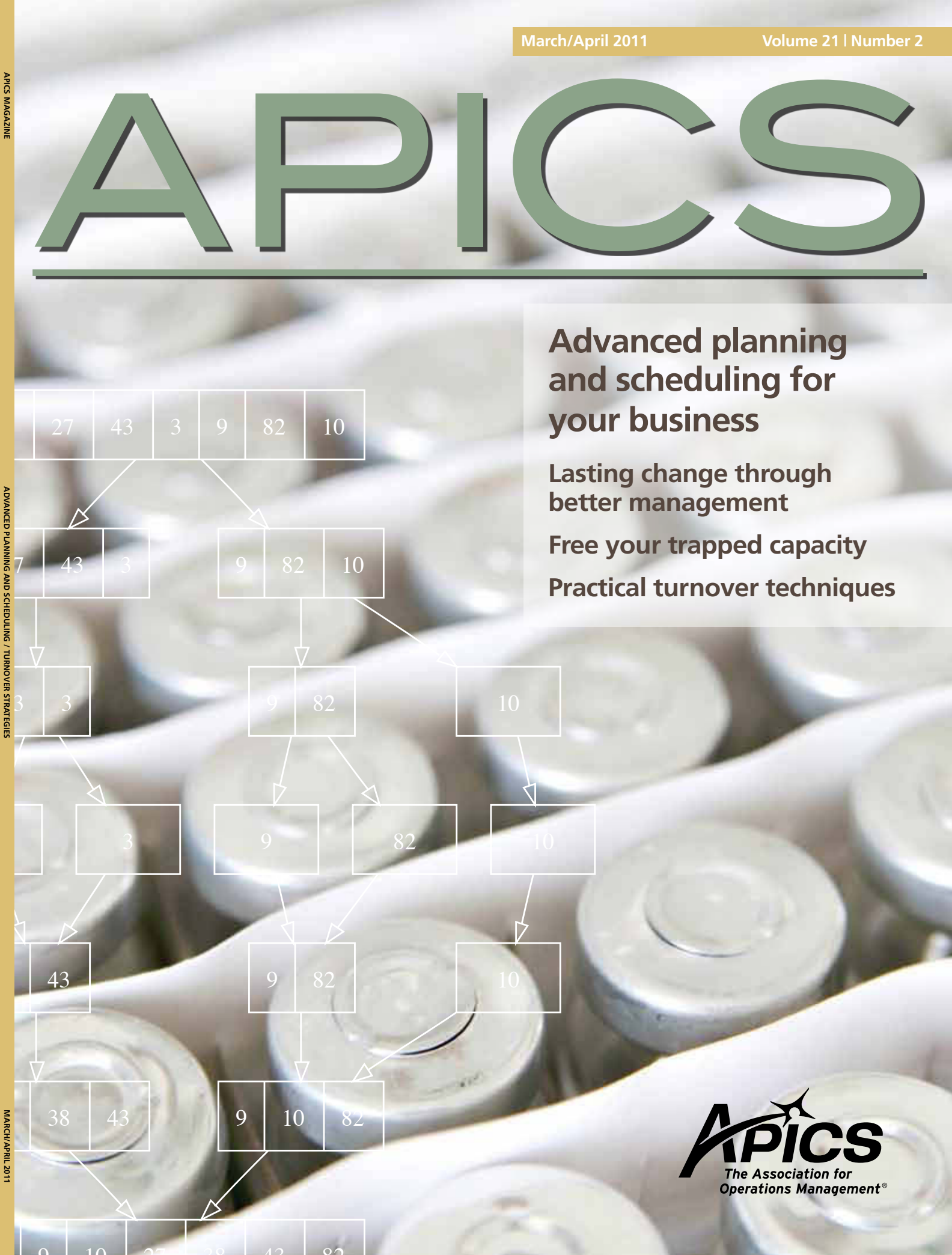

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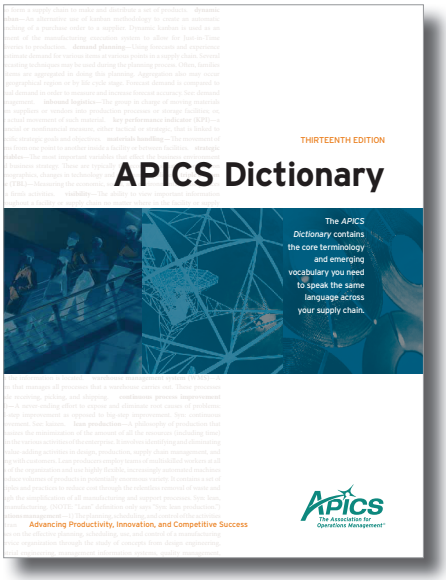

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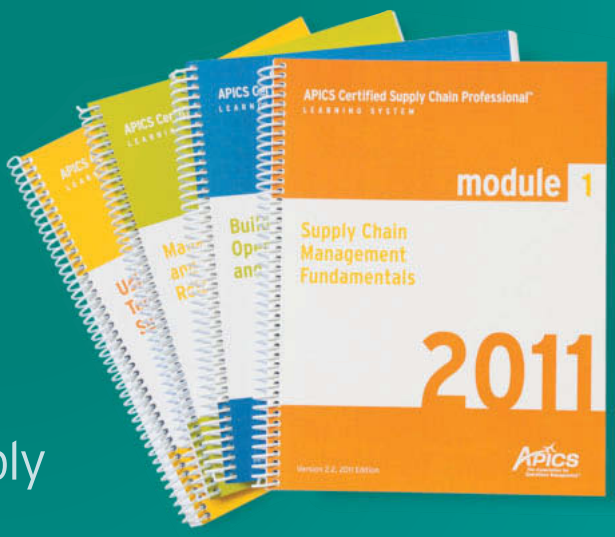

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APICS magazine

March/April 2011 Volume 21 | Number 2

FEATURES

COVER STORY

"Only a system that has 100 percent supply and planning reliability, a perfect forecast, and no demand variability should be loaded to 100 percent of its effective capacity." page 35

DEPARTMENTS

APICS magazine (ISSN 1056-0017) is published bimonthly by APICS The Association for Operations Management, 8430 West Bryn Mawr Ave., Suite 1000, Chicago, IL 60631-3439. Phone: (773) 867-1777. Canada Post International Publications Mail (Canadian Distribution) Sales Agreement No. 571423. Periodicals postage paid at Chicago, IL, and additional mailing offices. Subscriptions: $65 per year U.S., $77 Canada/Mexico, $93 elsewhere. Printed in the United States of America. POSTMASTER: Send address changes to: APICS, 8430 West Bryn Mawr Ave., Suite 1000, Chicago, IL 60631-3439.

Participating in the Dialogue

Recently, I've had the opportunity to meet with a number of members, partners, and government officials in Singapore. I used these meetings to share the work we're doing and gain a better understanding of how APICS can enable our community of members, affiliates, and customers to lead in the global marketplace.

Operations and supply chain management professionals have seen their area of expertise thrust into the spotlight in ways never imagined just a few years ago. As professionals, you are tasked with incorporating strategic initiatives into day-to-day practices. The key to success is to engage in the dialogue whenever the opportunity presents itself within your community and with colleagues internationally. On April 7–8, 2011, APICS is partnering with the Singapore Manufacturers' Federation to present our inaugural Asian supply chain conference, providing an opportunity to extend the dialogue even further.

Asia Supply Chain & Operations 2011

The theme for this important event is Advancing Productivity, Innovation, and Competitive Success. Asia Supply Chain & Operations 2011 promises attendees an exciting blend of productivity-enhancing best practices from the West and innovation from emerging Asian markets. In addition, at the World Café, operations and supply chain management professionals from a variety of industries all over the world will learn about the UN Global Compact and work together to identify solutions and strategies that build sustainable supply chains and businesses. We look forward to expanding this event globally and again sharing the results with APICS leaders to aid their investigation of emerging standards in the sustainable supply chain.

Operations and supply chain management professionals have seen their area of expertise thrust into the spotlight in ways never imagined just a few years ago.

The demand for APICS affiliation, education, and certification continues to expand across the globe. I hear from our enterprise members how important it is to their success that APICS provides networking and education opportunities to employees worldwide. Our local partners are critical to our success, and we will continue to identify ways to collaborate with organization leaders who understand and can meet the needs of their local members and customers.

Improving supply chain practices around the world serves our members, customers, and the global economy. Asia Supply Chain & Operations 2011 presents a unique opportunity. I'm excited that APICS is able to present this event, and I am eager to connect with the APICS community in Singapore.

Abe Eshkenazi, CSCP, CPA, CAE
Chief Executive Officer

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APICS magazine is published by

APICS The Association for Operations Management

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Chicago, IL 60631-3439
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Publication in *APICS* magazine does not constitute an endorsement of any product, service, or material referred to, nor does publication of an advertisement represent an endorsement by APICS or the magazine. All articles represent the viewpoints of the authors and are not necessarily those of the magazine or the publisher. Letters to the editor will be published at the discretion of the editor.

Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 1220055.

Subscriptions: *APICS* magazine is circulated to all members of APICS as part of their membership fee. For all others, the subscription rate is $65 annually ($77 in Canada and Mexico, $93 for other international or overseas delivery). To subscribe, call APICS customer service at (800) 444-2742 or (773) 867-1777.

Single copies within the US are $8, outside the US, $12 (payable in U.S. currency). Contact APICS Customer Service, (800) 444-2742 or (773) 867-1777.

Printed in the United States of America.

Embark on an Odyssey

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As I was editing the articles in this issue of *APICS* magazine, I discovered a recurring theme: the need for creative thinkers in business. For instance, department authors Philip Quigley, CFPIM, PMP, and Ron Crabtree, CIRM, CSCP, MLSSBB, discuss the benefits of identifying people who can offer new perspectives on your organization and continual reinvention of currently accepted wisdom. And "The Turnover Dilemma" author Barry Gunderson, CPIM, CSCP, writes, "Managers who think uniquely can achieve desired results … The only limitations are our imaginations."

This got me thinking about my daughters. Each weekend, they participate in Odyssey of the Mind (OM)—the best-kept secret in education. OM is a competitive, educational program that provides opportunities for teams of students from kindergarten through college to solve open-ended challenges. For example, one of this year's problems is called "Mouse Mobiles," and it requires teams to build a vehicle that uses mousetraps as its only energy source. The solutions ultimately are presented in front of a live audience and panel of judges at local, state, and worldwide levels.

The teams are given guidelines, an eight-minute time limit, and a budget. How they solve their chosen problem is entirely up to them. Adults may not offer any outside assistance. As a coach of two teams—one for my third grader and one for my sixth grader—this means I teach the groups how to understand a multifaceted challenge; stay on schedule; keep to a budget; perform relevant research; write a script; and produce scenery, costumes, and props—all while not offering any actual help with the problem's solution.

The time we spend on these challenges equals about 100 hours of practice over eight months. As many OM coaches joke, that's eight months for eight minutes—which seems like an arduous affair until you see the effects OM has on your own children. Then you're hooked. For me, it was witnessing my once-timid daughter at last year's tournament overflowing with confidence in her own opinions and her ability to present them with clarity.

The business case

Sammy Micklus, executive director of OM, recently stated in an interview on *21st Century Business,* "Employers need problem-solving workers who can think out of the box. But our schools—heavily focused on testing—just don't have time to teach those creative skills. OM strives to fill that gap."

He added that innovation, invention, and new products and services all come from the creativity of the human mind. "People are naturally creative," he says. "But as they age, they become inhibited to express that."

There's no doubt that business leaders recognize the value of OM. In fact, NASA sponsors a challenge each year because, as Micklus put it, "They are looking to … harvest and grow future scientists."

One thing I've learned from my years of coaching is that kids rise to the heights we ask of them. The same is true of the workforce. Employees are motivated by intellectual challenge. Tap into this. Consider implementing a formal process for developing creativity in your people. Engage in brainstorming sessions that broaden the range of opinions and encourage expression of new thoughts. Show your workers that you value their ideas, and they will take you on an odyssey to meaningful progress.

Elizabeth Rennie
Managing Editor

Diversify Your Career

Changes in the job market, industries, and the global economy are inevitable, and professionals who plan for change find themselves more apt to embrace and profit from it. Over the course of your career, you likely will be asked to adapt and develop while industries, markets, technologies, and job expectations change around you. Prepare yourself for these shifts with these APICS resources.

Pursue success through diversity

There is no standard or linear career path across industries, according to findings from the APICS research report "Operations and Supply Chain Management Career Paths and Patterns," compiled from survey data from more than 6,000 operations and supply chain management professionals. Career mobility is a key factor in career progression for all operations and supply chain managers. Industry professionals advance by demonstrating and seeking out diversity of skills, knowledge, and competencies.

Avoid the "expert" trap

Career trend data show that, when you work in one role for a while, you become an expert in that area. Although annual recognition through salary and title advancements reflects your growing knowledge and skill, any change can be detrimental to your career. Expanding your understanding and involvement in adjacent roles can lead to further benefits, as leaders recognize you as someone equipped to bridge departmental functions.

Prepare yourself by pursuing development activities, such as education and certification, which not only concern your current responsibilities, but also cover those generally related to your field. APICS is developing competency models to help operations and supply chain management professionals navigate the knowledge and skills that define their current career position and plan for future development. To learn more, visit apics.org/competencymodel.

Drastic career shifts can be costly

The biggest barrier to career change is having financial responsibilities. For most, the beginning of the career life cycle is a bumpy road. Switching jobs is easier with a lower level of experience in any one area, and entry-level salaries are similar.

At the midpoint of your career life cycle, you have made many achievements and gained more experience. It can be a terrifying prospect to change careers due to the risks associated with starting over and taking cuts in salary. Diversifying can be your key to success. Finding the self-discipline and motivation to continue your personal development can ease you into different career directions without forcing you to start at the bottom or suffer a financial hit.

Don't wait to make a change. When planning for your career and considering change, don't accept that a poor situation will be limited to a short period. Rather than simply "paying dues" now for success in the future, you may find yourself trapped instead.

APICS resources can help you achieve your professional goals. These resources include the following:

- **APICS Career Center.** Whether you seek career change or need to fill positions in production, inventory, materials management, supply chain, logistics, purchasing, and more, the APICS Career Center should be your first stop. For more information, visit apics.org/careercenter.
- **APICS online events.** Get convenient access to dynamic information and education through APICS online events. Educate an entire group of employees or colleagues without the cost of travel or bringing educators on site. Visit apics.org/onlineevents for more information.
- **APICS research.** Let APICS research prepare you with a comprehensive picture of the operations and supply chain management career field. Download and view the report "Operations and Supply Chain Management Career Paths and Patterns" and other APICS research at apics.org/research.
- **APICS certification.** Enhance your professional knowledge and credibility among peers, employers, and customers by earning APICS certification. Learn more about the APICS Certified Supply Chain Professional and Certified in Production and Inventory Management programs at apics.org/certification.

Chapter seminars

Mar. 9—APICS Mid-Florida Chapter. Seminar: Building Leadership Trust. Presenter: Lisa Ross. Location: Dubsdread Country Club, Orlando, Florida. For information, contact Jo Fickes at jo.fickes@earthlink.net or (863) 514-3777.

Apr. 12—APICS Mid-Florida Chapter. Plant tour: Central Florida Box Company, Lake Mary, Florida. For information, contact Jo Fickes at jo.fickes@earthlink.net or (863) 514-3777.

Apr. 13—APICS Wichita Chapter. Seminar: TLS: The Next Improvement Wave. Presenter: Robert Fox. Location: Southside Education Center, Wichita, Kansas. For information, visit apics-wichita.com or contact Brian Ferris at bferris@cox.net or (316) 644-2963.

By Jennifer Proctor

Standing Out from a Crowd of Candidates

Earning APICS certification to enhance career prospects

After unsuccessfully attempting to gain an internship, Rohit Gandrakota, CPIM, knew he needed an edge. A friend suggested he pursue his APICS Certified in Production and Inventory Management (CPIM) credential, so he started the Basics of Supply Chain Management module.

"The difference was evident," Gandrakota explains. "My chances of getting an interview increased. Better yet, I became more knowledgeable in supply chain, which helped with talking to the recruiters."

He soon completed the other modules and earned his certification.

Eventually, Gandrakota obtained his current job at Terra Technology. He credits his CPIM with helping him get the position and ensuring he is efficient in completing his duties. Gandrakota's role includes providing demand forecasting and inventory optimization consulting to consumer packaged goods firms such as Procter & Gamble, Unilever, and Kraft Foods.

Gandrakota says his APICS certification reveals a lot about him. "It is important to show your employer that you are proactive and serious about your career," he says. APICS certification "helps you stand out from the crowd." For all of these reasons, Gandrakota is considering pursuing his APICS Certified Supply Chain Professional designation in the future.

Networking advantage

APICS isn't all about certifications, and neither is Gandrakota. He enjoys outdoor activities. In the summer, he likes camping and climbing. In the winter, he snow skis.

Rohit Gandrakota, CPIM

Supply Chain Consultant

Terra Technology

Since becoming an APICS member in 2009, he has enjoyed the networking APICS offers—first, with enthusiastic fellow students who shared the knowledge they gained from internships and co-ops; then, with potential employers. Gandrakota enjoyed the culmination of these networking opportunities when he attended the 2010 APICS International Conference & Expo in Las Vegas, Nevada.

"The tutorial sessions at the conference were invaluable," he says, adding his appreciation for the general sessions. "They very were interesting and a very good motivation to start the day."

Jennifer Proctor is editor in chief of *APICS* magazine. She may be contacted at editorial@apics.org.

Send APICS your operations or supply chain management questions at askapics@apics.org.

By Jonathan Thatcher

Role-Playing with Fire

Strengthen your organization's disaster readiness

Reader A.L. writes, "I've been asked to develop risk management and business continuity plans for my group. Where do I begin?"

Just as most organizations have fire and other emergency drills at their facilities, it's necessary to augment these lifesaving practices with business-saving continuity drills. Role-play a risk, and audit the performance of your processes and operations. Consider the following scenario as a placeholder for any event that triggers a sudden, catastrophic loss of production.

A motor with a hidden defect gradually overheats within a device installed on an upper floor of your building. The motor triggers a slow, smoldering fire between floors overnight. Eventually, a roaring fire develops and a floor collapses, dropping parts of the building onto your production equipment and destroying 90 percent of your capacity. The safety equipment installed in your production area was unable to detect or prevent fire breaking out on other floors.

After such a scenario, immediate and enduring questions demand your attention. In the short term:

- How will you fulfill orders?
- Will production staff receive their salaries?
- How long will your remaining inventory last?
- Are your data and intellectual property safe?
- Do you have all the data you need to quickly restart operations in another location?

In addition, you must make financial and strategic decisions regarding replacing equipment; satisfying existing orders; restarting production; and contracting crews to build, repair, and salvage facilities. You also must deal with fire, insurance, and related investigations.

> Experiencing a disaster can be likened to incompetent or ineffective management suddenly taking control of your supply chain.

In the long term, it's necessary to strengthen staff, partner, and customer relationships that may have suffered from your lack of production. You will have to manage numerous, concurrent restoration projects. And finally, you must ensure the lessons learned are understood, appreciated, and acted upon.

Welcome to the survivors' club

Fifty percent of companies that lose their data go out of business immediately, and 90 percent don't survive more than two years, according to research firm Baroudi Bloor International. Experiencing a disaster can be likened to incompetent or ineffective management suddenly taking control of your supply chain. If you have been through a similar situation, you will understand the context; if not, try the fire scenario as a thought experiment with your team.

The next move is to ask, "What is your team still able to do? Can employees work from home or another location? What do senior managers need to communicate to workers? Are people even still employed? What do company leaders need to tell stakeholders right away—and then later? What specific skills or abilities would be particularly useful in recovery? To what key staffpeople would your team naturally turn?

Don't presume that managers know the answers to these questions. Task groups to report their results to the senior operations management team at your organization. As more teams complete their reports, it will become clear where gaps, misunderstandings, and potential disconnects exist in terms of business continuity management. This also is a good way to strengthen teamwork.

Research into business and production resiliency frequently points to five criteria as key determinants to the strength and pace of recovery. They include

- how well-protected are data and information technology
- the effectiveness of the organization's plan and preparation for severe and sudden loss of production
- how rapidly the business can access financial and operational resources critical for resumption of production
- the strength of leadership's ability to communicate and make optimal, consistent decisions throughout a crisis.

Finally, your insurance company likely offers ideas and historical statistics on risk that are worth considering, and local emergency response services may offer on-site inspections and suggestions for a variety of risks they see every day.

While conducting a business continuity drill could reveal some uncomfortable facts about your business, that certainly shouldn't deter the effort. A disaster may one day take temporary control of your production—but don't let that be the last chapter of your organization's story.

Jonathan Thatcher is director of research for the APICS professional development division. He may be contacted at askapics@apics.org.

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Additional course offerings to come.

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Automation

RMT Robotics has released ADAM Reactive Audio Playback, a programmable audio system that enhances automated vehicle safety notifications with music and voice messages. The system is designed to increase the safety of both operators of automated vehicles and those who work around them by replacing standard beeps—which can reduce worker alertness from constant exposure—with custom sounds, such as speech or music cues. The system features the ability to associate specific sounds with a vehicle's position in the facility.

Cloud computing

Aras has formed a strategic partnership with **Trubiquity** to adapt enterprise product life cycle management (PLM) software into a cloud-based format. The partnership will enable users of the software to share and manage computer-assisted design files, specifications, requirements, and other intellectual property securely and via existing company-specific PLM workflows.

Descartes has released Logistics Flow Control System, a cloud-based software suite for the collaboration of retailers, suppliers, logistics service providers, and brokers to manage the flow of goods and assist retailers in the post-purchase order process. The suite features mobile device support and enables users to perform functions such as global trade compliance, inventory and purchase order tracking, transportation management, and yard and dock-door flow control in distribution centers.

Zontec presents the Synergy 3000 statistical process control system, a cloud-based software suite for real-time quality management of production facilities. Users can access the suite remotely and perform tasks such as obtaining measurements or inspection counts, monitoring process statuses, troubleshooting processes, tracking and tracing production samples, and exchanging quality assurance data with customers and supply chain partners.

Employee management

Intelligent Instrumentation has unveiled Time Gathering System 400, a combination of hardware and software that uses biometric-based authentication for the purposes of employee time management and preventing unauthorized clock-ins. The solution features fingerprint verification, integration with most popular payroll accounting software, remote server verification requiring no storage of fingerprint data on-site, and transaction tracking for a complete audit trail.

Enterprise

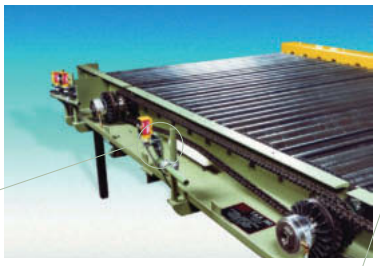
CDC Software has formed a strategic partnership with **MIR3** to provide to the global market enterprise software with monitoring, alert, notification, and resolution services. The partnership is intended to create solutions for those in positions such as information technology service management, crisis management, operations, and supply chain management—with applications in industries such as health care, finance, energy, government, retail, logistics, and manufacturing.

Preactor International and **Sage** have extended their partnership in order to offer their enterprise system to mid-market businesses in many new countries around the world. The solution aims to meet elaborate business processes in all manufacturing sectors in a cost-effective, quick-to-implement, and straightforward manner.

Material handling

A&H Engineering and Manufacturing unveils the Shop Lift, a hydraulic-electric lift that fits through most standard doorways and can move heavy materi-

als in confined spaces. Features include built-in battery and charger, heavy-duty steel structure, molded polyurethane wheels, onboard control, and foot-engaged floor locks. The Shop Lift is designed for use in facilities including mold shops, machine builders, tool works, and foundries, as well as clean facilities such as hospitals and electronics manufacturers.



TKF Conveyors has released Zoned Accumulation Conveyors, a line of zone-controlled conveyor systems for medium to heavy-duty loads. Features include a single power unit for the entire conveyor length; photoelectric sensors for zone control, allowing heavy, bulky loads to move through the line without contact or impact; and a side-mounted clutch assembly, which makes the system able to rest as low as six inches from the floor.

Rugged computing

Datalogic Mobile announces a partnership with **Skyhook** to provide location tracking services on mobile devices. Skyhook's Core Engine software determines a user's location by synthesizing data from Wi-Fi access points, global positioning system satellites, and cellular towers. The partnership aims to reach industries such as field service and sales, delivery, retail, and logistics.

Shop floor

Advanced Antivibration Components presents a line of precision wedge mounts designed for leveling heavy loads. Features include cast iron bodies, adjustment bolts made of zinc-plated steel, and no axial motion on the head of the bolt for increased operational safety. The mounts are devised for use with heavy objects including air compressors, rolling and transfer machines, gas turbines, nuclear reactors, and other large structures.

Linde Material Handling introduces the RX60 series of counterbalanced, seated lift trucks for manufacturing, storage and distribution, and logistics applications. The trucks feature sensor-activated power boosting for assisting with railroad crossings, curbs, ramps, and other obstacles.

Pinpoint Laser Systems introduces Capture, a Windows-based software suite that integrates with the company's Laser Microgage laser measuring and alignment system. The software suite features the ability to record incoming alignment readings and display results with spreadsheets and statistical analysis software, as well as the use of up to four remote laser receivers. The software has applications in locations such as steel mills, shipyards, and aircraft plants, as well as the health care field.

Sytech announces Smartz display modules, which aid in the visual identification of production interruptions on the shop floor. The modules show comprehensive production diagrams, problem locations within those diagrams, and detailed descriptions of problems. They also can be configured to display production metrics, including volume, productivity, rejects, and scrap. The modules feature language support for Arabic, Chinese, and Japanese and can be configured with cameras for video recording.

Transportation and logistics

Linescape has launched Fresco, an online rate exchange service for freight forwarders and shippers. The service enables members of Linescape's user base to find each other, initiate bookings, obtain rate quotations, and form business relationships. Features include the ability to obtain multiple quotations from various providers with a single request, result delivery via email, and access to freight sailing schedules.

To comment on this article, send a message to feedback@apics.org.

By John P. Collins, CFPIM, CSCP, and Eric P. Jack, Ph.D., CFPIM, CSCP

Sense and Respond

Why relationships are essential to demand-driven excellence

One of the goals of the Certified Supply Chain Professional course work is to stress the importance of an effective relationship among a company, its customers, and its suppliers—referred to as demand-driven excellence. But what exactly is demand-driven excellence, and how do you achieve it?

According to a recent article from Gartner, it is "a system of technologies and processes that senses and responds to real-time demand signals across a supply network of customers, suppliers, and employees." The *APICS Dictionary* adds that a demand-driven supply network is "a situation where a customer purchase initiates real-time information flows through the supply chain, which then causes movement of product through the network."

This is a relatively straightforward concept to understand. The challenge comes in how to measure it. In the article, Gartner ranked the top 25 supply chains, primarily using financial performance data and peer opinions as surrogate measures of both operational and innovation excellence. Interestingly, there were few assessments of how well these top performers did with product and service quality and responsiveness. Granted, these data are not readily available for comparison.

Quality and responsiveness are the leading metrics that provide early warnings about customer satisfaction levels. It is refreshing to see that, in a recent McKinsey survey of 639 chief executive officers (CEOs) of global companies, the CEOs' perspectives shine a bright light on issues related to product and service quality and responsiveness. In digesting the data presented, perhaps the biggest takeaway is that the low-hanging fruit (reduced inventory levels) is withering, and company leaders must refocus on the basics.

The surveyed executives ranked the top challenges for the next five years, which include

- reducing operational costs (41 percent)
- improving customer service (36 percent)
- getting products to market faster (34 percent)
- improving quality of products and services (29 percent)
- creating a greener supply chain (16 percent)
- reducing risk (16 percent)
- reducing overall inventory levels (12 percent).

Compared to similar responses from previous surveys, the noticeable changes in the CEOs' perspectives were the relative emphasis on improving customer service, quality, and responsiveness versus reducing inventory. The focus on quality and customer service will help these businesses retain current customers and possibly gain market share from new ones. Of course, the focus on cost reduction will remain at the forefront in order to survive in an increasingly uncertain marketplace. Here, some will say the business environment always has been uncertain, so cost reduction always will be on the operational agenda. But notice how closely cost reduction is ranked relative to the position of service quality, product quality, and responsiveness.

When one looks closely at the challenges of service quality and responsiveness, the sense of time suddenly is condensed down to the moment of truth—in real time—when frontline employees interact with customers. So how does the concept of demand-driven excellence help supply chain managers provide in real time the right strategic focus, guidance, and resources to succeed? Perhaps the answer lies in recognizing the importance of operating your supply chain as a set of key integrated relationships between you, your customers, and your suppliers.

At many organizations, the ability to improve internally is potentially limited by relationships with major customers and suppliers. Thus, for continued success, it's necessary to actively engage and leverage these bonds. Productivity improvements through internal efforts can take you only so far. Time lost in production often can be attributed to poor communication or coordination throughout the supply chain.

In order to climb to the next level of demand-driven excellence, you must focus on effective ways to accurately convey to both customers and suppliers how important their partnering is to all stakeholders in the relationship. Remember that you are only as strong as your weakest link—and improving product and service quality and responsiveness starts with better supply chain relationships.

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By Dave Turbide, CFPIM, CIRM, CSCP, CMfgE

Is Your Head in the Clouds?

What you need to know about remote computing

You see it in advertisements, publications, and even your emails. You hear people talking about it, but you are reluctant to enter the conversation because your business doesn't have it. So, is your lack of cloud computing threatening to put your company hopelessly behind the competition?

Relax. Although the cloud is a technological hot topic these days, it is not the magical key to business success that advertisements and discussion groups might lead you to believe. In fact, there is so much hype surrounding cloud computing that the term itself has been rendered almost useless, in that there are many interpretations of just what the cloud is and how it can be used.

First, be aware that the cloud is a general term for a technology architecture that offers computing and storage capabilities resident at a remote location. A simple example is Snapfish, an online photo gallery that enables you to store your pictures "out there in the ether" and invite friends and relatives to view and download them. It is not an application that provides any direct business functionality. That said, cloud computing can be an important part of your information technology (IT) infrastructure and deserves due consideration when formulating IT strategy.

Cloud computing can be an important part of your information technology infrastructure and deserves due consideration.

In the business world, most enterprise resources planning and customer relationship management applications are available through remote hosting. A specific variation of this approach is known as software as a service (SaaS). SaaS solutions are distinguished by their licensing. Instead of paying a license fee up front and a recurring (optional, but highly recommended) annual maintenance fee, SaaS tools are offered on a monthly rental basis, often with no long-term commitment. The economic trade-off is pretty clear, and there is a simple total cost relationship that favors SaaS in the near term, but shifts to the traditional license at some point.

But it's not that simple. SaaS offerings also eliminate the need for your own hardware (in the form of servers) and local IT support. Some suppliers also claim the implementation process is faster and easier, but there may be only minimal savings from avoiding the software loading phase. Other factors may be more significant in terms of time to benefit and user acceptance. The issues of modification, customization, and support and upgrades are different with SaaS and vary with the type of implementation and particular supplier.

The cloud and SaaS have been most successful in application areas where distributed access is an important factor—functions such as sales support and expense reporting. They have not been as quickly accepted for core enterprise applications. Many executives are more comfortable having critical information under their own control, even though SaaS suppliers likely have better security than the average company. Additionally, most organizations already have IT infrastructure and staff in place and are reluctant to change.

SaaS solutions are most appealing to decision makers at smaller companies desiring to avoid up-front licensing, hardware, and infrastructure costs. Businesses that are expanding rapidly and distributed companies—particularly those with smaller facilities located in remote areas—also are attracted to pay-as-you-go because the tool eliminates the need for IT capability in each location.

SaaS and the cloud offer important new alternatives that should be considered when rethinking your IT strategy. But it's not a simple decision. There are many factors to consider in terms of life cycle costs, security, access, functionality, support, and infrastructure. When assessing system alternatives, functionality and fit reign supreme. Include alternatives where the functionality fits—then consider the cost, configuration, and support trade-offs.

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By Bradley McCollum

Reconciling Perspectives

Exploring the central aspects of demand alignment

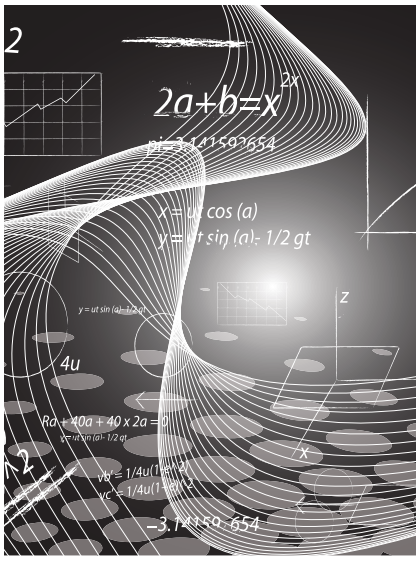
I've recently been involved in a search for new demand planning software. While I'm excited about the technology's capabilities, the process of demand alignment—a key step in any sales and operations planning (S&OP) process—requires more than just generating models and gathering data. What's missing from these solutions is something driven by process: a reconciliation of different perspectives and, most importantly, their inputs.

The objectives of demand alignment in S&OP include the following:

1. Deliver consensus on demand across the 18-to-24-month planning horizon. This means using one set of numbers to run the business.
2. Develop consensus around other probable demand scenarios. The one thing everyone knows about a forecast is that it's always wrong; so it's essential to agree on where S&OP team members could be wrong—and how wrong they might be.
3. Develop proactive contingency plans based on areas of risk and opportunity.

Because the outputs of demand alignment serve as the primary inputs for each subsequent step in S&OP, meeting these objectives is critical. The "garbage in, garbage out" rule applies: If supply professionals are given unrealistic demand numbers, their plans will be likewise unrealistic. When this occurs, the results of S&OP won't be held with any real confidence, and the process's value is greatly diminished. The bottom line is that demand alignment objectives have to be met without exception.

If supply professionals are given unrealistic demand numbers, their plans will be likewise unrealistic.



Key factors for success

It all starts with S&OP design and implementation. The purpose of demand alignment is to align demand perspectives, so it should be no surprise that those perspectives have to be part of S&OP design from the start.

I work in the consumer packaged goods industry. Here, the critical perspectives requiring alignment are those of the consumer (represented by the marketing department) and the retailers (represented by the sales and customer service departments). Early in my company's S&OP design, my team spent a significant amount of time talking about how each of those perspectives would be represented. We asked what are the data points that we want to review each cycle and at what levels—product family, customer, and so on. Before our very first cycle, everyone within the demand alignment process agreed to the design of each demand perspective. This was critical to a healthy discussion.

Demand alignment requires debate. This is the time and place to disagree, voice perspectives, and defend them with data. Just remember to disagree without being disagreeable. If accomplished successfully, the team can deliver a more informed forecast, of which each member holds ownership.

Agree to what you know and what you don't know. While much of the demand alignment discussion needs to be about those factors that can be largely controlled or influenced, it also needs to include dialogue about those issues that can't, such as weather or other macroeconomic factors. Both can drive misalignment between demand perspectives. Demand alignment must take into consideration where these things fall within the consensus model and offer demand scenarios that capture the effects when those factors are planned for—and when they are not.

Figures 1 and 2 offer sample diagrams that may assist you in your S&OP process. Figure 1 illustrates that reconciliation between the bottom-up detail forecast and the volume forecast occurs only within the planning fence. Thus, the remaining discussion should be about the

Figure 1: Bottom-up and volume forecasts

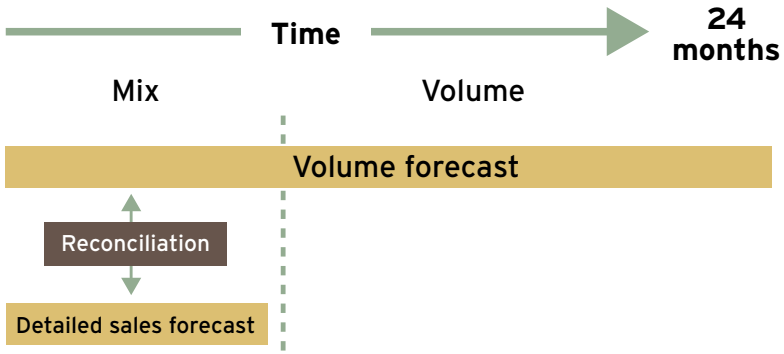
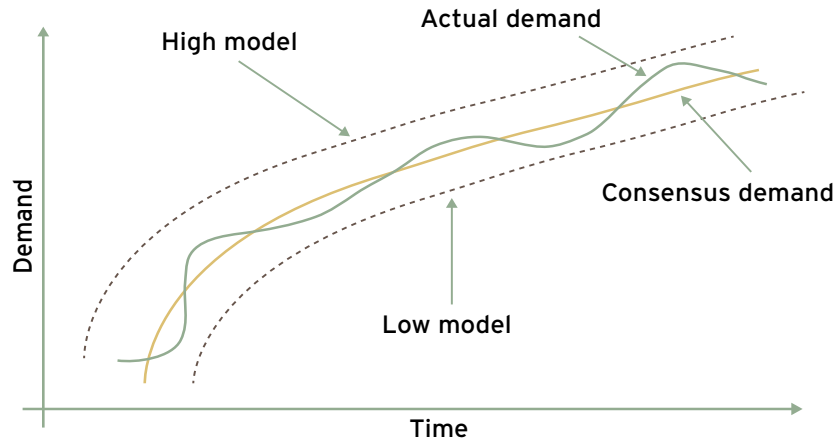


Figure 2: Range of error



volume model inputs and potential error range of that forecast.

Figure 2 shows a range of possible error. Once high and low models have been developed based on extrinsic factors driving the business, the demand team is able to identify that span. Supply plans and risk mitigation discussions now take place based on the possible error.

While each S&OP process is different, running S&OP across several business units has taught me that, when these key pieces are in place, our process is successful. As a team, we are able to take ownership of the demand call and set up the rest of the S&OP cycle for victory. Most importantly, we proactively communicate where we believe the risk lies within the demand plan and give the supply management and executive teams time to mitigate that risk, if they choose to do so.

Demand alignment is much more than running models and collecting data; it's about reconciling different perspectives and understanding as a team where the risks lie.

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To comment on this article, send a message to feedback@apics.org.

By Philip E. Quigley, CFPIM, PMP

A Brilliant Hue

Using red teams to challenge your processes

The other day I was browsing the United States Marine Corps website and saw an interesting news story. Seems the Commandant of the Marines was establishing red teams to look at what was happening in Afghanistan and asking team members to analyze and predict what the Taliban was doing and was capable of doing in response to US operations.

Red teams are groups of subject matter experts with various, appropriate backgrounds who review products and processes, act as devil's advocate, and role-play potential actions of outside agencies. According to the Defense Science Board's "Report on Red Teaming," "Red teams and red teaming processes have long been used as tools by the management of both government and commercial enterprises. Their purpose is to reduce an enterprise's risks and increase its opportunities … Red teams are established by an enterprise to challenge aspects of that very enterprise's plans, programs, and assumptions."

The website goes onto explain that red teams carry out investigations and evaluations from different perspectives. Members perform these activities in order to achieve improved or alternative plans, operations, or designs.

I pondered the article for a day or so because it related to something I had been thinking about in the workplace: How do we keep our organizations thinking on the cutting edge now and in the future? Can red teams be used to look at one's company and competition in order to come up with ideas on changing or adapting new ideas?

The easiest, and most expensive, method is to have a consulting company study and analyze the operation and give recommendations. A second approach is to form an internal team. For example, in the early 1990s, Chrysler sent a team of young professionals to Honda to study how the automaker developed cars. The resulting report led to the creation of platform teams at Chrysler that radically improved the company's ability to deliver new cars. However, in many organizations, lower-ranking people won't challenge current thinking and planning because they know executives don't like being told what they don't want to hear.

The result is a hardworking, motivated group of smart people assessing your company's strengths, weaknesses, and plans.

There is another approach that combines elements of both approaches. First, find a university close by and get to know its business and engineering faculty through meetings, lunches, and the like. Ask them to have students come in as part of an internship or class project to study your organization. Partner the students with employees so the students get real-world insight and information. Then, ask them to prepare and present a report on your organization.

To make this work, you need a close relationship with the faculty. These people, along with your managers, can target the student groups. The result is a hardworking, motivated team of smart people assessing your company's strengths, weaknesses, and plans in selected areas. The students won't have an agenda and aren't selling anything, so they surely will give you an objective perspective on the problems you face.

Use these student groups for out-of-the-box thinking. Have them ask the simple questions: Why is the company doing it this way? What results does it get? What doesn't make sense here? At least one of these questions will lead to some very interesting answers.

The idea is to make yourself and your colleagues aware of new ideas, opportunities, and threats in the new global marketplace. After all, only when you are aware of these things will be you able to act upon them.

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By Antonio Galvao, CSCP

Climate Change Last Chance

Cancún conference sets the stage

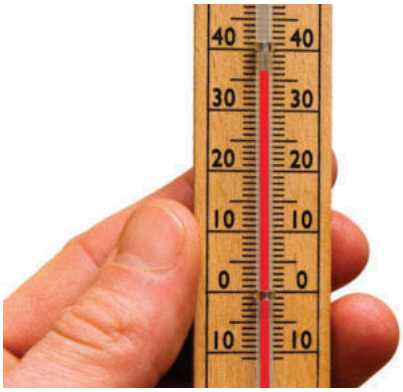
Over the past three years, this department has addressed a broad array of issues relating to sustainability—from the green building movement to water shortages. But among those issues, none more clearly underscores what is at stake for each of us and the planet we share than climate change.

That fact once again took center stage in Cancún, Mexico, at the recently completed 16th Conference of the Parties to the United Nations Framework Convention on Climate Change, or COP 16. We will know soon enough whether COP 16 proves to be another missed opportunity or if it will become the basis for a better solution to this critically important issue.

While the stakes for COP 16 were high, expectations were low—in large measure due to the lack of progress made on key issues at COP 15, held in 2009 in Copenhagen.

Nonetheless, COP 16 did succeed in laying the groundwork for next year's conference in Durban, South Africa. That's especially important because the Kyoto Protocol, which was adopted in 1997 and took force in 2005 as a means of combating global warming, is due to expire in 2012. So the conference in Durban represents the last opportunity to agree on a legally binding deal to avoid the negative impacts of climate change.

The agreement reached in Cancún commits every nation, whether developed or developing, to trim its greenhouse gas emissions and create a Green Climate Fund. The fund is intended to help poorer countries to adapt to climate changes; facilitate the transfer of low-carbon technology, including wind turbines and solar panels; and provide



compensation for countries that avoid deforestation.

The fund is to be run largely by developing countries and could accrue from $30 billion in 2012 to $100 billion in 2020, UN officials say. However, it isn't clear how the money would be raised, managed, and monitored.

While this is progress of a sort, the agreement reached in Cancún falls short of keeping the anticipated rise in the temperature of the earth under 2 degrees Celsius. In fact, researchers from Climate Action—a global network of nongovernmental organizations working to promote government and individual action to limit human-induced climate change—say current pledges put the world on course for an increase in the earth's temperature of 3.2 degrees Celsius, which they believe would spell disaster for many countries.

Indeed, Pablo Solon, the representative from Bolivia, one of the poorest countries in Latin America, declined to sign the agreement, saying that history would "judge it harshly" because the emission reductions it calls for would result in an increase of nearly 4 degrees Celsius. Solon added that bigger cuts are absolutely necessary to avoid a catastrophic impact on the poorest and most vulnerable nations.

To be sure, Durban is the last and best chance for the nations of the world to reach a legally binding agreement that would replace the Kyoto Protocol and get us back on track to reducing carbon emissions and avoiding an unsustainable rise in the earth's temperature. The United States, China, and India will play decisive roles.

To put the seriousness of climate change into a context that everyone can appreciate, consider that the World Meteorological Organization, a specialized agency of the United Nations focused on atmospheric issues, says 2010 will rank as one of the hottest years ever recorded. The first decade of the 21st century already ranks as the warmest in recorded history.

Meanwhile, Russia, Ukraine, Finland, Kuwait, Sudan, Niger, and 11 other countries have reached record high temperatures, resulting in serious consequences such as forest fires and catastrophic floods. Harvests have been destroyed, leading to food shortages and subsequent deaths in the Middle East and Northern India.

This is the context in which the nations of the earth will convene next year in Durban. The path they must take is clearly marked. We simply can't afford to stray from it.

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By Ron Crabtree, CIRM, CSCP, MLSSBB

Get "RESULTS"

Taking another look at business process reengineering

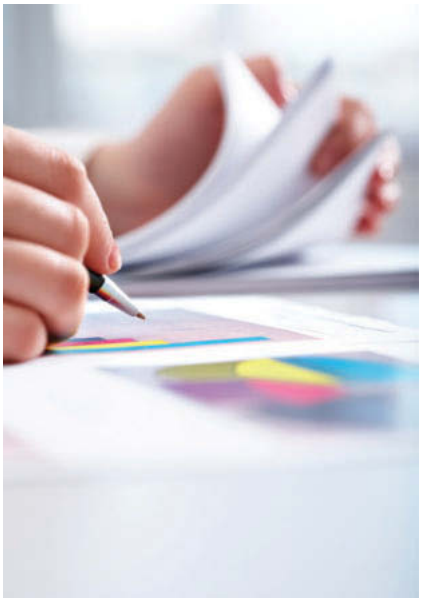
It doesn't seem all that long ago that business process reengineering (BPR) was sweeping across most industries. Actually, it's been about 20 years. The 1990s and 2000s saw the rise of lean; six sigma; and, more recently, the fusion of the two in lean six sigma (LSS). Today, business process management and business process optimization have been popularized, particularly in terms of melding process thinking with technology in order to provide workflow support, better exchange of information, and business intelligence.

Just in the last six months, I have witnessed a huge resurgence of interest in BPR. Operations management professionals are redefining it as something beyond its original characterization, which often involved expert-, engineer-, or consultant-driven processes and organizational changes that quickly changed the business landscape—sometimes to the methodology's detriment.

Forward-looking leaders at organizations of all sizes are rethinking BPR and alignment of their information technology (IT) strategies at a furious pace. As I write this department, I am working with an organization appearing in *Fortune's* "100 Best Companies to Work For" that is grappling with how to move forward in modernizing its IT infrastructure in an incredibly competitive consumer market, maintain connections to people, and reinvent processes.

Decision makers at great and soon-to-be-great organizations are trying to learn how to pick the right business drivers and metrics, embrace the customer as never before, build better processes to deliver what customers want, leverage the best of technologies and emerging social media marketing, and align their people fully. Winning trust and cooperation for change in traditional BPR initiatives has been rare—and this must be addressed.

The chief constant in business is change.



Consider the following acronym, which may serve your organization well in taking these issues in hand and improving performance. The phases of a never-ending wheel of action follow the letters of the word: RESULTS.

Reflection

Driving improvements is decidedly a top-down, bottom-up endeavor. It's amazing to me how many good organization leaders struggle to articulate what their companies should look like in the future in terms that are easily understood and embraced by stakeholders. Top managers must reflect on and develop a meaningful vision of the future, asking "Where we are going?" and "What will we look like when we get there?"

This vision needs balance. Customers first, employees second, and the company last is a valid way to reflect upon this subject. The more challenging part is implementing specific measures. Financial results are the easiest to assess. Customer satisfaction is more challenging. And the people part is extremely difficult.

Expectations

The success of any organization ultimately comes down to our ability (or inability) to develop and empower people to support the company vision. Managers must be clear about where the business is going and what it will look like when it gets there—in measurable terms. It's the people who figure out the how. Thus, information must be shared openly, adequate training should be provided, and workers have to understand how processes work. This involves classic LSS and BPR tools. In addition, it's imperative that leaders show support for the necessary changes.

Once unambiguous expectations are set, company decision makers should align all stakeholders and ensure they have bought into the vision fully. Answering the question "what's in it for me?" seems like a simple concept; but, in practice, it is devilishly difficult. And the bigger and more complex the organization, the more challenging it becomes.

Selection

Once the previous steps are complete, it's time to select where to apply the toolbox containing BPR, LSS, or other methods. There must be a careful assessment of the organization, specific identification of the current and future performance gaps with metrics, and compilation of a portfolio of potential projects. This must be capped with a few balanced and measurable outcomes so that it's possible to recognize success.

A careful assessment that examines IT, people, processes, current and future customer requirements, supply chains, and potential market shifts will generate far more projects than can possibly be undertaken all at once. Outside consultants can earn their keep by providing competitive intelligence (what other companies out there are doing) and expertise in the best ways to tackle these projects.

Finally, make sure the approach to mapping processes and identifying priorities is done in an inclusive manner. This will pay huge dividends later in alignment and change management.

Understand

The power of a plan comes from people understanding it while being empowered and held accountable for its execution. Most organizations are effective at planning, so it should be fairly easy to create a good work breakdown structure and resource it with adequate program management support. Here, again, an inclusive approach is critical to developing plans and making sure there is ownership. People would rather put up with a problem they cannot solve than accept a solution they don't understand.

Insist that the results of each major action item can be measured. I am not talking about tracking the completion of the task; that's obvious. Rather, establish metrics for the effect of implementing each action item. What will be improved after the action is completed? Exactly how will we know if we got the benefit we expected? If participants can't show a solid case for an action, it's time to question why scarce resources and time are being assigned to it.

Leverage

Once plans are taking shape, and before implementation begins, team members should take an inventory of the stakeholders affected by selected action items. There usually is a suppliers, inputs, process, outputs, and customers (SIPOC) diagram completed early on to support process mapping and understanding. In highly regulated or legislated industries, the diagram also likely will include an R for requirements. This analysis is helpful—yet not nearly sufficient.

Once plans are established and supporting project charters are written, assess the affected stakeholders at the project and project-task levels. Ask a few critical questions. First: To what degree does this group affect success? Will they support the action and provide the resources willingly? If not, why? An often overlooked and fatal mistake is lacking the discipline to do this final set of "gut-checks" before implementing changes. Perhaps no issues will be uncovered. Great; then it's full steam ahead. But if problems are revealed, it's time to go back to the planning phase and address the issues fully. Being lazy now will become very expensive later—guaranteed.

Transform

Finally we get to the all-important action phase. A steering committee or guiding coalition can be formed throughout the life cycle of a major improvement initiative. Whether this is handled by a program management office or leadership team, careful review of progress and adjusting the plans must happen early and often. Too frequently, the planning process is seen as a "one-and-done" task; in reality, it is an integrative and never-ending step of the change process.

Measure and report the results with hard data early. Celebrate where progress is seen to build momentum and keep energy high. If results are lagging, do not punish or vilify the teams responsible. That ensures fear and retreat from replanning and recommitting to objectives. Accept the fact that managers and influencers likely failed, and commit to a lessons-learned-style review in a nonaccusatory fashion. Commit to getting it right.

Sustain

To sustain and nurture progress, organization leaders must elevate standardizing on the new methods and approaches and build in the mechanisms to make sure gains don't slip away. Old habits die hard—if operations managers are not insisting on making the improvements permanent, they will backslide.

Remember to not fall victim to being successful. It's human nature to do high-fives all around and rapidly become complacent when we are winning. Beware of complacency and entropy, and keep in mind that the chief constant in business is change. Even though your great actions and methods yielded fantastic results, there is no guarantee that will continue.

The new processes that have been standardized can become future constraints to success. As time passes, it's necessary to keep reminding yourself that current thinking won't be sufficient to deal with the problems of the future. Continual reinvention is required.

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By Tim Becker

A Modern Proposal

Rules for developing better business cases

At the heart of effective leadership is good decision making. And at the heart of successful business is profit. Therefore, most decisions that a business leader makes are driven by economic motives. Accordingly, these choices are—or at least should be—grounded in a formal business case, though often a simple and subconscious one.

For the most important business decisions—those requiring significant investment—an explicit and formal business case is required. It should include some calculation of return on investment (ROI) and be developed using a financial model, often a spreadsheet. I have created more of these models than I'd care to admit. Spending time as a "spreadsheet jockey" is somewhat of a rite of passage for consultants. Fortunately, I rarely create spreadsheets these days. However, like most business executives, I still supervise and review quite a few business cases each year. Following are some guidelines I have found to be useful.

Don't overdo the analysis. There is a tendency, particularly among MBA types such as myself, to strictly adhere to the admonitions of our finance professors: "Payback analysis is heresy." "Internal rate of return (IRR) works most of the time, but has flaws and should generally be avoided." "Net present value (NPV) is the only prudent method of computing ROI." "Plus-NPV calculations are sure to impress the corporate brass."

Executives operate in the real world, where payback analysis is fine 90-plus percent of the time. It is easy to compute and easy to understand. The rest of the time, IRR usually will work. Only in unusual, murky, or high-stakes situations—those with oddly distributed cash flows, for example—is NPV analysis a necessity.

The end game is not investment approval, but investment success.

For less impactful, simple, obvious decisions—in other words, the majority of decisions that we make—payback analysis is fine. However, for high-impact, complex, or less-clear investments, it's necessary to compute IRR and NPV in addition to payback. While these kinds of decisions may be few in number, they account for a majority of investment dollars a company lays out. Most of the guidance that follows pertains to these more complex investment analyses.

Consider and model several viable investment options. Avoid the temptation to focus on the acceptable option, one that merely clears corporate hurdles. Rather, set your sights on finding the option that clears corporate hurdles by the greatest amount. I find that clients often gravitate toward a single solution with a positive NPV to the exclusion of other options with higher NPVs. A good leader identifies multiple options arrayed across the spectrum of risk and return. Be careful not to go overboard with option identification and evaluation. A good rule of thumb is to identify and model the three to five most attractive options via a prescreening process involving a much larger set.

Risk adjust the cost of capital. Most organization leaders have defined a corporate cost of capital based on the cost of equity and debt. This is the basis for the company's hurdle rate and is a rough indicator of overall risk. However, the risk of individual business units can vary considerably, as can the risk of an individual investment. For larger investments, the cost of capital should be adjusted based on the risk of both the specific business unit and the individual investment itself.

Build additional conservatism into the business model. This often is referred to as contingency. Risk adjusting the cost of capital is done to account for known risks, while contingency is risk adjustment for the unknown risks inherent in almost all investments. Even in the most mundane of capital projects, I have witnessed the erosion of ROI because of unanticipated factors or events. It's common to hear of investments that fall short of predicted ROI, but rare to hear of investments exceeding ROI. This highlights the importance of including contingency costs. The amount of contingency depends on a number of factors, including the complexity of the investment and company experience with similar investments. Projects in which new technologies are applied especially warrant contingency premiums, perhaps amounting to 15 percent of total project costs.

Account for all significant costs and benefits, specifically, those that comprise at least 1 percent of the total. Include soft costs and benefits—

that is, those that are not easily quantified. Many soft costs and benefits can, in fact, be quantified—albeit with less precision than hard costs—if creativity and effort are applied. Where quantification truly is impossible, identify such soft costs and benefits along with a qualitative evaluation of impact.

Understand and represent the impact on accounting. While an investment might pass muster based purely on ROI, it might have a devastating effect on the business unit from an accounting perspective. For example, classifying costs as capital instead of operating expenses can have a significant effect on financial statements. On more than a few occasions, I have seen financially attractive investments disapproved because of negative influence on a company's income statement.

Perform deep sensitivity analysis. Identify the variables that most affect investment economics, and model the worst and best cases for each variable. Sensitivity analysis often is misunderstood and misapplied. The most common mistake is adjusting the base case value—the most likely value between the best and worst case values—for key variables by the same percentage upward and downward to determine the best and worst case values. Such sensitivity analysis is overly simplistic and therefore of little value.

In a good business case, the best, worst, and base case values for each variable should be calculated individually and each value provided with justification. Seldom will the percentage adjustment applied to base values be the same for the worst and best cases; and seldom should the percentage adjustments to the base values be the same across all key variables. If the same worst case values for multiple variables is a possibility, then your worst case ROI should reflect this worst case scenario. If you find that the worst case values for variables consistently diverge more than the best case values, you may want to assess whether your base case is overly optimistic—it probably is.

Identify key risks and mitigation strategies. A good business case should identify key investment risks, their probability of occurring, and an estimate of their potential impact on ROI. For each risk, detail a mitigation strategy identifying actions to avoid the risk and reduce its effect should it manifest. For certain investments, it may be prudent to devise an exit strategy triggered by the failure to meet specified performance minimums.

These guidelines should put a business leader's investment proposal in a good position for approval. However, the end game is not investment approval, but investment success. Accordingly, a business case should not be shelved once investment approval is achieved.

A business case is not a static, single-purpose tool. Rather, it is a dynamic tool of project management and investment evaluation. A business case should continue to be updated during project planning and execution—and perhaps be modified for better usability. Then it can serve as a reference point for investment evaluation and a tool for performance management.

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By Richard E. Crandall, Ph.D., CFPIM, CIRM, CSCP

Fit and In Force

Lean six sigma permeates the health care field

The Patient Protection and Affordable Care Act (PPACA) was signed into law March 23, 2010, by US President Barack Obama. Also known as the Health Care Reform Act, this statute has far-reaching implications for the health care industry and its stakeholders—patients, providers, insurance companies, medical device manufacturers, and others.

As I'm writing this department, several lawsuits have been filed challenging the constitutionality of provisions of the law. They have been rejected by two federal courts and upheld by two others, leading to expectations that the issues will be resolved by the Supreme Court.

There are two imperatives for health care providers: Reduce costs and improve service quality (Grout 2010). To achieve these goals, there are hundreds of initiatives of lean and six sigma—or lean six sigma (LSS), a combination of the two programs that has been popularized in recent years—that are being applied throughout the industry. And while the literature provides many examples of successes, it also cautions that there are obstacles to successful implementation.

Following are a sampling of the many LSS health care applications found in the literature. These examples show the wide range of applications of lean and six sigma in both large and small organizations:

- A hospital uses six sigma methods in its discharge process (Allen et al 2010).
- An internal medicine residency clinic employs six sigma to improve efficiency, timeliness, and quality of care (Fischman 2010).
- Physicians get involved in LSS initiatives (Caldwell, Brexler, and Gillem 2005).
- LSS is used to improve home health care (Jemes and Kovach 2009).
- Emergency rooms apply LSS techniques to shorten waiting times (Johnson et al 2004 and Schooley 2008).
- Hospitals use LSS to reduce medical errors (Kuman and Steinebach 2008).
- LSS helps clinics lessen variability in service delivery (Lloyd and Hoslenback 2008).
- LSS techniques are employed to improve hip replacement procedures (Peltokorpi and Kujala 2006) and care for patients with congestive heart failure (Wu and Liu 2010).

The LSS advantage

The benefits of lean, six sigma, and LSS programs include cost savings, improved quality of care, shorter hospital stays, increased collaboration between administrators and care providers, simplified administrative procedures, and increased patient satisfaction. While there are a number of successful implementations of lean, six sigma, and LSS, their adoption is fragmented and often confined to larger organizations.

A study from the American Society for Quality surveyed 77 hospitals; of those, 53 percent reported some level of lean deployment, while 42 percent reported some level of six sigma deployment. However, only 4 percent reported full deployment of lean, and only 8 percent full deployment of six sigma (Zieger 2009).

Barriers to success

A number of obstacles prevent widespread adoption of LSS principles. They include, but are not limited to, the following:

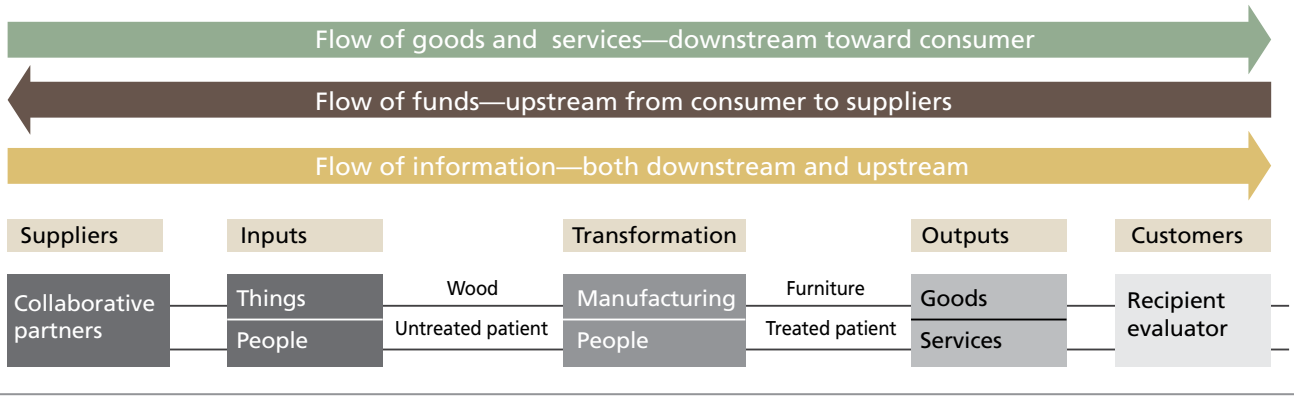
- It is difficult to measure quality in health care; therefore, it is similarly challenging to determine the results of LSS programs (Colvin 2010).
- At some organizations, there is a divide between physicians and staff-people that creates silos and prevents effective new program implementations (Crabtree, McDaniel, and Nutting 2008).
- One review of health care implementations reported six sigma implementations suffer from lack of financial resources, human resources, time, leadership, and training—and often face considerable internal resistance (Taner, Sezen, and Anthony 2007).
- According to Lean Health Care West (2010), employees are busy and do not have the time to work on problem solving, there is lack of management support and a coaching network, and people are tempted to skip steps in applying lean methodologies.
- There is a need to adapt the terminology and methodologies from the manufacturing environment to the health care environment.
- While physicians are sympathetic to the need to improve the quality of patient care, they may not accept that LSS is the best approach.

While these impediments are formidable, the Health Care Reform Act is likely to motivate many health care leaders to more actively search for acceptance of new ideas or old ideas repackaged to meet today's needs.

Supply chains

In addition to applying LSS methods to isolated problem areas, there is a growing interest in establishing a flow in health care services. Figure 1 illustrates the flow of manufactured goods along the supply chain. It also shows the movement of patients—the inputs into the health care supply chain—along the steps in the care process. While

Figure 1: Manufactured goods and services supply chains



smooth flow is desirable, it does not yet exist in most situations. There are three types of flow along the supply chain. In addition to flow of goods, there are flows of information and funds. While information and funds flows are not as far advanced as goods flow, their full realization is not far away.

Figure 2 provides an example of how surgery for a knee repair does not flow as smoothly as desired. The patient damages her knee and visits the emergency center, where she receives short-term treatment. She then checks in with her primary care physician, who may or may not recommend a final treatment or specialist. With or without the help from primary care, the patient finds a specialist who recommends surgery. The specialist works with a hospital and schedules a time that fits both the specialist and hospital, but not always the best time for the patient. The surgery is completed, and the patient then arranges for rehabilitation with a physical therapist, either through the hospital or a third-party service.

The patient's flow faces intermittent treatment and sometimes unexpected decision requirements beyond her normal capability. In addition, data (patient records) do not flow smoothly, and funds flow is a frustrating experience because of multiple sometimes unexplained billings. Because the health care system is driven by fee-for-service payment, there is little financial incentive to economize on service delivery (Roggenkamp 2010).

Accountable care organizations (ACOs) and patient-centered medical home (PCMH) approaches derived from this need to improve the coordination of patient treatment for both general care and specific ailments (Roggenkamp 2010). While these approaches have multiple options or variations, each is designed to improve patient care and reduce costs by providing the patient with collaborative arrangements—such as hospitals and home health centers—among primary care physicians, specialist physicians, and treatment centers.

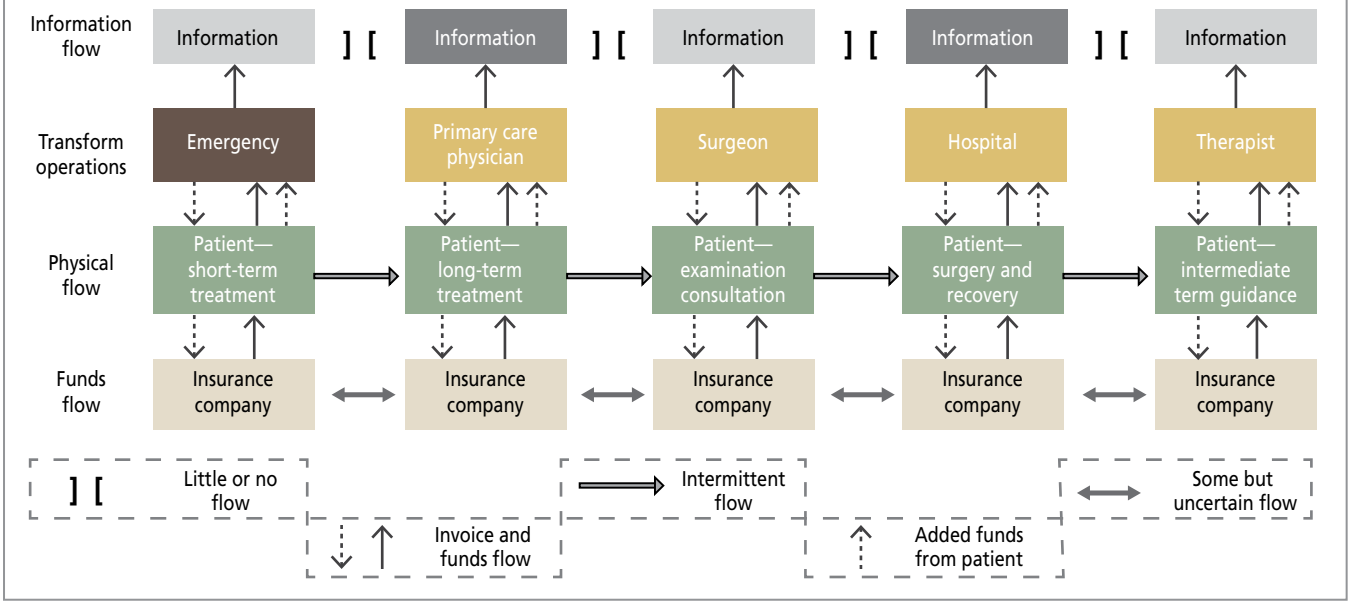
ACOs originated as a way to reduce costs and improve care in traditional Medicare programs. Since inception, their scope has extended to include additional public and private insurance programs. An ACO is defined as "a local entity and a related set of providers, including at least primary care physicians, specialists, and hospitals, that can be held accountable for the cost and quality of care delivered to a defined subset of traditional Medicare program beneficiaries or other defined populations, such as commercial health plan subscribers" (Devers and Berenson 2009). An even simpler definition is "a system where physicians bear the responsibility of coordinating care for a group of patients to improve quality and drive down costs" (Roberson 2010). Cohen (2010) attributes the ACO phase to Elliot Fisher of Dartmouth Medical School, who studied health care costs for more than 30 years and found that higher costs did not assure higher quality of care.

An ACO's focus appears to be more on cost control than improving and simplifying the process of patient care. At present, the scope and desired organization structure is evolving. Because of the link with Medicare and provisions in the PPACA, it is uncertain how government regulations will affect ACOs.

As the name implies, the PCMH is designed to provide a single site where a patient could receive treatment for any and all medical needs by working through his or her primary care physician. It would link together care providers of all kinds in a collaborative, or contractual, patient-friendly relationship. The primary care physician is responsible for coordinating and managing patient care needs. Payment for all care comes through the medical home, which arranges for the care needed and "brokers" the care obtained from various providers (Roggenkamp 2010).

Figure 3, adapted from Berry and Mirabito, shows the graphical concept of a PCMH, where the patient is surrounded by all of the services needed during a lifetime. "The concept of patient-centered medical homes offers a structure for integrating innovations that can transform the delivery of health care. In this model, each patient develops an ongoing

Figure 2: Supply chain flow for a knee repair patient



relationship with a primary care physician supported by a team of caregivers. An integral feature is the electronic medical record, which facilitates coordinated communication and decisions. Access expands beyond the traditional physician office visit to satellite services tailored to individual needs. Services center on whole-person care, including wellness and preventive counseling, as well as acute and chronic care. Adoption of the patient-centered medical home transforms health care delivery into a system that benefits everyone" (Berry and Mirabito 2010).

Today's system tolerates a number of administrative hurdles for patients: physician selection and evaluation, scheduling surgery and rehabilitation, sorting out multiple billings, and contact with insurers. Through PCHM, these would be removed from the patient's direct responsibilities in a medical home infrastructure. By simplifying these steps in the treatment process, patient care would be enhanced and costs reduced.

At a Patient-Centered Primary Care Collaborative stakeholders' conference, Boeing reported the results of its medical home pilot project, which was launched in 2007. It involved three large medical groups covering 740 patients who were considered medically complex because they had an average of four different conditions. The pilot project reduced emergency room visits and hospital admissions, resulting in a 20 percent net savings in medical costs among patients in the medical home. The project also increased employee and physician satisfaction rates (Arvantes 2010).

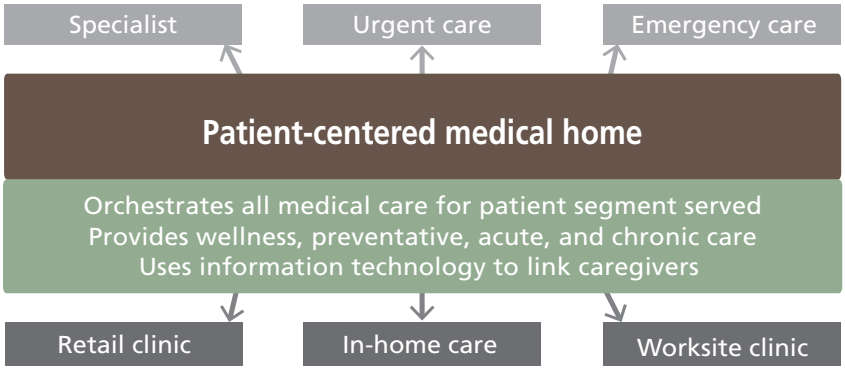
While health maintenance organizations (HMOs) originally were designed to provide care and isolate costs, they represent only a small percentage of the total market and have been more involved in negotiating prices than controlling and reducing costs.

Next steps

There is little doubt that something must be done if health care coverage is to be provided across the US population and, at the same time, costs are to be controlled and quality of care improved. Some of the most energetic and innovative ideas are coming from within the health care industry. For example, the Cleveland Clinic has long been a shining example of progress (Colvin 2010). In an interview with Susie Gharib, anchor of the *Nightly Business Report*, David Cordani, chief executive officer of insurance company Cigna, repeatedly stressed the need to work within the guidelines of the Health Care Reform Act to reduce costs and improve quality of patient care. Cordani also stressed the need to move ahead with the complete health reform package and not allow politicians to pick it apart without regard to the consequences (Gharib 2010).

The federal government has provided a start with the Health Care Reform Act. However, there are differences of opinion about its eventual effect on costs. The PPACA, when fully implemented, will expand insurance coverage to millions of uninsured citizens, and these increased costs must be offset with spending reductions achieved through better efficiency of the total health care system. Changing the ways in which Americans consume health care services will make it possible to provide coverage to more citizens (Roggenkamp 2010).

Figure 3: Integrating a patient with a medical home



It appears that the industry has to adapt to the legislation's requirements. However, this means that there must be an unprecedented level of collaboration among stakeholders, as well as culture and paradigm changes. Patients must intelligently manage their own health through diet and exercise. Care providers should move from a pay-for-service-provided program to holistic health care management for their unique population (Harris, Grauman, and Hemnani 2010). Insurance companies need to collaborate with primary care providers to determine how to reduce costs through process improvements.

In addition to the culture change, technology can be used to transform patient records into an electronic format that enables easier access and use throughout a patient's life. Finally, the infrastructure must change to something akin to the ACO or PCMH ideas described earlier.

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In what ways do you think the APICS body of knowledge can be extended into the health care field? Share your thoughts by sending an email to feedback@apics.org.

For a free list of more than 60 annotated references on this topic, email the author at crandllre@appstate.edu.

By Karl M. Kapp, Ed.D., CFPIM, CIRM

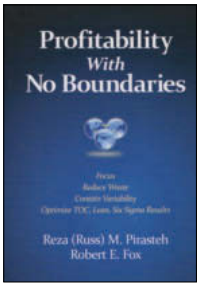
Exploring the Possibilities of iTLS

TOC, lean, and six sigma concepts combine for real results

Editor's note: This special "Book Review" features books written by APICS magazine feature article and department authors.

Profitability With No Boundaries: Optimizing TOC and Lean-Six Sigma

By Reza M. Pirasteh and Robert E. Fox
Published in 2010
ASQ Quality Press
384 pages



In *Profitability With No Boundaries*, authors Reza M. Pirasteh and Robert E. Fox have created a work targeted to two distinct groups: senior thought leaders of organizations and change agents or practitioners who are responsible for profitability and performance. To begin the book, the authors suggest that combining concepts from lean, six sigma, and the theory of constraints (TOC) can greatly benefit organizations. They have coined this convergence of methodologies iTLS.

Pirasteh and Fox developed, implemented, and honed a practice that now has scientific research behind it in the form of a two-and-a-half-year long experience that shows how combining lean, six sigma, and TOC can bring about tangible financial results above and beyond implementing any one of the methodologies independently. In fact, they found that iTLS projects produced more than four times the benefits of either lean or six sigma projects alone. Similar results have been repeated both domestically and internationally.

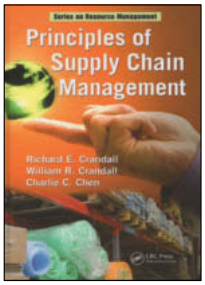
The book offers an important history lesson for understanding the manufacturing process. According to the authors, the river systems of Henry Ford and Taiichi Ohno—and the economic decision making tools implemented by Alfred Sloan at GM—can be combined into a single highly effective approach.

Pirasteh and Fox have used iTLS to help operations management leaders understand their organizations' core problems, quantify potential benefits, establish priorities, and implement practical solutions. The authors also have significant experience in the area of process improvement.

This book is a fascinating read and provides both a high-level overview and an opportunity for change agents to roll up their sleeves and begin implementation. For companies aiming to reach a new performance level, iTLS might just be the methodology that delivers.

Principles of Supply Chain Management

By Richard E. Crandall, William R. Crandall, and Charlie C. Chen
Published in 2010
CRC Press
645 pages



Author Richard Crandall and his son, William, have teamed with Charlie Chen to write *Principles of Supply Chain Management*, providing an insightful and in-depth look at the topic. This work expands the father-and-son team's first effort in the 2008 *New Methods of Competing in the Global Marketplace.*

Principles of Supply Chain Management serves as an authoritative reference, covering everything from make and buy decisions to e-commerce to performance measurements. If you need to reference the elements of a supply chain, this text provides short, quick explanations of basic essentials about key concepts and how they relate to one another.

This comprehensive book is broken into six distinct parts. Part one describes supply chains and explains why implementation and management are so critical. This creates a foundation for the subsequent five parts and concludes by explaining the supply chain as a comprehensive and interrelated system in terms of physical, financial, relational, and informational flows.

Part two helps the reader unravel the perspective of the multiple customers within a supply chain, while covering important topics such as product life cycle management and managing demand. In part three, the authors examine the supply side of the operation, looking at the historical and current courses of retail elements within a supply chain and the service side of the product and service bundle that is so prevalent in today's product mix.

Part four explores how the components identified earlier in the book are integrated into a complex system with elements inside and outside the organization needing to work together to achieve success. The authors explain why few organizations have moved to a truly integrated supply chain approach. In part five, the critical flow of financial data,

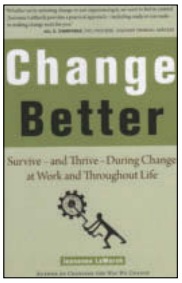
the importance of technology, and associated technological innovations are covered.

Part six is aptly titled "The Future" and ends this text logically by taking a look at where supply chain management is heading. The authors describe what's trending now and what the not-too-distant future holds for those practicing the art of supply chain management.

If you're looking for a solid grounding in supply chain management and insights into making your supply chain a little more efficient, then this book is a great start. It provides the content and context necessary to understand many of the nuances of today's modern supply chain.

Change Better: Survive—and Thrive—During Change at Work and Throughout Life

By Jeanenne LaMarsh
Published in 2010
Agate B2
160 pages



Manufacturing organizations are in a constant state of change. New improvement methods are introduced all the time, technology moves from bar codes to radio frequency identification in the blink of an eye, and e-commerce changes supply chain relationships overnight.

Hundreds of books have been written on the topic of organizational change management. Many describe how business leaders can convince employees of the effectiveness of the proposed change; how change leads to increased productivity and market share; and how change is difficult but ultimately good. What is missing is the employee perspective. In *Change Better,* Jeanenne LaMarsh explores what happens to workers during the change process and how they can adapt to the change on a personal level.

This book is focused on developing the critical skills employees need to cope with change both at work and in their personal lives. It describes the tools required to deal with change, such as developing a change management plan, handling the emotional stages of change, and creating a change partnership.

The book consists of three sections. In the first, LaMarsh describes change and helps the reader examine the state of change today and why it is occurring with increasing frequency and complexity. This section discusses how to avoid the "victim mentality" and describes how to deal with leaders that may be out of touch.

The second section provides an organized and systematic way to deal with change through a change management plan. This section is immensely practical and implementable. There is a workbook with worksheets, questions, tables, and other elements to help workers deal with the change process and move from a theoretical to a practical approach that can provide real benefits.

The third section describes a logical and pragmatic methodology for managing change. It outlines how to create a contract with an organization, through which it's possible to move from being a target of change to a partner within the change process.

Over the past few years, many organizations and individuals have undergone dramatic changes in terms of the economy, work status, and future outlook. Dealing with that is not simple; however, reading a book like this will provide the tools necessary to leverage change in a positive manner.

Karl M. Kapp, Ed.D., CFPIM, CIRM, a professor at Bloomsburg University, is author of *Gadgets, Games, and Gizmos for Learning* and coauthor of *Integrated Learning for ERP Success*. He may be contacted at kkapp@bloomu.edu.

Anchor Change

By John R. Schultz

Achieving **smooth sailing** and sustainable improvements

Improvement is about change. At some point, the innovative answers that were discovered during problem solving need to become part of daily routines and locked in place so newfound solutions do not revert to the old, less productive habits.

Whenever a work situation is altered, people's feelings are involved. The issues are both technical and emotional. Even though the status quo is flawed and difficult, stakeholders have figured out how to make it work. The helpful routines that enable coping with existing difficulties provide a sense of comfort and stability. So, when serviceable practices are threatened by change, people can become fearful and exhibit defensive behaviors.

Problem solvers are baffled by the reluctance of coworkers and stakeholders to enthusiastically embrace suggested upgrades. The reactions displayed appear as brooding, quarreling, and questioning and result in reduced cooperation, declining output, and sometimes outright expressions of hostility. Nevertheless, those initiating improvement shrug off these signs and chalk them up to the notion that people naturally resist change. Then, they press on without regard for the feelings of the workers.

Problem solving is a two-step progression that includes both problem resolution and solution implementation. Often the challenges encountered during implementation are not handled with the same rigor as complexities experienced during resolution. For example, when applying problem solving strategies, challenges are readily and enthusiastically tackled during the first stage. Problem solvers excited by their triumphs during problem resolution are full of confidence and eager to continue—but they end up undercutting the effort by rushing to conclude remaining implementation activities.

By not taking sufficient time to consider stakeholder needs, well-intended solutions may not find traction as participants come to grips with new and unfamiliar concepts. People who manage and work in the system being changed can become grousing skeptics, procrastinators, and even active resistors. Due to frustration, improvements languish without having a lasting impact. The result is a resolution—a change—that becomes someone else's problem later on as the revised system slowly reverts back to its original state.

Lackluster solution implementation frequently occurs when one or more of the following conditions exist:

- Time is a factor, and there is a rush to conclude remaining activities.
- Finding a solution becomes the objective, while implementation steps get shortchanged.
- Energy is exhausted on solution-finding activities.
- Project sponsors, concerned about costs, are anxious to conclude events once a solution is found.
- Solutions are pushed upon the system without thinking about effects on people and processes.
- Activities that will make solutions a permanent part of daily work are poorly planned and hastily integrated into new practices.

When any of these situations are in play, this in turn invites others to question the worth of problem solving and the effort spent on improvement. Uncertainty opens the way to counterclaims and opposing actions that can overwhelm and eventually sink a well-intended and meaningful endeavor.

Reaction

People confronted by new circumstances frequently experience grief and will go through a distinct conversion process before taking on their new roles. The length of time at each stage varies depending on the situation, the type of support, and individual flexibility. Each juncture has its own set of recognizable characteristics. Accepting and understanding these stages will provide an opportunity for the problem solvers—as agents of improvement—to reduce resistance and move forward.

In *Understanding Organizational Change*, Lynn Fossum says people experience the following behavior patterns upon encountering situation-altering events:

- **Indifference** involves belief that a proposed change makes no difference at all and that nothing new is really going to take place. Or, if something does change, individual interests will be resolved. As a result, work continues as usual.
- **Opposition** occurs when people realize the old way of doing things will not work and new rules apply. There is an active push back to maintain old and familiar routines.
- **Consideration** happens as people recognize that changes are starting to affect the work. Adaptations are required to reduce confusion. By modifying and tailoring processes, some things begin to function better.
- **Cooperation** describes a new process beginning to exhibit some successes. Workgroups see results, and skeptics and cynics are proven wrong—and thus leave or buy in.

Not everyone will have the same perceptions or exhibit the same behaviors. As a result, the transition effort will call for situational management techniques to shift workgroups toward the completion of implementation activities. Situational management is an adaptive approach based on studies about leadership styles. While managing the activities of realization and implementation, the agents for change are in a leadership position. Sponsors and stakeholders will look to these individuals for direction and expect results. A successful outcome often is the product of organizing and adapting actions based on situational factors.

Leadership

Authors Paul Hersey and Ken Blanchard suggest in their book *Management of Organizational Behavior* that the interplay between certain factors determines which leadership approach will be effective in a particular situation. Task behavior illustrates the amount of control a leader maintains when giving direction and guidance toward the accomplishment of tasks and goals. A high-task leader maintains tight control while demanding accountability toward the realization of goals without granting much authority. A low-task leader shares accountability by granting authority and responsibility toward the fulfillment of goals.

Relationship behavior shows the extent to which a leader is likely to build personal relationships with coworkers and stakeholders. A high-relationship leader maintains open communication, supports coworkers and stakeholders with coaching and mentoring, and is personally involved with assuring individual success. At the other end of the spectrum, a low-relationship leader trusts worker abilities, empowers others, and intervenes only when necessary.

Workgroup maturity is the ability and willingness of people to take responsibility for directing their own actions and behaviors toward achieving organizational and work goals. An immature workgroup lacks ability, is insecure, and requires considerable direction and motivation to accomplish tasks. A mature workgroup is highly capable, confident, and willing to take responsibility toward results. Minimum support and direction are required. Confronted with changing contingencies, effective leadership should vary tactics according to the situation.

For example, if the workgroup is able, competent, and confident, this situation requires behaviors that allow for self-determination, support group decision making and goal setting, and provide minimal feedback. Conversely, an immature workgroup—one that lacks ability, is insecure, and is reluctant to take responsibility for actions—necessitates a leadership style that provides well-defined goals and methods, gives explicit direction, and encourages skill building.

In addition, there are clear implications for helping people adapt to change: Individuals who are still in denial or opposing improvements will require considerable information and direction; those who have moved toward consideration and are showing some adaptability will respond to approaches that strengthen skills and build relationships; and, lastly, people who have matured and achieved buy-in will respond to practices that shore up self-determination.

Finally, when there is resistance to a proposed improvement, it is a signal that something may have been missed. Mistakes may have been made, concerns may not have been satisfactorily handled, or the proposal may not have been adequately presented and thus may have been misunderstood. Remember: The choice of responses is dependent on the personal perspectives of the individuals involved and the challenges encountered.

Enduring change

Lasting improvement is the result of systematic thinking that treats problem resolution and solution implementation as two essential parts of a continuing process. To be effective, problem solvers must complete all steps in the problem solving model and consider how stages interact to bring about change. People implementing improvement should not let pressure undermine the progressive and multistage effort.

A well-designed solution does not guarantee system improvement. Consideration and purposeful action are essential. The following factors are important to keep in mind:

- System issues are not resolved until improvements are successfully implemented.
- Stakeholder values and self image—not just processes—are affected.
- Stakeholder needs and feelings will require consideration and accommodation in order to make alterations permanent. System change is contingent upon individual change.
- Individual change is multistepped and dependent upon a person's ability to make coping adjustments.
- Improvement activities that are planned and sequenced to facilitate coping have greater acceptance and a better chance of producing permanent solutions.

The goal of problem solving is to fix the gap between current and desired performance. In order to create new efficiencies, the system requires modifications that alter both the flow of work and the deployment of labor. Likewise, the mind-set of many individuals will have to undergo change so new routines are accommodated and ultimately become the accepted reality.

System change is contingent upon individual change.

Corrective actions such as problem resolution require a set of well-planned and well-managed steps. The difficult job of shifting attitudes is much easier when using clearly defined actions to alter traditions. With that in mind, the following is a model for improvement and change that bridges the gap between problem resolution and solution implementation.

Step 1: Create awareness. Before improvements can be made, people need to have a reason to make them. They must be motivated—particularly if the current way of operating is comfortable and reasonably effective. No one wants to take a chance when status, competence, relationships, and compensation might be at risk.

Explain the need for improvements. Define why they are needed, and then cut through complacency so stakeholders understand why they're moving in a new direction. Communicate a unifying purpose. Develop a central theme that people can rally around, and create a sense of urgency so those influenced by change are ready to take a chance on something different. Finally, identify the formal and informal networks in the organization and ensure participation. The voices of diverse workgroups must be heard, and affected individuals must be active in completing the transition.

Step 2: Make a plan. Very little happens until there is specific action to nail down events that can be used to move the current situation toward a defined future. Planning facilitates and manages the details of getting from one place to another. Careful preparation will coordinate and align the change agent's effort. It is the first step toward determining how to achieve a desired end.

Make a plan for action that illustrates how to get from the current to the desired state. Determine constraints, decide what steps should be taken, assign responsibility, and estimate completion dates. Then, create an opportunity for small but meaningful gains. Break the plan into significant chunks so people are willing to take risks and can readily measure progress.

Step 3: Modify and improve. Change is a process requiring both physical and mental adaptation. While the environment and the structures that support it are being altered, individuals will have to adjust their attitudes and behaviors. This happens as a result of learning, creating a situation where new skills and responses are developed through training or trial and error.

Empower people to take action. Give problem solvers and affected workgroups the authority to make changes and accept responsibility for decisions. Provide training, and make sure people are capable of operating in the new environment. Manage resistance to system improvement by understanding how coworkers may react to change, and develop strategies for helping those who are dragging their feet.

Step 4: Standardize and sustain. At some point, the process being changed will have to be stabilized. However, actions that have been designed to alter attitudes and behaviors can fail once the effects of training have been deadened by time. This can happen because the new routines have not been fully integrated and locked in place.

Complete the restructuring of daily activities. Eliminate the old networks and relationships, and build new ones. Reconfigure communication networks, and align them with the new patterns for getting work done. Keep people on track, maintain faithfulness to purpose, and coordinate and integrate unfinished activities.

Sustain improvements by documenting revised activities. Measure and monitor both system and workgroup effectiveness to make sure they performing as intended. Initiate problem solving if output falls below anticipated expectations. Acknowledge and recognize accomplishments.

Keeping it together

The goal of improvement and change should reach beyond problem resolution; rather, the focus should include actions designed to sustain improvement and anchor change. Successful problem solving and improvement require more than the discovery of a workable solution. Ultimately, the results need to become part of daily routines and solidified so newfound practices don't revert to familiar, less-productive habits. Using a well-defined set of action steps during the solution implementation phase of change will assure standardized results.

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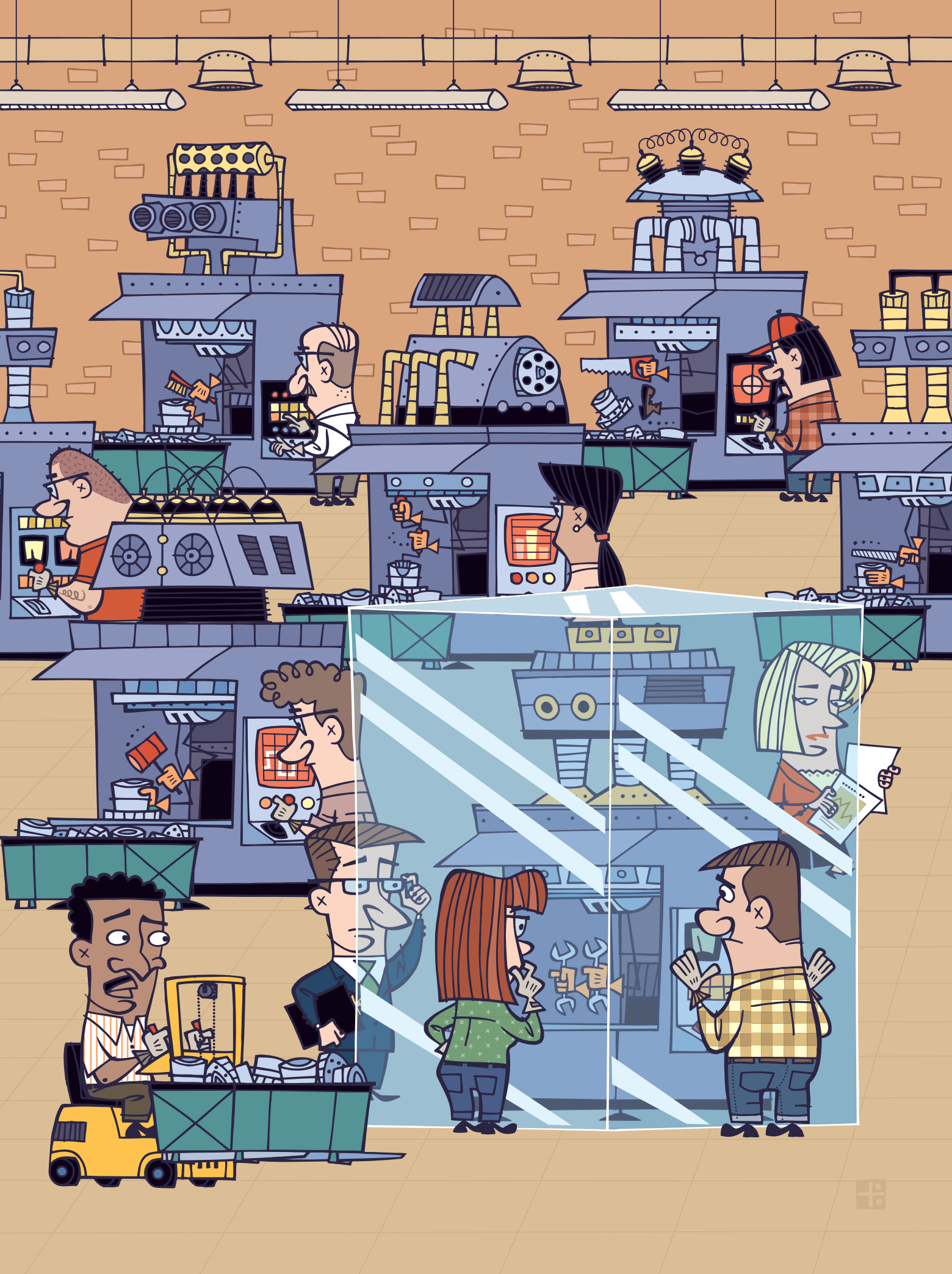


FIND WHAT'S MISSING

By Steve Johanson

Strategies for reclaiming your trapped capacity

The more chaotic the planning environment, the more capacity gets lost during execution. This disorder results in an effect called trapped capacity. Trapped capacity is the amount of time consumed on a production line to correct for variability on both the supply and demand sides. Even the most meticulously constructed capacity plan can be foiled by trapped capacity. Rather than blaming random events and bad forecasting, trapped capacity needs to be understood, quantified, and included in capacity planning.

Consider, for example, a line qualified to produce 1,000 cases a week. Can you schedule it to make 1,000 cases per week in your annual plan? The short answer is no. This line can indeed make 52,000 cases in a year, but it will not always produce the right stockkeeping unit (SKU) at the right place and right time to satisfy demand.

Are evil gnomes stealing time from your lines in the dead of night? No; the issue is that rough-cut capacity planning—our standard means of capacity planning—is too rough. Portfolios are complex, capacity is limited, and everyone wants to run lean. Planning to average run rates and average demand levels gives false results.

Just because you meticulously measured the average output of a line to be 1,000 cases per week does not allow for the fact that it might be swinging from 800 to 1,200 cases per week. Additionally, average demand might be anywhere from 500 to 1,500 cases per week.

Furthermore, enterprise resources planning applications are not predictive tools and will not save you from production variability. They provide valuable information, but if relied upon, everyone eventually will be attending weekly meetings to recover fill rates. Figure 1 shows a system that has more average capacity than average demand. Yet, the probability that on any given week there will be more items sold than can be produced is very high. Even with a perfect forecast, this cannot be stopped.

Nor can the problem be solved with safety stock. A lean system cannot rely on inventory to absorb variability. There are two secrets you should know about statistical safety stock: First, it can only be calculated one way. No matter how sophisticated the inventory optimization program, safety stock is subject to a single statistical equation and curve. Second, this equation makes the dangerous assumption after production cycles of expecting that the system will replenish everything consumed

Illustration by Terry Colon

and that all backlogs will be cleared. But what if you sell more than you can make in two or three successive periods? In such a case, you would dig into your safety stocks too deeply.

Figure 2 shows a real-life production line for frozen dinners. This line was loaded to 100 percent (average demand = average capacity). And, according to rough-cut capacity planning, this should have worked. Yet, there were many instances with one, two, or even more weeks of sequential capacity shortage. One week of shortage is all right, but two weeks means this system tapped its inventories too much. The result at this business was fill rate shortages.

This effect often is compounded by a planning department's tendency to react to a single SKU's shortage. "Planning harder" to fix one SKU's shortage in a lean environment often sets off a ripple effect on every other SKU manufactured on the line. The leading cause of variability in the supply chain is not demand fluctuations; it is human decision making. Schedule changes, unanticipated changeovers, reassigned inventory, and general confusion caused by broken production run strategies lead to two counterproductive results. First, they decrease the effective capacity of a manufacturing line when output is required most. And second, they upset the balance and harmony of a well-planned production run strategy and invalidate safety stock calculations.

This is a planning problem, not an execution problem. Annual and quarterly rough-cut capacity planning needs to be replaced by effective capacity planning, wherein the fluctuations in supply and demand are absorbed by an economic combination of safety stock and capacity. Relying on only safety stock and a heroic operations staff will not solve the problem.

There is a three-way relationship between system variation, capacity loading level, and safety stocks that satisfy a given fill rate target. Knowing the first two points gives you the third: safety stock. For most plans, variability is a given—demand variation or supply performance will not change overnight. The primary choice to make is regarding line loading. The key question here is this: Do you expect 100 percent output of a line, or do you reserve a little to run lean? Remember, even though rough-cut capacity planning says you can operate to 100 percent loading, you will encounter a trapped capacity threshold when the requirements for safety stock become exponentially high. It is very easy to find yourself in this area of operational chaos. As an approxi-

Figure 1: Overlapping capacity and demand probabilities

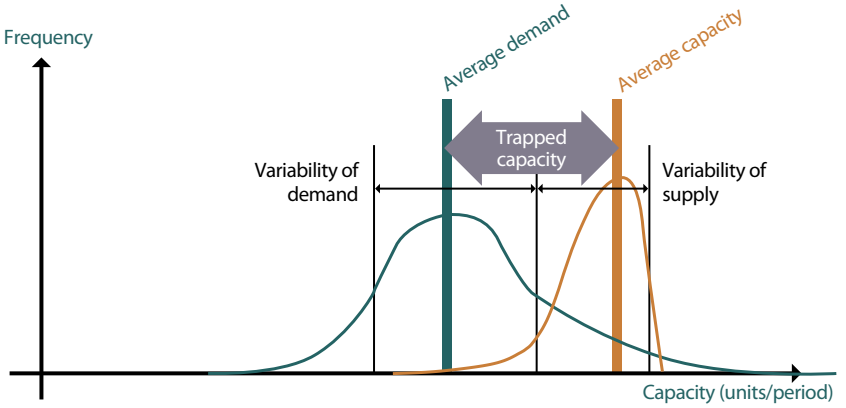


Figure 2: Frozen dinners production line loaded to 100 percent of rough-cut capacity

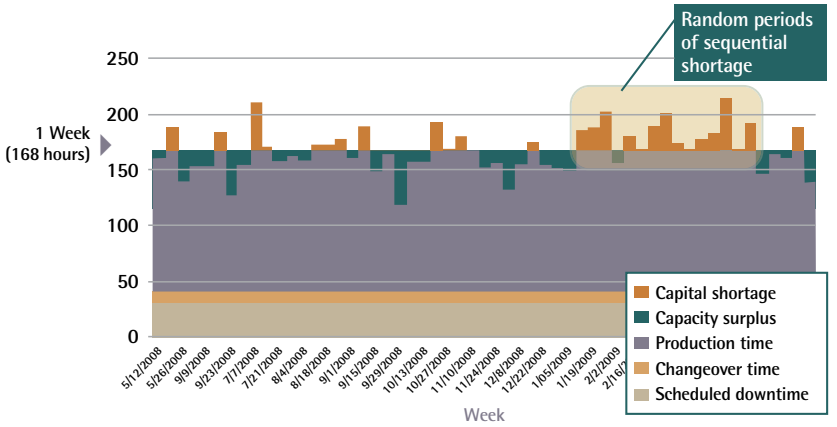
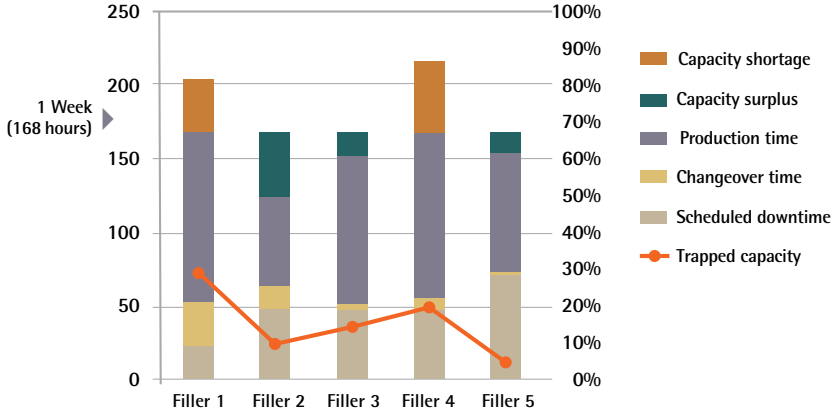


Figure 3: Whack-a-mole capacity loading



A lean system cannot rely on inventory to absorb variability.

mation of the trapped capacity threshold, you can load a manufacturing line up to demand less one standard deviation of system variation. After that, you enter an area that becomes rapidly unstable. Yes, enough safety stock can cover this variability—maybe a half-year's worth. (How big is your warehouse?) But this will not be acceptable to any company interested in running lean, and it certainly embarrasses six sigma efforts.

The risk is clear: Only a system that has 100 percent supply and planning reliability, a perfect forecast, and no demand variability should be loaded to 100 percent of its effective capacity. Most systems run at about 80 percent schedule adherence and more than 20 percent demand variation, so some lines should be loaded to only 70 to 90 percent of average capacity.

This figure is unpalatable to most executives unless properly explained and quantified. But the good news is this explains why planners are struggling against persistent stockouts. Additionally, it provides a quantitative means to measure trapped capacity and determine the degree to which it can be controlled.

No amount of executive encouragement will enable an organization to break the laws of physics and probability. You either run fat and reactionary with excess inventory and capacity or get lean and proactive with effective capacity management. There are three simple steps to achieve the latter goal:

1. Model your environment in statistical terms. Know the net variation of demand and supply on your lines.
2. Build quarterly run strategies that everyone agrees to follow. Specifically, load lines to their most economic level, calculate safety stocks to match the environment, and establish your run strategy.
3. Be disciplined and adhere to your run strategy.

Optimally, you will view your capacity plan in the "whack-a-mole" format shown in Figure 3. This predictive modeling approach shows the impact of decisions about sourcing. You can see that filler 1 is overloaded in this model. Moving demand from filler 1 to filler 2 will have several effects. First, it will move changeover and gross production time from one to the other; second, it will change the trapped capacity profile, enabling it to go up or down. Of course, you need to know what it is before you try to execute this plan.

When you are stable in your capacity planning, you can begin to recover your trapped capacity. The following strategies—in order of increasing difficulty—will help you get there.

Variability elimination. Combine products that are countercyclical so that the net demand of the two products is much smoother than the individual demands.

Variability concentration. Use an asset or product as the focus of flexibility in your schedule. Have it absorb the surges and troughs of demand. Pick a SKU that is a fast runner and, in times of surplus, build that inventory. In times of shortage, draw on its inventory. All the other SKUs can run at their proper cycles and inventory profiles. Weekly planning is simplified to asking the question of what should be done with the flexible SKU. Variability concentration makes weekly planning focused and lean.

Complexity reduction. This is standard SKU reduction with a twist. Add to the dialogue the cost of trapped capacity, and use it as a leverage point to kill C- and D-class SKUs. Follow the previous strategies, and you will find a collection of products that represent bad revenue. You even can adjust your standard costs so they are essentially activity-based, rewarding profitability. The results are simplified problems and eliminated bad revenue.

Flexible manufacturing. Use any staffing or scheduling technique that enables you to vary your plant's output from week to week. Put a temporary labor plan in place to allow for an extra shift on weeks with capacity shortages. A line that can add eight hours of capacity any given week can reclaim exactly eight hours of capacity. This practice quantifies the value of flexibility.

Demand shaping. Demand shaping is any technique that "sells" capacity or smooths demand. Operations works with brand and sales professionals to coordinate supply and demand streams. For instance, find a commodity-based product and make it your flexible SKU. If a surplus occurs, sell it. If a shortage occurs, buy it, or at least reduce its demand. Another example is working with marketing to promote products when there are forecast periods of surplus capacity. These efforts take an esoteric concept—demand shaping—and enable operations managers to lead in quantifying its benefits.

This may seem like a lot of work and data management—and it is. But the rewards of increased cash flow and stable fill rates are more than worth it. And if these are not enough reasons to look at better managing your capacity, imagine what you could achieve with all the time and energy your organization currently spends "planning harder."

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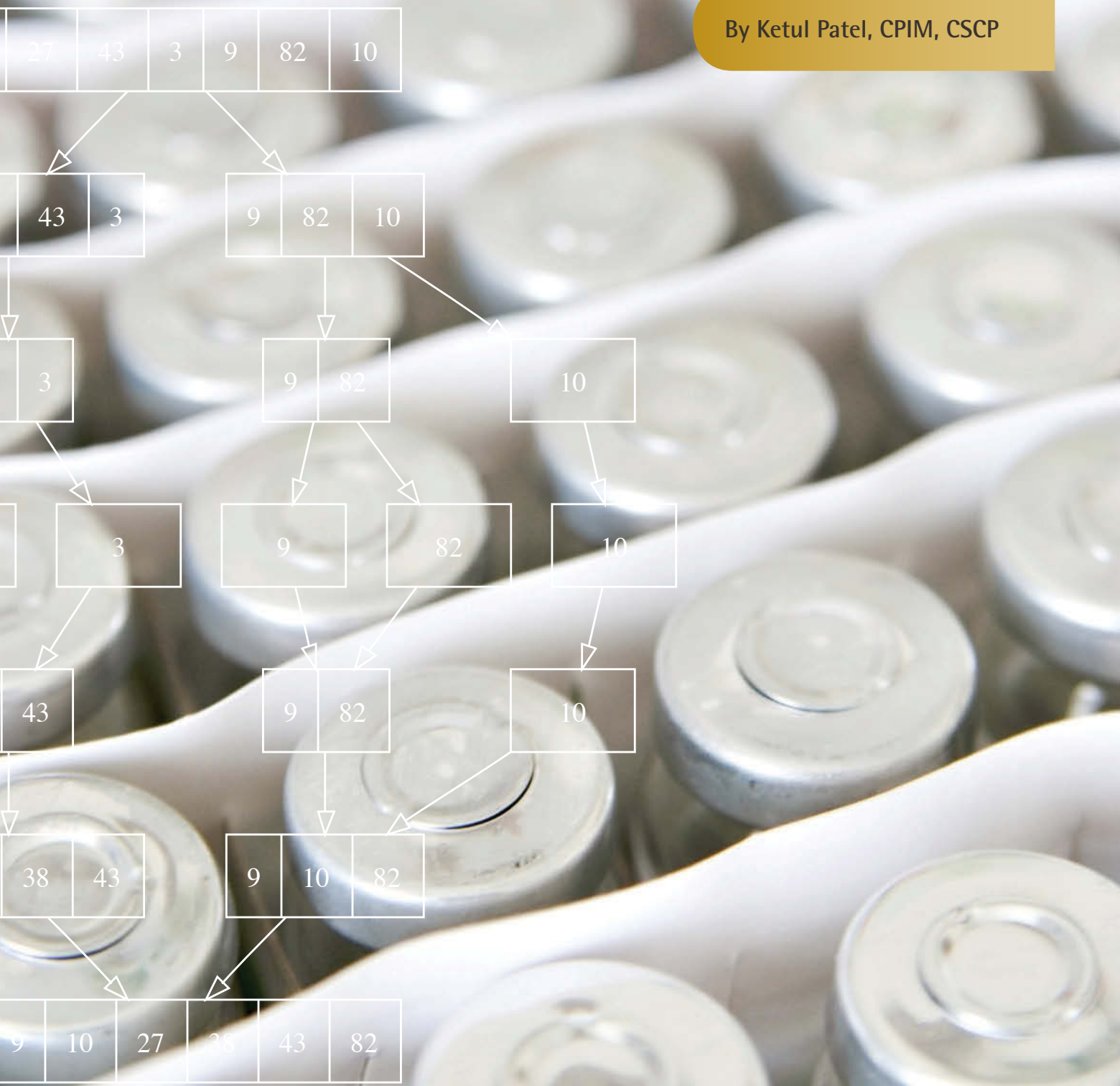
Hints to APS Supply Chain Success

Real-world lessons learned for successful system implementation

By Ketul Patel, CPIM, CSCP



An advanced planning and scheduling (APS) system is a tool; but APS implementation is an organization-wide journey that starts from the top with clear vision, goals, strategy, planning, and long-term commitment. All global players—both internal and external—must be involved, including key vendors, customers, strategic logistics partners, and software and services implementation partners.

World class supply chain management relies on the right APS process. APS involves the analysis and planning of manufacturing and logistics activities in the short, mid, and long terms. According to the *APICS Dictionary*, "APS describes any program that uses advanced mathematical algorithms or logic to perform optimization or simulation on finite capacity scheduling, sourcing, capital planning, resource planning, forecasting, demand management, and others."

Specifically, there are five main components of APS tools, which are

- demand planning
- production planning
- production scheduling
- distribution planning
- transportation planning.

The *APICS Dictionary* also states, "These techniques simultaneously consider a range of constraints and business rules to provide real-time planning and scheduling, decision support, available-to-promise capibilities, and capable-to-promise capabilities."

There are many examples of successful APS system implementations; but, for each success story, there are many more initiatives simply limping along and creating negative return on investment. The following information is based on research from APS system implementations for some of my company's major clients in the pharmaceutical, consumer product, and health care industries. Best practices will be summarized across five broad areas. Following these guidelines can help you facilitate successful implementation of APS solutions and interpret meaningful data, enabling effective decision making. The five topics are

- leadership and change management
- organizational readiness
- program governance
- program and project management
- data and technology governance.

Leadership and change management. An effective implementation approach requires the players to know, focus on, and resolve supply chain pain points and tightly integrate the APS tool with other systems. Additionally, a well-negotiated, fixed-cost price structure from carefully chosen APS system implementation partners is required. Finally, due to the high degree of uncertainty and complexity involved in such an initiative, a time and material pricing structure may be in order.

Organization readiness. More often than not, problems occur because people resist change, not because a process or system isn't working. Leaders must identify and work with those who are impeding progress, then clearly divide the functional responsibilities, delegate them to subject matter experts, and conquer them. The main assumption here is that all key stakeholders will be available to work together and achieve the stated goals, regardless of their particular work locations—thus avoiding silos.

Most successful APS system implementation teams are broken into distinct planning areas, such as demand, supply, distribution, production, detailed scheduling, order fulfillment and allocations, transportation, warehousing, and so forth. Because key consultants and third-party implementation partners will not be around forever, it's important to make sure permanent resources are involved in every function. Engage the right person at the right time with right role or authority. Many successful initiatives establish a global team that supports local deployment teams at each individual site or region.

Program governance. Control the global scope of the initiative and change management vigorously with the optimal end state in mind. APS solution implementations spanning across multiple regions need clear boundaries for localized requirements. Consider a global governance team that controls the scope of the APS model and approves only those requirements that can be reasonably leveraged across the multiple regions.

It's crucial to choose the pilot site wisely, avoiding the learning curve for supplementary rollouts, both local and global. During the initial phases, limit customization and enhancement of standard APS to 20 percent. Early wins in this journey are very important.

Leverage standard, available frameworks and best practices in order to better manage and understand all deliverables, such as APS configurations, functional specifications, technical developments, testing, and training.

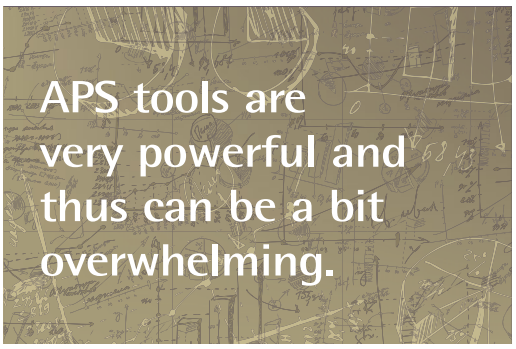
Emphasize effective and clear communication strategy, along with centralized documentation of all the key deliverables. Chances are good that your APS will be unable to fulfill all reporting requirements. The best practice here is intelligently simplifying reporting needs to focus on the "day in the life of a planner." However, standalone, spreadsheet-based reporting should be avoided,

as it can cause multiple and conflicting versions of the truth and disconnected planning. In many real-life scenarios, APS is connected to external data warehousing systems for complex reporting.

Finally, for performance measurements, define financial key performance indicators (KPIs) and connect them to supply chain KPIs. Track initial, targeted, and actual time-phased values both during and after implementation. Returns cannot be realized quickly; rather, they build over time.

Program and project management. It is important to take advantage of standard project implementation methodologies. These include project definition, solution design, solution details, execution and deployment, and successful completion. These are numerous opportunities to adopt different project management styles, depending on whether the APS implementation is brand-new or is the result of mergers.

Take the time to define a clear, concise, and understandable plan for the immediate, mid-term, and long-range time frames. For a large-scale or global initiative, make sure plans for dependent projects are well aligned. Don't ignore your enterprise resources planning system and independently start implementing APS. You will do so at your own peril.



There is an old adage about not putting the cart before the horse. I've seen companies do just that by hiring resources without first achieving a concrete, clear, feasible plan. Remember that having issues is not your biggest problem—hiding them is. Make sure logs of risks, actions, issues, and dependencies are tracked and analyzed on a daily basis.

At this very moment, organizations are spending up to 17 percent of their total APS budgets on training. Integrate the testing and training cycles with good simulation tools, learning accelerators, and easily updatable platforms. Multiple rounds of vigorous unit and integration testing with a suitable quality-quantity evaluation of productive data and proper recording of the test results will significantly improve results.

APS tools are very powerful and thus can be a bit overwhelming. Make sure end users and planners know them very well and are adapting to the changes. Planning for a multiyear, global APS implementation journey can be frustrating and challenging. Addressing the interim stages is more art than science, and there is no best practice here. Based on personal experience, I believe more pain now equals less pain later.

Lastly, what works for most of my clients is to start an APS solution upgrade only after the full completion of the current APS system implementation. In other words, in order to avoid overwhelming bugs and new patches with the most recent version, the original tool first must be functioning effectively.

Data and technology governance. It's all about the data. Successful data conversion, harmonization, and migration require clearly defined data scope and ownership, high-quality functional and technical data specifications, and sound enterprise data integration tools with a powerful staging environment. Data cleansing is a must. Many organizations have up to 50 different material numbers in their legacy APS systems for the same physical product. Make sure your enterprise data structure (plants, vendors, and financial) is defined early in the phase.

Often, each business entity or region will measure products in different units. Thus, it's important to streamline and clarify by defining a single unit of measure across the globe and using alternate units only for regional requirements. Similarly, aligning the planning calendar data also will help reduce confusion. The ideal scenario is to have your new, upgraded APS landscape in parallel to the existing one. This enables easy transition. A sound middleware platform that can interface the new APS with your existing information technology landscape is essential.

Finally, remember to define supply chain roles and responsibilities early on in order to help map them into APS system authorizations.

The real win

Going live on time and on budget is not the same as being successful. APS implementation will not change the business unless actively directed by effective change leadership. Implementations should focus on and result in holistic benefits.

Ketul Patel, CPIM, CSCP, is a consultant with TOP-2 tier, a global supply chain management consulting firm. He has helped major pharmaceutical, consumer packaged goods, steel, and other clients successfully implement advanced planning and scheduling and related supply, demand, production, and fulfillment systems. He may be reached at (732) 648-1938 or ketul.patel@teknokret.com.

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By Barry Gunderson, CPIM, CSCP

The Turnover Dilemma

Qualitative solutions to a quantitative problem

A lean supply chain is one that minimizes inputs and waste, yet enables the organizations involved to realize greater competitiveness, profits, or market penetration. Inventory turnover is a key statistic often used to signal supply chain management effectiveness. The faster inventory turns relative to industry peers, the more effective and profitable the supply chain tends to be.

An executive manager for a multibillion-dollar retailer recently expressed some degree of frustration over the fact that, despite having a huge footprint with a large number of retail outlets, the turnover of certain items—and even whole categories—could not be improved using traditional techniques.

Turnover and days' sales represent vital data used to evaluate category performance, but other statistics are needed to provide a fuller picture of financial performance. For example, the gross margin return on investment (ROI) calculation often is used as an ROI substitute in a retail setting. It can be calculated as the annual gross margin generated divided by the average investment in inventory. Additionally, the cash cycle indicates the length of time a company has to invest cash in inventory and accounts receivable offset by the time the business takes to pay its vendors. The results of these metrics compared to peers in the industry indicate supply chain management performance levels.

At this major retailer, some items—even when on-hand items were reduced to the lowest unit quantity of one per store—experienced subpar turnover rates. However, certain operating steps

could be taken to increase turnover and help company decision makers take advantage of key metrics to improve profitability. Not every solution works for all inventory items, nor even for all companies. Instead, the following illustrates that managers who think uniquely can achieve desired results and more closely ally themselves with vendors while giving customers what they desire and achieving superior returns.

To begin, assume a series of items that make up a category of inventory. It has been determined that a full assortment of items is necessary in order to be adequately present in this category and to make a market statement. Thus, the company is a destination point for customers seeking that product category. Some items turn very well, while others turn very slowly, with the average turning about five times a year. A normal distribution of items relative to sales would comprise a bell curve, with slower-turning inventory offsetting faster-turning inventory. Unfortunately, certain categories of inventory do not conform to these lines, and the bell curve shifts closer to the y axis, skewing overall turns below the optimal desired by management (see Figures 1 and 2).

A company with this type of turnover distribution results in a combination of both sought-after and less-desirable items, which drags down overall turnover statistics. A company taking a traditional approach to the problem might simply delay payments to the vendor; minimize inventory holdings; or, in the case of distribution, accelerate receivables. Although simple and straightforward, these methods have drawbacks. While they do not strictly improve turnover or days sales, they do accelerate the overall cash-to-cash cycle time, giving superficially positive signs to analysts. In addition, vendors may be alienated by such tactics. They do not give a structural or strategic resolution that can be integrated and built upon for the success of both vendor and customer.

The only limitations are our imaginations, willingness to challenge the status quo, and ability to adopt change.

Instead, consider the following steps:

1. Increase the selling price of slower-turning items. It seems as though this once-accepted practice has fallen out of consideration by retailers in the name of customer service and competitiveness. Increasing choice through a wider assortment of colors and sizes does add incremental cost to the retailer, but customers will pay a premium for stocking their exact selection and for the availability of alternate choices. Both turn and gross margin ROI improve with increases in selling price. And while there is a risk that an increase could result in fewer unit sales for slower-turning items, in the absence of substitute items, the likelihood is that unit sales will be unaffected.

2. Reduce the size of slower-turning items. Doing so reduces the cost component of the calculation. Reducing the size means that it generally costs less to buy, transport, and handle. However, packaging may not be reduced, and overall manufacturing labor can't always be incrementally reduced. By maintaining the margin ratio, the ROI is maintained on a lower-dollar outlay of inventory investment. The lower cost will entice customers to buy a wider variety and more quantity, thus yielding a higher volume of sales and improving the entire category's productivity. Proportionately lowering the cost and selling price of the reduced-size items means a lower investment in inventory. Gross margin ROI percent remains unchanged on a lower investment base. In practical terms, a lower selling price

Figure 1: Traditional bell curve

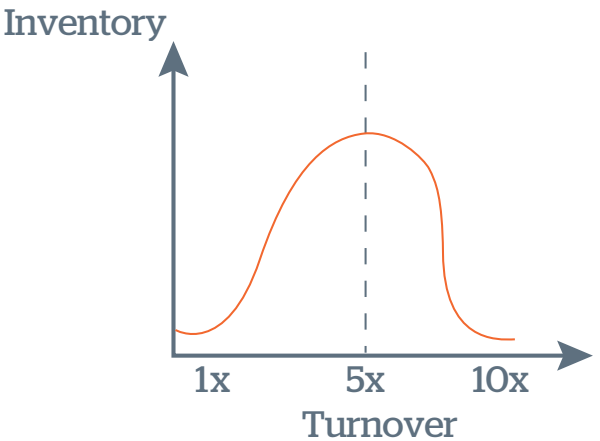
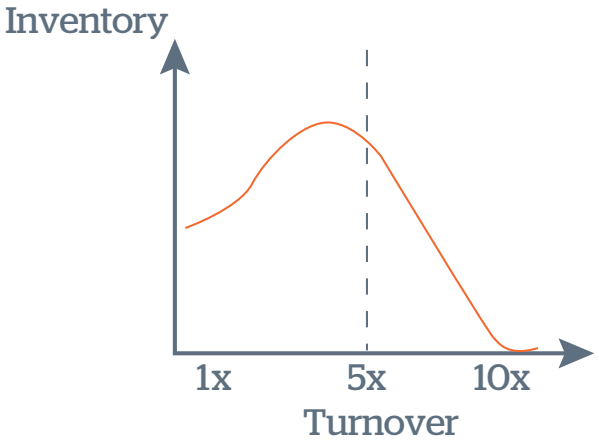


Figure 2: Bell curve adversely affected by slower-turning inventory



will result in higher sales with improvements in turn and gross margin ROI.

3. Make an agreement with vendors to pay for slower-turning items only when they are sold. Vendors will be the first to say they need a complete presence on the shelf and that a broader assortment attracts more buyer attention. However, the breadth of the assortment and amount of stock requires an increased investment by the retailer. It is realistic to ask the vendor to bear some of the holding cost of the category. Consequently, vendors are more closely tied to the success of the product and will keep closer tabs on items that don't perform as well. This direct link to sales will result in quicker decision times, more thorough research before product introductions, and enhanced vendor awareness of evolving trends at the register.

4. Match space return targets with category ROI requirements. Give vendors an amount of investment that must meet turnover and ROI objectives. Falling short of goals would result in delayed payments, markdown credits on items, co-op funding to drive top-line activity, or reduction of footprints. The principle here is translating ROI for space to ROI for the category. This strategy achieves a number of benefits: It provides the vendor with the latitude to introduce and experiment with new products or existing product variations; it keeps the shopping experience fresh and exciting for the customer; and it establishes a partnership geared to success for both the vendor and retailer, thus bringing about improved sales and cash to cash.

5. Convert slower-turning items to special order items. This step enables reduced inventory holding costs and increased margin while continuing to present a complete assortment to the consumer. Presumably, there is less urgency for these items, as they are—by definition—slower turning. A practical, yet still visually pleasing way to implement this solution is continuing to display top sellers on the shelf, with special order items depicted on cards or attractive empty display cartons. Customers in this scenario present a card to the cashier for fulfillment within 24 to 36 hours from a surrounding satellite store, distribution center, or vendor. As is common for special order items, the slower-turning product also could be priced higher, yielding improved margins and, as previously discussed, better ROI and turnover.

6. Prune lower-selling items from the mix. Although the overall objective is to present a complete assortment, it is worthwhile to review all inventory and then only by exception keep slower-turning products. Turns and gross margin ROI remain consistent with initial category analysis, and the cash cycle improves.

The right approach

There are many strategies for improving turn, ROI, and the cash-to-cash cycle. The only limitations are our imaginations, willingness to challenge the status quo, and ability to adopt change. By involving the vendor at the planning phase of the process, partnering becomes easier and a mutually beneficial tactics can be developed. Many different approaches may have merit and, in the spirit of truly embracing change, should be considered in a team environment.

As with all change, results should be measured. A baseline series of financial returns and ratios should be empirically gathered and reviewed. As changes are implemented, they should be compared to the baseline for further improvement or rejection. In this manner, the bottom line will dictate continuation of the new process, and building on improvement will support additional change.

Barry Gunderson, CPIM, CSCP, has provided risk mitigation and management advisory services for 15 years. He cofounded Hilco, an asset advisory and valuation firm. Gunderson is a Six Sigma Master Black Belt. He may be contacted (617) 827-0731 or fmpbusinessadvisors.com.

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Preactor has established partnerships with more than 400 companies located around the world to provide local expertise to support the implementation of the solution for each company. These 1000+ accredited professionals offer a key resource working closely with users to ensure each company's unique requirements are met. Preactor offers a family of applications ranging from mid and long term capacity planning to detailed scheduling and is translated into over 30 languages.

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PROFILES IN MANUFACTURING

Global Production Planning & Scheduling Solutions, Locally Delivered

Preactor® INTERNATIONAL

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Mission Statement: Preactor International is committed to delivering real-world production planning and scheduling benefits to manufacturers of every size in every sector.

Company Information: Preactor International is a world leader in production planning and scheduling software used by over 3500 small, medium and large multinational companies in 69 countries.

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The current trends in manufacturing are towards lowering inventory levels to reduce costs yet still be able to respond to shorter lead times to satisfy customer demand. Preactor offers a family of applications ranging from mid and long term capacity planning to detailed scheduling and is translated into over 30 languages. See www.preactor.com for over 100 case studies of Preactor in action and also for information on the free of charge, Preactor Express.

AIM Computer Solutions, Inc.
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Product: **AIM Vision®**

AIM Vision®, the ERP software package for repetitive automotive suppliers and contract fabricators, is a proven solution that focuses on lean manufacturing initiatives.

Implemented by our APICS certified resources, AIM Vision® features EDI integration into production scheduling complete with demand smoothing. Demands are used to generate MRP/CRP reports, fully synchronized for supply chain planning. In addition, AIM Vision® meets MMOG/TS16949 requirements. Some capabilities include outside processing, lot control, finite scheduling, barcode label generation and significant use of operator friendly edit and validation aids.

The MES application provides for barcode-based material and container tracking of raw material, semi finished goods, and finished goods inventory, as work in process travels inside and outside of the plant creating the framework for barcode-based production entry, and a selection of inventory auditing and accounting selections. Specialized modules include plant floor capture of scrap and labor efficiency and a range of reports that provide visibility into man, material and machine movement and utilization. Call us today to schedule on online demonstration.

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aimcom.com/RapidTrak.htm

Product: **RapidTrak™**

RapidTrak™ the low-priced, web enabled, wireless material tracking system designed to provide basic warehousing, inventory tracking and logistics functionalities; a valuable tool for tracking MRO Items, tooling and die sets, and perishable materials consumed in manufacturing.

Highlights:

- RF portable data collection or PC-based data entry
- Mobile application for fleet inventory
- Economical barcode labels to reduce errors
- Hosted solution on dedicated and managed servers that are PCI Compliant, and SAS 70 certified
- Multi-language capable
- User-defined Email Alerts
- Multilingual Email messages for alert
- User-definable fields with validation
- Integrates with Microsoft Dynamics GP

Features:

- Track inventory moves and transfers
- Manage consumable inventory
- Track and verify additional product characteristics via user-defined fields
- Find inventory by Warehouse, Location, Item Number, TrakID or UPC
- Trace inventory audit transactions
- Convert multiple units of measure
- Putaway by HAZMAT or other grouping
- Verify TrakIDs at Warehouse/Location

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Demand Management Software, Forecasting Software, Inventory Optimization, MRO Products & Services, Service Parts Planning, Surplus Inventory

Smart Software is the innovative leader in enterprise demand forecasting, planning, and inventory optimization. Our SmartForecasts® and Smart Collaborator solutions help companies worldwide manage the future of their business. You'll increase forecast accuracy, reduce inventory levels, improve customer service, and save millions of dollars annually-because with Smart Software, you see what's next! For nearly 25 years, we've provided SmartForecasts® to thousands of planners and inventory managers worldwide, pioneering many forecasting and planning solutions in the marketplace. Today, our patented, Intermittent Demand Forecasting/Inventory Optimization technology for service parts continues to set the highest standards of accuracy and ROI performance for our customers

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Company Index

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Same-Day MRP

Manufacturer upgrades its software and processes

CHALLENGE: Improve customer service and efficiency

SOLUTION: S2K Enterprise from VAI

COMPANY: Specialty Products Company

HEADQUARTERS: Longmont, Colorado

OPERATION: Automotive parts manufacturer

The challenge

Specialty Products Company designs and manufactures automotive suspension and alignment parts. Recently, company leaders found it necessary to upgrade their enterprise resources planning (ERP) package. They sought a reliable, trustworthy solution for monitoring inventory levels and accessing sales data—and one that could handle the needs of a rapidly growing company.

Customer satisfaction was a concern for company leaders. Thus, they also required a solution that would give customers better awareness of shipment status by connecting orders with attached tracking numbers, links to a global positioning system website, and integration with UPS WorldShip software.

Most importantly, the business required a solution that could streamline daily operations to deliver on its promise of same-day shipment. Staff desired the ability to know, in real-time, the exact location of every product and the inventory counts of each item. Also, the inability to pick, pack, and ship a product in a single step was a recurring problem. The chosen solution needed to significantly reduce order time and increase overall warehouse efficiency levels.

The solution

Specialty Products selected Vormittag Associates (VAI) and implemented its S2K Enterprise, an ERP software suite. The company was drawn to the customization in S2K and the "extensive user-defined capabilities available in the major modules," says Mina Cox, chief operating officer at Specialty Products. "This allows for a wide range of flexibility without requiring a great deal of additional programming."

Even with the customization, the implementation took only four months to complete. And when Specialty Products leaders decided the organization needed a second warehouse installation in Tennessee, operations were brought online and orders began to ship in less than one month.

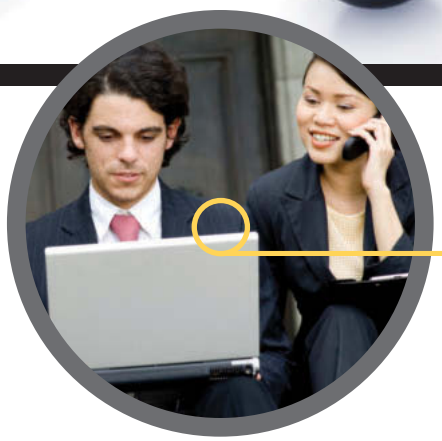
The results

Specialty Products enjoys significantly lower maintenance costs for the VAI platform compared to its previous vendor, and the system provides new functionality, such as ecommerce and electronic data interchange capabilities. "Every department benefited from the implementation," Cox says. "Sales information is easier to track, manufacturing processes are streamlined, and shipping and warehouse operations continue to meet, and exceed, the company's goals."

The company has seen improvements in customer service, reaching 99.9 percent inventory accuracy and attaining an error rate of less than .02 percent. Now, the tedious double-checking staff had to complete for every order is eliminated, and same-day delivery is guaranteed if a customer calls by the 3:30 p.m. cutoff, even for very large orders. An additional, unforeseen benefit from implementation is that many of the company's departments have gone paperless, resulting in cost benefits for Specialty Products and less waste for the environment.

"When I hear about the technical issues other executives are experiencing, I realize that we just don't have those concerns with VAI," Cox says. "The bottom line is that VAI provides a strong and dependable solution, with the technical resources to provide backup and support if there is a problem."

A machinist inspects a part at Specialty Products Company's Longmont, Colorado, facility.



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By Doug Dedman, CPIM

Straight Talk about S&OP

Head in the direction of success

The monthly sales and operations planning (S&OP) process begins with a review of the sales forecast and culminates in the development of a demand forecast. Operations managers then develop a production plan that is reviewed, tweaked, and approved by the entire S&OP team. Finally, the master schedule is updated to align the necessary resources. In that way, we begin each month content in the knowledge that the plan is valid, resources are available, and all is right with the world.

Then change happens. Orders arrive slower than forecast. Someone calls for a reduction in production, and purchase orders are canceled. This requires the elimination of an entire shift. Orders pick up, and it looks like we may make our monthly sales forecast after all. Employees and suppliers alike work overtime and expedite canceled material in order to get back on track.

The month ends close to plan—but did we manage the operation intelligently? All the extra hours, rushing around, and added expense suggest we did not. So, how can professionals effectively work through the chaos? Looking back on my childhood on the farm, I found the answer: We plow.

In both plowing and S&OP, it's a matter of keeping your eye on the target. In order to plow straight, you need a visual objective. When my dad first taught me to plow, my target was a big maple tree at the far end of our field. I would pick my starting point, set the tractor toward the tree, and keep driving straight toward it. I learned to ignore the slight dips in the field and the distractions of other trees. Otherwise, when I reached the end of the field, I would see the furrows snaking across instead of lining up straight. It takes discipline to focus on the target and ignore the distractions.

Similarly, S&OP is all about keeping the same direction and ignoring obstacles vying for your attention. The monthly sales and production plans are the targets at the end of the field. New orders never arrive at a steady pace, and it is tempting to react to daily increases or decreases. But if you set the target, stick to it, assess performance, and make adjustments next month, you will reach your monthly goal without wasting money on distractions along the way.

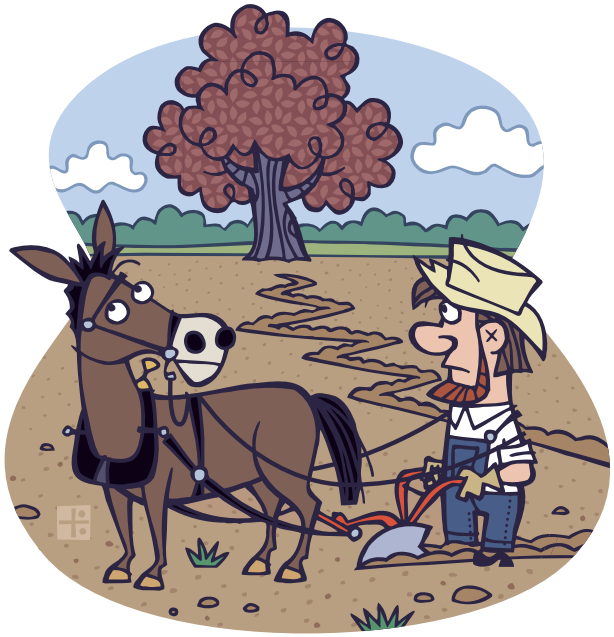

Illustration by Terry Colon

To stay the course with S&OP, it's necessary to measure the previous month's actual performance for both the sales and production plans at the start of each month. If performance differs greatly from the plans, determine why they were faulty, make corrections to the planning process, and move on.

Never change the production plan unless sales professionals first change the forecast. Only when a predetermined variance has been exceeded should a change be considered.

Finally, learn the order patterns for major customers. If orders typically arrive during the second week of the month, realize that low order inflow during the first week is not necessarily a precursor to a bad month.

No plan is perfect. Changes will happen. How we react to them is what separates the straight furrows from the crooked ones, the effective S&OP process from the chaotic one.

Doug Dedman, CPIM, is a senior business consultant with DBM Systems in Cambridge, Ontario. He consults for global, multidivisional organizations with a focus on sales and operations planning and supply chain execution. He may be contacted at dbm@dbmsys.com.

Do you have an anecdote that teaches, enlightens, or amuses? Consider sharing it with the readers of APICS magazine. Stories should be approximately 700 words. Email submissions to "Lessons Learned" editor Randall Schaefer at randallschaefer@att.net.

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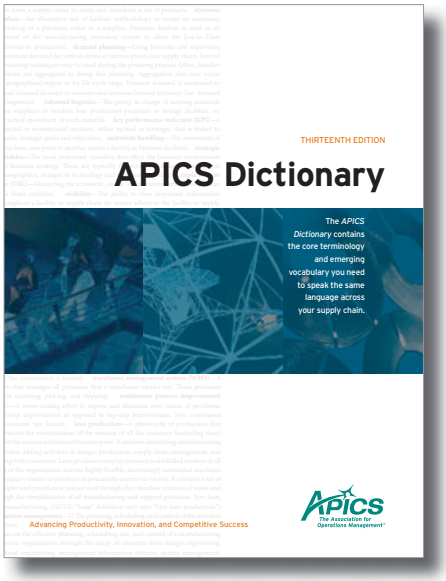

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