# THE
# BarCode™
## NEWS

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March / April / May **2017**

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# THE BarCode™ NEWS

## Letter from the Editor

Hello,

Thanks for taking a look at our new magazine format. The Bar Code News is now in its 8th year and while we've experimented with a few formats, we think this will be a regular part of what we do in the future.

The barcode.com website is here to provide tools and resources to assist the implementation and adoption of bar codes in your organization, no matter how simple or complex it might be.

There are over 3,000 articles on the website that talk to all aspects of bar codes - including printing, labeling, enterprise adoption, bar code printers, QR codes, choosing a bar code scanner and much more. To sort through these, make use of the Search box in the upper right corner of every page. For case studies and examples of real life installations be sure to click on the Solutions tab on the main menu bar.

Lastly, this publication and the website would not be available and free if not for the support of our sponsors and advertisers. You can help us by letting them know that you've seen them here and on the website. Your support is appreciated!

Best,

Craig

Craig Aberle
Publisher and Barcode Fan

**Owner's Bio**

Craig Aberle is the owner and publisher of PointofSale.com and Barcode.com. He was the founder and CEO of MicroBiz Corp (1985-2000), a three-time Inc. 500 winner and leading developer of POS software. He has a business degree from SUNY at Buffalo and an MBA from The Wharton School. He has served as a volunteer for SCORE mentoring small business owners, is an author of - "How To Computerize Your Small Business." (Wiley and Sons NY), and has given over 100 seminars across the country on "The Benefits of Automating Your Business." Aberle is an enthusiastic yogi, skier, and triathlete.

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# CASE STUDY:

# MicroVention Improves Total Production Efficiency by 50% with TEKLYNX CENTRAL CFR

**Enterprise-level label management system integrates with MicroVention's JD Edwards ERP System to streamline labeling process**

**SOLUTION**: TEKLYNX CENTRAL CFR, TEKLYNX International's Browser-Based Integrated Enterprise Label Management System

**INDUSTRY**: Medical Device Manufacturing

**SITUATION**: MicroVention, a wholly owned subsidiary of Terumo Corporation, is a leading medical device company headquartered in Tustin, California. A world-renowned developer, manufacturer and marketer of innovative neuro-endovascular technologies, MicroVention operates facilities in California, Costa Rica and China. Recently, the company has experienced rapid growth, fueled by growing product demand and expanded distribution in key international markets.

To date, MicroVention leveraged TEKLYNX' barcode label design solution, LABELVIEW, to design and print labels. However, recent growth has caused MicroVention to re-evaluate its labeling operations in favor of gaining efficiencies across all facilities. "We reached a point in our growth where we needed a labeling solution that was available over our network, not stored on each individual computer," explains Frank Carranza, MicroVention Associate Label Engineer. "I immediately thought of TEKLYNX, given my past experience with TEKLYNX' enterprise-level barcode labeling solution, TEKLYNX CENTRAL CFR, at a previous employer."

For MicroVention, the upgrade to an enterprise-level labeling solution – that integrates with its Enterprise Resource Planning (ERP) System – would position MicroVention to streamline labeling operations globally while addressing the need to:

- Adequately support a global and secure, multi-user environment: over 50 different employees in 4 different facilities needed to access and print desired labels.

- Efficiently support a leanly staffed label design environment: 2 employees were responsible for designing and managing labels for over 2,000 different SKUs.
- Provide bandwidth for future growth: operating in a rapidly growing industry meant MicroVention needed a labeling solution that could grow with them over time.
- Comply with medical device manufacturer labeling regulations such as those required by the FDA's Unique Device Identification (UDI) requirements.

In addition to these unique labeling challenges, MicroVention's global presence required it to be particularly mindful of security and accessibility issues related to the company's data center. "We have thousands of global installations and know that security and access is top of mind for companies," explains Cory Catterall, TEKLYNX Enterprise Sales Executive. "We were confident our enterprise-level barcode labeling solution could meet MicroVention's labeling requirements while providing secure access and sophisticated user profile control."

**SOLUTION**: The TEKLYNX Enterprise Team collaborated with MicroVention to determine that browser-based, integrated enterprise label management system, TEKLYNX CENTRAL CFR, would be a scalable and efficient solution for managing its facilities, including those beyond US borders, while providing the bandwidth for future growth.

"We were excited to work with MicroVention on its upgrade from LABELVIEW to an enterprise-level barcode label solution. As companies grow and business requirements change, so do labeling requirements," explains Catterall. "Upgrading to TEKLYNX CENTRAL CFR was an opportunity for MicroVention to streamline labeling operations globally."

TEKLYNX worked in close partnership with the MicroVention team throughout the implementation, including providing MicroVention with a significant amount of advanced label creation services. These services proved invaluable as Micro-

Vention relied on TEKLYNX to create extensive logical date stamp formulas to ensure accurate printing of expiration/manufacturing dates on MicroVention's products.

These formulas allowed MicroVention the flexibility to manually override dates when special circumstances required MicroVention to do so (i.e. a product label reprint from a previous production day). This intelligent label design reduced the chance of manual error globally while allowing for granular date control when necessary.

MicroVention also relied on TEKLYNX to develop a Structured Query Language (SQL) script that synchronizes work orders, products, labels, and variables from over 50 tables in MicroVention's database. Developing the SQL script eliminated manual processes, allowing MicroVention to create thousands of printable products with the single press of a button while improving the company's database speed and efficiency – a move that made it easier for network users in Costa Rica and China to utilize the system.
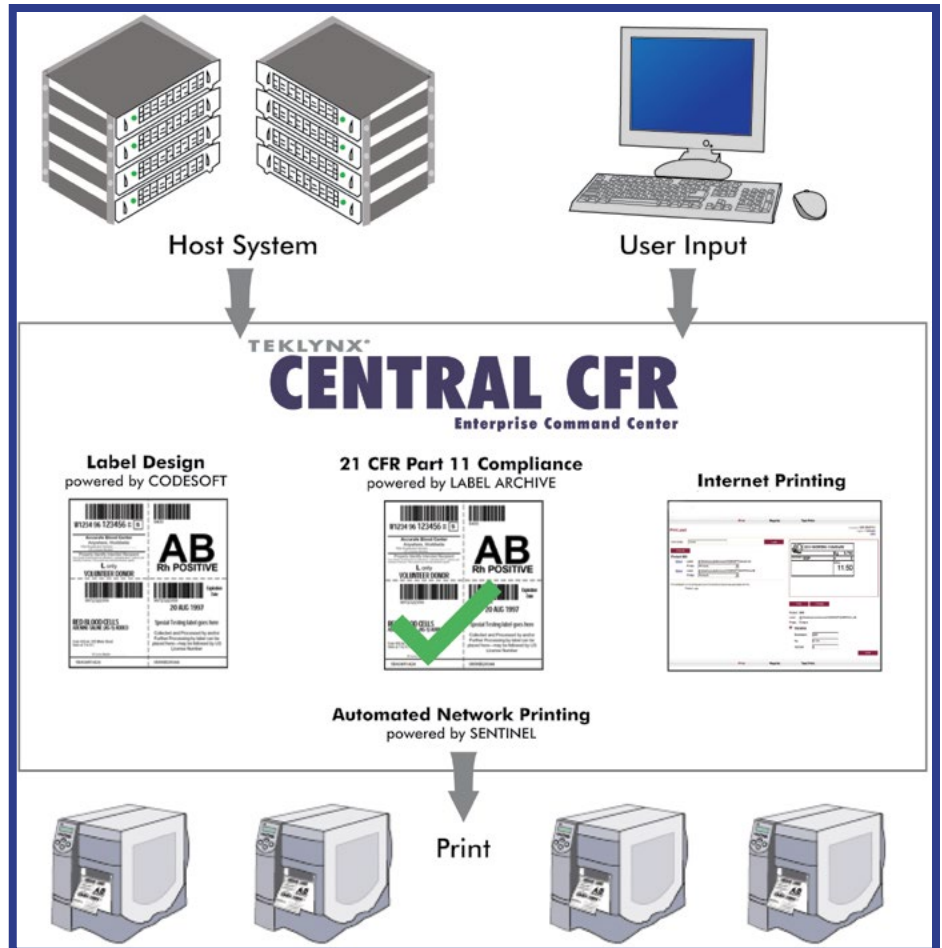
TEKLYNX also created interface patches to further customize MicroVention's user interface. This customization simplified MicroVention's interface, allowing for greater ease-of-use and faster network speed. All told, these custom development services were key to helping MicroVention not only label better, but also work better as a company.

In addition, MicroVention's implementation of enterprise-level solution TEKLYNX CENTRAL CFR would position it to integrate labeling operations with the company's existing JD Edwards ERP system. Integrating the two systems meant that all label files could now be created using database-driven templates, minimizing the room for human error.

Yet another benefit of MicroVention's upgrade to TEKLYNX CENTRAL CFR related to a very critical aspect of its business operations – compliance with medical device manufacturing industry regulations. Because TEKLYNX CENTRAL CFR was specifically designed to help manufacturers fall in line with FDA compliance standards such as 21 CFR Part 11 and UDI, MicroVention would be in the best position possible to meet these requirements.

"The TEKLYNX team's guidance throughout the implementation process was remarkable," states Carranza. "They were knowledgeable, responsive and successfully guided us through our internal issues as they arose."

**RESULTS**: MicroVention Associate Label Engineer, Frank Carranza, and his team set out to improve labeling efficiency, control and support for its global, multi-user labeling environment. "From design to approval, production, and print, our goal was to make our labeling process more lean overall," states Carranza. "By implementing TEKLYNX CENTRAL CFR, we were able to streamline our entire labeling process, on a global level, resulting in a 50 percent improvement in total production efficiency."

In addition to a 50% improvement in total production efficiency, MicroVention's successful implementation of TEKLYNX CENTRAL CFR led to the following labeling environment enhancements:

- Improved ability to support its global multi-user, multi-facility environment:
  - Access to true internet printing allows MicroVention to print labels from anywhere in the world.
  - Ability to print labels to a virtually unlimited number of printers provides the necessary bandwidth to support future growth.
- Improved ability to support its leanly staffed labeling environment:
  - The automated network printing module can manage hundreds of printers in multiple locations from a single server.
  - The regulatory compliance software ensures that electronic signatures are linked to relevant electronic records by requiring user ID and password sign-in to perform all functions.
- Provided the desired level of data center security throughout its global network:
  - User privileges are controlled with customizable user

groups so only authorized individuals can use its system and/or electronically sign a record.

- The system records audit trails throughout label life cycles, making MicroVention audit ready.

- Improved ability to comply with medical device manufacturer labeling regulations:
  - Can easily create complex bar codes, such as HIBC or GS1 Databar, to meet FDA compliance and healthcare industry standards.
  - Access to a label approval module that allows for electronic approval while providing the required security and traceability in accordance with FDA 21 CFR Part 11.
  - A single regulatory compliance software Command Center that coordinates its enterprise labeling process while providing secure access and sophisticated user profile control.

In addition to addressing all of MicroVention's immediate labeling challenges, the TEKLYNX CENTRAL CFR implementation has also put MicroVention in a solid position to address future labeling challenges. This couldn't be more critical for MicroVention as it looks to continue growth in a highly competitive, fast-growing and ever-changing industry.

"Our enterprise-level barcode labeling solutions have proved invaluable for medical device manufacturers time and time again," comments Catterall. "Companies like MicroVention can rest easy knowing their labeling environments are equipped to handle whatever labeling challenges the marketplace or industry throws their way."

For TEKLYNX General Manager Doug Niemeyer, this notion of future preparedness speaks to how TEKLYNX approaches each and every one of its installations, "We're not looking to simply install software at companies, we're looking to partner with companies to ensure our labeling solutions integrate well into the supply chain to help those companies work better over time."
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## ABOUT TEKLYNX INTERNATIONAL

TEKLYNX International is the world's leading barcode and RFID labeling software developer and solutions provider. An industry innovator for over 30 years, TEKLYNX helps companies operate smoothly and efficiently by implementing labeling solutions that streamline operations while staying ahead of industry-specific compliance and emerging regulations. TEKLYNX is world-renowned for its customer service, offering flexible purchase options, unparalleled service and support, and a comprehensive product offering that grows with companies over time. With operations in the United States, Europe, Japan, China, and Singapore, more than 630,000 companies in over 120 countries look to TEKLYNX integrated software solutions for their standard of success.

**Learn more by visiting TEKLYNX:**

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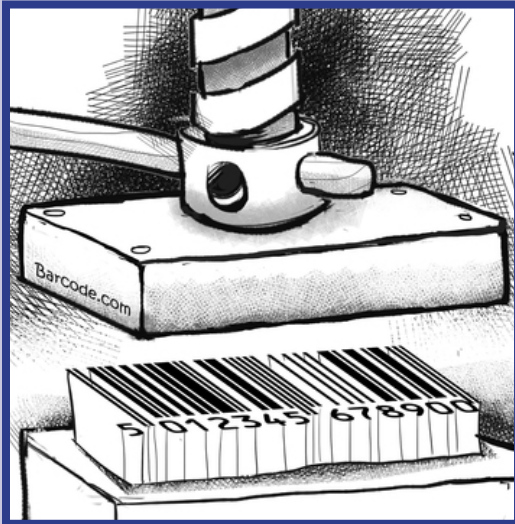
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# BARCODE TYPES:
## More Than Meets The Eye

*Article by John Nachtrieb of Barcode-test.com*

There are more barcode types than most people realize. We are talking about the most basic barcode structures—not the more subtle, technical range of ways to encode the data (ergo Code 128, Interleaved Two-of-Five, UPC, etc.). The growing popularity of 2D symbols seems to suggest that there are really only two barcode types: 1D (like those symbologies mentioned above) and 2D (including QR Code, Data Matrix code and some other less popular types).

Actually there is a third barcode type and many of us are already aware of them—we just did not realize they are neither 1D nor 2D, they are a different animal altogether. These are the stacked linear barcodes. But wait a minute—these barcodes encode data on both the X and the Y axis, so aren't these really 2D symbols? Not really and here's why.

1D or linear barcodes encode data only in the X axis, and is likewise decoded horizontally, perpendicular to the bars, not vertically, parallel to the bars. 2D symbols encode the data on both the X and Y axis, with the data packed into the symbol in a serpentine pattern.

The third barcode type is the stacked linear symbol. Many of us are familiar with this one, which appears on state-issued drivers' licenses in the US. It is a PDF417 barcode. Why is this not a 2D symbol—there is data going both horizontally and vertically? It is because the data is only decoded horizontally, like text on a page. Each line of text ends in a "more to come" message until the last line in the encoded message. A true 2D symbol encodes data continuously, both horizontally and vertically.

Somewhat less popular but out there in the public purview are GS1 DataBar stacked linear barcodes. We see them on

coupons, but they can also be used on fresh fruit and vegetable labels and other variable weight retail point-of-sale products.

What are the benefits of stacked linear barcodes over 1D barcodes? That's a simple question with a simple answer: stacked linear barcodes take up less space than the same data encoded in a linear barcode. And stacked linear barcodes are better at Omnidirectional scanning than the same data encoded in a linear barcode.

Why not just use 2D symbols everywhere and get rid of linear and stacked linear barcodes altogether? Is there some pro or con of a stacked linear barcode in comparison to a true 2D symbol? The answer is not simple. A true 2D symbol such as a QR Code or Data Matrix code has error correction capability that no linear barcode can offer. While a linear barcode can detect an error, it cannot correct an error. A 2D symbol has the ability to correct an error to a greater or lesser extent at the design stage.

Furthermore, linear and stacked linear barcodes can be decoded with laser scanners. Retailers would have to replace all their scanners with newer camera-type scanners to read 2D symbols. This is a significant expense with questionable cost-benefit for many retailers, even very small one-or-two lane stores.

**About John Nachtrieb**
Mr. Nachtrieb has 30+ years of hands-on experience in barcode technology. His team imaged the film master for the first commercially scanned barcode in North America (1974). His specialty is barcode quality. He created and hosts a highly customized barcode quality seminar which has been presented to 100's of companies, reaching thousands of quality-concerned people, helping them to avoid barcode problems and manage barcode-related risk. **John's Google Profile** ●

# BARCODE RESOURCES

## HISTORY OF BARCODES



The bar code, also referred to as a UPC (Universal Product Code), although that is just one type of bar code, was invented for inventory tracking purposes in stores. **Learn more >>**

## ALL ABOUT 1D BARCODES



Have you ever looked at the black and white symbol on your grocery product packaging, or on the cover of a book that you just bought or even a department store receipt and wondered how the information is encoded in those bars and spaces? **Read more >>**

## HOW TO GET A BARCODE



So, you have a product, and you want to be able to sell it through retailers. Now you're wondering how to get a bar code, or more specifically, a Universal Product Code (UPC). **How to get a barcode >>**

## HOW TO CHOOSE A BARCODE READER OR BARCODE SCANNER



There are many considerations when choosing a type of barcode reader or scanner. **Learn more >>**

## RFID RESOURCE ARTICLES
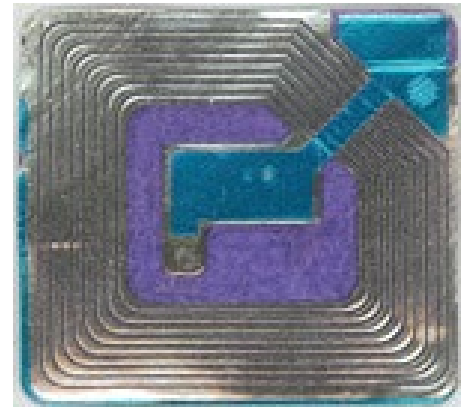


RFID (radio-frequency identification) is constantly being applied in new and exciting ways. These are links to some of our most popular articles about RFID. **See articles >>**

## WHAT TO CONSIDER WHEN BUYING A BARCODE SCANNER



Think about how your business will be using barcodes before making an investment—but know that the flexibility of most barcode-based systems helps many of these scanners take on a variety of tasks, in case your business pivots or changes its operations. **View list >>**

# BARCODE SOFTWARE VENDORS

## TEKLYNX International

TEKLYNX International is the world's leading developer of barcode labeling software solutions. Their products feature the widest range of device and driver support in the industry. More than 600,000 companies in 120 countries rely on TEKLYNX integrated software solutions for supply chain automation, warehouse management, shipping and receiving, inventory control, and asset management.

## NiceLabel Software

NiceLabel is the leading global developer of label and marking productivity software solutions that help SME and large enterprises reduce complexity and mitigate risk while meeting compliance requirements and increasing productivity, quality and agility. NiceLabel's design, print and management solutions are modular, easily configurable and scalable so they enable best practice labeling processes to be implemented quickly. This provides significant ROI over the lifetime of their use. NiceLabel is a Microsoft Gold Certified Partner, Oracle Gold Partner and SAP partner. As the world's leading developer of Microsoft Windows drivers for thermal and direct marking printer technologies, NiceLabel software is shipped by the world's largest printer manufacturers and used by the majority of Fortune 500 companies.

## Wasp Barcode Technologies

Wasp Barcode Technologies is the leading manufacturer of barcode software and barcode software solutions for small to medium-sized businesses. Wasp's easy to use barcode software can quickly and easily design and create barcodes for use as product barcode labels, inventory labels, product scan sheets, or other printed barcode labels.

## BarTender by Seagull Scientific

The most trusted software to create and automate labels, barcodes, RFID tags, plastic cards and more. BarTender® software by Seagull Scientific enables organizations around the world to improve safety, security, efficiency and compliance by creating and automating labels, barcodes, RFID tags, plastic cards and more.

## Loftware Inc.

Loftware's Enterprise Labeling Solutions bring label design resources, native print capabilities, and built-in business rules functionality to integrate barcode labeling with any organizations existing business processes in order to help drive topline revenue, increase customer satisfaction, and maximize supply chain efficiency.

# Top 7 Things To Consider When Implementing

# A Work-In-Process Tracking System

*by Dr. Peter Green, Chief Technology Officer, BellHawk Systems Corporation*



Are you managing one of the 80% of make-to-order manufacturers in the USA that are still using paper forms and Excel spreadsheets to track and manage their operations?

If so, you are probably finding, as many others have, that it is increasingly difficult to track and manage your operations using these old-fashioned methods. This is because we live in a 24x7, hyper-competitive, lean, global supply chain world in which customers expect rapid delivery of quality products at rock-bottom prices.

If you have been searching for a system to automate the real-time tracking, scheduling and planning of your operations, you have probably found a bewildering array of possible choices from low cost, smart phone Apps to expensive ERP systems.

This article suggests some questions to ask when comparing possible system solutions to address these issues. These are based on the practical experience of other make-to-order manufacturers and the system capabilities they have found valuable or even essential to the efficient running of their operations.

1. Does the proposed system give you a real-time view of the status of your work-in-process? This requires capturing the status of customer orders in real-time as they flow from operation to operation. Using paper forms followed by manually keying the data into an Excel spreadsheet or ERP system does not give managers and supervisors the timely information they need to avoid bottlenecks and get customer orders out on time.

2. Does the system give you a real-time view of the status of all the materials needed to make your products? This can includes tracking the status of:

- Available raw and intermediate materials, including project specific materials on order or in the process of being made
- Floor stock, including materials in KanBan bins
- The picking of parts from the stock room
- Work-in-process parts as they flow between operations, either as individually barcoded items or as parts in totes or on carts
- Parts waiting for test and inspection
- Finished parts ready for shipment, which may be in cartons, on pallets, in the finished goods warehouse, or staged on the shipping dock

- Picking, packing and shipment of finished products to customer site

A major issue for most make-to-order manufacturers is that they cannot keep track of all the materials for the customer orders flowing through their plant at the same time. This dynamic real-time tracking of materials in nested containers is very different from tracking inventory at static locations in a warehouse.

1. Does the system track the transformation of materials? This requires tracking which materials, by lot, serial number, and manufacturer, were consumed to make intermediate parts and then the conversion of these intermediate parts into finished goods. This is critical for capturing materials traceability data so that the source of defects can quickly be identified and the cost of recalls minimized.

2. Does it also track the consumption of labor and equipment/machine time used in each transformation operation in making a product, including allocating these resources across multiple orders run at the same time on the same machine? This is essential to get detailed costs for each customer order, especially when many different parts have to be made, assembled, and shipped to the customer in multiple releases.

3. Does the system support the ability to use a small number of "generic" part numbers for raw, intermediate and finished goods with different attributes, such as length, width, size, color, and other options? This avoids the problem of having to assign a separate part number to each different product you make for customers which, for some make-to-order manufacturers, could otherwise run into hundreds of thousands of different part numbers to maintain.

4. Does it support the ability to track work-in-process materials and assemblies without assigning a separate part number to each intermediate product stage? For many make-to-order manufacturers tracking work-in-process materials is essential as they flow from one operation to another. But, at the same time, they do not want to create new part numbers for each intermediate stage in the process of making the material. Instead, they simply want to use the finished product part number and then flag the materials as work-in-process so they are not confused with finished product inventory.

5. Does the system do real-time scheduling of jobs? Busy make-to-order shops have many customer orders flowing through their shops at the same time, which can present managers with a complex scheduling problem because some operations take less time than expected and others take longer. Trying to do this scheduling in real-time without assistance from your work-in-process tracking system can be challenging.

A key element to providing the above capabilities is automated data capture. This typically requires the use of mobile computers with integral barcode scanners and increasingly, the integration of RFID and other Internet of Things sensors, such as weighing scales.

In summary, effective work-in-process tracking systems must be able to easily handle the complexities of make-to-order manufacturing businesses. Most critically, these systems require the use of software such as BellHawk, that is able to capture work-in-process data in real-time at multiple geographic locations, analyze that data in real time using artificial intelligence methods, and present critical operational data to operations managers, supervisors, and customer support people in real-time, whenever and wherever it is needed.

**About the Author**

Dr. Peter Green is the Chief Technology Officer for BellHawk Systems Corporation (www.bellhawk.com). He has a BSEE and a Ph.D. in Computer Science from Leeds University in England. Prior to BellHawk Systems, Dr. Green was a Senior Member of the Research Staff at MIT and a full Professor at WPI. He is a current member of APICS and gives professional development talks about operations tracking.

Dr. Green has been implementing operations tracking and monitoring solutions for over twenty years. He is a domain expert in automated data collection as well as in materials tracking and traceability and automated planning and scheduling. His team at BellHawk Systems has implemented nearly 100 systems for clients including manufacturers, food and pharmaceutical processors, medical and biotechnology laboratories, as well as systems for the US Navy and Air Force and the Centers for Disease Control. •

# Moving From a Paper to Digital Inventory and Logistics Tracking System

*By Alex Seretis, Account Executive, Infinite Peripherals, Inc.*

Despite the growing use of digital and mobile solutions throughout various industries, many organizations still rely on outdated, paper-based systems or old, expensive radio frequency (RF) devices for inventory management and logistics. These systems often require manual filing, can cause missing or duplicated paperwork and may hamper efforts to quickly track specialized, high-value assets. Although companies may acknowledge these issues, they can be hesitant to replace a familiar, time-tested way of running operations with a new digital solution that takes them into unknown territory.

It is important to understand that changing to a digital inventory management or logistics tracking system is more than just replacing a legacy product or service; it's creating an entirely new way of conducting business. Adapting to a new technology can be difficult, requiring leadership buy-in and time to assess, accept and implement. However, when a company can capitalize on technology, the transition is ultimately worth it, resulting in multiple benefits that improve business and save money.

## Benefits of Mobile Solutions

To enhance inventory management and logistics tracking, new solutions add barcode scanners to consumer devices, such as smartphones and tablets, to take advantage of their versatility, including:

1. Cost – Using consumer devices reduces the price of a handheld solution to approximately $750-$1,200 each, which is more economical than traditional RF scanners that can cost more than $1500 each. This can be particularly helpful in remote warehouses where it may not be cost-justified to install a complete RF network.

2. Form factor – Lighter, with larger screen sizes and better resolution, consumer handheld devices run on iOS, Android™ or Windows, which deliver a familiar, intuitive user interface.

3. Accuracy – Eliminating paper and the opportunity for human error consistently leads to significant cost savings, greater efficiency, increased productivity and less waste, which, in turn, can lead to labor reduction or redeployment.

4. Management on-the-go – With mobile solutions, staff and management no longer are tethered to PC workstations, enabling them access to warehouse management system (WMS) reports and KPIs from warehouse aisles, thereby facilitating immediate decision-making with real-time data.

5. Integration with other business systems – Software running on the mobile device integrates warehouse and logistics data with other company functions, such as accounting, which can issue invoices or credits in a timelier manner for faster receivables.

6. Additional functionality – Cameras and video capabilities can be used for recording damaged inventory. Signature capture expedites customer pick-ups and returns, and mobile printers can create instant labels. The devices also can manage shipping and receiving, serial number tracking and time and

attendance.

7. Training capabilities – Because employees already are familiar with these consumer devices, mobile solutions can dramatically reduce the training and employee transition process due to ease of use.

## Proven Results and ROI

Bell Nursery, the primary plant supplier to 178 Home Depot stores in seven states and the District of Columbia, encountered many challenges with its previous paper-based inventory process. Staff manually counted items on the floor with a clipboard, pen and paper and then faxed the counts to the office to be entered a second time into a spreadsheet.

For a business that covers 400-600 SKUs in 200 inventory locations, this system was inefficient and prone to errors. In addition to being time-consuming, it also created significant inventory waste, as Bell Nursery annually supplies Home Depot with 100,000 flowers – perishable goods that are thrown away if they end up in the wrong place.

After adopting a mobile solution using an iPhone® equipped with a barcode scanner for supply chain and inventory management, Bell Nursery decreased waste by 50 percent, saving $7 million annually. Bell Nursery employees – as many as 1,700 in the busy season – now manage inventory more quickly and accurately with UPC codes, providing real-time access to precise inventory data.

Michigan CAT, an authorized dealer of Caterpillar heavy equipment, power systems and engines, formerly used handheld scanners that were limited to inventory management and were unable to differentiate a text field from a number field, which caused errors in areas such as quantities and order numbers. Equipped with a full keyboard, the heavy devices didn't integrate with other workflows and tended to freeze, requiring a hard reboot and interrupting work flow and productivity.

The switch to mobile devices resulted in significantly greater functionality, including better interface between the warehouse and the service and the delivery departments, faster customer pick-ups, instant analyses on employee productivity and improved quality control.

And a U.S.-based component supplier expedited order processing with a barcode scanner, but found that the data remained on the scanner until the end of a shift, when it was connected to a computer and results were synced. Therefore, order accuracy was not guaranteed, as real-time data was unavailable while the scanners were in use – which was particularly problematic when processing and shipping orders the same day.

The company now has about 50 percent of its employees using a more robust solution with an iPod touch® and a 2D barcode scanner in the warehouse. The system displays a green light if the barcode matches the product being picked, and a red light if there is a mismatch. With staff now scanning approximately 70,000 details per day, a significant increase in productivity, the company estimates that the improved order accuracy resulted in more than $10 million in savings in the first year alone.

## Best Practices for Transitioning

Although every business has individual considerations specific to its organization, here are guidelines for moving to a digital/mobile-based inventory and logistics tracking system:
Identify the organization's overall mobile deployment goals, estimated budget and projected timeline for each phase of the project.

Research hardware and software providers that partner with customers to understand business needs, customize solutions and deliver ongoing training and support. When evaluating solutions, ensure capability to complete all designated tasks, with potential to add different functions in the future.

Continually communicate the benefits of the new system and how it will help staff perform responsibilities with greater convenience, efficiency and accuracy.

Establish measureable test criteria and interim benchmarks as the solution is developed and pilot tested.
Identify a project leader/s that staff can approach with questions and feedback.

Address device charging procedures, device check-out and return, accessories such as hand straps and cases and extra units in case of breakdowns.

Deploy units company-wide, and measure results using metrics for productivity, accuracy, labor assignment, etc. Compare data to existing benchmarks from the former WMS.
Share results, including data, testimonials and anecdotes with the company.

## About Infinite Peripherals:

The first company to mobilize iOS for enterprise, Infinite Peripherals, Inc. has deployed more than one million enterprise mobility solutions across multiple industries, including retail, logistics, warehousing, healthcare and hospitality. Mobility experts since 1999, IPC continually delivers innovative hardware and software solutions that equip businesses to run more efficiently and more profitably. Complementing its leading Linea Pro®, Infinea Tab® and Infinea® mPOS product lines are an unparalleled commitment to customize solutions for each customer, accompanied by dedicated personal service and partnership. For more information, please visit ipcmobile.com. Connect with Infinite Peripherals at facebook.com/infiniteperipheralsinc and @infiniteperiph.

## About Alex Seretis

A four-year veteran at Infinite Peripherals, Alex Seretis began as an Account Manager and now is an Account Executive, where he manages enterprise sales for the Eastern U.S. His clients have benefited from a variety of IPC products to enhance field services, retail operations and warehousing. •
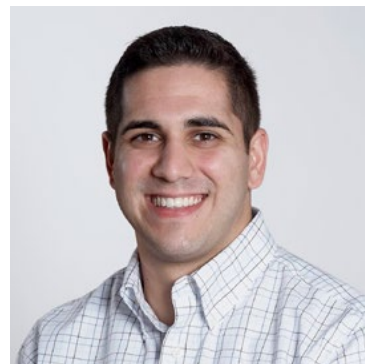
# CASE STUDY: Industrial Food Label Barcode Printing

The Gourmet Nut Company has replaced manually applied labels to their flexible packs of nut products with two Linx TT5 Thermal Transfer Overprinters, and as a result has improved their efficiencies and packaging quality.

The Gourmet Nut Company is a specialist coater of several gourmet nut products. They coat nuts from 3mm granulated hazelnuts up to whole, large nuts (such as macadamias and pecans).

Close to 1,000 tonnes per annum of roasted and coated nuts are sold to virtually all major retailers and wholesalers throughout Australia. Products are also exported across Asia Pacific and New Zealand.

## SITUATION
**The Gourmet Nut Co.'s dramatic sales growth had vastly outpaced its labelling process. The company was applying three separate labels by hand: one on the front, two on the back. They wanted an automated solution to increase efficiency, improve packaging quality, and increase packaging consistency.**

They also needed to save time and money by removing manual labour, such as changing a whole film wheel whenever they wanted to change products on the line.

The specialty nut roaster also wanted to reduce packaging costs. As a small business, too much working capital was tied up thousands of reels of film for individual

products across its 12 product lines.

The coding solution needed to print alphanumeric information and barcodes on both sides of a flexible film packet at once. It also needed to be able to print Chinese characters for export products. Product ID, barcode and nutritional codes needed to be clear, scan reliably in customer warehouses, and look professional.

The solution had to be able to code on generic film (to reduce packaging inventory and costs), and also have the capability for new products to be created easily (to

## SOLUTION
**The Gourmet Nut Co. chose two Linx TT5 Thermal Transfer Overprinters, supplied by Linx distributor Matthews.**

trial new flavours, for instance).

The TTO printers are configured as master/slave, where the one user interface has control over both printing

devices (a strong advantage of this coder). This reduces tasks and makes set-up easier, with only one printer needing to be setup to cover two printers.

The coders simultaneously print the product ID on the front, along with ingredient panels and best-be-

## OUTCOME
**The Gourmet Nut Co. is very pleased with the coding solution. It has saved a huge amount of time by removing manual labour, improving efficiency in the process and lifting packaging quality and consistency. Generic film has freed working capital (and physical storage space) from being tied up in film inventory.**

fore and batch codes on the back.

The operators find the TT5s very easy to use: simply changing a code in the system has replaced the manual task of changing an entire film wheel whenever they want to change products. The colour touchscreen, with its simple-to-follow instructions, has minimised errors. A bonus has been fewer ribbon changes due to the long standard ribbon (1,000m).

Both generic film and the simple programmability for codes has meant The Gourmet Nut Co. can easily add or trial new products (rather than wait for film for new products to be traditionally printed).

www.linxglobal.com/tto    www.matthews.com.au

Linx is a registered trademark of Linx Printing Technologies Ltd. Linx Printing Technologies are an internationally-renowned supplier of a range of coding and marking solutions including Continuous Ink Jet, Laser Marking, Case Coding and Thermal Transfer printers. Linx Global provides coding and marking solutions to a wide range of industries which include the food, beverage, pharmaceutical, cosmetics, automotive and electronic industries, where product identification codes, batch numbers, use by dates and barcodes are needed. •

### Key Facts
**Country**
Australia

**Industry**
Snacks

**Product coded**
Flexible film

**Linx printers**
Linx TT5 Thermal Transfer Overprinters

### Key Product Benefits

**Linx TT5**

- Clutchless, bi-directional motor for reliable, constant ribbon tension

- Print intermittently or continuously

- Intuitive touch screen for simple message creation

- Built-in diagnostics for ribbon, machine and print status.

"I felt quite comfortable with Matthews, and it's good to know that we have not only ended up with quality machines that are absolutely right for our business, we also have knowledgeable people there to help us whenever we need them. We have ended up with quality machines that are absolutely right for our business."

— Ray Rust, Managing Director, The Gourmet Nut Company

**Fixed Mount Scanning: Applications & Functions | Benefits**

1D & 2D Scanners & Imagers

- Identifying item code
- Reading full Product Info
- Counting
- Verifying Serialization
- Measuring Product frequency
- Verifying barcode print quality
- Detecting no barcode
- Sorting different items
- Scanning Text (OCR DOT Code)

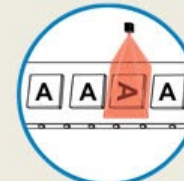Vision Systems
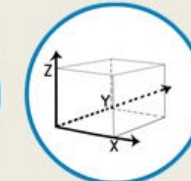
- Product orientation
- Box and volume measurement
- Color Matching
- Scanning of an entire pallet
- Identifying odd product
- Video coding
- Product Inspection
- Assembly verification
- Precision calibration
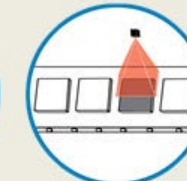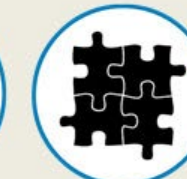
Benefits:
- Validation of data & alarming upon having an error
- Recording locations, workers, & time/date
- Eliminating human data entry & time
- Instantaneous data transfer to host server
- Collecting Statistical data of operations
- Minimizing paperwork
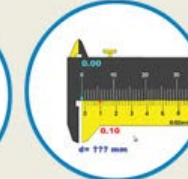
Simplified Diagrams of Automatic Identification, Data Capture & Mobility
Mohammad Amer Shallah, Auto-ID Support, www.ai-support.com; Terms of Use and Copyrights: https://goo.gl/RI5XoS

# BARCODE FIXED MOUNT SCANNING: Functions, Applications And Benefits

This diagram shows the comprehensive applications and functions of fixed mount barcode scanning systems on production lines, mainly on conveyor belts. There scanners are of various technologies (CMOS, laser, imager and vision). Most scanners send data to host directly using a serial, ethernet or USB connection cables. Some scanners carry in their built-in circuits some intelligence boards to compare scanned numbers and images, and some models carry also input sensors (such as box presence sensor) and output triggers to trigger alarms or control some sorting system. The scanned output usually goes to a host system (PDA, control box, server) to store data (and possibly images) and to process additional more actions.

Here are the applications and functions:

1. Identification by barcodes: The is the basic function for identifying products by reading their barcodes.
2. Counting: Reading consecutive boxes eventually leads to counting how many has passed.
3. Sorting: If boxes with different items numbers are expected, reader can give signal to move box on another track. Additionally, if all boxes should be identical in certain batch production, any odd box will trigger a signal to remove the box away. This is commonly used in pharmaceutical industry to make sure all boxes and drug leaflets are the same and relevant to medicine in line.
4. Verifying serialization: Scanners can monitor the sequence of numbers to make sure all items are go-

ing through their sequential numbers and nothing is missing, odd or misplaced.

5. No-read detection: Scanners can be able to sense a box without a barcode. Action must be taken to ensure barcode existence (reprinting or reorienting the box to barcoded label side).
6. Barcode quality verification: It is a rarely used application to verify that printed barcodes meet GS1 specification printing specifications.
7. Product self-lookup: Scanners can read 2D codes that contain detailed encoded information about the product and can possibly alarm for certain parameter such as an expired date. Additional example is to print a label and apply it after scanning. Additionally, scanners can read from the barcodes the lot number (of a raw material) to save its data in production history.
8. Reading text (OCR & Tyre dot codes): Advanced scanners are able to take fine images of an embossed rubber text on tyres and read them in the system to extract product information where usually it is hard to apply a labeled barcode.
9. Product orientation: Some scanners can distinguish which side of the box is facing and thus might require reorientation.
10. Image match verification: Some advanced scanners compare all the boxes to match all product side images so that they are the same 100%. This can be used in pharmaceutical industry to make sure printed instructions on boxes are all well printed and there is no missing character in the printing press.
11. Reading barcodes of a full pallet at once: Any array of scanners can read all barcodes of all boxes on a pallet in a single moment and have batch data collectively gathered.
12. Measuring volume & dimensions: Some specialized scanners have the ability to measure box dimensions and volume especially in the logistic industry.
13. Image and video capturing: Special scanners can take shots of each box for quality control issues.
14. Color Matching should all items should be the same
15. Other advanced functions such as: assembly verification, contents verification, product inspection, and precision calibration

There could be much more applications depending on the requirements and this is limited by imagination. The flexibility lies in the ability to add sensors, relays and program host applications to gather data and make decisions.

Here are the common benefits:

a- Auto and/or online validation of captured data and alarming upon having an error

b- Data capture of site locations, production lines, operator names and date/time stamps

c- Reducing human data entry errors and time

d- Instantaneous data transfer to host server

e- Statistical analysis of info to make decisions, update instructions, knowing total operation time of each production line for maintenance issues

f- Minimizing paperwork

The diagram can help:

• AIDC manufacturers, specialists, distributors and integrators have a broad vision of what they are designing, developing, and selling and they see also how efficient their solutions would be.
• Software developers design their data capture applications in most efficient way to customers.
• AIDC resellers explain to their customers the benefits, the overriding of difficulties and cutting of costs.

Comments, suggestions, corrections, additions are welcome on this topic.

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**About Amer Shallah**

I have been implementing automatic identification, data capture technologies, and mobility for 20 years in domains of business, government and security. The accumulated experience and continuous follow up on latest emerging technologies help me to contribute writings about current trends and highlight challenges. I try to bring up diagrams and infographics along each topic to clarify concepts in a simple way. I like also to raise controversial topics for public discussion and exchange of knowledge. I welcome all comments.

Mohammad Amer Shallah, Auto-ID Support,
www.ai-support.com
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# CASE STUDY:
# Quality Control With Barcodes In Food Packaging

Food manufacturers place high importance on ensuring product safety and quality for their customers. Not only is the industry highly regulated, but any errors can be very costly due to product recalls. Having a wrong label on a can of food, or a wrong lid on a cup of margarine, could have serious consequences to the manufacturer and the retailer, as well as the consumer. An automatic identification solution using 1D and 2D barcodes is a reliable way to improve quality control in the food packaging process, ensure safety and to avoid human errors.

**Specific Problem: Prevent wrong labels on food packaging and ensure that all products within one sales batch are the same.**

**Project: Automate quality control using 1D and 2D barcode technology.**

**Solution: QX Hawk imager automatically matches lids to cups and immediately stops the production line if errors detected.**

**Result: Quality control system ensures immediate reliable results and avoids human error. Full return on investment in less than three months.**

## CASE STUDY

Bunge Finland, founded in 2009, is a manufacturer of margarine that develops, produces and markets healthy and high quality vegetable-based margarines and vegetable oils. In the autumn of 2009 the company acquired Raisio's margarine business, which has been a pioneer and expert in margarines in Finland for over 50 years.

In 2011, the company received a request from one of its large international customers to implement automated quality control checks to error-proof the packaging process in their factory in Raisio, Finland. The company placed a 2D Data Matrix code on the lids of the margarine products to match the correct lid to the correct cup. In addition, they needed to make sure that each sales batch of six margarine cups contained only the correct product.

In the past, quality control relied on visual and paperwork checks. The company wanted to rule out human errors, in case a cup from the previous batch would mistakenly enter the following batch, or that a package in the wrong language could slip into a delivery.

Bunge was already using the QX-830 industrial laser barcode readers from Microscan to read EAN-13 retail codes on the bottom of the cups. These readers were supplied by Informa, a Microscan partner and specialist in labeling and marking systems.

Now as Bunge needed to read the 2D Data Matrix code on the lids, they again opted for Microscan and Informa, to make sure that maximum synergy could be achieved. They selected the QX Hawk industrial 2D imagers from Microscan rec-

ommended by Informa. The QX Hawk is fully integrated with liquid lens technology which enables infinite focus flexibility.

The embedded processing, together with three high speed inputs/outputs directly from the reader, enable the QX Hawk to provide line level control functions. The QX Hawk decodes the Data Matrix code, compares it to a database and automatically stops the production line if an error is detected.

Bunge worked on a very tight schedule and were able to implement the solution together with Informa within three months from start to finish.

The solution has already proved its value to Bunge. Shortly after installation, they were able to stop a batch that contained the incorrect product from being packaged thanks to the quality checks with the QX Hawk imagers. They have thus achieved almost full return on investment immediately after implementation. Mika Tammi, Maintenance Manager at Bunge Finland comments: "We are very happy with this solution. Our customer is satisfied and we were able to finish the project on a very tight schedule. We have a great working relationship with Informa and Microscan is definitely the right choice for us."

"This project has been a great opportunity for us to get more experience in Microscan's 2D technology. Microscan's application support assisted us in fine-tuning the system, and can be a great help to save time and to get the solution up and running even faster," said Jari Hanén, Key Account Manager at Informa.

In addition to fine-tuning, Bunge and Informa are optimizing the production line settings and planning improvements such as making the packaging line easier to clean and refining the lighting.

Bunge is planning to implement the 1D barcode readers on their other production lines, and will also look into expanding the use of 2D imagers. They are one of the first Bunge factories in Europe to use 2D barcode readers for quality control. "Expanding the system to also include machine vision could offer interesting possibilities, such as checking the best before date," commented Hanén. "We find it important to make the most of technology and keep developing our service to
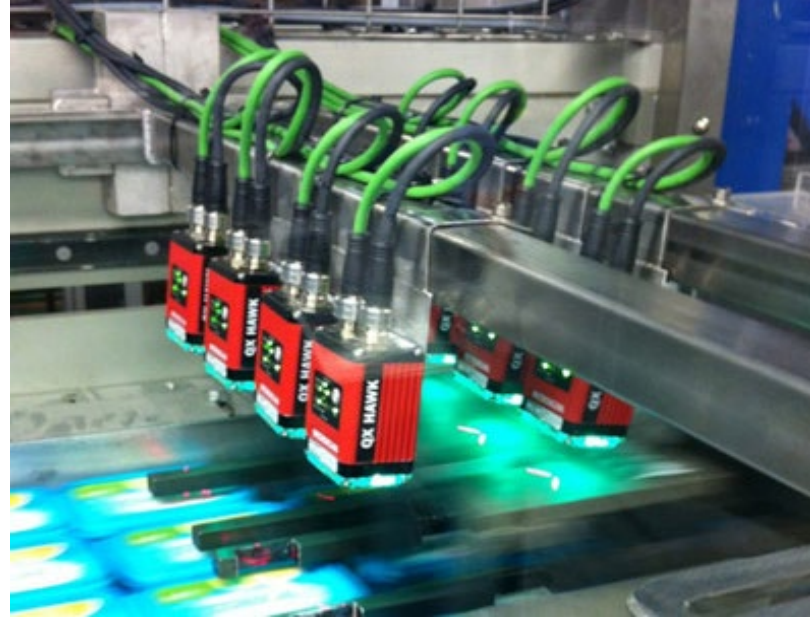
meet customer requirements. This gives us a leading edge," Tammi concludes.

The imagers match the correct lid to the correct cup.

**Customer: Bunge Finland Oy**
**Industry: Food & Beverage**
**Application: Quality control and error prevention in food packaging**
**Products: QX-830 and QX Hawk from Microscan**
**Reseller/Integrator: Informa Oy**

This case study was provided by Microscan Systems Inc. Please visit their website for more information and other case studies.

**About Microscan**
Microscan is a global leader in technology for precision data acquisition and control solutions serving a wide range of automation and OEM applications. Founded in 1982, Microscan has a strong history of technology innovation which includes the invention of the first laser diode barcode scanner and the 2D symbology, Data Matrix. Today, Microscan remains a technology leader in automatic identification and machine vision with extensive solutions for ID tracking, traceability and inspection. •

*QX-830 1D Laser Barcode Reader*

*QX Hawk 2D Imager*

# Streamlining Label Processes Captures Efficiencies, Saves Time & Money

By using BarTender labeling software to manage variable data on their labels, a company was able to reduce their number of label files from 9,000 to 24. The implementation of the Globally Harmonized System for Hazard Communication (GHS) has provided an incentive for the chemical industry to reexamine its labeling and data management practices. By restructuring labeling processes and eliminating redundancies in their data sources, chemical companies hope to save time and cut costs while achieving regulatory labeling compliance.

A specialty chemical manufacturer worked with Ohio-based Seagull Scientific partner Adaptive Data Inc. (ADI) to manage a complete overhaul to their compliance labeling system. By deploying BarTender®, the company was able to build a scalable, adaptable labeling solution that helps them comply with GHS and other industry regulations while also capturing cost-saving efficiencies as the company grows through acquisition of new businesses, brands and product portfolios.

## THE CHALLENGE

### Regulation and growth
Like many in the chemical industry, the need to comply with OSHA's GHS mandate drove the complete redesign of the company's labeling system. They had simplified their labels by incorporating branding and transport and hazard information on one label, but the system that ran the production of those labels was complicated, difficult to use and expensive.

Managing variable data was also a big issue. The company focuses on a variety of specialized product lines including chemical manufacturing for a number of diverse industries, as well as production of industrial lubricants, cleaners, and sanitizers for the food industry. In many cases, the products they manufacture require different brand names for a single product, despite identical ingredients. In addition, several products' labels require certification information including toxicity spec numbers for chemicals, Kosher or Halal practices for food products or EPA's DfE stamp for industrial cleaning products.

Complicating labeling processes even further, the company had recently acquired nine different chemical companies, each with their own set of labeling needs, printers and processes in place.

### An inefficient labeling system — wasteful and expensive
The first step was addressing weaknesses in the company's existing labeling system. "The company was using the wrong equipment," said Mike Barker, Client Solutions Manager, ADI. "It was not suitable for printing on large pressure sensitive sheets. They experienced frequent media jams which stopped label production and wasted expensive label media."

The company's print methodology was complex. For every single product and SKU, there was a file, with over 9,000 label files in the system. Because of the way the label formats and product data were stored, the print operator had to access four different software systems just to print a set of labels for one product. Using label stock preprinted with static as well as variable information, such as DOT hazard diamonds, often led to user error.
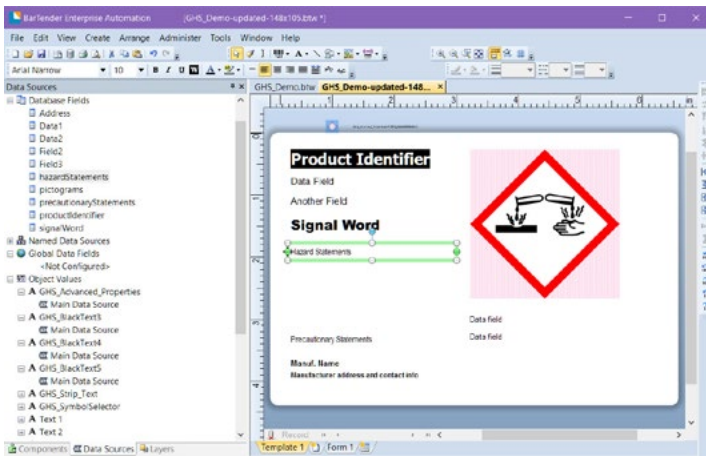
"We were producing labels four or five days in advance of a production run," said the company's Senior Regulatory Specialist. "If a shift couldn't find the labels they needed at production time, they'd just reprint new labels. And chemical blending is not a finite process — sometimes we had too many labels, which wasted material, and other times we had to stop and print a few more, which wasted time and labor. The preprinted stock we used was expensive, and the amount of media we were throwing away was unacceptable."

As a result, the company often exceeded the volume they had contracted for with their printer vendor, and thus were required to pay considerable per-click charges.

"We asked ourselves, 'How do we do this better?'" the Regulatory Specialist said.

### THE SOLUTION

The need to meet the new GHS standards finally provided the motivation the company needed to fix their inefficient compliance labeling system. Because the company had previously owned another enterprise labeling solution, "and the experience wasn't great, particularly the customer service," the company proceeded cautiously, spending seven months carefully evaluating systems integrators and the labeling software available.

"We were able to present a comprehensive solution that takes advantage of the data they already had," said Barker. "Using BarTender, we were able to build a user-friendly GHS solution that provided the company easy access to their existing prod-

uct data. The system reduces media waste, and the company is realizing additional savings through the elimination of per-print click charges."

Given the need to quickly assimilate data from the many and diverse systems of the company's new acquisitions, BarTender's industry-leading integration capabilities were a differentiator. ADI created a simple, graphical interface that allows centralized control of data and labeling. One action, whether job number, barcode scan, or alphanumeric key entry, gathers data from various places, populates the label, and sends the print job to any of several different printer types, sizes and brands at any of the company's online facilities. The entry of one job number will typically produce two to four different labels, on up to four different printing devices

## Intelligent Templates™
Initial estimates were that the company could reduce their 9000 label formats to 70 or 80. But after the initial deployment, the final tally was 24. BarTender's Intelligent Templates™ and the layering capabilities that they provide allowed the company the adaptability to do so. Images required for industry certification, regulatory, product and branding information are housed in the label's layers. Data gathered after the scanning of a job number or SKU triggers BarTender to turn on the appropriate layers for print. The dataset retrieved includes all information required for customer, GHS and / or DOT requirements, as well the names and folder locations of all variable graphic elements. Because only a small number of templates are required to print thousands of different labels, and since the operator creates the label out of existing product information through a forms-based point-and-click interface, the process is simple and secure.

## Benefits
The new ADI / BarTender chemical compliance labeling system is running a much higher volume of labels than anticipated. The company has realized greater accuracy in labeling processes, reduced waste and gained process efficiencies, all translating into cost savings. The labeling system is scalable and adaptable to accommodate the company's rapid growth — data for newly acquired companies and products are quickly incorporated into the label database, making new product labels accessible to the production line immediately.

"It's infinitely easier to get newly acquired companies up and running," said the Senior Regulatory Specialist, "and the customer service we've received has been excellent."

Because the company is constantly folding in new product lines, the reduced effort required to manage formats and create new product labeling saves time and money. The company has reduced the number of label formats it requires from more 9,000 — that's before integrating newly acquired companies into its system — to 10 across all of its current facilities.

"We're now producing many more and different labels than one year ago, making it hard to calculate the net benefit," said the Senior Regulatory Specialist, "but the process of making new labels is so much faster. For example, if a product was packaged and sold by the drum, but we wanted to add a new SKU and sell it by the pail, the labeling process had to start from scratch — the product information would be entered into a database by marketing, and information would be added the label by the regulatory group. A different person would create the label, and then send it though the approval chain. Now, we just enter key data like the new SKU and net contents into the database, a five minute job, and the label is done."

## Synopsis
- A specialty chemical company had previously installed an Enterprise Labeling Solution that was expensive and inefficient.
- The company was using over 9,000 label formats, and this number was rapidly increasing as the company grew through a robust acquisition program. New companies and product lines had to be folded in to the labeling process.
- The old system used preprinted label media, resulting in expensive waste and increased risk of user error.
- Working with Adaptive Data Inc., the company built a BarTender-based labeling system that employed data management best practices.
- The new labeling system takes advantage of BarTender's Intelligent Templates™ to manage variable data that can include images and regulatory and product information stored in several different systems, slashing the number of label formats the company needed from 9,000 to a total of 24.
- The new system is scalable and agile, and can rapidly align to business needs. It has realized cost savings and reduced the hours required to manage product labeling by: Increased accuracy; Waste reduction; and Capturing process efficiencies. •
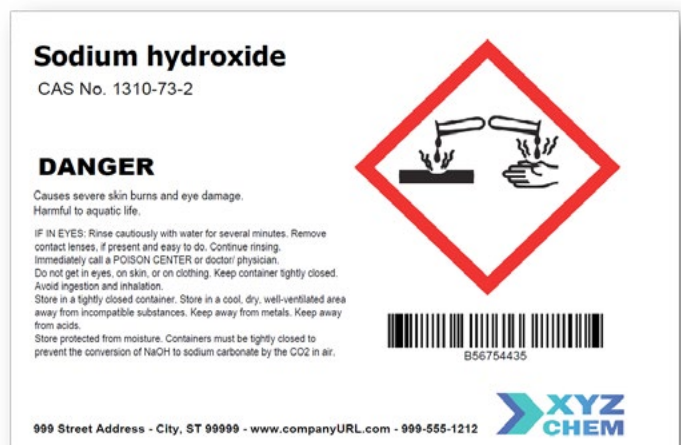
# BARCODE / RFID TRADE SHOWS

**March 12-13, 2017 - AIM Summit 2017**

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# Careers in Barcoding, RFID, Supply Chain

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Boone NC - Manatee Works is searching for the best in sales, marketing, web and low-level programmers.
Email jobs@manateeworks.com.

Symbology Enterprises, Inc Branchburg NJ - Inside Sales Rep - Printer software / Data collector - email resume
Stratix Corporation (Norcross, GA)  Verification Sales Associate -  http://www.stratixcorp.com/company/careers/jobs

ScanSource.com - (SC, FL, AZ and elsewhere) assorted - finance, marketing, merchandising, sales
http://www.scansource.com/en/careers/job-board

 BlueStarInc.com (KY and worldwide offices) - assorted - business development, sales, warehouse
http://www.bluestarinc.com/nl-de/about-bluestar/careers.html

Zebra (IL, GA, CA, MO, NY, RI and others) (about 60 openings posted)
https://www.zebra.com/us/en/about-zebra/work/careers.html

GS1 - http://www.gs1.org/careers

Sato America (IL, NC, NJ, CT, others) - https://www.satoamerica.com/careers.aspx

Honeywell, Intermec (world wide - over 3,000 job openings posted)
http://www.careersathoneywell.com/en/job-search-results/

Motorola Solutions (world wide - over 260 jobs posted) - http://careers.motorolasolutions.com/

Barcoding, Inc - (MD, GA, OH, MN, KY, MA, MI) - http://www.barcoding.com/about/barcode_employment.shtml

Identiv.com (CA) - http://www.identiv.com/careers

RMS Omega Technologies -  http://www.rmsomega.com/careers/

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