# SUPPLY CHAIN VISIBILITY

## Best Practices to Achieve End-to-End Inventory Management

RFgen

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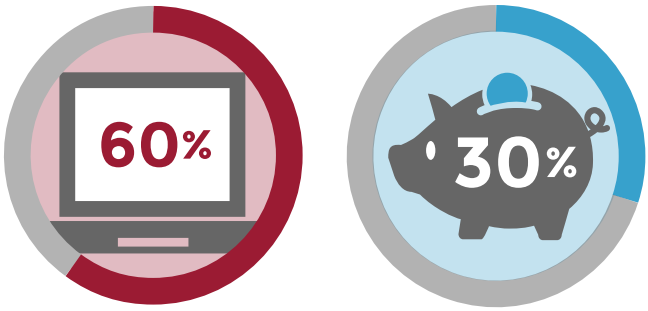
# INTRODUCTION

The past several years have marked tremendous changes in the manufacturing industry. Organizations are working to build next-generation supply chains that incorporate highly efficient emerging technologies including robotics, AI, 3D printing, Internet of Things (IoT) and blockchain.

> According to IDC, by 2020, "60% of the top manufacturers will rely on digital platforms that enhance their investments in ecosystems and experiences and support as much as 30% of their overall revenue."[1]




With greater digital transformation comes the need to enhance supply chain visibility. Gartner predicts supply chain visibility "will soon be a standard business practice," and goes on to define visibility as being "about generating timely, accurate and complete views of plans, events and data across the entire supply chain including external partners." Gartner predicts there will be mass adoption of supply chain visibility within two to five years.[2]

Most manufacturers have not created a fully transparent supply chain yet. A recent survey indicated that 69% of organizations did not have full visibility into their supply chains[3], and a lack of visibility is cited as one of the top five sources of pain in the supply chain.[4] Less than half of the senior manufacturing executives report having the visibility needed to make strategic decisions. More than one-third of those executives cite supply chain failure as a 'significant risk.'[5]

This paper presents information to help your organization begin to evaluate your supply chain visibility and take steps to improve it for the digital future. We will examine:

- **Questions** to assess the degree of visibility in your supply chain.
- **Benefits** of enhancing supply chain visibility.
- **Case studies** with real-world examples of manufacturers using mobile data collection apps to improve inventory and supply chain visibility.
- **Best practices** for achieving end-to-end inventory visibility.
- **Key areas of functionality** to consider when evaluating mobile app development platforms.

# HOW TRANSPARENT IS YOUR SUPPLY CHAIN?

As your organization plans for the digital future, it's important to take stock of your supply chain strengths and vulnerabilities as they exist today. Ask yourself the following important questions to determine if your organization's current supply chain practices are ready for the future:

## ARE YOU SATISFYING CUSTOMER DEMANDS?

First and foremost, are you giving customers the information they need to continue doing business with you? Increasingly, B2B customers want the same kind of buying experience that retail consumers enjoy. They demand 24/7 visibility into your real-time inventory levels, pricing, and product information.

## DO YOU HAVE UPSTREAM AND DOWNSTREAM VISIBILITY INTO RAW MATERIALS, PARTS AND PRODUCTS?

Do you exchange supply chain data with suppliers and distributors? Can you view inventory and production status at their suppliers? Today, 47% of supply chain executives lack visibility into Tier 2 suppliers.[6]

In an increasingly real-time, digitally-driven environment, supply chain experts believe visibility will drive value and keep customer satisfaction high. Recently, Aaron Parrott of Deloitte Consulting noted that "for many large manufacturers, 70 to 80 percent of the total value of their product comes from their supply base... [yet] most companies do not have visibility beyond the first or second tier of their supply chain."[7] The more tiers you can see, the more you can control for changing supply chain conditions.

## ARE YOU FULLY COMPLIANT WITH TRACK AND TRACE REQUIREMENTS FOR YOUR INDUSTRY?

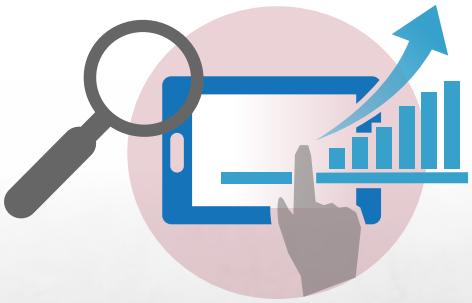
If your industry has traceability regulations, supply chain visibility isn't just nice-to-have—it's a necessity. In order to track raw materials, parts, and finished goods, you need to collect data at every step of production and distribution. Companies with a big data initiative perform significantly better on product traceability (61% vs 38%) than companies that don't pursue big data.[8]

## ARE YOU ABLE TO EMPLOY ADVANCED PICKING METHODS AND WAREHOUSE MANAGEMENT?

Directed picking, voice, and WMS can all make a big impact on fulfillment accuracy and efficiency. If you have good visibility into inventory levels and locations, you can take full advantage of these technologies.

## ARE YOU COLLECTING ENOUGH DATA TO BENEFIT FROM PREDICTIVE ANALYTICS?

Supply chain analytics will be a critical value driver for manufacturers and distributors. In 2016, 84% of manufacturing executives were already invested in supply chain analytics or were considering it within the next one to two years.[9] To benefit from analytics you have to be able to feed big data initiatives with plenty of operational data. Gartner expects big data to achieve mainstream maturity within the next two to five years, so there's no time to lose in enhancing your mobile data collection capabilities.[10]



# SUPPLY CHAIN VISIBILITY CASE STUDY: VSE CORPORATION

**INDUSTRY:** Aerospace & Defense
**APPLICATION:** Inventory Management

*VSE Corporation achieved full lot-level traceability with mobile data collection—providing better inventory visibility for employees and greater billing transparency for the Department of Defense.*

## CHALLENGE

As a preferred strategic partner to the Department of Defense, VSE Corporation extends the service life of military vehicles by providing sustainment services, consisting of supply chain management (SCM) and maintenance, repair and overhaul (MRO). Director of IT Operations, Cathy Henry, faced an efficiency challenge as the company grew and competed for larger contracts: much of the day-to-day inventory management for vehicle overhauls was managed on manual spreadsheets, and then manually reentered into the company's Deltek Costpoint ERP system.

> *"As we looked at larger and larger contracts it was really critical to have an automated solution that included barcode scanning...We needed to scale up," recalled Henry.*

## SOLUTION

First, VSE added the Deltek Costpoint Inventory Management module to their existing financial ERP. Next, Henry looked to integrate barcode scanning into inventory management processes to reduce the manual data entry burden for employees at the receiving dock, the warehouse and the shop floor. After speaking to Deltek, she implemented RFgen Mobile Foundations for Deltek Costpoint—the only Deltek recommended mobile solution for providing real-time, bi-directional information exchange between Costpoint and barcode scanners, handheld devices, RFID devices, PLCs, and scale type devices for the aerospace and defense industry.

> *"RFgen really blew our socks off. You could scan something and data would appear in Costpoint live, in real-time,"* Henry said.

## RESULTS

VSE was able to deploy RFgen quickly, and employees picked up the use of the barcode scanners with ease. Using RFgen has enabled VSE to:

- Replace manual spreadsheets with automated data collection for inventory management processes.
- Receive items into inventory and update the Costpoint Inventory Module with efficient, mobile barcode scanning.
- Achieve full lot-level traceability to comply with DoD contracts and ensure 100% billing accuracy.
- Mass transfer entire racks, shelves or sections of a warehouse to another location or warehouse.
- Improve the visibility of inventory management operations to increase inventory turns without double ordering parts or running out of stock.

"Because we bill the government, obviously our billing has to be correct and exact. When we bill for a project, we have 100% traceability of each part installed on each vehicle," said Henry.

# FIVE BENEFITS GAINED
## BY IMPROVING SUPPLY CHAIN VISIBILITY

Each manufacturer has a slightly different set of priorities for supply chain visibility, but in general, companies can expect to elevate the customer experience, strengthen supplier relationships, and enhance organizational efficiency by improving visibility. Here are five expected benefits:

*Manufacturers can elevate the customer experience, strengthen supplier relationships, and enhance organizational efficiency by improving supply chain visibility.*

1. **INCREASE** the ability to track and trace materials and products from initial suppliers to end customer. This will be especially important in industries that need to comply with government traceability mandates, including:

   **Feed, food, and beverage**
   **Aerospace and defense**
   **Medical devices and pharmaceuticals**

2. **CREATE** more perfect orders and happier customers while lowering the cost of returns. Today, only 84% of all orders can be termed as perfect orders, but with better visibility, accuracy improves.[11]

3. **IMPROVE** supply chain flexibility and resilience with predictive analytics and better exception management. Ultimately, this flexibility and resilience can help manufacturers mitigate the risk of supply chain failures and differentiate themselves from competitors.

4. **ENHANCE** working relationships with suppliers and distributors, because trading partners never have to wonder about the status of orders. As trust grows between trading partners, there may be better cooperation and explorations of additional ways to create value together.

5. **COLLECT** the data needed to make better business decisions at the speed required in the digital marketplace. Manufacturers will have the business intelligence required to explore new opportunities in the IoT, including developing new products or services and entering new markets.

# SUPPLY CHAIN VISIBILITY CASE STUDY: CLIF BAR & COMPANY

**INDUSTRY:** Food & Beverage
**APPLICATION:** Order Processing, Inventory Management, License Plating, Manufacturing

## CHALLENGE

Clif Bar & Company is a leading maker of organic energy bars, including the CLIF®, LUNA®, and CLIF Kid® product lines. Until 2016, Clif Bar used co-manufacturers to make its products, but the company made the strategic decision to bring manufacturing in-house. To boost efficiency in both bakeries, they looked for a mobile data collection solution that integrated with Oracle's JD Edwards EnterpriseOne and would enable bakery associates to use wireless barcode scanners.

## SOLUTION

RFgen Mobile Foundations for Oracle's JD Edwards EnterpriseOne is a suite of pre-written, pre-tested Oracle-validated data collection solutions that enable manufacturers to benefit from real-time barcode data collection and roaming mobile applications. Hartwell selected RFgen for its flexibility and its integration capabilities, as well as the RFgen team's work in the food and beverage industry and proven experience with lot-controlled inventory management.

*"One of our objectives was to run the manufacturing and warehouse transactions with a paperless process," explained Dave Hartwell, Sr. Director of Business Applications.*

*"RFgen provided flexibility on the front-end to design the transactions the way our bakeries actually operate while still honoring the critical JD Edwards integration," said Hartwell.*

## RESULTS

Clif Bar associates use wireless barcode scanners running RFgen to collect data throughout the warehouse, inventory management and manufacturing operations. RFgen has enabled Clif Bar to:

- Deploy quickly, meeting an aggressive deadline without sacrificing customization or functionality.
- Utilize wireless barcode scanners to improve efficiency and accuracy throughout warehouse and manufacturing operations.
- Enhance sustainability through paperless transaction processing.
- Exchange information with JD Edwards as well as third-party applications for manufacturing, food safety, and equipment maintenance.
- Trace materials and products throughout the supply chain, in compliance with food safety regulations.
- Reduce cost while maintaining the highest quality standards.
- Scale up to accommodate new production lines and rapid company growth.
- Refine transactions to reflect new learning and best practices in pursuit of continuous improvement for bakery operations and controls.

> *"RFgen allows us to seamlessly transact our lot required items to provide the inventory usage and lot traceability we require," said Hartwell.*

# FIVE BEST PRACTICES
## FOR END-TO-END INVENTORY VISIBILITY

Supply chain visibility is a benefit of being part of a network of suppliers, partners, and customers committed to sharing real-time supply chain information. These networks take time to build out, but work is already well underway. In order to benefit from enhanced supply chain visibility, your organization will need to prepare your own IT systems to collect the right data, store it centrally or in the Cloud, and share it securely (first internally and then with supply chain partners).

*Gaining better visibility into your own inventory by automating mobile data collection is an excellent early step toward improving overall supply chain visibility.*

1. **Take it one step at a time.** Creating a transparent supply chain pipeline is a process and it isn't going to get built overnight. You will be integrating some existing systems and adding other new tools. Roles within your organization will have to be defined and redefined as you move forward. Some business processes will remain the same, while others will transform radically to take advantage of new supply chain opportunities.

2. **Automate data collection throughout your internal operations.** Logically, the first step to achieving better supply chain visibility is to start collecting better data within your own operation. As you move toward full digital supply management, you will want to eliminate paper-based processes from your internal inventory management, including receiving, warehouse operations, manufacturing, and shipping/logistics. This is the time to incorporate an automated, mobile data collection solution that can track and trace the movement of raw materials and finished goods throughout your operations. We will examine mobile data collection further in a moment.

3. **Break down internal data silos.** Along with automating your data collection to make sure you can see where inventory comes from and where it is going, you want to make sure information is shared freely among departments within your organization. It's not ideal to have three or four different systems capturing and storing supply chain data at the departmental level. Instead, you want real-time information feeding a central system. For many manufacturers, distributors, and retailers, this system is the corporate ERP. In the future, the Cloud will play an increasing role in storing and sharing data at many companies.

4. **Take advantage of big data and analytics.** Now that you've automated your data collection processes, you have real-time (or near real-time) operational data to feed your big data initiatives.

Now make that data work for you through the power of predictive analytics. Through data mining and pattern recognition tools, you can measure how agile and responsive your supply chain is and take steps to optimize it. Work with suppliers to create a collaborative trading network. Analytics have helped you better identify the mission-critical spots in your supply chain where a disruption could be devastating.

Now turn to supply chain visibility tools to gain complete visibility into your trading network. With help from your upstream suppliers, you will be able to have expanded visibility into many factors in your suppliers' production status, including whether your supplier has ordered raw materials, if they have been delivered, what their work-in-progress status is, any quality issues found during production, and more.[12]

# SUPPLY CHAIN VISIBILITY CASE STUDY: CRYOLIFE

**INDUSTRY:** Biomedical
**APPLICATION:** Consignment Inventory Management

## CHALLENGE

CryoLife is a global biomedical company that manufactures devices used in life-saving surgeries. The CryoLife sales force serves over 550 hospitals and surgical centers. They tracked consignment inventory using a paper-based process, but wanted a more automated, efficient and accurate system.

> *"It is common in the mechanical valve industry to maintain consignment inventory on-site in the hospitals and surgical centers. If your valve is not on the shelf, surgeons are going to grab another vendor's valve," said Tim Currie, the Manager of Information Technology at CryoLife.*

## SOLUTION

RFgen Mobile Foundations for SAP software is a suite of pre-written, SAP-certified data collection solutions that feature real-time, bi-directional information exchange with the SAP system. RFgen fully supports remote operations, including disconnected scenarios where data is preloaded onto the mobile device and transactions are exchanged with SAP software at a later time. This was important to CryoLife because sales reps often lacked connectivity inside the hospitals.

RFgen also enables development of online and offline Android®, iOS, and Windows® mobile apps and runs on any type of mobile device including consumer-grade devices. This was also important since CryoLife wanted to utilize Apple® iPhones® as a standard mobile device issued to their sales force for this purpose.

## RESULTS

RFgen made it possible for CryoLife sales reps to:

- Replace paper-based cycle counts with paperless mobile data collection.
- Conduct efficient cycle counts of consignment inventory in hospitals, in offline mode with automatic updating of SAP when connectivity is reestablished.
- Seamlessly transfer products from personal sample stock to surgical centers or other CryoLife sales reps.
- Easily download, setup, and activate the RFgen consignment inventory app on iOS mobile devices.
- Submit inventory photos and capture customer signatures in the field.
- Trace any serialized or lot-controlled product.
- Conduct cycle counts in English, French or German with the appropriate regional date formats.

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*"Sales reps often get into areas of the hospital where they cannot get onto Wi-Fi or their cell coverage does not penetrate the building. Therefore, we needed RFgen to work offline, and it does," Currie said.*

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# SEVEN CONSIDERATIONS
## FOR INVENTORY MANAGEMENT THROUGH MOBILE APPS

When you evaluate and compare mobile application development platforms for enhancing supply chain visibility, consider these seven areas of functionality:

1. **Validated connectivity/integration to your ERP system**—ensure that your mobile apps feature integration to your ERP that is validated by your ERP vendor. When it is time to update your ERP system, you can be confident that you will not break the connectivity of any mobile apps.

2. **Prebuilt suite of mobile apps**—save development time by choosing a solution with a set of prebuilt mobile apps that are easy to customize for your business workflows. To enhance supply chain visibility, focus on data collection solutions that include apps for the manufacturing shop floor, materials and finished goods warehouses, receiving dock, and shipping area.

3. **Device and OS agnostic**—the mobile data collection solution you select should enable you to develop a mobile app just once and deploy it to any type of mobile device. Although you want to use native applications to gain the most robust feature set, you'll also need a solution that works on any mobile OS.

4. **Off-network capabilities**—in some circumstances, your employees will need the ability to go off-network while continuing to use their mobile data collection devices. In challenging environments such as remote warehouses, cold storage, or facilities where Wi-Fi is restricted, your mobile apps must be able to continue collecting data and storing it on the device until connectivity can be re-established.

5. **Ability to collect data on connected machines**—while businesses leverage mobile devices like barcode scanners and tablets, there are also many other types of connected machines in industrial settings. From robots and connected forklifts in the warehouse to manufacturing equipment and advanced picking systems (pick-to-light, voice), you should be able to collect inventory and supply chain data and exchange the information with your ERP system.

6. **Integration with route planning**—if your business includes direct store delivery, route sales, or field maintenance as part of your operations, choose a solution that empowers efficient route planning with integrated mapping functionality.

7. **Support for geo-location and tagging**—if you need to track the physical location of items, such as shipping containers, choose a solution that enables geo-location and tagging to display locations based on GPS coordinates.

# CONCLUSION

The ultimate goal in supply chain visibility is to transform your supply chain operations for digital business, becoming part of a network of suppliers, partners, and customers—built on trust and transparency—that share supply chain information.

The currency of supply chain visibility is data, and the ability to collect operational data efficiently and in real time is tantamount to future supply chain success. Implementing mobile apps to collect data on any mobile device or connected machine and relay it to the ERP system is an important early step in establishing end-to-end inventory visibility for your supply chain.

As more manufacturers achieve digitalization and supply chain visibility becomes clearer, leading organizations will be able to increase their share of global e-commerce. Manufacturers with greater visibility will more easily leverage opportunities to create new products, strengthen supply chains, improve operational performance, open new markets/revenue streams, and pursue new manufacturing, distribution and/or logistics strategies.

# RFGEN SOFTWARE
## THE MOBILE SUPPLY CHAIN EXPERTS

*Improve your organization's inventory visibility with RFgen Software—* **one of the industry's most reliable and flexible mobile data collection solutions on the market today.**

RFgen Software helps organizations reduce supply chain implementation costs while increasing accuracy and efficiency with the industry's most reliable and flexible mobile data collection and digital supply chain solutions.

Enabling you to mobilize critical warehouse and supply chain workflows, RFgen helps keep your mobile workforce connected by providing real-time and on-demand access to enterprise data. Further, RFgen's Mobile Unity Platform™ enables you to simplify your process workflows and deliver easy-to-use and customized mobile apps that work on Windows, Android, and iOS devices like barcode scanners, tablets, handheld computers, and RFID systems, all while interacting real-time with your ERP system.

Offering on-premise, cloud, connected, and disconnected solutions, RFgen enables you to connect your ERP system to any mobile device, machine, or monitor. The RFgen Mobile Development Studio coupled with a suite of dozens of pre-built mobile applications gives you the ability to implement mobile data collection in a matter of weeks, not months.

Whether you are looking for solutions to automate your warehouse and better manage your inventory, comply with government regulations, ensure 24/7 warehouse operations, track and trace your products, voice-enable your warehouse, or manage your remote inventory, RFgen is the smart choice.

To learn more, please call us at 888-426-2286, or visit our website at **https://www.rfgen.com**.

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