

Viewlocity Whitepaper Series



RFID:
Challenges and Changes



Driving The Adaptive Supply Chain

RFID: Challenges and Changes

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Executive Summary

If you believe the proponents of RFID, it is going to be one of the biggest technology changes to roll through Consumer Packaged Goods and Retail. Pictures of smart supply chains that throw off enormous savings are being painted by standards groups, hardware vendors and consultants alike. The reality is that most companies can't see how to get to that vision with the capabilities that they have today - and the components of RFID don't address those missing capabilities that are needed.

The problem is that RFID is really just a way to achieve more granular visibility, and visibility is only half of what you need to get the benefits that RFID promises. 'Seeing' doesn't drive nearly as many benefits as 'doing'. In order to be able to move from just 'seeing' to actually acting on the information that visibility provides, you need new capabilities: real-time visibility, exception management, and supply chain resilience.

Real-time visibility provides a shared, synchronized view across multiple trading partners, real-time updates to that shared information, and the context to give that information meaning. Exception management provides the tools you need to identify the events within your supply chain that moves it off-plan - it provides you with the confidence to know that if it's not on your radar, then it doesn't need your attention. Supply chain resilience is achieved when your supply chain can automatically identify an exception, coordinate resolution, and execute that response throughout the supply chain. What it comes down to is, in order to really get the benefits of RFID, you don't need the readers and tags - you need these new capabilities within your extended Supply Chain.

There are four steps in getting to RFID. Step 1 is to tap into existing data in order to get better visibility today. Step 2 is to build on that visibility until you have achieved supply chain resilience. Step 3 is to evolve your processes by pursuing and resolving the root causes of exceptions that Step 2 helps you identify. Step 4 is to increase the granularity of visibility that you have through implementation of RFID.

The High Tech industry does serialized inventory tracking today - basically, RFID but without the readers and tags. In our case study, we present an example of how one computer manufacturer has already taken the first step towards the type of granularity that RFID provides, and is steadily working through the other three steps.

We conclude with some ideas on how to break this approach down into feasible projects that will get through today's budget committee environments.

Introduction

There have been relatively few technology breakthroughs that have rocked the world of Retail and CPG in the last several decades, but there is little doubt that Radio Frequency Identification, or RFID, will be counted as one of them. There's some irony here, considering that RFID as a technology has been around since World War II. However, its day as a consumer goods technology is coming, and when that day arrives, proponents say it will change not only the way manufacturers and retailers interact with their products, but also the way consumers handle them.

Someday, the story goes, your favorite soda can will come with an RFID tag on it, which uniquely identifies that particular can. In this future world, not far around the corner, having this tag on the can will mean that your refrigerator will tell you when it is running low on cans of your favorite soda. It will mean that you will never walk into a grocery or convenience store and not find your favorite soda in stock on the shelf. It will mean that the delivery truck that brought your can to the store will never lose a case of your soda. It will mean that, should there be the need, the manufacturer of your soda will be able to instantly identify and find cans of soda that were produced during a specific time at a specific manufacturing facility. And this will all make the cost of that can of soda much less than it is today - certainly enough less to justify the cost of individually labeling and tracking every unique can of soda (see sidebar #1).

1 RFID Promises A Lot

Benefits of RFID:

- Increased retail promotion effectiveness
- Increased availability of inventory at retail
- Decreased losses from theft
- Decreased inventory handling costs
- Decreased warehouse, distribution and transportation costs
- Improved customer service; real-time ATP
- Reduced write-offs; reduced waste
- Improved inventory turns
- Improved cash flow management
- Reduced slow-moving/absolute SKU's

Source: [*Focus on the Supply Chain: Applying Auto-ID with in the Distribution Center*](#), IBM Business Consulting Services, June 1, 2002.

This is the picture that various proponents of RFID are painting about the future of consumer goods and retailing. Counterfeiting will be reduced as manufacturers use RFID tags to uniquely identify the 'real thing'. Loss prevention will be reduced when smart shelves photograph 'grab and go' thieves as they pull large quantities of items off the shelf. And store stockers will operate more like warehouse employees, where handhelds will direct stockers to fill the next stockout or potential stockout - as the delivery truck backs into the dock with a delivery of the product that's needed. A synchronized, transparent supply chain, ensures that the right item - not just the right product - gets to the right place at the right time.

Sounds wonderful, doesn't it? Which makes it all the more frustrating when you look at what's going on at the back of a store today. Let's see. This box showed up without an Advanced Shipping Notice (ASN) from the distribution center, which means that it's going to have to sit over to the side until tomorrow morning. Sometimes ASN's show up a day or so late - we don't really know why. But it's a lot easier to wait for it than to try to manually receive the contents of that box. Over here is some back stock that has overflowed onto the receiving dock. The VMI vendor didn't know that we already have too much of the product at this store because they only get inventory updates weekly, and the forecast had apparently already called for another delivery. By the way, there's no one back here actually receiving anything, because they're all out on the floor - in the middle of sales hours - changing over a sales display that stocked out unexpectedly on Sunday. There might be more of the products that were in this display coming in on the next truck, but that won't be until Wednesday, and we won't know for sure until we unload it and see.

The fact is, today's world is so far away from that perfect world of the RFID future, that it's almost impossible to see how to get there. How, the question is inevitably asked, can I possibly manage the massive amounts of information that RFID promises to generate about my supply chain, when I can't even proactively manage the information that I get right now? It's all well and good to play with tags and readers in my warehouse, but how is that really going to change my ability to act on all this new information that I get?

Why this gap seems so large: missing capabilities

This gap seems so overwhelming because bridging it requires capabilities that most supply chains don't have today. The first step in identifying what those capabilities are is to understand what RFID really is - and what it isn't.

Read any explanation of RFID components, and you'll find a description of electronic product codes, active and passive tags, readers that operate at different frequencies, and a hint of software that helps manage all of the inputs that a reader collects. And that's where the description stops. Your planning systems are ready to tell you where the item should be, and your executional systems - once the item is in your possession - are ready to move it there, but there's no system that can tell you if the item is where it's supposed to be right now, or if anything might threaten getting it there (see sidebar #2).

RFID is simply an automated way to capture information about an item. Being able to eliminate the human interface - scanning a barcode, keying a number - means that you can capture a lot more information about an item a lot faster. Instead of just tracking a pallet or a case, it becomes feasible to track every unique item. At its most basic, this capability is really supply chain visibility - at an extremely granular level.

The real question is, why would you want to know every single move that an item makes, all the way from manufacture to consumption? And the simple answer is, you don't. Visibility, even at this most granular level, only gets you halfway there. How do you distinguish which moves are important and which ones aren't? Or, even worse, how are you going to find, in this data tidal wave of item moves, the item that didn't move but should have?

So What is Really Needed ?

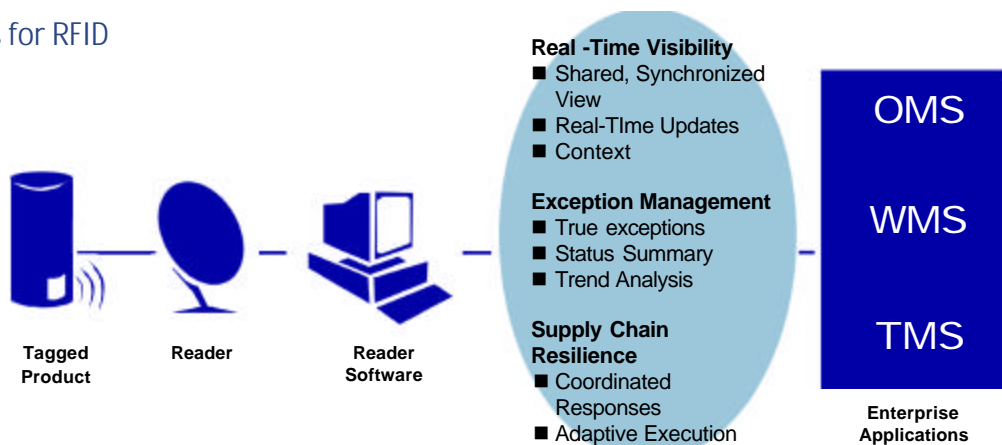
RFID promises a sleeker, faster, more synchronized supply chain. Part of the promise of RFID that will enable this is something very basic: visibility. The ability to rapidly collect accurate, real-time data about where items are in a supply chain makes it easier to share that information - which makes it possible to reduce the variability caused by that classic Bullwhip Effect. You are able to trade inventory hedges for better information. But here's where the benefits of RFID start to get a little vague: knowing where product is helps, but it's half of what you really need. It's only worthwhile knowing when a product is not where it's supposed to be if you have the capability to do something about it. For example, if a store gets a box before the ASN, a reader might indeed tell them what exactly is in the box - but it won't really help the store, if the only way to receive a shipment is against the ASN. What it comes down to is, in order to really get the benefits of RFID, you don't need the readers and the tags - first you need some new capabilities within your supply chain: real-time visibility, exception management, and supply chain resilience (see sidebar # 3).

2 Components of RFID

Auto-ID Components	Brief Description
Electronic Product Code(ePC)	Unique identity for each product; has company, product group and serial number.
Tag	Stores the ePC; is attached to every product; cost should be at five cents.
Reader	Detects a tag and there fore the product.
Physical Markup Language(PML)	Language that describes all information that can be associated to a product.
Object Name Services (ONS)	Service in the Internet that maps the ePC to the location in the Internet where the PML data is stored.
Savant	Software that controls the reader; API for applications that uses Auto-ID technology, e.g. theft detection application.

Source: M-Lab working paper No 3 Version 1.0 " Auto-ID Technology: MIT's Approach to Standardize Product Identification" 11/2/02, Thomas Schoch

3 New Capabilities for RFID



Real-Time Visibility

Real-time visibility consists of three components: a shared, synchronized view of information across multiple trading partners; real-time updates to that shared information; and the context to give that information meaning.

A shared view across trading partners sounds simple, but it can actually be a challenging proposition. Every trading partner has already invested in the systems that they use to manage their internal activities. And each set of systems has been implemented in a different way to support the different trading partners' business models. Replacing all of these systems with one application that reaches across all trading partners is completely unrealistic - especially when the most valuable information is the most distributed. Extending any one of the systems to be shared by all trading partners is extremely challenging, because these systems have all been designed to manage the activities of one company, not coordinate the activities of several. For example, an order is never just an 'order'. For the retailer, it might be a purchase order. This PO might generate a sales order and multiple work orders within a manufacturer, who uses a purchase order to procure goods from its suppliers.

There are additional concerns that a shared, synchronized view generates: Who will administer the community of users? How will the trading community ensure that competitors don't get access to sensitive information about each other? Who is responsible for the quality of the data that this shared view provides? These questions are often difficult to answer when providing increased visibility internally, let alone the challenge that external integration can bring.

Once you have achieved a shared view of information across your extended supply chain, the next challenge is making sure that this information stays synchronized. 'Real-time' information sounds great - but the information is only as good as the weakest link in the chain. It may seem like a real-time internet world out there today, but the reality is that 'real-time' is a high-sheen gloss that has been painted over a patchwork of legacy systems, database platforms, batch processes, and for companies operating globally, low-tech suppliers and unreliable networks.

Making sense out of random updates coming from multiple sources is a critical part of having a synchronized view that is also reliable. Which leads to the third component of real-time visibility: context. Visibility is not just about knowing where a product is. It is bringing together the history of where it has been and the plan for where it is supposed to be. In this way, real-time visibility is the first step towards bridging the gap between planning and execution. This helps the trading community rapidly sort between the things that are on track - and the things that are not.

Exception Management

Exception management is one of the most fundamental capabilities for enabling RFID. How many SKU's does your company maintain? Now multiply that by the yearly unit volume for each SKU. That is the new minimum number of transactional data points that your company will have to manage, should you tag every item. Now multiply that by the number of trading partners who touch each item. The volumes of data are staggering - and the only way to manage such volumes is by exception.

The challenge of exception management is a cultural one. It's not easy to move an organization from a 'plan and re-plan - and put out fires' environment to a true exception management mindset. It's not about designing new reports. It's about having the confidence that never mind it's going according to plan. That kind of confidence can only come with real-time visibility and careful regard given to the kinds of exceptions that you want to manage. Deciding which kinds of exceptions need to be elevated above the 'noise' of everyday operations can be a trial-and-error process, as you learn that some things you thought were 'exceptional' actually happen every day - several times a day. So one critical part of exception management is the flexibility to define what should be considered 'exceptional'.

This means flexibility in turning 'on' or turning 'off' exception rules, as well as the flexibility within those rules to define tolerances: when is a shipment truly late - when it's two hours late? Two days?

The other critical element to exception management is defining the processes that your company will use to resolve certain kinds of exceptions. This is important for two reasons - one, there's little point in identifying an exception if you don't have the capability to do something about it. For example, finding out about an inventory stockout doesn't help you much if it's still going to take five days to get the next shipment into the store no matter who you call or how loudly you yell about it. And two, you don't want to destroy all of your existing process controls to enable problem resolution, allowing anyone to take drastic means to solve any problem. Just because there's a stockout doesn't mean that a costly expedite is needed, for example.

Supply Chain Resilience

Going through the process of building an exception management culture will drive your company towards what you really need in order to take advantage of RFID: supply chain resilience. This resilience is driven by Adaptive Execution capability, or the ability to automate responses to exceptions. When you can dynamically re-allocate inventory that is already in motion, when your planning window is frozen for a day instead of a week or a month, when your extended supply chain can correct an exception within two hours of the notification, then you have achieved a truly resilient supply chain - and one that is ideally suited for the introduction of RFID.

So how do you get there ?

There are currently two schools of thought for getting to RFID. The first is based on the standard advice for undertaking almost any kind of supply chain transformation - 'get your own house in order first' and then work on building external integration points and sharing information with your trading partners. The reality is, if you take this approach you will never achieve your objective. Internal capabilities are a moving target. As soon as you get one set of systems integrated and communicating, one of the applications gets replaced or upgraded, or a whole new set of applications get layered on top - and you've got to start over.

The second school of thought advises that you go out and buy a bunch of tags and readers, and start playing with the technology. There are certainly some legitimate early opportunities for RFID: counterfeiting of high-dollar products, theft and shoplifting of attractive targets, etc. But while these opportunities might have the business case to support their limited implementations, it's difficult to extend those benefits into core business operations like the basic management of the movement of merchandise into stores.

The problem is that most companies are not making the most of the information that is available within their extended supply chains today. Very few have achieved basic visibility, and fewer still have gotten far down the path of building a resilient supply chain. Pursuing the granular visibility that RFID provides in this kind of environment provides very little immediate value, and can actually distract companies from organizing themselves to successfully pursue RFID in the long term.

RFID is about collecting real-time information about activities in the supply chain. In order to get value from that information, you need to have the ability to flexibly respond to exceptions identified within that information. And neither of the approaches outlined above will get you there.

What will get you there are the four incremental steps of visibility, supply chain resilience, process evolution, and finally the end goal: item-level visibility (see figure #4).

4 Four Steps to RFID

Step 1

Visibility Today

- Tap into existing data Sources
- Internal & External Sources

Step 2

Supply Chain Resilience

- Exception resolution
- Adaptive execution
- Internal & External Sources

Step 3

Evolve Your Processes

- Root cause analysis
- Process improvement
- Increasing flexibility

Step 4

Increase Granularity

- Efficiency driven
- Accuracy driven
- RFID data Collection

Step 1: Tap into Existing Data - Visibility Today

Very few companies already tap into all of the supply chain information that is available to them today and bring it together into a synchronized view that is shared with trading partners. Visibility is not just about reaching into the internal planning and execution systems within your company, it also brings together the silos of information that reside within the multiple trading partners that your company does business with. This is important because much of the information about an item does not reside solely within your company's internal systems. For example, in order for a retailer to be able to reduce the safety stock that sits in a store's back room, they need to be able to see when the supplier is going to ship the product, and they need to know - with a fair degree of reliability - how long it will take to get there. These are not pieces of information that traditional planning and execution systems are designed to handle. The retailer additionally needs to know when the product actually left the supplier, and they need to know immediately if there are any delays that occur along the way. At the same time, the supplier needs to be able to see how fast the product is moving off the shelf, as well as how much inventory the retailer has - and where it is in the retailer's distribution network.

Step 2: Build Supply Chain Resilience

Supply chain resilience comes from being able to act on the information that visibility provides. And because you are tapping into many more information sources than you ever had before, the only realistic way to manage this information is by exception.

Exception management can occur at three different levels. At the first level, users are alerted to specific events that cause exceptions to occur. For example, a supplier does not acknowledge, within a specified timeframe, that a new order has been received. Normally, this might result in 'the ball being dropped' - no one at the supplier realized that the order had been placed, and no one at the supplier's customer realized that the order was never received. In a retail world, the number of orders generated each week can easily run into the thousands. This kind of exception might not be discovered until the order didn't arrive when it was expected - unless the entire order life cycle between the supplier and the customer was being monitored for exceptions.

At the second level, exception management allows for summary level monitoring of status in the supply chain. This summary status could apply to inventory, shipments, and/or orders. Summary status enables users to gain a big picture view of the activities within the supply chain. For example, a status summary of orders might indicate - as of right now - how many new orders have been created but not acknowledged by suppliers, how many orders have been acknowledged by suppliers but not shipped, how many orders have been shipped but not received, etc. Within that summary, various levels of status can be communicated and managed. For example, for all orders that have been acknowledged but not shipped by suppliers, some percentage of those are quickly approaching their cancel date, and some are relatively new. Exception management provides a way to rapidly identify those orders that need attention - even before true exceptions, like a missed ship date, are generated.

Finally, the third level of exception management provides an even bigger picture by looking at supply chain activities over time. Because exception management monitors extended supply chain activities, new metrics and trends can be captured and analyzed - trends that give you a much deeper insight into the performance of your supply chain processes. Metrics such as actual order and shipment lead times are enhanced by trends around exception type and resolution cycle time, for example, reported by supplier, by carrier, or by transportation lane. This gives you the ability to not only identify which exceptions cause disruptions, but also what the root causes of those exceptions really are. In this way, you are building a knowledge base for improving processes by eliminating the problems that cause exceptions in the first place. For example, shipments from a supplier to a retailer might always be received late - but who is really causing the late receipt? Exception management trend analysis can easily identify the sources of the exception and provide an analysis of the impact of that continued exception. This provides you with the information and leverage you need to get the retailer to change their receiving process or justify changing carriers.

As exception management becomes a standard practice within your company, you will find that you go through the same process for resolving certain exceptions every time. In those cases, the next step in exception management is to implement some exception process automation through Adaptive Execution. Adaptive Execution provides workflow guidance that can be used to ensure that users only consider appropriate responses to an exception, by providing them with a list of options and walking them through the steps that will execute that resolution. It can also be used to completely automate an exception response, eliminating the need for any individual to touch the process. For example, for any order with inventory that is going to be promoted in the store, if it is delayed at the DC, it should always be expedited to reach the store on time. Adaptive Execution identifies the exception, and then reaches back into the underlying execution systems to coordinate the resolution - perhaps notifying a user that this kind of exception occurred and identifying the action that was taken to resolve it.

Step 3: Evolve Your Processes

Two things happen when a company has fully implemented exception management. First, you find that the exceptions that you want to know about change over time. Where you might have originally wanted to know about stockouts, for example, you may have now found that the root cause of this exception is really that the inventory sits at the back of the store for too long without getting received. So now you actually want to know if a shipment has been delivered to a store but has not been received within a specified time frame. By acting on this exception, the original one on stockouts has been prevented.

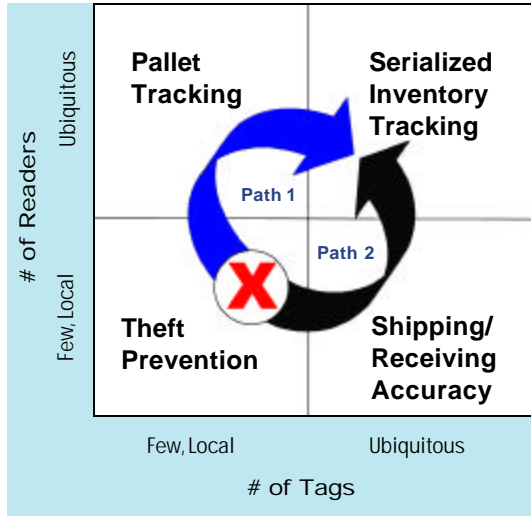
The second thing that happens is that your company gets better and better at quickly resolving exceptions. Some of this improvement comes because the number of exceptions has been reduced while experience at resolving each kind of exception increases, but some of it comes because you have grown comfortable enough with some resolution processes that you have started to automate them using Adaptive Execution.

Exceptions will never be truly eliminated, even with the attention and focus that exception management brings. However, your organization's ability - and that of your trading partners - to respond to and resolve exceptions will increase tremendously. You will have built a resilient supply chain - one that can rapidly identify and respond to disruptions. This is the foundation that you need in order to get the real value out of RFID.

Step 4: Increase Your Granularity

Now that you have the capability to manage your supply chain in real-time at a shipment or order level, the time has come to start increasing that granularity down to the item level. Proponents of RFID have been challenged to make a case for implementation beyond limited, high-value opportunities like counterfeiting and theft prevention.

5 Two Paths to RFID



The problem is that RFID must attack two challenges simultaneously in order to achieve widespread adoption: tagging every item, and having readers at the key places in every location to read the tags. This means that there are two primary paths possible in implementing RFID (see figure #5).

The first path is basically an efficiency path: where the expected benefits from RFID will come primarily from reduced handling or faster movement of goods. This would in part be driven by ease of installation of readers and relatively high costs for tagging. Pallet tracking would be a good example of this. The argument for this approach says that as the price of the tag drops, the granularity will also increase - it will become cheaper and easier to move from tagging pallets to tagging boxes or cases, and finally items. The case can be made that the CPG industry will likely follow this path, as they stand to benefit the most from pallet and case-level tagging of items.

The second path is an accuracy path: where the expected benefits from RFID will come primarily from reducing the impact of errors. This path would be driven by low cost tags accompanied by expensive readers. For example, if in-store visibility truly requires all new fixtures, networks, and computer hardware in order to be viable, it is highly likely that the first real application of RFID in stores will come to the specific places where accuracy is critical - receiving, or point of sale, for example. And as this example indicates, this path is probably most attractive to retailers, who must face the 'store multiplier' effect of any hardware implementation.

However, right now, RFID is still in its infancy. It is not readily clear which component of RFID infrastructure will be the most expensive or the most difficult to implement, because both readers and tags are currently expensive propositions. A resilient supply chain capability will help you make the most of the RFID opportunity, because it is through this capability that you will be able to identify the benefits to be gained from RFID.

If your supply chain is generating a lot of cycle-time and lead-time exceptions, then it will become immediately apparent that the efficiency path is the most attractive value opportunity. If your supply chain is generating a lot of accuracy exceptions - item shortages or substitutions, for example - then the accuracy path will yield the most value. Instead of the falling price of tags or readers, it will be the pursuit of root cause analysis that will drive RFID adoption: the need for greater visibility, and more granular levels of visibility, in order to identify and resolve the root causes of exceptions.

Case Study: Serialized Inventory Tracking With No Tags

In the High Tech industry, serialized inventory tracking is a regular occurrence. Your computer, for example, has a unique serial number, along with the monitor, the hard drive, the CD-ROM drive, and most of the other components in that computer. But you won't find an RFID tag on any of them. So how does that industry make use of serialized inventory tracking today? Here's one example.

Within a Global Computer Manufacturer, a division called the Service and Repair Organization (SRO) manages the service and repair business in support of the installed base of customers. When a customer's computer breaks down, Customer Service identifies the problem, and in the cases where a repair is needed, SRO works to resolve it. They track every serial number on the major components within every computer that they support. When a part fails and is replaced, it goes through a testing and repair cycle that will often result in the part being refurbished and added back in to replacement part inventory. But in order to make sure that perpetually bad parts don't keep finding their way into customers' computers, SRO has a 'three strikes and you're out' policy: if a part is repaired and fails three times - even for unrelated causes - then the part must be destroyed. What makes this extremely difficult to manage is that responsibility for repairing the part rests with the part's manufacturer, not SRO.

SRO was responsible for managing a process that included sending the repair order from Customer Service to the Service Parts distribution center, shipping the required replacement parts out to the customer, and then receiving the bad parts into the Testing and Engineering Center, where the bad parts would be tested for any needed changes to engineering and design specifications. The tested parts would then accumulate at the Testing Center, until a pallet could be filled, and then they were sent on to the Supplier for repair and refurbishment before being sent back to the Service Parts DC to be made available as replacement inventory.

The cycle time associated with this process - from notification of a bad part through Supplier disposition and credit - took over sixty days, and involved four separate product moves through three different inventory locations.

This meant that SRO had to keep a substantial amount of service parts inventory on hand in order to be able to meet their service level commitments, while still tracking each individual serial number in order to make sure that no part looped through this process more than three times.

SRO wanted to move to a more direct model, where each Supplier would take responsibility for the repair process for their own components, but they didn't have the confidence that their Suppliers would be able to take on that process without endangering the service levels that SRO had promised their customers. In order for this model to work, SRO needed:

- Visibility into the Supplier's parts inventory and testing processes
- Visibility into every step a service part took in its lifetime, down to the serial number level
- Exception management and proactive notification of disruptions in the process

SRO needed item-level visibility in order to be able to identify how many times a part had been refurbished. And they needed exception management so that they could proactively respond to disruptions to ensure that the end customer's needs were met within the service level.

The powerful combination of visibility and exception management have enabled this Manufacturer to cut that sixty day cycle time in half, and still move from a 96% service level to a 99.9% rate - in fact, at one Supplier as of this writing, not a single replacement order has been missed since implementation. And the Manufacturer was not the only company to benefit. The first Supplier to implement has shared in the benefits of collapsing four product moves and three inventory locations into two product moves and one inventory location. Additionally, visibility into the testing process has cut that process cycle time for the Supplier from thirty days down to five.

All of these benefits have come, not from readers and tags - although this inventory is tracked at the item level - but from the visibility, coordination, and control that event management brings. This Manufacturer has implemented the first two steps of RFID: they have extended supply chain visibility, and they have exception management to enable them to retain control over the process, even though they no longer own it. And they are rapidly moving on to the third step - a few of the exceptions that they monitor for have Adaptive Execution workflows tied to the resolution.

Once they build supply chain resilience, could they benefit from RFID? Certainly. In fact, the next step-level improvement may well come from the increased efficiency in handling and identifying individual parts in an automated way. The point is, that benefit will come only after they have already gained the benefits and developed the capabilities to operate in a real-time environment with the granularity that they can achieve today.

Conclusion: what does this mean to you?

You don't track inventory at the item level today, so what does all this really mean to you? It means that if you want to start getting into RFID, if you want the benefits that RFID can provide, then you don't need to wait for the cost of tags to go down - you don't need tags at all. There are things that you can do today, with the information that your supply chain generates right now.

In today's environment, major supply chain transformations often don't make it through the budget committee, and even if they do, have the energy or attention span to implement them. Therefore, it is important to identify small opportunities that can become capability building blocks over time - opportunities with business cases that get approved, and also rapidly deliver enough value to fund the next opportunity.

These small opportunities will have some common characteristics: they will involve processes that touch multiple trading partners, or even multiple silo's within your company. They will be primarily visibility problems, they will involve multiple systems. Examples include VMI, inbound logistics, and Efficient Customer Response or fulfillment/replenishment processes.

Once you have identified a specific problem to solve, begin your evaluation of applications that provide the capabilities you need. There is a bewildering range of vendors out there right now, each with a different mix of capabilities. But given that your end goal is granular visibility built on top of supply chain resiliency, there are some basic questions to ask:

- How well does the solution acquire data? How easily will it integrate with my systems and information feeds from my trading partners?
- How well does the solution manage data integrity challenges?
- How easily does the solution facilitate management of the trading community?
- How well does the solution manage the different information needs of the different trading community members?
- Can the solution be easily personalized - at the role level or the user level?
- What tools does the solution provide to manage exceptions?
- How well does the solution automate resolution processes?
- How well will the solution scale with my growing data volumes?

These questions are a starting point for weeding out those vendors that provide exception management only as an extension to their core capabilities, like transportation or order management. These vendors might resolve the small opportunity that you are addressing today, but they can't grow to offer the additional capabilities you need to manage the full extent of your supply chain - across orders, inventory, shipments, and forecasts. These questions will also help you eliminate vendors that only offer a basic toolset around alerting - leaving you to build the capabilities you need to give context to the information you want to bring together, and leaving you stranded when the volumes of data you want to monitor grow over time.

In the end, RFID is about visibility - but the value to be gained from visibility doesn't come from 'seeing', it comes from 'doing'. And 'doing' is only possible when you have the supply chain resilience to identify and respond to the exceptions that occur in your supply chain. The steps to get to RFID - visibility today, supply chain resilience, process evolution, and granularity - are feasible without tags and readers, as actions being taken today in the High Tech industry show. The first step is a small one - identify a visibility problem that you have right now - and solving it will provide you with the foundation you need to start building the end capabilities that you are shooting for.

About Viewlocity

Viewlocity, Inc., is the leader in providing Adaptive Supply Chain Management solutions. Our solutions enable companies to operate their extended supply chains more efficiently and reach their customers more effectively, by providing a single platform for managing the processes, interactions, and transactions that are the everyday reality of operating an extended supply chain. This platform enables companies to reduce inventory levels, transportation costs, material handling costs, and increase inventory availability and improve customer service by bridging the gap between planning and execution while managing the constant flow of events and exceptions that are the inhibitors to supply chain optimization.

Adaptive Supply Chain Management is:

Visibility - Visibility is enabled across the entire end-to-end supply chain, not by implementing one enormous application across all of trading partners, but by tapping into the distributed, disparate systems that all of these trading partners already have and use in their day-to-day, four-walls activities. We put this information into context by relating the different pieces of information to each other: inventory, orders, shipments, and forecasts. This provides every participant with a shared, synchronized view of the current status of the supply chain that is updated in real-time.

Supply Chain Event Management (SCEM)- Because Visibility generates much more information than any one company has ever had available to them before, we also provide the ability to manage this information by exception. Our event management solutions monitor the activities in the extended supply chain, generate alerts, and notify impacted parties when exceptions or disruptions occur. Exceptions can occur at two levels: first, exceptions are changes in conditions that threaten the extended supply chain's ability to execute against the plan. Second, exceptions are changes in the assumptions on which the plan was originally based. Being able to distinguish between these two types of exceptions gives companies the ability to respond either by correcting the exception and putting the plan back on track, or re-planning altogether, based on the most current conditions that exist in the supply chain.

This isn't about exception reporting - that is still a rear-view mirror picture. This is giving people the absolute confidence that, if it's not on their radar screen, then it's not a problem.

Adaptive Execution - Adaptive Execution greatly reduces the time to the most appropriate response to an exception. Being able to identify potential problems in the supply chain much earlier than before typically creates many more options for solving the problem. The Adaptive Execution components to Viewlocity's solutions rapidly identify the potential actions for recovery, estimate the cost and time for each option, and present the user with the results. Potential responses encompass three categories: changing execution in order to get the plan back on track, re-planning for only the impacted area or process, or re-planning for the entire supply chain, based on the most current conditions.

Adaptive Planning - Adaptive Planning consists of a set of optimization engines that seek to optimize processes and plans that cross trading partner boundaries, such as inbound logistics or order planning. These solutions utilize a broader set of decision criteria and fewer constraints, allowing them to drive to more profitable plans that are better synchronized across the extended supply chain.

For more information about Viewlocity, visit us at www.viewlocity.com or contact us at **877-512-8900**.



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