

**MEDICAL DEVICE INDUSTRY PERSPECTIVE:  
ACHIEVING SERVICE LEVEL AVAILABILITY AND  
INVENTORY EFFICIENCY USING IOT TECHNOLOGY**



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## INTRODUCTION

The medical device market is one of the biggest industries in healthcare, with a current global market size of over \$389 billion dollars, with growth estimated at over 28% by 2020. As the industry continues to see unprecedented growth, medical device manufacturers are confronted with mounting pressures and challenges related to operating efficiency, product availability, costs, logistics, and patient outcomes. Furthermore, losses from expired and obsolete products are commonplace, estimated between \$2.8 to \$5 billion per year. Plus, with more to lose in healthcare, it is critical to adopt a real-time, automated, accurate inventory tracking process. There continues to be strong demand on the industry for optimized tracking and automated processes as it relates to supply chain management, forcing the industry to design out inefficiency.

While many solutions exist for managing inventory, a fully connected smart inventory management system using Internet of Things (IoT) technology presents the most proactive solution for automating inventory management. Connecting assets using IoT technology offers medical device manufacturers real-time information throughout the supply chain. Many medical device organizations are turning to IoT technology to solve complex supply chain and logistics problems.

## INDUSTRY UPDATE: WHAT IS DRIVING THE NEED FOR CHANGE IN SUPPLY CHAIN MANAGEMENT WITHIN THE MEDICAL DEVICE INDUSTRY?

Amidst regulatory changes and healthcare uncertainty, medical device organizations are finding themselves with mounting inefficient inventory management processes.

The following are trends that are driving the need for change in how medical device organizations manage inventory



### INCOME SHEET VS. BALANCE SHEET

For the past several years medical device companies have put priority on top line revenue growth over balance sheet optimization. In many cases, providing vendor managed or consigned inventory are required to capture market share from competition - *as long as the revenue is growing we can live with increased inventory levels*. As interest rates have been historically low for the past several years the “cost of capital” tied up in inventory has been manageable. As interest rates increase, inventory carrying costs will become more expensive and drive the need to lower inventory levels.



### MERGERS & ACQUISITIONS

Recently, the medical device industry has seen numerous mergers and acquisitions. Ideally, the merging companies would quickly work to eliminate duplicate products (SKUs). Unfortunately these “synergies” have not been recognized as quickly as planned in many cases, leading to compounding inventory management problems including obsolescence.



### LACK OF VISIBILITY

The most common challenge in today’s healthcare supply chain is a lack of visibility to important assets including high value inventory. To compensate for the lack of visibility, inventory levels are increasing to ensure product availability to a growing number of distribution points is not compromised.



### INVENTORY LEVELS PRECEDE REVENUE

When growing revenue and market share, medical device companies have to build up inventory in advance of new revenue. The physicians they are selling to need assurances that the product they will be using will be at the right place at the right time. Once the medical device company has some historical purchasing data from the healthcare provider they can optimize the inventory leading to reduced inventory levels. However, in many cases, this optimization never happens.



### INCREASED DEMAND FOR CONSIGNED INVENTORY

Healthcare providers are demanding that medical device suppliers provide consigned inventory to pass the challenge of inventory management to these companies. Without proper controls and visibility, consigned inventory is difficult to manage leading to lost usage (charge capture), overstocking, increased expiration write-offs, and increased risk of failing to meet regulatory specifications.



### EXPANDING DISTRIBUTION POINTS

As the demand for healthcare services increases across the country these services are being provided at more locations. Ambulatory surgery centers (ASCs) are becoming increasingly popular to provide outpatient services. Medical devices and supplies need to be provided to a growing number of distribution points which puts added pressure on an already complex supply chain.

There is a need stemming from healthcare organizations to increase efficiency and meet margin pressures. Healthcare organizations are prioritizing cost control, efficiency, and support from suppliers as they look for ways to control costs and increase value-based outcomes. In a study of U.S. hospitals conducted by UPS, 78% of respondents said that controlling supply chain and logistics costs are a top priority over the next three years. 25% of hospitals are not currently satisfied with their product supplier, and “poor inventory management, physician preference items, lack of good data, lack of standardization, and inefficient practices all contribute to a system that is costly, ineffective, and a potential area of savings” for healthcare organizations. (*UPS Healthcare Supply Chain Vital Signs Survey, 2017*).

## THE CURRENT LANDSCAPE IS NOT SUSTAINABLE

As it stands today, many medical device manufacturers have developed complex and manual supply chain distribution models. However, as the data shows, healthcare organizations are looking for medical device manufacturers who provide operational efficiency and real-time visibility that can mitigate supply chain costs. Based on survey analysis of 33 medical device companies performed by Health Industry Advisor, LLC., the current state of medical device supply chains can be measured using four key metrics:

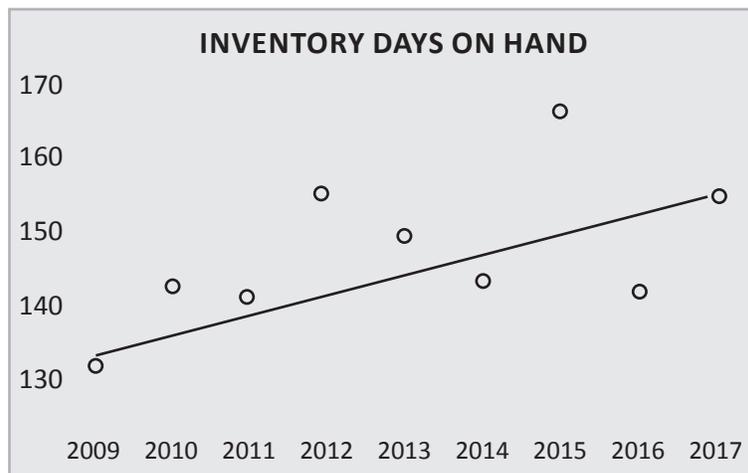
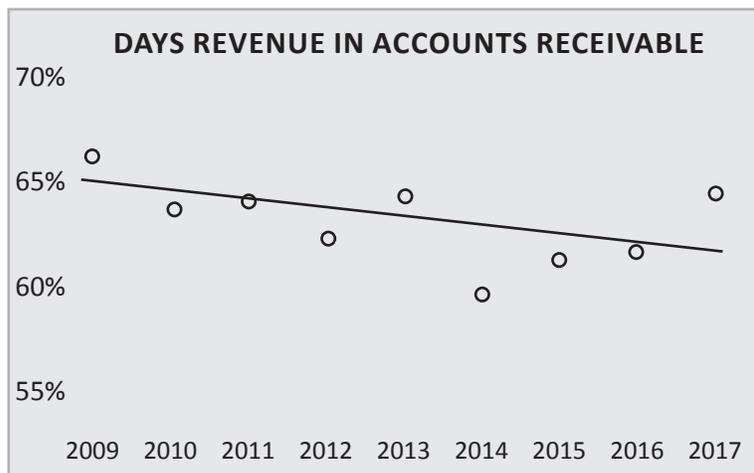
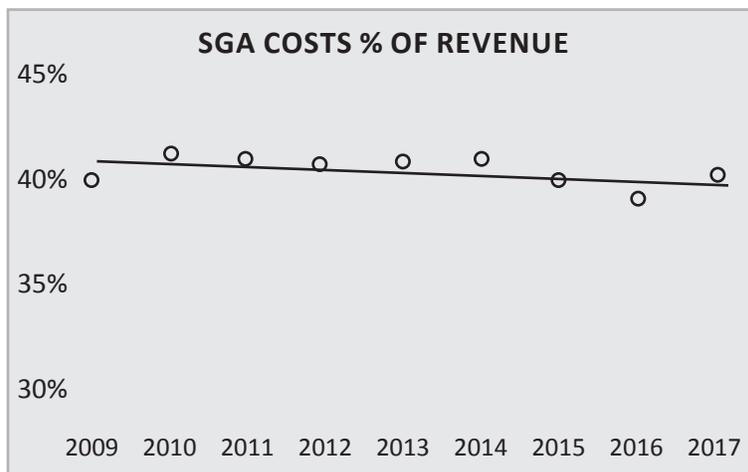
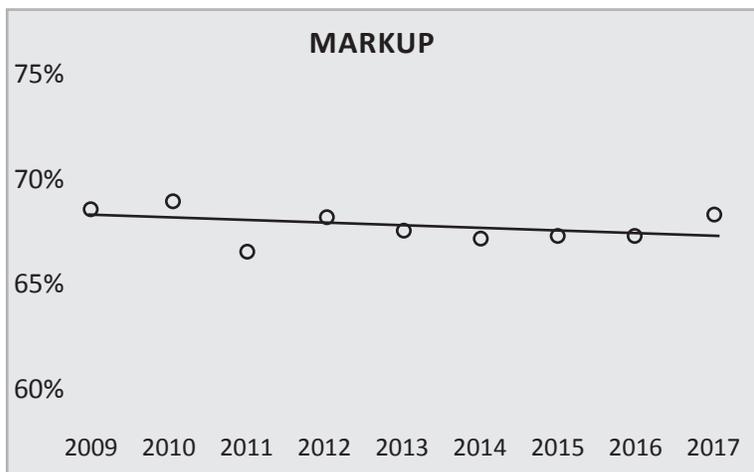
**Markup Percentage:** *Mark-up on product cost*

**Sales, General, and Administrative (SGA) Costs Percentage of Revenue:** *Operational efficiency*

**Days Revenue in Accounts Receivable:** *Lever to offset pricing and margin pressure*

**Inventory Days on Hand**

The hypothesis is that lower values are representative of a better or improving supply chain.



Although markups, SGA costs, and days in revenue are all trending downward, inventory days on hand continues to rise. With an average of 155 days of inventory on hand in 2017, it is clear that the medical device industry needs to take a closer look at how to better control inventory and supply chain processes. Comparatively, a look at “best-in-class” supply chain companies include Amazon with an average of 52.3 days of inventory on hand, with a growth rate of 1 day per year. As well as Apple, with only 12.6 days of inventory on hand and Walmart with 42.8 days on hand with a growth of only .3 days per year. This compares to an annual growth rate of 9.7 days of inventory on hand by one large medical device company.

If you lack the visibility into distributed inventory, you end up supporting that with extra resources, resulting in overstocking, lagging revenue, and a plethora of other business problems. The first step is recognizing that there is a problem and a need for change.

### **OPPORTUNITY FOR MEDICAL DEVICE ORGANIZATIONS: DIFFERENTIATION THROUGH IMPROVED SUPPLY CHAIN MANAGEMENT SOLUTIONS**

Now is the time for medical device organizations to seek out and implement smart, automated supply chain processes as the healthcare industry shifts to reduce spending and make services more accessible and affordable. This is achievable when both the commercial and operational side of the business see the benefit of adopting an IoT solution, and can begin adding optimized processes to the supply chain.

The importance of having the right inventory at the right place at the right time is no longer just a “nice-to-have”, but a necessity. As the saying goes, you cannot manage what you cannot see, and real-time visibility into inventory status is crucial. As innovation grows, we are finding a myriad of applications for medical device manufacturers to utilize IoT technologies to solve complex inventory management problems.

**With IoT technologies, such as RFID (radio frequency identification), it becomes possible for medical device organizations to achieve both service level availability and inventory efficiency.**

### **THE ANSWER IS VISIBILITY: A REAL-TIME HEALTHCARE SYSTEM USING IoT AND RFID TECHNOLOGY**

Implementing an IoT solution will improve supply chain processes. The significance is not only in the enabling technology, but in the value of the data it collects. Providing smart information allows organizations to make proactive decisions that benefit both the bottom line and inventory levels. As financial and societal demands on healthcare increase, the way inventory is managed needs to become more digital and streamlined and possess sophisticated situational awareness and operational intelligence.

This is known as the real-time healthcare system (RTHS). The RTHS disrupts the classic care delivery model and senses the need for change in workflows and business processes. It eliminates waste and latency inherent in many manual processes. While this is happening, IoT technologies are gaining visibility and adoption in the medical field. This represents a huge opportunity for medical device organizations to increase the quality of information they have surrounding inventory and consumer trends while simultaneously improving operations.

#### **THE MARKET IS EVOLVING. ARE YOU?**

- Trends that are driving market evolution:
- + Lessons learned from retail RFID adoption
  - + Open architecture based on standards
  - + Cloud-based data sharing
  - + Multi-echelon and inventory optimization
  - + Lower technology costs
  - + Multiple solution options
  - + Global growth
  - + Transparency in supply chain
  - + High margins
  - + Consumerism

## MEDICAL DEVICE ORGANIZATIONS ARE STARTING TO ADOPT IoT TECHNOLOGIES: *THE CASE FOR RFID*

The good news is that healthcare organizations and medical device organizations are seeing the value in real-time inventory management systems and beginning to adopt IoT technologies.

According to a recent report, nearly 60% of healthcare organizations are planning on or currently implementing an IoT solution

The Internet of Things is poised to revolutionize the entire medical device industry. As organizations adopt smart sensing technologies, such as RFID, the seemingly endless use cases become even more apparent. UHF RFID (RAIN RFID) in healthcare is also growing rapidly. It is estimated that the global market for RAIN RFID in healthcare in 2012 was \$1.1 billion, and expected to grow to \$3.3 billion in 2018, with approximately 100 billion RAIN RFID tags in circulation by 2020.

RAIN RFID technology provides real-time visibility of all inventory within a medical device organization's supply chain, and tracks chain of custody from point of manufacture to point of use. Products like Terso Solutions' RFID-enabled enclosures and mobile devices collect valuable data about assets and ensure real-time visibility of inventory. Data can be integrated into ERP, inventory management, EHS, and BI systems. This ensures products are in the right place at the right time, which means medical device organizations can guarantee product availability at all times as well as maintain an efficient inventory stock, both on consignment and in the field.



We are excited to see the advancement of IoT technology and RAIN RFID for use in the medical device industry.

### ABOUT TERSO SOLUTIONS, INC.



Terso Solutions, Inc. is the leading provider of automated inventory management solutions for tracking high-value medical and scientific products in healthcare and life science. Terso Solutions is backed by 14 years of RFID product development and implementation experience. Our product line includes RAIN RFID cabinets, refrigerators, freezers (-80C to -20C), smart rooms, and mobile solutions. Terso has deployed over 2,100 RAIN RFID-enabled sensors worldwide. Headquartered in Madison, WI, Terso Solutions is a wholly-owned subsidiary of Promega Corporation. Additional information is available at [www.tersosolutions.com](http://www.tersosolutions.com).

### ABOUT HEALTH INDUSTRY ADVISOR, LLC.



Health Industry Advisor LLC is a sole member LLC, supporting professional activities in governance and advisory service to middle market medical device, technology, and service companies in the health care industry. Services include: board governance, strategy, market intelligence, and supply chain. Additional information at [www.healthindustryadvisor.com](http://www.healthindustryadvisor.com)