

HEALTHCARE INDUSTRY VISION: SMART INVENTORY MANAGEMENT SYSTEM

TERSO SOLUTIONS



SMART INVENTORY MANAGEMENT SYSTEM

AN INDUSTRY VISION

SUMMARY: This paper will enable executives in the healthcare sector to begin envisioning, designing and constructing a next generation, smart inventory management system based on real-time healthcare system concepts, principles and goals.

KEY ISSUES:

- The real-time health system paradigm will be required to address the challenges and opportunities resulting from healthcare reform, encroaching financial realities and new consumer and patient expectations.
- Most healthcare providers are unprepared to capitalize on the sophisticated situational and operational intelligence surrounding the patient that is now possible.
- Manual processes remain the status quo, and moving to an automated system must be championed by informed and inspired leadership willing to oversee changes in enterprise operations and culture.
- Real-time health system principles must be applied to every process within the healthcare value chain. Smart inventory management is an important component of this framework.

OVERVIEW: The way in which healthcare is delivered and managed is in the midst of a significant transformation, driven by major financial, societal and industry forces. The industry is moving toward a consumer-centric, value-based care delivery model that seeks to improve care quality and access while lowering costs. This model depends heavily upon digitalization and access to better and more timely information.

Healthcare providers have their hands full these days. A disjointed care delivery system, misaligned incentives, clinician shortages, uber-aging and associated chronic conditions have, among other things, contributed to a fragmented and costly care delivery system that has put the current fee-for-service care model on notice in favor of one based on operational efficiency and improved outcomes and consumer experience.

Technology continues to play a more critical role in the business strategies of healthcare providers, suppliers, and stakeholders as they apply technology solutions and advanced analytics to the fundamental redesign of the industry, the hospital and the practice of medicine.

The modern healthcare organization includes software systems and technologies from many generations that are as much impediments to, as they are enablers of, progress. As financial and societal demands on healthcare increase, the role of IT becomes that of navigators from the traditional, disjointed operation to a more digital, streamlined healthcare model that possesses sophisticated situational awareness and operational intelligence and the means to make use of them.

Gartner refers to this next-generation healthcare delivery operational and technology model as the real-time health system (RTHS). The real-time healthcare system disrupts the classic care delivery model and senses the need for change in workflows and business processes. It eliminates the waste and latency inherent in many manual processes while working to improve care quality, business operations and the patient experience by increasing situational awareness and operational intelligence.

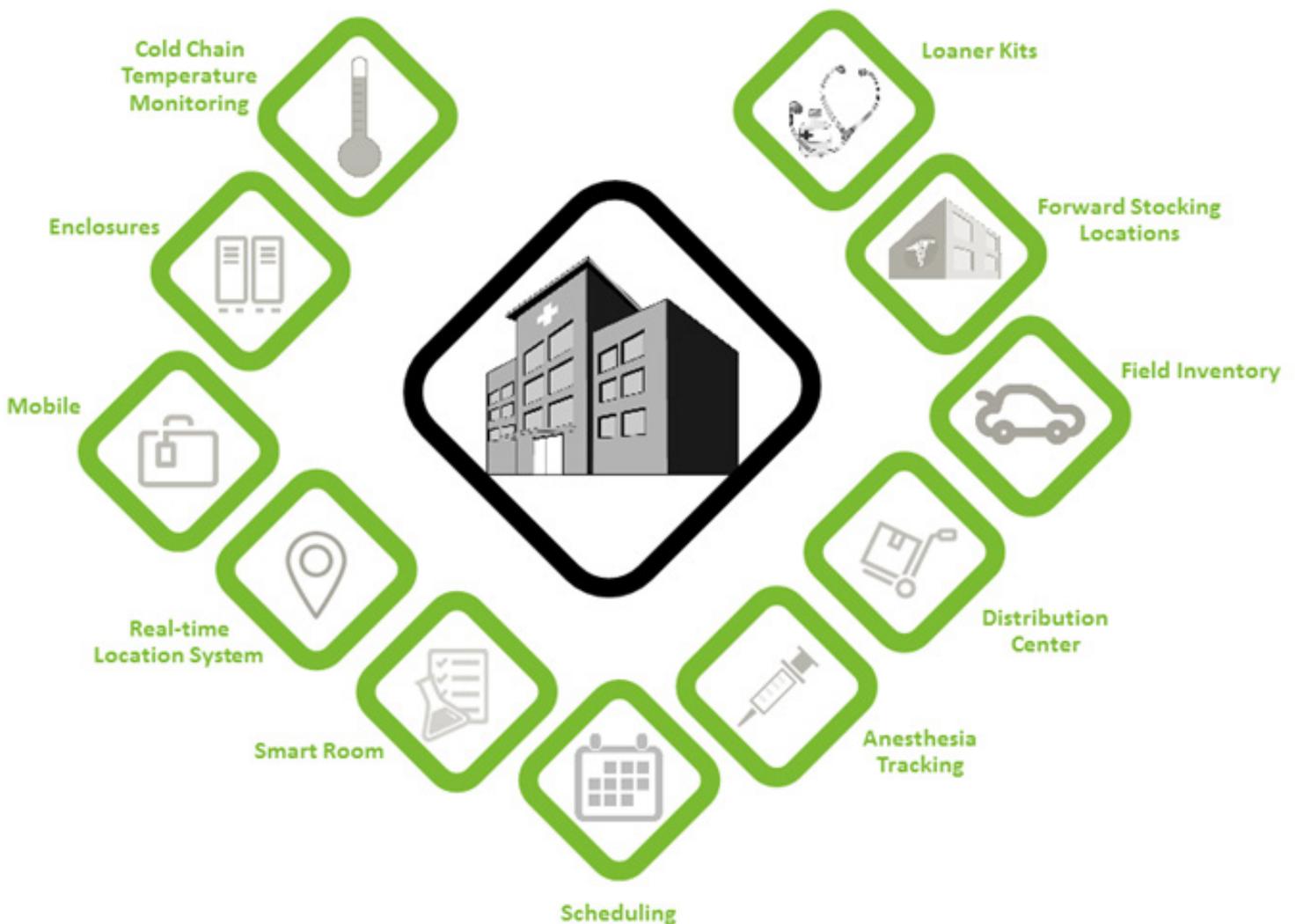
This model represents the transformation of the healthcare delivery model into an efficient, consumer- and patient-friendly enterprise whose nature and reach will create more and better care options and an improved healthcare experience.

While this is happening in the healthcare industry, the Internet of Things (IoT) is gaining in visibility and adoption. Gartner believes that by 2020, there will be 25 billion devices connected to the Internet — in 2015 there were fewer than 5 billion connected devices.

This represents a huge opportunity for the healthcare industry to increase the quality of information and situational awareness they have surrounding the consumer and patient.

When devices (“things”), directly or indirectly, connect to the Internet, they become an extension of the enterprise. The RTHS is IoT in practice. At its core, the RTHS is about possessing the right information at the right time and having the means to use it effectively. To successfully operate as an RTHS, healthcare delivery organizations will have to expand their use of location- and condition-sensing technologies, communications and collaborative tools, integration, embedded technologies, interoperability standards, and mobile devices. They will have to be able to use this information to optimize the management and execution of their most critical clinical and business workflows and processes in real time. A smart inventory management system is one of those critical RTHS systems.

Figure 1: The Smart Inventory Management System Components



COLD CHAIN TEMPERATURE MONITORING: RFID tags placed on temperature sensitive products such as implant devices, medications, and biologics allow a healthcare system or clinician to track status in real-time. Thus producing alerts when products are outside of specific temperature requirements. Increased protection not just in hospital, but also during transit from manufacturer to end user.

ENCLOSURES: Secure enclosed sensors such as cabinets, refrigerators, and freezers store medical products. User-specific badges are required to access the enclosures to add or remove inventory. Once the door is closed, a full scan of the enclosure is completed. Using a cloud-based platform such as Jetstream® offered by Terso Solutions, the data is safely sent to an end user's software or business application. Data can be utilized in a number of ways to help better manage the supply chain. These reports are produced in real-time, allowing staff to immediately view what is in inventory. Showing what has been removed and who took what, when.

MOBILE: Sensors on medical cases and handheld devices allow for mobility of real-time tracking tools. A handheld reader can scan hundreds of products in seconds. This information is sent directly to an end user's software or business application to quickly track what is in stock and trigger alerts. Medical representatives can transport medicine or products between healthcare facilities, while the case contents remain visible in real-time, regardless of location.

REAL-TIME LOCATION SYSTEM: Wireless tags are attached to objects, people, or medication to automatically identify and track location and condition. Reference points within a facility receive the wireless signals to determine location. Full visibility to every asset in a healthcare organization becomes possible.

SMART ROOM: Sensors monitor items within a patient or supply room. This allows staff visibility into all assets, their location, and condition. For example, monitors at the foot of a patient bed can display patient information. This connects each item within a specific room, unique to each patient visit and treatment type.

SCHEDULING: Configurable software streamlines and automates the process of staff scheduling. Assign staff to the proper patient and job function while balancing workload distribution. Integrated real-time reporting ensures proper coverage and last minute schedule management.

ANESTHESIA TRACKING: The system auto-schedules anesthesia providers to the correct shifts and appoints the necessary providers to surgeries and facilities. Ensuring encounters with anesthesia are easily tracked in real-time from the initial visit to the insurance billing process. Charge capture is accurate and avoids mistakes in billing.

DISTRIBUTION CENTER: RFID tags placed on consignment inventory allow items to be tracked from point of manufacture to point of distribution. This enables a manufacturer full visibility into the status of a specific product, knowing when it left the warehouse to when it was placed in a patient at a hospital.

FIELD INVENTORY: Mobile sensor technology allows inventory to be easily transported without losing sight of the contents condition and location. RFID sensors within a mobile trunk case scan contents every time the case is opened and closed, sending real-time reporting of what is in stock, and where it is located.

FORWARD STOCKING LOCATIONS: RFID tags placed on inventory that is then placed at many regionally located warehouses. Rather than store your entire inventory in one large warehouse, RFID technology allows medical device manufacturers and distributors to store essential inventory at a number of warehouses that are conveniently located based on needs. Always know what is in storage, and where.

LOANER KITS: Equipped with RTLS or GPS systems, these kits meet the daily needs and challenges of medical device companies. Loaner kits allow you to trace, locate, search, and identify supplies in the field in seconds. This enables 24/7 real-time visibility of all inventory and automatic control of products and costs.

To enable a smart inventory management system, healthcare organizations, providers, and suppliers must know what assets, capabilities, and research are needed to succeed.

ASSETS:

- RAIN RFID sensors such as enclosures and mobile devices for storing and securing high-value products.
- RAIN RFID tags to place on products stored in a healthcare facility or at point of manufacture. This will enable products to be tracked and managed in real-time.
- Cloud platform offering as well as on-site option to pull necessary data from sensors.
- Business application/software to decipher, analyze, and manage inventory data. Software ranges from third party systems to organization-specific applications.
- Data analytics to analyze data generated by activity. This will enable healthcare organizations to better manage day-to-day activities, patients, and people while understanding ways to better their operations.
- Knowledgeable, experienced staff that design solutions based on unique, individual problems for desired business goals. Provide experience and motivation to help customers achieve the best outcome.

CAPABILITIES:

- Distributed RFID management is necessary to connect all moving parts of a healthcare system. This means having the capability to manage, connect, and oversee sensor technology at hundreds of locations.
- Managing infrastructure and hardware including enclosures, software applications, and staff.
- Reliable system that is stable and secure for patients and those using the technology.
- Change management and staff training for preparing staff for new processes.
- Security and privacy with both software transmission, data interpretation, and displays.
- Data analytics and software development is required for accessing and deciphering the important records that come from the RFID sensors. The healthcare organization must be capable of producing or utilizing secure software and managing this platform.
- Innovation within the system as technology expands and growth occurs.
- Lower costs for patients and the overall healthcare organization.
- IoT solutions must align with business goals and needs.
- Ability to guide staff and decision makers through what problems need to be solved.

RESEARCH:

- Ecosystem of providers are necessary for establishing a smart inventory management system. There is not just one provider or organization that can solve this complex problem. A healthcare organization must understand the players and components needed for a successful system.
- Define larger strategy and desired goals.

ABOUT TERSO SOLUTIONS



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, Inc. is backed by 14 years of RFID product development and implementation experience. Our product line includes RAIN RFID cabinets, refrigerators, freezers (-20C to -80C), smart rooms, and mobile solutions. Terso has deployed over 1,800 RAIN RFID-enabled sensors worldwide. Headquartered in Madison, WI, Terso Solutions is a wholly-owned subsidiary of the Promega Corporation. Additional information is available at www.tersosolutions.com.