

# Medication management: rapid concept to production

## The Opportunity

As a market leader in healthcare information technology systems, Cerner Corporation identified significant functionality gaps in available medication dispensing systems. Cerner Corporation's challenge was to find a partner that was flexible and experienced enough to design, manufacture and continually improve a complex mechatronics product to fulfill the market need.

The project involved a number of principal design and engineering challenges; minimizing cost and complexity while providing a high degree of security and reliability were critical to the project's success. With limited internal resource availability and aggressive time-to-market demands, Cerner Corporation needed quick access to a full engineering team that could work with them to design a manufacturable product based on input including product features, performance specifications and the intellectual property landscape.

Chief among the technical challenges in developing the RxStation® was allowing the adaptability demanded by the myriad potential applications of the product while controlling cost. This task proved significant given the goal of making the RxStation® equally useful to a pharmacist storing bulk medications in a central hospital pharmacy or a nurse tending to multiple patients on a hospital floor.

Secondary challenges included mechanism design, embedded software development, design for electromagnetic compatibility (EMC) compliance, development of custom reliability testing fixtures, an agency test approach that addresses the modular nature of the product and automated production test systems.

## Product Profile

The Cerner Corporation® RxStation® medication management system securely stores pharmaceuticals and facilitates their efficient, error-free administration. Designed to track inventory from a hospitals' central pharmacy to the patient, the RxStation® simultaneously prevents incorrect stocking and theft.



“Cerner engaged Plexus to develop an innovative new product design for securing medications in an Automated Dispensing Cabinet. Plexus accepted the challenge and within two weeks delivered a design that has become the foundation of Cerner’s RxStation® solution. Plexus demonstrated why they are known as The Product Realization Company.”

-Matthew Beck, Sr. Director, DeviceWorks  
Cerner Corporation

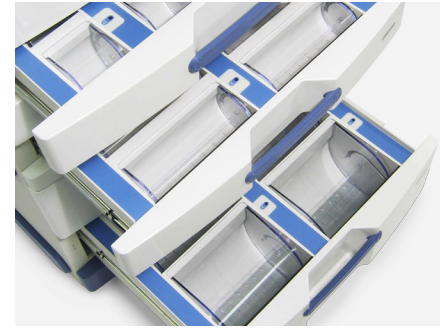
## Plexus Solutions

The synergy of Cerner Corporation’s market leading electronic medical record systems and device integration experience along with Plexus’ more than 30 years of medical device design and manufacturing experience created the revolutionary Cerner Corporation® RxStation® that set a new bar for medication workflow, security and dispensing accuracy.

Plexus helped Cerner Corporation overcome the modularity challenge through several key design steps which made the system’s modularity completely seamless to the user. Software and electronics onboard the header and storage modules automatically negotiate a controller area network (CAN) address once added to a tower. Also, no matter what kind of modules or trays are added to a system, the software will automatically sense this topology and function accordingly. These modules and trays can be added or removed from every section of a tower with no additional changes required and the scalable distributed object scheme allows complete software upgradeability either on-site or remotely via Ethernet.

In order to meet the first client’s aggressive implementation needs, Plexus and Cerner Corporation leveraged an existing supply chain of preferred suppliers that enabled the RxStation® to progress from initial concept to functional specification to prototype in just three months. Five months later, 55 units had been manufactured, agency approved and shipped to the awaiting client.

Prior to the introduction of the RxStation®, Cerner Corporation’s role was primarily that of a healthcare information technology solution provider, leading the industry in patient data management. By partnering with Plexus on the design and development, Cerner Corporation closed the loop of pharmaceutical control and now provides a complete solution for tracking and dispensing medications within the hospital environment. Through partnering with Plexus and introducing the RxStation®, Cerner Corporation was able to access a new market segment providing the company the opportunity to offer its hardware solution to organizations interested in using it with non-Cerner software.



## Benefits of Working with Plexus

Ability to leverage each partner’s core competencies to outperform legacy products

Rapid concept-to-production and product refresh cycles to maximize desired features to end users

Integrated product design and manufacturing improving quality and transition to production

Flexible and focused skills of more than 400 engineers globally

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